Stone Meadows
Habitat Management Plan
2025 - 2030

Stafford
BOROUGH COUNCIL

Contents

Executive Summary

Stone Meadows Local Nature Reserve consists of two areas of floodplain meadows, either side of the town of Stone, totalling 14ha in size. The main aims of site management are to undertake the following: Restoration to species-rich floodplain meadows, restoration of tree lined river banks, creation of small areas of other habitats such as woodland, wetland and ponds.

Regular annual management is required to maintain and enhance this work. This includes the day-to-day management of the site including site surveys and general maintenance. Details of the works are found in the main body of the text and include:

- Annual hay cutting and bailing
- Scrub/tree control
- Tree planting
- Weed control

By managing the Borough's natural assets, the Council is following national and local policy set out in:

NERC Act 2006 - Section 40 and 41

SBC Corporate Business Objective: Climate Change and Green Recovery

SBC Nature Recovery Declaration

1 Introduction

Name: Stone Meadows

Total area: 13.9 hectares

The Local Nature Reserve is comprised of two meadow areas - Goodall Meadow is 8.4 hectares in size and Southern Meadow covers 5.5 hectares.

Grid reference: SJ895340 (Goodall Meadow) and SJ909326 (Southern Meadow)

Ownership: Stafford Borough Council

Conservation Status: Local Nature Reserve (LNR).

Management History: This document updates and replaces the 2022-2027 Management Plan and is the fourth update since the site was declared a LNR in 2004.

Stafford Borough Council owns two Local Nature Reserves in Stone, the larger Goodall Meadows in the north and the appropriately named Southern Meadow - boundaries highlighted in red at either end of the map, above.

In the centre of the map are two additional sites; Stone Town Council's "Crown Meadow" LNR and the lower section of Westbridge Park. Both areas include meadows, scrub and riverside trees.

What is apparent from the map is the comparatively large area of land in Stone's Trent floodplain under some form of conservation management. It therefore made sense to coordinate management aims across all four sites. This will help establish a connected and coherent landscape that is also more resilient to climate change.

The most appropriate conservation aims for a series of fields in the river floodplain is to restore the old type of river meadow that would have been present in the past.

Floodplain meadows are beautiful, ancient and fascinating places rich in wildlife and history. Throughout the spring and early summer, they are awash with wildflowers and waving grasses, humming with insects and the birds that depend on them. They provided a vibrant and beautiful spectacle that has now all but disappeared largely due to modern farming methods.

They evolved over many hundreds of years through the need to store the summer grass crop as hay to sustain animals over the winter months. The system of allowing the vegetation to grow up in the spring, taking a hay crop in midsummer and then grazing the re-growth, prevented taller, coarser species from becoming dominant and created a diverse flower rich habitat.

If you know where to look, there is still evidence of the original plant communities, found along the river corridor. Plants such as Meadowsweet, Great Burnet, Common Bistort and a number of sedges, resilient enough to have survived in unmanaged patches, indicate what was formerly present. That these plants have held on, often after decades, indicates both their suitability and the appropriateness for restoring them across their former range. This is also a path of least resistance, allowing the plants to inform the management rather than imposing some arbitrary aim.

Meadow restoration is under way across the sites in Stone. The main management task is to ensure an annual hay cut, with the bales removed from site. Continued support from the Biodiversity budget is essential.

Access:

Members of the public are welcome to enter both of these meadows, but their location alongside the River Trent imposes geographical constraints on access. There are no formal rights of way or paths on either site.

The Goodall Meadow has two access points, one situated on Trent Road. This access point consists of a small lay-by with a locked field gate (to allow vehicular access) and a kissing gate. Additional access is from Meadowside housing estate across a small footbridge.

The Southern Meadow has two access points, one off Valley Road and the other via an area of grassed amenity public open space just off Redwood Avenue. Both of these include locked gates for vehicles and have kissing gates for public access. The Environment Agency has been known to access Goodall Meadow to clear blockages on the stream boundary. Network Rail has accessed the Goodall Meadow for maintenance/improvement works to the railway embankment and viaduct. Severn Trent access Southern Meadow to monitor an outfall.

2 Site descriptions

The Goodall Meadow is situated in the north-western corner of Stone, close to the Wayfarer Inn on the A34, and is almost entirely bounded by water courses. The River Trent meanders along the western and southern perimeter of the site. The eastern boundary is marked by a small straight drainage ditch which separates from the River Trent just to the north of the site and re-joins the main river alongside the old Trent Hospital building in the south-east corner of the meadow. The short northern boundary is provided by Trent Road. Much of the meadow is low lying and contains archaeologically important flood meadow field systems. However, there are also a series of large earthworks created during the Foot and Mouth crisis that provide higher land. The meadow is bisected by a railway viaduct which runs roughly north-east to the south-west through the centre of the site on a large embankment owned by Network Rail. All site users, including vehicles, can travel between the two halves of the meadow via either of two arches in the embankment.

The Southern Meadow is located in the southern end of Stone, close to the cemetery and the A34/A51 road junction. The River Trent runs along the northern and eastern edge of the site, whilst residential gardens provide the western boundary. Privately owned farmland lies to the south of the meadow, beyond a boundary hedge. The meadow is an area of flat, relatively low-lying ground on the River Trent floodplain. The predominant vegetation types are grassland, with the southern and western edges of the meadow providing hedgerow and wet woodland habitat. A low-lying area of rush by the smaller

access gate has a number of ponds. The wet habitats are fed by a small watercourse, which runs from higher ground to the south of the site. By the time it reaches Southern Meadow water flow is almost entirely underground.

Additional sites:

Westbridge Park

The refurbished park and play areas sit on a raised area of land, whilst the eastern end of the site is a lower-lying area between the river and canal that can often be waterlogged, especially in winter. Therefore, whilst not being suitable for formal amenity use, the ground conditions are appropriate for a more nature-based solution, with the creation of a floodplain meadow area, surrounded by a mown circular path. Meadows can take many years to mature and develop - in 2024, the first Southern Marsh Orchids were found, a positive indication that restoration work is progressing in the right direction. Of interest, there are also areas of woodland, marsh and wet grassland. Plants found here include Small Teasel, Meadowsweet, Great Burnet, Common Bistort and Brown Sedge. A new hedgerow was planted along the fenced eastern boundary.

Crown Meadow LNR

Crown Meadow's topography means it is prone to flooding and the impact of that is to bring river-silt on to the meadow areas. This nutrient enrichment makes it difficult to establish a flower-rich meadow, as grass growth is so vigorous. However, the wetland scrape in the centre of the site has been largely successful, with the spread of Purple Loosestrife and other wetland plants. Willow growth does need to be managed quite strictly to prevent losing the feature's floral interest.

3 Management objectives

Local Nature Reserves are a very important part of our heritage, and it is important that we treat them as such. We want to encourage and enhance biodiversity within our Borough and encourage as many of our residents to visit and to enjoy our LNR's.

- To enhance the grassland on both meadows, by encouraging a greater floral diversity in line with local conditions.
- To maintain and enhance, and where possible create or restore, wetland features.
- To ensure that all hedgerows on the meadows are managed appropriately to provide maximum wildlife benefit.

- To maintain and enhance the populations of notable species.
- To enhance the educational value of the site.
- To contribute towards achieving the aims, objectives and targets that are identified in the UK Biodiversity Action Plan, the Staffordshire Local Nature Recovery Strategy and the Stafford Borough Biodiversity Strategy

3.1 Table of Maintenance Tasks

Works	Date
Surveys	All year
Invasive weed Control	May - July
Hay cut	July/August
Pollarding	Nov - Feb
Wet Woodland Management	Nov - Feb
Tree/hedge planting	Nov - March
Hedge management	Nov - Feb

3.2 Management History and Ecological Analysis

Historically the fields along the River Trent in Stone were managed as floodplain meadows. The remains of floodplain channels still exist at Goodall and can also be seen from aerial photos of land to the east of Westbridge Park, though not Southern Meadow. This would have allowed the grass to grow earlier and enriched the soil before cutting for hay and aftermath grazing. Floral surveys on surviving remnants of land at Westbridge Park and land off Trent Road have revealed species associated with MG4 such as Great Burnet, Meadowsweet and Southern Marsh Orchid along with sedges and Meadow foxtail grass. It is very probable that MG4 grassland existed along the river meadows in Stone. It would have been rich in insects, flowers and birds including wetland birds such as Curlew, Snipe and Redshank.

More recently, the land appears to have reverted to pasture with sheep and cattle grazing. This management was considered the most suitable process for the original and subsequent management plans. Grazing was arranged via agreements with local farmers. In 2001 Stafford Borough Council entered both meadows into a Countryside Stewardship Agreement, which aimed to increase the biodiversity of the sites. The number of livestock on the

meadows was reduced to prevent over-grazing and practices such as the addition of fertilisers and pesticides were prohibited. In 2012 this was succeeded by a Higher-Level Stewardship (HLS) agreement with the aim of enhancing the meadows floristically.

Through monitoring of the meadows over the years, it became apparent that grazing was not leading to an increase in meadow flora. The intended aim of management was originally just to enhance the meadow flora - with no set aim of target species or type of grassland. Later, the aim became more specific and was to restore an MG4 floodplain meadow grassland. However, as with many rivers, the Trent has been disconnected from its' floodplain and so the seasonal variation in water levels that would support MG4 is disrupted. Additionally, there are areas on the meadows where conditions dictate that MG4 is not possible, for example wetter areas of ground that support MG11 type grassland. Taking all the factors into consideration, being too prescriptive about the end result is probably unhelpful. A seed-mix including MG4 and MG5 species will be sown, and then local conditions will determine the outcome. The main aim is that the meadows are managed in order to maintain and enhance an appropriate species-rich grassland.

In 2019 work began to restore the meadows through seeding of a wildflower mix. The mix is a hybrid of Naturescape's N6 and N7 mixes - intended to fulfil the aims above. This intervention was deemed necessary by the failure of other methods.

In 2022, On-Trent undertook works at Goodall, reprofiling sections of river bank, and creating scrapes. They also secured tree stumps into the riverbank in order to stimulate the flow of water over irregular features. At Southern Meadow a number of ponds were dug on the lowest lying land, on a section of soft-rush.

In 2023, a Biodiversity Net Gain Agreement (pre-mandatory) provided funds to enhance a meadow strip above the area of wet woodland, (with Emorsgate EM8 seed-mix), as well as works to the woodland edge and the installation of a bench.

In 2024 an award from HS2's, Biodiversity Investment Fund, provided the funding for Goodall Meadows, restoring the first meadow with Emorsgate EM8 seed-mix. (This mix was chosen to add diversity to the sites - having a different combination of native plants and grasses to the Naturescape seed). To add new habitats, two small areas of woodland were planted at either end of the site. The small field to the right of the main access point was chosen as a woodland, continuing the belt of woodland found across the A34 on the "Trent Wood" SBI. The back field, too wet for meadow restoration, was

planted with a mix of wet-woodland trees such as willows, Alder and Downy birch.

In June 2023, the Floodplain Meadows Partnership visited Goodall, Southern Meadow and Westbridge Park. They concluded that all three sites were suitable for restoration. Site reports are now on their database.

An application to the RPA for the new Grassland SFI (Sustainable Farming Incentive) payments, beginning in 2025 has been submitted. If successful, this should provide payments to maintain the hay-cutting for 5 years.

4 Main management operations

This section details the main management operations that are required to protect and enhance the biodiversity of these meadows and also maintain their community amenity value. A new management plan should be produced during 2030 to succeed this document. This current plan should be monitored throughout its 5-year lifetime and should be revised at any time during that period, if necessary, to provide greater protection to the important habitats and species that are found on this site.

4.1 Grassland management

The main management objective for all the meadows in Stone is that an annual summer hay cut is carried out. The Council does not have the specialist equipment to undertake this work, therefore local farmers work as our contractors. Timing of the hay cut can vary according to conditions, as a four-day window of dry, sunny weather is required. There have been occasions when the grass cutting was delayed into early September. Whilst the UK weather is unpredictable, ideally, it would be best to aim between mid-July and early August. Nutrient levels would then fall providing a better balance between grass growth and meadow plants. It would also be advantageous, if after an early hay cut is done, that a second topping follows later in the year. Contractor commitment, budgets and the weather all need to align for this to take place. Hay cutting will incrementally remove nutrients, so long-term aspirations will hopefully see a slow improvement in the condition of the meadows.

Former management plans were clear that no manure or fertiliser should be applied to Stone Meadows. Enriching the sward with nutrients causes grasses to grow vigorously, at the expense of meadow flowers. There have now been at least 20 years without this practice. Measurements of the nutrient load, (N,P,K) showed only moderate levels, so over time, with continued hay removal, this should be reduced, providing the lower nutrient conditions that favour a more diverse flora.

4.2 Wetland Management

The two meadows contain a variety of wetland features, ranging from riverine habitats, wet-woodland pools, and ponds/scrapes. Small areas of river reprofiling have taken place at Southern Meadow in 2005 and Goodall Meadow, 2022, where the vegetation has developed naturally. Ponds and scrapes have also been created, with a wetland seed-mix to add diversity to the habitats. Cutting and raking-off during the winter should maintain the floral interest.

4.2.1 Pond area and wet woodland on Southern Meadow

Old Ordnance Survey maps of Southern Meadow show formalised ponds on the western boundary of the site. Even modern computerised mapping information identifies a roughly rectangular water body and a smaller oval pool in this location. In reality this is now a small area of wet woodland, which contains a mix of open water features and marshy vegetated ground. The woodland canopy is predominantly Crack willow (some of which are standing deadwood) together with a few Alders. The under-storey contains regenerating Crack willow, Alder, and Goat willow. Ground flora species include Common bistort, Meadowsweet, Yellow iris, Water mint, Marsh marigold and Water horsetail. As this area provides both the largest woodland copse and the only permanent standing water on the site it provides a valuable habitat for a variety of fauna.

Four new ponds were created in 2022. A selection of wetland plants was added in 2024. Water levels will fluctuate seasonally, but hopefully standing water will remain providing habitat for dragonflies and other invertebrates.

Any standing deadwood should be left unless it is considered to pose a Health and Safety risk to site users or neighbouring residences. If felling is deemed to be necessary then the cut deadwood should be left on the ground within the woodland to provide habitat diversity.

4.2.2 Flood meadow field system on Goodall Meadow

Staffordshire County Council’s Historic Environment Officer (Archaeology) has identified this as an important archaeological feature.

The flood meadow field system consisted of a series of shallow channels, which were used to retain floodwaters on the meadow each year. The nutrients and extra moisture that these channels held prompted more vigorous growth of grass.

These shallow channels, the majority of which run in rows parallel to the River Trent, can still be identified on the site today.

Viewing aerial maps of the area shows that the channels were widespread along the Trent corridor. However, there is no evidence of these features on Southern Meadow.

4.3 Woodland and Hedgerow Management

Around two meadows there are a variety of woodland, hedgerow and scrub habitats. These all provide valuable habitat diversity and should be managed sensitively to benefit the associated ground flora and the fauna that utilise these habitats. If new planting is planned then only appropriate native tree/shrub species should be strongly encouraged on these meadows.

4.3.1 Hedgerows

In 2004 hedgerow restoration work was carried out on a hedge that runs through the back of Goodall Meadow. The remnant hedgerow was comprised of a series of old hawthorn trees, which had clearly been planted in a linear fashion but displayed no sign of having been laid in the past. The hedgerow was gapped up with a variety of local provenance species including hawthorn, hazel, crab apple, dog rose and buckthorn.

The northern boundary of the Goodall Meadow, which runs alongside Trent Road, is marked by a hedgerow. The roadside part of the hedge therefore requires trimming to prevent encroachment onto this narrow road. This cutting should take place during January or February.

Goodall Meadows' vicinity to Trent Woods SBI allows for the continuation of woodland habitat along the Trent. It is proposed that the existing hedgerow along the river bank is doubled up to provide thicker cover and habitat. New planting in 2022 began this ongoing work.

4.3.3 Black poplars

The Black Poplar is a rare native British tree, which is naturally found on lowland river floodplains and is therefore ideally suited to the conditions on Stone Meadows. Native Black Poplars are now very rare due to changing land and river management. A couple of saplings were planted, in enclosures, on Southern Meadow in 2004. New saplings were planted at Goodall in 2025.

4.4 Other Site Management Tasks

There are numerous general site management tasks that need to be undertaken, including maintenance of access gates and litter picking.

4.4.1 Access

Monitoring of the condition of all access points is undertaken regularly. Contractors help with this, replacing gates when necessary.

4.4.3 Signage

New information boards will be installed on both LNRs by the main access points.

4.4.4 Wildlife Surveys/Monitoring

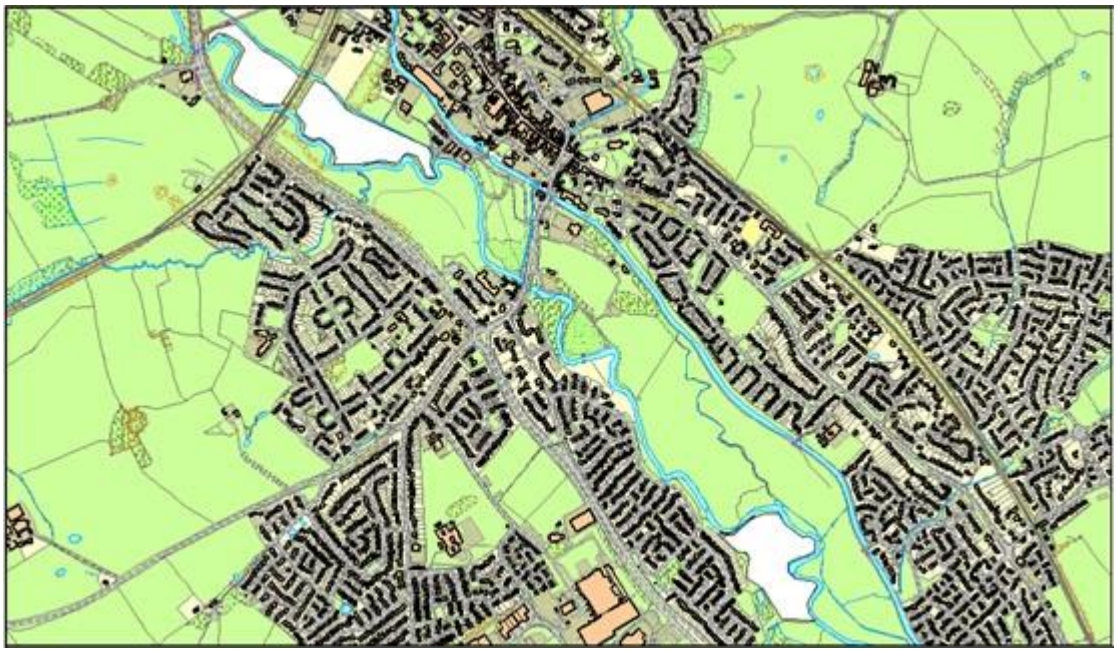
- To get a better overall understanding of the wildlife that uses this site a number of surveys should be undertaken. It would also be beneficial to have general survey data relating to birds, reptiles, dragonflies, damselflies, butterflies and moths that use the meadows.
- All wildlife records that are collected, whether historical or current, should be reported to the Staffordshire Ecological Record (SER).
- Annual monitoring of the condition of the meadows is essential in order to evaluate the management aim of species-rich floodplain meadows and any required amendment to the timing of hay cuts.

4.4.5 Invasive Species Control

- Ragwort has to be pulled prior to hay cutting as the plant is toxic to animals if it remains in the cut hay.
- Thistles should be topped in June and again in July before flowering
- Docks require control - this has been done both through volunteers digging them out (that does not always succeed in removing the whole root), topping them as a last resort in summer, and chemical control. Spraying is unpopular with local users, especially dog-walkers, so it is helpful if warning signs are in place for 24 hours.
- Himalayan Balsam can be a problem and requires monitoring and removal when resources allow. Plants are best cut down before flowering. As annuals, they are shallow-rooted and easy to pull.

Ecological Position and Green Infrastructure

Figure 1 Map of Trent corridor in Stone, the Local Nature Reserves highlighted in white



In between the two LNRs are Stone Town Council's Crown Meadow, Westbridge Park and several areas of land owned by a local farmer. Although an area of open landscape, Stone's Trent corridor does not fulfil its potential as a wildlife rich area. By considering the whole length of the river corridor and adopting the broad aims of an overarching Management Plan, the following potential benefits could be achieved:

- Improved quality of landscape
- Improved sustainable transport - footpaths
- Opportunities for education and informal learning
- Having a positive impact on people's health and well-being
- Climate change adaptation
- Flood risk reduction
- Improving the river corridor and green space networks
- Increasing access to nature and recreation
- Increasing wildlife

Although this remains aspirational, the inclusion of this area in the Local Plan as designated Green Infrastructure shows the important role this land plays within the wider landscape. Floodplain restoration work at nearby Aston Farm has clearly shown the ecological benefits possible on this section of the Trent.

Appendix - Maps

Figure 2 Goodall Meadow

Figure 3 Southern Meadow

Bibliography

Floodplain Meadows Partnership (2016) *Floodplain Meadows - Beauty and Utility*

George Peterken (2013) *Meadows*

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