Stone Meadows
Habitat Management Plan
2022 - 2027

Stafford
BOROUGH COUNCIL

Contents

Executive Summary

Stone Meadows consists of two 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. In addition, it is hoped that introduction of small numbers of cattle will aid natural processes in habitat restoration.

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:

- Vegetation control
- Scrub/tree control
- Tree planting
- Seeding/planting wildflowers

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 2: To improve the quality of life of local people by providing a safe, clean, attractive place to live and work and encouraging people to be engaged in developing strong communities that promote health and wellbeing.

SBC Climate Change and Green Recovery Strategy

1 Introduction

The Goodall Meadow has only one access point, which is situated on Trent Road. This access point consists of a small lay-by with a locked field gate (to allow vehicular access for Stafford Borough Council, the grazier or contractors) and a kissing gate, which is designed to allow access for wheelchairs and pushchairs as well as pedestrians.

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 consist of locked gates, which provide authorised vehicular access to the site. Both points also have kissing gates installed for public access.

Since local residents currently use the Meadow to walk their dogs they will be allowed to continue doing so. However, when livestock are present they will be required to keep their pets on a lead and under close control. Owners must clear up after their pets and remove faeces from the site on all occasions.

Name: Stone Meadows

Total area: 13.9 hectares

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

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

OS Map: Explorer 258 - 1:25,000

Ownership: Stafford Borough Council

Local Planning Authority: Stafford Borough Council

District: Stafford Borough

Conservation Status: Local Nature Reserve (LNR).

Management History: This document updates and replaces the 2015-2020 Management Plan and is the third update since the site was declared a LNR in 2004. This plan seeks to further new aims in habitat creation - allowing more emphasis on rewilding techniques.

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 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 description

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 grassland on this meadow has been agriculturally improved in the past, and botanical diversity is not sufficient for SBI status. 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 short tunnels 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 improved and semi-improved grassland, but the southern and western edges of the meadow provide greater botanical interest. There is a diverse area of wet woodland that has developed around two small ponds in the south-western corner of the meadow. These 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. This phenomenon provides a wet grassland habitat to the north of the wet woodland.

2.1 Ecological Evaluation

Southern Meadow

Trees:

On entering the site, the first tree to be seen is a fine specimen oak. A mature Black poplar is the largest and most impressive tree on site (see section 4.3.3). A group of poplar are located nearby. Several Crack willow form a group by the river in the centre of the reserve. Willow and Alder are the dominant tree species in the wet woodland area.

Birds: During the summer, impressive numbers of House martin feed across the site and river. On sunny days in June, these birds can be seen collecting mud from the river-bank for their nests. Sand martins can also be spotted and nest in the mud banks of the river. Swallows can also be seen. On the river, a Kingfisher is possible though rare. Also occasionally spotted are Mandarin duck and Goosander. Mute swan can be seen regularly and are often on the floodplain during winter. Grey heron and Moorhen are also regularly seen. During winter, Snipe have been recorded feeding in the wetter sections of the meadow. Corvids and buzzard often fly over.

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 MG5 or MG4 grassland.
- 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 and, where necessary, stock-proof boundaries.
- To maintain and enhance the populations of notable species, such as native black poplar.
- To enhance the educational value of the site and increase the number of educational visitors.

- To contribute towards achieving the aims, objectives and targets that are identified in the UK Biodiversity Action Plan, the Staffordshire Biodiversity Action Plan and the Stafford Borough Biodiversity Strategy

3.1 Table of Maintenance Tasks

Works	Date
Grazing Agreements (when applicable)	March
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 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 current species-poor grassland is enhanced.

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.

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 2025 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 HLS - General Requirements

- Inorganic or organic (e.g. farmyard manure) fertiliser, lime, slurry, sewage sludge or slag must not be applied to the meadows.
- Pesticides must not be applied except for the control of spear thistle, creeping or field thistle, curled dock, broad-leaved dock, common ragwort or, with prior DEFRA / NE agreement, nettles. Application must be by weed wiper or spot treatment.
- There must be no ploughing or other cultivation,

- The only exception to this is if such operations are required as part of work to enhance the natural floral diversity of the grassland

- There must be no new drainage or modification to existing drainage systems. This includes subsoiling and mole ploughing.

- Where Livestock Units per hectare are referred to in the following section, the units below should be used to calculate stocking rates:

    ⇒ Dairy cow 1.0 LU

    ⇒ Beef cow (excl. calf) 1.0 LU

    ⇒ Cattle over 2 years old 1.0 LU

    ⇒ Cattle between 6 months and 2 years old 0.6 LU

- There must be no use of metal detectors or ground disturbance on sites of archaeological interest without prior written consent from DEFRA.

- Pigs/poultry/sheep must not be allowed to graze on Agreement land.

- Graze at a stocking density of no more than 1.0 Livestock Units/hectare at any one time between 1 April and 15 July. This is to minimise disturbance to ground nesting birds/ damage to flowering plants/ damage to archaeological sites.

- There must be no supplementary feeding of any description, including creep feeding.

4.2 Wetland Management

The two meadows contain a variety of wetland features, ranging from fast moving riverine habitats to a heavily vegetated pond/wet woodland environment.

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,

goat willow and some sycamore. 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.

- Management of this area will aim to maintain a mix of wetland habitats.
- Natural regeneration of willow species and alder should be encouraged. In 2003 a new fence was installed around the woodland to prevent access by cattle and therefore prevent grazing of natural regeneration.
- The composition of the tree species should be closely monitored. If sycamore trees seem to be increasing in number rapidly then selective removal will be required. This invasive, non-native, tree species has the potential to significantly affect the composition of woodlands if left unchecked.
- 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.
- It is important that the remnants of the flood meadow field system are conserved. Consequently, there must be no heavy disturbance of the ground surface (including ploughing) on the low-lying half of the meadow.

4.2.4 Control of Himalayan Balsam

- Like much of the River Trent the sections of water course that flow through the Goodall and Southern Meadow in Stone are badly affected by Himalayan Balsam. This invasive, non-native, plant bares attractive pink flowers from mid-summer until early autumn. It is an annual, which grows vigorously and swamps much of the natural bankside vegetation. Each plant produces hundreds of seeds, which are then transported downstream.

- It will be very difficult to eradicate Himalayan Balsam from the drainage ditch on Goodall Meadow and the River Trent on both sites because there are a very large number of plants further upstream. Therefore, each year a huge number of seeds will continue to be produced, which will then be transported to Stone by the river. Even so, it is important that efforts are made to control Himalayan Balsam on these meadows. As the plant is an annual it is vital to prevent it from setting seed. Manual pulling or mechanical strimming are the preferred methods of control. This work should be undertaken in June as vigorous plant growth begins. Further control work may then be required throughout the summer months to ensure that later germinating seeds are not missed.

4.2.5 Riverbank re-profiling

- In 2003 plans were drawn up to undertake two sections of riverbank re-profiling on this meadow. These were funded by the Environment Agency, who also funded work on another section of re-profiling, which was completed in November 2003 on the nearby Crown Meadow.

- Over the past two hundred years most of the River Trent has been ‘canalised’ - a process that results in steep banks, flat riverbeds and fast flows. This greatly reduces the diversity of habitats within the river and on its banks. One of the main reasons for ‘canalisation’ was the belief that it would reduce flooding problems. However, it is now known that fast flowing rivers can result in ‘flash floods’ downstream.

- The process of riverbank re-profiling involves re-instating the natural contours of the land by removing ‘wedge-shaped’ sections of the riverbank using earth-moving machinery. This results in much gentler slope gradients (see diagrams below). By reducing the gradients of the banks the re-profiling work will provide an opportunity for natural bank-side vegetation, such as reeds and rushes, and riverbed features, such as shingle-bars, to develop. This increased diversity of habitat will, in turn, benefit a variety of animal life, particularly birds and insects which

will return to the area over time. As well as wildlife, the work will benefit people living nearby. The sections with gentler banks will make it easier to see the river and safer for people walking alongside. It will also provide an opportunity for the river to be safely used as an educational resource.

- However, the process of re-profiling a section of riverbank generates a tremendous amount of surplus topsoil. On many sites this material could be incorporated into other habitat restoration/creation projects. Unfortunately virtually all of Southern Meadow lies within the floodplain of the River Trent. No material should be deposited within the floodplain (because this would reduce flood capacity), so all surplus soil produced would have to be transported off-site. The sustainability and cost of transporting material away from the site, together with restricted vehicular access to the meadow, have resulted in this planned habitat enhancement work being indefinitely postponed. However, if circumstances change and a sustainable, financially viable, way of carrying out the work can be found then the project should be implemented.

- HS2 has been approached in regard to re-profiling works. Site visits have informed them of the overall management aims and the requirement for funding. It remains a possibility that they could fund this work.

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

- Hedgerow restoration work was undertaken on the hedge that marks the southern boundary of Southern Meadow during 2003. The hedge had become very gappy and had clearly neither benefited from hedge laying nor gapping up work for a considerable length of time. Hawthorn and Blackthorn whips were the dominant species used in re-planting, although species such as dog rose, alder and crab apple were also planted. The planting density was approximately 6 per metre (in two staggered rows to produce a denser hedgerow). Stock-proof fencing was installed around the ‘gapped up’ hedge to prevent cattle from

grazing the young trees. All of this work was funded by the On Trent project.

- In 2004 hedgerow restoration work was carried out on a hedge that runs through 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. As this is a roadside hedge it is essential that the hedge remains stock-proof and does not cause a risk to public safety by growing into the road or obscuring road signage. The roadside part of the hedge therefore requires annual 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.

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 because the remaining mature trees are not producing saplings. This is because their seeds need very specific wet, muddy ground conditions to successfully grow. However, in the last 300 years suitable conditions for the establishment of these majestic trees have virtually disappeared because of changing farming practices and land drainage. Some black poplars still survive locally and to promote the survival of this species Staffordshire County Council are growing new trees by taking cuttings from the remaining mature trees. The native black poplar is a Staffordshire Biodiversity Action Plan species.

- There is a large mature poplar tree close to the riverbank on the northern edge of Southern Meadow.

- In early 2004 several native black poplar saplings were planted in Stone. Three of these were on Southern Meadow (1 in the wet woodland, 1 amongst the mature trees on the riverbank and 1 by the patch of trees on the western boundary), one was on Goodall Meadow

(close to the riverbank at the end of the restored hedge) and two were on the nearby Crown Meadow. These saplings were kindly donated by Staffordshire County Council. Where necessary the trees were fenced off to prevent grazing or fitted with tree shelters.

- Once the trees are considered to be developed enough to be safe from grazing and rabbits, the fencing should be removed.

4.3.4 Other tree management tasks

- Whenever possible ropes should be removed from the branches of trees, although only if it is safe to do so. Old tree ties should also be removed from any planted trees.

- Bird boxes and bat boxes could be installed in appropriate locations on some of the mature trees around the meadows.

4.4 Other Site Management Tasks

There are numerous general site management tasks that need to be undertaken. Many of these are undertaken by the graziers – or because they are on site on a day-to-day basis are the best wardens for the site and notify us of any problems.

4.4.1 Access

- Monitoring of the condition of all access points should be undertaken regularly.

- It is essential that all site boundaries are maintained in a stock proof condition and un-authorised vehicular access is prevented. Any necessary repairs should be arranged as soon as possible. For the duration of the annual grazing agreements for these meadows the graziers are responsible for maintaining site boundaries.

4.4.3 Signage

- New Local Nature Reserve information boards will be installed on both meadows.

4.4.4 Wildlife Surveys

- To get a better overall understanding of the wildlife that uses this site a number of surveys should be undertaken. As previously stated in section 5.2.1 it is particularly important to get more information about the wet woodland/pond area on Southern Meadow. 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).

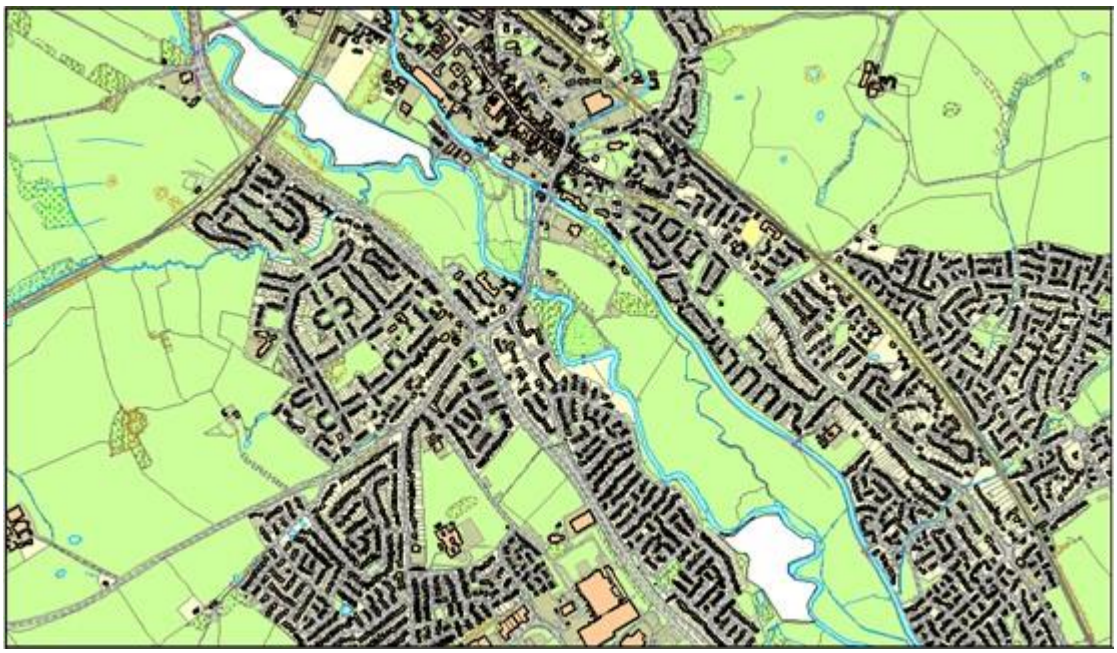
4.4.5 Invasive Species Control

- Ragwort is more common on Southern Meadow – it is possible that regular sheep grazing on Goodall Meadow prevented its establishment there. Ragwort is a native species that supports a number of invertebrates. It can be tolerated in small numbers but requires monitoring and control to prevent it spreading.

- Thistles should be topped in June and again in July before flowering

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

Benedict MacDonald (2019) *Rebirding*

George Peterken (2013) *Meadows*

Isabella Tree (2018) *Wilding*

Contact for further Information:

Bill Waller - Ecology and Landscape Officer, Stafford Borough Council

E mail: wwaller@staffordbc.gov.uk

Telephone: 01785 619000


Stafford
BOROUGH COUNCIL