

### Landownership and site background

Goodall Meadow is part of Stone Meadows Local Nature Reserve owned and managed by Stafford Borough Council. It has been undergoing restoration to a more species rich floodplain meadow programme since 2015.

The site is publicly accessible and well used. The Borough Council aspiration is to create species rich meadows and inspire the public.

### Restoration activity

The field to the south-east of the railway line was power harrowed to bare earth in July 2015 and spread with green hay from Mottey Meadows National Nature Reserve. However this didn't seem to work very well, so power harrowing and spraying were repeated in 2016. The site was then spread with commercial seed from Naturescape: the Borough Council tend to sow at half the recommended rate to keep costs down. They used a wet meadow (N6) and clay soil mix (N7) mixed together. They were aiming to get some of the rarer species including pepper saxifrage and saw wort.

However 2017 was a very wet autumn and the field was underwater for weeks. More seeds were therefore sown in spring 2018.

They have also planted 9 cm pots more recently (2021) including great burnet, pepper saxifrage, water avens and marsh marigold (the latter two in low lying areas).

Annual hay cuts started before seeding was undertaken. Some river restoration has also been undertaken.

The area to the north-west of the railway line has been partially prepared for restoration in 2023. A section has been sprayed and power harrowed and will be sprayed again once germination has occurred. The site was spread with Mottey Meadows green hay as recommended by FMP but unfortunately the weed burden has been unpredictably bad with large areas of dock, nettle and thistle. Harrowing and spraying will be repeated for a seed-mix application in 2024.

### Site information

**Size:** 9 ha

**Public access:** yes

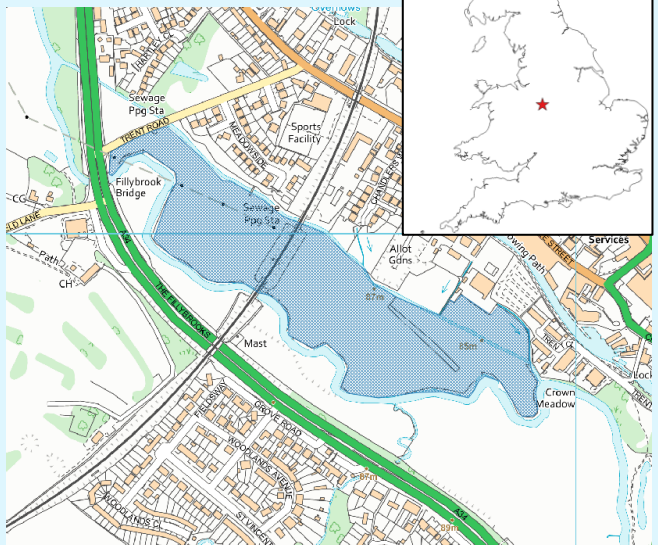
**Phosphorus levels:** not known

**Soil type and profile:** organic rich topsoil overlying silty clay with some gravel.

**Flood frequency:** The site does not flood but the low-lying areas and channels hold water. There is some wet woodland on the site which is spring fed.

**End use of hay:** the contractor comes and takes the hay.

**Priority Habitat Inventory:** Species rich lowland meadow



### Current management

Annual hay cuts are undertaken typically mid-August, sometimes with a second cut. In 2022 the hay cut was 1<sup>st</sup> September, which is later than usual. However any second cut arisings are left on the site.

There is no grazing, the second cut is a replacement for that. Docks are managed through volunteer pulling rather than spot spraying.

### Progress by 2023

A botanical survey was carried out on five 1 x 1 m quadrats in this field – two in the drier area of the field and three in the wetter area. Soil moisture and fertility are clearly lower in the more elevated areas of the field (Table 1). Species richness in both areas was relatively high ranging from 17–21 species per 1 square metre in the elevated area, and 16–20 species per 1 square metre in the lower area of the field. The plant community in the drier area showed a reasonable similarity to Knapweed Meadow (MG5 *Cynosurus cristatus* – *Centaurea nigra* grassland) (Table 1), while the wetter part had the strongest similarities to Burnet floodplain meadow (MG4 *Sanguisorba officinalis* – *Alopecurus pratensis* grassland).

The relatively high score for the MG4 community in the lower part of the field is largely due to a single plant of great burnet in one of the quadrats, which was plug planted. Given that there were only 3 quadrats in the lower area and 2 in the upper, these associations to plant communities should be regarded as indicative only. More quadrats are advised to gain more certainty about the plant community.

Plants from plugs including pepper-saxifrage *Silaum silaus*, have established very well. Unfortunately, the spread of these species is not yet occurring in the field. Most of the vegetation is very grassy and similar to Ryegrass pasture (MG6 *Lolium perenne* – *Cynosurus cristatus* grassland). Overall a plant community of any particular type hasn't clearly developed on the meadow yet. The early stage of plant community development is confirmed by a lack of balance between three functional types of plants in the sward. Competitive species (C) and well as ruderals (R) – both grow well in open areas but do not last long in a closed sward. In this field, both types dominate the vegetation, while stress-tolerant species, typical of an established, biodiverse and well balanced meadow, are not yet well represented (Table 2).

Several species of grass dominate the wetter area of the field forming dense patches with ground cover over 30%. Also, creeping buttercup *Ranunculus repens* has a high abundance here.

Vegetation in the drier area is also quite patchy, with high abundance of species like yarrow *Achillea millifolium*, white clover *Trifolium repens*, ribwort plantain *Plantago lanceolata* and yellow rattle *Rhinanthus minor*, in some places. Yellow rattle is growing well in both the drier and wetter areas. In coming years, it is likely to reduce the abundance of its preferred host species like red fescue *Festuca rubra*, ribwort plantain, and red clover *Trifolium pratense*.

The southern end of the field is lower lying and contains abundant marsh foxtail *Alopecurus geniculatus* and is possibly too wet for MG4. Trials of further plug planting of cuckoo flower, purple loosestrife, marsh marigold & meadowsweet are planned.



**Table 1 Summary of the botanical data collected**

	Higher/ drier area	Lower/ wetter area
<b>Ellenberg F (moisture tolerance)</b>	<b>5</b>	<b>5.7</b>
<b>Ellenberg N (fertility)</b>	<b>4.5</b>	<b>5.6</b>
<b>Ellenberg R (Reaction)</b>	<b>5.85</b>	<b>6.3</b>
<b>Species/quadrat (mean and range /1 m x 1 m)</b>	<b>18 (17-21)</b>	<b>17 (16-19)</b>
<b>NVC (top 2 MAVIS subcommunities)</b>	<b>MG5 MG5a</b>	<b>MG4b MG6</b>

**Management Recommendations**

More plug plants of great burnet, pepper-saxifrage and meadowsweet could be planted in the wetter area of the field. Could consider targeting the patches of creeping buttercup for plug planting and any further seed sowing as the sward is more open here compared to the more grass dominated areas.

Soil fertility in the lower area is on the high side. Even with yellow rattle in this area, it is likely that occasional double hay cuts and earlier hay cuts (mid-June and ensuring removal of all arisings), will be necessary to reduce the soil nutrient level here.



**Tables 2a and 2b. Five categories of meadow restoration progress, measured by indicator scales based on species richness, NVC similarity score and ratios of Grime's plant functional types. Adapted from Rothero, Tatarenko & Gowing, 2020.**

<b>Drier area</b>	Score of progress (1 = poor progress, 5 = very good progress)				
Measure	1	2	3	4	5
Average scores from two botanical quadrats per field. Calculated in MAVIS					
Species richness (number of species per 1 m <sup>2</sup> )	<8	8 to 12	13-15	16-20	>20
NVC similarity score	<50%	50-55%	55-60%	>60%	>65%
C:S ratio	1.65	1.39	1.23	1.1	1.09
S:R ratio	0.67	0.79	0.81	0.89	0.93

<b>Wetter area</b>	Score of progress (1 = poor progress, 5 = very good progress)				
Measure	1	2	3	4	5
Average scores from three botanical quadrats per field. Calculated in MAVIS					
Species richness (number of species per 1 m <sup>2</sup> )	<8	8 to 12	13-15	16-20	>20
NVC similarity score	<50%	50-55%	55-60%	>60%	>65%
C:S ratio	1.65	1.39	1.23	1.1	1.09
S:R ratio	0.67	0.79	0.81	0.89	0.93

**[\\*A summary of the data collection and analysis methods used is available here](#)**

