



the BIG Biodiversity Challenge
do one thing

Southwell Sewage Treatment Works (STW) AMP7 Biodiversity Enhancements
Southwell, Nottinghamshire, UK
Severn Trent

BIG Biodiversity Challenge Award Category: *Habitat Creation – Project of the year award (<5ha)*

Project Overview

During the early stages of the Southwell STW AMP7 project we recognised the opportunity to deliver significant biodiversity enhancements on the site and that much of this could be delivered ahead of construction of the project, giving the measures a head start on establishing and benefiting the local wildlife.

What were the biodiversity conditions on site, prior to the enhancement?

The pre-existing site was predominantly poor condition grassland and developed land with a small number of trees and sparsely vegetated land giving total baseline figures of 5.85 habitat units and 0.17 hedgerow units. There was also a lack of connectivity of the features that were on site into adjacent ecological features.

The proposed construction works to upgrade the sewage treatment works were within permitted development rights, so there were no planning permission requirements in terms of biodiversity net gain.

What were the reasons behind this project?

Severn Trent have an ODI associated with biodiversity net gain and a target of 15% net gain on each capital project undertaken, which when combined with a positive approach to CSR drove the project team towards trying to maximise the biodiversity improvement potential at Southwell. Due to the size of the site and the likelihood of being able to exceed the 15% net gain target, it also enables the gain at this site to offset other capital projects where it isn't possible to achieve the target.



Existing site showing 'bare' nature and predominant grassland



Biodiversity Enhancement Plan Scope

What were the biodiversity measures taken?

The overall biodiversity improvement plan for the site at Southwell was as follows:

- 0.84ha wildflower meadow creation
- 450m native species-rich hedgerow creation + existing hedgerow enhancement
- 0.46ha, 50 tree traditional urban orchard (fruit & nut species)
- 112 tree coniferous woodland (Yew & Scots Pine)
- 19 habitat boxes (10 bat, 4 house martin, 3 insect, 2 hedgehog)

All of the above improvements except the wildflower meadow creation were identified as being able to be fast-tracked and implemented before construction of the main capital scheme, which together have delivered a 31% increase in habitat units and 1,170% increase in hedgerow units (7.69 and 2.09 units total post-implementation respectively). When the wildflower meadow is planted and established post-capital scheme construction, the habitat unit increase rises to 89% (11.04 units total post-implementation), both significant increases in the site's biodiversity and far in exceedance of ST's 15% target.

These improvements have created new habitats on the site, but also linked these into adjacent habitats, such as the hedges and trees alongside the path to the north of the site and land to the east, and a 30-year management plan has been produced and implemented to ensure the long-term success of the enhancements.

These improvements were also targeted at solving an existing operational issue with flies associated with the site that have previously led to customer complaints, as they will encourage more wildlife to the site to keep the (unfavourable) fly population down, along with providing a physical barrier to the flies leaving the site with the coniferous woodland. This is an innovative approach to solving this common operational issue and has large cost and carbon savings associated with it, as well as significantly improving the local environment, and is replicable at other similar sites across the ST region.



Pre and post coniferous woodland planting



Habitat boxes installed (Bat, House Martin & Hedgehog)



Further information

The tree and hedgerow planting, orchard creation and habitat box installation was all completed by a team of 3 from Ramm Sanderson over a 10-day period in March 2021, with a small number of watering visits required post planting over April and May to ensure the trees are established when there are periods of drought. This year the orchard trees have been flowering with a noticeable increase in (favourable!) insect presence on the site. Some of the habitat boxes installed also appear to have been in use over recent weeks.

There hasn't yet been a noticeable decrease in unfavourable insect populations on site that were causing the operational issues previously mentioned, although this was expected at this stage as the planting needs more time to mature before a significant enough population of birds and other wildlife will be present on the site to have an impact on this aspect.

The main learning from this scheme is to consider what biodiversity improvements can be made prior to a main capital scheme being undertaken, as there is the potential to deliver significant benefits ahead of time by doing this. The phased approach taken to the improvements are also something that has been taken on to other schemes.

Project Team

- Severn Trent – Client + Optioneering Design Team
- Ramm Sanderson – Ecological Consultants

What was the motivation for carrying out the enhancement?

I have a personal passion for the environment and have looked to enhance biodiversity on all projects that I am involved in, along with treating the Severn Trent 15% net gain target as a minimum to achieve. I also saw the opportunity to make a significant difference to the local environment on and around Southwell Sewage Treatment Works and connect the habitats.

The opportunity to potentially reduce the impact of an operational issue at the STW at the same time as delivering these improvements was an added benefit to reduce customer complaints and save operational costs and carbon impact!



Pre and post hedgerow planting



Traditional urban orchard post-planting