

Leeds Flood Alleviation Scheme FAS2

Project Location – Leeds

Leeds City Council, BMMJV (BAM, Mott MacDonald) Environment Agency

BIG Biodiversity Challenge Award Category: **Construction Phase Award**

Project overview

Leeds Flood Alleviation Scheme is a project based in West Yorkshire which is reducing flooding in Leeds, between Leeds Train Station and Apperley Bridge. A combination of traditional engineering methods and natural flood management (NFM) will be used to reduce flood risk. Leeds FAS2 is there to help protect 1048 homes and 474 businesses. FAS2 provides a one in 200 year level of protection against flooding.

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

The biodiversity conditions at the previous concrete / rubble wall (Tannery site) were extremely poor providing no suitable habitat conditions for any species. The area was full of rock, waste material and unsuitable soils. This has dramatically changed since the introduction of a soft bank engineering solution, specifically using a vegetated reinforcement earth embankment to stabilise the area allowing wildflower to fully establish along the area, rather than using a traditional concrete flood wall. This solution met the planning conditions making sure the scheme balanced both hard and soft engineering solutions to reduce flood risk.

What were the reasons behind this project ?

The reasons behind the project was to deliver biodiversity net gain whilst reducing flood risk to the city of Leeds. Leeds FAS2 has done an excellent job of making sure the balance of hard engineering and soft engineering solutions have been achieved in the city. Protecting homes and businesses is not the only important factor when delivering flood risk. We need to take into account local biodiversity and using low carbon, sustainable products that encourages native species to thrive in the water environment.



Previous / before photo of the bank at the Tannery site.



The vegetated, flowering reinforced earth embankment at the Tannery site

What were the biodiversity measures taken?

A section of collapsed 4m high riverbank adjacent to The Tannery has been rebuilt with a vegetated reinforced earth embankment – a nature-based solution, which is low in carbon, improves the riverside habitat and is nicer to look at than traditional engineering techniques such as a concrete wall.

The biodiversity measures taken here resulted in the application of vegetated reinforcement earth embankment which was filled with wildflower seeds to encourage local biodiversity and important pollinators. The Leeds FAS2 team have created a new area of habitat for insects, birds and butterflies to enjoy whilst increasing the habitat value of the land. The team engaged with the staff, workforce and local community to show how the project is encouraging biodiversity in the city centre. Any waste material from the original wall structure was reused and reinstated in other areas of the scheme. One of the other major benefits of this area comes not just from enhancing wildlife but also local river users and recreational walkers/runners/bikers along the watercourse can appreciate the space. The embankment is now visually very appealing with all the wildflowers currently in bloom. This is a huge contrast to the original, derelict, rundown structure previously in place and a significant amount of credit goes to the team who successfully implement the solution. There is an area of the watercourse we are now going to be able to enjoy year on year.



Embankment in bloom



Full earth embankment photo

Further information

- A section of collapsed 4m high riverbank adjacent to The Tannery has been rebuilt with a vegetated reinforced earth embankment – a nature-based solution, which is low in carbon, improves the riverside habitat and is nicer to look at than traditional engineering techniques. Removal of existing embankment took place followed by the installation of the vegetated earth embankment solution. Reuse and recycled products were utilised on the scheme. A significant increase in biodiversity has been achieved here.

Project Team

- Leeds City Council
- BAM Nuttall and Mott Macdonald
- Environment Agency

What was the motivation for carrying out the enhancement?

Biodiversity enhancement

Habitat creation

Local community engagement

Reuse of materials

Avoid always using hard engineering solutions in flood risk

This project has achieved many different biodiversity solutions whilst reducing flood risk in Leeds however ensuring that in the built environment we always encourage the use of nature based solutions wherever possible in imperative when successfully delivering civil engineering schemes.



Sun set over the embankment



Habitat creation at the embankment