



**Reddish Viaduct**  
**Reddish Vale Country Park- Manchester**  
**J Murphy & Sons - Network Rail**

## BIG Biodiversity Challenge Award Category: *Innovation Award*

### Project overview

In 2022 J Murphy & Sons (JMS) received an emergency remit from Network Rail (NR) to complete work to Reddish Viaduct. The viaduct is a grade II listed structure supporting train services on the Hope Valley line between Manchester and Sheffield. The structure was being heavily undermined by the River Tame, which was exposing the foundations and threatening the stability of the structure. As the works were under NR emergency powers due to danger to the railway line we were working to NRs design under emergency access, starting on site immediately with no time to plan.

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

Reddish Vale is a biodiversity hot spot and a green corridor that provides refuge for all manner of wildlife such as Kingfisher and Sand Martin in an otherwise fragmented region of Greater Manchester. The park is used by local residents for community events, watersports, scenic trail walks and school trips. Residents are very proud of the park and what it means to the local area.

### What were the reasons behind this project ?

Emergency agreement was made with the Environment Agency (EA) to install 5000 tonnes of heavy rock armour to the western bank in front of the piers as well as digging back the opposing banks to realign the river. As works were under emergency powers no environmental permits or consents were required and therefore no landscaping conditions were associated with the works. The sole priority was to ensure that Reddish Viaduct was protected from further scour and to make safe the structure.

Working to this methodology would offer no biodiversity value and detract from the natural beauty of the park. However, JMS wanted to deliver the project in a way that enhanced the country park to ensure delivery of a project that would benefit the local community.



*Heavy Scour to the Western Bank:*



*Scour exposing the foundations of the viaduct:*

### What were the biodiversity measures taken?

Our remit was to preserve the integrity of the structure only, however after the structure was made safe, we challenged ourself to find a solution that would be in keeping with the amenity of the area and also ensure an enhancement to the biodiversity and deliver a net gain.

We reviewed NR's design which had no scope for enhancement, however increasing biodiversity over rock armour was a new challenge in which we could not find any tried and tested methods to allow growth over the rockface.

We commissioned Salix, a river restoration and erosion control specialist who suggested that whilst we could not plant directly on the rock armour we could infill the voids between the rocks by packing them with project reclaimed spoil and then seed with a riverside mix. We agreed a mix that was approved with Reddish Vale Country Park, Stockport Councils arboriculture officer and the EA and was selected for its native species that would increase biodiversity and assist with target species along the riverbank such as invertebrates and riparian mammals. All of the species were hardy and able to survive the intermittent flooding which occurs in that area and are low maintenance which eases pressure on the Country Park.

Once emergency works were completed we reused the 1000t of arisings from the watercourse realignment to create an artificial embankment over the surface of the rock armour. Due to the constant flood risk in the area we were not able to infill the entire bank, but had to leave the lower sections of the rock exposed as flood waters would wash away the spoil, silting the river and causing damage. We were then able to hydroseed over the top of this new embankment, creating 1300m<sup>2</sup> area of vegetation.

The project is a testament to the project team for going beyond their scope and searching for an innovative way to do one thing for biodiversity and find a green solution on a job that had such pressing engineering challenges. In doing so the team have found a solution that is replicable to gain biodiversity units on future scour protection schemes in which heavy grey engineering options are required.



*Rock Armour installation during emergency works*



*Completed works showing the beach for locals*



### Further information

The seed mixture used in this instance was a Riverbank Mix:

- 20% Reed Canary Grass
- 20% Rough Stalked Meadow Grass
- 30% Strong CRF
- 20% Timothy
- 10% Red Clover

In addition, stone from the project was also donated to create a butterfly garden in the park. The team installed a seating area for the residents atop the banks and fenced off the areas directly above the rock armour to allow the area to grow naturally without being trodden. A beach area was created on the meander for local residents to access the river for paddleboards and canoes.

The work was all undertaken without any over pumping or closing of the river channel to allow protected species such as water vole and otter to continue to migrate freely throughout the River Tame.

### Project Team

- Network Rail
- J Murphy & Sons

### What was the motivation for carrying out the enhancement?

Reddish Vale Country Park is a green jewel within an otherwise urban and developed area. Local residents have often petitioned for the park to remain a green corridor and our responsibility as a contractor is to ensure we do not leave the project an eye sore and better the communities that we work within. Motivation from the project came from the challenge in finding a biodiversity positive solution to an emergency scheme and going above and beyond the requirements of the project's remit.



*Newly seeded eastern and western banks*



*Western bank of the viaduct as taken from the beach:*