

Willerby Carr Culvert Daylighting Maintenance work (2015-2016)

Coronation Road North, Hull

Hull City Council, Flood Risk section & Parks and Gardens section

BIG Biodiversity Challenge Award category: Medium Scale Permanent Award

Project overview

The Willerby Carr Culvert site is situated in an urban area on an old school grounds which was last used by Hull City Council as an education centre. The building and grounds were badly flooded in summer 2007, resulting in demolition of the building. The project was highlighted in an 'identification of opportunities' workshop with partners including our colleagues in parks and gardens, ward members and local residents. The landscape and maintenance work cost approximately £10,000. The aim of the project is to conserve and enhance the green space whilst enriching the visitor experience and delivering hydraulic capacity over that provided by the culvert. As well as removing a costly maintenance asset, the core objects will provide:

- Sensory Garden - Productive Garden - Orchard tree area - New footpath and bridges which will enable visitors, to engage with local wildlife reintroduced by the open water - Creating a sustainable community - Cost reduction of a failing culvert.

Were there any specific conditions that led to you carrying out this work?

The site is predominantly made up of improved amenity grassland and hard-standing in an urban area; the biodiversity conditions on site are poor in parts. With the following activities happening:

- Undesirable users on motor bikes and cars - Dogs and dog mess - Environmental problems such as fly tipping, litter and vandalism.
- Open fires- Illegal tethering of horses - Poor aquatic habitat.

The culvert has become a major concern. The additional benefits and opportunities that a day lighting scheme provides alongside habitat creation includes:

- Reduction of annual expensive maintenance cost
- Relieves choke points caused by under- capacity.
- Improves water quality by exposing water to air, sunlight, vegetation, and soil.



New crossing point to provide circulation route to existing tree area

- Recreates aquatic habitat and improves wildlife movement
- Provide recreational amenities, improving neighbourhood's environment.

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

The site is bound by un-maintained historic hedgerows and broad-leaf trees surrounding knee length grassland, so there is an established biodiversity value for species of plants, animals and micro-organisms. We can shape this to uphold a multitude of different ecosystems.

What were the biodiversity measures taken?

Hull City Council working with councillors and external partners undertook a series of community consultation workshops to discuss the future of this site. This saw a call for the creation of a Neighbourhood Garden with a brief to include a nature walk, allotments and an orchard. Volunteers including local school children have helped plant 2,500 native trees, donated to the project by local company William Jackson.

The planting of a mixed orchard of 100 fruit trees by staff and volunteers and the ongoing re-instatement of the Setting Dyke, from an old culvert have also transformed the site. The dyke now meanders across the site creating an immediate and striking biodiversity feature which brings a number of species to the area .

A relaxed mowing regime on the grassland has yielded cowslips and lesser stitchwort and the fruit trees have already attracted overwintering bullfinches to the site. Recent sightings include heron, roe-deer, dragonfly and damselflies. The design includes a minimum of 300mm depth of water, this we hope will provide additional recreate aquatic specific biodiversity values.

Other enhancements include further tree planting, the completion of the allotments complete with a nectar-rich butterfly garden, the planting of ditch banks and grasslands with locally sourced wildflowers, the erection of bat and bird boxes and the creation of bug hotels out of reclaimed materials. Woodpiles and hibernacula will be created within the boundaries to attract a range of invertebrates and act as a refuge for reptile. and amphibians.

This series of small projects will be achieved with the help of the local community and schools in the area.

The project provides enhancements for several Hull Biodiversity Action Plan habitats and species including dragonflies, butterflies, linnets, water voles and common toad. In the future, the facility will be used as an educational resource for schools and it is hoped that the site will help promote community cohesion.



Daylighting of the culvert with a meandering bend around the existing trees

How would you best describe the project?

Maintenance and biodiversity enhancement

Further information

The daylighting maintenance scheme and biodiversity enhancements to the existing green space have been progressed using the RIBA plan of work. The strategic definition and core objectives involved several different sections from the local authority, strategic partners, ward councillors and a number of residents and volunteers from the area.

The concept design section was undertaken in two sections, the first involved looking at existing levels and data and on-site surveys of the culvert. The second part involved parks and gardens progressing with a design for the layout and planting options of the green space, in a way that provided maximum benefit to the area whilst future proofing the area for additional measures.

The developed design and technical design, regards the daylighting aspect could have been a uncomplicated design involving simply taking out the old culvert and keeping the line straight, however, we have added a number of very shallow meandering bends, this has increase construction time and soil amounts which has increased costs, however, this we believe has provided a significantly improved scheme. This allows the project to maximise the long-term daylighting benefits such as water quality improvements through exposing water to air, sunlight, vegetation and soil, it will recreate aquatic habitat and improve wildlife movement in addition to providing recreational opportunities. This will improve the neighbourhood's environment and create new amenity provision that attracts people to the area.



Existing site before demolition of the school, blue line indicates existing culvert

Both the developed design and technical designs were merged to create a full construction concept drawing which all parties are happy with. This has now been costed up and implemented.

The long term management and maintenance will be in partnership with the water course section and parks and gardens, there will be a large element of volunteer help from local school and residents.

What was your personal motivation for carrying out the enhancement?

To enhance the physical character of the site though improving the visual amenity, adding attractiveness and creating a sense of pride which local residents can enjoy. It will that can provide long-term opportunities by protecting and enhancing levels of biodiversity and ecological habitats. While also increasing flood protection and decreasing maintenances cost.



The scheme in progress the right hand side earth spoil will be landscaped to provide additional flood protection to the house.



Volunteers help to plant the orchard



The Orchard taking shape