

**THE SOUTHERN STRATEGIC SUPPORT MAIN (SSSM) - BRYOPHYTES
NORTH SOMERSET/ SEDGEMOOR
KIER UTILITIES AND BRISTOL WATER**

BIG Biodiversity Challenge Award Category: Temporary Project of the Year Award

Project overview

The Southern Strategic Support Main is a 31km water pipeline between Barrow and Cheddar reservoirs which will improve the water supply to 280,000 houses and support the growing local population. The pipeline passes through open countryside and towns and villages providing the opportunity for both biodiversity enhancement and community engagement.

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

The EIA surveys undertaken in 2016 found 25 protected areas, 5 priority/BAP habitats, 200 hedges, 400 standard trees (some TPO protected), 18 ponds with great crested newts, 17 badgers setts within 30m, 3 bat roosts, 1 barn owl roost, 1 kingfisher population, 24 locations of dormice, 400 bee orchids, small population of cave spiders, a small population of reptiles and 10 invasive species. The pipeline was designed to avoid as many of these as possible.

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

The SSSM is the largest single pipe line scheme ever undertaken by Bristol Water. There was a shared goal by client, contractor and local stake holders (district councils, local conservation groups) to leave a legacy by providing funding and staff time that were outside contract requirements. Local wildlife and habitats were protected as much as possible within the design and environmental management plan. It was our goal to achieve a biodiversity net gain using the biodiversity index calculator generated between Bristol Water and Ecosulis that would be beneficial.



Preparation for pipe being laid in the tunnel



Shute Shelve Tunnel

What were the biodiversity measures taken?

Bryophytes on an exposed tufa formation were identified within the Strawberry Line Heritage Trail cycle path and walkway in Winscombe, North Somerset. Kier Environment Team were keen to include the protection of this habitat within project management plans although it is not a protected or priority habitat within the Avon Biodiversity Action Plan. Students from Bath Spa University were involved with the project and visited site with Kier as part of a series of habitat survey and bryophyte species identification. Bryophytes play an important role in reducing soil erosion, as some of the only species that can grow on a steep bank of a natural spring. The bryophyte and moss species found at Shute Shelve Tunnel are ideal materials for nesting wildlife. The Strawberry Line itself is an important natural corridor, allowing wildlife to pass from The Mendip Hills AONB and North Somerset Moors NNR, SSSI.

Five Bryophyte species were found by the Somerset Bryological Society, and Kier Environment Team identified that Bryophytes are very sensitive to dust due to the nature of their stomata. The works in the tunnel produced vast amounts of dust so the area was dampened down to reduce this, but the Kier environment team, with recommendations for Bath Spa students designed a protective fence, with a double layer of dust resistant netting that was erected in front of the bryophytes to ensure any escaping dust did not settle onto the species. The fencing was made using already available materials on site so no additional costs were put onto the project and once works were completed the protective fencing was disassembled and materials used elsewhere.



Bryophyte species protected at site: *Cratoneuron filicinum*, *Pellia endiviifolia*



Protective netting in situ

Further information

Kier Environment Team monitored the bryophytes weekly whilst works were taking place to make sure that the fence stayed in place and the bryophytes remained untouched for the 6-month duration of the works. Considering the identification of protected species such as badgers, bats, dormice, great crested newts, cave spiders and Sladers Leigh LNR all within 500m of the specialised tufa formation, the Kier team have begun working with Natural England to gain further protection across the entire site of Shute Shelve Tunnel with a Special Area of Conservation (SAC) designation. This would ensure protection to the bryophyte feature for many years to come. The project has also provided a long-term legacy working with Bath Spa students who will be involved in the ongoing monitoring of the tufa formation and consultation with Natural England for protection as now included within the SSSM environmental management plan.

Project Team

- Kier Utilities Environment team: Jamie Edmonds, Grace Burdge and Rozy Gray
- Bristol Water Environmental Manager: Natasha Clarke
- Bath Spa University

What was the motivation for carrying out the enhancement?

The SSSM project has had a positive impact on the local community and wildlife. It was our goal, as the environment team and residents to the area to make sure the local natural environment was protected and safeguarded for many years after SSSM is complete. Kier also wanted the community to appreciate their natural environment, once we had reinstated without causing a negative impact. Kier want to leave a legacy of exceptional mitigation measures that include valuable habitat and a respect for wildlife within the local community that will be remembered.



Bryophytes at Shute Shelve Tunnel



Pipe successfully laid in the tunnel