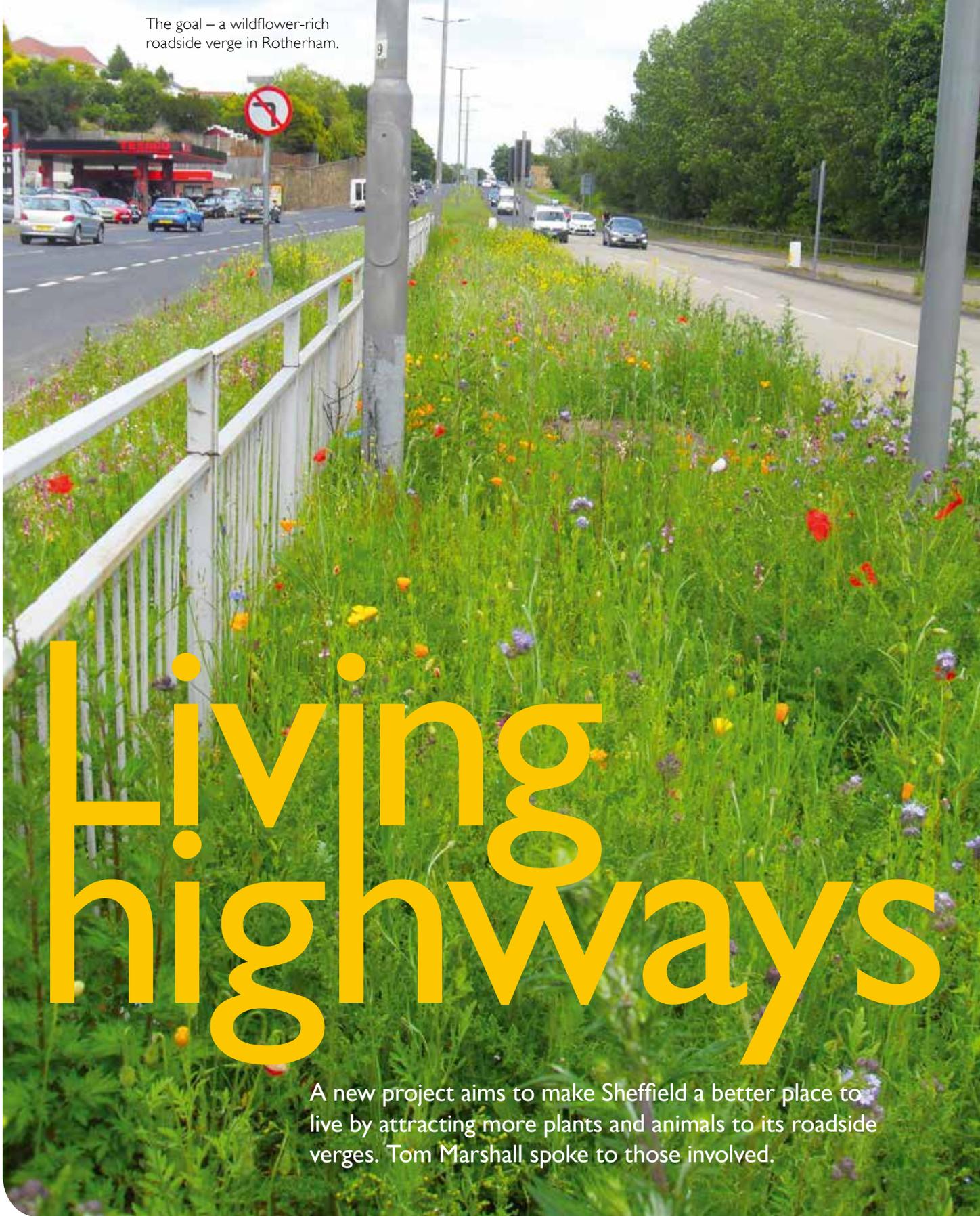


The goal – a wildflower-rich roadside verge in Rotherham.



Living highways

A new project aims to make Sheffield a better place to live by attracting more plants and animals to its roadside verges. Tom Marshall spoke to those involved.

Sheffield and Rotherham Wildlife Trust

Cities contain a lot more greenery than you might think, but a lot of it isn't terribly interesting from an ecologist's viewpoint, or very easy on the eye – think of the dull grassy embankments running along the sides of many a ring road, or the patchy

vegetation struggling to survive on the average urban central reservation.

It doesn't have to be this way. Simple changes can make these fragments of land much more beautiful, and perhaps more attractive to a wider range of wildlife. This could in turn make local

people's lives better – there's research that suggests regularly experiencing healthy, varied natural environments improves wellbeing.

Better management of urban green space may help in other ways too, perhaps improving air quality, absorbing

more carbon and cutting flood risk. It could even help reduce the impact of climate change. And crucially for local authorities struggling to cope with budget cuts, it can be cheaper than doing things the traditional way.

Dr Alison Holt, an ecologist at the University of Sheffield and NERC Knowledge Exchange Fellow, co-ordinates the Living Highways project. She's working with infrastructure services company Amey, which is carrying out the Streets Ahead project on behalf of Sheffield City Council, and with the Sheffield and Rotherham Wildlife Trust to investigate how to make the city's verges more pleasant, more wildlife-friendly, and more able to provide a range of benefits to urban dwellers. It's still early days, but if the project succeeds it could form a model for cities across the UK.

'Part of my role is starting conversations to find out what each of the partners need, and what they can contribute,' she says. 'As scientists we want to find out more about the role road verges can play in urban sustainability. Working together benefits everyone; we get to write papers about our findings, while Amey and the Wildlife Trust can put them to practical use.'

In 2012, Amey began a 25-year highways maintenance contract with

Sheffield City Council which includes taking care of Sheffield's roadside green space. There's a lot of it – around 2.2 million square metres, from long stretches beside dual carriageways to tiny patches of grass along residential streets.

Wildlife Trust staff already worked with Amey, and had heard about NERC's Biodiversity and Ecosystem Services (BESS) programme, which investigates how the variety of living things in an environment affects its ability to provide 'ecosystem services' – benefits like pollination or clean water. They wondered if similar principles could be applied to roadside verges. They approached Holt and her colleague Professor Phil Warren, who is closely involved with BESS, and helped establish contact with Amey.

The partners have distinct but compatible aims; both Amey and the Wildlife Trust would like to increase biodiversity and improve the ecosystem services local people receive. 'We want to look at the current maintenance regime and find out if there are things we could do better,' says Darren Butt, operations manager for Amey, working with Sheffield City Council. 'We're here for a long time so we can try out different approaches and see what works. The goal is to increase biodiversity while also being sustainable

both environmentally and financially.'

'For us, the benefit of the contract is the scale and duration – 25 years of maintaining the whole of Sheffield's highway system, not just one aspect of it,' he adds. 'In other cities we don't have the same scope to look at the big picture.'

From lawns to meadows

One promising idea is mowing roadside verges less often, so more wildflowers reach maturity and attract pollinating insects and other creatures. Other possibilities are 'mosaic mowing' – cutting grass in sections over time to provide more varied habitats – and re-seeding with native plants in places where the soil doesn't have a healthy seedbank of its own. At the moment most verges contain a limited range of species and are regularly mown short. Tactics like these could transform them into sustainable flower meadows hosting a rich variety of wildlife.

There will be challenges, though. Some residents might see unmown grass as scruffy so the partners are working to keep them onside, with regular meetings to explain what's going on and why. 'People can be resistant to change, particularly when it's in the area around their house,' Holt explains. 'But we hope that by consulting as widely as possible and being open about what we are trying



Sheffield and Rotherham Wildlife Trust



Yellow rattle.

to do, we can build support. That's important because in the long term the project won't work if people don't like it.'

'We're not going to do anything without talking to residents,' adds Dr Nicky Rivers, Living Landscape Development Manager at the Wildlife Trust. 'Once we explain what's happening, people tend to be very enthusiastic.' The partners also aim to involve the local community with projects like creating small meadows in the unused space around road junctions, or getting more benefit from its urban trees. 'Sheffield has many tiny pockets of woodland that aren't really managed at the moment,' says Rivers. 'So we are thinking together about how to make these sites more interesting for people and wildlife. I would also like the project to enhance ecological networks and strengthen the city's "network for nature".' The last idea involves helping wildlife move around the city as a whole rather than being scattered across many small fragments of habitat.

Living Highways is still at an early stage. Holt and her colleagues have already reviewed research on verge management to get a sense of the options available, and have provided suggestions on topics like what new tree species could be planted to improve the city's air quality. Experimental work starts in earnest in 2016. A lot of it will be done by Olivia Richardson, who recently started a PhD at Sheffield with support from NERC, Amey and the Trust. She'll spend the next

couple of years finding out the ecological state roadside verges are in, how they're benefiting residents and how they could be cost-effectively improved. The details are still being worked out, but the benefits she looks at could include pollination, carbon storage, flood control or enjoyment of nature.

One thing that's already clear is that there's a lot of variety in Sheffield's roadsides; they range from recently-planted grass monocultures to fragments of much older and more diverse landscapes. The Sheffield City Area includes a surprising number of diverse rural roadside verges, which need very different management to an urban road.

'We're still learning what we have to work with,' says Butt at Amey. 'In some places there may be diverse habitats already, remnants of older meadows and woodlands that we can identify and enhance. For us, having the PhD student will build on our understanding of the existing estate; this will help Amey and Sheffield City Council to put the maintenance contract on a more scientific footing.' Knowledge flows in both directions, though. As well as helping Amey understand its options, the scientists will also get a much clearer idea of what is and isn't feasible for the private sector.

Things are already starting to happen. The Wildlife Trust recently experimented with planting a roundabout with yellow rattle, a native wildflower that parasitises grass, weakening it so other species can get a foothold. It's not a hi-tech procedure; volunteers cut hay from a nearby Wildlife Trust meadow with a rich mix of native species and spread it on the roundabout so that the seeds it contains will settle to the earth and germinate.

This is just one of a variety of management changes that'll be tested over the next few years; how well it works remains to be seen. 'It's great for us to have the university involved,' says Rivers of the Wildlife Trust. 'They can give us a much clearer idea of what will and won't work, so that we end up with a menu of practical options that can be applied in different places depending on the local conditions. It's a really exciting project to be involved in – there's huge interest in verges and biodiversity across Britain.' That's coming from everyone from city councils to Network Rail and Highways

England. Butt agrees that the other local authorities that Amey works with are interested in the findings, especially if they provide environmental and cost benefits.

We're only just starting to think seriously about everything we need to do to help our cities cope with the many problems environmental change will bring.

Verges aren't going to solve them all, but we'll need to manage all our urban resources wisely if we're to provide the urbanites of the future with safe, pleasant living spaces. Turning roadside spaces from dull grassy monocultures into thriving, diverse meadows and woodlands could be a good place to start.

“The goal is to increase biodiversity while also being sustainable both environmentally and financially.”

Living Highways is a partnership between the University of Sheffield, Amey and the Sheffield and Rotherham Wildlife Trust. Working alongside Holt on the project at the university are Professor Phil Warren and Dr Karl Evans.