

Briefing note

01 February 2024

Greenprint Project (ADEPT Live Labs 2)

Background

Live Labs 2 is a three-year, £30million, UK-wide programme funded by the Department for Transport, (DfT), that will run until March 2026, with a five-year subsequent monitoring and evaluation period. Seven projects, grouped by four interconnected themes, are being led by local authorities working alongside commercial and academic partners.

Following the success of the ADEPT SMART Places Live Labs 1 programme and its focus on innovation across local roads, Live Labs 2 concentrates on how to decarbonise local highways infrastructure and assets, bringing innovation to a sector that is traditionally risk adverse: [Live Labs 2 | ADEPT \(adeptnet.org.uk\)](https://adeptnet.org.uk)

South Gloucestershire Council (SGC) and West Sussex County Council (WSCC) are now working in partnership to deliver one of the Live Labs 2 projects: ***Greenprint – a carbon negative systems model for green infrastructure management.***

Following successful submission of the Outline Business Case in April 2023, first year funding of £1.715m was provided by DfT in May, as part of the overall £4m budget available over the next three years. In July, Arup were awarded the five-year contract which will continue beyond the three-year programme, to examine whether programme objectives have been met and to understand the effectiveness and efficiency of each Live Lab and its knowledge sharing with the wider sector.

Project overview

Currently, grass in open spaces and highway verges in South Gloucestershire is cut and left on the ground, a process which increases the soil nutrient levels and leads to the proliferation of robust grasses and other nutrient-demanding vegetation. This practice discourages biodiversity, requires more frequent mowing and generates more operational emissions. SGC and WSCC will test new technologies for cutting and collecting the grass instead, whilst reducing the frequency of cuts, with the aims of:

- reducing operational emissions,
- increasing biodiversity,

- increasing soil carbon sequestration,
- reducing the carbon footprint of Council verge maintenance operations.

The cut and collected grass, known as biomass, will then be tested via several innovative processes. SGC plans to co-mingle grass cuttings with existing food waste collections currently transported to the Geneco anaerobic digestion (AD) plant in Avonmouth. The AD process breaks down the mixture in the absence of oxygen, into biogas, which can be used to replace fossil fuels. The addition of grass cuttings in an appropriate proportion should in theory enhance the reaction and therefore the yield and it is this theory that the trial would hope to prove. Other outputs include a nutrient-rich digestate liquor, which can be used for fertiliser and the digestate as a further nutrient source for agriculture including vertical farming. Greenprint will investigate and test different options for this process and measure the impacts in terms of the aims listed above.

WSSCC will examine related technologies including hydrothermal carbonisation, (HTC), and pyrolysis, (a process involving heating organic materials to a high temperature in the absence of oxygen). This process produces biochar which can be used as an asphalt additive in road surfacing and as a highly beneficial soil additive.

Changing how we manage our verges and open spaces offers great potential to address the ecological emergency and provide resilience to climate change impacts. Implementing improvements to the verge network is an action in the Council's agreed Climate Emergency Action Plan: [Climate and nature emergency in South Gloucestershire | BETA - South Gloucestershire Council \(southglos.gov.uk\)](#) and supports important national strategies including the government's 25 Year Environment Plan and Net Zero Strategy.

A key project objective is to design and scale a system toolkit or 'green print', as a replicable carbon negative green infrastructure management model – to provide other local authorities with a guide to implementing this approach in their own areas. Knowledge sharing is critical to the success and scalability of the Live Labs programme.

The Future Highways Research Group's, (FHRG), Carbon Calculation & Accounting Standards will be used to implement the greenhouse gas protocols for measuring and reporting the carbon emissions associated with the changes under investigation.

Project Update

A Partnership Agreement and Accountable Body Agreement between South Gloucestershire Council and West Sussex County Council has been established and details of the project were presented at several events across the country in 2023, including the Local Council Roads Innovation Group (LCRIG) Innovation Festival in July and Highways UK in October. In addition, a Live Labs Expo event will take place in Birmingham on 17th April 2024.

The Year 1 budget of £1.715m has been directed towards several key activities.

- Working with West Sussex and procuring project partners:

Overall funding has seen project activities have been broken down into several work packages.

Work package	Budget
Outline Business Case - OBC (Amey)	(£40,000)
WP0 - project management	298,000
WP1 - new carbon model	100,000
WP2 - highways verge management	2,165,094
WP3 - biomass technical innovation	617,874
WP4 - economics and benefits	50,000
WP5 - environmental impact assessment	100,000
WP6 - legal and contracts	20,000
WP7 - whole life cycle (greenprint)	50,000
WP8 - equality, diversity and inclusion	20,000
WP9 - Communication	200,000
Sub Total (<i>less OBC £40,000</i>)	£3,620,968
Contingency/Risk	£366,097
Total (<i>less OBC £40,000</i>)	£3,987,065

Procurement tasks have been undertaken by both authorities to select and appoint the following project partners, including:

- Future Highways Research Group (FHRG) – WP1
- University of the West of England (UWE) – WP1
- University of Nottingham / Invica – WP3
- Amey Consulting – WP4 & WP7
- Plantlife International – WP5
- The Diversity Trust – WP8

All partners have begun work to set out their delivery plans and schedules, with connections to other partners and work packages identified and developed.

- Equipment purchases and site sampling:

Both authorities have supplemented their current fleet with new machinery to enable the efficient collection of cut grass. In South Gloucestershire, 3 new cut and collect mowers have been delivered, along with a hook-lift trailer and 3 containers – totalling £166,050.

As part of the evidenced data collection, both authorities carried out a series of grass and soil tests at selected sites last summer, which have been sent for laboratory analysis. The results have been provided to the University of Nottingham, for interpretation in conjunction with other partners, including Plantlife. The tests provide an insight into the composition of the biomass and check for the presence of organic pollutants. Further tests are currently underway across 29 selected sites, involving the extraction of soil core samples to measure the levels of carbon currently stored in the soil. This testing will be repeated regularly to

monitor carbon levels over time and establish the anticipated positive effect the change of maintenance regime is having. Biodiversity sampling is set to begin in July.

- Grounds operations – the cut and collect process:

In South Gloucestershire, Yate was selected as the pilot area for the 'cut and collect' trial, primarily due to its proximity to our operational base, (making it easier to control costs and monitor the results). Consultation with Yate Town Council during May and June resulted in agreement of selected amenity grass plots to be included – the plots were chosen from a list of recommended plots identified in a 2022 survey carried out by consultants Metis.

Details of the project were issued in a press release to the local media, including The Yate and Sodbury Voice. In addition, targeted social media posts were issued and information shared in the South Gloucestershire Council weekly residents' newsletter. A project webpage was created, including an FAQ document and project email address for queries. A6 postcards were provided to Grounds staff and Place inspectors to assist in responding to queries in person.

The first cut and collect ran from Monday 21st August to 12th September and resulted in the collection of 45 tonnes of grass, from plots covering over 12 hectares. This exercise was repeated from 3rd October – 31st October 2023. All associated labour, plant and machinery costs were tracked throughout the process to record the resources used, both financial and carbon related. Reviews of the chosen sites with Yate Town Council have enabled us to fine tune the areas chosen.

Next Steps

Consultations with several other parishes have been carried out, including:

- Staple Hill & Mangotsfield
- Kingswood
- Bradley Stoke
- Stoke Gifford
- Patchway

Subject to agreement with parishes, further trial plots will receive a reduced cutting frequency during 2024 – from between 4 to 5 amenity cuts, rather than the typical 8 to 10 cuts.

Geneco have submitted a successful application to Ofgem under the Non-Domestic Renewable Heat Incentive scheme, to permit disposal of cut grass co-mingled with food waste to their Avonmouth plant. To complete the approval process, Geneco must also gain approval for a proposed change in their current calculation for Ofgem's Renewables Obligation (RO) scheme. Following this, Geneco will submit an updated Fuel Measurement and Sampling (FMS) Questionnaire to Ofgem to include the new co-mingled consignment of grass and food waste - the application amendment will then be reviewed. At this stage the approval process is anticipated to take around 3 months to complete. In the meantime,

cut grass will be transported for composting to the Council's exiting composting contractor, Phoenix Green Solutions, near Westerleigh.

It is important to note the experimental change in cutting focuses on whether we can reduce our carbon footprint, improve the carbon storage of our green spaces, and improve opportunities for nature restoration. Cut and collect is expected to be cost neutral at best, (as the cost of collection is likely to outweigh the cost savings of the reduction in cuts), but the project will be measuring all operational costs and assessing these against the resulting costs and benefits in other areas - particularly carbon and biodiversity. As food waste has market value, it is hoped in the long term that grass, (assuming it enhances the yield), does too. A report is being prepared capturing the key findings from Year 1.

Communications and Engagement

Existing arrangements for management of the green estate vary between parishes and ensuring integration with these is a key consideration. Meetings have been held with parishes to address any concerns and select the specific areas of grass to be included.

Initially, operational costs are higher than 'business as usual' – the cut grass is being collected and transported rather than left on the ground. However, as the activity is rolled out across a wider area, different methods will be trialled to improve efficiency – for example, investigating potential savings in fuel and time by locating containers in different locations along the route between collection and disposal.

Feedback following the 'cut and collect' operations carried out twice in Yate during 2023 was generally positive – taking into account the comments received, the proposed programme for 2024 has been refined to allow for improvements on the original design. This approach will be carried forward as the project expands.

Updates and announcements for the project are being communicated through our usual online channels, (social media, weekly update newsletter, etc). Any reduction in cutting frequency of the grass is a gradual process – consequently residents should not experience a significant change in their surroundings. In the short term, a neater appearance will be seen as the grass is collected after cutting, rather than left to degrade.

Feedback from residents and other stakeholders is welcomed throughout the experiment - a project webpage has been set up with a contact email address, located here:

<https://beta.southglos.gov.uk/energy-from-grass-cuttings>

More information on all the Live Labs 2 projects can be found here:

www.adeptnet.org.uk/livelabs2

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