



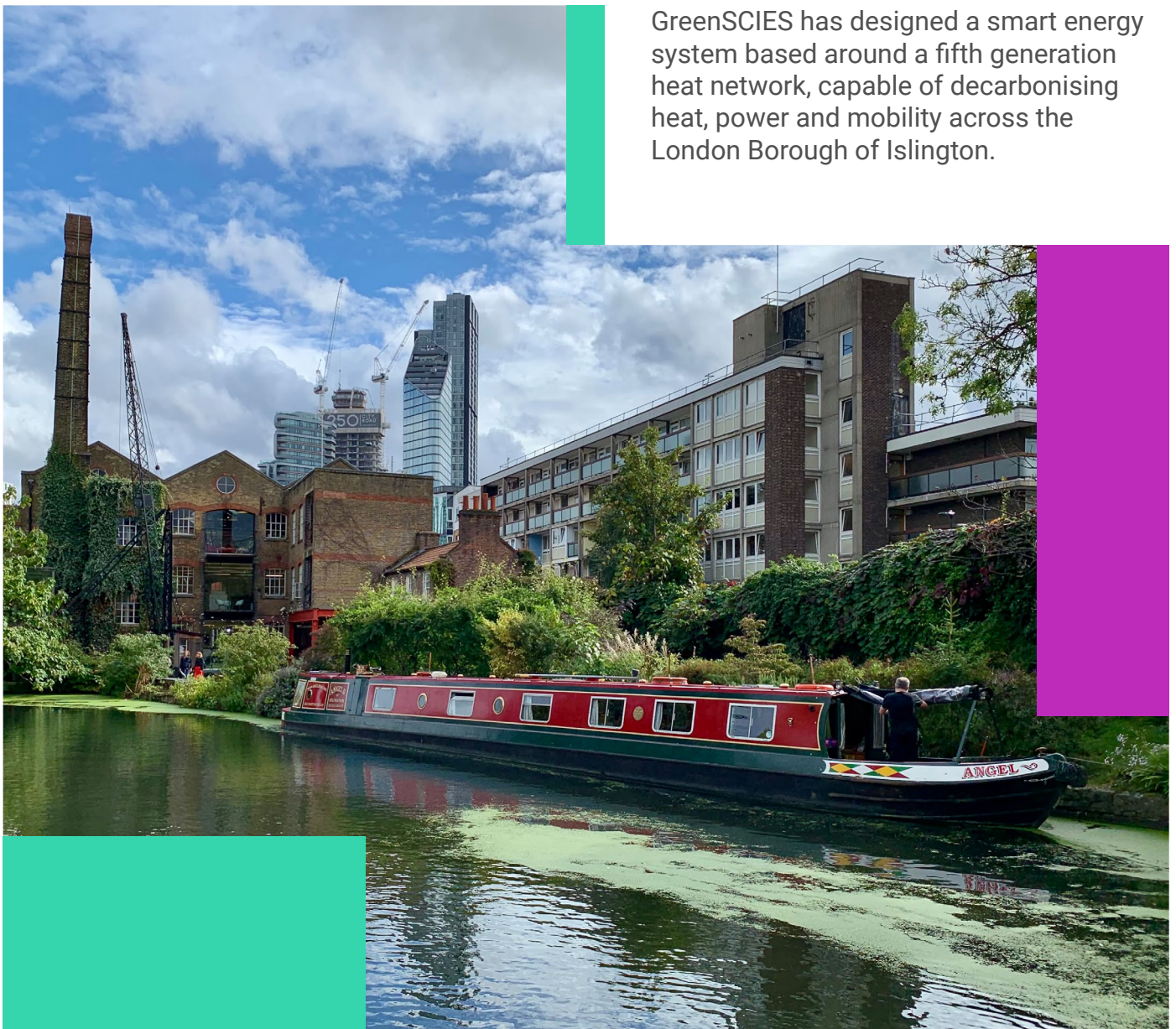
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Prospering from the Energy Revolution

GreenSCIES

Project fact sheet

GreenSCIES has designed a smart energy system based around a fifth generation heat network, capable of decarbonising heat, power and mobility across the London Borough of Islington.



The Prospering from the Energy Revolution challenge programme ran from 2018 to 2023.
For more in-depth information on the programme and the projects see:
<https://www.ukri.org/what-we-offer/browse-our-areas-of-investment-and-support/prospering-from-the-energy-revolution/>

GreenSCIES

Dates: March 2020 – May 2022	Project partners: London South Bank University (lead) Hanger19 Grid Edge Transport for London Consortio Eon Building Low Carbon Solutions Carbon Data Resources CENEX West Midlands Combined Authority Carbon Descent Projects	Cullinan Studio London Borough of Islington Repowering Silver Energy Management
UKRI funding: £3.3m		SLES components: Heat networks Heat pumps Heat storage Renewable generation Electric vehicles Smart charging
Link: https://www.greenscies.com/		

What is the project?	GreenSCIES has designed a smart energy system based around a fifth generation heat network, capable of decarbonising heat, power and mobility across the London Borough of Islington. The design draws low grade heat from local data centres and from the London Underground which is distributed between buildings through ambient temperature pipelines. Heat pumps are used to adjust the temperature - heating buildings in winter and cooling them in the summer. There is also a link to the London aquifer which can store heat between summer and winter. Distributed energy centres connect solar photovoltaic, electric vehicle chargers, and energy storage which can supply the electricity needed by the heat pumps, act as hubs to support low carbon transport, and deliver demand side response to the electricity system.
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What has been delivered? What has been successful?	<ul style="list-style-type: none">✓ Detailed design of GreenSCIES for a third of the London Borough of Islington.✓ Investment and site secured to deliver the New River scheme in Islington.✓ Seven investable case studies completed for sites across the country with a variety of sources of heat, power and mobility solutions.✓ Successful development of GreenSCIES business.✓ Set up of a centre-of-excellence to develop the skills, expertise and capacities needed for SLES and to support the replication of GreenSCIES across the country.
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Barriers encountered and outcomes

Barrier	Reluctance to engage with new, innovative models for energy: GreenSCIES had to create a vision for a very different form of energy system and, critically, to persuade potential users to buy into that vision by ensuring that they had confidence that their needs would be met.
Outcome	Through collaboration and co-design at all levels the project has ensured that, whilst novel, the model reflects the needs and values of each of its stakeholders.
Barrier	Investors are unfamiliar with the complexity and business models involved in GreenSCIES. This creates a nervousness which the project scope and structure needs to overcome.
Outcome	GreenSCIES has been designed to ensure it is suitable for investment with a focus on both financial and non-financial value streams. The project structure has supported investors to become comfortable with risks and rates of return, whilst non-financial benefits include growing an organisation's reputation within the local community. The result is that GreenSCIES has successfully attracted investment and is moving forward to delivery with several projects.

Impacts	Forecast carbon saving in 2032: 88.9% (Range: 85.2% to 91.2%)
	Forecast cost reduction in 2032: £0.00m (Range: £-0.06m to £0.06m)
	Match funding: £1.1m

Top lessons learnt	<ol style="list-style-type: none">1. Successful SLES projects have to be based in detailed community and local stakeholder engagement. Without this, projects risk a failure to gain local support and to miss opportunities to realise local value.2. Delivering a heat-network based SLES scheme with electricity infrastructure connected behind hubs limits the regulatory challenges faced by the project.
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What's next?	<ul style="list-style-type: none">• Construction of the New River project in Islington with the potential to deliver CO₂ savings of 5.7 kTonnes/year and energy use of 6 GWh/year. There is an ambition for the scheme to be operational during 2025.• Roll out the skills development programme at the Centre of Excellence, development of new courses, and support for a wider national network of SLES training centres.• Replication of the GreenSCIES model nationally, including drawing in investment for the existing case-study portfolio.
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