

Greater Manchester Combined Authority

Date: 22 March 2024

Subject: GM Smart Decarbonisation Network (GM-SDN)

Report of: Councillor Nick Peel, Portfolio Lead for Digital; and Joanne Roney, Portfolio Lead Chief Executive for Digital

Purpose of Report

The purpose of this report is to brief Members of the Combined Authority on the successful bid to the Department of Science Innovation and Technology (DSIT) 5G Innovation Regions competition to develop and test a Smart Decarbonisation Network (SDN) in Greater Manchester and seek approval for the delivery of the project as set out in the successful bid.

Recommendations:

The GMCA is requested to:

1. Endorse the development of the Greater Manchester Smart Decarbonisation Network (GM-SDN) in line with the Memorandum of Agreement between GMCA and DSIT.
2. Support work between local authorities to share learning and where possible identify opportunities to scale the Smart Decarbonisation Network (SDN) and associated outcomes.
3. Delegate authority to the Treasurer, in consultation with the Portfolio Leader, to approve the allocation of funding for partner organisations and any required variations to funding allocations subsequently required to meet the overall project objectives within the defined parameters of the project.

Contact Officers

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Equalities Impact, Carbon and Sustainability Assessment:

Recommendation - Key points for decision-makers

Insert text

Impacts Questionnaire

Impact Indicator	Result	Justification/Mitigation
Equality and Inclusion	G	This proposal has the potential to positively impact access to public services by delivering digital connectivity to residents of social housing.
Health		
Resilience and Adaptation		
Housing		This project will enable the collection of property level data that can be used to inform maintenance and targeted property management.
Economy	G	This project will mobilise industry and academic partners to work with the public sector to test innovation in the application of wireless technologies raising the profile of GM as an innovation region and stimulating private sector investment.
Mobility and Connectivity	G	The proposal will enable a smart road network using to data to priorities traffic flows so reducing congestion. The project has the potential to influence how people travel making active travel and public transport options more accessible.
Carbon, Nature and Environment	G	This proposal will generate valuable data about the use of heat pumps in social housing properties that has the potential to enable smart energy grids. This proposal will generate data that will allow changes to road networks to reduce congestion and the associated carbon emissions.
Consumption and Production		
Contribution to achieving the GM Carbon Neutral 2038 target		
Overall	G	Positive impacts overall, whether long or short term.
	A	Mix of positive and negative impacts. Trade-offs to consider.
	R	Mostly negative, with at least one positive aspect. Trade-offs to consider.
	RR	Negative impacts overall.

Carbon Assessment

Overall Score					
Buildings	Result	Justification/Mitigation			
New Build residential	N/A				
Residential building(s) renovation/maintenance	High	Interventions will not change EPC ratings of buildings in which the Smart Meters are installed Advanced wireless installations will be made alongside existing and new air source heat pumps			
New build non-residential (including public) buildings	N/A				
Transport					
Active travel and public transport	High	Transport interventions will be dependent on the data captured from the digital road networks.			
Roads, Parking and Vehicle Access	High	Travel interventions will be dependent on the data captured from the digital road networks.			
Access to amenities	High	Transport interventions will be dependent on the data captured from the digital road networks.			
Vehicle procurement	N/A				
La	No associated carbon impacts expected.	High standard in terms of practice and awareness on carbon.	Mostly best practice with a good level of awareness on carbon.	Partially meets best practice/ awareness, significant room to improve.	Not best practice and/ or insufficient awareness of carbon impacts.

Risk Management

The SDN project presents a significant opportunity for GM to develop and prove the value of advanced wireless technologies to delivering GM priorities. Managing the interface between the deployment of infrastructure and the realisation of benefits will be crucial to ensuring the project can deliver tangible local benefit within the timeframe of the project prescribed by DSIT.

Legal Considerations

Subsidy Control advice was sought from Shared Legal Services at project mobilisation phase and has been shared with DSIT as part of their due diligence processes prior to signing of the Memorandum of Agreement.

Financial Consequences – Revenue

There are no revenue finance consequences for the GMCA from this report and its recommendations.

Financial Consequences – Capital

There are no capital finance consequences for the GMCA from this report and its recommendations.

Number of attachments to the report: 0

Comments/recommendations from Overview & Scrutiny Committee

Not applicable

Background Papers

[5G Innovation Regions: successful regions - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/5g-innovation-regions-successful-regions)

Tracking/ Process

Does this report relate to a major strategic decision, as set out in the GMCA Constitution?

No

Exemption from call in

Are there any aspects in this report which means it should be considered to be exempt from call in by the relevant Scrutiny Committee on the grounds of urgency?

No

GM Transport Committee

Not applicable

Overview and Scrutiny Committee

Not applicable

1. Background

1.1 The Advanced Wireless Strategy published by DSIT in April 2023 made provision for a 5G Innovation Regions competition to ensure that people, business and public services across the UK can realise the full benefits of 5G and advanced wireless connectivity.

1.2 The competition aimed to allocate £36M for up to 10 Innovation Regions to deliver test projects in the 15 months to March 2025 to:

- Drive economic growth
- Accelerate commercial investment
- Foster the emergent 5G ecosystem

By:

- Developing the regional ecosystem
- Identifying strategic sectoral projects and use cases
- Mobilising and delivering projects and use cases
- Developing a plan for sustainability

1.3 Following the launch of the competition in August 2023, GMCA's Digital team undertook a rapid process of engagement with public and private sector partners from across the city region, including via the GM Digital Portfolio Delivery Executive, to identify potential project opportunities that met the DSIT criteria, including tight delivery timeline, whilst also aligning with GMS priorities. This process identified opportunities linked to transport, building on the 5G Test Beds and Trials project previously undertaken in Salford by TFGM; and energy, building on the £78M investment in improving the energy efficiency of social housing through the Social Housing Decarbonisation Fund led by GMCA.

1.4 In early September a bid for £3.06M was submitted to DSIT by GMCA on behalf of the city region for a Greater Manchester Smart Decarbonisation Network (GM-SDN) with activity initially focused on two sites in Manchester (Chorlton and Cheetham Hill) and one in Wigan (Leigh) where smart transport and smart energy could be tested in a locality using a new shared advanced wireless infrastructure. These sites were selected due to their existing focus for air source heat pump installations in social housing, and busy traffic junctions.

- 1.5 After a further clarification exercise relating to compliance with subsidy control, GMCA were notified in November 2023 that their bid for a Smart Decarbonisation Network to tackle the drivers of climate breakdown, accelerating decarbonisation, improving quality of life and growing the Green Technologies and Services sector had been successful.
- 1.6 Following a due diligence phase, GMCA signed a Memorandum of Understanding with DSIT on 11th January 2024 and will receive £3.06m capital funding under a grant agreement under Section 8 of the Industrial Development Act 1982 Act.
- 1.7 West Midlands Combined Authority and Glasgow City Council were among the other nine areas who were also successful in their bid for 5G Innovation region status in a highly competitive process. The programme presents an opportunity to share learning between successful regions, nationally and within GM.

2. GM Smart Decarbonisation Network

2.1. Project Aims and Objectives

- 2.1.1. The Project aims to demonstrate how advanced wireless connectivity, including 5G, can tackle the drivers of climate breakdown at a city region level by:
 - Wirelessly enabling hundreds of existing air source heat pumps across social housing, allowing real time energy data exchange on equipment performance and usage. As well as improving the performance of heat pumps and reducing costs for residents, the intent is to accelerate the creation of Smart Energy Grids and bring forward benefits for residents, industry and public services, aligning with the GM Local Area Energy Plan, and testing a model which can be scaled across GM.
 - Developing and testing a Digital Road Network environment aiming to reduce congestion and carbon emissions and prioritise traffic flow such as public transport in a quicker, efficient way.

2.1.2. Central to these use cases is advanced wireless technology, such as 5G and next generation WiFi, that will be deployed by industry and telecoms partners collectively. The project will utilise industry expertise and leverage existing capabilities such as GM's Local Full Fibre Network, academic expertise, and cyber security sector.

2.2. Smart Energy Grid

2.2.1 In a smart energy grid, energy supply and use can be balanced and optimised using information on consumption and provision. Digitally enabling air source heat pumps and connecting them to an advanced wireless network will facilitate the capture and analysis of real-time data to enable demand optimisation where currently these assets are unable to transmit data. In time, this could link a large number of units together to enable the development of a Local Energy Market, matching regional energy supply and demand.

2.2.2. The basic connectivity with a heat pump is expected to unlock £100 p.a. savings per year in fuel bills alone for a household, with Demand Side Response (DSR) on top of this expected to reduce the average fuel bill (currently £1923) by 25% (£481).

2.3. Digital Road Network

2.3.1 The project will enable smart traffic signals in two areas of GM, adjacent to these areas of social housing, enabling TfGM to coordinate movements and prioritise traffic flows and improve the efficiency of our road network reducing congestion and carbon emissions. In addition, as electric vehicle charging infrastructure is rolled out across GM, this will also create further demand for connectivity to improve operations similar to that needed for heat pumps.

2.4. Localities and Places

2.4.1. Wireless technologies will be deployed in three areas of GM connecting existing and new heat pumps installed in social housing through the Social Housing Decarbonisation Fund. By co-locating these use case the benefit of deploying an advanced wireless solution can be maximised with the intent that it can sustainably enhance the connectivity of each area and demonstrate scalability.

2.4.2. It is also intended that the deployment of advanced wireless infrastructure in the identified areas will create opportunity to explore how to enable residents to benefit

from enhanced connectivity, tackling barriers to digital inclusion including network coverage, network capacity and affordability.

2.4.3. The potential to establish a social housing focussed place-based model will be considered, with the intent being able to test further use cases, potentially enabling improvements to building management, education, mould detection, and health-at-home, whilst the results from the initial projects are scaled across GM.

2.4.4. Solutions will be designed with the needs of places and communities in mind with local authorities and social housing providers considering the wider community benefits and how learning can be scaled into neighbouring areas.

2.5. Outcomes, Benefits and Legacy

2.5.1 The desired outcomes and benefits from this project include:

- Reductions to household energy bills
- Increased energy efficiency in heating
- Cost savings to Social Housing Providers
- Reductions in domestic and transport CO2 emissions (tonnes)
- Improved traffic flows
- Enhanced 5G coverage

2.5.2 At a city region level, benefits include:

- Developing frontier energy and technology industries across GM and UK
- Improving public sector services provision (efficiency/ innovation)
- Specialist employment, knowledge dissemination and skills development
- Providing a national focus for use of advanced wireless in community-based decarbonisation
- Extending our world class digital infrastructure and the role of this infrastructure in realising GM priorities including:
 - Using technology, data and analytics to drive decarbonisation and improve decision-making about places.

2.6. Approach to Delivery and Governance

2.6.1. In rapidly developing this project to respond to the opportunity presented by the DSIT 5G Innovation competition it has been necessary to work collaboratively with

existing partners and leverage established digital infrastructure assets such a Local Full Fibre Network and GM One Network whilst also challenging the market to innovate and build for the long term.

- 2.6.2. The project is being developed and will be delivered in accordance with the ways of working set out in the GM Digital Blueprint and, in particular, with a focus on being scalable across GM, leverage existing assets, be people first, responsible with data, and benefit led.
- 2.6.3. At all stages the project will be co-designed with communities, public services and the market to ensure maximum impact, balancing the need to act at pace with the importance of ensuring best use of public finance.
- 2.6.4. The project has established a programme board and will report principally into the Connected Places Leadership Group under the GM Digital Portfolio Delivery Executive.
- 2.6.5. It is anticipated that as we enter the detailed design and delivery phase of the project it will be necessary to make some changes to the project scope to respond to identified opportunities and practical constraints.
- 2.6.6. Any proposed deviation from the original bid will be considered in accordance with the above principles and in collaboration DSIT, the Digital Portfolio Leader and Chief Executive, with any resulting decision delegated to the Treasurer where such a change will result in a variation to the allocation of funding for partner organisations.

3. Summary and Recommendations

3.1. Project Summary

- 3.1.1. The Smart Decarbonisation Network presents an opportunity to leverage government investment via the DSIT 5G Innovation Region competition to test the role of digital connectivity in realising GM Net Zero ambitions.
- 3.1.2. The initial investment will deploy advanced wireless digital infrastructure in underserved communities and use this infrastructure to capture data that will enable better management of roads, housing stock and energy.
- 3.1.3. The project will deliver both immediate outcomes for those communities directly affected as well as wider benefit to the city region.
- 3.1.4. Existing partnerships and assets will be leveraged to enable rapid delivery in accordance with the DSIT timeframe.

3.2. Recommendations

See top of report