



**England's Connected Heartland (ECH)
5G Innovation Region
Science and Innovation Campus Project**

Prior Information Notice

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1 Introduction

1.1 Overview

On behalf of England's Connected Heartland 5G Innovation Region (ECH 5GIR), Oxfordshire County Council will procure a framework contract for a Supplier to install and operate 5G mobile private network managed services for Science and Innovation Campuses.

The procurement will evaluate tenders based on the specification for an initial order for the Harwell Science and Innovation Campus, with the possibility to extend the network to further locations during the term.

This Prior Information Notice (PIN) is intended to alert potential bidders to the forthcoming procurement procedure and to present the current view of the content of the procurement. We want to engage with potential bidders with the expertise, experience, and innovative solutions to design, build and operate a robust, secure, and scalable 5G standalone mobile private network.

The network will underpin a wide array of applications, from supporting advanced manufacturing and health applications, and outdoor mobile connectivity as Campus users move between buildings, real-time information services to support the advanced scientific and technological needs of the campuses, and smart construction management.

We invite interested parties to review this notice and consider the opportunity to contribute to a project that promises to enhance connectivity at the Harwell Science and Innovation Campus and set a model for similar networks elsewhere in the UK and beyond.

1.2 DSIT 5G Innovation Regions (5GIR) Programme

The Department for Science, Innovation and Technology (DSIT) 5G Innovation Regions (5GIR) programme is a pioneering initiative by the UK Government, designed to foster the development and deployment of 5G and advanced wireless technologies across the country. With a funding pool of approximately £36million, the programme has identified ten regions, including ECH, to become hubs of digital innovation. The DSIT 5G Innovation Regions funding must be spent by 31st of March 2025.

These 5GIRs are expected to lead the way in demonstrating how cutting-edge wireless connectivity can transform public services, drive economic growth, and stimulate innovation across a diverse range of sectors such as manufacturing, health, agriculture, and public services. The goal is to ensure businesses and communities, whether in urban, rural, or semi-urban areas, can fully leverage the benefits of advanced wireless technologies, thus bridging the digital divide and propelling the UK towards a more connected, technologically advanced future.

Adoption is a critical aspect of the 5GIR programme, as it underpins the initiative's success in achieving its transformative objectives. Widespread adoption of 5G and advanced wireless technologies is essential to unlock their full potential in enhancing services,

stimulating economic growth, and fostering innovation. This adoption spans across key sectors, including manufacturing, health, agriculture, tourism and public services, where advanced connectivity can lead to significant improvements in efficiency, productivity, and service delivery.

The adoption of 5G technology within these Innovation Regions is expected to function as a catalyst for private sector investment, driving demand for advanced connectivity solutions. This, in turn, can lead to the development of new business models, services, and applications that leverage the unique capabilities of 5G. Successful adoption entails the development and sharing of best practices, learnings, and scalable models that can be replicated across other regions, thereby amplifying the impact of the 5GIR programme nationwide.

The adoption of 5G technology within the 5GIRs is not simply a case of upgrading infrastructure; it involves creating an ecosystem that fosters innovation, enhances market competitiveness, and improves the quality of life for communities. By encouraging the uptake of 5G, the 5GIR programme aims to ensure that the benefits of this advanced technology are realised across the UK, making it a key driver of the country's digital strategy and economic resilience.

1.3 ECH 5G Innovation Region

ECH 5GIR was formed in 2023 and is one of ten regions to successfully bid for DSIT 5GIR funds. It is a partnership between councils in Oxfordshire, Berkshire, Buckinghamshire, Bedfordshire and Cambridgeshire, coordinated by Oxfordshire County Council and has a long-term vision for driving the use of advanced wireless across the region

Each of the Local Authority participants in the region have digital infrastructure teams with a strong track record in improving fixed broadband connectivity. Whilst this remains an important regional focus, they are now working to extend the reach of advanced wireless connectivity, enabling wider adoption of the technology as a means of improving business productivity and public service delivery and supporting further innovation.

Like all 5GIRs, ECH 5GIR will leverage the transformative potential of advanced wireless connectivity and digital technologies for economic and social benefit. It has selected the world leading Harwell Science and Innovation Campus for deployment of 5G connectivity by March 2025, and its longer-term operation.

ECH will deliver a 5G mobile private network initially on the Harwell Science and Innovation Campus which hosts over two hundred organisations across four research clusters, Space, Energy, Health, and Quantum, and includes the European Space Agency, and the Diamond Light Source Synchrotron.

England's Connected Heartland has a higher-than-average number of Science and Innovation campuses, with almost 20% of the UK's Science Parks, seventeen of around ninety.

Through this project, ECH aims to develop a repeatable model to drive 5G networks to other Science Parks in the region, and to science parks, business parks and industrial campuses across the UK.

The area represented by England’s Connected Heartland and the location of Harwell Science and Innovation Campus is illustrated below.

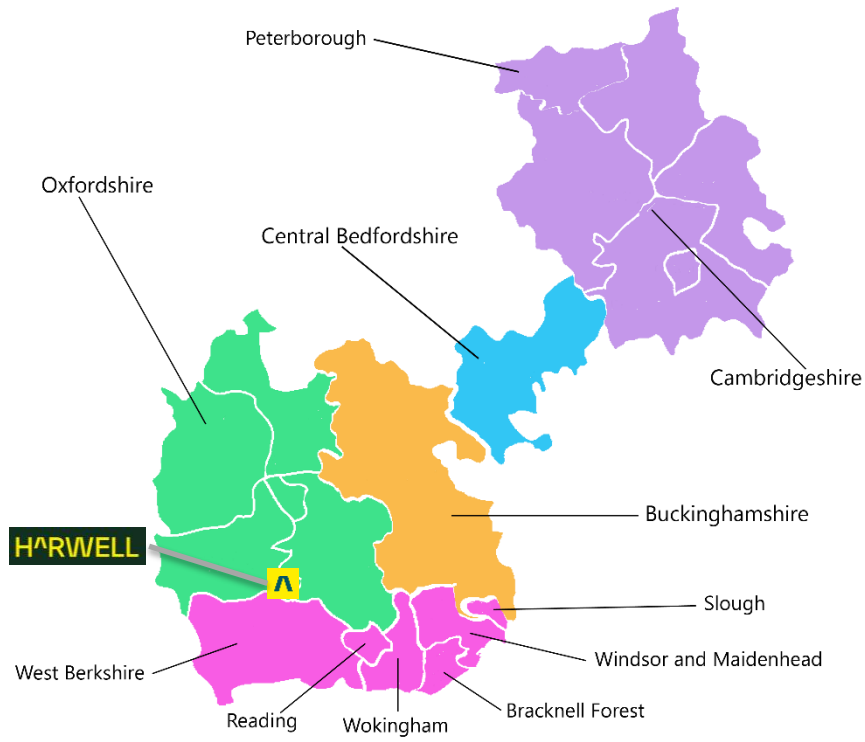


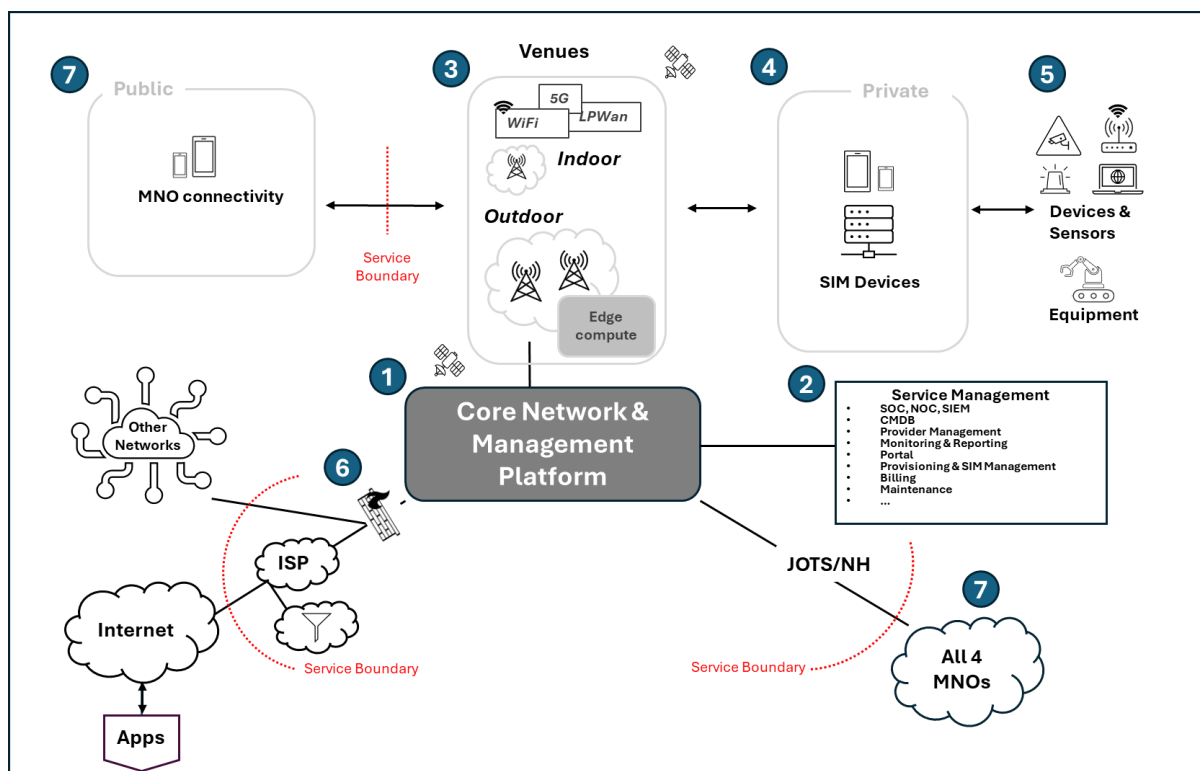
Fig 1: ECH 5GIR region

2 Service Requirements

2.1 Overview

The Supplier will design, build and operate 5G Standalone Mobile Private Network services, initially at the Harwell Science and Innovation Campus.

The principal elements of the required network are shown in the diagram below.



Key:

1. Core Network and Management Platform - the 5G network core and the management platform(s) for the technical solution and service management
2. Service Management functions that the Supplier will provide
3. Edge Connectivity - radio infrastructure at the venues, including masts, radios and antennas, edge computing and backhaul
4. Edge devices with access to the network
5. Devices and equipment sourced by the Supplier to support the use cases
6. Data platform to store, analyse and access to the data that the solution will collect
7. Gateways to connect edge devices to other networks
8. Public Network mechanisms to maximise the wider benefit of the solution's infrastructure

The 5G Science and Innovation Campus project is conceived as a single region-wide solution to provide 5G network connectivity to support a diverse range of use cases for ECH's science parks.

2.2 Core Network and Management Platform

The platform should provide the following functionality.

Core and RAN configuration and control including:

- Operation of the RAN itself
- Monitoring
- User access/permissions to applications
- Data and venue services across the region
- Security management of all devices, data, platforms and networks
- Configuration Management
- Device and SIM provisioning and management

Service Management:

- Reporting, including performance and service reporting
- Change requests and change control
- Incident Management
- Maintenance management
- Billing
- Document library
- Portal access for the Council to use for self service operations

2.3 Service Management

The Supplier will be responsible for the technical operations (NOC and SOC) for the services.

Campus and organisational IT Support will provide first-line support for all end-user engagement with the networks and services under the contract and will provide an interface for support requests with the Supplier.

The Supplier will engage with these IT support functions on a Service Desk to Service Desk basis for service management.

Where the service recipient organisation does not have a service desk, Oxfordshire County Council will fulfil the first line support role to engage with the Supplier.

The Supplier will be responsible for all other aspects of network and service management under the contract scope.

The Council intends to set in place contractual agreements to define clear and proportionate arrangements for ongoing support and maintenance of edge devices and

equipment bought under this contract. The Supplier will be responsible for large capital expenditure items and will wish to set in place back-to-back arrangements with third parties for those items or services.

2.4 Edge Connectivity

The Supplier will provide resilient, configurable and extensible indoor and outdoor 5G RAN coverage and capacity. The network may be used to support other radio technologies such as Wi-Fi or LPWAN to meet the needs of the defined use cases on the campus. See the traffic type and density figures in the campus description section of this document.

The Supplier will provide resilient backhaul connectivity to the Campus RAN using a combination of diversely routed fibre, satellite or microwave connectivity.

The Supplier will provide suitable edge computing equipment as necessary to support use cases with requirements for low latency.

The Supplier will ensure suitable licenses, wayleaves and other permissions are in place to deploy and operate the RAN on the campus.

The Supplier will provide all aspects of the passive and active RAN infrastructure and operations.

2.5 Edge Devices

The Supplier will make connectivity available to a range of user equipment including modems, mobile handsets and tablets via SIMs provided under the contract. It is envisaged that some edge devices will be provisioned with e-SIMs through a simple QR code approach, so that some user types can use their own compatible devices for temporary access to the private network.

2.6 Devices and Equipment

Some use cases require specialist devices and equipment which the Supplier will be required to source. Examples include marine street lighting, Wi-Fi access points, environmental sensors and CCTV cameras. The customers will use a wide range of customer selected devices procured separately.

2.7 Data Platform

The Supplier will be required to provide a cloud-based data platform capable of hosting or connecting to a range of media, application and data services including analytics and dashboard presentation functionality. This platform will be used to securely capture, analyse and present data from and to the campus in a manner that supports the Use Cases. This platform should support the future growth of users, the campus and applications/use cases. We would welcome Supplier thoughts on how this future growth should be supported.

2.8 Gateways

The Supplier shall provide gateway services to securely manage data flows from edge devices on the private network to other networks.

Some devices will be connected across a gateway to a customer's corporate network.

Other devices may require internet connectivity to access cloud applications. The Supplier shall provide an internet service for these devices, including configurable content filtering to prevent inappropriate use.

2.9 Public Network Impact

Subject to the agreement of the public network operators, the solution needs to provide a method to use the same infrastructure to improve public network coverage and capacity from all public mobile network operators as required.

2.10 Design, Implementation and Testing

The Supplier shall be responsible for planning, designing, deploying and demonstrating operational readiness of all aspects of the solution by 31st March 2025 including project management.

3 Harwell Science and Innovation Campus

3.1 The Location

Harwell Science and Innovation Campus is one of several science parks within the ECH region. Harwell is home to over two hundred organisations, including leading science and technology organisations and facilities.

The campus is a collaboration between the government, academia and industry with the site being jointly managed by both the Science and Technology Facilities Council (STFC) and Academic Research Cluster (ARC)

The site has a wide variety of both new and older buildings, hosting organisations such as the National Quantum Computing Centre, the Central Laser Facility and the European Space Agency, as well as teams from thirty UK universities and many commercial technology organisations.

There is currently evidence of fibre fixed line connectivity to the site, but mobile coverage is limited to 4G and only provided by a couple of MNOs. With the organisations already established on the site there is the immediate potential for the adoption of 5G once provided to adopt existing use cases and to develop future use cases.

More information on the focus and range of Harwell's organisations can be found at harwellcampus.com.

3.2 Example Use Cases for 5G

Organisations at the campus frequently relocate or take on temporary space. They have requirements for resilient and temporary urgent high bandwidth connectivity to address these business challenges.

Operations both for the campus and the organisations situated on it require resilient and reliable connectivity to enhance the campus experience. For example, providing wider coverage to enable a seamless campus wide wireless network allowing users to access applications and connectivity wherever they are on the campus.

Remote CCTV and security monitoring and fire detection will drive improved safety and security. Enabling push to talk will greatly enhance campus operations.

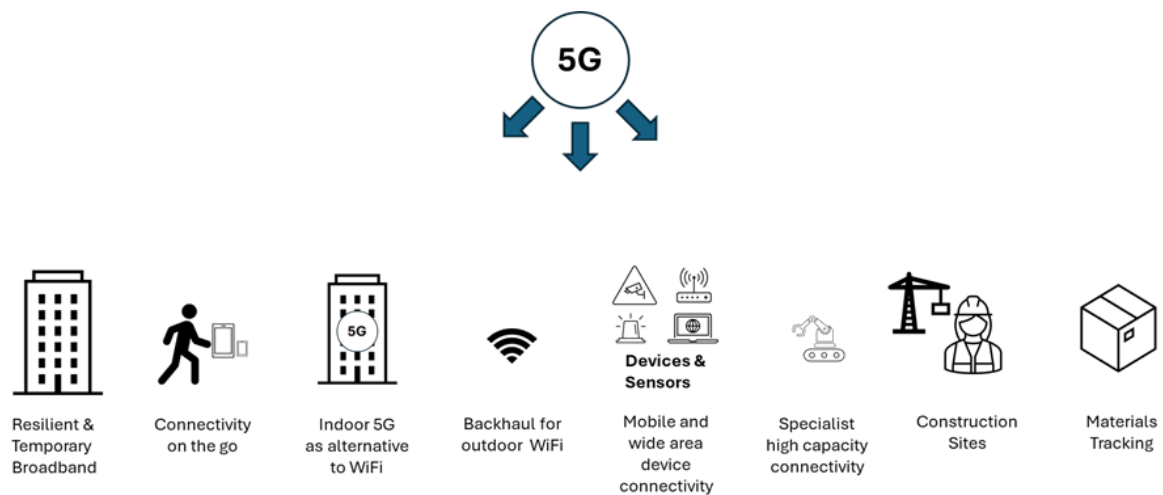
Automated campus wide street lighting management will enable synchronisation across the site. It would enable remote management to reduce the energy wasted as well as detecting maintenance issues. The campus has a wide range of low bandwidth wide area connectivity requirements to support estates operations.

Organisations on the campus have emerging requirements for high bandwidth low latency outdoor mobile connectivity to support specialist applications such as autonomous robot development.

Automated vehicles are an example of a future use case that multiple organisations have expressed an interest in trialing and potentially adopting.

Indoor 5G could be deployed in buildings as a high-speed alternative to Wi-Fi as well as enabling the adoption of use cases for indoor facilities such as laboratories and offices.

The Harwell Campus is undergoing stages of large-scale redevelopment in which low latency, high bandwidth connectivity could be used to enhance the construction and development process such as Digital Twins and tracking of high value materials.



Example use cases

3.3 Location Map and Statistics

The following levels of latency, number of devices, and bandwidth currently anticipated for the initial deployment at the Harwell Campus are summarised below.

Demand Type	Estimated Number of devices	Estimated Total Bandwidth (Mbps)
Low	518	205
Medium	112	1220
High	43	2502
Total	673	3927

A mobile private network covering approximately 260 hectares is required. With the ITT, we will provide more detail about the specific areas of coverage required within the overall curtilage.

A map of the Harwell Science and Innovation Campus is provided overleaf, indicating some of the key locations.

Harwell Science & Innovation Campus



Example of Organisation Locations:

- 1 Diamond Light Source
- 2 European Space Agency
- 3 Astroscale
- 4 Campus Management
- 5 Satellite Applications Catapult
- 6 STFC
- 7 Oxford Nanopore
- 8 Rutherford Appleton Laboratory
- 9 Vulcan, Central Laser Facility

4 Contract Structure

The Council currently intends to procure a single supplier framework contract for 5G Standalone Mobile Private Network managed services with a term of 4 years. The ECH 5GIR Framework contract will be held by Oxfordshire County Council. Call Off contracts within the framework are envisaged to have a term of seven years. The Supplier may use subcontractors to deliver elements of the services.

The contract is designed for extensibility. ECH hopes that through the procurement process and the initial deployment at the Harwell campus, the commercial model for 5G connectivity for Science and Innovation Campuses will become clearer. From that knowledge, ECH hopes to grow the scope of the deployment at Harwell and to make orders for further venues across the region. The same models could be replicated by other regions under similar new contracts.

Possible extension of the scope at Harwell and further orders for other venues will be priced according to a pricelist model that will be part of the tender response.

It is envisaged that each ECH partner will hold one or more call off contracts with the Supplier in respect of the venues within its geographical boundary.

All contract charges for the services will be invoiced to the ECH partner that holds the call off contract. The Supplier will not invoice end users directly.

The Council, working with the ECH partners and other organisations, will oversee the service delivery to the venues and provide first line support to service users. The Supplier will be responsible for all other elements of the service delivery.

The Supplier's monitoring and reporting will be at a detailed campus level and at the aggregate level to allow this two-tier management approach.

The contract terms will be comparable with those of the Crown Commercial Services Network Service 3 (RM6116) Framework.

The estimated total value of the framework's call offs over their term is £10 million. The estimated value of the first call off for Harwell Campus is approximately £1.5 million for the first three years.

The estimated total contract value represents the expected price for the Harwell deployment over seven years and an estimate for the value of possible further orders.

5 Procurement plan

The Council plans to procure the services using the Open Procedure.

This Prior Information Notice is intended to alert potential bidders to the forthcoming procurement and its type, and timetable and provide an overview of the planned services.

A webinar is planned that aims to bring the outline requirements to life for potential bidders. The webinar will be recorded and made available to all potential bidders.

To register for the webinar please follow the link below:

[England's Connected Heartland \(ECH\) 5G Innovation Region Procurement Webinar](#)

Short individual 1:1 sessions to discuss commercially sensitive feedback will be available. To book a 1:1 session, please complete the ECH 5GIR Science and Innovation Campus PIN Supplier Response template and return it via the Portal.

The Invitation to Tender (ITT) will present a delivery scenario for evaluation that is as close as possible to the order that the Council intends to make. However, it is possible that the actual order placed will be different from that scenario, for example if there is a mismatch between price and available budget.

The ITT process will include scope for potential bidders to submit clarification questions in respect of the procurement specification.

Estimated dates for the key stages in the procurement process are shown in the table below.

Stage	Description	Estimated Completion Date
PIN Publication	Prior Information Notice to alert potential bidders to the planned procurement	28/03/2024
1:1 Requests	Potential bidders optionally request 1:1 session	05/04/2024
Webinar and 1:1s	Optional webinar to hear current plans, and 1:1s to discuss commercially sensitive feedback.	09/04/2024 & 10/04/2024
PIN Responses	Potential bidders respond to PIN questions	12/04/2024
ITT Publication	Open procedure published	19/04/2024
ITT Clarifications Deadline	Bidders submit clarification questions if necessary	17/05/2024
ITT Responses	Bidders complete ITT response.	31/05/2024
Evaluation	Preferred Bidder identified	21/06/2024
Standstill Period	Mandatory Standstill period ends	01/07/2024
Contract Award	Signed contract with Supplier	19/07/2024
Initial Implementation	Initial order delivery complete	31/03/2025

All dates are estimates. They are subject to change as necessary to reflect evolving discussions and market feedback.

6 Spectrum

The Council intends to submit medium power Shared Access License applications to Ofcom in the 3.8-4.2 GHz spectrum for the Harwell campus.

The aim of the application is to determine before the end of the tender process whether spectrum of that type is available before the and to avoid the risk that Ofcom might receive multiple applications for the same spectrum in an urgent timescale.

There is some concern that spectrum in the 3.8 GHz range may not be available at Harwell.

Bidders may wish to make their own spectrum arrangements. There will be no obligation to use the licenses that the Council hopes to obtain, nor to use the spectrum band that the Council has assumed may be applicable.

[End]