

## **CABINET MEMBER DECISION**

### **31 AUGUST 2020**

## **WORCESTERSHIRE 5G – PATHWAY TO SUSTAINABILITY AND 5G CREATE APPLICATIONS**

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### **Relevant Cabinet Member**

Dr K A Pollock

### **Relevant Officer**

Strategic Director of Economy and Infrastructure

### **Recommendation**

- 1. The Cabinet Member with Responsibility for Economy and Infrastructure is recommended to:**
  - (a) note the work undertaken by Worcestershire Local Enterprise Partnership (WLEP), the Council and other partners in the successful delivery of the first Worcestershire 5G project and the ongoing work on the West Mercia 5G project as part of the Department of Digital, Culture, Media and Sport's (DCMS) 5G Testbed and Trials programme;**
  - (b) note the successful application for funding into 'Open for Business' to support the transition of Worcestershire 5G into a sustainable model;**
  - (c) endorse the application for two new proposed projects into DCMS's 5G Create fund;**
  - (d) note, should either or both of the '5G Create' applications to DCMS be successful, the award of the initial grant from DCMS would be up to £1.5m for Wave 1 and up to £4m for Wave 2 and the role of the Council as the lead partner, will be managing the projects, assuring and financing partners' claims and drawing down the funding;**
  - (e) note and accept both the potential opportunities and risks that are identified within this report and earlier 5G Cabinet reports; and**
  - (f) authorise the Strategic Director of Economy and Infrastructure to finalise and agree the necessary agreements to progress and support the Open for Business project and the two DCMS 5G Create projects if funding applications are successful, noting that delegations in earlier 5G Cabinet reports also remain in place.**

## **5G Programme Background**

2. The first Worcestershire 5G project commenced in Spring 2018, focussed on exploring 5G mobile technologies within the areas of Industry 4.0, Advanced Manufacturing and Security. After securing an extension, this successful, award-winning project is now coming to an end and the Council alongside some of the original project partners are investigating sustainability options, including making applications into funding competitions and new models of delivery.
3. Previous Cabinet (April 2018 & January 2020) and Cabinet Member Decisions (March 2019) have been made in respect of progressing Worcestershire's 5G projects, in line with the Council's Open for Business priority and strategic direction on improving digital connectivity in the county.
4. Under the delegated authority agreed following these reports, work has taken place to continue, sustain and build on the 5G projects. This includes the submission of two further project proposals into DCMS's 5G Create competition and the exploration of a new sustainable business model for the Worcestershire 5G Testbed.
5. The Council is expected to be the lead body of the local consortia on both applications; if successful, whilst again no significant funding is required from the Council, additional funding is required to be added to the Council's accounts in 2020/2021 and 2021/2022 and for the activities to be undertaken. It should be noted there has been a commitment of Open for Business funding to support the wider 5G programme and should the Council wish to add scope to the project, then alternative local funding could be used to investigate new opportunities.
6. Following the Cabinet decision in January 2020, on 1 April 2020 Worcestershire County Council, as lead partner, also commenced the separate, two year, 'West Mercia Rural 5G' project. The Council is working alongside public and private sector partners to explore new models for deployment of 5G in rural areas and how new products and services across the health and social care sectors could be developed utilising 5G technologies.

## **Sustaining Worcestershire 5G**

7. The Worcestershire 5G mission is to support Worcestershire's Local Industrial Strategy by helping Worcestershire and wider UK advanced manufacturing industry harness the benefits of 5G connectivity and secure applications through smart factories, automated operations and productivity improvements. This supports the Worcestershire LEP vision of a "connected, creative, dynamic economy for all" and the connectivity aspirations to help drive productivity and quality of life within Shaping Worcestershire's Future.
8. The vision is for the 'Worcestershire 5G' Testbed headquartered at Malvern Hills Science Park to become a sustainable going concern and become the Testbed of choice to support 5G services, with a focus on Industry 4.0 as a key differentiator.
9. As this unique opportunity has been created through the success of the original Worcestershire 5G project, it is important we take early advantage from the reputation and current capability we have already created.

10. Following the original project, Malvern Hills Science Park and Ericsson retained ownership of the key physical network assets. These partners have worked closely over recent months with BT and the Council, alongside other partners, to understand how to transition to a viable new 'Testbed as a Service' operating model.

11. As part of this approach a successful application was made into 'Open for Business', to help support the transition and wider programme. Whilst the business plan develops and the market matures, the strategy includes applications into DCMS's '5G Create' competition, to maximise the opportunity for success. Should one or both of the 5G Create bids not be successful it does not prevent the new model being pursued, however a further internal review should take place.

12. It is believed 5G will become the key connectivity enabler for the Industry 4.0 driven digital transformation of the manufacturing sector, enabling unprecedented flexibility, productivity, efficiency and usability. Recent Forrester research projects that around 20% of the forecast \$1.2 trillion global revenues from 5G by 2026 will come from manufacturing.

13. Further developing the Testbed at Malvern Hills Science Park is arguably the single most significant opportunity for driving growth into a potential European Scale Science Park and the associated wider economic benefits.

### **Overview of new 5G Create proposals – Wave 1 submission**

14. This proposed project will leverage and enhance existing investment in the physical assets and knowledge within the original Testbed, providing a platform for new 5G use cases to develop. The key aim is to deliver enterprise grade 5G solutions, with a focus on Industry 4.0 and security, that drive economic value for UK manufacturing, enabling enhanced productivity and new flexible operating models. This forms a key component within our business plan for 'Worcestershire 5G' through driving and supporting the wider adoption of 5G across Worcestershire and the UK.

15. The partners working with the Council and Worcestershire LEP within the proposal include BT, Worcester Bosch, Malvern Hills Science Park, Immersive Story Labs, Utelize and Wearable Link; earlier partners QinetiQ and Ericsson remain involved as part of the wider programme.

16. The technology, security and innovation partner BT (underpinned by Ericsson technology), bring leading edge development, networking, support, security and integration capabilities to drive wider collaboration with industry. The strength of our consortium can support a diverse range of use cases within this project, and into the future, engaging with industrial partners and SME innovators to develop and scale these opportunities into value generating enterprise level products and services.

17. Having delivered a 'first of type' in terms of 5G networks in a factory setting, as part of the original project, Worcester Bosch remains at the core of this project. They bring three new use cases that include driverless transport systems, cases that support productivity improvements and are additive to Health and Safety initiatives by utilising advanced and secure 5G network connectivity. Use case results will inform the business case for 5G to become a central part of their concept for a 'Factory of the Future'.

18. This project also includes three small-enterprise partners, each bringing innovative use cases, applicable to diverse settings including tourism, construction, health and safety and remote working. Each seeks to exploit the existing 5G network and support capabilities to demonstrate quick wins, taking their product significantly closer to commercialisation. Two of the small-enterprise partners were part of earlier Beta-Den cohorts; a pipeline of other interested companies and use cases have already been identified and subject to resources and funding could engage with the Testbed.

19. Placing a significant focus on skills development, the Worcestershire 5G project led cross industry skills report, 'Gearing Up Our People to Drive the Power of 5G', was published in early 2020; we seek to lead and collaborate within the 5G ecosystem to drive forward at least one recommendation and other key agendas.

20. The initial Wave 1 application was not successful but was able to be re submitted to DCMS to be considered alongside Wave 2. It includes private sector contributions and a request of grant funding of c.£1.2-1.3m. If shortlisted and successful, the next steps would be to finalise and agree the Grant and Collaboration Agreement with DCMS and partners for the project to commence in the autumn to run until March 2022.

### **Overview of new 5G Create proposals – Wave 2 submission**

21. This proposed project will build on and extend the existing 5G Testbed at Malvern Hills Science Park and to new factory sites outside of the county, ensuring the Testbed remains at the leading edge of 5G technologies, whilst also investigating exciting new use cases.

22. The partners working with the Council and Worcestershire LEP within the proposal include BT, Malvern Hills Science Park, West Midlands 5G, University of Sheffield / AMRC Cymru, D-RisQ, Impact Aerial, AE Aerospace and Airbus.]]

23. This project engages the Testbed in a new vertical sector via Airbus and its production research and development partner, the University of Sheffield's Advanced Manufacturing Research Centre (AMRC). This relationship provides an exciting and unique opportunity to test and enable 5G solutions within a publicly funded, purpose built and representative aerospace production research environment at Broughton, near Chester. The aerospace supply chain is initially engaged through SME partner AE Aerospace with a strategic focus on developing a new 5G enabled business model. Such developments are critical to the sector's long-term recovery from the current economic crisis as well as creating demand for the Testbed's services and opportunities for local engagement and growth.

24. All project use cases support critical challenges covering productivity, process control, connected assets, network security and end to end security of Internet of Things (IOT) solutions. Further SME partners, D-RisQ and Impact Aerial, will explore 5G based network security and drone technology-based applications respectively.

25. The ongoing partnership with BT brings the scale and expertise for Worcestershire 5G to extend the benefits of 5G to more manufacturers in the Aerospace and other vertical sectors, whilst working with major partners such as

Airbus and AMRC to disseminate learning. Building these relationships and a strong reputation for leadership in the 5G space regionally and nationally are key in developing the future customer marketplace to sustain Worcestershire 5G, attract inward investment and drive the local economy.

26. The application has been submitted to DCMS. It will include private sector contributions and a request of grant funding of up to £4m. If shortlisted, there would be an interview process with DCMS and if successful the next steps would be to finalise and agree the Grant and Collaboration Agreement with DCMS and partners for the project, expected to commence in October 2020 to run until March 2022. Should both bids be successful there will be a discussion with DCMS around any efficiencies that would be achieved.

### **Risk evaluation**

27. The risks identified at the commencement of the current 5G projects remain, summarised in Appendix A. The key points for the proposed projects that need to be managed include: managing the outcome of two separate application processes; management of the network (undertaken by technology partner); managing communications; ensuring the public and private partner grant split remains below 30% for the public partners (the Council, West Midlands 5G and the Universities); the timelines to conclude the Grant and Collaboration Agreements; ensuring only eligible spend is accrued against the grant; securing the required radio spectrum licences from Ofcom; controlling the spend and establishing the programme management and technical expertise required for the extension; and management of partner expectations and performance against a range of use cases. These risks are accepted and are being managed accordingly. If the 5G Create proposals are not approved, the Open for Business project will continue in an attempt to find a sustainable model in partnership with BT, Malvern Hills Science Park and other organisations as appropriate.

### **Legal, Financial and HR Implications**

28. The Legal, Financial and HR implications on the Council as the lead partner for the new projects are a repeat to those in the original report to the Council's Cabinet in April 2018.

29. If successful, the proposed projects would continue to be funded by DCMS and the private partners in accordance with the grant conditions; as a public body the Council is able to claim back 100% of its eligible costs incurred on the project. Partners will continue to submit their claims to the Council and will be paid from the Grant provided to the Council by DCMS. The 5G Open for Business project is funded separately.

30. Subject to the applications being successful and appropriate funding and partner agreements being made the DCMS income and matching expenditure will form part of the Economy and Infrastructure revenue budget in 2020/21 and 2021/22 and Cabinet will be informed of this amendment as part of the normal Resources Report.

31. Since commencing the 5G projects, the core project and programme management, including technical, sector specific and commercial expertise has been challenging to resource and recruit to. This has therefore been sourced through a

combination of recruitment to fixed-term contracts, management of existing resource, engagement of third parties through Matrix and Clients Direct Limited, procurements through recognised frameworks Crown Commercial and ESPO, or through the 'In Tend' portal. Moving into the new projects this mixed approach to resourcing will continue.

## **Privacy and Public Health Impact Assessments**

32. No adverse privacy impacts have been identified during the preparation of the applications and project proposals; this will be kept under review as the project continues.

33. It should be noted a number of concerns have been raised by campaign groups and members of the public around the UK into central government and into the Council, regarding the safety of '5G' technologies, largely linked to the health and ecological impacts. There are reports and papers written on both sides of this debate.

34. It is recommended the council takes its direction on 5G and health from Public Health England (PHE), who released their latest guidance on 5G technologies: radio waves and health on 3 October 2019 that summarised in respect of 5G deployment there should be no consequences for public health. Any changes to PHE overall or their guidance will be monitored.

## **Equality and Diversity Implications**

35. An Equality Relevance Screening was completed during the original project timescales. The screening did not identify any potential negative equality considerations requiring further consideration during the project. It was noted that whilst the project itself does not impact negatively on individuals with protected characteristics, that future 5G networks and applications do have the potential to impact both negatively and positively on individuals with protected characteristics, including availability of services and employment opportunities. Overall at this stage in the development of 5G networks and their applications, the potential benefits are thought to outweigh the potential negatives and continued consideration should be given to how 5G networks and digital technology could improve the way public sector services are delivered.

## **Contact Points**

### County Council Contact Points

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### Specific Contact Points for this report

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## **Background Papers**

In the opinion of the proper officer (in this case the Strategic Director of Economy and Infrastructure) the following are the background papers relating to the subject matter of this report:

Agenda, background papers and minutes for the meeting of Cabinet, Agenda Item 6, held on [19 April 2018](#), the Cabinet Member report and decision recorded in [March 2019](#) and the agenda, background papers and minutes for the meeting of Cabinet, Agenda Item 11, held on [30 January 2020](#).

## Appendix A

The risks below largely existed at the outset of the first project, these have been managed through this project and will continue to be managed through the newly proposed projects.

Risk	Mitigation
Impact of situation if funding is withdrawn / clawed back / deemed not State Aid compliant	<p>A dedicated programme resource and professional financial resource are secured to support the project.</p> <p>A Collaboration Agreement / Grant Agreement will be put in place</p> <p>At the outset of Phase 1, State Aid Guidance was sought from Department of BEIS, their view concurred with view of County Council legal, that the Grant Funding is compatible aid for a research and development project within the "experimental development" category of Article 25 of the General Block Exemption Regulation. The same Guidance is being followed for the proposed projects.</p>
Ensuring Value for Money (VfM) across all partners in an innovative space with established supply chains	<p>Specific requirements will be set out in the 'Collaboration Agreement' to seek value for money. Private sector partners also contribute their own funding at either 60%, 50% or 40% ratio, therefore commercial practices lead to VfM being sought.</p> <p>In areas that only one supplier is suitable due to either 'latest technology' and "timescales" required the appropriate VfM assurances will be sought.</p>
Funding Competition rules require that partners should not build any risk contingency into their financial models	<p>All partners are aware of the restrictions of funding at each milestone, if costs are exceeded it is expected that partners will only claim up to their allocated amount. If required revised Cash profiles can be submitted, but these will only allow for relief within the total cap for each partner.</p> <p>For the Council, Finance resource is allocated against the programme to monitor spend.</p>
Not Managing Stakeholder Expectations / Reputational damage / 5G Technologies are new and performance unknown, should use	<p>Stakeholders and performance have been well managed through the initial project and the recently launched West Mercia Rural 5G project. Whilst the 5G Create proposals do include earlier partners, new partners are also involved in both proposed projects. All</p>



Risk	Mitigation
cases not deliver on expected benefits, how is this viewed	<p>partners will have a seat on the relevant project boards and are expected to engage in regular coordination / agile meetings to minimise the risk of ongoing concerns / issues.</p> <p>Partners recognise this is a Research and Development project and that not all applications will work as expected. It is recognised that 'failure' may be an acceptable outcome provided enough learning is provided, to avoid similar issues in future.</p>
Reputational / concerns raised as to safety of radio frequencies used by 5G applications	<p>Please see information in 'Public Health Impact Assessments in report. The network will be managed by technology partner BT who have substantial experience of deploying radio networks and complying with industry and governmental guidelines.</p> <p>Having considered a number of reports, including most recently the second edition of the Institution of Engineering and Technology Guide "Allaying health concerns regarding 5G and exposure to radio waves" published July 2020 <a href="https://www.theiet.org/impact-society/factfiles/engineering-safety-factfiles/allaying-health-concerns-regarding-5g-and-exposure-to-radio-waves/">https://www.theiet.org/impact-society/factfiles/engineering-safety-factfiles/allaying-health-concerns-regarding-5g-and-exposure-to-radio-waves/</a> the recommendation is that the advice from Public Health England referenced in the main report should continue to be followed and monitored.</p>
Partner withdraws from programme	<p>Within the Collaboration Agreement there will be provisions that require partners to meet their obligations. If a partner were to withdraw, they would be expected to deliver to the point so that all other partners could still deliver their milestones. Regular Board meetings and support from the core team help to align partners and keep them focussed on task.</p>
Breach of GDPR / Security Breach of network. Reputational and Financial Risk	<p>Good practice and guidance will be followed. An element of project delivery will be understanding 'security risks' related to new ways of working and networks; these assessments and lessons learnt will provide valuable feedback.</p>
Programme slippage due to external factors e.g. being a trial of leading-edge technology / particular to Usecase	<p>Due to the innovative nature of this programme and the continuing development of the latest 5G standards it presents an accepted risk around the project delivery. Partners have again created an ambitious delivery timeline and recognise this is a Research and Development project with inherent timeline risks. Having delivered earlier 5G projects the experience gained to date help to mitigate these concerns.</p>
Delay in advancement of standards, notably to deliver a full 5G Stand Alone (5G SA) architecture	<p>Advancement in standards and the delivery of 5G SA architecture, and compatible devices, has historically been slower than expected. However, the existing Testbed solution continues to provide the most advanced and stable Testbed solution currently</p>

Risk	Mitigation
	<p>available to meet the requirements of Industry 4.0 and provide the necessary facilities to support our associate technology accelerator projects.</p> <p>Our infrastructure partner selection and diversification approach places the bid in a strong position to step forward as standards and cyber security expectations mature, and the market delivers new solutions.</p> <p>The project will remain compliant with relevant Ofcom and National Cyber Security Centre guidance and policy.</p>
Underestimation of the task of managing a complex collaboration.	<p>The Council is experienced in the role of consortium lead and will be supported by dedicated project management. Driving our external affiliations with BT, other partners and the wider UK5G ecosystem, provides the opportunity to extend the reach of the project management and business development resources in the programme.</p> <p>Our approach to delivery allows a managed transition of the platform under BT's technology leadership, and consortium leadership provided by the Council, with initial use cases undertaken on a least change basis using current technology.</p>
Continued Covid-19 related operational disruption	<p>The Council's economic development team are leading on economic recovery, providing advice to business re safe operation and social distancing, already applied in Malvern Hills Science Park.</p> <p>Timing of external spend commitments and use case delivery will be assessed to reflect further government guidance, taking a realistic view of potential impact and the outlook over the period of the plan.</p> <p>Activity within the projects is authorised to commence in all project locations from either August or October 2020 as planned.</p>