



Infrastructure Acceleration (IA) Project Closure Report

Document Information:

Document owner:	Rhys Enfield
Date of document:	March 2022

Document History:

Version No:	Date:	Owner:	Description of change:
0.1	21/03/22	Rhys Enfield	First Draft
0.2			
0.3			

Distribution:

Name:	Role:	Title:	Date Approved:
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SCOPE OF REPORT

This document covers the Infrastructure Acceleration (IA) workstream within WM5G which set out to accelerate the deployment of 5G mobile networks. The report documents what we set out to do, what we have achieved, and the impacts of those achievements.

1. Executive Summary

1.1. Overview of report and the purpose

This document covers the Infrastructure Acceleration (IA) workstream within WM5G which set out to accelerate the deployment of 5G mobile networks. The purpose of the report is to show what we done and the positive benefits that have been achieved.

WM5G have provided both education and intervention to improve the relationships between the Mobile Network Operators (MNOs) and their supply chain and the Local Authorities (LAs). This has been extremely successful leading to WM5G being asked to support multiple local authorities outside of the region, DCMS and Mobile Operators and Infrastructure Providers (IPs). Our learnings have been shared far and wide and also replicated by many, proving that through the DCMS Urban Connected Communities (UCC) project, DCMS have effectively intervened in the market, driving acceleration in the deployment of digital infrastructure and creating an environment which moves away from confrontation and moves more towards a collaborative relationship between MNOs, IPs and the LAs.

WM5G IA team have created leaflets, case studies, lessons learned and processes that are being shared with the wider UK ecosystem to help them expand their knowledge and help to provide a basic platform for the commencement of collaborative dialogue between the MNOs and LAs.

Overall the IA workstream spent less than a third of money that it originally set out in the business case but managed to achieve greater benefits than initially estimated from the business case. The 4 different activities with the IA workstream produced differing results, but the benefits have been derived from evidenced acceleration of both macrocell sites and small cell sites. For Small Cells, Infrastructure Providers (IPs) have stated that the use of the Connected Map and the facilitation by WM5G with the Local Authorities (LA's) has reduced their end to end deployment times by 3-6 months. For macrocells we carried out two measures - one, a survey of Mobile Network Operators (MNOs) and Infrastructure Providers (IPs) who unanimously indicated that an acceleration of 6 months had been achieved, the second a measured set of uniform sites provided by one of the IPs comparing sites within the West Midlands to those outside the West Midlands, this data showed a 4.5 month acceleration in deployment for West Midlands sites.

Utilising the 4.5 month acceleration figure benefits for both MNOs and IPs, plus the wider socioeconomic benefits can be calculated. For MNOs and IPs there is a reduction in the required resources and overheads for the sites to be deployed, and if the principals are applied to all the LA sites across the UK, then it could drive savings for them of over £30m through the life cycle of an individual MNO network rollout.

By accelerating the deployment of 5G it pulls forward the Socioeconomic benefits and when applied to the value attributed to 5G through the Vodafone/WPI economics report we can determine that

£105m¹ worth of benefits have been achieved in the West Midlands by accelerating the deployment by 4.5 months.

2. Introduction

2.1. To include the key objectives of the overall programme (inc Testbed and Trial(s) objectives) and objectives taken from the Strategic Business Plan

The Infrastructure Acceleration project originally identified a number of **challenges** to current 5G deployment, as defined in the Full Business Case, which can be summarized as follows:

- Timelines for lease negotiations including the Electronic Communications Code 2017 (ECC)
- Timelines and volume of failed Town and Country Planning Applications, including inconsistent approach by the Local Authorities
- Obstructive Landlords
- Timelines for Fibre deployment

There are existing initiatives by wider stakeholders which address some of the issues, but the initial findings are that there is a general lack of awareness of these within the West Midlands Local Authorities and further work is required to adopt the policies and processes and realise the benefits. The initiatives are as follows:

- Digital Infrastructure Toolkit
- Digital Connectivity Portal, including guidance for the ECC
- Streetworks Toolkit

WM5G proposed 8 **SMART objectives** to address the challenges and gaps that the existing initiatives do not cover as shown in the below table.

No:	Category	Objective	Description	Measure	Timeline
1	STRATEGIC BUSINESS PLAN	Acceleration Feasibility	Analysis, feasibility studies, market engagement and options assessment for Infrastructure Acceleration completed.	Evidence documents submitted as part of Q1 DDA's	Sept-19
2	1a) Testing models for cost-effective deployment of 5G infrastructure in highly populated, urban areas, and removing barriers. This should help reduce commercial risks with investment. 1b) Reducing risks associated with investment in 5G and relevant technologies.	Barrier Busting Plan	Programme of action agreed, and implementation started with the seven WM LAs to proactively support infrastructure acceleration (barrier busting), as described in DCMS guidance.	3 x processes (upgrade/new site/maintenance) detailing engagement between LA's and MNO's 5 x guidance leaflets to assist LA's	Mar-20

¹ Calculations using economic benefits from vodaphone June 2020 report - <https://newscentre.vodafone.co.uk/app/uploads/2020/06/Vodafone-5G-Report-final.pdf>

3		Barrier Busting Results	LAs are demonstrating good practice in starting to operate in line with the new Electronic Communications Code (ECC) and town and country planning, in line with DCMS and WMCA letter to the LAs sent April 2019, including training of key people.	All 7 LA's In the WM area agreed to use the MNO engagement process. Minimum of 2 MNO's or MBNL/Cornerstone agree in writing that the process is an improvement on current practice. feedback that the process is smooth Train 50-80 Local Authority staff	Mar-20
4		Medium term strategic objective	Demonstrate how to deliver a >30% reduction in deployment time for medium, difficult and very difficult 5G sites (c.70% of sites).	Baseline and measure the deployment times through the project lifecycle	Mar-21
5		Long term strategic objective	Evidence 20% more 5G sites (including upgrades) across the region than original plans pre WM5G	Baseline and measure the deployment times through the project lifecycle	Mar-22
6	STRATEGIC BUSINESS PLAN 4) Informing and testing West Midlands and national digital policy and regulation.	Short term strategic objective	Identify the top 5-10 critical local and national policy issues (from a West Midlands perspective) blocking 5G and fibre infrastructure acceleration identified.	First draft submitted June 2020 and continually reviewed through the project	Dec-19
7		Medium term strategic objective	Solutions delivered to address each of the critical policy issues enabling infrastructure acceleration.	One solution delivered against each of the following policy areas; 1) Barrier busting, 2) Fibre and 3) Neutral Host Report delivered to DCMS detailing shared infrastructure processes (including feedback from MNOs, service providers)	Mar-21
8		Long term strategic objective	Champion and deliver critical policy across the WM5G region, in partnership with LAs DCMS to lead on national policy analysis, development and implementation.	Based on lessons learnt, submit at least 3 processes and 5 guidance documents to DCMS which influence national policy	Mar-22

To achieve the Strategic Objectives, WM5G split the programme into 4 separate **workstreams** as described below:

1. Neutral Host and Passive Solutions
 - 1) Neutral Host / Passive Sharing / Small market analysis, process and design
 - 2) Small Cell Design Competition
 - 3) Dense Urban Small cell trial
2. Barrier Busting
 - 1) Guidance and intervention with the LA's and Operators on the ECC and Town and Country Planning
 - 2) Standard LA and Operator engagement processes
 - 3) Standardized wayleaves and lease agreements
 - 4) Alignment of Operator rollout plans with WM5G and Local Authority priorities
3. Local Authority assets and maps
 - 1) Identify and map public assets
 - 2) Process for access onto public assets
 - 3) Standardization of public smart infrastructure
4. Fibre deployment
 - 1) Fibre design and build to support Neutral Host and Small Cell 5G rollout

The originally identified **benefits** of this programme can be summarized as follows:

- Standardized deployment approach for LA's and Operators across the region, reducing resource and overheads
- Accelerated rollout of 5G across the region
- Reduced deployment time for 5G
- Cost savings for the both the LA's and Operators

The anticipated benefits and risks at the start of the programme were as follows:

No:	Benefit	Benefit Description
1	Standardized WM local authority processes which simplify the engagement with MNO's	Standardized points of contact, valuation, planning and wayleaves allow quicker and simpler engagement with MNO's, rolled out across the WMCA region. The LA's will save time and effort as a direct consequence (see table 17 for details)
2	Accelerated rollout of 5G across the West Midlands.	Increasing the speed of 5G rollout across the West Midlands will bring multiple socio-economic benefits as well as stimulating the market, fostering innovation and competitiveness.
3	Reduced 5G deployment costs for Operators	The standardized processes and collaborative approach between the Local Authorities and Councils will reduce deployment costs significantly (see table 17 for details)
4	MNO savings from rolling out barrier busting innovations developed as part of this Project in the West Midlands to the rest of the UK	Further cost savings for MNOs from replicating the WM approach to Barrier Busting across the UK. (Measurement probably beyond scope of this Project and not contingent on the success of this project given DCMS national barrier busting. Therefore, not included in the BCRs for the proposed Infrastructure Accelerator project)

2.2. Put the project in perspective, particularly for the sector(s) involved

Prior to the Infrastructure Acceleration (IA) workstream within WM5G there had been very little direct, if any, intervention with respect to accelerating the deployment of mobile telecoms networks. The government had provided a view and guidance to the public sector via the Future Telecoms Infrastructure Review (FTIR) in 2018 where they had expressed the desire to utilise public assets for the deployment of digital infrastructure, and to help drive the social, economic and environmental benefits of connectivity, for both citizens and businesses.

The government had also created the 'Connectivity Portal' to provide advice and supporting guidance documentation for Local authorities and industry, however this was largely focussed on the deployment of fixed fibre networks and not the Mobile networks.

WM5G created the IA workstream to specifically intervene, and to work with MNO's, Infrastructure Providers (IPs) and Local Authorities to accelerate the deployment of the 5G networks, this however has gone further and now supports 4G and other types of connectivity such as Internet of Things (IoT).

Intervention was successfully carried out in the four areas detailed in the previous section through two approaches:

- 1) Providing education and training to Local Authorities around the ECC, T&C Planning and how to make their assets more accessible to the Industry.
- 2) Providing direct intervention when there were issues and disputes, sometimes creating new ways of working between the parties to ensure a smoother way of working is achieved in the future.

Through our work and sharing the learnings and successes beyond the West Midlands it was clear that we were stimulating the market. MNO's and IP's were asking us to talk with other Councils and support in resolving specific issues or providing education and knowledge sharing. Also, other councils and combined authority regions were starting to replicate some of our work, such as installing Digital Champions and Coordinators or creating their own digital maps so that they could share assets with MNO's and IPs.

Following our work DCMS have launched two programmes that are a direct extension to the work we have completed.

- 1) The 'Local Authority Engagement Programme', where DCMS worked with the MNOs and IPs to identify LA's that may need support in terms of education and knowledge sharing. DCMS utilised the skills and knowledge built up through WM5G to help support this programme and to provide bespoke telecoms expertise.
- 2) Following on from the development of the Connected Map within WM5G, DCMS have now taken this concept further by launching and competition for 8 Pilots to develop a 'market place' platform that will not only offer the assets up in map layout, but will also aim to create the transaction between the two parties – the landlord (LA's in this instance) and the tenant (MNOs and IPs).

It is clear that the IA workstream has had a large positive impact on the deployment of mobile telecoms infrastructure and has achieved what it set out to do – accelerating 5G rollout. The learnings are now being taken further to create greater impact across the UK.

3. Description of what the project did and the results (points 3 & 4)

3.1. Overall description of the results, including key findings with supporting evidence (sent to DCMs separately in line with milestone evidence)

3) Neutral Host / Passive Sharing / Small market analysis, process and design

In July 2019, WM5G carried out a Neutral Host and Passive Sharing feasibility report which focused on small cell site infrastructure for 5G deployment with a specific emphasis on Neutral Hosting. It concluded that 5G requires significant densification of network infrastructure, and the move towards this provides opportunities for re-evaluating existing business models that yield capital expenditure (CapEx) and operational expenditure (OpEx) efficiencies. The report does not present Neutral Hosting as a new technical innovation, rather it adopts the approach that Neutral Hosting can be used innovatively. The maturity and proven effectiveness of Neutral Hosting is seen as a credible basis upon which to build the high-density infrastructure that is needed to support 5G, and that it is the most feasible approach in doing so, and that it is technically, economically, and environmentally feasible.

Almost 3 years later, there hasn't been a noticeable change in mindset across the market, and the majority of installs are passive sharing solutions.

WM5G worked with 3 Local Authorities and multiple industry players to develop a commercial model and process to address some of the issues described in the Small Cell workshop, that could be used for Local Authorities as a template. The technical design, process and solution has been packaged into 3 documents and shared on the WM5G website for use by all Local Authorities.

4) Small Cell Design Competition

WM5G worked with DCMS to run a Small Cell Design workshop on 18th March 2020.

The aim of the workshop was to find a way to investigate the technical design and commercial blockers and offer solutions, making future deployment of 5G small cells more practical and cost effective. The agreed approach was to invite a small number of key stakeholders that are involved in the Small Cell process to review and understand the issues, then provide solutions. We decided that this was the best way to approach the problem. A "competition" in the traditional sense wouldn't accomplish the desired result as there are only a small number of parties that could influence the design (e.g. equipment vendors, operators etc). The outcome was a series of actions, which were prioritised during the remainder of the project:

Physical design, visual appearance, and installation method:

- Open conversation with hardware vendors and manufacturers to ascertain whether a cylindrical shaped small cell, or wraparound shroud, can be developed in accordance with Small-Area Wireless Access Points (SAWAPS) regulations, such that wind loading on the pole is reduced
- Explore potential suppliers of 5G small cell products that are already in development and likely to be available for trial within 12 months at the latest
- Investigate options for deploying ground-based equipment in a concealment enclosure which is wrapped around the bottom of the pole
- Future proof lighting columns for Small Cells – continue to develop a standard specification with British Standards Institute (BSI).

Architecture and Backhaul:

- Investigate the architecture split of products in development, to understand the potential options for small cells with <1Gb/s backhaul, enabling use of mmWave rather than fibre to each cell.

Commercial and procedural issues:

- Investigate the private finance initiative (PFI) issues in more detail and work with DCMS and Department for Transport (DFT) to understand if there is a solution for Small Cell deployment
- Business case for Small Cells – evaluate opportunities for progressing a “Smart City” Commercial approach where Small Cells are only part of the scope, including fibre and sensors etc
- Review candidate areas for a Small Cell trial and socialize with the relevant stakeholders

5) Dense Urban Small cell trial

WM5G supported 3 Small Cell pilots across the West Midlands.

The first one was used as the template for the process and commercial model which has been shared on the WM5G website. This advertised an ‘Open Access’ Expression of Interest on a procurement portal then used a standard legal agreement to contract with interested parties.

The second developed a temporary contractual arrangement to facilitate the deployment of infrastructure on assets covered under a PFI agreement. This included temporary de-accrual of a small number of assets to facilitate additional connectivity in the region.

The third used a slightly different approach to use the precedent of an existing 4G microcell licence template to facilitate the install of small cells on LA owned infrastructure.

As of today, multiple legal agreements have been signed across the 3 pilot areas, and small cells have been installed in 2 out of the 3 LA’s.

6) Guidance and intervention with the LA’s and Operators on the ECC and Town and Country Planning

WM5G’s Infrastructure Acceleration Barrier Busting workstream commenced its region-wide programme in 2019. Since this time, the team have worked to facilitate collaboration and encourage engagement between the Mobile Network Operators (MNO) and primarily the West Midlands local authorities. The role of the Barrier Busting team was to hold and maintain an unbiased and neutral position, which is often referred to as an “*honest broker role*”. The team provide specialist expertise, support and guidance in the interpretation of the Electronic Communications Code 2017 and Town & Country planning to their seven constituent local authorities; MNOs; joint ventures; passive infrastructure providers; small cell providers and many local authorities throughout the UK.

WM5G supported local authorities in understanding and responding to DCMS' technical consultation on amendments to the proposed changes to the Electronic Communications Code and the General Permitted Development Order. The Barrier Busting team disseminated and presented the subsequent DCMS issued summary of changes to permitted development rights to the LAs, whilst supporting DCMS's commentary that they are designed to support the deployment of 5G and to extend mobile coverage within England.

Guidance was provided in the form of imparting and sharing of specialist industry based knowledge, providing regular Upper Tribunal case summaries, Teams presentations providing explanatory information of new and proposed case law and legislation, the value of adopting the National Planning Policy Framework 2019; creation of LA bespoke Code valuation process and the value of standardised documentation, whilst providing intervention through guided support in negotiations between the MNOs and LAs and mediation when barriers arose between the LAs and MNOs.

7) Standard LA and Operator engagement processes

Property.

Following the adoption of standardised documentation and the Code valuation process within the LAs property domain, a standardised engagement process was created, with WM5G facilitating engagement and compliance with Code requirements.

- 1) The process of engagement commenced with WM5G facilitating an initial meeting with both parties to discuss the MNOs proposal.
- 2) This was followed up with a written outline of the proposal and a request to access the LA's asset to undertake a site survey.
- 3) Once completed a set of drawings were produced and shared by the MNO to the LA.
- 4) The LA undertook a process of due diligence to ensure the asset was registered to the LA and suitable for new or upgraded equipment.
- 5) The MNO submitted Heads of Terms (HoTs) and legal undertaking to the LA.
- 6) Both parties agreed to proceed with the MNO's proposal.
- 7) Legal services instructed or WM5G fast track legal process.
- 8) Legal completed.

Town & Country Planning.

Following the adoption of the framework guidelines of National Planning Policy Framework 2019 (NPPF '19), with the guidance of WM5G, a standardised engagement process was created to manage the flow of the T&C planning process.

- The MNOs undertook an initial directed site search was undertaken via WM5G's Connected map or a physical search of the locality.
- Once completed a list of discounted sites and the reasons why they were not suitable was compiled along with the location of the preferred position with reasons why it had been selected.
- MNO produced a set of drawings and these are with a pre-application consultation submission to the LA's Town & Country (T&C) planning department.

- The LA consider the consultation submission and provide meaningful feedback and recommendations to the MNO.
- Whilst taking into consideration the consultation feedback, the MNO prepares and submits a formal planning application.
- Applications submitted under Part 16 of Schedule 2 to the Town and Country Planning (General Permitted Development) (England) Order 2015, as amended, states that prior approvals for telecommunications equipment may only be considered in relation to the siting and appearance of the development.
- The LA continues to engage with the MNO during the process and determines the application within the prescribed timeline.

8) Standardized wayleaves and lease agreements

The Barrier Busting team advocated the use of a simplified and standardised documentation.

Lease agreements that give communications network operators rights to access private and public land and buildings for network installation and maintenance are regulated by the Electronic Communications Code (the Code). The Greater London Authority (GLA) legal templates were drafted in conjunction with the Great London local authorities and MNOs (et al) and are intended for use by legal representatives of mobile network operators and their landlords. They can be adapted and are intended to provide a recognised neutral starting point for discussions, promoting common understandings of key issues for discussion.

The GLA agreements were shared by WM5G with the constituent local authorities within the West Midlands, with recommendation that they were reviewed and amended to suit the needs of each individual authority. All but one of the LAs in the region adopted these leases as their template documents and were used as precedent documents to enable a simplified and swifter legal process in agreeing terms with the MNOs.

Legal Wayleaves allow digital connectivity providers to install infrastructure in properties owned by others and to access it on an ongoing basis to carry out work. A standardised wayleave document was developed in partnership with many London boroughs and was adapted by regional local authorities within the West Midlands. By using a standardised template wayleave document, it has helped to reduce the time and cost whilst cutting down the legal process that delays connectivity in the region.

9) Alignment of Operator rollout plans with WM5G and Local Authority priorities.

Since 2020, the MNO did not issue rollout plans to either WM5G or the local authorities. However, WM5G did urge the MNOs to consider sharing this information to allow the local authorities to have an insight to the volume of forecast planning applications for both new and upgraded equipment. Likewise, this information would have been valuable for the property services department to forecast the level of resource required to manage new leases.

The MNOs reported that their rollout plans had been suspended as their forecast of new and upgrade sites had become fluid due to budgetary issues and complications with site ownership.

10) Identify and map public assets

Over 400,000 public sector assets were identified and mapped via various sources. The datasets included LA land & buildings, streetlights, CCTV poles and GTIP locations (Government Telecoms Infrastructure Project provided by the Office for Government Property). WM5G worked with Transport for West Midlands and the West Midlands Combined Authority to host the Connected Map on existing ERSI software utilising the Public Sector Geospatial Agreement (PSGA) licencing from OS.

In addition to the public sector assets - other datasets such as mobile connectivity (hotspots and notspots for 4G and 5G), fixed line data and areas of special interest were also added to the Connected Map.

The first tranche of data came directly from the LA's in point data format in excel files or via ePIMS, but feedback from the MNO's was that polygon format and building height would be required, so the focus switched to using OS PSGA polygon asset data. Data provided by the PSGA is ok to use for LA and public benefit, but there are question marks on the licencing arrangement if the data is used for private sector commercial gain. It took around 6 months to collect all the data sets, carry out data cleansing and iterating the versions until a sharable map was ready. All of the datasets require continual review and need to be updated on a regular basis.

The DCIA programme is a direct follow-on from the WM5G work. It will take the lessons learnt from the WM5G pilot and other sources to test and further enhance a platform to standardize as much of the commercials and contracts as possible.

11) Process for access onto public assets

The process for access on highways lampposts for Small Cell deployment has been clearly defined and tested with 3 Local Authorities in the region, including a PFI contract. The main lesson learnt is that there are multiple ways to achieve the same goal, with each local authority following a slightly different process. WM5G have produced a Case Study and detailed process to cover this process from a Local Authority perspective, this can be found on the WM5G website.

The process for access on public land and buildings has been clearly defined and tested with 6 Local Authorities in the region. The WM5G's Code valuation process is an auditable tool that accurately calculates the compensation element of payment due to a LA over a 10-year period. The process of calculating valuation is as prescribed within the Electronic Communications Code 2017. The main lesson learnt is that the use of standardised documentation (GLA legal template and GLA wayleave documents) as a basis for negotiations supports a simplified process with each local authority following a slightly different variation to establish a template precedent document. WM5G have produced a Case Study and a Code valuation process from a Local Authority perspective, that can be found on the WM5G website.

12) Standardization of public smart infrastructure

WM5G discussed how the British Standards Institution (BSI) could provide support to assess and codify associated best practice, relating to some specific aspects which had been identified in the West Midlands but have a national significance, based on engagement with a diverse set of stakeholders. The Infrastructure Acceleration team at WM5G was investigating the current approaches and future “smart infrastructure” plans in the region, including a focus on “street furniture” and in particular, lamp posts, as well as to gain a wider perspective of market thinking on smart infrastructure. BSI was engaged to advance this investigation and provide a wider national perspective, ultimately working towards a recommended approach for guidance and standardization that would address priority needs for key public and private sector stakeholders.

WM5G undertook three phases of work with BSI to ascertain the feasibility and demand for a Publicly Available Specification (PAS) for new and existing infrastructure.

Over a period of three distinct phases, BSI undertook research into smart infrastructure within the West Midlands and beyond. Each phase lasted for a 3-month period.

Phase 1 commenced in June 2019 (Q2 2019). The first phase investigated and gained an understanding of the existing models and requirements of street furniture, with a view to making recommendations for standardisation in future phases. This piece of work also looked outside of the UK for policies and programmes.

Phase 2 started in September 2019 (Q3 2019) when BSI were directed to identify a wide range of existing standards and specifications to determine the need for new guidelines or formal standards to enable Smart Street Infrastructure for 5G deployments. This review identified that existing standards did not specifically address Smart Street Infrastructure, which confirmed a gap in the availability of standards.

During Phase 3 (Q4 2020) BSI consulted with stakeholders and technical experts, via interviews and another workshop, to identify key opportunities and challenges requiring further attention and potential action.

The outcome of these three discovery phases was that there is a need for two separate (but linked) Public Available Specifications (PAS) to be produced. The first recommendation (R1) was to develop a new design specification for future smart lamp columns, and the second recommendation (R2) a guidance for the use of existing lamp columns.

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During Phase 3 (Q4 2020) BSI consulted with stakeholders and technical experts, via interviews and another workshop, to identify key opportunities and challenges requiring further attention and potential action.

The outcome was that there is no existing specification in the market and that there would be a clear benefit to take this scope forward. This workstream is now being progressed via the DCMS programme.

13) Fibre design and build to support Neutral Host and Small Cell 5G rollout

WM5G engaged the support of a fibre and business case specialist, to help investigate the options for greater deployment of fibre across the region. Initial investigations focussed on whether providing back haul for mobile operators and Neutral Host solutions would generate enough demand to create a business case and return on Investment that would warrant fibre deployment – It became clear that there would not be enough demand from these two areas alone to warrant standalone investment in fibre.

Our attention then moved to looking at which interventions may work to stimulate the deployment of full fibre across the region. It became clear that our focus should be to work with the Local Authorities as they had assets (Ducts, fibre, and PSN contracts) that were attractive to Fibre providers and could help draw in private investment to further help the deployment of full fibre across the region. We produced a detailed report that provided costs and solutions for 3 different scenarios to deploy full fibre across 5 of the 7 constituent authorities, the report highlighted that with the lowest cost scenario (utilising Openreach’s duct and pole access where available) the total cost would be £30m, with the LA contribution standing at £16m based on their current expense over the next 20 years, leaving a ‘gap’ to be funded of £14m. At the time the Government were ‘gap funding’ local full fibre networks (LFFN) projects and so this seemed to be an approach that could be possible, however DBUK have since removed any funding for urban areas which unfortunately means that most of the West Midlands is unable to claim any support from the Government.

Once the report was completed this workstream was stopped as it had carried out the initial assessment on whether 5G could drive a standalone business case for full fibre deployment.

A positive outcome of the report is that it has stimulated the Combined Authority and some of the local authorities to investigate further whether they can utilise their assets to drive investment into full fibre in some of the deprived parts of the region.

Summary of what was achieved against each of the strategic milestones:

No:	Category	Objective	Description	Measure	Achievement
1	STRATEGIC BUSINESS PLAN 1a) Testing models for cost-effective deployment of 5G infrastructure in highly populated, urban areas, and removing barriers.	Acceleration Feasibility	Analysis, feasibility studies, market engagement and options assessment for Infrastructure Acceleration completed.	Evidence documents submitted as part of Q1 DDA's	The feasibility and discovery phases were completed in the first 3-6 months of the project, creating a clear scope of work for the remaining programme

2	<p>This should help reduce commercial risks with investment.</p> <p>1b) Reducing risks associated with investment in 5G and relevant technologies.</p>	Barrier Busting Plan	<p>Programme of action agreed, and implementation started with the seven WM LAs to proactively support infrastructure acceleration (barrier busting), as described in DCMS guidance.</p>	<p>3 x processes (upgrade/new site/maintenance) detailing engagement between LA's and MNO's</p> <p>5 x guidance leaflets to assist LA's</p>	<p>This part of the programme was highly successful, providing education in the form of leaflets around the ECC and T+C Planning, summary documents of tribunal cases, and standardised documents like the GLA code agreement to commence intervention work. (The detailed information can be found via the Case Studies on the WM5G website)</p>
3		Barrier Busting Results	<p>LAs are demonstrating good practice in starting to operate in line with the new Electronic Communications Code (ECC) and town and country planning, in line with DCMS and WMCA letter to the LAs sent April 2019, including training of key people.</p>	<p>All 7 LA's In the WM area agreed to use the MNO engagement process.</p> <p>Minimum of 2 MNO's or MBNL/Cornerstone agree in writing that the process is an improvement on current practice.</p> <p>feedback that the process is smooth</p> <p>Train 50-80 Local Authority staff</p>	<p>This part of the programme was highly successful, providing education and intervention, implementing standardised approaches, agreements and processes to deliver accelerated rollout. In particular the Local Authorities in the West Midlands were some of the first in the UK to sign up to ECC compliant code agreements with multiple Infrastructure providers/MNOs. Across the WM LA's WM5G have provided training to 99 LA staff. Outside of the region we have trained 66 LA staff.</p>
4		Medium term strategic objective	<p>Demonstrate how to deliver a >30% reduction in deployment time for medium, difficult and very difficult 5G sites (c.70% of sites).</p>	<p>Baseline and measure the deployment times through the project lifecycle</p>	<p>This was a very challenging metric to measure, but through working closely with a Mobile Infrastructure Provider we were able to measure a standardised sub-set of sites, showing that a 4.5 month acceleration was being achieved in the West Midlands. This is a reduction of ~25%</p>
5		Long term strategic objective	<p>Evidence 20% more 5G sites (including upgrades) across the region than original plans pre WM5G</p>	<p>Baseline and measure the deployment times through</p>	<p>Again, a difficult measure as MNOs deployment strategies have changed from the start of the programme. There have</p>

				the project lifecycle	been 125 more sites deployed in the region, but largely by one MNO. This equates to ~10% increase.
6	<p>STRATEGIC BUSINESS PLAN</p> <p>4) Informing and testing West Midlands and national digital policy and regulation.</p>	Short term strategic objective	Identify the top 5-10 critical local and national policy issues (from a West Midlands perspective) blocking 5G and fibre infrastructure acceleration identified.	First draft included within Q2 DDA's MS4 & MS6 and continually reviewed through the project	Throughout the project WM5G have been fundamental in providing feedback into DCMS, which has driven some of the changes to both the ECC, Permitted development rights and also the Code of Practice. Locally we focussed on LA Digital Strategies to include Infrastructure, and the introduction of Digital Champions, Coordinators and Ambassadors, these being brought together through a regular digital forum.
7		Medium term strategic objective	Solutions delivered to address each of the critical policy issues enabling infrastructure acceleration.	<p>One solution delivered against each of the following policy areas;</p> <p>1) Barrier busting, 2) Fibre and 3) Neutral Host</p> <p>Report delivered to DCMS detailing shared infrastructure processes (including feedback from MNOs, service providers)</p>	<p>Comments as above.</p> <p>In the area of Barrier busting, multiple activities completed. Code valuation process, standardized agreements. Input into Planning and ECC consultations, plus detailed input into Code of Practice.</p> <p>Fibre – Moved towards utilizing public assets to secure funding for further full fibre deployment.</p> <p>Neutral Host – Focused on Outdoor small cells commercial and technical solution. This approach is now available for other LA's to follow as found in the Case studies on WM5G website.</p>
8		Long term strategic objective	Champion and deliver critical policy across the WM5G region, in partnership with LAs DCMS to lead on national policy analysis, development and implementation.	Based on lessons learnt, submit at least 3 processes and 5 guidance documents to DCMS which influence national policy	6 Case Studies have been developed to provide guidance to LA's and Infrastructure providers. Processes have been developed for Small Cell rollout and Code valuation. Public assets were shared through a Connected Map, which

					will now develop through the DCMS DCIA project. All Case Studies can be found on the WM5G website.
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4. Impact of the results including Benefits (in line with BR sheets – include KPI dashboard)

- 4.1. Narrative of key impacts and benefits of the trial, drawing on and/or referring to the Benefits Realisation return (no need to duplicate) and any other results to show
- i. How are the results better than what has come before?

WM5G created the Infrastructure Acceleration (IA) workstream to specifically look at interventions that would help to speed up the deployment of Public 5G networks. By intervening in a few critical areas, we have been able to prove that by taking positive action in the areas of the Electronic Communications Code, Town and Country Planning, making public assets more accessible and devising a commercial and technical solution for mass outdoor small cell deployment, we have been able to reduce the deployment times of both Small cells and Macrocells.

In the field of Macrocell deployment the Mobile operators have carried out deployment largely in the same way for the last 20 years. This is the first intervention of its type that has been able to prove a reduction in deployment timescales by ~25%.

- ii. How will the results affect your or someone else’s business?

The results have brought positive feedback for WM5G and acknowledgment that the work carried out by the IA team has had a positive impact for both the mobile operators, Infrastructure providers and Local authorities. All parties continue to ask for support and this is an area of future business development for WM5G.

Mobile operators and Infrastructure providers will have seen a reduction in timescales via our work and hence a reduction in overall cost.

Local authorities have seen 5G deployed more quickly across the West Midlands leading to the West Midlands Combined Authority region being named as having the best 5G coverage in the country of any CA area by network coverage specialists Umlaut. This acceleration of 5G can equate to a socioeconomic benefit of over £100m across the whole region.

- iii. Could similar results have been achieved without 5G?

The work the IA team carried out was driven by the initial deployment of 5G, but it has also positively impacted on 4G deployment, whether that was replacement sites, or new Small Cells. The key thing is that the 5G testbed and trials team and WM5G recognised that there were serious blockers to mobile deployment in the UK and wanted to change this. Having

easier deployment of digital infrastructure will ultimately mean more network can be deployed at lower cost and will lead to greater productivity and efficiency. When studying small cell deployment, it is clear that those countries with most cells deployed like China and South Korea have far simpler solutions and far less red tape to navigate in the deployment process. The aim of the IA team was to reduce some of this red tape by devising standardised approaches and processes that could be replicated across other local authority regions in the UK. Through sharing our work we have seen other local authorities replicate it and create benefit for their citizens and businesses.

iv. Overall summary of the IA benefits

The IA workstream generated a number of key benefits:

- a) Providing education and knowledge to the LA's allowed them to better understand the Electronic Communications Code, this meant that they were now equipped to engage with the MNOs and Infrastructure Providers (IP's). This mitigated any risk of the LA being taken to tribunal, unlike some other LA's and having potential legal costs in excess of £100,000.
- b) By creating a Connected Map with the LA assets listed (Land, buildings, lampposts, etc) it was possible to provide data to the MNO's and IPs in an easily digestible format. Once a useable asset had been identified through the map there was then a direct conduit into the correct person within the LA. It was stated by some IP's that the use of the map saved them between 3-6 months in time and effort.
- c) Through making the acquisition and deployment process easier on the LA sites by delivering the Barrier Busting education and intervention, developing and trialling the Connected map, and creating a new Small Cells commercial and Technical model, WM5G have been able to reduce the overall deployment times of ~ 6 months. The result of this work has meant that the West Midlands Combined Authority region has had the best 5G coverage of any CA region for the past 18 months – this has been independently benchmarked by Umlaut every 6 months.
- d) By reducing 5G acquisition and deployment timescales we have in turn created a number of benefits for both Operators and IPs – Reducing time brings an overall cost reduction – if this cost reduction is applied to every LA site across the UK, it could generate over £30m of savings for the MNOs and IPs.
- e) The final area of benefit is one of Social and Economic improvements, by accelerating the deployment of 5G it is possible to prove that the Socioeconomic benefits have been 'pulled forward', resulting in over £100m of social and economic value to the region.

4.2. This section should answer the 'So what?' question.

Through the work that WM5G carried out within its IA workstream it has been able to show great benefit and value. This approach has now been shared with over 50 Local Authorities through introduction meetings and knowledge sharing events, allowing some of those LA's to develop similar approaches, whether that is mapping their assets and making them available

to MNOs/IPs, engaging more freely and openly with operators on the Electronic Communications Code and Town and Country planning, or putting in place open access small cell agreements. What it does show is that the WM5G IA work has had a widespread impact with others replicating where they have the vision, will and resources. It is still fair to say that there is a broad spectrum of Local Authorities within the UK, some forward thinking and proactive, others where mobile telecommunications is seen negatively. This will change with further education and intervention. WM5G intends to offer support to Local Authorities and Operators through specialised service offerings in the future, which will help those who want to be helped.

DCMS have also recognised the good work done within this workstream and developed further projects to build on our work to date. The first piece of work is to develop British Standards for new Smart Lampposts and also the adaption of existing lampposts, the second is to build on the concept of the Connected Map, by creating the DCIA project which will see 8 LA's developing a 'market place' tool which will not only make the assets available through a map view, but also look to develop the transactional process of acquiring the site – this is effectively moving towards a 'click to buy' process for renting public assets for mobile networking equipment and sites.

Fig.1 Umlaut 5G Coverage comparison data – Data from the first comparison survey – Aug 2020

Combined Authorities: 5G%.

West Midlands ranks 1st in 5G geographical coverage.

	5G% geographical coverage	Tiles with 5G detected	Total # of tiles
Cambridgeshire and Peter..	0.01%	4	64,239
Greater Manchester	2.84%	2,517	88,474
Liverpool City Region	1.33%	686	51,562
North East	0.41%	253	62,198
North of Tyne	0.28%	150	53,870
Sheffield City Region	1.74%	1,100	63,275
Tees Valley	0.11%	36	31,513
West Midlands	7.34%	5,664	77,148
West of England	2.64%	950	35,969
West Yorkshire	0.98%	955	97,914

Fig.2 Umlaut 5G Coverage comparison data – Data from the first comparison survey – December 2021

Combined Authorities: 5G%.

West Midlands ranks 1st in 5G geographical coverage.

	5G% geographical coverage	Tiles with 5G detected	Total # of tiles
Cambridgeshire and Peterborough	1.91%	1,126	59,100
Greater Manchester	17.87%	14,594	81,650
Liverpool City Region	16.39%	8,172	49,856
North East	7.75%	4,460	57,566
North of Tyne	6.10%	3,330	54,549
Sheffield City Region	9.05%	5,448	60,175
Tees Valley	6.83%	2,094	30,642
West Midlands	21.92%	16,497	75,243
West of England	15.69%	5,248	33,440
West Yorkshire	14.88%	13,715	92,180

5. Key lessons learned captured to date

- a. This section combines lessons from the approaches used to provide the key take aways in a way that others could use to repeat the successes.

Through the UCC WM5G have captured in the region of 80 detailed lessons learned from the work we have conducted with LA's and MNOs. Below are some of the key lessons (Lesson summary and resolution) which we believe are most important and impactful:

Lesson Summary	Resolution
LA's do not have a good view of MNO's plans in their area, hence they struggle to support when large numbers of applications come in and there is often resistance from Citizens, members and officers through lack of awareness.	MNOs need to share rollout plans, site designs and constraints more readily with the Councils to provide awareness, allowing councils to mobilise the correct resources and to educate members and officers of telecoms development. This will build relationships and garner support for telecoms development
The T+C Planning pre-application process is often ineffective, with one or both parties not able or willing to implement it effectively.	MNO's/IP's and LA's should engage in dialogue at the commencement of any new rollout works, agreeing an approach for managing planning applications. This can be through the recognised pre-application process or through another agreed process. From our experience the most successful approaches are when the MNO/IP and LA engage in dialogue about the overall rollout, locations and design. The MNO/IP

	<p>then submits their applications - if the LA does not like the scheme they engage in dialogue to come up with a compromise solution. We have seen this approach work successfully in a number of different LA's.</p>
<p>Local Authorities do not have the telecoms skills or knowledge within the domain of the Electronic Communications code.</p>	<p>Provide them with regular training/education updates so that they are well informed around the T+C planning and ECC changes.</p>
<p>Overall the level of engagement between LA's and MNOs needs to be a lot better. High quality engagement on both sides is paramount to a collaborative relationship.</p>	<p>If the LA's and the MNOs/IPS had single points of contacts for sharing information and to resolve issues, then this would be a big improvement. These SPOCs in the LAs would also occasionally need technical support from an independent party (ideally a national body to provide a consistent approach) to support them in discussions with MNO's/IPS.</p>
<p>Where a LA has a Digital Strategy (that includes Infrastructure) or a separate Digital Infrastructure Strategy, they are in a far better position to support the deployment of digital infrastructure whether on their buildings, land or lampposts.</p>	<p>All LA's to be encouraged to produce a Digital Strategy that includes Infrastructure or a separate Digital Infrastructure Strategy. This will be ratified and approved by senior management and the members, so will speed up any decisions and align the whole council behind its goals.</p>
<p>Local Authorities that have Digital Champions, Coordinators and even Ambassadors are far more effective at improving the digital connectivity across their region. They provide the support for external parties to navigate the internal workings of the LA.</p>	<p>All LAs to appoint Digital Champions, Coordinators and Ambassadors. Government should consider providing some financial support to LA's to enable them to resource this adequately, particularly the Coordinator role.</p>
<p>Providing the LA assets data (mainly land, buildings and lampposts) in an easy to digest format for MNO's and IP's will speed up the process of deploying digital Infrastructure.</p>	<p>LA's to provide their asset data in a GIS map format for MNO's and IP's to view. They should also provide the contact details for the property and highways teams, so the identified assets can then be accessed for use. Note: The DCMS DCIA project will extend this concept beyond just a map but moving</p>

	towards a 'market place' where future transactions can take place.
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- b. Suggestions for policy, regulation or other things that may need adjustment arising from the programme.

From the IA work there have been many learnings which have fed into government policy and legislation, most notably the changes to both the Permitted development rights for telecoms, and the changes to the Electronic communications code. WM5G were able to provide real time feedback over the life time of the project to DCMS on what was happening 'on the ground' and how the MNO's and LA's have been working with the legislation, including the impact of some of the ECC tribunal cases.

WM5G provided both written feedback to DCMS in the form of quarterly reports, but were also able to present our findings at points within the project – our unique insight of being able to see 'both sides of the argument', enabled us to provide DCMS with an impartial unbiased view of what was actually happening, whereas the MNO's and LA's would always present their position which would be from just one perspective.

We were also able to provide feedback directly into DCMS on the changes to the Mobile Operators Code of Practice, highlighting where the existing documented practice was not always happening as it was written – this enabled DCMS to create a new document in a far more objective way being more aligned to what both Operators and LA's needs, whilst being cognisant of not cutting across other legislative documents. We actively supported each re-drafting of the document with both written and verbal feedback, our expertise and knowledge from the UCC enabling us to provide a factual non-biased opinion.

An area that has proven to be of benefit is that when Digital Champions, Coordinators and Ambassadors are in place within a Local Authority the ability to positively influence and progress digital infrastructure is great. These roles are important both internally within the LA, but also externally to industry and government – we have seen huge developments in the progress of digital infrastructure where these roles exist – Noticeably places like Glasgow, Sunderland and Wolverhampton. We would recommend that in the future the government provides an element of financial support to all LA's across the UK for them to provide as a minimum and Digital Coordinator. This should be supported by a central team of telecommunications experts who could provide support and guidance on both property and T+C planning legislation, interpretation of the legislation, updates in Tribunal cases, education sessions, and on occasion support by intervening where a dispute arises between a LA and a MNO or IP.

6. Financial end of programme requirements

All claims are based upon collating & submitting the associated information/evidence to DCMS on a quarterly basis following the agreed financial principles between the respective parties i.e. DCMS and WM5G, only when the evidence is approved, grant payment is made. In the final quarter of delivery, all evidence associated with each program / project is shared with DCMS and further information is available upon request as supporting evidence.

7. Benefits Realisation: (This has been covered in the earlier sections – 4)

Benefits realisation Throughout your grant funding period, each quarter you have been required to submit an updated benefits realisation spreadsheet tracking the benefits from the project. As part of project closure, the benefits realisation spreadsheet must be updated with the benefits from the project. This final submission will be fact-checked by DCMS to validate benefits being claimed.

Please ensure that all information in the tabs of the spreadsheet are up to date. Where possible, be clear about how the benefits link back to the deliverables or key milestones of your project.

For all lessons that have been learnt as part of the project delivery include these in the benefits realisation spreadsheet. Be specific about the type of lesson, the category, whether these can be published or not and key takeaways.

Action: Unless otherwise agreed, submit final benefits realisation return by 31 March 2022.

8. State aid and spend compliance

Being completed at a programme level for WM5G Andy Bateman/Towers Hamlins

DCMS requires projects to inform DCMS of their continued compliance with state aid; and confirm the treatment of assets purchased with grant funding in the project's life.

Projects are required to:

Provide written confirmation (Lead partner's assessment) of the project's compliance with the State aid approach and confirm there have been none or are no outstanding legal challenge(s).

To confirm whether assets (all capital assets and materials - excluding consumables) used for R&D have a residual value after the project ends (informed by project's final asset register (spreadsheet: see Annex 2).

Needs confirmation letter from Trowers or just confirm that each DDA was assessed?

Confirmation no outstanding legal challenges

Assets register Annex 2 – confirm blank?

Action 1: Provide written confirmation (Lead partner’s assessment) of the project’s compliance with the State aid approach and confirm there have been none or are no outstanding legal challenge(s). **Action 2:** Complete assets register (Annex 2) by 28 February 2022.