department for
culture, media
and sport

Mobile Infrastructure Project

Industry Stakeholder Engagement

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improving
the quality
of life for all

Our aim is to improve the quality of life for all through cultural and sporting activities, support the pursuit of excellence, and champion the tourism, creative and leisure industries.

Contents

Chapter 1: Introduction

In October 2011, the Government announced £150m in capital expenditure to improve mobile coverage and quality – known as the Mobile Infrastructure Project (MIP).This project is being run by Broadband Delivery UK (BDUK).

The objectives of MIP are:

- To improve the coverage and quality of mobile network services for the five to ten per cent of consumers and businesses that live and work in areas of the UK where existing mobile network coverage is poor or non-existent; and
- To extend coverage to 99 per cent of the UK population.

The government expects that the procurement will begin by spring 2012, and to complete the project by 2015. The procurement is dependent upon achieving consensus from the existing mobile spectrum licence holders and gaining State Aid clearance from the European Commission.

Audience

This document is aimed at potential bidders for the MIP procurement, Mobile Network Operators (MNOs), network infrastructure providers and operators, network equipment vendors, mobile network planners and backhaul providers. Specifically we are also seeking executives responsible for network investment decisions, particularly those accountable for planning rural coverage to respond to this request. Respondents are requested to only reply to those questions which they feel are relevant to them.

A separate engagement process will commence soon where Local Authorities and Devolved Administrations will be invited to provide their views on a number of important topics, including:

- How their local development priorities can be used to inform how not-spots are prioritised;
- What challenges need to be addressed in the acquisition of suitable sites on public land, what planning challenges exist and how best to address them sympathetically; and

- The ways in which communities and others can contribute towards the development and operation of mast sites (e.g. donations of land) to extend coverage in their localities.

Notes for respondents

Your responses will be treated in confidence and used by the MIP team to design an effective procurement and delivery process for the provision of additional mobile services to selected areas of the UK.

Please be aware that your responses may be subject to a request for information under the Freedom of Information Act (FOIA). If there are responses that you do not wish to be disclosed, please ensure each response is clearly marked and references the appropriate exemption under the FOIA.

Responses to this engagement will be used to shape the procurement process. We will also use them to consider the best approach to secure participation of the mobile industry – for example a form of industry agreement, or potentially licence changes in return for access to MIP infrastructure.

Overview

There is a growing recognition of the impact on and benefits to, economies and societies of mobile voice and data connectivity. Increasing the coverage and quality of mobile connectivity is needed to support business growth, extend access to key public services which are delivered online, and to bring an improvement in the mobile customer experience more widely across many parts of the UK.

There are areas of the UK where no mobile coverage is provided by any MNO and other areas where there is low quality coverage which results in a poor level of customer experience.

In certain areas of the UK, particularly rural areas, there is a limited commercial case for market-driven private investment to achieve an enhancement to coverage and quality of service.

The MIP team is part of BDUK. BDUK has been created within the Department of Culture, Media and Sport (DCMS) to be the delivery vehicle for the government's policies in this area. Further information on BDUK is available at:
http://www.dcms.gov.uk/what_we_do/telecommunications_and_online/7781.aspx.
BDUK is currently developing the delivery model and procurement options for the use of the available government funding, in order to develop or extend mobile infrastructure in areas where there is an insufficient commercial case. At this early stage of the project, several procurement options are under consideration, including:

(a) A “Serviced Site” approach which procures support infrastructure to enable increased mobile network coverage and service quality; or

(b) A “Wholesale Access” approach which procures both services and infrastructure to enable increased mobile coverage and service quality.

BDUK is also considering whether the MIP contract to be awarded following a procurement should be:

- A framework (either a single supplier or multi-supplier framework);
- A works or services contract;
- A single national contract or separated into lots (by geographical area or otherwise); and
- Used for purchasing on behalf of other contracting authorities.

Design principles

The following design principles are being applied to the project.

- To improve mobile voice coverage to outside of premises for the five to ten per cent of consumers and businesses that live and work in areas of the UK where existing mobile coverage is poor or non-existent;
- To enable the removal of ‘complete’ voice not-spots without converting them to ‘partial’ not-spots;
- To provide services to consumers and businesses using technologies compatible with the current population of subscriber handsets in use;
- To offer equal access to spectrum owners to any government funded infrastructure; and
- To make an appropriate and proportionate investment in mobile network infrastructure, subject to Value for Money tests.

Scope of Stakeholder Engagement for the Mobile Infrastructure Project

BDUK would welcome your comments and feedback in response to the questions in this document. Specifically, we are seeking your comments on three broad questions:

1) Not-spots - What and where is the problem?

2) Infrastructure - What assets or services should be procured and how?

3) Operation- How can utilisation of the assets procured be ensured?

Why the Engagement?

The MIP team is seeking your organisation’s views on the nature of the not-spot problem and the type of facilities and services to be procured in solving mobile not-spots.

We also recognise that we will need MNO support to deliver services using the new infrastructure procured as part of this project. Accordingly, we are also seeking MNO's views on the best way to obtain MNO commitment to deliver services for an extended period via the new infrastructure – either on a Serviced Site or Wholesale Access basis.

To be successful, the MIP project needs MNO support and active participation. The MIP team wish to have clarity on the mechanisms that could be used and an agreement in principle with the mobile industry prior to finalisation of the forthcoming 800MHz and 2.6GHz spectrum auction terms, so any costs of participation are clear.

Overall, we are seeking two outcomes from this engagement process. The first is input on how best to develop an agreement on participation between MNOs and government. The second is to inform an effective procurement for Serviced Sites or the procurement of services based on Wholesale Access.

Chapter 2: Definition of a not-spot, what and where is the problem?

The scope of the project in terms of the not-spots to be addressed with MIP infrastructure will be based on a list of not-spots that will be agreed with Ofcom.

Ofcom have to date collected data on not-spots when producing its Infrastructure Report[1] (published November 2011). Here 'complete' not-spots are defined as an area where no service provision is available from any mobile operator. Ofcom measured this in two ways – outside premises and geographically – to arrive at the percentage of premises and UK geography where signal strength was deemed insufficient to make a call[2]. The report highlights not-spots in parts of Wales, Scotland, Northern Ireland and a number of Counties in England (set out in Appendix C).

The Ofcom Infrastructure Report sets out a number of reasons why its signal strength based technical assessment of coverage may not fully reflect consumers' experience of mobile services (see paragraph 4.9 of the Ofcom Infrastructure Report). As a result, Ofcom recognises that while the level of signal strength used for the analysis provides a useful maximum level of predicted coverage in each area, it may, for a variety of service quality factors be set too low. Ofcom therefore intends to assess coverage at a range of different signal levels to give a more informed indication of consumers' actual experiences.

An important part of this engagement is to consider with industry the minimum consumer experience below which an area would be considered a complete not-spot. If the final definition of the minimum level of desired consumer experience extends the list of complete not-spots, then the not-spots within the increased geographic area of intervention may need to be prioritised to work within the available MIP funding.

The intention is for the project to enable the removal of complete not-spots which touch or surround as many premises, and potentially roads and frequented areas as is affordable. The MIP team is looking at ways to

[1] http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/bbspeeds2011/infrastructure-report.pdf

[2] Based on modelled received signal strength indication (RSSI) of -92dBM, where resulting coverage levels were determined by aggregated mobile operator data supplied to Ofcom.

assess the relative priority of these not-spots for the 'static' population (premises) as well as for the 'mobile' population along A-roads and B-roads, and in or around frequented areas such as national parks/tourist areas, where it is feasible and appropriate to do so. The objective is to ensure that new infrastructure is focussed in areas where the relative economic benefits are likely to be greatest.

The MIP team are also considering whether the MIP specification should:

- Make allowance for future data usage by specifying a suitable backhaul solution to cater for future growth in data usage; and
- Specify Wholesale Access where it is unlikely a location will support more than one set of network equipment.

Questions for respondents to consider are set out below:

Not-spots

Question 2.1: A definition of a complete not-spot is set out in the Ofcom Infrastructure Report, based on an RSSI of -92dBM. The MIP team are considering the case to define a minimum level of consumer experience which could expand the area of operation. Is setting an RSSI of -85dBm on roads and -75dBm in village areas as a minimum signal strength threshold the most appropriate way to define the project scope? What are your views on the levels set out here and are there any alternative RSSI levels or other measures you would suggest as a minimum acceptable service level given increasing customer expectations and greater reliance on their mobile devices?

Question 2.2(For MNOs) : If the above level for minimum consumer experience is used, what would the impact be on your current measured coverage in terms of premises and geographic area?

Future Proofing

The delivery of voice (and basic data) services is being used by the MIP team as a proxy to describe the minimum service required to meet the MIP objectives as outlined in Chapter 1 and as a commonly understood threshold. However, we also note the importance of 'future proofing' the investment to enable upgrades, for instance, to 4G services when available[3], which may influence the design and rollout of the procured solution.

Question 2.3: Is it sufficient to specify the requirement for a voice service and let the MNOs decide how best to support that service? It should be noted that one of the design principles is that MIP coverage extension should be compatible for the current and future population of handsets.

[3] There may, for example, be a link between the MIP infrastructure and Ofcom's proposals for a coverage obligation as part of the award of 800MHz spectrum.

Question 2.4: What are the implications of specifying a solution which will enable upgrades to high speed data services?

Question 2.5: To what level is it appropriate to specify the base station and connectivity (backhaul) needed to secure an appropriate evolution path for future services to be supported by the MIP infrastructure?

Granularity of data

For the Infrastructure Report, Ofcom analysed relatively granular data supplied by mobile operators (200m x 200m cells) to identify the number of not-spots in each authority area. It noted that aggregating this data at local authority level could mask localised coverage problems, particularly where not-spots are patchy in nature rather than contiguous. However, data at too granular a level may make it difficult to understand the true size of the problem and determine the most cost effective solution. The type of infrastructure solution adopted (e.g. macro, micro, pico, femto cell) is likely to influence the level of granularity required.

Question 2.6: How appropriate would it be to categorise the level of granularity according to different infrastructure solutions? If so, how might this categorisation be achieved?

Chapter 3: What do we expect to procure?

The Ofcom Infrastructure Report identifies complete not-spots clustered in Scotland, Wales, Northern Ireland and parts of England in the South West, North East and North West.

The appropriate infrastructure solutions to address these not-spots may vary from macro cells through to pico and femto cells. This is regardless of from whom and on what basis the elements of the solutions are procured, built, operated and maintained.

The MIP objectives could be achieved in a number of different ways, ranging from paying a subsidy to mobile operators to provide coverage, through to an investment by government in building Serviced Sites - a form of passive infrastructure open to all mobile operators and into which mobile operators would install their own network equipment (electronics and antennae). Serviced Sites could be provided in an appropriate location to serve one or more not-spots, where site facilities, power, backhaul, connectivity, cabinet and mast space were made ready and available for 'occupation' by all mobile operators. Our working assumption is that a Serviced Site would not include operator specific active equipment as this would be selected and provided by each MNO.

There could be at least one alternative to the Serviced Site concept where operators agree – subject to competition law – a local roaming agreement or other type of infrastructure sharing agreement rather than installing four sets of equipment.

Where a not-spot is small and covering a low number of customers, there may be the need to support the creation of a service based on Wholesale Access. Under this approach, the MIP would work with an existing licence holder to not only procure the supporting infrastructure, but also the necessary network equipment to allow provision of a full mobile (voice) service. This would create a wholesale service to be re-sold by all parties.

Market developments since 2009 have seen increasing use of site sharing solutions (typically 'passive infrastructure' approaches). For example Vodafone and O2's Cornerstone agreement and H3G and T-mobile's MBNL agreement. The recent merger of T-mobile and Orange, now Everything Everywhere, has also seen further network integration, including the emerging use of active infrastructure solutions. Localised roaming agreements in not-spots areas may also provide a lower cost and

therefore more viable economic solution. This approach has been applied successfully in France[4].

Delivery options

Question 3.1: What would be the benefits and challenges of these two options (Serviced Sites and Wholesale Access) for delivering additional coverage? Are there other possible approaches that could deliver the project objectives at better value for money?

Question 3.2: How can a service based on Wholesale Access be procured given it is reliant on spectrum held by mobile operators? How appropriate would it be to agree Wholesale Access rates based on current termination rates? Are there any alternatives to the use of current termination rates as a charging model?

Question 3.3: What level of infrastructure sharing is appropriate for meeting the MIP's coverage objective in the most cost effective way (for example mast/site/Radio Access Network (RAN) sharing and/or local/rural roaming agreements)?

Question 3.4: What factors are relevant in assessing the long term economic viability for MNO's in providing services to current not-spot sites? What are the variables that inform the commercial viability of such locations? How could the Government's capital funding, BDUK and the local bodies (Devolved Administrations/Local Authorities) assist in improving the commercial viability of these models?

The government is making capital funds available to 'extend' the physical network infrastructure, into areas where no mobile voice service exists. MNOs are expected to gain a direct benefit from this extension to the mobile infrastructure in less economically viable areas e.g. from a reduction in the total investment required to provide voice coverage, and then to roll out upgrades to these areas. In return, the government is considering what contributions the industry could provide in return for access to the new infrastructure. This approach may encourage more innovative solutions and help to incentivise mobile operators to work towards implementing a lowest cost solution.

Question 3.5: What is your view on the ownership and maintenance of government funded physical assets as part of this project?

Question 3.6: If an area is identified as a not-spot, what role could the government, community or local body play in securing an appropriate site to build the required base station (macro or micro)?

Question 3.7: In your experience, what specific planning constraints currently exist in the delivery of network infrastructure in any region of the UK? What is the best way to address these?

Question 3.8: How can the MIP ensure that incentives to existing coverage levels be maintained?

[4] For example, France's 'dead zone' programme targeting mobile not-spots saw operators build infrastructure in some areas into which they introduced roaming.

How could the requirement be procured?

There are several ways to construct a procurement to address the areas identified. At this point the MIP team considers the primary options for the procurement strategy to be:

i. A single national procurement, with a geographic scope covering the entirety of the UK and with DCMS as the contracting authority
ii. A single procurement, but structured into a number of regional lots, with DCMS as the contracting authority
iii. A small number of separate procurements, for example segmented by regional boundaries, with DCMS as the contracting authority
iv. A small number of separate procurements, for example segmented by regional boundaries, with relevant local authorities/devolved governments as the contracting entities
v. A separate procurement for Northern Ireland, with options (i) to (iv) for the remainder of the UK

The MIP team recognises that during the procurement process it may be impractical for bidders to work up detailed solutions and pricing for every identified not-spot. Accordingly, one procurement approach may be a requirement for bidders to focus on a sub-set of not-spots during the bidding process supported by a unit cost framework/rate card which is applied to delivery of any other not-spots solutions.

Question 3.9: What would be the benefits and challenges of these procurement strategy options?

Question 3.10: What alternative procurement strategies could deliver a better value for money outcome for both industry and government?

Chapter 4: Realising coverage improvements, securing MNO participation

The government is committed to improving coverage in areas where it is currently poor or non-existent. It is essential to the success of the MIP that MNOs support the government's investment in new infrastructure by providing services at or occupying the procured Serviced Sites as soon as possible, and for the medium to long term (minimum of 10 years). It is also essential that the MNOs support any service using Wholesale Access where it uneconomic or impractical to deploy multiple sets of network equipment.

There are a range of mechanisms available to secure this support:

- Industry led agreements, possibly led by the procurement winner;
- A contract or Memorandum of Understanding (or similar), possibly led by government; or
- Variations to mobile licences in exchange for access to funded sites.

These approaches are not necessarily mutually exclusive.

Early determination of the preferred approach will be required to provide greater certainty for the procurement process. This will help to ensure value for money solutions are achieved (and to guard against the risk of 'white elephant' or 'stranded asset' sites).

MNO participation

Question 4.1: What mechanism(s) should be adopted by the MIP to secure provision of services by mobile spectrum owners at the procured Serviced Sites?

Question 4.2: Where Wholesale Access is deemed the most appropriate solution to a not-spot, how does MIP secure MNO commitment to ensure the success of such a service?

The government recognises that some MNOs may wish to provide services from some but not all of the procured sites. However, to bring the greatest benefits to consumers and promote wider consumer choice, the government is keen to ensure that consumers can access services from all the procured sites regardless of their choice of network operator.

We wish to procure a solution(s) which will enable and require all mobile operators to access all procured Serviced Sites and sites from where Wholesale Access is the optimum solution. We are proposing to seek a

commitment from each MNO that they will deploy services or agree local roaming agreements. Where a service based on Wholesale Access is procured, MIP is looking for all MNOs to support the wholesale service and agree commercial terms potentially based on today's call termination rates.

The MIP team believe that an open access approach for all MNOs across all Serviced Sites, will also enable a 'pooling' of operating costs across all mobile spectrum holders, thereby reducing the operating costs for each operator individually across the Serviced Sites. Access to Serviced Sites would be available to other providers of public communication services on an equivalent basis.

Question 4.3: If a formal industry agreement is used what form should it take?

Question 4.4: (For MNOs only.) Are you prepared to commit resources to help establish any industry agreement prior to the auction?

Question 4.5: If a formal link is established between the proposed 800 Mhz spectrum slot with the coverage obligation and the use of MIP sites; how would this impact on your decision to participate in the MIP project?

Delivery

Question 4.6: How would your organisation actively support a mobile service reliant on Wholesale Access?

Question 4.7: If Serviced Sites began to be available from early in 2013, at what rate (sites per month) could MNOs begin deploying services to them? How long would you expect it to take to rollout to:

a) 1000 macro sites;

b) 2000 macro sites;

c) 2000 small cell sites; and

d) 5000 small sites?

Additional comments

Question 4.8 Are there any additional comments you wish to make?

Thank you for your time to complete and respond to this questionnaire. The MIP team hope that this will enable us to design an effective procurement and deployment of an appropriate solution.

Chapter 5: Next steps

In order to meet our overall timetable, the MIP team would like to receive your responses by 10th February 2012.

For your convenience the questions have been summarised in Appendix A. Please could you provide your responses in electronic format using the Word template provided to the project mailbox which is

MobileInfrastructure@culture.gsi.gov.uk

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Appendix A: – Summary of questions

Chapter 2: Definition of a not spot.

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Question 3.5: What is your view on the ownership and maintenance of government funded physical assets as part of this project?

Question 3.6: If an area is identified as a not-spot, what role could the government, community or local body play in securing an appropriate site to build the required base station (macro or micro)?

Question 3.7: In your experience, what specific planning constraints currently exist in the delivery of network infrastructure in any region of the UK? What is the best way to address these?

Question 3.8: How can the MIP ensure that incentives to existing coverage levels be maintained?

Question 3.9: What would be the benefits and challenges of these procurement strategy options?

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Appendix B: Glossary of terms

FOIA Freedom of Information Act

MIP Mobile Infrastructure Project.

MNO Mobile Network Operator.

Not-spot Areas where there is no mobile coverage as reported in the Ofcom Infrastructure Report, October 2011.

Partial not-spot Areas where there is coverage from one, but not all operators.

RSSI Received Signal Strength indicator, a measurement of power present in a radio signal. In mobile telephony RSSI is measured in – dBm.

-dBm an abbreviation of the ratio measured in decibels (dB) of measured power referenced to one milliwatt (m). It is one factor in determining the availability of a functional mobile service.

Serviced Sites A location where the passive infrastructure (cabinet, power, mast, and connectivity) is ready for a network operator to install its network equipment and antennae.

Wholesale Access An arrangement where an MNO permits other operators to use its facilities or originate calls.

Wholesale Service a mobile service where a single (active) network infrastructure is put in place and is then re-sold by all operators.

Appendix C: Areas with not-spots

Initial analysis of local bodies with greatest number of complete not spots as identified in the Ofcom Infrastructure report published in November 2011

Northern Ireland
Scotland
Wales

Cheshire East
Cornwall
Cumbria County
Devon County
Derbyshire County
Dorset County
Durham County
East Riding of Yorkshire
Herefordshire, County of
Lancashire County
Northumberland
North Yorkshire County
Redcar and Cleveland
Shropshire
Somerset County
Staffordshire County
West Sussex County
Wiltshire