

## USO Designated Provider

### Introduction

Broadway is pleased to respond to Ofcom's invitation to register its interest to be a Designated Universal Service Provider for broadband services.

Broadway believes that its own commitment 'to connect the unconnected'; its pioneering experience of TV WhiteSpace radio deployment; its pragmatic approach to the use of low-cost small cells, of existing passive infrastructure, and of innovative commercial models; its participation in the DCMS Better Broadband and 5G Pilot schemes; and the quality of its institutional investor backing – all combine to make Broadway uniquely qualified to act as a Designated Service Provider for broadband in its chosen areas.

In its commitment to 100% connectivity, and to building for scale, Broadway has in effect acted as the default provider of broadband services wherever it has chosen to operate – and seeks to extend this role across the broader geographies of Scotland and Wales.

### Geographic Areas

5.3 Please provide information on which geographic areas you are interested in being designated as the Universal Service Provider. If you are interested in providing the USO on a sub-national basis, please specify the regional areas – based on local authority boundaries – where you are interested in being the Universal Service Provider.

5.4 Our *Connected Nations Update: Spring 2018* data contains a list of local authorities and the number of premises in each of these areas that cannot receive services that deliver 10 Mbit/s download and 1 Mbit/s upload sync speeds. A link to this data can be found in Annex 3 of this document.

**RESPONSE:** Broadway wishes to become the Designated Services Provider of broadband services in the following local authority areas in which it either currently operates or intends to operate imminently:

- ✓ Angus
- ✓ Argyll & Bute
- ✓ Ayrshire
- ✓ Fife
- ✓ Highland
- ✓ Perth & Kinross
- ✓ Stirlingshire
- ✓ Moray
- ✓ Aberdeenshire
- ✓ Caithness
- ✓ Sutherland
- ✓ Orkney
- ✓ Shetland
- ✓ Monmouthshire

Subject to broader discussion and agreement on terms with important relevant stakeholders – such as BT and Axione in a R100 context – Broadway would be happy to consider becoming the Designated Service Provider for the whole of Scotland and Wales.

## Delivery of the USO

### Checking that premises are eligible to receive a USO connection

5.5 A Universal Service Provider may receive numerous requests, in different geographic areas, at the same time. This may particularly be the case when consumers are first able to request a USO connection.

5.6 We are keen to understand how you would manage requests for USO connections and assess which premises are eligible for connections. Please provide any information relevant to your assessment of whether a premises:

- a) falls within the definition of eligible premises (fixed location which is a residence or place of business);
- b) does not (and could not) already access a connection that meets the USO specification;
- c) would not be covered by a publicly-funded broadband rollout programme in the 12 months from the request being made; and
- d) would cost under £3,400 to provide a USO connection, taking account of the extent to which the cost of providing a connection could be shared between multiple locations.

5.7 In particular, we are interested in understanding your approach to modelling take-up, sequencing requests and how quickly you will be able to respond to requests from consumers. Where possible please support your response with experience from previous network infrastructure deployments.

**RESPONSE:** Broadway already runs its business as if it were a provider of Broadband USO wherever it is active – at present, across its networks on Arran, around Loch Ness, in Perthshire and in Monmouthshire. Broadway's corporate mission is 'to connect the unconnected', and the company has, since its inception, had a commitment to provide broadband services to 100% of the population in whichever area it operates. While fully recognising the challenge that this imposes on the business, both technical and financial, Broadway believes that the cost is justified by the legitimacy that a 100% obligation (whether self-imposed or not) confers on the business.

Broadway is confident that it has the tools to deliver to the ambition, in particular:

- A leading expertise in the deployment of TV WhiteSpace radio, based on Broadway being the first company in the UK to deploy TVWS commercially (on the Isle of Arran in Scotland, in 2016);
- A holistic view of the overall profitability of a population cluster, balancing the easier to serve with the more technically challenging;
- A pragmatic view of technology options, using a mix of wireless technologies appropriate for the particular geography and terrain, and a variety of backhaul options, including making maximum possible use of existing Openreach infrastructure;
- A vertically integrated approach, offering retail services on our own infrastructure, that minimises organisational friction and internal transaction costs; and
- A partnership approach to building the ecosystem – such as local authorities, large corporates as anchor customers – as a means to minimise demand risk and thereby lower the required returns from any particular investment.

### Checking that premises are eligible to receive a USO connection:

Broadway assesses areas for potential future investment on both a demand-led and investment-led basis,

and is experienced in the systematic analysis of investment prospects, partly based on the founder's 30-year experience as a City financial analyst specialising in telecoms. Prompted by initial registrations of interest from individual householders, community groups or Council broadband executives, demand 'heatmaps' are screened against a more rigorous analysis based on a wide variety of data inputs:

- Previously disclosed 'NGA White Areas', postcodes and premises;
- Demographic information, derived principally from the relevant Index of Multiple Deprivation (SIMD and WIMD);
- Postal addresses and precise Latitude/Longitude data for individual premises, sourced from the Post Office's AddressBase database;
- BT Cabinet data, providing the location of cabinets and the postcodes which they serve, from PointTopic, supplemented by crowd-sourced data verification;
- Terrain and tree data, from [Ordnance Survey and the National Tree Database....], under subscription from BlueSky Data.

Broadway would apply this systematic modelling methodology to the assessment of whether individual premises are eligible to receive a USO connection.

For specific assessment, Broadway would access the following data sources:

5.6 a) falls within the definition of eligible premises (fixed location which is a residence or place of business);

**Data Source:** Post Office's AddressBase file to determine its UPRN and Lat/Long coordinates, with a visual confirmation via GoogleEarth.

b) does not (and could not) already access a connection that meets the USO specification;

**Data source:** Broadway would expect to use a variety of data sources, including the address-level network information and information published in Ofcom's Connected Nations reports, and Ofcom's speed-checker (<https://checker.ofcom.org.uk/broadband-coverage>) to check basic sub-10Mbps availability. To complement these sources, Broadway would also make reference to the Post Office's AddressBase file to locate the premise's UPRN and precise Lat/Long coordinates, cross-checked against BT's cabinet location, to check the physical distance from the BT pop, whether fibre-enabled cabinet (FTTC) or exchange-only (ADSL).

c) would not be covered by a publicly-funded broadband rollout programme in the 12 months from the request being made;

**Data source:** Broadway would expect to make use of Ofcom's own database of ongoing and planned public procurements, as well as Digital Scotland's Superfast and R100 and WelshGov's Superfast Cymru relevant coverage checkers. Broadway would also work with the relevant local councils to identify/verify those premises that are subject to ongoing Government procurement and intervention.

d) would cost under £3,400 to provide a USO connection, taking account of the extent to which the cost of providing a connection could be shared between multiple locations.

**Data source:** Broadway would draw on its past experience of deploying rural networks across multiple locations in Scotland and Wales. As suggested above, it is in Broadway's DNA to seek pragmatic and holistic solutions to the challenge of rural broadband deployment. Using a combination of off-the-shelf (and therefore relatively inexpensive) unlicensed 5Ghz radio in line-of-sight situations and the more expensive

TV WhiteSpace radio in non-line-of-sight situations; through its use of innovative deployment models (including the use of small cells and existing physical infrastructure); and through the targeting of anchor customers (councils or corporates), Broadway is able to lower the average cost of network deployment to a level that minimises the need for public subsidy.

However, Broadway recognises that, in the past, its chosen areas of network investment have been carefully selected and pre-screened, such that the company's investment bias has inevitably been towards lower cost/higher return opportunities. In a USO context, clearly a different cost and return threshold applies. In the access network, the 'worst case' deployment scenario involves the use of a dedicated TVWS transmitter and a single TVWS receiver, to serve a single premise – say, buried within a group of trees, beyond the reach of conventional radio. At current equipment prices, the hardware cost alone of such a configuration is of the order of £3,000 (£2,200 for the transmitter and £800 for the receiver and router), with up to £500 of mounting brackets and installation labour costs.

This of course does not make allowance for the possible need, if the premise is particularly remote, to extend any 'core' network to within a mile or two of the premise in question. In the worst case scenario, this additional network extension could entail the use of additional single or multiple relays, very possibly each requiring their own autonomous power units. This would clearly inflate the cost of deployment to well beyond the £3,400 cost ceiling, in which case Broadway would engage with the customer and other stakeholders to explore different funding or cost-pooling arrangements.

An alternative approach would be for Broadway to deploy TVWS radio in a backhaul mode (the principal deployment model used by Microsoft in Africa, to extreme low density areas), in which case the technology can relatively easily support link lengths of more than 5 miles.

In general, Broadway is comfortable with the proposal that shared cost calculations (and therefore cost recovery) be based on the basis of projected take-up, rather than allowing, say, six months to elapse to allow actual demand to be aggregated.

In short, Broadway is confident that, in virtually all situations, it could maintain its costs at a level that is consistent with the £3,400 cost ceiling; where very rare exceptions, Broadway would seek to minimise the 'excess construction charge' levied on the customer, and would do so in a way that is consistent with the principle of fairness, efficiency and transparency.

## Technology and Network Build

5.8 We are interested in understanding how you would approach designing and delivering the USO in areas in which you are designated, including:

a) which technologies you would use to deliver the USO in the areas you have identified and how you would ensure they meet the technical specification in all cases;

**RESPONSE:** In the **access network**, and as suggested, Broadway employs an innovative mix of access radio technologies, perfectly suited for the delivery of Broadband USO – conventional unlicensed 5Ghz radio in LOS situations, and TV WhiteSpace in non-LOS. Broadway has unparalleled experience of deploying TVWS radio, following Ofcom's liberalisation of the spectrum on January 1<sup>st</sup> 2016. Following a period of test and development with first-generation equipment from Adaptrum, Broadway has successfully deployed second-generation equipment on its Loch Ness and Perthshire networks, from Canadian company 6Harmonics and US company HuWoMobility, that aggregate multiple TVWS channels to deliver download speeds of more than 50Mbps.

Broadway is also beginning to deploy 60Ghz radio in the access network, to allow it to offer ultrafast speeds to business custokers as part of the DCMS/BDUK Gigabit Voucher Scheme.

While the requirements of the current iteration of the USO specify a download speed of only 10Mbps, it is helpful to know that even the current generation of TVWS equipment provides a significant migration path to higher speeds, even in the most remote and inaccessible situations. Subject to the availability of adequate backhaul, Broadway is quite prepared and able to offer download speeds to USO recipients of many times the minimum 10Mbps, subject to appropriate costs.

For the **core network**, Broadway uses a mix of unlicensed 5Ghz radio and licenced microwave.

For the **backhaul network**, Broadway uses a mixture of leased line, GEA and bonded VDSL products from Openreach and other third-party providers.

As part of Broadway's involvement in the 5GRIT 5G Pilot programme, supported by DCMS, it will be monitoring, testing and evaluating the performance of its mixed unlicensed, light-licensed and shared-spectrum networks with a view to receiving NGA approval for its wireless networks, expected by the end of calendar 2018.

b) what the main steps and timeframes are to provide a connection (including both network infrastructure build and customer connection phases) using the technologies you are likely to deploy, including any information which affects these timeframes;

**RESPONSE:** In this response document, Broadway is registering its interest to become a Designated Service Provider in a selected group of local council areas across Scotland and Wales. By definition, therefore, the company is already operating 'in area'.

Accordingly, Broadway will follow its existing established and proven processes to network deployment and customer connection. In our experience, there are three distinct coverage scenarios:

**Scenario 1.** If a USO request is received in an area that is already 'covered' by an existing core network and an access node: an initial desk-based analysis is undertaken (using Broadway's ATDI network design software) to determine whether the installation is likely to be a LOS (5Ghz or 60Ghz) installation, or a NLOS TVWS installation. This triggers an engineering jobsheet which is sent to the most appropriate local contractor to complete the installation. This would be considered a completely routine installation, and should take no more than 4-6 weeks to complete from receipt of initial USO request.

**Scenario 2.** If a USO request is received in an area that is already 'covered' by Broadways' existing core network, but there is no usable access node: an engineering request form is completed and submitted for the construction of a new relay, with the above procedure followed to determine whether LOS or NLOS equipment is to be used. This would also be considered a routine installation, subject to standard internal processes, and could be expected to take 6-8 weeks to fulfill, allowing for additional design work and site-share acquisition.

**Scenario 3.** If a USO request is received in an area that is not already 'covered' by existing core network. In this case, Broadway follows its tried and tested process for screening new network investment – the 'Doorman' process.

Step 1 – Doorman Stage 1: desk-based analysis of the relevant terrain, premise and cabinet data. This will determine the 'economic context' for the individual USO request – for example, is there a cluster of adjacent properties that is also likely to benefit from new network deployment? Is there an existing BT FTTC in the vicinity from which Broadway can directly access fibre?

Step 2 – Doorman Stage 2: further desk-based analysis, using ATDI design software, to provide preliminary Bill of Materials (BOM), from which an assessment can be made as to whether the USO request (together with any adjacent premises) will fall under the £3,400 cost ceiling.

Step 3 – Doorman Stage 3: the preliminary software design is then subject to design ratification via a field

survey carried out by one of Broadway's engineers.

On the basis of Broadway's past experience, this more extended process could require up to 12-24 weeks to complete, given the dedicated design work involved, and the likely requirement for new backhaul and site-share agreements.

If, subject to satisfactory discussion and agreement with BT or Axione, Broadway takes on the USO Designated Provider role in other council areas, there may be a slightly extended preparation phase, while Broadway and BT or Axione agree respective responsibilities.

c) how your resourcing needs and costs might change in order to provide connections at a faster rate.

**RESPONSE:** Broadway considers that the timescales indicated above reflect a proven, refined and well-oiled internal process within the company, and already represent industry-leading performance for rural areas. However, if an even shorter time to deliver were required, additional resource could be contracted in, with fully allocated costs likely to inflate individual per-premise cost by ca. £500-£1,000.

5.9 Where possible please support your response with experience from previous network infrastructure deployments.

**RESPONSE:** Broadway has acquired extensive experience of screening prospective investments, designing and deploying networks, and connecting customers, across its rural networks on Arran, on Loch Ness, in Perthshire and Monmouthshire. On the basis of its previous experience operating in extreme remote locations, Broadway can confidently claim that it understands the key cost drivers behind rural broadband deployment to an extent that essentially de-risks the rollout of broadband USO.

## Quality of Service

5.10 We expect that premises connected under the USO will receive the same quality of service levels as premises elsewhere in the UK. We would also expect prospective Universal Service Providers to meet the standards of the automatic compensation industry scheme. We would therefore be interested to know what quality of service levels (e.g. repair lead times) you would offer were you to be designated as the Universal Service Provider.

**RESPONSE:** consistent with its commitment to providing high quality broadband to 100% of the population wherever it builds networks, Broadway undertakes to provide a uniform quality of service to all customers, regardless of physical remoteness.

Our Terms and Conditions (<https://www.broadwaybroadband.co.uk/terms-conditions>) sets out the service commitment to its customers, and we would expect these T&Cs to apply equally to the recipient of service under the USO scheme.

Broadway is a member of CISAS, the Dispute Resolution Scheme service.

## Pricing of USO Connections and Services

5.11 The Order includes requirements for USO connections and ongoing charges to be priced affordably and uniformly. Please provide information on the services you would expect to offer to premises connected under the USO and how you intend to price connection and ongoing charges.

**RESPONSE:** as with its commitment to uniform quality, Broadway is committed to providing uniform pricing

across all regions. The company is equally committed to transparency and simplicity in its pricing, with a standard charge of £35 per month (including VAT) for its superfast service (£29.99 per month for a 24-month contract), with no data cap. A connection charge of £240 (including VAT) applies, although this is waived if the customer qualifies for the Better Broadband Voucher Scheme.

Broadway recognises that its standard offering (minimum 30Mbps) is well over the 10Mbps requirement of the USO scheme, and that, in those very rare circumstances where Broadway is unable to provide a 30Mbps download speed, it is willing to provide a 10Mbps service at reduced fee. It is therefore open to the idea that a reduced fee could apply to those customers that insisted on taking a service closer to the 10Mbps minimum, even if Broadway were able to provide a 30Mbps service.

## Complaints handling procedures

5.12 Universal Service Provider(s) will have to manage complaints specific to the USO, for instance relating to eligibility disputes, the time taken to build network infrastructure or the quality of the connections and services. We are interested to know how you would handle the potential increase in complaints numbers as a result of USO specific complaints, and what procedures you would intend to follow to resolve these complaints.

**RESPONSE:** As suggested, Broadway is committed ‘to connect the unconnected’ and it has built its organisation from the outset to support this ambition. In management’s view, there is no fundamental difference between a customer seeking service under the USO scheme, and one requesting service on a more conventional customer/supplier basis – they are all customers, with a slightly different set of payment mechanisms.

Broadway has had several years’ experience of working within the BDUK Better Broadband Voucher Scheme, so is already familiar with the requirement to invest in processes to support a more complex transaction. As a Designated Service Provider, Broadway would expect to have to invest in additional customer support resource – not because it would expect a massive increase in transaction volumes as a result of becoming a Designated Service Provider, but rather because it would expect individual customer interactions to be more complex. Anecdotally, management is well aware of the greater sense of entitlement that can prevail amongst customers when public funds are being used to support network rollout, and fully expects that this would be even more the case where the service request fell under the USO.

## Financial and governance arrangements

### Corporate structure and management

5.13 Please provide evidence to demonstrate that you have the expertise, capacity and experience to be able to effectively deliver the USO in the geographic areas that you have expressed an interest in.

**RESPONSE:** As indicated, Broadway’s corporate mission is ‘to connect the unconnected’, so the provisions and requirements of the Broadband USO are effectively embedded in its corporate DNA: this is what we are in business to do.

The management team is deeply experienced in its chosen area of rural broadband. The company was founded in 2011 to explore options for delivering fibre-to-the-home in rural areas, and gained significant experience of the public procurement/State aid process through its involvement in the Rural Community Broadband Fund (RCBF) scheme.

In 2015, the company set out on a new corporate direction following an introduction to Microsoft, the

global sponsors of TVWS, and Strathclyde University's Centre of WhiteSpace Communications, with a commitment to providing high quality, affordable broadband even in the most remote areas, using a hybrid combination of 5Ghz and TVWS radio. This led to the first commercial deployment of TVWS in Europe, on the Isle of Arran, in 2016.

Management has always been committed to scaling the business, recognising that the first generation of 'Mom & Pop' wireless ISPs were never likely to be sustainable at small scale. Since receiving significant institutional funding in February (see below), the management team has invested significantly in engineering resource and network design capability, as well as in organisational support processes, to support the company's ambition to extend its reach to the entire UK – and internationally – over time.

Management believes that it is the combination of its fine-grain granular approach to network design and deployment, and commitment to scale, that makes it almost uniquely qualified to manage the challenge of broadband USO.

Because of its previous experience working with the Better Broadband Scheme, as well as more recently as a member of two consortia (5GRIT and 5G Rural First) participating in the DCMS 5G Pilot programme, management is confident that it has in place the internal financial systems and controls that will be required to act as a DSP, particularly with respect to cost allocations and claims processing.

From a governance perspective, management believes that the investment by Souter Investments has ensured a high standard of corporate governance.

## Sources of funding

5.14 Please provide evidence to demonstrate your ability to effectively finance the delivery of the USO in the geographic areas that you have expressed an interest in, recognising that there will be a lag between network infrastructure build and any cost recovery.

**RESPONSE:** Broadway is wholly confident in its ability to fund its Universal Service Obligations, thanks to the supportive role played by its key institutional investor, Souter Investments. Souter's Initial investment in the company is intended to support the 'scaling up' of the business, and Souter and its network of investors has indicated its/their willingness to support additional investment, if required. References are available on request.

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