GREATER BRIGHTON ECONOMIC BOARD	Agenda Item 14

Subject:		**Greater Brighton Full Fibre Connectivity**	
Date of Meeting:		**16th October 2018**	
Report of:		**Chief Executive, Mid Sussex District Council**	
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LA(s) affected:		**All**	

FOR GENERAL RELEASE

1. PURPOSE OF REPORT

1.1 This report proposes that the Greater Brighton Economic Board commits to working alongside other bodies, for example the C2C LEP, and neighbouring authorities to bring full fibre connectivity to the area and wider sub region.

1.2 The approach outlined would be innovative and offer enormous potential to the economy. It could be a signature priority for this Board over the medium term and be something that helps define the area's economic ambitions.

1.3 Greater Brighton aims to bring jobs and prosperity to the area; to make the Greater Brighton City Region the most successful economy in the South East connected with London. However, the area has failings in its traditional infrastructure which are disadvantaging business and productivity.

1.4 We know that the GVA in our area is falling behind other comparable areas and that while we must, of course continue to lobby for all the investment our area needs, there may be advantages to an early focus in new, full fibre infrastructure[1] to stimulate productivity and investment in the area.

1.5 Studies have shown that the economic benefits of full fibre infrastructure are significant in terms of productivity and innovation increases: 2.5% after 5 years, 5% after 10 years and 7.5% after 15 years.

1.6 Full fibre infrastructure has the advantage of being very significantly cheaper to construct (£/m) than other, more traditional infrastructure (road, rail and buildings).

1.7 Full fibre (once installed) is also largely invisible, which means it fits well with our beautiful and highly protected landscape. Once in place, it also benefits rural and urban areas, indeed it could help address some of the inequality rural areas often face.

1.8 There is now an opportunity for us to clearly and decisively take the current opportunity and on the development of a full fibre "super spine" for our area and the wider sub region.

[1] Full fibre describes an internet connection that is entirely served by a fibre optic cable, from the exchange all the way to the end user. This is also known as Fibre To The Premises (FTTP)

1.9 This ambitious approach could be a clear priority for GBEB and something we could vigorously support alongside our partners in the LEPs, Education, business and local government. It could also help define the area in terms of its economic ambitions and priorities. The proposals have the potential to mark us out and put us ahead of all other regions in the UK.

1.10 Investment in a new standard of full fibre broadband connectivity would make Greater Brighton the first area of the UK with full 21st century full fibre infrastructure. The goal is to provide a world-class digital network capability that can help deliver high productivity gains across all sectors of our economy.

1.11 This approach supports and complements the existing activity in the area to deliver full fibre and coordinates with recent bids to the Government's LFFN Wave 3 programme for example by Brighton and Hove City Council, East Sussex County Council, and the Coast to Capital (C2C) LEP.

2. RECOMMENDATIONS

2.1 That the Board support the opportunity to join other partners in the sub region and prioritise the development of full fibre digital infrastructure for the Greater Brighton area and work cooperatively to secure funding opportunities to achieve this aim.

2.2 That the Board notes the contents of the report and the activities of partner authorities and expresses its support for the development of full fibre digital infrastructure as a part of the economic development approach for the sub region that is entirely consistent with the Government's Industrial Strategy.

3. BACKGROUND AND CONTEXT

3.1 This report highlights an approach to accelerating investment in and deployment of new digital infrastructure. The aim is to ensure not only that the infrastructure is technically capable, but also that its construction and operation plays a direct role in developing the regional economy, supporting competition and innovation.

3.2 Greater Brighton is one of the fastest growing city regions in the UK with a strong knowledge-based economy. However, the Board receives the consistent message from businesses that under-investment in infrastructure blocks growth and prevents inward investment. Without the required level of investment, the full growth potential in the area will not be achieved.

3.3 The area's economy is an interconnected network of functional economic hubs each with its own distinct sense of identity. What they have in common is significant strengths in technological and knowledge-based sectors which require ever faster and reliable digital connectivity both in the UK and beyond.

3.4 Through its Industrial Strategy, the Government has expressly focused on building a 'full fibre future for Britain' to deliver a digital infrastructure capable of providing today what the next generation will need tomorrow. This means connecting premises with fibre and not copper or coaxial connections.

3.5 Despite the demand and potential economic benefits of full fibre deployment, the area lacks the fibre density in access networks and backhaul to ensure that local businesses have access to the infrastructure they need to innovate, differentiate and add value, so increasing the pace of economic growth. Increased speed and capacity from 5G will rely on higher frequencies and network densification. Without more high capacity fibre, carriers will be unable to support the projected minimum four-fold increase in mobile data traffic.

3.6 To attract investment into our business infrastructure and the subsequent creation of more high value local jobs, full fibre coverage across our area is essential. Fundamental enabling technologies will be crucial for the future success of the area and for unlocking the full potential of 5G.

3.7 To address the demands of businesses for the future we need a supporting infrastructure in the same way that manufacturers need a road, rail and shipping network to distribute their goods. But to gain the maximum advantage for the area also means ensuring adopting an approach to the market structure that supports local development with opportunities for local business, SMEs and public sector. This means these organisations taking part, not just in using the service that the infrastructure makes possible, but in creating those services, investing in and helping to build the infrastructure, operating and maintaining it.

3.8 Most importantly this can deliver a significant uplift in productivity and innovation for the area. It can be achieved in the short term and with low levels of investment compared to other infrastructure projects.

3.9 Key partners, including C2C LEP, Network Rail Telecoms and local authorities across the region are forming a 'coalition of the willing' to advance the plan. The geographical scope of the project will depend on that coalition and the funding that can be attracted.

3.10 The approach requires funding, some of which has already been sourced through the Local Full Fibre Network Fund (LFFN) Waves 1 and 2, with expressions of interest going to Wave 3 and the bid from West Sussex authorities to retain 75% business rates and re-invest them in a full fibre super spine.(see paragraph 5 below).

4. SPINE NETWORK

4.1 The proposed approach is to develop a new access network to accelerate investment in and deployment of further new digital infrastructure by reducing barriers to investment in full fibre access networks and new wireless technologies. A spine network is a high capacity fibre network that allows other lower capacity access networks to link to it. The capacity of the spine network and proximity to it dictate where fibre can be built economically. By using the fully open access, shared, spine fibre routes that will connect parts of the region, suppliers will be able to extend networks out on a commercial basis where currently there is lack of supply. This infrastructure will be able to support different types of initiatives, for example:

- neutral exchange points that will serve as focal points to grow the existing digital sector and to attract new development;
- commercial build in cities, towns, hamlets around the spine route (enabling both fixed and mobile wireless technologies, particularly in rural areas);

- self-build projects with mobilised business and residential communities to extend the network into harder to reach areas, previously too expensive;
- town and city centre connectivity initiatives e.g. fixed wireless technologies such as Wi-Fi, small cell 4G installations and mobile wireless technologies such as 5G.

4.2 The spine network will connect a number of towns and is scalable, capable of being extended to the wider region. A key principle of the design is that it will be open access, available to all, thereby overcoming the barrier to local initiatives to create new infrastructure. Market testing with suppliers will be conducted to establish the detail of service offering (e.g. duct access, fibre access), the optimum design of routes, the most suitable delivery routes. Options under consideration include, among others, the dedicated build on roads and lower cost alternatives such as cycle routes and abandoned railways, as well as the option of collaborating with Network Rail.

4.3 The core design could link towns to provide a cross county backhaul route. The section between Burgess Hill and Brighton to the east of the county is already under consideration with wider partners working with the C2C LEP.

4.4 There are a number of projects starting or underway that aim to address full fibre connectivity. They are summarised in paragraphs 5 and 6 below. This paper is recommending that those projects are supported, enabled and extended through investment in "super spines" as outlined above.

5. WEST SUSSEX RETAINED BUSINESS RATES PILOT

5.1 All the local authorities in West Sussex have already agreed to work together on the approach to securing full fibre infrastructure outlined in this report. Further, the authorities have submitted a bid to Government to pilot 75% business rates retention.

5.2 If the pilot bid is successful, the West Sussex authorities have agreed in principle, that the majority of the retained business rates should be re-invested in the development of full fibre 'super spines' as outlined in this paper. The retained business rates available could be in the order of £15m. There is now an opportunity for the GBEB to develop its own contribution to this work.

5.3 Full fibre networks typically have asset lives of more than 20 years and present longevity of investment and a greater opportunity for return in a market where demand is increasing.

5.4 The pilot will invest retained business rates growth to facilitate and expand further commercial investments in digital connectivity across the area. The aim is to create a regional spine network that connects towns across the region. The "spine" will not connect individual premises but will provide a scaffolding to support investment in, and deployment of the "access networks"[2] that would connect individual premises to a full fibre network. The aim is to ensure not only that the infrastructure is technically capable but also that its construction and operation plays a direct role in developing the regional economy, supporting competition and innovation. The route will be subject to detailed design and market testing, however creating one or more resilient spine "loops", that can be scaled up or down within the county and the wider region is an option.

[2] Access Network: the connections that cover the final metres to reach businesses, homes and 5G cells

Urban clusters

5.5 The countywide West Sussex Gigabit project, (a collaboration with all West Sussex local authorities and DCMS), aims to deliver gigabit capable connectivity to the public sector. However, it may also attract further commercial investment in full fibre networks if digital infrastructure suppliers see opportunities for wider investment in the county. This would support the expansion of key urban clusters across the county into gigabit towns and cities. Linking these gigabit urban areas together could create a platform capable of innovation and expansion of next generation technology. Full fibre is a hygiene factor for this expansion, availability of backhaul is crucial. The spine will address this as it will be open access i.e. accessible to all digital infrastructure providers and service providers, allowing investors to gain entry to, or expand their markets without incurring the most expensive part of the engineering, the cost of deploying ducts all the way back to the core points of inter-connection.

Rural reach

5.6 The geography of Sussex provides a number of challenges and opportunities. Some areas within the Areas of Outstanding Natural Beauty and the South Downs National Park have historically been difficult to serve in terms of broadband connectivity given the challenging terrain and long distances involved, along with the low density of premises. These areas have effectively suffered from market failure and have also been too costly to reach through the BDUK[3] publicly funded fibre roll-out. This has impacted the ability to unlock the full potential of the rural economy and will limit access to crucial enabling technologies in the future (for example for agritech).

5.7 West Sussex County Council has been working on the rural connectivity agenda for some time, however a constraining factor is the availability of accessible backhaul in these areas that makes connections to the remaining areas cost-prohibitive. A spine build in the county complements the current rural initiatives by reducing the cost barrier of access, thereby reaching more businesses.

City/town centres

5.8 The town centre experience is becoming vital to the survival and continued popularity of many locations up and down the country. The use of town centres is changing, whereby they are becoming a destination and meeting place where leisure is beginning to dominate over the retail offer (ref The Grimsey review[4]). Part of the leisure experience involves the ability of visitors to interact with their friends and share experiences with their peers via instant social media such as Twitter and Instagram. The local authorities within West Sussex have set out a number of strategic plans and objectives in their respective “growth deals”[5] to adopt this type of digital offer.

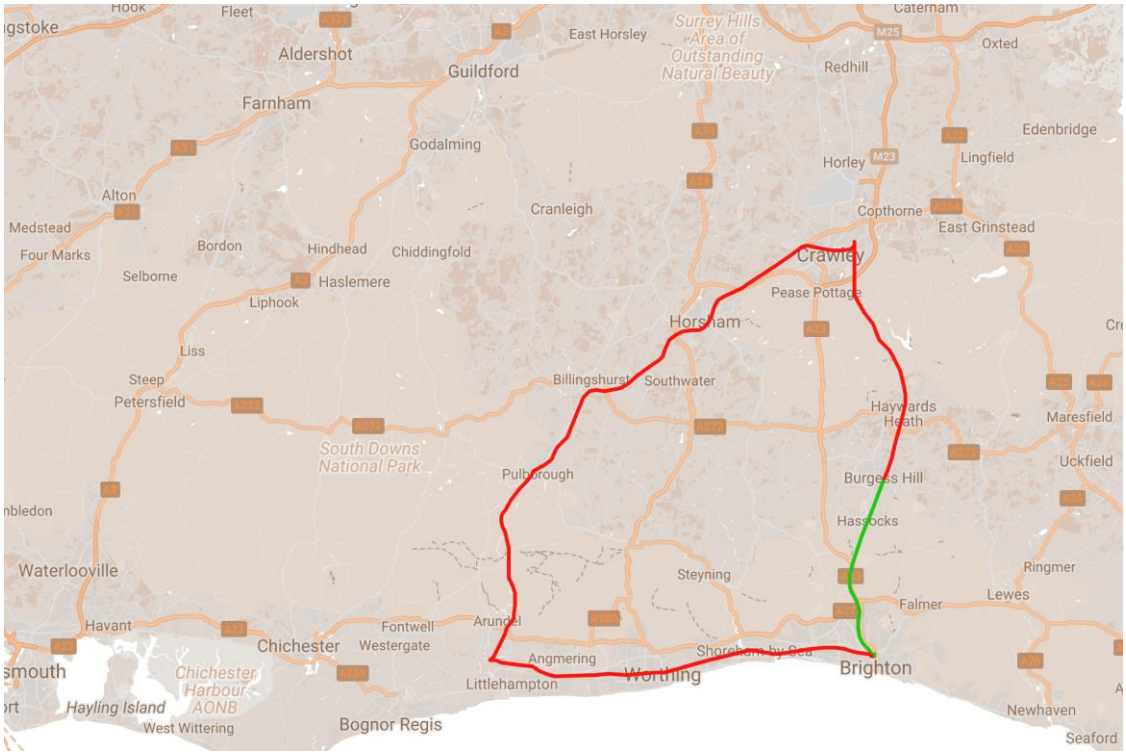
[3] Broadband Delivery UK, part of the Department for Digital, Culture, Media and Sport, is delivering superfast broadband and local full fibre networks to the nation

[4] The Grimsey review (2018) highlighted the importance of town centre Wi-Fi in helping develop modern adaptable town centres, with the ability to survive in an ever-changing retail world

[5] 5 year partnership pledges that have been made between the County Council, district and borough councils and others that bring local improvements for residents, businesses and visitors

5.9 The potential spine routes for the West Sussex Retained Business Rate Pilot are being evaluated and early examples are shown below as an illustration. These are built alongside railway lines, and cost estimates are provided on that basis. They could be provided though other routes including road digs. A partnership with Network Rail Telecom could potentially allow fairly rapid and cost-effective deployment. The cost illustration at the end of this document assumes up to £100/m.

5.10 Figure 1. Loop spine



5.11 Other options exist for low-cost deployment. Cycle routes, particularly those using abandoned railway lines offer a very low cost alternative. Similar deployments have achieved costs as low as £10/m. The cost illustration at the end of this document assumes £20/m to deploy along the Downs Link connecting Guildford with Shoreham.

5.12 Brighton & Hove also has an emerging specialism in ICT and Digital Services, a sector which has seen rapid growth in recent years. This higher value sector is being prioritised for growth nationally, and therefore represents a considerable economic opportunity for the city as highlighted in the city's draft Economic Strategy. The city also has a growing number of bespoke research and innovation facilities which mark it out nationally. The Digital Catapult Centre is undertaking innovative research into immersive tech, and is one of the only places in the UK where 5G technology can be accessed by start-ups. The Digital Exchange in Brighton is a business cooperative working to improve digital infrastructure and services. This strength in digital industries acts as a draw for investment in digital infrastructure that should benefit the entire city region.

5.13 BHCC is in the process of submitting a Wave 3 bid to the Local Full Fibre Network Challenge Fund (LFFN) with a proposal to take gigabit capable infrastructure to 190 public sector sites to create a new 91 Kilometre fibre access network. This fibre access network would change the economic profile for connectivity to ultrafast+ bandwidth services for over 92,000 residential and business premises across the city The proposal will place c.3,600 businesses within 50m and c.8,000 businesses within 200m of the new network.

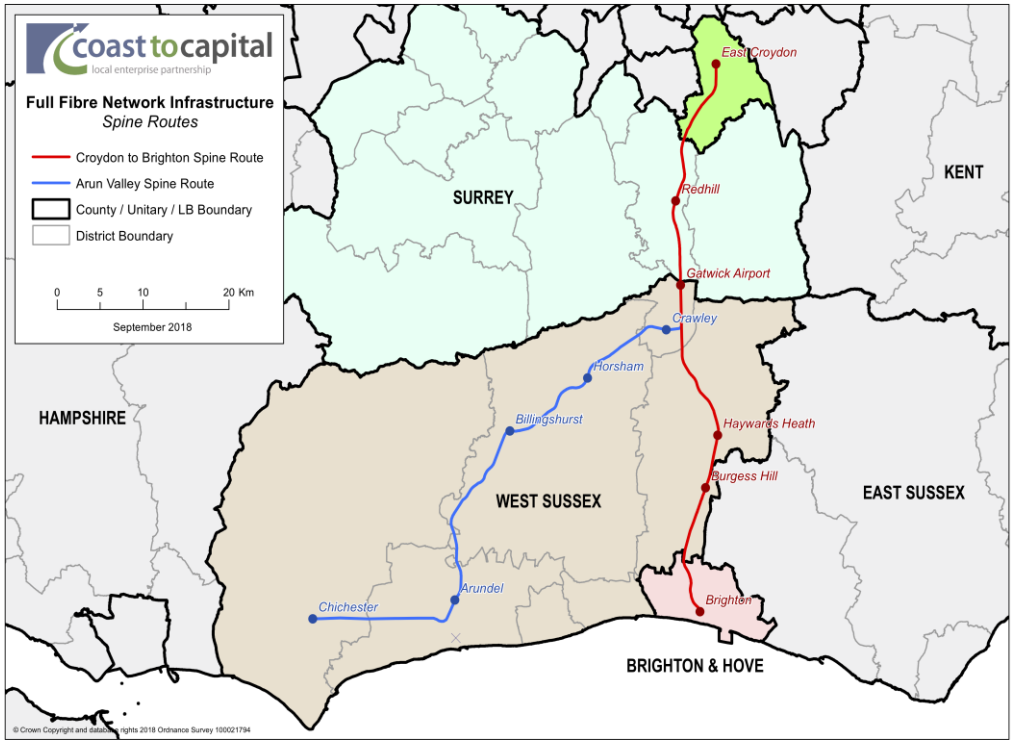
6. C2C WAVE 3 EXPRESSION OF INTEREST

6.1 The C2C LEP intention is to extend the spine across the rural heart of the county and enable access networks to be built at appropriate break out points. A number of routes are under discussion, including the Arun Valley Network Rail line as shown in the map below, cycle paths and a mix of carriageway and cross country dig to connect Chichester and Crawley via Horsham.

6.2 A rural West Sussex Chichester to Crawley route would effectively create a design that could join up with Brighton via the coast to form a West Sussex full fibre loop.

6.3 The South Downs National Park, along with the High Weald are areas that will fall within the final percent and have only partially benefited from the BDUK superfast roll out. These areas are particularly challenging due to the limited availability of open infrastructure and/or the low density.

Figure 2. C2C LEP Proposals



6.4 This would leave the onward connectivity between Chichester and the south coast of the County, the final piece that would potentially close a “small loop spine” that could also be extended to include Brighton. This loop topology may provide additional benefits to local suppliers in particular the ability to source resilient connectivity.

7. HOW WE CAN ACHIEVE THIS?

7.1 The commercial model for making these assets available to the market are being considered and will also be the subject of further market testing. The key principles are that all assets will be made available to all market players on equal terms, and that access will be charged at market rates.

Cost illustration

7.2 The costs below are for illustration purposes only. A full cost model will be worked up alongside the detailed design including project costs and on-going running costs:

Infrastructure	Elements	Estimated costs	Details
Small loop spine	115 km loop	£11,500,000	linking key areas within WSCC
Large loop spine (not illustrated)	215 km loop	£21,500,000	includes smaller loop and is extended to wider areas including Brighton, Surrey, Hampshire
Additional/alternative build	60km cycle routes, disused railway	£1,200,000	Downs Link Cycle route
Town local spine network	local loop around a town	£1,500,000	Cost per loop
DX-PoPs	based on 5 towns	£750,000	points of presence for digital exchanges linking to network
Digital Exchanges	based on 3	£1,500,000	
Framework	professional services	£350,000	legal, technical support to deliver a framework that facilitates driving out the benefits of the investment e.g. develop models and toolkits to facilitate expansion of the network

- Based on the cost assumptions, an investment of between £16.8m and £26.8m to secure a full fibre spine in our region that can be scaled up or down.
- £16.8m represents the *small loop spine*, cycle path build, at least one local town spine, the DX PoPs and Digital exchanges as well as the Framework.
- £26.8m represents all of the above and the *large loop spine* within the region which offers the potential to work with wider partners in the region now or in the future.
- The design is flexible and reflected in the costs which are scalable up and down.

7.3 These can be funded using a combination of sources. Where public funds are used to create new assets these will:

- Provide public sector with new opportunities for cost savings and public service transformation.
- Be shared with private sector on a market basis, without the application of state aid or any kind of subsidy.

7.4 A collaboration framework can be designed to achieve a number of objectives:

- Make it easier for local authorities to launch their own initiatives, for example to use local assets such as CCTV ducting to help build out a local network, or to obtain and effectively deliver against funding from sources such as the Government's Local Full Fibre Networks programme.
- Provide local authorities with ready-made legal mechanisms to reduce investment barriers, such as way-leaves, or to engage property developers.
- Make it easier for communities of businesses and citizens to co-invest in new infrastructure that will improve connectivity, without getting locked in to a particular provider. This could include the use of Gigabit Vouchers and community initiatives such as crowdfunding to provide fibre connections.

7.5 The framework can provide a toolkit with ready-to-use models, pre-established vehicles and legal mechanisms to support rapid delivery. This will put within reach fibre and 5G connections to towns and villages across the region at a pace that is not possible now.

Framework

7.6 The framework can provide a toolkit with ready-to-eat models to support local authorities, other public sector bodies, private sector investors, operators, SMEs and citizens in taking local initiatives.

7.7 The toolkit will use models already proven or being piloted elsewhere. The plan will establish the vehicles and bodies needed to make these models work:

- Asset-sharing mutual[6]: providing an effective way for public and private assets to be shared while remaining in separate ownership. Private and public bodies would gain access to shared fibre spine networks to support investment in access networks.
- Dig-once: an approach to providing new ducting assets created during construction and regeneration projects, utility and transport infrastructure upgrades[7].
- SME/citizen co-investment vehicle: a crowd-funding vehicle to invest in new access networks. SMEs and citizens can invest their own funds as well as connect premises in the region: it provides a scaffolding to support investment in and deployment of the networks that connect premises.
- Gigabit vouchers in new, co-owned infrastructure[8]. A model used to connect villages to fibre currently being used in the North of England.

7.8 Additionally, the framework will offer legal tools and templates. These tools are designed to provide maximum flexibility:

- For private network operators and investors to reduce costs with straightforward commercial access to shared assets such as the superspine. The framework complements existing initiatives and developments.

[6] Being piloted in Tameside, as part of the Wave 1 of LFFN
[7] Being piloted in Mid Sussex as part of Wave 2 LFFN
[8] Using a similar model to B4RN which connects villages in the north with fibre

- For public sector bodies to re-use and share their assets or invest in infrastructure to meet needs.
- For business, citizens and public institutions such as schools to take their own initiatives where the market has been slow to deploy.

8. CONCLUSIONS:

8.1 Members of the Board are asked to support the approach outlined in this paper and consider the development of full fibre digital infrastructure for the Greater Brighton area as a key priority within the emerging 5 year strategic plan.

9. FINANCIAL & OTHER IMPLICATIONS:

Financial Implications:

9.1 There are no direct financial implications as a result of this report, however, indicative set up costs ranging from £16.8m to £26.8m for the full region are detailed in paragraph. 7.2. In the event that this is adopted a fully costed model will be worked as well as funding options explored. This may include public sector as well as commercial investment options being considered.

Finance Officer Consulted: Rob Allen, Principal Accountant
Date: 04/10/18

Legal Implications:

9.2 The Board is just being asked to express support for the development of full fibre digital infrastructure. There are therefore no legal implications arising directly from this decision. Clearly those authorities involved will need to consider the legal implications associated with delivering the infrastructure. If, in the future, the Board is asked to make further decisions and / or commitments to progress the delivery of full fibre infrastructure, the legal implications will be considered at that time.

Lawyer Consulted: Alice Rowland, Head of Commercial Law
Date: 04/10/18

Equalities Implications:

9.3 None

Sustainability Implications:

9.4 None

Any Other Significant Implications:

9.5 None