The challenge of financing the deployment of next generation broadband networks in the United Kingdom and the Civil Infrastructure Utility concept.

BSG Discussion Document
December 2003

Executive Summary

- The CIU hypothesis is that by decoupling the cost of civil infrastructure from the cost of technology it may be possible to find a more efficient way of financing the deployment of next generation broadband services in a pro-competitive way, which could allow for their timely widespread deployment across the UK, without the public sector having to bear a significant proportion of the risk.

- This discussion document explores some of the underlying assumptions behind the hypothesis and highlights some of the issues that would need to be addressed to take the CIU from concept to reality.

- Significant progress is being made in the deployment of current generation of Broadband services through various initiatives and mechanisms. The CIU concept is unlikely to play a role in deployment of the current generation broadband services.

- There are considerable dangers in trying to predict demand for next generation broadband and the timescales for that demand. Much more sophisticated demand analysis would be required to support the investment case for CIU.

- However, the issue of how the UK's broadband infrastructure evolves is of important economic significance for the UK. The transition to next generation networks is likely to require the deployment of further fibre in the access network. The cost of civil infrastructure is a significant barrier to fibre deployment.

- Other countries are addressing this barrier either through subsidies or regulatory incentives in order to stimulate investment ahead of the demand curve. However, it is not evident that the UK government or OFCOM would be willing or able to provide subsidies or regulatory incentives similar to those provided in Korea, Japan or even the US. A 'third way' may be required to overcome potential investment barriers in the UK.

- It is appropriate to discuss these issues now and begin to think about how the UK intends to address them, rather than wait until they become 'critical', even if we conclude that further action at this point would be premature. The UK needs to consider the implications of international competitors being 1 or 2 generations ahead in terms of broadband deployment.

- The CIU concept presents threats and opportunities for all operators and may be seen as an unwelcome intrusion in the competitive landscape. Most operators remain appropriately sceptical at this stage of the case for a CIU approach.

- The CIU concept provides one potential approach to the challenge of financing the deployment of next generation broadband services in the UK. It is still not clear how viable the concept would be from a demand, finance or regulatory perspective and much more work would be required to take it beyond the conceptual stage. The BSG has taken its exploratory work as far as its capabilities, capacity and role allow, however, it believes there is justification for further examination of its potential. The issues related to how it could be implemented are difficult but not impossible to address.

1. Background

When the Broadband Stakeholder Group started to consider, in 2001, how the Government's objectives to increase broadband take up and widen broadband availability could be achieved, it reviewed the various barriers to infrastructure provision, particularly for local access networks. It was also looking to find a model that would not just widen availability but also allow competitive access facilities to be available more extensively against a background of difficult capital markets.

In summary, it was looking to maintain the Government's desire for facilities-based competition without the need to replicate every element of the local access network and to make more effective use of the available capital. This led to primary infrastructure (otherwise referred to as civil or passive infrastructure) being considered separately from networks (i.e. the transmission system using copper, optical fibre or wireless spectrum) and the services that use the transmission path. An early conclusion was that the capital cost of primary infrastructure represented a significant barrier to more extensive competition at the local level.

This conclusion was based on an understanding that civil engineering work (ducts, masts, collocation sites etc.) represent 60-70% of the cost of newly built fixed communications network and about 40% of the cost of a wireless network. In other words, civil works absorb a huge amount of money and steer capital into digging rather than innovative services and applications. However, it is entirely possible for network operators to share this civil infrastructure with no adverse impact on competition or the quality of their services.

In parallel, a similar conclusion has being reached in other fora within Europe and there was an alignment of approaches during 2002 when the various options were further developed.

During 2002, the BSG developed a recommendation that third parties (i.e. non telcos) should be able to provide such civil or passive infrastructure and provide access to communications network providers on non-discriminatory terms. This concept was supported by Government and led to a provision within the Communications Act 2003 to allow 'electronic communications network code powers' to be awarded to such providers. We now need to consider the next stage in more detail; i.e. what is involved in taking the concept to reality.

2. The CIU hypothesis

Demand for bandwidth is likely to continue to increase over the next decade. To meet this demand it will be desireable at some stage to deliver the next generation of broadband services as widely as possible across the UK. To do this it will be necessary to take fibre closer to the end user (ie in the access network). However, the very high costs of digging to deploy new fibre could make the rapid roll out of more fibre prohibitively expensive for any individual operator, particularly given the risk that an operator could at some stage be forced to open up access to that infrastructure to other competitors. Countries currently deploying next generation broadband (Korea, Japan, Sweden etc) have only been able to do so through the state sharing the risk (subsidies, public investment etc) or through regulatory guarantees that operators won't have to provide open access to new networks in the future (US).

The CIU hypothesis is that by decoupling the cost of digging from the cost of technology it may be possible to find a more efficient way of financing the deployment of next generation broadband services in a pro-competitive way, which could allow for their timely widespread deployment across the UK, without the public sector having to bear a significant proportion of the risk.

Civil infrastructure has different financial profile than telecommunication networks	*Civil infrastructure encompasses all civil elements underlying communication networks up to but not including the final drop. The 'final drop' from the curb to the customer premises can be provided by a range of technologies including cooper, coax, fiber, powerline and Wireless Local Area Networks (WiFi)[1] etc.* *Civil infrastructure has a very long life cycle. In reality, ducts, masts and collocation sites are nothing other than the real estate used by telecom operators. When this real estate is used for only one network, it becomes dependent on this network's economic and financial performance. When owned by a third party and therefore open to all operators and networks, the economic value of this infrastructure is no longer tied to one operator or a specific service. For as long as there is demand for communication services this infrastructure will be able to provide a return.* ***In other words the civil infrastructure can be seen as having similar profile to real estate rather than being a technology investment.***

3. The Need

3.1 Will there be a need for more bandwidth?

BSG has described Broadband as a 'journey of ever increasing bandwidth'. The journey started around 2000 with the deployment of ADSL and cable modem services which made affordable higher bandwidth services (0.5Mbps) available to SMEs and consumers for the first time. It is difficult to predict where the journey will end - whether we will need megabits, tens of megabits or hundreds of megabits in the future to the home. Nor is it clear when we will need to arrive at this destination (from 5-50 years?). Mainly because it is difficult to predict what such bandwidth would be used for or who would be willing to pay for it.

Meanwhile it is reasonable to expect that there will continued innovation, which will allow increasingly rich content applications and services to be delivered over the current generation of broadband infrastructure.

3.1.1 The benefits of next generation broadband for users

There is however already a significant difference in capacity between local devices in the workplace or home (Gigabit LANs / Megabit WLANs) and the communications infrastructure (ADSL / cable 0.5 – 2 Mbps). This suggests there is currently a bottleneck in terms of capacity (i.e. there is latent demand for higher bandwidth services).

3.1.2 The benefits of next generation broadband services for operators

There are clear benefits for operators as well as users in moving to the next generation of broadband services. According to the BT the key drivers of their Network Transformation programme, the 21CN, *"are based around the new services we want to offer, the customer experience this will deliver and the cost reductions we should see. As you will see this all adds up to a compelling value growth strategy for shareholders."*

[1] These final drop technologies may well evolve rapidly over time. However, most engineers agree that they will always require back-haul capacity over fibre.

3.1.3 The benefits of next generation broadband services for the UK plc

Some countries have taken a 'leap of faith' decision against incremental progress along the broadband journey and have launched national plans to invest in next generation broadband (and in some cases FTTH) well ahead of the established demand curve. Japan is currently rolling out FTTH and expects to begin phasing out investment in xDSL. However, given the high risks involved this has only been possible to achieve through the State bearing significant proportion of the risk.

The fact that other countries have chosen to invest large amounts of public funds to support the deployment of very high capacity broadband services does not in itself mean that the UK should necessarily do the same. However, the macro-economic implications for the UK of other international competitors having significantly higher capacity communications infrastructure should be considered. If a significant differential were to emerge between the bandwidth available in the UK and elsewhere in the world, experience suggests that this will once again become an issue of public concern, leading to renewed interest from politicians, and possible calls for ill thought through regulatory intervention. It would be better to discuss these issues now and begin to think about how the UK intends to address them, than wait until they become 'critical'.

3.2 Do next generation broadband networks require more civil infrastructure?

The potential need for civil infrastructure is difficult to define. As an open forum, the BSG does not have access to the detailed network information necessary in order to make a detailed assessment. However, on the basis of the information that is publicly available it is reasonable to suggest that any operators seeking to make next generation broadband services available to SME and residential customers across a significant proportion of the UK market would need to invest in new civil infrastructure, at some stage.

If the cost of deploying fibre to the operator is reduced they may chose to deploy further or more quickly than current plans may envisage.

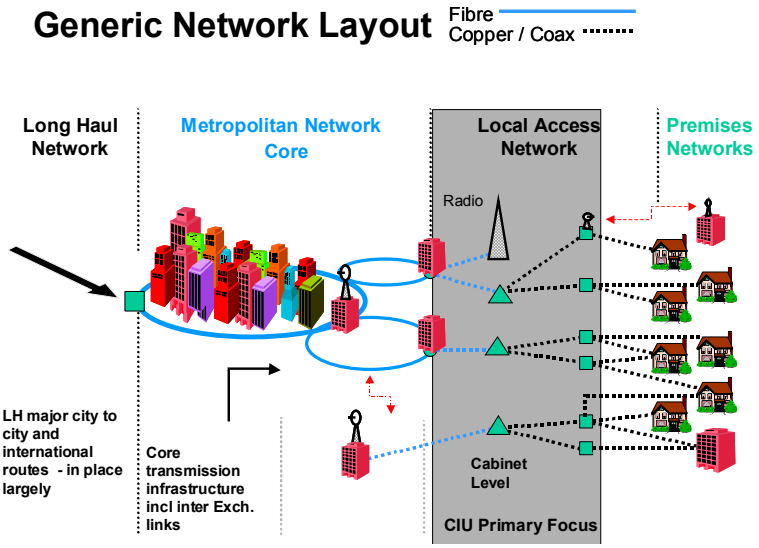
However, there is clearly the potential for new technologies to emerge that don't require significant large-scale civil infrastructure investment (e.g. High Altitude Platforms; Wi-Max etc). Meanwhile operators have their own plans in place for the incremental upgrade of their networks based on their existing business models.

It is also important to remember that the UK telecommunications sector is currently at a low point in the investment cycle and the financial climate will improve overtime, enabling operators to increase CAPEX levels.

3.2.1 The case of BT

Current ADSL (0.5 Mbps) services can now be deployed over copper up to distances of 6 km from the local exchange. Technological progress will be made in areas of modulation, framing, coding and signal processing so that next-generation DSL technologies will be faster and further-reaching, making it possible to deliver speeds of over 2Mbps up to 5km from local exchanges.

However, it is likely that beyond that point, higher bandwidth services will only be available over shorter distances. This suggests that in order to support the deployment of next generation of xDSL broadband services it will be necessary to push more fibre out from the local exchange to the street cabinets as is shown below.



CIU in the Local Access Network

The primary focus of the CIU concept is on pushing fibre deeper into the Local Access Network, where it can be used in combination with either wireless or fixed line technologies for the final drop to the customer premises.

The need to extend fibre into the access network is also consistent with BT's 21CN programme which highlights the need to begin the process of extending fibre to the PCP (street cabinet). In some cases (we don't know what proportion) it will be possible to do this without undertaking any significant civil works, however in other cases it will be necessary to 'dig' in order to deploy the fibre. The extent to which it will be commercially viable to push fibre into the access network in (particularly into less densely populated areas) will therefore partly be dependent on the cost to the operator of the civil infrastructure.

3.2.2 The Case of a Cable Operator

Cable networks currently have a footprint over approximately 45% of the UK market. Due to CAPEX restraints the cable operators have no current plans to significantly extend the reach of their networks into new areas and are focused on driving take-up in the areas where they have a presence and driving the ARPU of their existing customer base. In broad terms their HFC networks have the capacity to deliver significantly higher bandwidth services to the end user without the need to deploy significant further fibre.

Clearly, in order to extend their networks in the future (and therefore extend the proportion of infrastructure competition in the UK market) they would need to undertake large-scale civil works.

3.2.3 The Case of a Wireless operator

Wireless broadband technologies have the potential to make a significant impact on extending broadband coverage, particularly in rural areas. The key advantages that wireless access systems offer include relatively cost effective system deployment suitable for less densely populated areas, fast installation and rollout and nomadicity and full mobility.

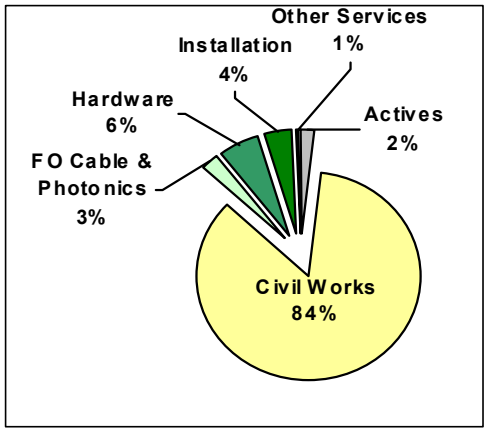
Given that wireless networks are significantly less expensive to deploy than fixed networks, they should be ideally suited to addressing the issue of broadband coverage. However, the ability to deliver low cost mass-market wireless solutions to complement equivalent fixed line services such as ADSL and Cable depends upon the availability of appropriate and sufficient spectrum as well as the availability of affordable backhaul fibre. This issue was highlighted in the 2002 BSG Wireless Working Group reports stressed the need to improve the availability of backhaul infrastructure to improve the business case for using wireless to provide new broadband services in low density areas.

3.2.4 The challenge of funding investment in next generation broadband

Working on the assumption that the CAPEX constraints on operators will remain at current levels for the foreseeable future, under the current 'status quo', this will continue to have a significant bearing on the extent to which operators are able to deploy next generation broadband networks across the UK.

As the global market for broadband services has grown over the last three years the cost of technology has fallen significantly, reducing the potential cost of the transition to next generation broadband networks for operators. However, while the technology costs have fallen, the cost of digging to lay new fibre has not fallen to the same extent. Indeed regulatory pressures to decrease disruption caused by streetworks etc could actually increase the cost of deploying new civil infrastructure (the BSG is actively lobbying to prevent this).

Civil Infrastructure continues to account for the majority of the cost of deploying new fibre. In the case of the role out of cable infrastructures in the UK it is estimated that civils accounted for approximately 84% of the cost. (see box below. The high cost of digging was one of the main reasons the cable operators ran out of money).



The cost of digging makes the extensive deployment of new fibre in the access network very (prohibitively) expensive particularly when trying to justify this investment ahead of the established demand curve. Moreover, if former incumbent operators did invest in the extensive deployment of next generation broadband networks, it is likely that alternative operators will argue that they should be allowed 'open access' to these new networks on the basis that duplication is not commercially viable and the local access network should be seen as 'an essential facility'. This has been the legal reasoning underlying LLU but also the identification of the 'wholesale broadband market' as a relevant market, susceptible to be regulated ad hoc. Whether or not the Regulator would take such a decision, this regulatory risk represents another significant barrier to the willingness of operators to invest.

3.3 The International Experience

A number of countries are making progress in deploying or planning for the deployment of next generation broadband networks. The usual examples include Korea, Japan, and Sweden, however, recent developments in the US and France should also be noted. So how is the role out of next generation broadband being achieved? Essentially it is being done either through governments taking on the financial risk through subsidies and loans etc or through regulatory decisions that reduce the regulatory risk for operators.

- Subsidies – South Korea/ Japan
- Regulatory incentive – US (FCC ruling)
- Local authorities building networks – EU: Sweden/ France/ Italy

3.3.1 South Korea

To meet its vision to transform South Korea into the leading knowledge economy. The Korean government has pumped several billion US$ of public sector funding into upgrading core and access networks. This has been done through the Korea Information Infrastructure (KII) action plan (1995) which recognised the scale of the financial investment required to meet the government's target. Supply side elements of the KII strategy included:

- Construction of new high capacity backbone infrastructure – with more than US$1.5 billion of direct government funding
- US$1 billion pump priming of local access infrastructure through soft loans
- Provision of more than US$700 million funding for R&D

Having achieved 73% household penetration of Broadband services (2-8Mbps) this strategy has clearly been successful. In 2002, the Korean government revised its objectives and set a new target to achieve 20Mbps to the home by 2005. In July the Korean Government announced a further $2.9 billion of funding Broadband R&D projects up to 2007.

However, despite this level of public funding both Hanaro and Thrunet (the main competitors to the incumbent KT) have had to seek re-financing (Hanaro's Won2,200bn of debts is more than double its market capitalisation of Won838bn.)

3.3.2 Japan

The Japanese Government published a direction to make Japan the world's most advanced IT nation by 2005.

e-Japan target for 2005 to reach 90% of households (approx 44 Million)

- 10 million households with up to 100 Mb connectivity (FTTH)
- 30 million households with up to 10 Mb connectivity (FTTH, CATV, xDSL)

- Government support:
  Provide funds up to 50% (25% By Central Govt. + 25% By Local Govt.) for infrastructure cost (Cable, Equipment, Installation) to NTT / Cable TV Operators using FTTH or Hybrid (Fibre + Coaxial) network

The Japanese Central Government offers various programmes to give broadband operators incentives to invest broadband facilities, including: financing systems, tax reductions and guarantees of liabilities.

1. Financing systems

(1) no/low-interest financing by the Development Bank of Japan (DBJ);

- no/low-interest financing by the DBJ for operators introducing broadband access networks;

(no interest for public corporations, low interest for private corporations).

(2) Ultra low-interest financing by the DBJ and Telecommunication Advancement Organisation (TAO).

- TAO makes interest-based assistance for private corporation with low interest financing from the DBJ.

2. Tax benefit incentives

(1) Special redemption for corporate tax;

- Operators introducing broadband access networks can apply for a special 6-18 per cent redemption on corporate tax.

(2) Decrease of the tax standard for fixed assets tax;

- Operators introducing broadband access networks can decrease the tax standard for fixed assets tax by 20-25 per cent.

3. Guarantee of liabilities;

- TAO guarantees the debt liabilities of operators introducing broadband access networks.

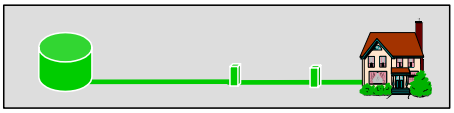
Source: MPHPT, "Outline of the Telecommunication Business in Japan", October 2002

3.3.3 The United States

The US approach to the issue of promoting the deployment of next generation broadband networks has been to seek to reduce the regulatory risk faced by operators. On 20th February 2003, the FCC published a ruling that removed any regulatory obligation to ILECs to unbundle FTTH. The underlying reasoning for this being that there would be sufficient platform competition between the Baby Bells and omnipresent cable companies.

As a result, in May 2003: 3 Baby Bells (SBC, Verizon and Bell South issued a joint statement on standards to be used for FTTP (Fiber to the Premises) and alerted equipment providers that they will soon be seeking proposals for equipment based on the common requirements. BellSouth, SBC, and Verizon will independently finalize their FTTP deployment plans for 2004 and beyond, based on the evaluation of these proposals, ongoing internal studies, and on the resolution of related regulatory issues.

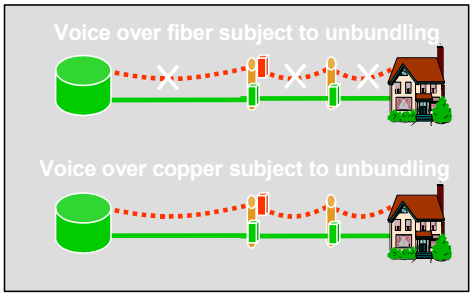
FCC Regulatory Ruling



Greenfield FTTH (new build)

- **Broadband** - ***No unbundling***
- **Narrowband** - ***No unbundling***

ILECS have a choice of one of the following options for overbuilds



Brownfield FTTH (overbuild) option 1

Retire copper and provide a 64 kbps channel on fiber

- **Broadband** - ***No unbundling***
- **Narrowband** - **Subject to UNE**

Brownfield FTTH (overbuild) option 2

Maintain copper (only upon request of CLEC)

Becuase there is only dual platform competition (between the cable operators and BT) in 50% of the UK market we believe that OFCOM would not be able to provide such a regulatory guarantee regarding the threat of future open access requirements being imposed in the UK.

3.3.4 The EU

The e-Europe 2002 Action Plan5, recommends that new infrastructure and services across Europe may be supported with European funding, provided that public aid does not distort competition and respects technology neutrality. The EU has announced that 7.3% of structural funds should be earmarked for ICT projects to stimulate demand and encourage deployment of broadband services. This represents 10 billion EUROs to be disbursed until 2006.

The indicative guidelines published by the European Commission on 28 July 2003[2] specify how this money can be disbursed in a competition neutral manner. “ERDF support should be limited, in principle, to infrastructure, i.e. installations (dark fibre, ducts, masts.) and equipment which is open to all operators and service providers.”

Although only some UK regions qualify for ERDF funding the guidelines shed light on the way in which the European Commission is likely to interpret the use of public funds for infrastructure projects vis á vis state aid :

a) Public funding of ‘open-infrastructure’ open to all operators and service providers does not constitute state aid;
b) The subsidised infrastructure can either remain owned by a public authority or be a public-private partnership. The prerequisite, however, is that this is an ‘open infrastructure’.

[2] SEC (2003) 895

In case of a public-private partnership the state financial contribution would have to be made conditional on the acceptance of operating requirements that would preserve the nature of the infrastructure as a facility open to all operators.

Across continental Europe a number of municipal authorities have been looking at how they can use public funds to stimulate the deployment of broadband services in order to meet their economic regeneration objectives. More than 100 local authority led projects have been set up in Sweden and perhaps the most well known example being Stockholm, where the municipal authority set up a new company (Stokab) to deploy fibre in the access network which was made available on an open access basis to operators. Meanwhile the French government is also looking to use public funds to support the deployment of new infrastructure in the regions. More than 120 projects have applied for funding from the Caisse des Depots.

Several local authorities have expressed interest in similar models in the UK, however, the BSG does not believe that it would be desirable to see a return of any degree of public ownership in the telecommunications market.

3.3.5 Conclusions on the next generation broadband challenge

The cost of civil infrastructure appears to be a critical barrier to further fibre deployment. Other countries are addressing this barrier either through public ownership, subsidies or regulatory incentives in order to stimulate investment ahead of the demand curve. The UK plc needs to consider the implications of international competitors being 1 or 2 generations ahead in terms of broadband deployment. It is not currently evident that the UK government would be willing or able to subsidise on the scale of Korea, Japan, or even Sweden and France. Meanwhile the lack of ubiquitous infrastructure competition across the UK would make it difficult for OFCOM to provide regulatory guarantee similar to the FCC ruling. Finally there is little appetite in the UK to see a return to public ownership in the telecoms market. This suggests that the UK may need to look for a pro-competitive 3rd way solution for financing the deployment of next generation broadband, that allows the appropriate and pro-competitive use of public/ structural funds where they are available for un-economic areas.

4. The CIU Concept

A third party creates or buys existing infrastructure capable of supporting broadband networks and services. It finances this infrastructure on a utility basis and leases it to operators. This "civil infrastructure utility" can be a fully private venture or a public- private partnership with the relevant public authorities. In either case, the third party is prevented from providing telecommunications services to end customers. To the contrary, it is restricted to being a "real estate owner" that leases capacity to businesses, in this case telecom operators.

This approach:

- reduces barriers to entry for service providers
- improves operators' business case (by turning Capex into Opex and reducing time to market),
- enhances competition in services and applications,
- frees capital for investment in services and content and enables existing operators to provide new high bandwidth innovative services.

The advantages for a potential investor:

- Very long life cycle and relatively low risk (over the next 20 years, with an efficient local access, demand for bandwidth is expected to increase significantly);
- Possibility to buy and refinance existing infrastructure as a "utility" (most operators had to commit to payback periods of 5-7 years for the entire networks despite the fact that a substantial amount of the investment was spent on civil works. Independently owned civil infrastructure can justify much longer payback periods).
- There is no churn (end users may change network operator but there will always be use of the civil infrastructure for as long as the end users require high bandwidth)
- If deployed by an existing utility there may be opportunities for synergies in civil works and therefore possibility to reduce costs.
- Minimal administrative costs (sales, marketing, billing).
- No technology choices, all operators can be tenants (wireless and wireline).
- Possibility to receive subsidies or other forms of public support without any adverse impact on competition in networks, services or content.

The disadvantages:

- Very big investment with low return and long payback period. It can only be attractive if one proves low risk.

  What are the risks:

  a) Demand for broadband services:

  A civil infrastructure utility would not provide broadband services. However, the clients would. The viability of the client businesses is critical for the business of the "civil infrastructure utility". This is why it is important to assess demand patterns for bandwidth.

  Residential demand for broadband services is difficult to predict. However, it is possible to predict public sector demand for broadband services with more certainty in view of the Government's commitment to deploy broadband to the health and education sectors. It is also possible to estimate business demand for broadband services.

Arguably one can use public sector demand and business demand for a first very conservative assessment of the business case. The consultancy firm Analysys created a model that attempts to provide the tools for this assessment. Their work is described in the annex to this paper.

b) ***Regulatory Risk:***

It is highly unlikely that an operator or another entity will duplicate local access civil infrastructure in the areas covered by the civil infrastructure utility. This, however, may create an obligation for a 'civil infrastructure utility' to provide access on non-discriminatory, objective and reasonable terms to all operators. This type of utility will have no problem to provide open access. Issues may, however, arise with regard to 'prices' for access.

Furthermore, public sector authorities may also have expectations about the geographic reach of this utility that do not coincide with the 'Civil Infrastructure Utility' 's own plan.

Some of the possible scenarios that may emerge in order to address these issues are:

- The public sector will have to attract civil infrastructure utilities in the least profitable areas through subsidies or other financial incentives;
- Public sector will have to award some kind of concession that will impose a certain rollout within a certain timeframe.

5. Implications of the CIU concept for operators

Clearly the CIU model would have major implications for all operators and we recognize that it presents a number of risks as well as opportunities. As stated above, at this stage the concept is not sufficiently mature to make it possible to properly assess the actual extent of either the threats of the benefits. This could only be done though detailed concept development work, which is beyond the scope or ability of the BSG.

Negative	**Disruption** Discussion of the CIU concept increases uncertainty due to potential impact on existing investment plans etc
	Potential to increase competitive threat The CIU would lower barriers to entry for all operators, with the result that it would change the competitive landscape.
	Threat of hidden obligations Concept is still at an immature stage. Risk that as it develops new requirements emerge that would effectively force operators to cooperate with the CIU against their commercial interest.
	Impact on BT's USO Not clear what the implications would be on BT's USO.
	Fear of public sector creep into the telecoms market The CIU concept has developed out of models in continental Europe that were based on public sector investment and in some cases municipal ownership

Positive	**Potential to reduce costs** Could significantly reduce the cost of further fibre deployment in the access network
	Could allow operators to accelerate access network upgrades By diverting funding away from civil infrastructure investment
	Could help to accelerate de-regulation Given that the CIU reduces barriers to entry and increases the potential for competition there would be a strong argument that this should be reflected in regulatory withdrawal
	Allows access to Structural Funds and other Public Sector Funding The CIU would be able to benefit from structural funding to support the provision of civil infrastructure in commercially unattractive areas, decreasing the barriers to deployment in these areas.

6. The CIU Round Table

The BSG held a round table meeting to bring together a small group of key stakeholders including operators, constructors, utility companies, financiers, and government decision makers to discuss some of the underlying assumptions with a cross section of stakeholders and assess: a) whether the concept of civil utility infrastructure (CIU) could offer a more efficient and cost effective route for the financing broadband network infrastructures and the services they support; and b) whether there is a practical opportunity for realising this vision in the United Kingdom.

It should also be stressed that the concept does not currently have full endorsement from operators. Clearly it would have a significant impact on the competitive environment, and while the concept is still vaguely defined in many areas, operators are unlikely to give their full endorsement until the full range of competitive implications have been clearly identified and assessed. The concept is not sufficiently mature to enable such a complete assessment at this stage. We assume that ultimately the final cost benefit analysis for operators would need to be positive in order for them to be willing to become customers of such a civil utility entity.

The meeting took place under Chatham House rules and no attempt was made to reach a consensus or agreement. Clearly not all stakeholders were represented in the room and it was noted that the final balance of participants did not reflect the full balance of commercial interests (for example operators were underrepresented in the meeting).

6.1. Round Table Comments

6.1.1 Predicting the demand for Civil Infrastructure

- There are considerable dangers in predicting demand for bandwidth and the timescales for that demand. Much more sophisticated demand analysis would be required to support the investment case for CIU.

- The fact that other countries have chosen to invest large amounts of public funds to support the deployment of very high capacity broadband services does not in itself mean that the UK should necessarily do the same. Nor is there yet any clear evidence from those markets of the commercial drivers that will make those infrastructure investments sustainable over the long-term.

- Operators are constantly upgrading their networks and use all opportunities to push deep fibre whenever there is an opportunity to do so based on real user demand. Over time this will change the nature of the problem.

- Need to consider all of the potential alternative technologies that could circumvent the need for significant civil infrastructure investment (New wireless technologies such as Wi-Max, High Altitude Platforms, Powerline etc). Investors would need to understand what the competitive threats would be to the CIU.

- Need to understand why Moore's law does not apply to telecoms networks and whether the need for bandwidth could follow the same principle as Moore's law if the current bottlenecks could be addressed.

- Need to see what impact the government's Broadband Aggregation Project has on the market together with other public and private sector initiatives.

6.1.2 Location

- It is clear that there is not a blanket need for a CIU across the whole of the UK. However, there may be locations where such an approach might be applicable. Need to identify locations where the model might work. It should be possible to map potential locations.

- The model might be more applicable in green field locations where there are fewer competitive issues caused by the presence of existing networks and infrastructure.

- Both SEEDA and the LDA have declared their interest in ensuring that next generation broadband services are planned in the development of the Thames Gateway, which could be a suitable location to pilot the CIU concept.

- The economics of green field development would be different as the civil infrastructure would be less expensive to deploy. Deploying in green field sites would require cooperation from operators at the outset.

6.1.3 Financing

Does the model really create a true utility risk profile?

- Whilst the disintermediation between the investment for infrastructure and services has clear appeal from a financial perspective, it is not clear in practice how the service risk could be dislocated the from the infrastructure risk.

- Traditional utilities are much closer to natural monopolies – i.e. there are no alternatives and they therefore have zero redundancy risk. In this model there would still be a potential competitive threat.

- In order to achieve a utility risk profile the civils financing would need to be bankruptcy remote and the stranded asset risk would probably need to be pushed back on to government possibly through state guarantee.

- The government risk would diminish over time as other sources of demand for bandwidth materialized and this could be structured into the financing. However, a macro-economic case would need to be made to persuade the Treasury to take the risk.

- There could be a way to get private financing for the civil infrastructure if the public sector agreed to purchase infrastructure and services separately. The public sector could lease space in the civil infrastructure for 15-20 years and buy the services separately through one or two-year contracts with service providers. The service providers would have to use the leased infrastructure for housing their equipment etc. However, this would be a very complicated way to organize public procurement and unlikely to be a popular route for most operators.

- In order to achieve sufficient economies of scale (to cover costs such as due diligence etc) a project would need to be in the order of £100 m.

6.1.4 State Aid and Competition and Regulatory implications

- Most RDAs have accepted Broadband as an economic priority and are willing to invest in Broadband projects, which they see as fundamental to their overall economic

development objectives. However they are limited as to the extent to which they can invest by State Aid rules. France has sought to overcome this issue by declaring broadband a service of general economic interest (SGEI). The UK could explore the implications of doing the same.

- State Aid issues are still unclear (The legal challenge to the Scottish Executive's Project Atlas, currently being considered by the European Commission will provide further clarity on issues such as the definition of 'open access' etc). Some sort of legal clearance would be required.

- However, State Aid would not be a 'first order' barrier, although if it led to too much complexity in the way the CIU was structured it could be a killer factor.

- It would be necessary to consider the regulatory impact on the narrow band market as well as the broadband market and BT's existing Universal Service Obligation. This would need detailed regulatory evaluation by OFCOM.

6.1.5 Structures

- There is no reason why this would have to be done by one monolithic company. There could be several companies doing this in different locations. However, there are probably only a limited number of organizations that would have the specialist skills to become a CIU.

- Who would do it? Four possible ideas:
    - Public Private Partnership
    - Industry consortium
    - An existing Utility Company
    - A 'new Co'.

- Best approach would be to start small and see how the business case would work (although if it was too small the economies of scale would be lost)

6.2 Summary

- The issue of how the UK's broadband infrastructure evolves is of important economic significance for the UK.

- CIU is an interesting concept, there aren't many alternative new ideas at the moment as to how the regulatory and investment barriers to the development of next generation networks can be overcome. Therefore the CIU concept may justify further examination. The issues related to how it could be implemented are difficult but not impossible to address.

- A starting point would be to map potential locations where there may be a need and where a pilot could be run to test the business case.

- The business case seems to suggest some element of government support leading to questions about how this would be structured and the impact upon the competitive landscape.

- A strong case would need to be made that that there is a public value imperative to do this and that this was the least intrusive means of intervening in the market. That case does not exist today.

7. Conclusions

- Significant progress is being made in the deployment of current generation of Broadband.
- The CIU concept is unlikely to have a significant impact on current generation broadband deployment
- There are considerable dangers in trying to predict demand for bandwidth and the timescales for that demand.
- Much more sophisticated demand analysis would be required to support the investment case for CIU.
- The transition to next generation networks is of critical importance to UK plc.
- This is likely to require the deployment of more fibre in the access network. The cost of civil infrastructure is a significant barrier to further fibre deployment.
- Other countries are addressing this barrier either through subsidies or regulatory incentives in order to stimulate investment ahead of the demand curve
- UK needs to consider the implications of international competitors being 1 or 2 generations ahead in terms of broadband deployment
- Currently not evident that UK government would be willing or able to subsidise on the scale of Korea, Japan, or even Sweden and France
- Lack of ubiquitous infrastructure competition across the UK would make it difficult for OFCOM to provide regulatory guarantee similar to the FCC ruling
- A 3rd way may therefore be required in the UK
- CIU provides one potential approach, however, concept is immature at this stage, much more work would be required to take it beyond the concept stage
- The BSG has taken its exploratory work as far as its capabilities, capacity and role allow
- The CIU concept presents threats and opportunities for all operators and may be seen as an unwelcome intrusion in the competitive landscape
- Unsuprisingly most operators remain very sceptical at this stage, particularly given the fear of ‘public sector creep’ into the telecoms market
- However, the potential for a strong upside suggests that the concept is worthy of further consideration.
- A starting point would be to map potential locations where there may be a need and where a pilot could be run to test the business case.
- The business case seems to suggest some element of government support leading to questions about how this would be structured and the impact upon the competitive landscape.
- A strong case would need to be made that that there is a public value imperative to do this and that this was the least intrusive means of intervening in the market. That case does not exist today.