Superfast Broadband in Surrey

1.   Background

Surrey County Council made the statement below in their Cabinet Report of the 24 May 2011[1].

Surrey's ambition

We want to leapfrog the currently available broadband speeds and for speeds in Surrey to be amongst the fastest in Europe. The EU universal broadband program has a target to ensure that 50% of households have access to 100Mbps internet speeds or higher by 2020 and that all Europeans have access to 30Mbps by the same date. Surrey is seeking to achieve superfast broadband for Surrey's residents and businesses considerably earlier by the end of 2013. Given this ambition, we need to discuss with industry what precisely can be achieved on a universal basis, whilst keeping costs to an affordable level for the customer.

Surrey County Council is currently in commercial negotiation with a number of suppliers to determine how to achieve their stated ambition of 100% superfast broadband coverage by 2013. The SCC Broadband Newsletter dated November 2011 states;

We have received Outline Solutions from each of the short listed bidders, i.e. their initial proposal as to how they would build the necessary infrastructure to ensure that everyone in Surrey is able to access Superfast Broadband.

In parallel with the commercial negotiations SCC are conducting a survey to determine whether there is a demand for superfast broadband. SCC is promoting the need for residents and businesses, especially those in rural areas, to complete the survey.

Meanwhile, BT Openreach continues to rollout their Fibre to the Cabinet (FTTC) solution in areas where they estimate there will be a return on their investment. This solution is capable of providing speeds of up to 40Mbps, with a possibility of up to 80Mbps. The actual speed is determined by the distance of the premises from the street cabinet, this span retaining the existing metallic telephone wires which are of varying quality. As there is no regulatory obligation for BT Openreach to maintain these lines, except for the provision of a basic telephone service, the actual broadband speed for long poor quality lines could be considerably less.

Virgin Media provide a superfast broadband service to approximately 50% of Surrey premises (according to SCC and Ofcom), mainly in urban areas with a high population density. The Virgin Media infrastructure utilises coaxial cables as the final span, capable of carrying speeds of 100Mbps now (more in the future), and this is not so dependent on distance. Furthermore the Virgin Media infrastructure includes over-sized ducts direct to almost every house and is usually capable of accommodating new fibre tube with the existing cables.

Fibre to the Premises (FTTP) provides speeds that are independent of distance. This comes in at least two categories, Point-to-Point (PTP), which has a dedicated fibre from a marshalling point to each premise or Gigabit Passive Optical Network (GPON), which share a single fibre between 32 premises. In some (mainly urban) areas BT Openreach are deploying GPON, and this offers speeds of up to 100Mbps, with the possibility of future improvements. Some forward-looking private housing developers have deployed Point-to-Point FTTP, but there is not significant coverage in Surrey.

Terrestrial or satellite wireless broadband is available and a useful solution for those with nothing now, but will be unlikely to have the future capabilities of fixed-line fibre based broadband.

An important requirement with any broadband technology is upload speed. So far, speeds mentioned here have been download speeds. Future (and some current) applications will require fast upload speeds as well as fast download speeds. Most technologies are asymmetric, compromising the upload speed to provide a faster download speed as the overall bandwidth is limited. Point-to-Point FTTP is the best technology for full symmetry, where the upload speed can be both superfast and the same as the download speed and is therefore the best future-proof option. Some privately funded schemes to deploy this expect to achieve gigabit speeds (1000Mbps)[2].

---

[1] http://www.surreycc.gov.uk/__data/assets/pdf_file/0004/176620/item-11-Superfast-Broadband.pdf
[2] http://www.b4rn.org.uk/

A further consideration is the European requirement for any publically funded broadband technology to provide open access to any service provider so that the end consumer has a choice of provider. This consideration restricts the public sector as some broadband provision is not open access. This includes Virgin Media's network and most wireless/satellite provision. Ironically, consumers who do not have even a basic broadband service are not usually as concerned with this as the EU believes they should be. There is a strong argument that impoverished areas should be exempted from open access just to encourage additional deployment.

2. BT's Superfast Rollout in Surrey

BT Openreach data of December 2011 shows that they have or plan to have 347,776 Surrey premises capable of accessing the internet by a FTTC /FTTP service.

This represents 71.5% of Surrey premises (486,458). The deployment is across a total of 52 out of 97 telephone exchanges that serve Surrey postcodes. The 52 exchanges serve 410,430 premises. The 62,364 premises not covered are categorised as not scheduled for deployment (5,923) or deferred (56,441, including 7,504 directly connected to an exchange). These 62,364 premises are scattered throughout the areas served by the 52 exchanges.

The BT Openreach GPON FTTP rollout in Surrey is limited to some premises served by the Ashford (Middlesex) and Capel exchanges and amounts to 12,883 premises, which is 3.7% of the total deployment or 2.65% of Surrey premises.

The SCC November Broadband newsletter reports that BT Openreach have no plans to upgrade their existing broadband infrastructure in a number of areas in Surrey, as illustrated by the white areas on the map below, which was included in the newsletter. These white areas contain 74, 524 premises, mainly in rural locations.
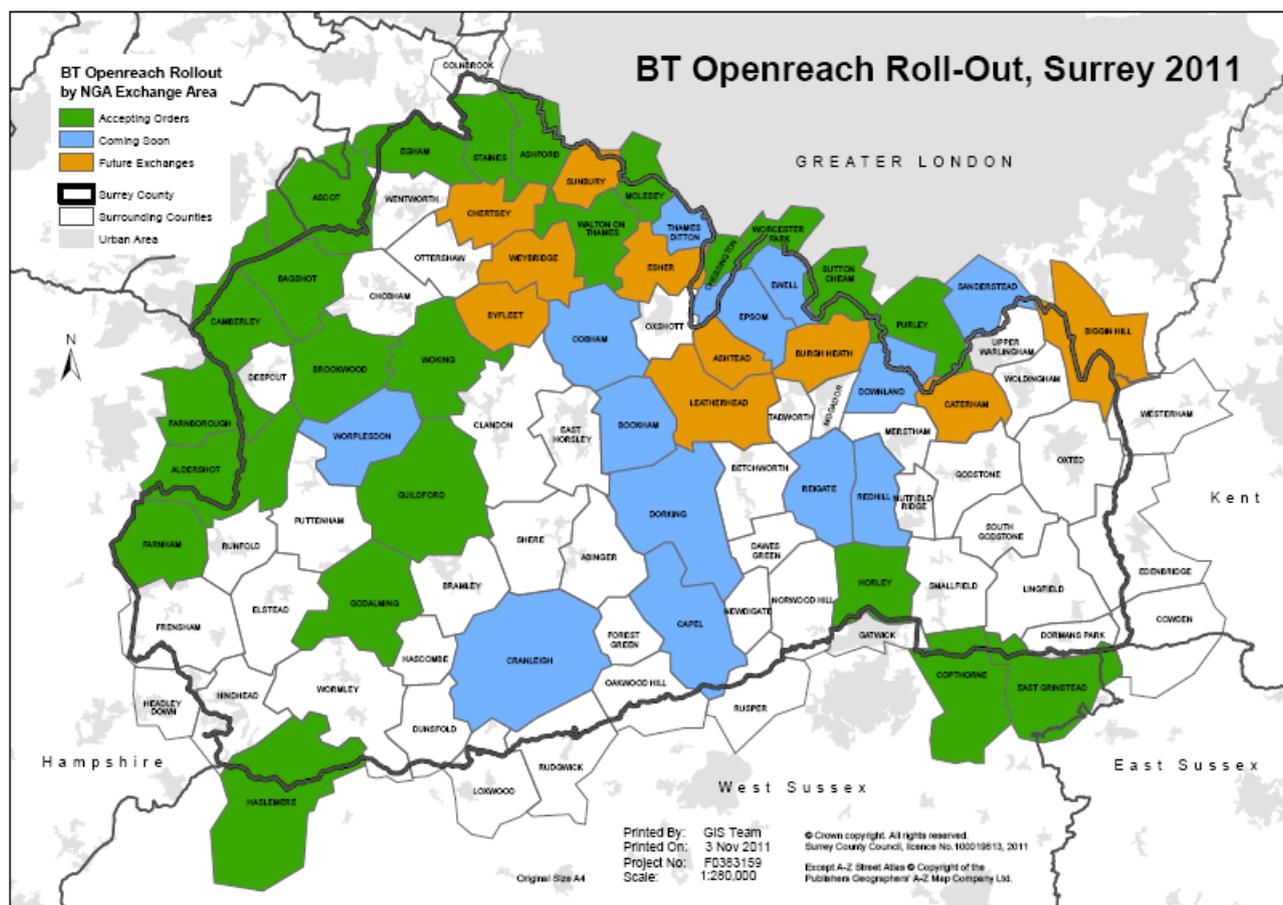
3. Superfast Broadband in Rural Areas

Taken at face value the BT deployment looks impressive with just 74,524 premises in rural areas left as candidates for government funding. However this assumes that the 62,364 premises not scheduled or deferred are in areas covered by Virgin Media. This is not the case based on observations and data for Guildford, which has some Virgin Media coverage, but where neither BT nor Virgin Media plan to cover some outskirts or vital business parks. Also, BT data shows that for places like Godalming and Cranleigh, where there is no Virgin Media coverage, BT have not or do not plan to deploy FTTC to all outskirts. Also BT does not appear to have a solution that will allow premises directly connected to exchanges to be upgraded, or a solution to upgrade from FTTC to FTTP.

Further, the statistics above assume that all telephone wires are capable of being transferred to a fibre connection. This does not seem to be the case as the design of the BT FTTC cabinets and the way they are deployed considerably limits the number of premises that can be connected without further major upgrade work, including the installation of additional or larger cabinets. In some urban areas, 100% FTTC capability from each cabinet may not be important for BT Openreach as they are unlikely to need 100% coverage when competing with Virgin Media. However, the same designs and deployment methods are being utilised in rural areas where take-up is likely to be higher. In any case such a design will not meet Surrey County Council's aspiration of 100% Superfast Broadband, the dilemma with this aspiration being the wisdom in committing public money to 100% coverage, when even in rural areas there probably will not be 100% take-up. Despite the dilemma, if 100% coverage by 2013 is really the SCC objective then a different design and deployment strategy from either BT or another supplier is required, otherwise this lack of capacity could become a candidate for further public funding in the future.

Rural areas suffer from long telephone lines between the cabinets and premises (the "D" or "distribution" side), these often being aluminium rather than copper and in some cases poorly maintained[3]. There is a danger that the current round of public funding will fund the improvement of this "D" side at the expense of new fibre infrastructure. This use of public money to subsidise something that should have been "normal business" for BT should be avoided and perhaps consideration should be given to fund future-proof next generation connectivity, using PTP FTTP to provide at least 100Mb/s symmetrical to each premise.

In the view of the author, this whole area of investment in infrastructure by BT should have been something previously regulated by Ofcom, but has not been. In short, the BT design and deployment does not seem to be future-proof, especially for rural areas. If the current design / deployment method is chosen it will be more difficult than ever to move forward as the pace of technology change will outpace the ability to upgrade the infrastructure.

Perhaps a condition of public funding to any provider should be that profits are reinvested to provide continuous improvements and proper maintenance and this is tightly regulated, especially if BT receives the bulk of the public funding.

---

[3] **http://www.ewhurst-broadband.org.uk/?p=1665**