Title: Relaxation of restrictions on the deployment of overhead telecommunications lines	# Impact Assessment (IA)
IA No:	**Date:** 01/01/2011
Lead department or agency: DCMS	**Stage:** Development/Options
	Source of intervention: Domestic
Other departments or agencies: Defra, CLG, Ofcom	**Type of measure:** Secondary legislation
	Contact for enquiries: Pete McDougall - 020 7211 6156

Summary: Intervention and Options

RPC Opinion: RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
£1,666	£1,666	-£179	Yes	OUT

What is the problem under consideration? Why is government intervention necessary?

Existing regulations require that telecommunications systems, which facilitate supply of fast broadband, are installed in underground ducts. Laying ducts incurs considerable costs. If those systems could be installed overhead, then there is the prospect of considerable cost saving. However, there may also be detriment to local visual amenity. This measure introduces greater choice for telecommunications providers. If passed, it will allow telecomminications providers to use overhead installation provided no alternative systems are available and the installation is discussed by local communities.

What are the policy objectives and the intended effects?

It is intended that by enhancing the choices available to telecommunications providers more optimal business solutions will be forthcoming. This should benefit consumers by providing lower cost services. It should also mean that the geographical margin beyond which it is not financially feasible to provide broadband services will be extended so that some rural communities which previously would not have been connected will have access to fast broadband in the future.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Two options were considered. First, if the regulation is passed, then telecommunications companies may explore alternative methods of installation which may lower costs and enable an extension of service. The second option is preferred because it should enable cheaper and more extensive broadband access to be provided to rural areas in the UK while ensuring that visual amenity is not materially affected for the worse. Second, if nothing changes telecommunications lines continue to be installed in ducts.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 04/2019

Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:**	**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ______________________ Date: ____________________

Summary: Analysis & Evidence

Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	**PV Base Year** 2010	**Time Period Years** 10	**Net Benefit (Present Value (PV)) (£m)**		
			Low: Optional	**High:** Optional	**Best Estimate:** 0.002

COSTS (£m)	**Total Transition** (Constant Price)	Years	**Average Annual** (excl. Transition) (Constant Price)	**Total Cost** (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	0.030		0.005	**0.072**

Description and scale of key monetised costs by 'main affected groups'

[N.B. The data on these summary pages are expressed in £ per km.]
Overhead installation of telecommunications lines.
Costs of maintaining overhead lines.
Wayleaves paid to landowners and tenants for overhead lines.

Other key non-monetised costs by 'main affected groups'

Costs of extra road accidents.
Costs of consulting affected communities.
Loss of visual amenity by affected communities.

BENEFITS (£m)	**Total Transition** (Constant Price)	Years	**Average Annual** (excl. Transition) (Constant Price)	**Total Benefit** (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	0.046		0.004	**0.074**

Description and scale of key monetised benefits by 'main affected groups'

Underground installation of telecommunications lines.
Costs of maintaining underground lines.
Wayleaves paid to landowners and tenants for underground lines.

Other key non-monetised benefits by 'main affected groups'

Not applicable.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Costs of installation based upon US data and the results of a modelling exericise.
Maintenance costs are assumed to be a fixed percentage of installation costs.
Wayleaves are based on assumptions about land prices and prices drawn from the energy sector.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			**In scope of OIOO?**	**Measure qualifies as**
Costs: 0.066	**Benefits:** 0.068	**Net:** -0.002	Yes	OUT

Evidence Base (for summary sheets)

PROBLEM UNDER CONSIDERATION

Existing regulations (Electronic Communications Code (Conditions and Restrictions) Regulations 2003) mean that telecommunications providers are compelled to install their lines underground except where overhead installations already exist or there is no viable alternative. In addition, it is not possible to install overhead lines in Areas of Natural Beauty, National Parks and The Broads. Hence, the business choices faced by telecommunications companies are limited by regulation to employing a particular technology when installing systems.

Normally, lines are installed in pipes called ducts which are laid in trenches the surfaces of which are re-instated after the ducts are laid. Subsequent access to the ducts is provided by jointing boxes and manholes installed at regular intervals along the duct run. Lines (either fibre optic or copper co-axial cables) are installed by drawing cable through the ducts and jointing (or splicing) sections together. The engineering works involved in excavating trenches, laying underground duct and re-instating surfaces comprise roughly 80% of the total costs of installing such systems.

If it were possible to install telecommunications systems overhead, then it may be possible to reduce, some but not all, of the costs of installation. However, installing telecommunications systems overhead may impose significant visual detriment to communities. Hence, there is a danger that telecommunications providers will employ overhead installation as a default option and thus impose significant external costs on affected communities.

The problem considered is how to extend telecommunications service as much as possible while ensuring that external costs are minimised.

RATIONALE FOR INTERVENTION

It is estimated that commercial providers (CPs) will offer super-fast broadband to roughly 70% of the population, under present regulations, without any intervention from the Government. However, in more dispersed populations the provision of broadband is not currently commercially viable. If less costly methods of installing telecommunications systems were available to CPs then it is possible that the commercial margin for super-fast broadband provision will become higher than 70% of the population.

The Government’s policy aim is to ensure that 90% of the population has access to super-fast broadband by 2015. Thus, it has decided to encourage the provision beyond the present 70% commercial margin through a budgetary allocation of £530 million to be disbursed through BDUK to help deliver superfast broadband into areas the market will not deliver to unaided. Thus, if lower cost methods of installing telecommunications systems in rural districts can be found then the need for Government intervention might also be reduced.

In practice, it is likely that a variety of methods will be adopted by the telecommunications industry to address this problem. For example, if appropriate commercial terms for access to infrastructure can be agreed with incumbent suppliers then it is likely that new entrants to the market may make agreements with electricity or telecommunications companies to use existing poles or pylons. Alternatively, new investment may take the form of newly installed overhead lines. At this stage it is not possible to assess which method of installation is most likely.

The rationale for the policy intervention is to maximise the degree to which the Government’s aspiration that all communities have access to super-fast broadband is achieved by commercial means.

POLICY OBJECTIVE

The Government has accorded a high priority to investment in high speed digital networks and has made substantial progress towards achieving its vision of having the best superfast broadband network in Europe by 2015. In December 2010, ‘Britain’s Superfast Broadband Future’, set out the Government’s policies for lowering the costs of deployment and its intentions for supporting rollout.

There have been a number of studies which attempt to isolate the economic effects of the spread of broadband and super-fast broadband. These show that the introduction of broadband had a generally beneficial effect on economic growth among OECD countries (Czernich et al 2011). In part, this is because there are significant network economies associated with the product (Fornefeld et al 2008). The reasons for the positive impetus to growth appear to be related to the increases in firm productivity resulting from inter-frim connectivity made possible by super-fast broadband (Franklin et al 2009). There are some indications that increased broadband speed enhances the positive economic effects of the spread of broadband networks (Bohlin 2011).

The Government's Growth Plan also outlined a presumption in favour of sustainable development, which in relation to broadband roll out essentially means that local authorities should seek to allow the deployment of broadband networks unless there is a very good reason not to. This is consistent with the National Planning Policy Framework (NPPF) consultation, published 25 July. The NPPF will consolidate some 1000 pages of planning regulations into one overarching Framework that will support neighbourhood and local planning decisions.

There is a risk that unless overhead installation is permitted the roll-out of superfast broadband by the market will not only be slower but also a large proportion of the population will be unlikely to take advantage of the potential benefits which superfast broadband connections could entail. Some communities will be unable to access broadband, which is considered inequitable, and so may be excluded from full participation in the UK economy and society. Lack of super-fast broadband could have a significant impact on the ability of local areas to grow and diversify their economies, particularly among communities which currently have relatively poor connectivity. This Government believes that deployment of new overhead lines can reduce the costs of deployment of superfast broadband and is committed to relaxing these restrictions so this can be permitted to occur.

Department for Business, Innovations and Skills carried out an initial consultation in September 2009 to try to determine the appetite for new pole deployment from communications providers, but also to test the water with communities, given the impact on visual amenity that new poles would have, particularly in more rural areas. The conclusion was that in some cases, new pole deployment could make a difference to the investment case, and communities themselves recognised that in order to have better connectivity, some new overhead deployment may be necessary. However, communities were keen to stress that this should not be the default option, and that full consultation with communities should be undertaken.

Government is therefore pressing ahead with the proposal to relax the conditions and restrictions to the deployment of new overhead infrastructure. However, the Government is aware that there may be an adverse impact on visual amenity and raise other environmental concerns. Its policy approach is, therefore, to seek to relax the regulations governing installation of telecommunications systems while introducing safeguards for communities. The existing protections for Areas of Outstanding Natural Beauty, National Parks and the Broads are unaffected by this measure.

METHODOLOGICAL BACKGROUND

Sources of data

This measure is intended to facilitate business decisions leading to greater installation of commercially-based super-fast broadband in rural communities. Whether or not it is successful in this aim depends upon the nature of those decisions. As a consequence, it cannot be known beforehand whether or not businesses will take advantage of the new possibilities and, if they do, where, in what circumstances and to what extent. Only by the use of sophisticated business modelling techniques would it be possible to provide estimates of some of these effects. However, it was judged that the expense of time and money required for such an exercise would have been disproportionately large. For this reason, this IA does not provide meaningful estimates of the effects of the measure on the total UK telecommunications market.

Moreover, because it has been judged disproportionately costly to robustly anticipate the business response to this measure for the purposes of preparing this IA, the communities that are likely to be affected by it are equally unknown. Thus, it has been possible to estimate neither the likely impacts (either beneficial or costly) of the measure on local communities nor the costs of consultation on business costs.

The outcomes of the policy also depend upon the data that informs business decisions. Much of the data that could enable an accurate quantification of the costs and benefits of this measure are known only to industry participants and form part of their management information systems. They are, therefore, often commercially sensitive, generally not publicly available and, even if known by officials, cannot be used to publicly justify this policy. As a consequence, in preparing this IA it has been necessary to have recourse to indirect estimates of many of the monetised costs and benefits the accuracy of which may not be known with any certainty and, if known, cannot be publicly announced.

Wayleaves

All utilities negotiate payments with landowners and/or their tenants for leave to pass over or under the land in question. These payments are called wayleaves. However, as a result of legal proceedings, telecommunications wayleaves for ductwork are different from the wayleaves negotiated for overhead installations.

Overhead installations attract wayleaves for the length of lines crossing the land and the poles located upon it. These wayleaves are generally paid annually according to a publicly announced schedule which is regularly uprated in line with inflation. Payments also vary according to the type and height of the poles that are installed.

By complete contrast, telecommunications wayleaves are the result of commercial negotiations between telecommunications companies and landowners. Normally, the agreements reached are confidential. However, Hutchison and Rowan-Robinson (2001) suggest that they normally involve an agreement not to erect structures within a strip 6 metres wide down the length of duct involved. These payments are paid when the duct is installed and are calculated according to a multiple of the fair market value of the land involved. If a second telecommunications company wishes to lay cable in the ducts of the first then further wayleaves are payable to the land owner. Telecommunications companies do not pay wayleaves for lines installed along public roadways.

In the absence of publicly available information about the likely magnitude of telecommunications wayleaves it has proved necessary to estimate both their size and temporal pattern. The details of the calculations employed are set out in the footnotes which accompany Tables 2 and 3.

Discount Rate

A business managed rationally only invests in alternatives which are expected to return more than its risk-adjusted weighted average cost of capital. The weighted average cost of capital can be seen as the extra return which a firm expects to obtain each year compared with the past. It is, therefore, the minimum compensation it expects to obtain for waiting another year before a project becomes profitable. Sometimes this is referred to as the price of time and is normally used in business planning to compare projects with different temporal patterns of benefits. Oxera (2011), for example, has calculated the pre-tax nominal weighted average cost of capital of BT as between 10.4 and 10.8% p.a (roughly the equivalent of 7.5% p.a. in real terms assuming inflation of 3% p.a.) and reported that Ofcom had determined BT’s weighted average cost of capital at between 8.2% and 9.7%. The weighted average cost of capital of a company with less market power, and facing higher business risks, than BT is likely to be higher than these levels.

By contrast, the Green Book recommends that a real discount rate of 3.5% p.a. be employed to calculate the present values of different temporal patterns of costs and benefits. This is substantially lower than the discount rates likely to be employed for a similar purpose in the UK telecommunications market. Consequently, its use in the present IA is likely to under-weight the importance of future costs and benefits and over-weight transitions costs and benefits compared to similar calculations performed by companies. Hence, the conclusions drawn on the basis of Green Book recommendations may be at variance with the financial advantages and disadvantages of the measure calculated by UK telecommunications businesses.

HIGH-LEVEL BENEFITS OF SUPERFAST BROADBAND

It is extremely difficult to assess the size of the potential benefits which may be generated by superfast broadband. Next Generation Access and super-fast broadband are still in the very early stages of being rolled-out across the country, and its full effects are not going to be known for some time. It is also still unknown which applications and services super-fast broadband is likely to support, how large consumer demand for such services is likely to be and the price businesses and households would be willing to pay for them.

Furthermore, the benefits may depend on the technology solution used to deliver super-fast broadband. As a result, there is considerable uncertainty as to the size of the potential benefits achievable from next generation broadband. However, there are a number of areas where next-generation access may be expected to bring benefits over and above those of standard broadband access:

Tele-working

Super-fast broadband-supported services such as two-way video conferencing may encourage more employees and employers to make greater use of tele-working whereby some employees work from home where they can be more productive. This can deliver benefits both to the firm, the employee as well as wider economic, social and environmental benefits. For example tele-working can:

- Help reduce the barriers to entering the labour force for those groups which may be less mobile (e.g. disabled and parents with child-care responsibilities who wish to work part-time);
- Potentially contribute to the reduction in traffic congestion and carbon emissions; and
- Improve work-life balance.

Improved delivery of public services (education and health care)

Super-fast broadband can help improve the quality and delivery of education services to people in more rural and remote areas, helping them become more skilled, productive and earn a higher wage. Australia is an excellent illustrative example of where this is happening. According to DCITA , higher-speed broadband access has led to the creation of virtual classrooms which help to deliver a better quality of service and enables teachers to engage with students as a group through video conferencing.

Super-fast broadband can also play an important role in improving the quality and delivery of healthcare services, and has the potential to deliver higher-quality versions of existing health care technologies and services as well as enabling delivery of new services which cannot be supported using current generation broadband networks.

According to DCITA (2007) while some health care services can be delivered using small amounts of bandwidth (e-psychiatry, e-ultra-sound and e-radiology) the number of services using increased bandwidths is rising because it offers the prospect of clearer pictures, smoother motion and better synchronicity of sound with images through broadband. This suggests that the quality of healthcare service can be significantly improved for people who cannot easily access health care services such as the elderly or people living in remote areas.

Creative Industries

Increasingly creative industries are reliant upon broadband-based technologies. Super-fast broadband offers rapid upload (i.e. from sender) as well as download (i.e. from ISPs) speeds with very low latency (i.e. delay). These characteristics permit collaborative working between firms within sectors of the industry. Innovations like remote real-time editing and cloud computing can become a reality for a very wide segment of the industry. The ability to rapidly transmit and receive very large data files means that online market making or provision of film-based and gaming services can be conducted from almost any convenient location.

However, already it has been reported that 30% of companies cannot gain access to the broadband speeds they require at all locations in which the operate (CMA 2011). Hence, it is possible that a significant part of the creative industries sector will be hampered by its inability to access super-fast broadband.

Social and Environmental benefits

According to Plum (2008), superfast broadband supported services may help deliver further progress towards the achievement of social objectives such as increased democratic participation, cultural understanding and social inclusion. Furthermore, superfast broadband-supported services may make a more powerful contribution to environmental objectives such as carbon abatement and reduced energy consumption.

OPTIONS

Two options are considered. As a result, the benefits of one are the costs saved by not taking the other.

Two options were considered. Option 1 is the preferred option and involves changing the Electronic Communications Code to permit overhead lines to be used subject to safeguards. Option 2 is the do nothing option involving no change to code so that telecommunications lines continue to be installed underground.

Option 1: Relax regulations

Under Option 1 the Government amends the Electronic Communications Code (Conditions and Restrictions) Regulations 2003 by means of regulations which remove the current restriction that makes it mandatory that new telecommunications lines are buried underground, except where lines already exist or if there is no viable alternative. It is proposed that the regulation will allow overhead installation of telecommunications lines except where an alternative exists (such as sharing existing infrastructure) and provided local affected communities are adequately consulted. Telecommunications providers will be required to consult with rural and community groups, such as Parish Councils and other neighbourhood bodies, as part of the notification process.

There will, therefore, be a presumption in favour of sustainable development, as outlined in the Budget 2011. The Government also believes that it is important that communities and rural groups are enabled to make a choice of improved connectivity over visual amenity, so as to be consistent with the Government's localism approach

Benefits

The benefits of Option 1 are the costs firms will save by installing fibre on poles rather than being forced to use newly-installed ducts.

If they are realised, households and businesses in more rural and remote areas (as well as some suburban areas) may be able to enjoy the benefits and opportunities of superfast broadband much earlier than would be possible if restrictions were not relaxed. Additionally, it is possible that areas which would not have been connected to superfast broadband because the commercial case was weak would now be covered under this policy option. This would enable consumers and businesses in such areas to enjoy the benefits of super-fast broadband.

Cost savings to network operators could be realised since the costs of deploying superfast broadband through overhead wires would be less costly than alternative options such as underground deployment. Although installation costs of overhead optic fibre networks are lower than their underground equivalents their maintenance and repair costs are, on average, somewhat higher because of the difficulties of splicing new sections of fibre into the network. Unfortunately, it has not been possible to access estimates of this differential in operation costs.

Some studies have already attempted to present cost estimates of the different technological options to roll out super-fast broadband in the UK and the potential cost savings achievable from overhead deployment. These studies differ considerably in the methods they use and the technological and behavioural assumptions which underpin their modelling. As a result, they reach different estimates of the total costs of rolling out superfast broadband and the relatively cost savings achievable from deploying superfast broadband overhead.

For example, research by Analysys Mason (2008) shows that if aerial deployment is possible in some parts of the country, then the total cost of delivering superfast broadband on a national basis could fall by around 10%. For Fibre to the Cabinet (FTTC) (i.e. optic fibre extending from the exchange to the local distribution cabinet from which copper wire connects to the premises) it is estimated that the total cost would fall from some £5.1bn to £4.7bn, a saving of £400 million if extended to the whole of the UK, while for Fibre to the Home (FTTH) (i.e. optic fibre extending from the exchange to the home or premises instead of copper wire) the total cost would fall from some £24-28bn to £20-23bn, a total saving of between £4 and £5 billion depending on the technology solution adopted. This conclusion was based on the assumption that aerial deployment is used to deliver superfast broadband in rural areas and that new telegraph poles are used to achieve this, the impact of which would be to reduce the average cost per metre of aerial fibre installation to £25 per metre. Unfortunately, it is not completely clear that such savings are achievable everywhere which means that actual cost savings could be lower.

Furthermore, it is not possible, at present, to robustly estimate the total cost savings that could result from Option 1 because they depend on the length of optic fibre likely to be installed overhead instead of underground. This, in turn, depends upon the commercial decisions of telecommunications providers and consent expressed by local communities. In the absence of commercially sensitive information about the business plans of major telecommunications providers it is not possible to provide reliable estimates of the extent to which overhead installation is likely to occur. Moreover, without a detailed analysis of the geography and sociology of those likely installations it is not possible to estimate how many communities are likely to be affected and to what extent.

For these reasons, therefore, it is only possible, at this consultation stage, to present capital savings per km as a result of removing restrictions on overhead deployment, as in Table 1:

Table 1: Cost savings per km for a UK national deployment

Technology	Capital Savings

	£/km
FTTC/VDSL(1)	3,883
FTTP/GPON(2)	5,501
FTTP/PTP(3)	6,876

Source: Analysis of data provided by Analysys Mason for Broadband Stakeholder Group, published in Final Report of Barriers to Investment in Next Generation Access by Francsesco Caio (Ref 1, page 4).

Notes:

1. VDSL Very high bit-rate Digital Line Subscriber. Provided over copper wire. Upload sppeds slower than download.
2. GPON Gigabit Passive Optical Network. Provided over optic fibre to multiple user premises after passing through a splitter system. Upload speeds the same as download.
3. PTP Point to Point. Direct optic fibre line from exchange to user premises with no splitter system.

The benefits of Option 1 are the costs that are saved by not following Option 2. Three main costs have been identified and monetised; namely, capital costs, maintenance and wayleaves.

The most important of these is the costs of installing optic fibre. Rural communities are generally connected directly to the exchange rather than through cabinets located in communities. Hence, it is likely that in rural areas, with few cabinets, the installation technology will be predominantly FTTP/PTP. Thus, overhead installation permitted by Option 1 promises to reduce the capital cost of installing optic fibre to rural communities by £6,876 per km of cable installed. Unfortunately, it has not been possible to find publicly available information about the cost of installing optic fibre in ducts in the UK. Hence, it has been necessary to base our estimate on publicly available US data.

Optic fibre involves relatively low maintenance costs whether installed underground or overhead. Optic fibre installed overhead is subject to severe wind loading and extreme temperatures. Hence, it is likely that maintenance of overhead installations is more costly than underground ones. Unfortunately, it has not proved possible to access publicly available estimates of maintenance costs to check this hypothesis. For this reason, it has been assumed that annual maintenance is a fixed proportion of installation costs which is assumed to be 10% for underground and 15% for overhead installation In both cases it is assumed that maintenance does not begin until the year after installation.

Telecommunications wayleaves are complex and subject to considerable litigation. There are no publicly available sources of data on them. Hence, it has been necessary to estimate their potential magnitude.

There are no costs of accidents of loss of visual amenity associated with taking Option 2 so there are no benefits accruing to Option 1 on their account.

Table 2: Cost savings by adoption of preferred option

	Costs of Do Nothing: Option 2 (£/km)
Installation saved(1)	36,483
Maintenance saved(2)	3,648
Way leaves saved(3)(4)	9,266
Cost of accidents saved	0
Loss of visual amenity saved	0

Consultation costs	0
Total transition costs saved(5)	45,749

Notes:

1. Overhead installation is likely to be used for FTTP-PTP in rural districts. Calculated as average additional cost of FTTP-PTP taken from Table 1 compared to new aerial installation of fibre. Average overhead installation costs calculated as in Table 3. Note that, in practice, the majority of optic fibre installation will involve replacing copper wires in existing ducts.

2. No data on the costs of maintaining optic fibre in ducts are publicly available. We, therefore, assume annual maintenance at 10% of capital cost for fibre in duct. Maintenance begins in the year after installation.

3. Wayleaves for telecommunications duct are paid to landowners in return for permission to install ducts and fibre underground. They represent both a rental and a compensation and are normally paid as one-off up-front payment at time of installation. They vary widely in practice depending on negotiations between providers and landowners but are normally based on a fair value calculation see Norman E Hutchison and Jeremy Rowan-Robinson (2000): “Utility Wayleaves: A legislative lottery”, London, RICS Research Foundation, December, p. 18. Landowners can grow crops over the ducts but may not erect structures within a 6 metre wide strip running the length of the duct trench.

4. Fair value is calculated by assuming that the average price of farmland is £5,000 per acre and this dictates the wayleaves payable on average for a strip 6 metres wide across farmland. This is somewhat less than the average price for farmland Great Britain reported for 2010 see Savills (2011): “Agricultural Land Market Survey 2011”, London, Savills Research, February. Underground wayleaves are calculated as 1.25 times the fair value of land.

5. Transition costs = Installation + one-off wayleave payment.

Over 10 years the present value of the benefits of Option 1 amount to £73,504 pkm.

Costs

The construction of more telegraph poles may be unsightly and reduce the aesthetic value of areas of visual amenity which may have an economic cost. This is because landscape generates an economic value as several studies in the UK have shown. For example, Sims and Dent (2005) and Sims et al (2009) find that proximity to electricity pylons has a strong impact on the value of houses, with prices between 15-20% lower for those houses within a range of 250 metres from the pylons. It is possible, therefore, that relaxing the regulation on the deployment of overhead wires may reduce the wealth of some property owners. However, it should be noted that any overhead telecommunications cables are likely to be carried by smaller telegraph poles, rather than electricity pylons, and so can be expected to have a smaller impact than reported by Sims and her colleagues.

In a different study, Day et al (2001) conducted nearly 800 interviews in England and Wales and concluded that willingness to pay to replace overhead poles with underground lines was in the range of £55 to £76 per person. No equivalent data on overhead telecommunications lines in the UK have been found. If it were possible to reliably estimate the numbers of people likely to be affected by the proposed regulation then, in principle, some quantification of this effect might be made. However, as has already been pointed out it would have been disproportionately costly to obtain estimates of the extent to which this regulation will affect business decisions.

In addition, a study in the USA found that areas with broadband access enjoyed higher rental values than areas without (Gillett et al 2006). This suggests that there may be two counter-acting effects in practice. On the one hand, is the possible detriment to visual amenity of overhead lines and on the other is the benefit of being connected to super-fast broadband instead of slower systems. It is expected that the gains from having broadband are the same, for a given population, whatever the method of delivery. However, if Option 1 permits more people to have access to super-fast broadband this will only occur if the detriment to visual amenity is considered by those consulted to be less than the extra benefit that super-fast broadband affords.

It is nevertheless proposed that Areas of Outstanding Natural Beauty, National Parks, and the Broads will remain protected and subject to planning permission, and therefore no visual impact on these areas is expected, above and beyond any current impact.

Telecommunications companies wishing to install lines overhead will be required to consult with local affected communities. This consultation will be part of the notification procedure and will involve ensuring that publicity of the installation is ubiquitous in the area affected by the proposal as well as the more formal notification of Parish Councils. It is expected that this will provide ample opportunity for those whose visual amenity is likely to adversely affected to voice their concerns and to seek amendment to the proposed installation. Telecommunications companies will also have to demonstrate that they are not able to share existing infrastructure – either for capacity or cost reasons.

We expect the consultation that accompanies this IA will provide further data on the following matters:

- Costs and benefits to telecommunications of business of overhead compared to underground installation.
- Likely extent of overhead installation.
- Impacts of overhead deployment on local communities.
- Costs of community consultation.

Table 3: Costs of adopting preferred option

	Costs of Option 1 (£/km)
Installation(1)	29,607
Maintenance(2)	4,441
Way leaves(3)	1,110
Cost of accidents(4)	N/A
Loss of visual amenity(5)	N/A
Consultation costs	N/A
Total transition costs(6)	29,607

N/A Not Available.

Notes:

1. No data on the costs of installing optic fibre overhead are publicly available for the UK largely because such installations have hardly taken place. This forced the use of publicly available overseas data on overhead installation of optic fibre. The mean one off-cost of new installation of aerial fibre based on DCMS analysis of grants made by the National Telecommunications and Information Administration (NTIA) in the USA for the aerial installation of optic fibre converted to Sterling (1: 0.62).

2. Annual maintenance costs of optic fibre installed overhead are higher than fibre installed in duct. However, no data are publicly available. Hence, it is assumed that annual maintenance costs are 15% for aerially installed fibre. Maintenance begins in the year after installation.

3. Overhead telecommunications lines attract an annual rental payment (a wayleave) for each pole paid to landowners and tenants as appropriate. As with duct wayleaves these involve elements of rent and compensation but no data are publicly available. Wayleave annual rentals vary considerably according to the size of pole, the use of the land traversed and the nature of its tenancy and it is not possible to reliably estimate their average annual level in the absence of firm plans to install aerial optic fibre. The above estimate for wayleave rentals assumes that the National Grid standard wayleave tariff applies see http://www.nationalgrid.com/NR/rdonlyres. It is assumed that poles of 5.3 m are installed at a density of 20 per km, one third of which are installed on grassland and two thirds on arable all owner-occupied. It is possible that this represents an underestimate of actual negotiated costs of telecommunications wayleaves see The Central Association of Agricultural Values (2010): "Telecommunications Masts", Coleford, CAAV, September, p. 52.

4. It is possible that the number of accidents per year involving roadside poles will increase as a result of new installations. It has not proved possible to estimate this possible effect.

5. The costs of visual amenity are partly monetised and partly non-monetised. Monetised costs include the change in price of property close to overhead telecommunications compared to other property and costs of consultation and notification. Non-monetised costs include the annual costs of possible reduction in well-being resulting from interruption of views. Neither can be reliably estimated in the absence of information about the likely location of installations, numbers of people affected and the length of cable to be installed.

6. Transition costs = Installation only.

The main savings associated with the preferred option are summarised in Table 4. This, shows that while substantial savings are possible because of lower installation and wayleave costs associated with Option 1 they are reduced somewhat by higher maintenance costs. However, it should be noted that the maintenance costs employed in this analysis are assumed and are not based on any publicly available evidence. Hence, the savings associated with the adoption of Option 1 are uncertain at this stage.

Over 10 years, the present value of the costs of Option 1 is £71,838 pkm. Hence, the best estimate of the present value of the net benefit of Option 1 is £1,666 pkm, a saving of 2.3% on the current present value cost of duct installation.

Table 4: Summary of Costs and Benefits of Option 1.

	Costs of Option 1 (£/km)	Costs of Option 2 (£/km)	Savings
Installation	29,607	36,483	6,876
Maintenance	4,441	3,648	-793
Way leaves	1,110	9,266	8,156
Cost of accidents	N/A	0	N/A
Loss of visual amenity	N/A	0	N/A
Consultation costs	N/A	0	N/A
Total transition costs	29,607	45,749	16,142

Option 2: Do nothing

Under this option there would be no change to the Electronic Communications Code 2003.

Benefits

The timing of the potential benefits to households and businesses of superfast broadband will continue to depend on the speed at which the market delivers superfast broadband. For those in the final third of the population – particularly those in more rural areas of the UK – it is highly likely that they may not be able to experience superfast broadband and enjoy the benefits and opportunities that it offers purely through commercial deployment. Nevertheless, those that are connected will enjoy the benefits that super-fast broadband can confer without incurring the costs of Option 1.

Costs

Analysys Mason (2008) estimates that if superfast broadband cannot be delivered aerially via telegraph poles then delivering superfast broadband on a national basis would cost some £5.1bn for FTTC and around £24-28bn for FTTH. However, there are strong uncertainties around these costs and further analysis is required in order to provide a robust estimate.

RATIONALE OF APPROACH

This is a relatively high level IA to accompany a consultation on amending regulations. It contains many estimates which may not be entirely robust. In principle, it is conceivable that social surveys could be designed and business modelling exercises undertaken which would have provided reliable basis for calculating the net benefits of the policy. Nevertheless, it was judged that performing such analysis prior to receiving and analysing consultation responses would represent a disproportionate use of scarce Departmental time and money. It is hoped that many of the uncertainties described in this IA will be clarified in the responses to the accompanying consultation. Once those responses have been received and analysed then further research may be justified.

RISKS

Three risks have been identified.

1. The estimates of costs and benefits incorporated in this IA may provide a misleading assessment of their likely magnitude. As a consequence, the net benefit likely to be forthcoming from this measure may have been over- or under-estimated. It is expected that this risk will be further clarified as a result of the responses received from the consultation.
2. It is possible that the above analysis omits significant costs and benefits from consideration. If so, the assessment of this policy will be inaccurate and its implementation may have adverse consequences on the UK telecommunications market or communities. It is expected that the consultation responses will identify any significant omissions from this IA.
3. The measure may have no impact upon business decisions and so will not result in the desired outcome of greater commercially-driven installation of super-fast broadband in rural communities. If this is the case, it is expected that responses to the consultation will draw attention to the possibility which will enable appropriate policy adjustments to be made.

ENVIRONMENTAL IMPACT

The relaxation of the restrictions on the deployment of overhead lines will have some negative environmental impacts, chiefly on the visual amenity of the landscape in an area. However, we believe that we have provided adequate protection by firstly allowing communities to have a direct say on whether new overhead infrastructure is warranted, and by retaining the protections for Areas of Outstanding Natural Beauty, National Parks and The Broads that currently remain.

Additionally, we are clear that any new infrastructure can only be erected if sharing of existing infrastructure is not possible, thereby further reducing the likelihood of significant negative environmental impact. This is because using existing infrastructure will be cheaper than deploying new infrastructure, even overhead, and virtually always will be the preferred option for deployment, if possible.

Much depends upon the alacrity with which network providers take advantage of Option 2 and whether or not their proposals to install new poles and lines will be opposed neither of which can be accurately estimated. Hence, it is not possible to reliably quantify these impacts either in monetary or non-monetary form.

POSSIBLE HEALTH COSTS

In 2009, 14 one vehicle fatal accidents involved hitting a telegraph or electricity pole; seven on built-up roads and seven on non-built-up roads. In total there were 603 accidents involving telegraph or electricity poles on all roads, 485 of which were slight. It is to be expected that if this measure leads to the installation of more poles for overhead lines along roads the number of accidents involving them will rise. The extent and hence the costs of this rise cannot be estimated.

ONE IN ONE OUT

We believe this qualifies as an Out, as it is a de-regulatory measure for business, designed to increase investment in superfast broadband networks.

However, because we cannot estimate the extent to which overhead lines are likely to be used it is not possible to estimate the effect on the whole sector. The present value of direct benefits to business are £0.068 million per km and of costs £0.066 million per km. The PVNCB is, therefore, -£0.015 per km and the EANCB -£0.002 million per km.

SUMMARY AND IMPLEMENTATION

We believe that Option 1, amending the regulations to allow overhead deployment, presents the best option for consumers, who will benefit from greater reach of services, as well as telecommunications companies who will have greater choice over how they deliver their services. We believe the restrictions we have proposed give communities protection and allow them to be fully consulted on any proposals.

Subject to consultation responses, we anticipate implementing the change to the regulations on the Common Commencement Date of 6 April. It may, however, be necessary to implement the change outside of the common commencement date, should we be unable to lay the regulations before Parliament in time, following the closure of the consultation.

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