Regulation Impact Statement

Enabling industry to manage interference between competing next-generation broadband services

Introduction and overview

Very high-speed Digital Subscriber Line technology (VDSL) is a recent generation of digital subscriber line (DSL) technology. The second generation of this technology, VDSL2, is capable of delivering up to 100 Mbps in both directions simultaneously over a short length of copper. VDSL2 services are typically provided in fibre-to-the-node (FTTN) and fibre-to-the-basement (FTTB) networks.

The maximum data rate which can be achieved over a line supplying a VDSL2 service depends on two factors:

- The length of the copper cable between the VDSL2 enabled digital subscriber line access multiplexer (DSLAM) (which could be housed in a street cabinet or apartment complex basement) and end-user premises, as there is signal loss or attenuation as the length of the copper cable increases.
- Interference, which is also known as 'crosstalk' between the different copper lines in a cable sheath. Vectoring technology however can be used by an access provider to minimise interference. It does this by cancelling out the crosstalk between copper pairs. In order for vectoring to deliver optimum performance, however, a single provider must operate vectoring over all active lines within a cable sheath or multiple providers must cooperate, using similar equipment to vector from the same point on the network.

Currently, interference between competing DSL systems, typically provided from exchanges, is managed by industry through codes. The industry representative body, Communications Alliance (CA), drafts those codes through its working groups which are open to participation by all CA members.

The *Telecommunications Act 1997* (the Act) and the *Telecommunications Regulations 2001* (the Regulations) together provide a head of power for industry to make codes dealing with technical issues. Once such codes are made, they may be registered by the Australian Communications and Media Authority (ACMA). Compliance with a code is voluntary unless the ACMA directs a service provider to comply; once such a direction is made the ACMA can then enforce compliance with the code. Industry can of course make its own codes independently, but if those do not match the head of power in the Regulations then they cannot be enforced by the ACMA.

Industry has advised the Government that existing codes and standards do not address interference caused by next-generation DSL systems, such as VDSL2, in particular when those systems are used with vectoring. Industry further advises that these existing codes cannot be amended to manage interference caused by next-generation broadband systems without an initial change to the Regulations. Such systems are now being rolled out in cities by providers such as NBN Co, LBN Co, OPENetworks, TPG and iiNet, and there are anecdotal reports of interference between the new and legacy telephony and DSL systems (in this context, Asymmetric Digital Subscriber Line or ADSL systems, and a variant of that

technology known as ADSL2+). The Government is therefore proposing to amend the Regulations to enable industry to make codes or standards to manage interference caused by the operation of next-generation broadband systems with a view to optimising performance and potentially, competition, to the extent possible.

Policy background

The Government, in December 2014, set out its framework for regulatory reform in the telecommunications sector. This included the Government's response to the 53 recommendations made by the Vertigan panel's Independent Cost-Benefit Analysis and Review of Regulation, and included a number of measures to promote a more competitively neutral market place. Against this backdrop the Government made a series of observations in relation to the regulatory treatment of VDSL2. It noted:

- The Australian Consumer and Competition Commission (ACCC) was conducting a declaration inquiry in relation to VDSL2 services.
- The Communications Alliance is currently considering the technical issues posed where there are competing providers of VDSL2 technology in a single multi-tenant building.
- The Government will consider additional rules as needed for managing interference and co-existence between competing VDSL2 networks.

In the Government's response to the recommendations of the review, the issue was treated in greater specificity. Recommendation 9 of the Statutory Review under s.152EOA of the *Competition and Consumer Act 2010* stated that interference between competing vectored VDSL2 systems should be managed by Communications Alliance and the regulators. The Government responded that the issue should be dealt with through existing industry mechanisms to the greatest extent possible, and if these arrangements cannot resolve the issue, then the Government should enable Communications Alliance to put in place appropriate mechanisms, including interim arrangements, to deal with interference.[1]

The next-generation DSL market in Australia

VDSL2 networks using vectoring technology are relatively new, and have only begun to be rolled out in scale around the world in the last few years. In Australia, five providers are known to have rolled out FTTB/N networks which are used to supply carriage services to residential customers (currently without vectoring, although service providers have plans to introduce vectoring in the future). They are:

- iiNet, through its TransACT subsidiary, which has a FTTB/N network serving parts of the Australian Capital Territory,
- LBN Co, which has built FTTB connections to multi-dwelling units in new developments in Sydney and Melbourne,
- NBN Co, which intends to roll-out VDSL2 on a national scale and began design and construction work in January 2015 for around 6000 premises in Sydney, Melbourne and Canberra,[2]

[1] *Telecommunications Regulatory and Structural Reform Paper*, December 2014, p 15
[2] IT News, *NBN Co begins FTTB rollout*, 19 January 2015

- OPENetworks, which has deployed FTTB/N technology in a small number of apartment buildings in Queensland and New South Wales[3], and
- TPG, which has commenced building a FTTB network in Sydney, Melbourne, Brisbane, Adelaide and Perth, with the intention of providing services to up to 500,000 customers.[4]

The Government is not aware of any other carriers currently supplying FTTB/N services, but notes that there are a number of carriers competing to service new developments and therefore the number of carriers with competing FTTB/N networks may increase.

Problem definition

Interference between competing next-generation networks or between legacy networks and next-generation networks can result in serious degradation to an end-user's service and prevent carriers from being able to offer optimised services to customers. There are three main scenarios in which interference is likely to occur:

1. Where a carrier installs a new next-generation system in a building and supplies that service to end-users using the same cable bundle that is used to supply existing legacy services to residents of the building.
2. Where two or more carriers supply a next-generation service over a cable bundle within a building and do not coordinate the spectrum band over which those services operate.
3. Where two or more carriers supply a vectored next-generation service over a cable bundle within a building and do not coordinate the spectrum band over which those services operate.

To some extent, the issue of interference management is most problematic in the context of apartment buildings (otherwise known as multi-dwelling units or 'MDUs') where more than one carrier may wish to install a DSLAM with next-generation capabilities in the building basement or from a node in the street that connects to the building's internal cabling. In MDUs, it is usually the building owner or manager who owns the internal cabling, and that building owner or manager can decide whether a single provider can access the cabling or whether there will be competing providers. Given that the building owner or manager has the ultimate choice, this means that there may be situations where there are competing providers accessing the same internal customer cabling in a MDU.[5]

Consequently, where there are competing providers using the same cabling, there is potential for services provided by those providers to interfere with each other and degrade each other's services. Where one provider is at a node, that provider's services will experience greater degradation than a provider whose DSLAM is in the basement. There may therefore be some incentives for a provider whose systems are located closer to end-users not to cooperate in order to gain a competitive advantage over providers located further from end-users. If such actions were to occur, then some end-users' services may be severely impaired. This highlights the consumer protection element of this issue – in essence, a consumer should be guaranteed to receive the service they have paid for. As a result, the Government needs to

[3] OPENetworks Pty Ltd, Network locations, viewed 12 May 2015, http://www.openetworks.com.au/network-locations

[4] Australian Financial Review, *TPG fibre plan challenges NBN*, 17 September 2013

[5] In some cases, a service provider may seek to install its own customer cabling (i.e. by overbuilding existing cabling), but this is generally rare.

ensure that industry can make rules to manage interference so that the performance of existing end-users' services are optimised.

At present, competing VDSL2 networks do not overlap, but inevitably as carriers seek to rollout new and improved systems, competing next-generation networks will overlap with other networks and in some cases may serve the same buildings. Some VDSL2 rollouts currently serve buildings that are already served by legacy ADSL or ADSL2+ services.

Currently, interference between competing systems, whether telephony, ADSL or ADSL2+, is managed by industry through a code, the *Unconditioned Local Loop Service (ULLS) Network Deployment Code (C559:2012)*.[6] This code was developed after the Regulations were made to allow codes to set out indirect network design features, and direct and indirect performance requirements, relating to interference between telecommunications systems using the ULLS. However, the Regulations only authorise industry to make codes relating to the ULLS, and not in relation to telecommunications systems that do not use the ULLS. In-building cabling, for example, is generally not a part of the ULLS as it is owned and controlled by a building owner or manager.

As VDSL2 systems are being installed at the building basement or a node, they do not use the ULLS and therefore industry cannot develop an enforceable code to manage interference caused by VDSL2 systems. It should be noted that CA, in its submission to the Vertigan panel's Independent Cost-Benefit Analysis and Review of Regulation, suggested that Government intervention was required to enable it to make a new code for the purposes set out in this regulation impact statement.[7]

The case for action

The need for industry to be able to manage interference is required because VDSL2 deployments are proceeding without coordination. As advised by CA in its submission to the Vertigan review, there is scope for significant interference problems to arise if appropriate measures are not put in place to manage it. The deployment of VDSL2 is the precursor to other, faster, copper-based DSL services such as G.fast. Coordination of VDSL2 services is the most effective way to ensure that competing providers can provide optimal services and operate their networks in a manner that delivers the best outcomes for consumers. Services that interfere with each other are likely to have a significant impact on the ability of individuals to access online services and obtain the benefits that result from that access. Furthermore, if the market is left unregulated for too long, attempting to correct the problems

[6] In a practical sense, this means the line that runs from the exchange building to the customer premises. For completeness, the unconditioned local loop service is defined by the ACCC as the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end user side of the customer access module. See http://registers.accc.gov.au/content/index.phtml/itemId/885818.

[7] Communications Alliance, *Vertigan Review Panel: Regulatory Issues Framing Paper*, March 2014, p 2, "While some of the necessary technical features of VDSL2 can be enabled by updating existing industry codes and customer equipment standards, the existing codes and standards cannot on their own provide the necessary regulation for the proper technical performance of a vectored VDSL2 rollout."

created by the unregulated marketplace is likely to be complex, costly and result in additional detriment to the end-user.

Government intervention would be focussed on ensuring that the appropriate head of power is written into the Regulations to enable industry to develop a code that provides it with the ability to effectively manage interference while supporting competition in the market for next-generation broadband services to the extent possible.

Additionally, continued uncertainty regarding a Government decision on appropriate measures to manage next-generation broadband interference could result in reduced investment in those technologies, or delay network design and construction of FTTB/N networks where they are required. This will result in worse outcomes for consumers who may have to wait longer before next generation broadband technologies are available to them and the subsequent benefits can be experienced.

A clear framework for the deployment of next generation networks is also required to provide NBN Co with certainty regarding its investment in next-generation networks and the design of those networks. **[C-i-C]** [redacted] **[C-i-C]**

Overview of options

In addition to the status quo, there are two main alternatives to respond to the problem of managing next-generation broadband interference.

Option 1 – Status quo

Under this option, the Government would not intervene in the market for supply of VDSL2 or other next-generation broadband services. This scenario may result in industry deciding to coordinate their networks to reduce interference. Conversely, there is the risk that they will not choose to coordinate and that legacy services and new services will be affected by interference caused by new entrants with new technologies.

It is too early to determine whether carriers are likely to cooperate to limit interference. Advice from industry is that competing providers are installing FTTB systems in multi-dwelling units without coordinating with the providers of services from the exchange and, as a result, legacy ADSL or ADSL2+ services may be being degraded. The limited scale of FTTB rollouts in Australia to date may explain why the problem is not more widespread. Given the incentives for new entrants not to cooperate, however, it can be argued that there will always be some situations in which a new entrant refuses to cooperate with an existing provider.

Option 2 – Amend the Regulations to enable industry to create a code to manage interference

This option proposes that the Government make an amendment to the Regulations that enables industry to create a code to deal with interference caused by next-generation broadband services.

The Regulations would set out a head of power for the industry to make a code. The Government could, at the same time, issue a policy statement setting out principles that it

would anticipate being covered in the code. The code would need to be registered by the ACMA.

Option 3 – Amend the Regulations and the ACMA makes an industry standard

If industry is unwilling to revise its code, the ACMA could ultimately make its own standard, as permitted under Part 6 of the *Telecommunications Act 1997*. Accordingly, under this option the Minister could expedite this process by directing the ACMA to make a standard.

Regulatory impacts of options

The following criteria have generally been considered in assessing the costs and benefits of the different options:

- Does the option provide for the effective (including enforceable) and efficient management of next-generation broadband interference by industry?
- Does the option provide regulatory certainty for carriers with existing network investments, or for carriers seeking to deploy next-generation broadband networks?
- Does the option impose burdensome compliance costs on industry, whether one-off or ongoing?
- Is the option asymmetrical, in that it imposes a greater financial impact on some industry participants and not on others?
- Does the option provide for flexibility in the deployment of future technologies or will it result in costly remediation?
- What will be the impact of the option on end-users?
- What will be the impact on investment?
- Does the option leverage industry expertise and experience?

Option 1 – Status quo

The option represents the status quo approach. Option 1 has the following advantages:

- Without any regulatory requirements to slow or prevent the rollout of services, carriers may be in a position to roll out services faster than they otherwise would if they were required to test and adjust equipment for interference. In this instance, consumers may be able to access next-generation broadband services sooner than they otherwise would if there were a requirement for carriers to comply with an industry code or other regulation.
- Compliance costs would be nil because there are no requirements for carriers to comply with an industry code or Government imposed requirements.
- Competition and coordination between carriers may develop organically if a second carrier's system has significant impacts on existing services. Ultimately, a first mover may be compelled to cooperate with a second carrier if the only alternative is that the second carrier installs equipment that causes significant detriment to the first provider's services.
- To avoid the interference issues associated with VDSL2, carriers may decide to invest in alternative superfast technologies. Carriers may decide there is too much risk associated in deploying VDSL2 systems and build or take advantage of existing HFC or FTTP networks. However, it is costly and time-consuming to deploy new networks and industry has to date shown little appetite for installing such networks on a large scale. In the case

of NBN Co, its acquisition of existing Telstra and Optus HFC networks may enable it to compete using HFC in some instances.

Option 1 has the following disadvantages:

- A carrier installing new VDSL2 infrastructure would have no obligation to ensure that its services do not interfere with existing services (including legacy services such as ADSL2+ and telephony) which are provided over the same cable bundle. A carrier installing its systems closer to end-users could have incentives not to cooperate with existing service providers because its systems would significantly degrade those providers' services, which could encourage end-users to migrate to the new carrier's services. Such an outcome would limit end-users' ability to choose their own preferred fixed-line service (noting that a new fixed-line provider would be required, under other Government regulation, to offer wholesale services). It would also mean that, for the period of time from when services begin to be degraded until service providers can migrate customers to wholesale services provided over the new network, end-users are exposed to poor quality services.
- Carriers whose services are affected by new entrants would have the option of negating interference from those entrants by installing new cabling in the building, but this would be expensive[8] and reduce the existing carriers' ability to compete on price. They may also choose to resell the new carrier's services, which may provide a more cost-effective option.
- Carriers are not afforded any certainty in relation to their investment in VDSL2 technology. A first mover carrier could conceivably be held hostage by a second mover that wants to install services. The first mover would have a choice between accepting the costs of coordinating the second mover's services or having its services severely degraded.
- Carriers would face difficulties in being able to guarantee achievable speeds to potential and actual customers; any guarantees would need to be subject to the possibility of another carrier installing a new system that used the same cable bundle. This could in turn deter some first mover investments in VDSL2 technology where carriers consider the risk from second movers is too great.
- A first mover may also seek an injunction against a second mover to prevent degradation of services, however, unless the first mover can identify specific legal rights that have been breached by the second mover, the injunction may not be granted.
- Consumers are likely to be frustrated if VDSL2 services start to experience poor quality of service due to other providers entering a building and causing interference.

Option 2 – Amend the Regulations to enable industry to create a code and issue guidance to industry

Option 2 has the following advantages:

- The option sets clear parameters for industry to develop rules. One of the concerns with option 1, which preserves the status quo, is that it will allow interference between

[8] For example, the costs of deploying new cabling within apartment buildings are between $450 and $500 more per apartment than deploying fibre to the basement and using the existing in-building cabling. NBN Co (2013), *Strategic Review December 2013*, p.87.

carriers' services if no rules are developed, but even if rules are developed, that will not be enforceable by the ACMA. This could result in an opportunistic player causing severe degradation to existing services. By enabling industry to develop rules in relation to the supply of next-generation services, the Government would provide the telecommunications industry with an enforceable framework in which it can manage interference.

- Carriers' investments in next-generation networks are protected under this approach. If a carrier rolls out a network, the code could prevent another provider coming in at a later date and unreasonably degrading the service being provided by the first mover. This provides carriers with confidence that the value of their investments will not be diminished by opportunistic behaviour by other carriers.
- A requirement in a code for carriers to cooperate will mean that competition will be able to occur over the cable bundle where it is feasible to do so. Where competition occurs, this would lead to more choice for consumers and potentially, permit the normal benefits of competition such as lower prices and earlier deployment of new services.
- A requirement in a code to cooperate also leaves open the opportunity for technological breakthroughs to advance competition outcomes. For example, if technologies such as cross-DSLAM level vectoring become more established, multiple next generation broadband services would be able to coexist with little or no degradation of services. A requirement for cooperation would preserve that opportunity.
- Industry is best placed to develop a code. Through familiarity with the existing ULLS code (C559:2012) to manage interference, industry is already in a position to develop with a code to manage interference involving next-generation broadband and legacy services. This should mean that the cost of code development will be relatively low and that industry will have an incentive to contain its own compliance costs.

Option 2 has the following disadvantages:

- Carriers may not be able to offer optimised services under this option if a second or subsequent provider is granted access to a cable and a code allows for some service degradation. This may result in some users experiencing a degradation—albeit minor—in the speed of their services once the second carrier begins to supply services over the cable bundle.
- There may be additional costs on second or subsequent providers to ensure that their services do not interfere with those of the first mover. While cooperation by the first mover can be assured under this option, the costs of managing interference would most likely fall to the second or subsequent provider who creates interference (however, costs are dependent on the requirements of the code).
- Some industry members have indicated that a register of cable bundle owners would be useful to help it track ownership and make it easier for carriers to determine if in-building cabling is already in use. If industry considers that such a register is necessary, it would have to implement it. The development and maintenance of such a register will create costs for industry, although these would not be regulatory costs as the Government would not impose such a requirement.
- Building owners may become confused or concerned about interference once carriers who wish to compete in a building supply information. As a result, they could refuse to grant new carriers access to their in-building cabling. Were this to occur, some residents

at least would be denied the potential benefits of infrastructure competition (noting that current regulation provides for carriers providing superfast services to residential customers to provide open access, supporting retail competition).

- If it takes too long for industry to draft the code (because of disagreement over its contents) or the ACMA finds reason not to register the code, the deployment of next generation services could be delayed.

Option 3 – Amend the Regulations and the ACMA makes an industry standard

The advantages and disadvantages of this option are similar to option 2. The main difference between the options would be that the ACMA develops a standard, rather than requiring industry to attempt to first develop a code and then seek to have it registered by the ACMA. The Minister would most likely direct the ACMA to make the standard and in doing so, could set out the principles that he or she would expect to be included in the standard. The ACMA would still need to consult industry in developing the standard and would be expected to engage with industry extensively. This option may be timelier than having industry first develop a code, and then seek ACMA registration; however, there is the risk that it could take the ACMA more time because it is less intimately involved in the technologies and issues than industry.

The main benefit of this approach is that a standard would be automatically binding upon all industry members who operate next-generation broadband systems. Consequently, it would be more straightforward to enforce than a code. (As noted above, compliance with a code, even if registered by the ACMA, is voluntary until a service provider is directed by the ACMA to comply with a code). If the ACMA makes a standard and observes non-compliance, it would be able to take enforcement action directly.

An ACMA standard may also be appropriate in situations where an individual carrier or carriers cannot agree to finalise a code for consideration by the ACMA. There are a number of reasons why a carrier may not want a code to be registered, including the possibility that a carrier may obtain some commercial advantage by delaying a code's registration. In this particular scenario, the ability for the ACMA to make a standard is an important safeguard, both for consumers and industry.

The main disadvantage of the option is that it removes industry control of the regulatory process. There is considerable technical expertise within industry, which should be leveraged to the greatest extent possible in developing a code. This may lead to the inclusion of unnecessary requirements and costs, and the regulator may be less driven than industry to eliminate such costs. There is a risk that the standard may reflect the outcome the regulator considers in best, even though the industry disagrees. As a result, it has the potential to impose greater compliance costs than option 2, although these are impossible to quantify at this stage because they are potential rather than actual. There is also the risk, as noted above, that it could be more time consuming as the regulator may not have the expertise and incentives available in industry.

Consultation

The Government has closely consulted CA, and in particular, Working Group WC58, on the development of rules to manage VDSL2 interference since August 2014. The Department has also held discussions with the industry regulators, the ACMA and the Australian Competition and Consumer Commission.

This consultation follows earlier consultation by the Vertigan review, and the subsequent Government response to the review. That review considered the question of VDSL2 interference management as part of the review process and CA members were consulted during this period. The Government has been encouraged by affected parties to assist in the development of a solution to the problem.

The Department has also sought comment on the draft regulation from the Australian Communications Consumers Action Network (ACCAN) and the Property Council of Australia. ACCAN noted that the substantive issues will be the content of the code itself.

The Department will undertake an additional two weeks of consultation on the Regulation and the regulation impact statement. This will enable all carriers to provide comment, including carriers who have VDSL2 infrastructure in place but are not members of CA.

Selecting the best option

Option 2 is the Department's preferred option. By establishing a regulation to allow industry to develop a code, the Government is facilitating an effective and efficient means of providing for the rollout of such services, and managing the associated interference issues that arise as a result of competing carriers sharing a cable bundle. In particular, the regulation will create an environment in which industry can develop cooperative arrangements, but ones which can be enforced by the regulator if required. This option may have higher compliance costs than option 1, but as industry already manages interference between competing ADSL services under a code, those costs are expected to be incremental costs rather than significant. For example, there may be some initial costs in developing the code and in training workforce and disseminating information about a new code. Ultimately, however, the cost that the code causes for carriers will be determined by industry. Additionally, this option leverages existing industry expertise to develop a solution to a technical and highly complex problem, driven by industry's incentive to minimise cost.

Option 1 does not address the problem that carriers rolling out VDSL2 technology can significantly degrade existing services, resulting in end-users receiving poorer services until they migrate over to the new network. It also increases the risks and costs of investment for carriers, potentially limiting access to next-generation broadband for consumers. Accordingly, option 1 may result in suboptimal outcomes for end-users and industry, even though it does not give rise to any regulatory compliance burdens. It is therefore not a preferred option.

Option 3, while similar to option 2, could potentially result in an industry standard being created sooner than industry would be able to develop a code, therefore enabling carriers to rollout next-generation services faster and with more certainty than they otherwise would. On the other hand, the standard, not being created by the industry body, would be less able to

leverage industry expertise and be less driven by industry cost concerns. There is also a risk that if industry does not have 'buy in', the standard could take longer. It is therefore not a preferred option.

Implementation and evaluation

Option 2 would be implemented amending the Regulations. Once the Regulations are amended, CA would prepare a code. If necessary, the Minister could also set out the Government's expectation about the code, which would go to optimising broadband performance and competition to the greatest extent possible. Industry itself would consult on the content of a draft code prior to submitting it to the ACMA for registration, and the ACMA would prepare a regulatory impact statement on the code before registration.

The Government would evaluate the effectiveness of the Code and the proposed regulation, including the nature of any impacts on carriers or end-users, through the ACMA's monitoring of industry performance (for example, through s 105 of the Telecommunications Act) and its ongoing engagement with carriers and regulators.

Annex A – Regulatory Burden Measurement

The regulatory burden measurement of the different options is set out in the table below.

Options	Preferred	Regulatory Burden Measurement
1: Status quo	No	None
2: Amend the Regulations to enable industry to create a code and issue guidance to industry	Yes	Low cost – $1.05m over 10 years.
3. Amend the Regulations and the ACMA makes an industry standard	No	Low cost - $1.05m over 10 years, but subject to actual measures in the standard

Assumptions (Option 1)

There is no change in regulatory burden for the status quo option.

Average Annual Regulatory Costs (from Business as usual)				
Change in costs ($million)	**Business**	**Community Organisations**	**Individuals**	**Total change in cost**
Total by Sector	($0)	$0	$0	($0)

Assumptions (Option 2)

The Department estimates that six businesses could be impacted by the proposed changes to the Regulations. As noted in the body of the RIS, the changes will affect those carriers who: a) have, or are rolling out, VDSL2 or other next-generation FTTB/N technology, or b) carriers supplying legacy services that may receive interference from VDSL2 or FTTB/N networks. At present the Department is aware of five service providers who have, or are rolling out, VDSL2 networks – NBN Co, LBN Co, OPENetworks, iiNet and TPG. Service providers with existing legacy infrastructure that may receive interference from VDSL2 networks are limited to Telstra and potentially iiNet (through its TransACT subsidiary).

The Department assumes that CA will allocate staffing resources to work on developing / drafting the code. It is then assumed service providers will also allocate a staff member to be engaged in the drafting process. Some carriers who are not currently rolling out next-

generation broadband networks may also allocate staff as they would want to ensure that any code was in their interests.

The Department also assumes that there will be ongoing monitoring of the code by industry to assess its effectiveness and whether potential changes are required to account for the state of the market and changes in technology. These costs are estimated to be around 10 percent, ongoing, of the cost of developing the code.

In addition to the cost of developing the code, service providers will need to develop information material for customers and that material will be moderately updated as required to account for changes in practices or approach by service providers.

The Department estimates that a register of service providers in MDUs will be required for the effective operation of the code. The register will be used by industry to determine whether a building is served by a next-generation service and the carrier operating that service. Such a register would help industry plan investments and know who to contact if a planned rollout will interfere with an existing service. The cost of the register would be relatively minor as it could be a simple database maintained by the industry association.

Service providers will supply information to building owners and spend time responding to concerns and negotiating with other providers to coordinate rollouts. The Department envisages these administrative issues creating around 240 hours of work per year for each of six service providers.

Ensuring compliance with the code is estimated to create around 120 hours of work per year for each affected service provider, on the basis that service providers would need to discuss co-ordination arrangements with other service providers and may need to adjust equipment to suit the technical parameters set out in the code.

The working table for this option is shown at Attachment A.

Average Annual Regulatory Costs (from Business as usual)				
Change in costs ($million)	**Business**	**Community Organisations**	**Individuals**	**Total change in cost**
Total by Sector	($105,594)	$0	$0	($105,594)

Assumptions (Option 3)

The regulatory costs are assumed to be comparable to those set out under option 2, noting that although the ACMA would develop a standard, industry and CA would still be extensively involved in assisting the ACMA and there would still be costs involved in complying with the standard and updating it. However, the greater degree of regulatory involvement could involve a more protracted code development process, as the regulator and industry may need to reach agreement on some issues. The Department therefore estimates that code development costs would be increased by 50 per cent.

As noted above there could potentially be some additional costs for industry to the extent that the ACMA requires it to undertake processes that are new, but it is not possible to quantify such costs without knowing whether they would actually be imposed. This would be a matter for the Regulatory Impact Statement to be prepared by the ACMA when it makes the standard.

Average Annual Regulatory Costs (from Business as usual)				
Change in costs ($million)	**Business**	**Community Organisations**	**Individuals**	**Total change in cost**
Total by Sector	($105,594)	$0	$0	($105,594)

Workings

Regulatory Burden and Cost Offset Estimate Table

Average Annual Regulatory Costs (from Business as usual)				
Change in costs ($million)	**Business**	**Community Organisations**	**Individuals**	**Total change in cost**
Total by Sector	($0.1)	$0	$0	($0.1)
Cost offset ($million)	**Business**	**Community Organisations**	**Individuals**	**Total by Source**
Agency	($0.1)	$0	$0	($0.1)
Are all new costs offset? ☑ yes, costs are offset ☐ no, costs are not offset ☐ deregulatory, no offsets required				
Total (Change in costs - Cost offset) ($million) **($0)**				

The regulatory cost offsets noted in the above table have been identified within the Communications portfolio. These cost offsets relate to savings created by the Government's policy on cost recovery in new developments.

RIS - Mananging interference between next-generation broadband networks											
COSTS											
Number of providers	6										
Hours spent developing code	240										
Hours spent ensuring compliance with code	120										
Hours spent preparing information material	30										
Hours spent on administration	240										
Wage/hr	$37.40										
Wage adjust for oncost multiplier	$65.45										
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Industry register - development and ongoing costs	$75,000	$3,750	$3,750	$3,750	$3,750	$3,750	$3,750	$3,750	$3,750	$3,750	$108,750
Development of information material	$11,781	$1,178	$1,178	$1,178	$1,178	$1,178	$1,178	$1,178	$1,178	$1,178	$22,384
Administrative costs of providing information to building owners	$94,248	$94,248	$94,248	$47,124	$47,124	$23,562	$23,562	$11,781	$11,781	$5,891	$453,569
Ensuring compliance with code	$47,124	$47,124	$47,124	$47,124	$47,124	$47,124	$47,124	$47,124	$47,124	$47,124	$471,240
											$1,055,942
Savings											
Nil											
RBM	$105,594										

Average Annual Regulatory Costs (from Business as usual)				
Change in costs ($million)	Business	Community Organisations	Individuals	Total change in cost
Total by Sector	$105,594	$0	$0	$105,594