

SENATE SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

QUESTION ON NOTICE

For the Department of Broadband, Communications and the Digital Economy:

Could the Department, in consultation as appropriate with the Lead Advisor for the *Implementation Study for the National Broadband Network*, please provide responses to the attached excerpts taken from media articles that have critiqued or made comments of relevance to the assumptions and conclusions made by the *Implementation Study*?

Structure of excerpts

Excerpts are grouped according to the following headings:

1. Assumptions made by lead advisor

- a) Assumptions about likelihood of take-up
- b) Assumptions about wholesale access pricing:
- c) Assumptions about competition from wireless
- d) Assumptions about competition from copper / HFC
- e) Assumptions about end-user desire for fibre broadband
- f) Rate used to calculate commercial viability
- g) Use of bond rate
- h) Estimates of input costs

2. Recommendations made by lead advisor

- a) Competition concerns
- b) Discrimination of access pricing for different end-users
- c) Services to final 10/7 per cent - "peak" vs "committed" speeds of 12 Mbps
- d) Desirability of satellite/wireless proposals

RESPONSE

1 ASSUMPTIONS MADE BY THE LEAD ADVISOR

(a) Assumptions about likelihood of take-up

■ Kevin Morgan

'the assumption take-up rates will exceed 70% and could approach 90% is heroic. ... This compares to FTTH take up rates in the USA and Holland which have levelled off at 30%. Despite such realities, the study argues the attractions of fibre for RSPs will drive take up to effectively 100% of fixed line households. Bear in mind 20% of Australian households don't have a computer. Nevertheless, the study believes consumers will be won over by RSPs offering retail services built on an entry level 20Mbit wholesale offering.'

Take-up rates are not levelling off in mature deployments and in fact fibre uptake in these markets is continuing to increase.

For example, Verizon stated in its most recent quarterly report (4 April 2010) that it was adding customers to its FIOS FTTP network at a net annualised rate of 5%.

This rate is in the context that Verizon, as the incumbent, has little incentive to migrate customers rapidly onto fibre as it faces a cannibalisation dilemma (it already owns copper networks). NBN Co will not face this dilemma.

Increasing uptake rates for Verizon are consistent with evidence of uptake in more mature roll-outs such as Japan and South Korea (as set out in Exhibit 4-35 on page 242 of the Study). In these countries, demand for fibre is continuing to increase and has grown to approximately 50% of fixed broadband penetration.

Home ownership of computers is growing strongly and reliance on a point in time statistic that '20% of Australian households don't have a computer' has a potential to mislead if taken in isolation of the trend for increasing computer ownership.

The rate of households in Australia with a computer has grown from approximately 50% a decade ago to 80% today with current growth of 3% per annum. While it is acknowledged this rate may level off, it is yet to do so.

Home internet usage is increasing sharply, particularly in younger age-groups. ABS statistics show the majority of households not using the internet at home are in the over 65 age-group. Over time it is reasonable

to expect changing household demographics to drive increased internet use.

The Implementation Study's conservative assumption that fixed-line broadband penetration will grow from 60% today to 70-90% by 2030 is consistent with these trends.

■ **Grahame Lynch**

'The bullish estimates of uptake also would seem to be belied by a few other inconvenient truths: overall PSTN revenues are declining by over 7% a year and at an accelerating rate, even fixed Internet revenue is flat. Some 30% of internet connections are now wireless and increasing at a double digit annual rate, while at the other end, 28% of households don't have Internet access. Don't expect that latter figure to change too fast, some 22% of households don't have a computer either! Overall household expenditure on communications as a percentage of income has remained incredibly stable across decades and the wireless sector is becoming more and more adroit at staking its claim on it.'

Fixed internet connections are already at 60% and the Study considers it is reasonable to assume this rate will grow to 70-90% by 2030 driven by increasing demand for bandwidth, growth in new premises (where penetration is extremely high) and favourable demographics.

The Study has not assumed that transitioning to fibre implies higher retail prices or growth in the overall revenue pool. It considers this scenario would still allow RSPs to offer services at prices comparable to those on offer today.

Mobile wireless broadband is expected to transition to being a complement to fibre over time rather than a competing service for most households, particularly in an environment where consumers are increasingly using 'bandwidth hungry' applications. Wireless broadband has limitations, as defined by the Shannon-Hartley law, which establishes an upper bound for the carrying capacity of a communications channel that is based on the bandwidth of the channel and the noise in the channel. In addition, recent advances in speed available over wireless networks have largely been driven by use of additional spectrum, which after the digital dividend, will be in short supply.

Actual wireless performance in the field can differ greatly from headline (or peak) rates as is explained in Exhibit 5-3 on page 275 of the Study. As 'bandwidth hungry' applications emerge, they will increasingly require the higher capacities available through dedicated fixed connections, be they fibre or wireless. Mobile wireless broadband services are not dimensioned to cope with the higher more constant usage patterns typical of fixed broadband connections.

As detailed in Exhibit 4-30 of the Study, a number of current drivers of mobile wireless broadband growth are expected to moderate going forward. Factors encouraging mobile broadband use which are expected to have less impact in future include the recent significant real reduction in wireless data pricing combined with current poor fixed broadband offers. Slower mobile broadband growth due to market saturation in the business sector is also in prospect.

(b) Assumptions about wholesale access pricing

■ Grahame Lynch

“the report also assumes that NBN Co will be able to increase wholesale prices by between 0-2% a year throughout the project, a highly contentious assumption given that prices have generally been decreasing by greater amounts in recent times.”

The Study models an indicative price architecture for a range of likely services that the NBN Co will offer. It assumes that real revenues per user will naturally trend higher over time (although at a modest rate of less than 2% p.a), before levelling off. There are two primary reasons that the Study takes this approach.

Firstly, it expects that over time users will gradually move to higher value bitstream products as they increasingly demand greater average speeds on the network. For example a customer who takes an introductory 20 Mbps bitstream product initially, may find over time that they require greater bandwidth to run the latest in applications and therefore upgrades to a faster plan with higher speeds. These premium products will produce higher average revenues per user for the NBN Co.

Secondly, the Study expects that over time the ACCC will allow access prices to rise gradually to enable the NBN Co to achieve a reasonable return on network assets. Any increases in access charges allowed by the ACCC would have to meet strict criteria including affordability and only allow a fair return on a regulatory asset base, over which the ACCC will have complete transparency.

■ Paul O’Sullivan

‘O’Sullivan was also confident that the NBN rollout would give Optus a viable option for the provision of retail services, despite suggestions from some quarters that wholesale prices would have to be extremely competitive to justify using it over its own ULL. —We expect that when 90% of Australian homes ... have access to 100Mbps services then the incentive for the industry to develop the applications and content will be huge, // he said. —There will be a huge

incentive from demand point of view to use higher bandwidth and higher speeds. The wholesale pricing that was outlined to us in the implementation plan ... would be around A\$35-50. We would expect that you could retail at those sorts of prices and be economic."

The above quote is consistent with the Study's analysis in Chapter 4 which suggests there are reasons to believe that RSPs will have an attractive business case to migrate customers to fibre at average wholesale prices of \$30-\$35 a month. This outlook is supported by Mr O'Sullivan's comments.

As suggested in Exhibit 4-37, the benefit to RSPs in terms of reduced cost to serve, lower churn and higher value of offerings to consumers is meaningful and sufficient to make the business case attractive to RSPs when compared to ULLS offerings on copper.

(c) Assumptions about competition from wireless

■ Grahame Lynch

'The report adopts another contradictory tone on the wireless front: it predicts that wireless broadband growth will slow down partly because providers will not be willing to invest in additional backhaul capacity. At the same time it says that backhaul capacity will become cheaper for fixed carriers and assist the decision to migrate to fibre, even though both would seem to face exactly the same growth issues!'

The Study examines a range of factors that suggest wireless growth will slow in the future. One factor discussed is the fact that mobile networks are facing increasing traffic and cost on their backhaul networks due to the large rise in data consumption on mobile devices.

The Study reference to wireless backhaul becoming cheaper for fixed carriers reflects the proposed building of backhaul capacity to towers in the last 10% to facilitate the NBN fixed wireless solution . However, the provision of additional backhaul capacity for mobile base station operators would be provided on a commercial basis at additional cost to those operators.

■ Professor Henry Ergas

'Whether the Study has paid enough attention to the emergence of mobility as a dominant feature in consumer preference (as highlighted by the strong demand for the Kindle, the iPhone and even more so the iPad) is especially questionable. Its views about the long-term progress of data rates over

wireless are at odds with other studies, and make its conclusions about the demand for NBN Co's service seem unduly optimistic.'

The Study considers that mobile wireless broadband will transition over time to being a complement to superfast fixed line networks. This position is supported by the Australian Mobile Telecommunications Association which is of the view that “Fixed and mobile broadband services are complementary”.¹

Despite extensive wireless broadband coverage today, the reality for many users who do not live in close proximity to wireless towers is that service quality can be relatively poor as the service is highly contended, with experienced data rates often well below advertised peak rates—particularly for indoor use.

Mobile wireless broadband has limitations, as defined by the Shannon-Hartley law, which establishes an upper bound for the carrying capacity of a communications channel that is based on the bandwidth of the channel and the noise in the channel. In addition, recent advances in speed have largely been driven by use of additional spectrum, which after the digital dividend, will be in short supply.

As bandwidth hungry applications emerge, they will increasingly require the higher capacities available through dedicated fixed connections, be they fibre or wireless. Mobile wireless broadband services are not dimensioned to cope with the higher more constant usage patterns typical of fixed broadband connections.

(d) Assumptions about competition from copper/HFC

■ Henry Ergas

“it is surprising, to say the least, that the Study projects very high levels of penetration for the NBN even in a scenario in which Telstra competes with the NBN using both its copper and HFC networks. While the Study claims that the economics of the copper network would force Telstra to progressively decommission copper, this part of its assessment shows a scant knowledge of the operating costs of the Australian copper network. It also seems to ignore the HFC network and the scope not only to upgrade it, but to extend its reach in areas where unit revenues are high and incremental expansion costs low. The likely effect would be not only a fall in NBN Co's market share but also in its unit revenues. If the Study did not take that possibility into account, it is seriously deficient; if it did, its failure to release the relevant results is unfortunate”

¹ Australian Mobile Telecommunications Association submission to DBCDE in response to the Implementation Study – May 2010.

The Study assumes a unilateral build. It also notes that Telstra and Optus have either announced or already upgraded their HFC networks to DOCSIS 3.0 in major capital cities.

As outlined in Exhibit 4-40 of the Study, modelling of uptake has been conducted on a granular, regional basis, taking into account coverage of different competing technologies. Specifically, in the HFC network coverage areas, a greater ability of HFC to hold market share has been modelled in recognition of the sort of potential competitor responses that Mr Ergas outlines. This modelling is based on a detailed analysis of international HFC market share after fibre roll-outs.

In terms of copper, the Study discusses in detail the operating economics faced by a network owner as users leave the network for rival networks. In particular, Section 4.4.4 includes the following observation:

“As users move off copper onto fibre, any fixed costs on copper will be spread over fewer users, increasing the average cost per user and, at some point, potentially making the copper uneconomic to run.”

■ **Grahame Lynch**

The study says that NBN Co should consider using the existing HFC networks – which cover around one-quarter of the proposed NBN footprint – to provide high-speed broadband services ahead of fibre deployment. It's an interesting idea, made all the more compelling by the fact that neither Telstra or Optus consider their HFC networks to be core infrastructure and also by the fact that technological developments in the HFC space would see those networks more than capable of providing NBN-style speeds well into the future. With some caveats, the study recommends that NBN Co be given the option to acquire an HFC network. Which begs a question - if it is good enough to get one of Telstra, Optus or VHA to tender for and provide a wireless service in the bush, why not so the same in the inner cities for HFC? It could certainly save quite a lot of wasted overbuild capital and take some of the tension out of the whole 'urban planning' challenge that the NBN will face

The Government's policy decision is to deploy a FTTP network to at least 90% of Australian premises, given, amongst other things, fibre's superior performance characteristics and its position as the most future-proof technology currently available. HFC is not capable of supporting a Committed Information Rate of 100 Mbps under DOCSIS 3.0 enhancements and does not have the nearly unlimited upgrade path that fibre has.

However, the Study considers that during the rollout, HFC could play an interim role in providing high speed broadband to some customers. It is in this context that the Study proposes considering HFC's potential, pending the provision of an advanced fibre network.

■ **Petroc Wilson**

“Neighbourhood Cable is defying the NBN Implementation Study’s proclamation that existing HFC networks will likely be deactivated over time, with a DOCSIS 3 upgrade to 100Mbps download speeds. TransACT’s Victorian subsidiary operates a network passing 95,000 households that currently claims around 20,000 active customers – all of whom could be receiving 100Mbps by early next year. The upgrade, which comes on the back of a trial that started last June, will begin in Mildura before expanding to Ballarat and Geelong. And Neighbourhood Cable isn’t the only HFC player pushing its network rapidly towards NBN-level speeds; both Telstra and Optus announced plans for similar DOCSIS 3 upgrades through Sydney, Melbourne and Brisbane back in November 2009”

■ **Ivan Slavich**

“I’ve read the implementation study, and I don’t agree with some of the parts of that document which relate to HFC, // Slavich told CommsDay. —They talk about DOCSIS, saying that it doesn’t have a certain upgrade path, that not all premises are capable of being connected – I just dispute all that. HFC is an amazing product... we believe that it’s absolutely upgradeable technology... I see this as complementing what the NBN wants to achieve – but all I can do is read the implementation plan, and it says... the HFC networks are likely to be deactivated over time, // he continued. —We have no intention of deactivating our network! We are now investing millions upgrading [it]... so that it will deliver the sort of benchmark that is being espoused as part of the NBN. And we’re doing it now! We’re getting on with protecting the value of our network assets and growing our business.”

The Government made a decision to deploy a FTTP network to 90% of Australian premises. It is in this context that the Study proposes considering the role of HFC and whether it is an appropriate interim solution pending the provision of a technologically superior fibre network.

HFC is not capable of supporting a Committed Information Rate of 100 Mbps under DOCSIS 3.0 enhancements and does not have the nearly unlimited upgrade path that fibre has.

(e) Assumptions about end-user desire for fibre broadband

■ Kevin Morgan:

'[The Implementation Study recommends that NBN Co charge an entry level \$30-35 wholesale access price]. But this \$30-35 wholesale access price could well more than double with retail mark-ups: so will consumers—especially those who just want the equivalent of a standard telephone service—be keen to migrate when they only pay \$30 per month for access now? True, that a 20 Mbit wholesale product has far greater functionality ... but given RSPs can already offer 8-20 Mbit ADSL 2 on near fully depreciated DSLAMs for an access fee of \$15 over copper in metro areas will they rush to the NBN? They will be foregoing a \$15 per month margin.'

The Study's modelling indicates RSPs will have an attractive business case to migrate customers to fibre at average wholesale prices of \$30-\$35 a month. Exhibit 4-37 of the Study indicates that the benefit to RSPs in terms of reduced cost to serve customers will amount to between \$12-24 per line.

The benefits to RSPs in using fibre include savings in the retailer's cost to serve and a reduction in the expected rate of churn. The Study's modelling indicates that for retailers offering broadband on a ULL platform at \$16 per month, the indifference price for them to switch to fibre is around \$28-40. For the \$23.60 ULL platform, the indifference point is \$36-48.

The \$30-\$35 average wholesale price includes broadband and voice. Even with a retail margin included, this price compares very favourably to current offers in the market. For example the cheapest 'double-play' deals are priced around \$60 with more premium plans costing \$100 or more.

Further, RSPs will need to take into account factors other than the wholesale price when assessing the economic case for fibre as opposed to copper. A fibre offer will require lower investment by a retailer in active equipment and may incur both lower backhaul charges (if the retailer is using NBN's transit backhaul) and exchange access fees compared to DSL.

Additional savings will accrue to retailers from not having to invest in DSLAMs in newly competitive areas and making on-going upgrades to their existing equipment (e.g. the depreciated DSLAMs). It is reasonable to expect that NBN Co services will meaningfully reduce retailers' physical costs to serve over the equivalent ULL product on copper.

A more detailed discussion of the RSP business case is included under section (h) below.

(f) Rate used to calculate commercial viability:

■ Professor Henry Ergas

'The most serious problems with the Study lie in the conclusions that have been drawn from it. In particular, the Study does not show that the project is commercially viable; on the contrary, all it shows is that under the assumptions the Study team made, the project's internal rate of return is slightly higher than the bond rate. This raises two obvious difficulties.'

■ **Professor Henry Ergas**

'There are ... a number of seeming errors in the analysis. For example, the Study uses the Modified Internal Rate of Return (MIRR) instead of the Internal Rate of Return (IRR). However, neither the MIRR nor the IRR is relevant to deciding whether to go ahead with a project; what is relevant is whether the project has a positive NPV.

Moreover, that NPV needs to be assessed at different levels of the assumed cost of capital, as well as for different revenue and cost scenarios; the Study neither estimates the project NPV nor sets out the sensitivity tests around it. This in itself seriously reduces the value of the Study.'

■ **Professor Paul Kerin (appropriateness of values used):**

'[McKinsey-KPMG's] evaluation role was limited to the business case: whether the NBN Co's forecast cash flows (ignoring benefits and costs incurred by others) deliver a positive net present value.

But their business case contains a disastrous error: it uses a spurious "discount rate". Strangely, the study presents no NPVs and instead provides internal rates of return. The latter are dangerous beasts for various technical reasons, but a project's NPV is positive if its IRR exceeds the discount rate.

Two types of IRRs are relevant. The project IRR indicates whether the project itself makes financial sense. The equity IRR indicates whether the government's equity investment earns an adequate return.

The study's use of the wrong discount rate gives the false impression that both project and equity NPVs are positive. It states that both the project IRR (6.3 per cent in the base case, ranging between 3.6 and 8.3 per cent under different scenarios) and Equity IRR (6.5 per cent in the base case, ranging between 3.1 and 8.8 per cent) "exceed the government bond rate of 6 per cent".

■ **Professor Henry Ergas (inappropriate cost discounting)**

'at a number of points in the Study, costs are discounted to the present at 9 per cent, which is higher than the bond rate which the Study (incorrectly) takes as the cost of finance (a point discussed below). The effect is to reduce the present value of costs. It can be perfectly correct to discount costs and benefits at different rates, but this is subject to two constraints: the differences must reflect differences in systematic risk; and the weighted

sum of the rates should equal the discount rate for net income under the project. Neither of these conditions seems to be met in this case.'

Commercial viability

The Study modelled the business case of NBN Co as a standalone entity operating on a commercial basis. The Study found the NBN is likely to deliver a project return of between 6% and 7%.

Although the Study concluded that private investors would typically require higher returns than those likely to be earned by the NBN to compensate for project risk, the Study notes that the projected return is above the Government's cost of funds. The Government considers the additional benefits to the economy and society accruing from the NBN is sufficient to justify taxpayers not receiving a premium for project risk.

In the later years of the rollout, NBN Co is projected to generate stable and large operating cash flows (EBITDA positive in year 6, EBIT positive in year 9) capable of attracting private capital at commercial rates of return.

Use of Internal Rate of Return (IRR) instead of Net Present Value (NPV)

The Study has explicitly not assumed a discount rate, which would be required in order to calculate NPV. Hence there is no NPV calculated in the report. Instead, the Study has used an IRR which is a pure metric for calculating the return of the project over its total life.

As stated in the report:

“The IRR is in no way a proxy or precedent for the weighted average cost of capital (WACC) that should be used by NBN Co in evaluating infrastructure-sharing deals or tradeoffs between spending capital upfront versus accepting higher ongoing operating costs. Nor is it a proxy or precedent for the WACC that the ACCC is expected to use for NBN Co's access undertaking.” - (Exhibit 7-5, p 360)

As the appropriate Government cost of capital is a matter of academic debate, the Study calculated an IRR which is agnostic to the discount rate chosen.

Discount rates

The Study has explicitly not used a discount rate to evaluate project returns. The Study has however made use of a discount rate to evaluate capex and opex tradeoffs in the build and to calculate the terminal value of the discounted cashflows at the point of privatisation. A 9% discount rate was used to inform this specific analysis but the Study has explicitly not assumed that this rate is the WACC of the project.

(g) Use of bond rate

■ **Professor Henry Ergas (bond rate used but this far below commercial rate of return):**

'the bond rate is far below a commercial rate of return. As the Study acknowledges, a commercial rate of return would be several percentage points above the bond rate: the Study itself suggests a range for that required commercial return that goes to 12.4 per cent. The Study also acknowledges that the Competitive Neutrality provisions enshrined in the Competition Principles Agreement require that capital used in the project be costed at that commercial rate. And readers will not need to be reminded that the government repeatedly claimed that such a commercial rate would be earned by the project. Those claims are comprehensively refuted by the Study.'

■ **Paul Kerin (bond rate wrong standard)**

'That the study used the bond rate is astonishing, as the standard advice on discount rates provided by various government agencies the Finance Department, Infrastructure Australia, the Office of Best-Practice Regulation and the Productivity Commission warn against it, as does the public economics literature. No mention is made of that standard advice, nor the literature, in the study's 546 pages. It completely disregards the government's own financial evaluation requirements.'

■ **Henry Ergas (bond rate not cost of finance for public sector):**

'the bond rate is not even the cost of finance to the public sector. Here the Study errs by ignoring the Department of Finance's own Handbook of Cost Benefit Appraisal which says that —the Government's borrowing rate does not reflect the true opportunity cost of the use of capital funds //, a point also stressed by the Productivity Commission in its comprehensive study of the choice of discount rates for public sector investments. Rather, the cost of finance to a project must be grossed up to take account of the systematic risk of the project. (Additionally, and also ignored by the Study, where there are losses that will be financed by taxpayers, the net loss must be grossed up by marginal deadweight cost of taxation). This would yield a cost of public funds for the project close to or even above the private sector pre-tax WACC. Regardless of the precise level of that rate, it is clearly far above the Study's estimate of the project IRR. It is disappointing that the Study does not get this right, as it has a significant bearing on its conclusions and as the correct approach would be obvious to any practitioner in this field.'

The above commentators incorrectly state that the Study used the bond rate to evaluate project returns. Instead, the Study evaluated the returns the project could expect to achieve and found they were 6-7% in most plausible

scenarios. This does not suggest that 6-7% is the appropriate cost of capital for the project.

Although the Study concluded that private investors would typically require higher returns than those likely to be earned by the NBN to compensate for project risk, the Study makes the factual observation that the return generated is above the Government's cost of funds. The Government considers the additional benefits to the economy and society accruing from the NBN is a legitimate consideration in not receiving a premium for project risk.

The Study advises Government on how best to implement its stated policy objectives; it does not evaluate those objectives, given that the policies have already been agreed by Government. The report focuses on translating policy objectives into tangible actions for both Government and NBN Co to implement.

(h) Estimates of Input Costs

■ Grahame Lynch

“The study, rightly, identifies that retail service providers will not happily migrate from ULL and LSS based services to fibre unless there is an economic advantage for them in doing so. As a result, it makes great play on preserving current copper pricing for entry-level pricing, but it also makes the heroic assumption that overall retail —conditioning // costs for such elements as active equipment and backhaul will fall in the NBN environment. Indeed, it quantifies this so-called “indifference” premium between copper and fibre at around \$12-24 per month. I’m not so sure.”

The Study provides significant detail on the different factors that RSPs will take into account in assessing the economic case for fibre over copper. These factors include:

Average revenue per user. It is expected that fibre based services will command a price premium over DSL based services on perceived value to users. In Japan, the United States and the Netherlands, fibre has managed to maintain a consistently higher price than DSL. Further, it is reasonable to expect that the emergence of fibre as a newer, faster technology will lead to price declines for end users on services offered over legacy platforms—reducing available margins for existing providers using ULL.

Retailer cost to serve. These costs may include billing, customer service and marketing. A fibre offer will require lower investment by a retailer in active equipment and may incur both lower backhaul charges (if the retailer is using NBN's transit backhaul) and exchange access fees compared to DSL. Further savings will accrue to retailers from not having to invest in DSLAMs in newly competitive areas and making on-going upgrades to their existing equipment. It is reasonable to expect that NBN Co services will meaningfully

reduce retailers' physical costs to serve over the equivalent ULL product on copper.

Churn. With the introduction of a new technology, the churn rate of copper customers will increase to take into account those customers migrating to fibre products. A significant increase in churn on a platform when compared with another, significantly decreases the attributed value of each customer kept on that platform, which in effect carry the churn costs experienced by the RSP. As such retailers will have an incentive to preemptively switch high value customers to fibre, to avoid them moving to fibre with an alternate RSP.

On the basis of an assessment of these factors, the Study concludes that the indifference point for retailers is between \$12 and \$24.

Commentators have mentioned that some retailers only pay \$2.50 a line in access charges for LSS and therefore would find the NBN Co wholesale charges unattractive. It is worth noting that the customers who take LSS from an RSP other than Telstra also need to pay line rental for using the PSTN from Telstra (i.e. they are paying different providers for fixed voice and broadband services). These customers will prove attractive to RSPs offering bundled voice and broadband services over fibre who will be able to provide strong value.

2 RECOMMENDATIONS MADE BY LEAD ADVISOR

(a) Competition concerns

■ Grahame Lynch

'The study recommends all variety of incentives to induce RSPs to migrate across such as discount offers, free connections and the like, but of course these add to overall project cost and need to run the gamut of competition law. And most significantly it recommends that NBN Co should be able to discriminate on the basis of the type of end user such as a mobile base station, a school or a business. Should that eventuate that would certainly provide ATUG with a new crusade!'

The pricing architecture modelled in the Study is based on the underlying premise that the network service provider should be able to price discriminate on the basis of end-user type. This already happens in the market today and it is reasonable to expect it to continue. For example, a network provider may offer a tailored product to schools which should not be available as of right to individual households.

In the market today it is typical for business customers to require an assured Quality of Service (QoS) grade service and this is typically priced at a premium. Telstra for example charges business users a premium over

residential users for high end fixed broadband. This type of differentiated pricing is typical internationally.

It is also typical in the market to price differently for backhaul products based on user and capacity requirements.

(b) Discrimination of access pricing for different end-users

■ Grahame Lynch

'The study explicitly models a wholesale ARPU for NBN Co at \$35-38 – a blend of such varying tariffs as a \$25-30 "voice only" tariff, a \$33-38 tariff for voice, "basic broadband" and IPTV, and, intriguingly, a \$60 tariff for small business... At the end of the day, I'm not so sure that ... the small business market will take enthusiastically to \$60 wholesale buy prices for services that are today 'end-user' agnostic.'

In the market today it is typical for business customers to require an assured Quality of Service (QoS) grade service and this is typically priced at a premium. In effect, these customers are paying more to obtain a guaranteed level of service (committed data rate). Telstra for example charges business users a 65% premium over residential users for high end fixed broadband. This premium is over 50% in some parts of the country.

(c) Services to final 10/7 per cent – a return to OPEL?

■ Grahame Lynch:

'The Implementation Study's recommendation that the Government conduct a tender process for the wireless services to service 4% of Australians outside the fibre footprint seems very close to being 'a direct return to the former government's [i.e. Coalition's] wireless tender policy that led to the aborted appointment of Optus-Elders JV Opel Networks to build a rural WiMAX network [ie Opel]'

The Study acknowledges the risk that a tender may not generate a conclusive result and hence has suggested a two stage process: 1) an Expression of Interest (EoI) and 2) structuring of the tender itself. It also recommends as a fall-back option that NBN Co be required to build the fixed wireless network. The cost for NBN Co to build the network has been modelled in the Study's overall base case and represents a conservative estimate of doing so.

The Study states that:

“This tender should be preceded by an EoI process to assess interest from the market and inform the detailed tender design, particularly in light of previous experience tendering for the provision of a fixed-wireless network. NBN Co should not participate in this tender process, but Government should ask NBN Co to provide an initial estimate of its costs to provide such a network. This will serve as a valuable reference point when evaluating the tenders received, and in the unlikely event of a lack of commercial interest, Government should reserve the right to instruct NBN Co to build the network.” (Section 1.2.4, p 23)

The Study argues that industry participants are better positioned than NBN Co to construct the network as they would be able to do so at a significant discount to NBN Co, by making use of existing assets (e.g. towers, backhaul and spectrum) and expertise (e.g. existing wireless network engineers and technicians). For some operators there would be the added incentive of protecting against loss of revenues.

If an industry participant were to construct the wireless network, they could offer both wholesale and retail services. This would prevent the potential retail market failure that might result if NBN Co were to build a wholesale-only network, given that some communities of users will be small and remote and potentially unattractive to retailers.

Section 5.4.1 of the Study (page 308) outlines specific features that should be incorporated into the tender design to maximise the likelihood of success.

(d) Desirability of satellite/wireless proposals

■ Grahame Lynch:

'\$5.3B FOR THE LAST 10%: All up, the study estimates that its hybrid fibre/wireless/satellite solution for the last 10% will cost up to \$5.3 billion, not including backhaul costs which add another few billion to the mix. This is not an insignificant investment and questions do need to be asked as to its efficacy. A KA-band satellite solution, for example, is estimated to cost \$11,000 per premises, largely because of the need to deploy a second satellite for redundancy and the tremendous insurance premiums associated with satellite launches. And that wouldn't deliver an ample 12Mbps per user throughput, indeed the study suggests something like 300-400kbps is more likely.'

Investment in the last 10% is designed to provide a step-change improvement in broadband performance for all regional and remote Australians. While the cost per user is in many cases likely to be considerably more than in the fibre footprint, the Governments' policy is to significantly improve broadband access for all Australians, wherever

located. The \$5.3 billion cost estimate should also be viewed against the background of the following improvements it will deliver:

- Peak data rates of 12 Mbps being provisioned vastly exceed peak data rates in remote areas of other countries (e.g. New Zealand has promised only 1 Mbps to the final 3% of premises and UK 2 Mbps)
- \$5.3b includes extending fibre to 93% of premises – more than 300,000 additional premises can get fibre than under the initial estimate of 90%, with 100 Mbps speeds being available to them
- Sufficient satellite throughputs to enable a substantial increase in average data rates from today's levels – an increase in average data rates by more than a factor of 20
- A fixed-wireless network that could offer next-generation wireless to 4% of premises and enable every premise covered to achieve speeds that are only available today on fixed-line technologies. In many cases it will offer much higher speeds through reducing the number of premises sharing a tower.

The bulk of the backhaul cost outlined in the Study relate to getting backhaul to 90%. The incremental cost to reach 93% is a relatively small percentage of the overall backhaul cost.

The challenge of providing an average data rate of 12 Mbps (as distinct from the peak data rate) on a satellite platform is discussed in Section 5.3.2 of the Study. The average data rate of 300-400 suggested in the Study nonetheless represents a very substantial change from the average data rates provisioned today of less than 10kbps.