nbn™ non-commercial services funding Options

nbn submission in response to Bureau of Communications Research Consultation Paper

nbn co limited

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Public

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1. Introduction

nbn welcomes the opportunity to provide a submission to the Bureau of Communications Research (BCR) on the options for funding non-commercial services. **nbn** notes that the BCR's terms of reference require it to:

- identify and quantify the losses incurred by **nbn** as a consequence of providing fixed wireless and satellite services;
- consider options for structuring the funding arrangements for the losses arising from the provision of **nbn**™ fixed wireless and satellite services; and
- consider the interactions of proposed funding arrangements with relevant **nbn**-related regulatory instruments and other telecommunications levy schemes.

Consideration of these issues is an important piece of work flowing from the Vertigan Review. Widespread access to high speed broadband services is a critical enabler of economic growth. Accordingly, Australia's long term interests will be best served by establishing transparent and sustainable funding arrangements to support the provision of broadband and telephony services in areas where the cost of provision is greater than user's willingness to pay.

Consistent with the principles outlined in the BCR's consultation paper, funding options for the provision of non-commercial services should be transparent and sustainable regardless of the telecommunications market structure or the corporate structure of the entity providing those services[1]. Moreover, funding options should recognise the dynamic nature of the industry and the wider policy environment. Accordingly, funding options should be adaptable to future changes in the industry and associated policy-settings (such as accounting separation and ongoing changes in industry structure).

The Terms of Reference requires the BCR to identify and quantify the losses incurred by **nbn** as a consequence of providing fixed wireless and satellite services. This necessarily requires the BCR to quantify the long-term costs and revenues associated with the following aspect of **nbn**'s operations:

- the long-term costs which are directly associated with constructing, maintaining and operating the **nbn**™ fixed wireless and satellite platforms over their lifetime;
- the long-term revenues earned by **nbn** from the provision of fixed wireless and satellite services. In doing so the BCR is required to account for any price changes over time noting that **nbn** is subject to a broad regulatory regime, including wholesale price caps and non-discrimination obligations; and
- a reasonable share of common costs including common network costs (such as, costs of constructing, maintaining and operating **nbn**'s™ transit network and Points of Interconnect (PoIs)), systems costs (such as the cost of establishing, maintaining and operating relevant IT systems including **nbn**™ Operations Support Systems/Business Support Systems (OSS/BSS)) and corporate overheads.

The Terms of Reference does not appear to provide the BCR with scope to quantify the losses or the revenues that may be associated with the construction, maintenance and operation of the **nbn**™ fixed line network. Consequently, **nbn** recommends that the current review should proceed on the basis that the provision of **nbn**™ fixed wireless and satellite services are stand-alone from **nbn**'s™ fixed line operations. In practice, this means that funding options should not reflect a typical universal service model in which the funding is presumed to come primarily from so-called commercial services provided by the same service/network provider. This stand-alone basis is appropriate given that:

[1] **nbn** notes that the Vertigan Review recommended a specific mechanism for funding **nbn**™ fixed wireless and satellite services only if there was disaggregation of **nbn**. See Recommendation 11 of Independent cost-benefit analysis of broadband and review of regulation: Volume 1 National Broadband Network Market and Regulatory Report.

- the Government's policy objective is to remove the current internal cross-subsidies within **nbn** from its fixed line platform to the fixed wireless and satellite platforms[2];and
- while the aggregate revenues from the **nbn**™ fixed line platform may be sufficient to recover **nbn**'s fixed line costs, it is highly likely that there will be cross subsidies inherent in the provision of services over the **nbn**™ fixed line platform. That is, across the **nbn**™ fixed line footprint, there are likely to be geographic areas where the provision of services by **nbn** is likely to be non-commercial. However the losses associated with these non-commercial services may be offset by the profitable provision of fixed line services in other geographic locations.

nbn submits that sustainable funding options for the funding of losses from the provision of fixed wireless and satellite service should acknowledge that the **nbn**™ fixed line platform will not generate economic profits sufficient to offset the losses that will be incurred as a consequence of constructing, maintaining and operating the fixed wireless and satellite platforms. This is particularly the case where **nbn** is subject to wholesale price caps and other economic regulation.

[Commercial-in-Confidence].

Finally, **nbn** acknowledges that any funding arrangements to recover losses arising from the construction, maintenance and operation of the fixed wireless and satellite platforms need to be competitively neutral and facilitate a level playing field. To ensure that this outcome is achieved, **nbn** encourages the BCR to give appropriate consideration to the broader market dynamics and regulatory frameworks impacting the provision of broadband services in Australia. In this regard, **nbn** submits that an inappropriately narrow funding base will distort competitive outcomes and skew the competitive landscape to the detriment of **nbn**, **nbn**'s customers and end-users.

The remainder of this submission sets out **nbn**'s responses to each of the questions raised by the BCR in its Consultation Paper. **nbn** notes that the Consultation Paper reflects the BCR's informed thinking, to date, on the issues that the Terms of Reference requires it to consider. We note however that these are complex issues and require a detailed understanding of **nbn**'s business case, operations and the existing regulatory framework (including **nbn**'s™ special access undertaking (SAU)). Accordingly, we look forward to working with the BCR to ensure that any recommendations to the Minister are fully informed.

2. Costing measurement

nbn is making a substantial investment in the construction, maintenance and operation of fixed wireless and satellite platforms which will together serve approximately 8 percent of Australia's residential and small business end-users which are located in regional and remote locations. **nbn** has commenced deploying around 1400 fixed wireless towers and the construction of two long term satellites is well progressed. The Fixed Wireless and Satellite Review indicates that **nbn** expects to spend around $3.5 billion in fixed wireless and satellite related capital expenditure (CAPEX) over the period 2011 to 2021[3] [4]. As noted by the BCR and the Vertigan Review, revenues from the provision of **nbn**™ fixed wireless and satellite services will not recover this significant upfront investment (or ongoing operational costs (OPEX) associated with providing these services) over the life of these assets – for this reason the **nbn**™ fixed wireless and satellite services have been deemed to be non-commercial services[5].

Regardless of the network operator, the business case for deploying fixed wireless and satellite services to end-users in regional and remote Australia has never been commercial. To date, consistent with previous government policy, the losses incurred by **nbn** in providing fixed wireless and satellite services were not made

[2] Department of Communications, Telecommunications Regulatory and Structural Reform, December 2014, p.6.
[3] This estimate excludes expenditure on acquiring spectrum.
[4] **nbn**, Fixed Wireless and Satellite Review, Final Report, March 2014, page 26.
[5] See for example Independent cost-benefit analysis of broadband and review of regulation:
Volume II – The costs and benefits of high-speed broadband, August 2014, p.12

transparent as they were bundled up with the initial losses associated with the provision of all **nbn**™ services to date.

Part of the BCR's task is to identify and quantify the losses arising from the provision of **nbn**™ fixed wireless and satellite services as distinct and stand-alone from other accrued losses that **nbn** has incurred in constructing the **nbn**™ fixed line networks. Importantly, as acknowledged by the Terms of Reference, losses associated with the provision of **nbn**™ fixed wireless and satellite services include not only the direct costs of constructing and maintaining the fixed wireless and satellite platforms but also requires an allocation of an appropriate share of **nbn**'s common costs. This is a complex task.

2.1 Appropriate approach to costing

nbn considers that funding options for **nbn**™ fixed wireless and satellite services should seek to ensure that services can be delivered sustainably over the long term and account for the significant upfront expenditures required. **nbn** agrees with the BCR that a commercial focussed model should be adopted that provides for the recovery of all costs associated with the provision of **nbn**™ fixed wireless and satellite services in net present value (NPV) terms.

The use of a commercially focussed model will avoid the pitfalls associated with alternative approaches. In particular it will avoid the uncertainty associated with approaches, such as a total service long run incremental cost (TSLRIC) approach that would require consideration of the hypothetically efficient costs of providing services. In this regard, **nbn** draws the BCR's attention to the considerable uncertainty associated with universal service obligation (USO) costing undertaken by the Australian Communications and Media Authority (ACMA) in the past.

Similarly, there are significant flaws with adopting an incremental cost approach. Funding options which do not take into account common costs associated with the supply of **nbn**™ fixed wireless and satellite services will not provide a sustainable source of funding into the future, but will instead entrench the existing cross-subsidy from the fixed-line platform to the fixed wireless and satellite platforms in **nbn**'s business case. An incremental cost approach will mean that the prices for **nbn**'s™ fixed line services will need to be higher which will in turn make market entry into high-value low-cost-to serve areas more attractive to network operators seeking to cherry-pick. Cherry-picking will not only be detrimental to **nbn**'s business base (i.e it will lessen **nbn**'s ability to fund the full share of the common costs) but it will also encourage socially wasteful duplication of fixed network costs. Given the natural monopoly characteristics inherent in fixed telecommunications infrastructure, any duplication of fixed network costs will raise the overall cost of delivering broadband services thereby reducing overall industry profits. Consequently, over time an incremental cost approach will mean that the burden of funding the provision of non-commercial fixed wireless and satellite services will represent an increasing share of industry profits – such an outcome is unsustainable and will not maximise overall social welfare.

nbn submits that the losses arising from the provision of **nbn**™ fixed wireless and satellite services should be calculated with reference to the direct costs of constructing, maintaining and operating the **nbn**™ fixed wireless and satellite platforms as well as a full allocation of any common costs that are shared between **nbn**'s™ fixed line and fixed wireless and satellite platforms. Such an approach is consistent with principles identified by the BCR in section 4 of its Consultation Paper.

Question 1: Is measuring NBN satellite and fixed wireless service costs on a commercially focussed basis appropriate?

*Yes. A commercial focussed analysis of the loss is essential to capture the financial loss associated with providing those services. This should be based on a full allocation of the costs which are common to the provision of services using the **nbn**™ fixed line platform and the **nbn**™ fixed wireless and satellite platforms.*

2.2 Commerciality of services provision at a granular network level

nbn considers it appropriate to recognise the non-commercial nature of its services across the entirety of its fixed wireless and satellite platforms. This is for several reasons:

- In narrowly defined geographic areas the provision of fixed wireless and satellite services will be interwoven. This makes a granular analysis of the commerciality of a particular technology platform challenging.
- A granular analysis is likely to result in arbitrary outcomes, as network common costs would need to be allocated out to different areas based on assumptions.
- **[Commercial-in-Confidence].**
- There would be considerable administrative costs of undertaking a granular analysis at a level that would seek to identify commercial and non-commercial areas within the fixed wireless and satellite footprints. While such an analysis may maximise the extent to which there is transparency of the losses arising from the provision of those services, it is unclear whether the benefit of transparency would outweigh the administrative costs of undertaking such an analysis.
- There is likely to be an ongoing reporting burden that would be created to support a granular analysis. This would likely require **nbn** to record its costs according to the geographic 'clusters' identified as non-commercial. Such a requirement would add to the existing reporting requirements imposed on **nbn**.

Additionally, as noted previously, the provision of **nbn**™ fixed line services to some geographic locations is likely to be loss making over the longer term. To the extent that the BCR concludes that there is merit in conducting a granular analysis of losses arising from the provision of **nbn**™ fixed wireless and satellite services to identify which geographic areas are profitable and those which are loss making, the BCR should also justify why there is not merit in doing the same for the provision of the **nbn**'s™ fixed line services.

Question 2: Is it appropriate to consider commerciality on a network 'cluster' basis?

No. An analysis based on network clusters is likely to require arbitrary assumptions and allocations that would distort the identification of non-commercial services. The interwoven nature of fixed wireless and satellite services outside of the fixed line footprint means that both of these networks should be identified as non-commercial for the purpose of establishing the funding arrangements.

2.3 Timeframes for assessing **nbn**™ non-commercial service losses

It is essential that the timeframe used for the assessment of costs associated with deploying fixed wireless and satellite services reflect the longer term economics of deploying the technologies, and the life of the assets being deployed.

If the BCR opts for a period that is shorter than FY2040 it should clearly set out the how the arrangements will be carried over to future periods noting that **nbn** would be required to make on-going investments in its fixed wireless and satellite platforms over time.

The dynamic nature of the industry means that arrangements for fixed wireless and satellite services may evolve over time, yet the investment today is being committed by **nbn** for an extended period. This should be reflected in the time period for assessing the loss made on that commitment.

Question 3: Is FY2040 an appropriate time period for assessing NBN non-commercial services?

*Yes. A time period at least reflecting the current business case to provide the **nbn**™ fixed wireless and satellite*

services is appropriate.

3. Principles based approach

nbn is broadly supportive of the principles outlined by the BCR. However, **nbn** notes that the extent to which alternative funding options will be consistent with these principles will vary. For example, an approach which seeks to identify only the incremental/marginal costs associated with providing fixed wireless and satellite services to narrowly defined geographic regions is likely to maximise transparency but may not be efficient, sustainable or equitable. This is because such an approach will not reflect the true cost incurred in delivering those services and would likely impose a significant reporting burden on **nbn**.

Whilst transparency is an essential element of the design and implementation of funding options, other principles are also important. In particular, the funding options must facilitate the sustainable provision of **nbn**™ fixed wireless and satellite services over the longer term by ensuring that industry contributions recover the initial and ongoing investment required to provide the services over time.

nbn considers that the principle of competitive neutrality should also be adopted when considering the appropriateness of funding options. It is also critical to ensure that funding options facilitate a level playing field and that competition is not distorted so that no network operators are advantaged or disadvantaged. In this regard funding options should seek to minimise uneconomic effects on prices for fixed line services.

In addition, the BCR should consider as a principle the concept of administrative simplicity and proportionality in the design of the funding arrangements. Funding options should not impose undue administrative burden on parties or duplicate existing arrangements. Where possible, it would be ideal if the arrangements could utilise the features of existing schemes. As the BCR would be aware, **nbn** is subject to various regulatory obligations with respect to the choice of efficient technology, the prudency of its expenditures and the reporting of costs.

Question 4: Are the proposed principles relevant and applicable for considering NBN non-commercial service funding arrangements?

*Yes, the proposed principles are relevant and applicable. **nbn** considers that transparency and sustainability are the key principles identified by the BCR that should guide consideration of alternative funding options.*

Question 5: Should the BCR consider additional principles? If so, what are they?

The BCR should consider the additional principles of competitive neutrality and administrative simplicity and proportionality when considering alternative funding options.

3.1 Transparency

Explicit funding arrangements for **nbn**™ fixed wireless and satellite services will increase the transparency of the losses associated with each type of service and the extent to which revenues from fixed line services allow that loss to be recovered.

[Commercial-in-Confidence].

nbn does not consider it appropriate for equity and debt to be allocated amongst network platforms. It is expected that such allocations would not be economically meaningful as **nbn** operates as a single corporate entity and equity and debt holder's interests will be in **nbn** as a whole (i.e not in a separate business unit or network platforms).

Question 6: To what extent could financial reporting support transparency of the allocation of equity, debt and revenues towards non-commercial services?

[Commercial-in-Confidence].

3.2 Economic efficiency

The concept of economic efficiency contains the static and dynamic aspects identified by the BCR. **nbn** has strong incentives to operate efficiently and to minimise the cost of delivering both fixed line and fixed wireless and satellite services. In addition, **nbn** is subject to substantial oversight by Government to ensure it is meeting its Statement of Expectations regarding the quality of broadband services delivered across Australia.

nbn is making substantial investments to deploy the **nbn**™ network. Given that network deployment requires large amounts of CAPEX to be spent upfront, substantial negative cash-flows arise as initial revenues are insufficient to recover these costs. This shortfall in revenue may not be fully recovered in the future unless there is sufficient take-up of services to generate revenues over time. This uncertainty creates revenue sufficiency risk for **nbn**, which will be greater if initial expenditures are not prudently incurred (i.e less efficient). As such, **nbn** has strong incentives to minimise the cost of its deployment. This has been recognised by the Australian Competition and Consumer Commission (ACCC). [6]

In addition, the SAU includes a number of provisions to ensure the efficiency of expenditures by **nbn**. These include provisions for the ACCC to assess expenditures against the prudency criteria set out in the SAU. Also, the constraints on **nbn**'s prices not to increase by more than CPI less 1.5% each year means that **nbn** has an incentive to both minimise costs and maximise the take-up of services.

nbn does not believe that additional incentive mechanisms need to be implemented as part of the funding arrangements for fixed wireless and satellite services to supplement these existing incentives and mechanisms. In particular, it is contemplated by some of the funding options outlined in the BCR paper that **nbn** will continue to be a significant contributor to the loss associated with the provision **nbn**™ fixed wireless and satellite services. Any additional mechanisms are likely to be duplicative and create risk for **nbn** that there will be a mismatch between the expenditures allowed under existing arrangements and under any new mechanisms.

nbn agrees with the BCR that the issue of economic efficiency is likely to be relevant to a consideration of funding options for **nbn**™ fixed wireless and satellite services. Funding contributions that flow through to the price of a service will reduce the consumption of that service and harm the welfare of those that consume the service and those that, as a result of the higher price, no longer consume the service. Funding options should seek to minimise the distortion to economic efficiency by broadening as much as possible the base of services to which the levy applies or weighting the levy in favour of services where the effect on the consumption of the service is weakest. That is, a higher proportion of the total funding should be collected from services with a low own-price elasticity.

Question 7: What issues are associated with maximising economic efficiency in developing NBN non-commercial services funding arrangements?

Economic efficiency should be a key consideration of the options for funding the loss associated with **nbn**™ *fixed wireless and satellite services.* ***nbn*** *would caution against duplicating incentive mechanisms that are already in place that ensure that* ***nbn*** *delivers high quality broadband services at minimum costs.*

[6] This incentive to minimise costs has been recognised by the ACCC, see ACCC Final decision: NBN Co Special Access Undertaking — December 2013, p.11

3.3 Contestability

nbn strongly supports the objective of promoting a level playing field when considering funding options to recover the losses arising from the provision of **nbn**™ fixed wireless and satellite services. In order for **nbn**™ fixed wireless and satellite services to be delivered sustainably, competitors to **nbn** must make an equivalent contribution to the losses that **nbn** bears as a consequence of it being required to provide loss making services. If competitors make a lower contribution than **nbn** they will have an unfair advantage in competing for fixed line customers. This would be harmful to economic efficiency (such an arrangement would effectively be a subsidy on entry).

nbn notes the policy goals associated with creating contestability of subsidies for fixed wireless and satellite services. However, the natural monopoly characteristics of networks, particularly in rural areas, means that it is unlikely to be efficient to encourage the deployment of duplicate networks. This appears to be recognised by the BCR. In the future, contestability would only improve economic efficiency if the cost of deploying a new network was lower than the incremental cost of serving that capacity with the existing (sunk) network. This is unlikely to happen in the future and is certainly not the case today.

In any event, it is critical that any future proposals to introduce contestability for subsidies preserve the financial integrity of the current investment in infrastructure by **nbn** to provide fixed wireless and satellite services. That is, future contestability arrangements should not confiscate the value of the irreversible capital investment **nbn** is making today in fixed wireless and satellite services.

Section 5.3 of this submission also considers issues of contestability and the extent to which it is practical to consider contestability in the provision of **nbn**™ fixed wireless and satellite services.

Question 8: In designing NBN non-commercial services, how can pro-competitive market conditions for the provision of both non-commercial and commercial services best be achieved?

As a principle, the levies imposed on fixed line services should ensure that competition between providers is not distorted. A level playing field will be established when providers of commercial services make an equal contribution to the loss arising from the provision of fixed wireless and satellite *services.*

nbn *considers that the BCR should indefinitely defer consideration of introducing contestability for the subsidies associated with fixed wireless and satellite services. If contestability of a subsidy is considered, the BCR should clearly articulate that such arrangements will preserve* ***nbn****'s financial commitment in providing* fixed wireless and satellite *services today.*

3.4 Sustainability

The Statement of Expectations requires **nbn** to provide a minimum quality of high-speed broadband services to all premises in Australia at affordable prices. The diversity in Australia's geography and the distribution of its population means that providing services in some areas is significantly more costly than in other areas. The cost of providing fixed wireless and satellite services will increase as the quality of service expectations for these services increase.

The sustainability of funding the provision of fixed wireless and satellite services through an internal cross-subsidy will be compromised if the expected uptake in **nbn**™ fixed line services is not realised. Similarly, competition from alternative providers in the **nbn**™ fixed line footprint will also constrain **nbn**'s ability to fund the provision of fixed wireless and satellite services.

Question 9: What issues are associated with developing sustainable NBN non-commercial services funding arrangements?

The key issue in ensuring that the sustainability of funding is not degraded by the shift away from internal cross-subsidy arrangements is to ensure that competing network operators provide an equivalent contribution to the funding of ***nbn***™ *fixed wireless and satellite services.*

3.5 Equity

Users of high speed broadband services benefit from arrangements that facilitate universal access at affordable prices. These benefits arise because greater take up of high speed broadband will encourage the development or use of applications that rely on access to broadband services. In economic terms, users of commercial services may enjoy a positive externality from the take up of non-commercial services achieved through subsidies. The size of this positive externality is difficult to measure and individual users may find ways to internalise these benefits (e.g., by directly subsidising a friend's/relation's service).

Notwithstanding these positive externalities (due to network effects), there is a policy question of whether it is reasonable that users of fixed lines provided by either **nbn** or other network providers fund the services of users living in areas where the provision of **nbn**™ fixed wireless and satellite services is loss making and whether this involves an undue burden for users of fixed line services.

Where funding is sought from users of fixed-line services, the burden of funding the losses arising from the provision of **nbn**™ fixed wireless and satellite services should be broadened as much as possible so as to minimise the impact on end-users. Addressing more specific equity issues (such as the impact on low income end users) in the context of considering alternative funding options may add undue complexity, and such issues may be better addressed through alternative policy mechanisms. In this regard, it is important to note that the

issues arising in commercial areas are a little different from those in non-commercial areas (i.e. the affordability of communication services generally).

Question 10: What equity issues need to be considered as a result of NBN's non-commercial service funding arrangements?

There may be good policy reasons to have some users of high speed broadband services subsidise other users. For example, there are benefits from increased penetration of broadband services for all users. Nevertheless, the design of funding arrangements for ***nbn***™ *fixed wireless and satellite services should consider whether an undue burden is falling on users of fixed line services.*

Question 11: What are appropriate mechanisms and measures to ensure equitable outcomes?

nbn *considers that equity outcomes would be best served by broadening the base of services on which the levy is added as much as possible. As discussed in section 5.1 this should include services which are close substitutes to those provided over the* ***nbn***™ *network including mobile data and broadband services.*

4. Financial model

nbn is happy to work with the BCR in the development of its financial model. **[Commercial-in-Confidence].**

4.1 Use of discounted cash-flow analysis

As discussed previously, the deployment of the fixed wireless and satellite networks will involve large upfront costs and ongoing operating and replacement expenditures. In contrast, the profile of revenue from fixed wireless and satellite layer 2 services is likely to be back-loaded, with revenues rising over time as the uptake of high speed broadband increases.

These contrasting cost and revenue profiles mean that an assessment of the loss associated with providing **nbn**™ fixed wireless and satellite services needs to be undertaken over a long time horizon. Discounted Cash-Flow (DCF) analysis is appropriate in these circumstances as the discounting of revenues and costs, at an appropriate rate, captures the time value of money in the mismatch between revenues and costs. An appropriately constructed DCF model will therefore provide investors with appropriate compensation for their expenditures, being a return of their capital (depreciation), a return on their capital (reflected in the discount rate) and recovery of operating expenditures (including taxation).

An identical level of compensation would be achieved by using a building block model that reflects and forecasts key elements of compensation (depreciation, return on capital and operating expenditures) and carries forward any annualised costs that cannot be recovered in a given year at the appropriate discount rate. That said, **nbn** agrees with the BCR that a DCF model is a simple and appropriate framework to adopt in this circumstance.

[Commercial-in-Confidence].

Question 12: Is a discounted cash flow methodology, incorporating appropriate assumptions, based on NBN Corporate Plan projections an appropriate approach to modelling NBN non-commercial service losses? If not, why not?

Yes, a discounted cash-flow methodology is an appropriate approach to modelling the losses associated with ***nbn****™ fixed wireless and satellite services,* **[Commercial-in-Confidence].**

4.2 Treatment of projected revenues and costs

nbn prepares forecasts of revenues and costs as part of its internal corporate planning exercises. **[Commercial-in-Confidence]**

[Commercial-in-Confidence]. **nbn** recognises that if the BCR adopts a discounted cash-flow model it will need to make projections for each technology for the period 2023 to 2040, and beyond. **nbn** is willing to work closely with the BCR to identify appropriate inputs to generate these projections. For example, this input could include testing assumptions regarding the life span of assets and replacement cost assumptions. Sensitivity analysis of input assumptions would also assist in this process.

However, it should be recognised that projections of revenues and costs beyond 2018 involve significantly greater uncertainty, and risk of variation, than projections until 2018. As such, **nbn** agrees with the BCR that its model should be designed to accommodate the replacement of forecasts with actual data and updates to financial projections as that information becomes available.

Accounting for actual revenues and costs on an accruals basis would allow the BCR to more easily reconcile its model with **nbn**'s financial statements, **[Commercial-in-Confidence]**.

Over time, the process of updating the financial model to replace projections with actuals will provide the BCR with a value of the accumulated loss incurred in providing **nbn**™ fixed wireless and satellite services and a projection of future revenues and costs. Given the uncertainty in projections over the period envisaged by the BCR, the process of tracking the losses over the life of the investment in the fixed wireless and satellite platforms will be needed to ensure that the funding arrangements do not deviate from the actual costs incurred.

Question 13: What, if any, issues arise in using NBN's Corporate Plan financial estimates for the purpose of assessing NBN's non-commercial service losses?

[Commercial-in-Confidence]. *However, the BCR will need to develop its own projections of revenues and costs arising from the provision of* ***nbn****™ fixed wireless and satellite service for the period beyond 2022,* **[Commercial-in-Confidence]**.

Given the uncertain nature of long term projections of revenues and costs, the financial model designed by the BCR should be updated to reflect actual expenditures as reflected in future ***nbn*** *financial reporting*.

4.3 Treatment of common costs

nbn supports the use of a fully allocated cost approach. A fully allocated cost approach will ensure that if cherry-picking entry occurs in fixed line areas it will lessen the financial impact of requiring **nbn** to provide fixed wireless and satellite services at prices that will not recover its costs.

A fully allocated cost approach will require common costs to be allocated between the relevant network platforms. The nature of some common costs means that there is a range of alternative ways to allocate these costs. An allocation methodology can be developed that utilises information from existing systems used by **nbn** for its financial, management and regulatory reporting requirements. When considering the issue of cost

allocation the BCR should have regard to the administrative costs that would be incurred in implementing and reporting on an ongoing basis.

nbn is happy to work with the BCR to identify appropriate allocation methods to allocate common costs across the various network platforms.

Question 14: Is a fully allocated cost approach appropriate for the treatment of NBN non-commercial services? What are the strengths and weaknesses of this approach?

*A fully allocated approach is appropriate as it provides for the financing of the losses arising from **nbn**™ fixed wireless and satellite services with protection from potential cherry-picking competition. A key strength of this approach is that it is an accepted commercial approach, with transparent assumptions and requirements. It will also provide an outcome which is consistent with current and future financial reporting requirements.*

4.4 Discount rate

The choice of the appropriate discount rate is dependent on the way in which it is intended to be used. A discount rate for calculating the net present value of future cash-flows could reflect the volatility of those cash-flows as assessed on a particular date. However, a discount rate for carrying forward the loss associated with past investment could reflect the long term cost of raising capital for the business.

At this stage, it is not clear how the BCR intend to construct its financial model and how it will use the discount rate in its model. As such, it is premature to provide a specific recommendation regarding the appropriate discount rate to use. As a general proposition, **nbn** considers that it would be appropriate for the BCR to have regard to accepted models for determining discount rates, including the capital asset pricing model (CAPM) and dividend growth models, which can be estimated using data from financial markets.

It should be noted that given the uncertainty in estimating the discount rate required for a particular set of cash-flows, it may be appropriate to consider a higher discount rate than the median estimated from financial data. For example, if we are estimating the discount rate an investor would use to assess a business, the median estimate of the discount rate would, by definition, underestimate the actual rate investors would use 50% of the time. If underestimating the discount rate would lead to greater economic costs than overestimating the discount rate (e.g., because investment would not occur if the discount rate is underestimated), an estimate above the median should be adopted.

Question 15: What are the relevant issues in determining a discount rate for NBN non-commercial services?

Question 16: What discount rate should be considered for NBN non-commercial services?

Modern finance theory dictates that the appropriate discount rate should reflect the volatility of cash-flows relative to the market. The issues associated with the choice of discount rate will depend critically on how the cash flows will be established in the model and how and when the discount rate will be applied in the assessment of financial losses arising from the provision of ***nbn***™ *fixed wireless and satellite services. At present, there is insufficient detail on the BCR's approach to elaborate on the relevant issues.*

nbn *considers the construction of a number of the historical discount rates identified by the BCR are likely to be useful guide to the likely outcome of modelling the appropriate discount rate. In circumstances where the discount rate is set to reflect the required return to encourage ongoing investment in non-commercial services, the risk of underestimating the required return should be considered by the BCR.*

4.5 Terminal value

A terminal value in a discounted cash flow model is an alternative to modelling the cash-flows in perpetuity. The terminal value reflects the value of the business in the final period of the model.

nbn considers that the BCR should not adopt a terminal value in its model for fixed wireless and satellite services. Instead, the BCR should model perpetual growth factors for individual revenue and cost lines in the period after FY2040. The requirement for ongoing capital expenditure, particularly in relation to satellite services need to be reflected in the assessment of losses, which a terminal value approach doesn't readily lend itself to.

nbn would caution against the use of multiples of EBITDA for establishing a terminal value in this context, because benchmark multiples are likely to reflect going concern profitable businesses, whereas the expectation for these assets is that on their own and without subsidisation they would be loss making.

If a terminal value is adopted by the BCR, it should reflect the earning potential of the assets that are expected to exist in FY2040. If the funding arrangements are not assured beyond this period, the terminal value is likely to reflect the willingness of investors to pay for the assets without subsidies. This amount might reflect the liquidation value of the assets or the (then) present value of future expected cash flows.

Question 17: What issues arise when considering the application of a terminal value for calculating NBN non-commercial services?

A number of issues arise from the use of terminal values, in particular the treatment of refresh CAPEX. For this reason ***nbn*** *considers that the use of a terminal value is not appropriate for calculating the losses associated with the long-term provision of* **nbn**™ *fixed wireless and satellite services. Instead the BCR should consider perpetual growth factors on individual revenue and cost lines are for the purposes of calculating the funding requirement for* ***nbn***™ *fixed wireless and satellite services.*

If however the BCR is minded to use a terminal value, its calculation should reflect inputs which explicitly acknowledge that the funding arrangements for ***nbn***™ *fixed wireless and satellite services are established for the period up to FY2040.*

4.6 Sensitivity analysis

nbn agrees that sensitivity analysis is an appropriate tool for testing the assumptions adopted by the BCR in its financial model. This sensitivity analysis should reflect the uncertainty associated with estimating future costs and revenues and the effect this has on attracting investment capital required for the provision of fixed wireless and satellite services. **nbn** would be happy to work with the BCR in identifying appropriate sensitivity analysis.

Question 18: What are the key sensitivities and scenarios which should be considered?

Uncertainty in the forecasting of revenues, expenditures and discount rate are likely to be key sensitivities to consider along with the timing of replacement CAPEX: the launch of new satellites and advances in fixed wireless technologies.

5. Designing funding arrangements for non-commercial services

nbn considers that the BCR consultation paper does not fully grapple with the breadth of issues associated with designing the funding arrangements for fixed wireless and satellite services. Specifically, the consultation paper does not clearly set out the objectives of establishing the funding arrangements and hence does not tackle critical issues such as how the present value of the expected financial loss in providing fixed wireless and satellite service would be translated into a fee or levy in any given year. For example, the consultation paper does not consider how the present value of the expected loss in providing **nbn**™ fixed wireless and satellite services would be recovered over time from industry revenues (e.g., constant nominal amounts could be calculated and recovered annually, or the levy/fee could seek to have a constant percentage effect on prices).

The appropriate recovery profile would depend on a range of factors. For example, if the primary purpose of the funding arrangement is to address cherry picking, the recovery may need to be sufficiently flexible to ensure that new entrants do not seek to time their entry decision to avoid making a contribution. Alternatively, if the primary purpose of the funding arrangement is to ensure that the contribution to the funding for the provision of **nbn**™ fixed wireless and satellite services is spread across telecommunications users in a manner that is efficient and equitable, the recovery might adopt a profile that minimises the distortion to prices over time.

nbn would be pleased to discuss these issues with the BCR and consult further on the detailed design of the funding arrangements.

5.1 Industry funding eligibility

The principles outlined by the BCR for the design of funding options (see section 4) strongly favour sourcing funding from as a broad a range of services as possible, including from those provided on fixed line networks (i.e., providing telephony and less than 25Mbps broadband services) and wireless network services. Those principles also support designing a levy that can be passed through to end-users in a manner that does not distort competition or entry decisions.

There is a broad range of funding options that might be considered by the BCR. The possible arrangements will have very different consequence for those who ultimately contributes and on the size and effect of impacts on competition and consumption decisions.

nbn considers that a revenue based levy that spreads the funding across the broadest range of services is most appropriate. This is for the following reasons:

- First, a revenue based levy will, in contrast to alternatives mechanisms (such as a network based levy), ensure that the funding arrangements do not fall disproportionally on network owners and therefore do not

unduly affect entry decisions. If the funding arrangements operate as a charge on participating in the market, they will affect the number of operators who enter a market and hence the competitive tension within the market.

- Second, as the effect of sourcing funds from particular operators or end-users is to raise the price of the services that are consumed, broadening the basis will minimise the effect of those higher prices on consumption choices. In competitive markets, a levy reduces economic efficiency as prices deviate from the cost of production. The wedge between price and cost discourage consumption of the good even though end-users value the service at more than its cost. The value of this lost consumption is commonly referred to as a "deadweight loss".

  Basic tax theory tells us that this deadweight loss increases exponentially with the size of the levy. That is, for a particular service as the required levy increases the size of the deadweight loss grows at an increasing rate.[7] This basic insight into tax theory is the basis of calls to broaden the basis of taxes that fall on economic activity. That is, a small amount of tax on a wider range of activities involves less distortion than larger amounts of tax on particular activities. The consequence for the BCR in the design of its funding arrangements is that it should seek to broaden the funding eligibility to reduce economic distortions.

- Third, funding options that are restricted to services above 25Mbps are likely to create competitive distortions by creating a wedge between prices above and below this threshold. **nbn** does not consider that bright line market distinctions can be drawn that separate the provision of high speed services above a specified download rate using fixed line technologies from other high speed data services such as mobile data and broadband access services. This is because services at the boundaries of those market definitions will be economic substitutes in the minds of end-users.[8] In Australia, wireless broadband services are consistently recording speeds of between 12-15Mbps (on existing 4G networks that do not yet utilise the capability of 700MHz spectrum).[9]

It is therefore important that proposed funding options ensure that these competitors (and providers of services which are close substitute services) to **nbn** for fixed line services contribute equally to the funding of losses arising from the provision of **nbn**™ fixed wireless and satellite services. This will not only aid economic efficiency and equity, it will also reduce uneconomic distortions to competition.

In terms of how the funding is collected, **nbn** considers that it would be appropriate (in principle) for industry contributions to be made to a Commonwealth account, administered by an appropriate body such as the ACMA, to be distributed to **nbn** to fund the losses incurred in supplying **nbn**™ fixed wireless and satellite service. In practice, whilst **nbn** remains Commonwealth owned cash payments to and from the Commonwealth account should be offset and treated on a net basis. This will minimise unnecessary transaction and funding costs.

Arrangements whereby contribution are made to and distributions are made from a Commonwealth account for the provision of loss making **nbn**™ fixed wireless and satellite services are consistent with the policy of minimising the cross-subsidies between **nbn**'s™ fixed line platform and its fixed wireless and satellite platforms. Such arrangements would treat the provision of **nbn**™ fixed wireless and satellite services on a standalone basis, albeit recognising the economies that **nbn** can achieve in providing services in both commercial and non-commercial areas (via the allocation of common costs).

In contrast, the alternative options set out in the BCR's consultation paper, in which **nbn** funds the provision of fixed wireless and satellite services internally (without making contributions to or receiving funds from the Commonwealth account) will entrench the existing cross-subsidies within **nbn**. Whilst accounting and reporting arrangement could be adopted to make these more transparent, they would not be consistent with the policy intention of removing the existing cross-subsidies between the fixed line platform and the fixed wireless and satellite platforms.

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[7] For a simple linear demand curve, it can be shown that the deadweight loss triangle grows with the square of the rate of the tax.
[8] For example, end-users will be sensitive to the relative price of a 20Mbps and a 30Mbps services.
[9] http://opensignal.com/assets/pdf/reports/2015_03_opensignal-state-of-lte-report_mar_2015.pdf

Question 19: Should NBN Co contributions towards NBN non-commercial services, and funding to deploy and maintain these services, be made via a Commonwealth account?

nbn *considers that a Commonwealth account, administered independently, is an appropriate vehicle to collect and distribute funds for providing non-commercial services. In practice, whilst* ***nbn*** *remains Commonwealth owned cash payments to and from the Commonwealth account should be offset and treated on a net basis to minimise unnecessary transaction and funding costs.*

Question 20: What issues should be considered when examining industry funding eligibility?

The principles identified by the BCR in section 4 of its consultation paper should form the basis of assessing industry fund eligibility. ***nbn*** *considers that these principles are consistent with a broad eligibility.*

Question 21: Is it reasonable to apply a service standard to determine eligibility? If so, is a high-speed broadband speed criteria based on a minimum download speed of 25 Mbps reasonable?

To the extent the Terms of Reference restrict the BCR to recommending a model based on industry funding, it should recommend the broadest base possible. Moreover, ***nbn*** *does not consider it easy to draw a bright line between high speed broadband services that compete for residential and small business customers based on download speed or the technology used to provide those services. The uncertainty as to how technologies and competition between services will evolve means that the most sustainable basis for determining industry contribution is from all broadband providers.*

5.2 Eligibility thresholds and proportionality

nbn understands that it is common for there to be an eligibility threshold for contributions to USO funds. As noted by the BCR the USO fund in Australia has a eligible revenue threshold of $25 million per year.

The requirement to contribute to funding of loss making **nbn**™ fixed wireless and satellite services should not be a barrier to entry into broadband markets. Equally however, any eligibility threshold should not operate to subsidise entry into the market. For this reason, **nbn** would support a revenue threshold that is applied to all operators regardless of their size. This would simply operate such that the first $X million of annual revenue for all operators would not be counted for the purpose of calculating their contribution to the industry fund.[10] This arrangement would mean that small operators would avoid the burden of the industry contribution, but incumbent operators would not be competitively disadvantaged.

Question 22: In the context of NBN non-commercial services, what issues should be considered regarding eligible revenue or other eligibility thresholds?

Question 23: To what extent is it appropriate to consider proportionality when developing funding arrangements?

nbn *recognises that small operators making contributions to the industry fund may result in a disproportionate burden. However, the eligibility threshold should not operate as a subsidy for entry. A competitively neutral model would apply the eligibility threshold to be claimed by all operators contributing to the industry fund.*

[10] For example, if the eligibility threshold was set at $100 million and an operator earned $500 million in revenues, its contribution to the fund would be based on revenues in excess of the $100million threshold (or $400 million).

5.3 Contestability

nbn is subject to a requirement to provide services across Australia regardless of whether they are profitable or loss-making. In order to meet these requirements, **nbn** is investing substantial amounts in long-lived assets and long term arrangements to ensure that these requirements are sustainable into the future.

As per section 3.3 of this submission **nbn** submits that any contestability arrangement would need to carefully consider the implications for the sustainability of those obligations, particular in light of the natural monopoly characteristics of networks in these areas.

nbn considers that it is premature to consider arrangements that would promote contestability in the provision of these services. It would be appropriate for the BCR to provide guidance that any consideration of contestability arrangement in future cash flow positive periods would recognise the negative cash flows that have been incurred in reaching those periods.

That said, it is important that funding arrangement allows for policy to evolve as technology changes and competition develops. **nbn** considers that this can be achieved by costing and funding the provision of **nbn**™ fixed wireless and satellite services on the basis of separate from the operation of **nbn**'s™ other network platforms.

Question 24: Is it practical to consider contestability in the provision of NBN non-commercial services?

nbn *believes it is premature to consider contestability arrangements for the provision of fixed wireless and satellite services. However, future policy changes that introduce elements of contestability would be served by ensuring that the funding arrangements recognise the provision of fixed wireless and satellite as a separate business activity within* ***nbn*** *with external funding provisions.*

5.4 Transparency mechanisms

Whilst **nbn** recognises there may be benefits to bill transparency, it does not have a view as to whether it would be net beneficial at this point in time. In addition, ***nbn*** *is not in a position to comment on retail service providers' ability to reflect charges in end user invoicing.*

Question 25: Would bill transparency arrangements be beneficial?

N/A.

Question 26: Is it feasible for NBN non-commercial services to be reflected on end user invoicing?

N/A.

6. Regulatory issues

6.1 Australian Universal Service Obligation (USO)

nbn considers that the administrative arrangements for the USO and any funding arrangements for **nbn**™ fixed wireless and satellite services should be separate and distinct from one another. This will maximise transparency.

nbn does however recommend that a separate review of the USO be undertaken. That review should consider whether the USO is still required given that in the **nbn** environment the obligation for Telstra would solely be a retail obligation. Where Telstra fulfils its obligation using the **nbn**, it is likely that any losses incurred are significantly less than what is currently reflected in the USO levy. Additionally, in circumstances where Telstra is using **nbn**™ fixed wireless and satellite services to meet its obligations, the rationale for the price caps on **nbn** that mean charges are less than the costs of providing those services is unclear and the imposition of such price caps should be reviewed.

Question 27: Is there opportunity to amend the existing USO collection arrangements to include NBN non-commercial services collection arrangements – noting that industry funding eligibility may be different?

nbn *does not support combining the collection of industry contributions.*

nbn *submits that a comprehensive review of the USO is warranted.*

6.2 Special access undertaking

The SAU accepted by the ACCC provides certainty to the industry regarding access arrangement for high-speed broadband services.

nbn recognises that in a changing policy environment it may need to modify some elements of the SAU over time. Any changes would be subject to approval by the ACCC as part of which there would be industry consultation.

nbn considers that it is premature to be discussing any modifications that **nbn** may need to make to the SAU. **nbn** considers that the BCR should proceed on the basis that **nbn** will seek appropriate amendments to the SAU to accommodate the final arrangements for the funding of **nbn**™ fixed wireless and satellite services.

Question 28: To what extent will elements of the SAU need to change to accommodate the introduction of NBN non-commercial service funding arrangements?

nbn *considers that it is premature to be discussing any modifications that* ***nbn*** *may need to make to the SAU.* ***nbn*** *considers that the BCR should proceed on the basis that* ***nbn*** *will seek appropriate amendments to the SAU to accommodate the final arrangements for the funding of* ***nbn****™ fixed wireless and satellite services.*