



# **Setting the regulatory asset base for the fixed network**

**A REPORT PREPARED FOR THE COMPETITIVE CARRIERS  
COALITION**

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# 1 Introduction

The Competitive Carriers' Coalition has asked Frontier to investigate the merits of the various options that might be used to set a regulated asset base (RAB) for Telstra's fixed network.

In its proposed draft pricing principles and indicative prices for fixed line services<sup>1</sup>, the Australian Competition and Consumer Commission (the ACCC) has recently outlined its views on the merits of moving to a regulatory asset base (RAB) for Telstra's fixed line network.

The ACCC has also acknowledged in recent pricing and regulatory decisions that it is open to consider other pricing approaches. Specifically, it has flagged the possibility of 'locking in' some of the inputs to the cost estimates of certain services; for example, the value of the assets used to provide the services (the regulated asset base).

The ACCC's openness to these alternative pricing approaches has been prompted by two main considerations. First, 'locking in' some of the inputs can provide greater regulatory certainty to both access providers and access seekers. Second, it is now less clear that the build/buy rationale for TSLRIC+ pricing remains as strong. Telstra's copper customer access network (CAN) appears to display enduring bottleneck characteristics, rather than being a network likely to be bypassed through technological and market developments.<sup>2</sup>

The key difficulty associated with 'locking in' the asset base is how this base should initially be valued. The ACCC also needs to consider the timing of when to lock in the asset base.

The ACCC proposes to maintain its use of the TSLRIC+ pricing approach to sunk asset valuation and for setting indicative wholesale prices for declared fixed network services until the 2011-12 financial year. However, it notes that in the event of a significant change in the regulatory environment during the term of these prices the ACCC would be open to reconsidering the prices and pricing principles.<sup>3</sup> The proposed legislative changes put forward by the Government may be sufficient to give rise to such a re-consideration, as we understand it would remove the key significant impediment to implanting a RAB – that prices cannot be set in advance by the ACCC for a period of years across multiple services.

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<sup>1</sup> ACCC, 2009, *Draft pricing principles and indicative prices for LCS, WLR, PSTN OTA, ULLS, LSS (Draft principles)*, August

<sup>2</sup> *ibid.*, p.2.

<sup>3</sup> *Draft pricing principles*, p. 18.

The ACCC cautions, however, that were it to adopt a locked-in RAB, there would be important issues of transition from established pricing principles.<sup>4</sup>

## 1.1 The options for locking in the RAB

The ACCC presently determines access prices using TSLRIC+ based on the ORC asset valuation methodology. It uses a modern equivalent asset value for delivering particular service requirements. The optimisation process attempts to remove excess capacity and redundant services from the value of the asset base, and establish values using the most efficient configuration of assets needed to deliver the regulated services.

The ACCC has noted that one of the key rationales for the re-valuing the RAB in telecommunications was that it would send ‘efficient build or buy’ signals. This was considered important in light of expected competition and rapidly changing technology. It was considered that:

- valuing sunk infrastructure at its replacement cost at the time of a pricing determination would generate a price that would provide investors with correct signals concerning whether to build their own infrastructure to provide services, or to purchase access to the existing infrastructure (i.e. the build or buy signal); whereas
- valuing the sunk assets at their actual/historic cost would encourage access seekers to build their own infrastructure, when it would actually be more efficient for them to buy access to the existing infrastructure.<sup>5</sup>

Given that the ACCC is now indicating that these rationales have diminished in importance other methods of valuing and revaluing assets can be contemplated. What options are available?

When there is no clear market to value the assets (or the services provided), as is the case with many regulated assets, asset valuation methods adopted are split into two main groups:

- Value based – the Net Present Value (NPV) of the cash generated from the business or the net realisable value of selling the assets of the business; and
- Cost based – the cost of purchasing the assets for example, the depreciated historic cost, the depreciated replacement cost etc.

In the draft pricing principles, the ACCC outlines the standard cost based methods and also suggests the NPV method for valuing the fixed network:

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<sup>4</sup> *Draft pricing principles*, pp. 17-18.

<sup>5</sup> ACCC, Submission to Department of Broadband, Communications and the Digital Economy “National Broadband Network: Regulatory Reform for 21st Century Broadband” June 2009 (*Regulatory reform submission*), p. 52.

- **historic cost/actual cost** — the original cost of acquiring or building the asset
- **depreciated historic/actual cost (DHC/DAC)** — adjusts the historic cost of an asset by the proportion of these costs that have been recovered
- **optimised replacement cost (ORC)** — values the asset at the cost of replacing it with a modern equivalent available asset (MEA);
- **current replacement cost** — how much it would cost to replace the asset in substantially the same form at today's prices (current costs may also be depreciated), and
- **depreciated optimised replacement cost (DORC)** — values the asset at the cost of replacing it with an asset that is both a) adjusted for the proportion of the service potential of the existing asset that has expired and b) optimised to provide the required service potential in the most efficient way possible.

Alternatively, the value of network assets could be derived as the **net present value** of existing prices for services.<sup>6</sup>

A further value based method that is not mentioned is the **net realisable value** (NRV) or **scrap value**. It is simply the value that could be realised by the sale of the asset itself. This is generally considered to be the absolute floor for a RAB, because lower values would likely cause the regulated entity to dispose of its assets and no longer provide the services.

In section 3, we discuss how these methodologies might be implemented in further detail.

## 1.2 Summary of findings

We conclude from our analysis that choosing a valuation methodology for the initial RAB is not straightforward. The long-term interests of end-users sub-criteria relating to competition and efficiency are important but potentially could be reconciled with a number of different valuation approaches.

Other factors, such as investor expectations, regulatory precedent, the likelihood and extent of any previous cost over-recovery, and information asymmetry problems are likely to be relevant criteria. The outcome of any talks between Telstra and the NBNC is also a critical contextual factor.

Of the methodologies, we find that NPV and ORC approaches appear to have considerable weaknesses. ORC methodologies would appear to lead towards cost over recovery, while the NPV approach would in practice mirror an ORC calculation.

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<sup>6</sup> ACCC, *Draft Principles*, p. 17.

DORC or DHC methods seem more suitable to the task. However, the conceptual basis for ORC methodologies (from which DORC is constructed) has been largely undermined, DORC retains some of the ORC subjectivity problems, and it may result in over-recovery of previously-incurred costs.

DHC has the advantage of being the least subjective of the approaches, and should be capable of implementation in a relatively straightforward way. It would also prevent any further cost over-recovery on existing assets. These benefits may come at the expense of allowing recovery of costs that have previously been disallowed by the ACCC as being inefficient.

### 1.3 This report

The remainder of this report is structured as follows:

- In section 2, we examine what decision criteria should be important to the choice of a methodology by which to set a fixed RAB.
- In section 3, we examine how the particular methodologies that have been proposed perform against the criteria we develop.
- In section 4, we consider approaches to the setting of a fixed RAB in other jurisdictions and how the trade-offs between possibly conflicting criteria have been made.
- In section 5, we draw conclusions from our study.

## 2 Choosing a methodology

As we have noted in section 1, there are several methods of asset valuation that could be used by the ACCC to set a starting value for the RAB. In this section we offer some thoughts as to the scope of considerations that might be relevant to the decision.

### 2.1 Legislative framework

The objective of the Part XIC access regime is currently, and will almost certainly remain, the promotion of the long-term interests of end-users.

In determining whether a particular thing promotes the LTIE, the ACCC must have regard to the extent to which it is likely to result in the promotion of the following objectives:

- promoting competition in markets for telecommunications services;
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users; and
- encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which telecommunications services are supplied, or are likely to become, capable of being supplied.

We have therefore sought to analyse the relevant considerations bearing these over-arching criteria firmly in mind.

#### 2.1.1 Applying the framework

When examining the relevance of the LTIE criteria, there are a number of points that can be made about the setting of a RAB, in light of the fact that it is now recognised that attaching a replacement cost value to network assets does not encourage more fixed network competition:

- The promotion of competition should primarily be considered in the context of competition at downstream levels. Consequently, RAB values which are as closely as possible aligned with marginal opportunity costs are most likely to contribute to competition by bringing competitors' costs more in line with those of the vertically-integrated access provider.<sup>7</sup> These marginal opportunity costs are likely to be quite low, reflecting the high proportion of

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<sup>7</sup> The prices that would best promote competition are those based on the short run marginal costs of the access provider. This is on the basis that these prices will be the access price imputed by the access provider's retail operation. Only these prices can meet the objective of "competitive neutrality" – see the analysis of Gans and King, *When are Regulated Access Prices Competitively Neutral? The Case of Telecommunications in Australia*, Mimeo, 2004.

sunk assets in the fixed network, and the fact that the opportunity cost of sunk assets is zero.

- Promoting efficiency in investment for the fixed network could be achieved under a RAB approach so long as (a) the fixed network is valued at no less than its scrap value (net realisable value) and (b) the cost of new investments in the network can be recovered. Although the fact that most of the fixed network assets are sunk, and therefore it would have a low scrap value, recovery of any more than this would not be necessary to promote efficient investment.
- Promoting efficiency in the use of the fixed network will be best promoted by ensuring that prices cover marginal opportunity costs. (Again, this is most consistent with a scrap valuation of the assets).

These *prima facie* considerations suggest that, if more fixed network competition is unlikely, an initial RAB valuation based on scrap or net realisable values should be favoured as being more in line with the LTIE.

However, there are a number of other factors which may suggest that we should be more circumspect about using scrap value. In particular, we perceive that the following further factors might be relevant to considering a RAB-setting methodology:

- Existing regulatory precedent and the (real or perceived) promises that have been made to investors.
- Any historical over recovery of costs.
- Existing price levels and the degree of any ‘adjustment shock’.
- Information asymmetries between the regulator and regulated firm and the quality of regulatory information.
- The financial viability of the access providing firm.

A final over-arching factor is how the proposed methodology is likely to fit with the NBN.

Below we explore how each of these factors is likely to count for or against the particular valuation methodology in the circumstances of valuing Telstra’s fixed network.



## 2.2 Regulatory precedent and promises made to investors

The application of TSLRIC access pricing (based on ORC asset valuations) has been a feature of the telecommunications access regime going back to 1997 and the publication of the Access Pricing Principles.<sup>8</sup> This methodology has involved revaluing the asset base periodically to accord with the starting period of new regulatory determinations. It has also found strong support from the Australia Competition Tribunal as a method of pricing:

This discussion should not be taken to suggest that TSLRIC pricing should be imposed at every opportunity. It will often be the case that regulation, including regulated pricing, is not appropriate in given circumstances. It does mean, however, that, in our view, it would generally not be in the LTIE to depart from TSLRIC pricing where access is regulated.<sup>9</sup>

The one notable exception has been the use of a “retail minus retail costs” approach for the pricing of the LCS. This has had a specific justification deriving from Telstra’s legislative constraint with respect to retail local call pricing and the likelihood that TSLRIC-based prices would have been above retail prices. However, the ACCC no longer considers this to be an issue as its TSLRIC estimates are now below retail prices.

Clearly the ACCC is now signalling that the old justifications for TSLRIC are no longer relevant, or as relevant. In particular, it is now recognising that one of the key underlying rationales for the use of TSLRIC, that is the promotion of efficient-build buy decision of access seekers, seems to have diminished as an issue given the enduring bottleneck nature of most of the CAN.

The importance of this issue from the perspective of firms that provide fixed networks and their investors is that moving to a RAB has the potential to impose on them some form of windfall gain or loss. The risk of these gains and losses is likely to be perceived as undesirable, and indeed, this is one reason for moving away from a replacement cost valuation system altogether. What is crucial for attracting future investment is how confident investors will be of obtaining a return on future investments. Even though, as we state above, returns on past sunk investments do not affect this decision directly, an investor might be concerned about making future investments if it regards regulatory changes that remove returns on existing sunk investments create an unacceptable precedent for future investments.

The potential problem is one of credibility for the regulator. While it should not matter to investors which RAB valuation methodology is chosen (so long as it is

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<sup>8</sup> ACCC, *Access Pricing Principles: A Guide*, June 1997.

<sup>9</sup> Australian Competition Tribunal, *Re Seven Network Limited* (No 4) [2004] 187 FLR 373 at 410.

above scrap value), a regulator that promises that any future (prudent) investment can be recovered may find its promises are not credible if an initial RAB value is set that is substantially different from that implied by today's asset valuations. This potential 'time inconsistency' problem<sup>10</sup> means that the ACCC will need to consider both the approach which is optimal in the short-term but also whether that approach encourages efficient investment in the longer term.

This analysis further raises the question of what 'regulatory promises' have been implicitly made by the ACCC and by the Government (through the Part XIC legislation). It would be difficult to argue that investors have been assured of any particular pricing or asset valuation methodology being followed indefinitely. It would be more reasonable to view the nature of the promise made as one that respects that investors have a right to recover costs plus a return on prudent investments.

## 2.3 Historical cost recovery

A further relevant consideration for the ACCC in setting the RAB might be whether previous asset valuation approaches have led to an over-recovery of costs. By over-recovery, we mean that the allowed path of depreciation has been such that if it continues going forward, the net present value of returns will exceed the up-front capital costs incurred. This might lead the ACCC to prefer a valuation methodology that might reduce the extent to which future over-recovery occurs.

We are aware of several precedents to taking such matters into consideration:

- Within the context of the national Gas Code<sup>11</sup>, in particularly 8.10(f), which specifies that one of the factors to be considered in setting an initial capital base (ICB) is:
  - (f) the basis on which Tariffs have been (or appear to have been) set in the past, the economic depreciation of the Covered Pipeline, and the historical returns to the Service Provider from the Covered Pipeline;<sup>12</sup>

Although the Australian Competition Tribunal found that such considerations were not relevant in the particular circumstances of the East Australia Pipeline decision by the ACCC, the Tribunal did find that there might be circumstances in which modifications to normal valuation methods would be justified:

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<sup>10</sup> The classic reference to this problem as it relates to economic policy is Kydland, F and Prescott, E. 1977. "Rules rather than discretion: the time inconsistency of optimal policy plans". *Journal of Political Economy*, Vol 85, No 3, pp. 619-637

<sup>11</sup> *National Third Party Access Code for Natural Gas Pipeline Systems*

<sup>12</sup> *ibid.*

When the factors in that section are considered together, they point to a set of circumstances in which the combined effect of past history is such as to require a modification of normal valuation methods which may have thrown up an unreasonably high ICB that would cause an unreasonably high tariff... It is not possible to draw the conclusion that the few years of operation of the MSP by EAPL has caused such a gross over-recovery of depreciation as to require offset in setting the ICB under the regulatory regime.<sup>13</sup>

- The relevance of historical over-recovery to RAB valuations is also accepted by the New Zealand Commerce Commission, which recently stated that “ensuring broad consistency with normal returns over the lifetime of regulated assets to the extent practicable, taking into account investors’ reasonable expectations, is likely to be important when establishing the initial value of the RAB.” (See box 1 for a further description).
- As we also note in section 4, a key reason for setting a RAB for BT’s fixed line assets on the basis of historic cost was that the switch to replacement cost accounting methodologies had lead, and would further lead to, cost over-recovery by BT.

Ultimately, of course, assessment of whether over-recovery has occurred is an empirical issue, and the specification of ‘over-recovered compared to what?’ Nonetheless, given that the ACCC has in the past favoured hypothetical costs in setting access prices at least gives rise to a question as to whether over-recovery may have occurred relative to actual costs incurred. Indeed, the ACCC has previously noted that:

However, the current regime, in assuming that a new asset is constructed at each pricing determination, allows for the costs of a replacement asset to be reflected in access prices without requiring that investment in the replacement asset to actually take place. Hence, the access provider is able to be overcompensated on their existing assets and be paid to replace assets which it does not actually replace.<sup>14</sup>

Indeed, had access prices been based on historic costs, they may have been lower.<sup>15</sup>

## 2.4 Adjustment shocks

The other side of the adjustment ‘problem’ relates to end-users, for whom price increases (in particular) are generally undesirable. Although this preference for price stability has historically been seen as a ‘non-economic’ factor, and difficult

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<sup>13</sup> Australian Competition Tribunal, *Re East Australian Pipeline Limited* [2004] ACompT 8 (8 July 2004), para 29

<sup>14</sup> *Regulatory Reform Submission*, p. 46.

<sup>15</sup> *Regulatory Reform Submission*, p. 38.

to reconcile with standard economic theory, the work of Biggar<sup>16</sup> does provide an indication that such considerations might be relevant from the point of view of promoting economic efficiency. In particular, if consumers have invested in customer-premises equipment or other assets which are specialised to the monopolist's product or service (and also perhaps linked to a service contract) then it may be inefficient to allow sharp rises in prices because they will deter consumers from making such investments in the future.

## 2.5 Information asymmetries

Information asymmetries concern questions of the degree of information disparity between the regulator and the regulated firm. The regulated firm will always have significantly more information about its business than a regulator. The greater the level of these information asymmetries the greater the administrative costs of regulation, and the more likely there is will be regulatory error and loss of economic efficiency. Asymmetry can be addressed in two broad ways:

- by directly reducing the asymmetry at the source, and
- by lessening the subjectivity associated with decisions made by the regulator and regulated firm.

The first of these options can and has been implemented (e.g. through the use of regulatory accounts) but there are invariably limits to how effective these mechanisms are.

The second approach can be addressed through the choice of alternatives by the regulator – for example, by choosing asset valuation methodologies that rely on existing financial records rather than on hypothetical benchmarks. Therefore, these considerations may have some bearing on the choice of a RAB setting methodology.

## 2.6 Financial viability of the access-providing firm

The ability of the access provider to recover the costs of sunk assets will not affect its decision to remain in business. That decision will be determined by whether it can recover its variable costs. However, to the extent that a firm has borrowed to finance its sunk investments, the ability to service this debt will affect the firm's financial viability. In these circumstances, allowing an asset value and permitted rate of return that enable such a debt to be serviced will help ensure financial viability of the firm, and could be important for setting the

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<sup>16</sup> D. Biggar, "Is Protecting Sunk Investments by Consumers a Key Rationale for Natural Monopoly Regulation?", *Review of Network Economics*, Vol.8, Issue 2 – June 2009

RAB.<sup>17</sup> Such a consideration does, however, seem of only minor relevance here given Telstra's relatively low debts (it might therefore only constrain the use of a methodology such as net realisable value).

## 2.7 Impact of the NBN

We note that there is the potential for the NBN to have an influence on the methodology that is chosen due to the impact of the RAB on Telstra's wholesale pricing and the relative competitive position of the two networks. For example, if Telstra elects not to vend assets in to the NBN, but instead elects to compete with it, then the setting of the RAB may well influence the competitive prospects and viability of the NBN.

However, this influence will depend on the ultimate relationship between the Telstra network and the NBN network, which is uncertain at this point. Some possible alternatives are:

- The Telstra CAN is rolled into the NBN company and the fibre-based NBN “morphs” from the Telstra CAN; or
- The NBN is built alongside the Telstra copper CAN in direct competition to it; or
- The NBN is built alongside the Telstra CAN, but Telstra also elects to upgrade its network to fibre.

In the first case it might be argued that changes in asset valuation should be avoided in setting the initial RAB, to avoid significant price shocks if the value of the NBN investment were then to replace it. On the other hand, existing asset valuation methodologies compensate Telstra for investments which it may well never make (as the copper CAN will be replaced by the NBN).

In the latter two cases, there may well be a decrease in need for access regulation (as there would be two CANs), but in the transition there may be issues about ensuring that any RAB was set to allow Telstra to recover the cost of future (fibre) investments.

We note that no particular scenario has been assumed by the ACCC in its draft pricing principles. Rather it notes that whether the NBN by-passes the copper CAN “may not be determined for some time”.<sup>18</sup> As a result it has not given this

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<sup>17</sup> Such a consideration might have been relevant to, for example the situation in Western Australia surrounding Epic Energy's purchase of the Dampier to Bunbury Pipeline. This pipeline was bought at competitive tender from the Government for \$2.407 bn, a decision by the WA regulatory meant it was only allowed to recover \$1.234 bn. This decision was overturned. See *Re Michael Ex parte Epic Energy (WA) Nominees Pty Ltd* (2002) 25 WAR 511

<sup>18</sup> ACCC, *Draft principles*, p. 17.

matter particular attention in its deliberations on alternative methods of setting the RAB. Given the inherent uncertainties – which may be resolved over the next few months – this seems a sensible approach.

**Box 1: Proposed input methodologies under changes to the New Zealand Commerce Act**

In its discussion document in relation to the possible input methodologies for regulated airport, electricity and gas businesses to be introduced following changes to the Commerce Act, the Commerce Commission succinctly identifies some of the issues around setting an initial RAB:

The Commission noted in the Provisions Paper that establishing an opening RAB part-way through the lifetime of the assets employed to supply regulated services is always a problematic task for regulators. The decision is primarily an exercise of regulatory discretion, informed by the need to promote statutory objectives. In exercising this discretion, the Commission has identified factors that it considers are relevant to the decision, namely:

- s 52A(1)(a) and (d): balancing the need to ensure suppliers have on-going incentives to invest while limiting their ability to extract excessive profits; and
- implementation principles and contextual factors.<sup>19</sup>

The Commission later expands on these factors.

The Commission considers that ensuring broad consistency with normal returns over the lifetime of regulated assets to the extent practicable, taking into account investors' reasonable expectations, is likely to be important when establishing the initial value of the RAB. The Commission therefore proposes setting an initial RAB value for each regulated supplier that is, as far as possible, broadly consistent with each supplier having earned at least a normal return in the past (i.e., high enough to ensure suppliers expect to earn at least a normal return over the lifetime of their assets). This must be balanced against the need to ensure the valuation is consistent with limiting the over-recovery of investments over the remaining lifetime of their assets.<sup>20</sup>

The focus on existing returns is interesting, because it more strongly grounds the selection of the RAB method with the returns actually earned by investors. With regard to the other contextual factors, the Commission has commented that:

The Commission considers that consistency across the regulated suppliers and with past regulatory and commercial practice can be important, as are the costs and practicalities of implementing particular valuation methodologies. However, the appropriate methodology to establish the initial RAB value is also likely to be informed by other considerations, including other important factors, such as the quality and availability of asset valuation data. Indeed, in the event

<sup>19</sup> Commerce Commission, *Input Methodologies Paper*, p. 137.

<sup>20</sup> *Ibid.* p. 138.

that a regulatory valuation was comparable to the firm's own book value, it may be preferable to simply adopt the book value itself.<sup>21</sup>

These additional criteria are quite similar to those we adopt. They imply a focus on limiting the scope for subjective judgements, and maintaining some consistency with previous approaches.

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<sup>21</sup> *Ibid*, p. 138.

### 3 Assessing methods against the criteria

In this section of the report, we examine the likely suitability of the following methods of valuing the fixed network against our criteria in section two:

- Net present value
- Optimised replacement cost
- Depreciated optimised replacement cost
- Depreciated historic cost.

#### 3.1 Net Present Value

The NPV approach values an asset as the present value of the predicted profit streams generated from using the asset over its life. It would involve using existing or future prices and quantities to set target revenues over time, from which one could “back-out” an associated RAB. This would also require estimates of operating expenditure (opex) and a rate of return (for discounting purposes). The annual opex would be subtracted from the revenue to derive net cash flow which is discounted using the rate of return to derive the RAB.

An NPV asset valuation approach generally presents problems of calculation under any setting because it requires detailed information about future states of the world – but this is not unique to this approach.

However, the more serious objection that can be raised when using NPV for determining regulatory asset bases is that its circularity<sup>22</sup> must be broken by choosing prices that are not based on asset values. This could well mean that the chosen set of prices is arbitrary (not related to efficiency or competition criteria) and non-transparent.

Moreover, if the existing (or future) regulated prices for the service are used to derive the RAB as suggested by the ACCC, this will in essence retrieve the asset value upon which those prices have been set i.e. a TSLRIC-based ORC valuation using the ACCC’s indicative prices. In this sense, it would make more sense to simply use the TSLRIC opening asset value and lock this in. Of course, if prices captured in the RAB calculation also cover non-regulated services, then one imagines that the RAB valuation may also capture a degree of monopoly profit.

This approach therefore probably makes more sense in a situation where prices have been heavily influenced by non-economic considerations (e.g. kept low for social policy reasons), and, in the absence of accurate historical cost information,

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<sup>22</sup> That is, there is circularity as the net cash flows that are to be used to value the asset are in turn determined by the revenues allowed by the regulator.



the regulator wishes to establish an initial RAB. This is not the situation for fixed network access services.

## 3.2 Optimised Replacement Cost

ORC is the asset valuation approach the ACCC presently uses for determining access prices based on TSLRIC+. It uses a modern equivalent asset value for delivering particular service requirements. The optimisation process attempts to remove excess capacity and redundant services from the value of the asset base, and establish values using the most efficient configuration of assets needed to deliver the regulated services.

There are two criticisms that are generally made of an ORC valuation:

- that it exposes the regulated firm and consumers to price changes that are not driven by changes to the regulated firm's actual costs (meaning that the approach can lead to over- or under-recovery of actual investment); and
- that, under the bottom-up approach to modelling costs, its implementation requires an unduly large number of subjective judgements about network design, patterns of demand and pricing paths – and usually over long time horizons.

The first of these criticisms of ORC valuation is one that is well recognised by the ACCC and one reason why the ACCC is now considering the use of a locked in RAB value.<sup>23</sup> It does, however, raise the question of whether in setting the initial RAB value the ACCC should examine whether Telstra has been more than recovering its costs of supplying the fixed network. As we noted in section 2, the ACCC at least appears to harbour this suspicion. Our view is that the ACCC should investigate and attempt to quantify the extent of any over-recovery and any potential future over-recovery from maintaining the use of the ORC method (including if it is used to construct DORC). While the ACCC may not wish to recoup any past over-recovery, it could well be relevant to a decision to change valuation methodology.

The second criticism of subjectivity is also relevant to setting the initial value. TSLRIC / ORC valuation of assets is a highly subjective approach that leads to wide bands of potentially reasonable values. It requires determining the assets required to supply a specified level of service potential at minimum efficient cost. However, it is difficult in practice to specify what constitutes this 'service potential' - for example, what are the 'core' dimensions of the service we wish to replicate, how do we measure these, and for how long? Should the methodology

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<sup>23</sup> This was one of the reasons that periodic re-optimisation was abandoned for setting the RAB in the electricity sector under changes to the Electricity Rules. See AEMC, 2006, Draft National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18, Draft Rule Determination, 26 July p. 75.

incorporate different technologies (i.e. wireless) from those actually used by the access provider? Will future competition influence the appropriate path of cost recovery? These questions are not particularly amenable to a single ‘right’ answer.

The ORC measure would therefore be expected to score poorly against the information asymmetry criterion. Nonetheless, ORC valuations have been used to date in telecommunications regulation so it would have precedent value, and estimates from various modelling exercises (for example the Analysys model and/or TEA model) have been used to support the ACCC’s indicative prices.

Aside from this criticism of the ORC methodology, the primary issue associated with the use of ORC in setting the initial RAB is somewhat different. This issue is how to maintain consistency between the initial RAB value and future additions and subtractions from the RAB value. The consistency issue is identified by the ACCC<sup>24</sup>, which notes that the approach used for valuing the opening RAB should complement the approach to depreciation and capital expenditure going forward.

In simple terms, this is about ensuring that assumptions behind the valuation methodology are ‘followed through’ – so that, for example, if one sets the RAB on the basis of ORC, no further allowance for replacement capital expenditure is made until these assets are fully depreciated. So, to avoid over-compensation, the path of all replacement expenditure would need to be specified and effectively “locked-in” at the initial RAB valuation – very difficult where some assets may have economic lives of 50 years or more. Consequently, if an ORC methodology is used and new capital investment is rolled-in to the RAB, there is a serious risk of cost over-recovery.

### 3.3 Depreciated Optimised Replacement Cost

DORC recognises that the remaining service life of the existing assets may be limited. Hence, the optimised replacement cost is depreciated to reflect the current, partly worn-out state (and limited service potential) of the existing assets.

Because DORC is derived from an ORC valuation, it retains the same problems as ORC related with the subjectivity of valuation and potential past over-recovery. In the current context, its primary advantage over ORC for setting the RAB is that it sets up a framework so that actual new capital expenditure to replace lost service potential can be rolled into the RAB as it occurs.

This mitigates the potential ORC valuation problem whereby new expenditure is rolled into the RAB that is already supposed to be captured in the ORC value. (i.e. where the regulated entity undertakes expenditure before the end of the asset lives specified under ORC, and is successful in having this incorporated into the

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<sup>24</sup> ACCC, *Regulatory reform submission*, p. 117.

RAB). It is therefore more likely to be consistent with LTIE criteria than the ORC method, particularly the promotion of competition and efficient use of infrastructure.

Notwithstanding these advantages, the issue of how to construct DORC from ORC is far from trivial. In selecting a methodology, it is important to bear in mind what the purpose is of using a DORC approach.

Simpler approaches to calculating DORC include:

- assuming that the same relationship between DORC and ORC holds as for the relationship between DHC and HC. That is, under a DHC approach, the depreciated value is calculated by deducting the depreciated amounts from the asset's historic cost. DORC might also be estimated by applying this percentage to ORC (i.e. if the historic costs of the network were 50 per cent written down, it would be assumed that DORC was also 50 per cent written down (from ORC)).
- applying to ORC an estimate of the useful remaining life of the existing asset (which might be longer than accounting life) expressed as a percentage of the life of the new asset. So if an existing asset had 20 remaining years of useful life, and the new asset would deliver service over 25 years, DORC would be 80 per cent of ORC.

A more complicated calculation of DORC arises from the contestability construction of DORC and the 'hypothetical new entrant' test that is said to underlie ORC valuations, with its implied economic depreciation profile.<sup>25</sup> The contestability or competition construction of DORC calculates DORC by estimating the net present values of future income from the asset (which is prevented from being circular by linking income with the price that would be charged by an efficient new entrant).<sup>26</sup>

We can illustrate this method via an example. Assume that a new asset would last for 20 years, and the remaining life of the incumbent's existing asset was 10 years, and that there are no changes in costs over time. By assumption, the 'hypothetical new entrant' ORC value of the new asset effectively sets the cap for how much could be recovered in a contestable market over 20 years, while the DORC value will be based on revenues earned over a 10 year period. The DORC value will be the NPV of the first 10 years of revenues in this case (or, equivalently,  $ORC = DORC + \text{discounted value of ten years of further earnings once the existing asset expires}$ ). So, if an efficient entrant was constrained to earn \$10 per year for 20 years (by the perfect contestability of the market), DORC in

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<sup>25</sup> As per *EAPL*, para 26.

<sup>26</sup> The derivation of DORC from ORC was a major issue in *EAPL*; a decision of the Tribunal which was upheld by the High Court (*East Australian Pipeline Pty Limited v Australian Competition and Consumer Commission* [2007] HCA 44 (27 September 2007))

this case is simply the net present value of those income flows over 10 years. Assuming a 10 per cent discount rate, this equates to an ORC of \$85.14 and a DORC of \$61.45 (72 per cent of ORC).

The contestability construction of DORC and its implied economic depreciation profile will lead to a higher asset value than that derived using straight line depreciation (which, in the example above, would lead to a DORC value that is 50 per cent of ORC). In situations where the economic life of existing assets and a new asset would be similar, DORC will be very close to ORC.

### 3.3.1 DORC construction approach for the fixed network

To derive a suitable methodology for calculating accumulated depreciation on an ORC valuation, it is first necessary to contemplate why ORC values might be used to set the initial RAB. This is because the reasons why ORC is used are likely to be critical to the kind of depreciation adopted.

Consider first the approach of Agility Management, which effectively started the debate as to appropriate DORC construction:

To be consistent with the statements of principle in the ORG and ACCC Decisions, and in the Draft Statement of Principles, the DORC for existing assets must be constructed as the net present value of the future income from those assets, where the income is consistent with the prices that would be charged by an efficient new entrant, but recognising that the income stream for the DORC valuation will have a life equal to the remaining life of the existing assets.<sup>27</sup>

As King notes:

The Agility paper notes the standard arguments that are put forward in support of DORC. These include the argument that a DORC valuation allows regulatory pricing to mimic the behaviour of a perfectly contestable market. Also, a DORC valuation of assets represents the maximum valuation that would prevent systemwide bypass of the relevant assets.<sup>28</sup>

This approach is also commented on by the Tribunal in EAPL:

26...ORC is only utilised in this field as the starting point from which to deduce DORC. These are forward looking concepts and the 'depreciation' concerned is economic depreciation. There is no support for ORC to be adjusted to take account of past events particularly based upon accounting concepts of depreciation, and to do so is wrong in principle....

51 If, as defined and described by the ACCC, DORC is the price at which a potential new entrant making 'a buy or build' decision would value an existing asset, it is difficult to see why the ORC used to calculate the DORC of an existing pipeline (such as the MSP) should not include a contingency factor to

<sup>27</sup> Agility Management, *The Construction of DORC from ORC*, August 2000.

<sup>28</sup> King, op.cit., p. 2.

cover omissions. Clearly, a prudent potential new entrant would allow for contingencies and include them in its calculation of its ORC to arrive at its 'buy or build' DORC value.

From these statements, we conclude that:

- DORC (and hence ORC) are calculated where it is desirable to estimate the costs incurred by a hypothetical new entrant
- Such asset values are consistent with prices found in a (hypothetical) perfectly contestable market for the relevant services
- Such asset values would encourage efficient build or buy decisions

These conclusions are interesting in light of the ACCC's current views on the relevance of the hypothetical new entrant benchmark, and the need to ensure that asset values would encourage efficient build or buy decisions. In particular:

The forward looking nature of optimised replacement costs is argued to better capture economic costs than either backward looking historic costs or current costs. This is because they reflect the ongoing efficient costs of providing a service, which is no more than a firm could expect to recover in a contestable market. (In practice however, the ACCC has been conservative in its approach, and has based prices on the costs of building a replacement network, as opposed to the ongoing costs to the incumbent of providing services.) Prices based on this standard are therefore thought to reflect the 'build-or-buy' signals that would be created in a contestable market. This was thought to be important, because, when the regime began, there was believed to be the prospect of inefficient bypass.

The assumption that a competitor would be likely to build a competing CAN, and therefore that the market is potentially contestable and inefficient bypass a possibility, is thus questionable. There is therefore somewhat of a tension in valuing the CAN using forward looking costs in order to reflect the build-or-buy signals that would occur in a potentially contestable market, when the market is actually not contestable and inefficient bypass unlikely.<sup>29</sup>

and

The ACCC considers that the existence of particular features in certain implementations of TSLRIC+ may be likely to result in estimates that, on balance, meet the legislative criteria; these features being:

- that the hypothetical efficient network operator is the access provider

Of most interest here is that the ACCC rejects the 'new entrant' test that would be implied by contestability theory as a reasonable benchmark for network costing. It is no longer seen as relevant, even if it were once so.

The implication is that if DORC is to be chosen as a methodology to set an initial RAB, it would not be incumbent on the ACCC to choose an 'economic'

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<sup>29</sup> Regulatory Reform Submission, p. 38.

approach to depreciation based on contestable market theory.<sup>30</sup> Plainly, these concepts are not as relevant to the regulation of communications infrastructure as they might be in other areas.

What might a more suitable construction of DORC look like? Several options are open to the ACCC, and we recognise that no one approach may prove to be most suitable. Our view is that the approach adopted should:

- Be consistent with objective of facilitating the introduction of replacement capital expenditure and new capital expenditure, and avoiding compensating Telstra twice for investments.
- Be consistent with the view that many of the fixed network assets are likely to be nearing the end of their economic life.
- Be consistent with the prior approach to depreciation under TSLRIC+, so that the DORC construction approach recognises some depreciation of the ORC values that have been used.

### 3.4 Depreciated Historic Cost

Under DHC assets are valued at the cost at which they were originally purchased, including costs of construction and installation, and with appropriate deductions for accumulated depreciation.

Adopting a DHC approach would clearly be a change in regulatory direction for the ACCC in communications. However, as we note above, it is not necessarily a change that would be inconsistent with promises that have been made to investors. Historic cost measures the amount of capital actually invested in the business and on which owners require a return. It would allow for the recovery of the costs of prudently-incurred investment, whereas in contrast, adopting ORC for the initial RAB value may result in recovery of amounts quite different to the amount of capital that was sunk into construction or purchase of the assets.

The major advantage of the DHC approach is that it would provide a logical and consistent path towards an ongoing RAB methodology. That is, unlike with an ORC approach there would be no issue with the incorporation of replacement

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<sup>30</sup> It is also evident that other ‘economic’ approaches to depreciation, that do not rely on market contestability, could also be derived. For example, Oftel’s approach to economic depreciation in its mobile cost model was quite different. It reasoned that the contestable market approach to depreciation “provides a feasible answer to the specification of the competitor constraint, [but] the price/unit cost profile that it implies seems unattractive. When utilisation is very low, the price/unit cost is very high and vice versa. It also involves an assumption about new entrants that seems very unrealistic.” See <http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/depr0901.htm#coma>.

capital expenditure and there would be a clear allowance for the expiration of assets. Unlike DORC, there would be no issue about the potential inconsistency between allowing replacement expenditure on assets that may have been optimised out under a DORC approach.

A second major advantage of DHC is that it is relatively simple and objective, so it has fewer problems associated with information asymmetry. The ACCC noted in 1999 that:

The cost information needed to calculate the rate base is usually readily available from the service provider's existing accounting and financial systems. Inflation adjustment, say on a CPI base, can be constructed, and [a] depreciation schedule can be superimposed. (p. 46)

A DHC value for fixed network assets should be able to be derived from regulatory and/or general ledger accounts. This assumes that detailed and accurate registers or accounts of the assets are available, which we understand has proven somewhat problematic for Telstra in the past, with a number of assets not included or not included with the requisite details.<sup>31</sup> Of course, if these assets are not included because they have been fully written off but not yet replaced, no concern would arise (replacement expenditure would then fold into the new RAB as incurred).

There are two problems that we could envisage with a DHC approach – one seemingly less serious, and one more so.

The first problem is that often cited with historical cost valuation methods – that replacement capital expenditure may result in significant price jumps if assets are fully or nearly fully depreciated. This could be particularly problematic if the cost of replacement expenditure is significantly higher than the historical value - a problem for long-lived assets – or if investment is particularly lumpy. The ACCC also noted in 2002<sup>32</sup> that such valuations could bring forward replacement expenditure even for assets that still had remaining useful life (in order to achieve a return on them). However, the Productivity Commission did not find these arguments persuasive<sup>33</sup>, rationalising that such a bringing forward of investment was unlikely if some excess capacity remained.

The more serious drawback of historical cost valuation is that it provides no information about the efficiency with which a firm is conducting its activities. Technological change may have made the existing assets largely obsolete, in which case historic asset costs would overstate efficiently-incurred costs (productive inefficiency) and further distort consumption decisions (allocative

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<sup>31</sup> See for example ACCC, 2004, *Current Cost Accounting Report Relating to Accounting Separation of Telstra for the Half Year to December 2003*, May.

<sup>32</sup> ACCC, *Submission to the Productivity Commission Review of the National Access Regime*, p. 36.

<sup>33</sup> Productivity Commission, *Review of the National Access Regime*, September 2001, p. 365.

inefficiency). For example, it may allow Telstra to recover the cost of some copper assets that have been optimised out of current TSLRIC ORC valuations because they are now not the lowest-cost methods of serving particular customers.

## 4 The use of the RAB approaches in other industries and jurisdictions

As part of our study, we have reviewed the use of the various RAB valuation approaches in other industries (within Australia) and in other jurisdictions in both communications and other industries. In particular, we have sought to understand the bases for why regulators chose the particular methodologies, and how they relate to our considerations in section 2.

### 4.1 Use or consideration of Net present value

#### 4.1.1 Water

The use of a NPV approach to setting RABs was adopted by the Victorian Essential Services Commission in framing advice to the Minister on possible RABs for Victorian water businesses.<sup>34</sup> This advice was used by the Minister to set RABs by trading off the value of these government owned businesses (based on the return that would be realised on past investments) and price increases to consumers within the bounds of a “financial viability” constraint.<sup>35</sup>

The ESC’s advice related to specification of a “line in the sand” approach to setting the RAB in accordance with Ministerial requirements that asset values for the businesses be derived from their pricing or revenue requirements.

It seems to have favoured including allowance for the businesses “efficient” anticipated expenditure requirements in their business plans in setting the RAB. More importantly, the ESC proposed that the financial viability of the business (related to the ability to serve existing debt) needed to serve as a lower bound on setting the RAB. As indicated above, this constraint was accepted by the Minister in selecting the RABs for each business.

#### 4.1.2 Airports

The valuation of airports’ assets has been a major source of contention between airports, airlines and regulators over the last 15 years in both Australia and New

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<sup>34</sup> ESC, 2005, *Advice to the Minister for Water Regulatory asset values for Victorian water businesses*, March.

<sup>35</sup> This is inferred from the RAV scenarios provided in the ESC’s report (*ibid.*) at p. 20, Table 4.3 and the actual RAVs set by the Minister reported at p. 31.



Zealand. In both cases, airports have progressed through privatisations and are subject to ‘light-handed’ regulation (monitoring and requirements to consult, respectively). While no decisions on asset valuation can therefore be forced onto airports, reviews of the applicable regulatory regimes by the Productivity Commission in 2006<sup>36</sup> and the Commerce Commission in 2009<sup>37</sup> reveal the full extent of dissatisfaction with the airports asset valuation approaches.

The Productivity Commission recognised that asset re-valuations were the cause of the majority of angst between the parties, and largely dismissed the airports claims that re-valuations were necessary for efficiency purposes. With regard to fixing the RAB going forward, the Productivity Commission recognised that the issue was primarily a distributional one, and that a degree of pragmatism was required. The Productivity Commission elected not to propose a specific methodology, but to draw a ‘line in the sand’ at a point in time, past which re-valuations would not be allowed (so that existing asset valuations would stand). The Productivity Commission did examine an ‘NPV’-type approach, based in imputing asset values from aeronautical charges, but concluded that it would be complex to implement because it involved looking back into the past to a time when the airports were price controlled.<sup>38</sup>

## 4.2 Use or consideration of Depreciated Optimised Replacement Cost

DORC has been widely used in Australia by jurisdictional regulators in both electricity and gas transmission and distribution, and rail for the purpose of setting RABs.

It was initially the regulator’s practice (the ACCC at the time) for electricity regulation to allow the RAB to be re-optimised at the beginning of each regulatory period. However, under changes to the National Electricity Rules at the end of 2006, RABs are locked-in rather than allowed to be re-set for each regulatory period. The ACCC was initially attracted to the use of DORC for its efficiency properties and consistency with the outputs of competitive or contestable markets. However, over time its (and other regulators’) views have changed as to the balance of costs and benefits in using (and updating) DORC valuations.

Its initial reasoning for adopting DORC in electricity included that it would:

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<sup>36</sup> Productivity Commission, *Review of Price Regulation of Airport Services*, 14 December 2006.

<sup>37</sup> See Commerce Commission, *Input Methodologies Discussion Paper*, June 2009 (*Input Methodologies Paper*) for a discussion as to the progress and content of this review. See also Box 1.

<sup>38</sup> Productivity Commission, *Review of Price Regulation of Airport Services*, 14 December 2006, pp. 69-83.

- help overcome the circularity problem associated with the NPV (or deprival value) approach to asset valuation
- be consistent with the prices charged by an efficient new entrant into an industry or the price that a firm with a given service requirement would pay for existing assets in preference to replicating the assets
- replicate outcomes in a competitive market
- help to minimise tariff shock on the basis that existing assets would dominate the capital base and tariffs for a number of years
- avoid inefficient by-pass
- be indicative of the maximum price a new entrant firm would pay to buy the existing assets as opposed to replacing them with new assets.<sup>39</sup>

The ACCC and other regulators' subsequent criticisms of the DORC approach related to the continual re-valuations of assets, which gave rise to regulatory uncertainty (as the regulator has significant discretion) and windfall gains and losses to regulated firms. Consequently, the regulators did not appear so concerned about the methodology for fixing the RAB, only that they did so. Although not evident in any documents we have examined, we presume that DORC valuations have been maintained in the initial RAB for reasons of maintaining regulatory consistency and by constraints in the electricity and gas regulatory codes.

### 4.3 Use or consideration of Depreciated Historic Cost

A relevant example of the setting of a RAB based on DHC occurred in the UK in relation to BT's fixed network. A re-examination of the method used to value BT's fixed network was undertaken by Ofcom in 2005. Ofcom was motivated to do this on the basis that it was unlikely that a new operator would build a new nationwide access network able to perform the same function as that owned and operated by BT.<sup>40 41</sup>

Although Ofcom was concerned at the outset of its review whether BT's approach to the valuation of assets under the current cost accounting (CCA) method was accurate, it subsequently became more concerned about the result that under this method BT was being allowed to recover more than the costs that

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<sup>39</sup> ACCC, 1999, *Draft Statement of Principles for the Regulation of Transmission Revenues*, 27 May, pp. 39-40.

<sup>40</sup> Ofcom, 2005, *Valuing Copper Access – Final Statement*, August.

<sup>41</sup> A difference is that Ofcom used CCA (DRC) and not ORC to value the RAB for setting the access price of CAN services.

it had actually incurred. This reflected a change to current costs accounting from historical costs accounting to valuing the network in 1997.

Consequently Ofcom decided to create a fixed regulatory asset value (RAV) to represent the remaining value of the pre-1997 copper access network assets rather than continuing to value those assets at their current cost. The value of the RAV was set to equal the closing historical cost accounting value for the pre 1 August 1997 assets for the 2004/5 financial year. Its value was allowed to be increased each year by the change in the retail price index to ensure it was not eroded by inflation. Ofcom indicated that over time the RAV would gradually disappear as the pre-1997 assets are gradually replaced with new ones.

It is also perhaps worth noting that Ofcom considered, but rejected, a ORC/DORC-type valuation exercise on the basis that it was overly subjective and would involve Ofcom becoming “intrusively involved in BT’s internal network planning and investment decisions”.<sup>42</sup>

The key lesson that emerges from the Occam’s decision is its concern about BT’s cost over-recovery if a replacement cost methodology continued to be used (CCA in this case).<sup>43</sup> This would also provide support for rejecting the use of ORC for setting the initial RAB value for the copper CAN in the circumstances that:

- the likely superceding of the copper CAN means that Telstra will not actually be undertaking the investments to replace it in the meantime; and
- ORC has tended to produce higher copper CAN access prices than would be the case if historical costs had been used.

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<sup>42</sup> Ofcom, *Op.cit.* pp. 2-3

<sup>43</sup> Note that CCA differs from ORC/DORC in that it assumes a modern equivalent asset that delivers the same service potential as the existing asset but does not optimise the asset or configuration of assets to account for any inefficient excess capacity or redundant services.

## 5 Summary and conclusions

We conclude from our analysis that the process of choosing a methodology by which an initial RAB should be set is not straightforward.

- Promoting the long-term interests of end-users is likely to remain the overarching criterion. The criteria relating to competition and efficiency are important but potentially could be reconciled with a number of different valuation approaches.
- It is also important to take into account what the Commerce Commission in New Zealand has called ‘contextual factors’, such as investor expectations, regulatory precedent, the likelihood and extent of any previous cost over-recovery, and information asymmetry problems.
- We also expect that the outcome of any talks between Telstra and the NBNCo will be pivotal to the timing and selection of a methodology, as the expected industry structure and effects of particularly choices will then become clearer.

Turning to which methodologies appear to best fit the criteria, or would not fit the criteria, we provisionally conclude as follows:

- The two methodologies which seem to have fatal weaknesses are the NPV approach and the ORC approach.
  - The ORC approach would likely raise issues of over-recovery of costs if it was used in conjunction with a conventional RAB framework that allowed new capital expenditure to be included within the asset base.
  - The only sensible basis for deriving NPV is current prices (or prices as they exist in 2011/12) and these are intrinsically linked to ORC (and therefore share the same problem as that described above).
- The two methodologies which appear to be implementable and consistent with a number of criteria are DORC or DHC.
  - DORC has the advantage of being most consistent with current valuation approaches (and arguably investor expectations), and may correct the ORC problem of rolling in new expenditure. However, its derivation from ORC is problematic as:
    - historical use of ORC methodologies may have resulted in past over-recovery, which could be perpetuated through the use of DORC, and
    - the actual derivation of DORC from ORC is likely to be problematic and involve a high degree of subjectivity.
  - DHC has the advantage of being the least subjective of the approaches, and should be capable of implementation in a relatively straightforward

way. It would also prevent any further cost over-recovery on existing assets. The primary problem with this approach is that it may allow recovery of costs that have previously been disallowed by the ACCC as being inefficient.



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