Optus Submission to

Australian Competition and Consumer Commission

on the

Analysys cost model for Australian fixed network services

Public Version

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1. Introduction

1.1 Optus welcomes the opportunity to respond to the ACCC discussion paper on the Analysys cost model for Australian fixed network services (the 'Analysys model'). Optus understands that the Commission will use the Analysys model as an input into developing new pricing principles for the ULLS and other fixed line services after the current pricing principles expire on 30 June 2009.[1]

1.2 Optus accepts the Commission's use of network cost models as an input to the pricing of declared services. However a key caveat underlying this support is that cost models should be only one of many inputs and pieces of information that must be considered as part of the decision making process. That is, as the Commission has alluded to in the discussion paper, the Analysys model should be "an input into that [pricing] process, but not the only input".[2]

1.3 Optus submits that the Analysys model builds a forward-looking hypothetical fixed line network that is reasonably accurate and may, if the matters set out in this submission are taken into account, provide a good basis for costing the ULLS and other fixed line services. In this submission Optus will make the following points regarding the model:

- The demand estimates require further analysis and consultation;
- The architecture and dimensioning of the model appears to be reasonable; and
- The asset costs estimated in the model are mostly reasonable however Optus considers that some of the costs relating to ducts and pits are overstated. When these are corrected, the ULLS price calculated by the model decreases by approximately **7 per cent** in Band 2.

1.4 Further, Optus considers that some of the assumptions made by the Analysys model in order to model the access network do not reflect the most efficient mode of entry for a hypothetical fixed line network operator. In particular, the pricing methodology applied by the model over-estimates forward-looking efficient costs because it assumes that prices for all assets should reflect the replacement cost of assets (which is not an appropriate assumption for assets likely to be made redundant by the NBN) and it assumes that an efficient new entrant would rebuild ducts and trenches (which would not be an efficient form of competition). If, instead, costs are estimated as the long-run costs of an efficient new entrant allowed to make use of the existing ducts and trenches, the ULLS price calculated by the model decreases by approximately **14 per cent** in Band 2. These matters are discussed further in the next chapter.

1.5 In summary Optus submits that the Analysys model overstates costs by at least 14 per cent.

[1] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 8.
[2] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 8.

2. Pricing Principles

2.1 Optus has commissioned a report by Europe Economics, "*Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*", which proposes a new method for determining efficient and pro-competitive prices for access to the ULLS. [3] The report is attached to this submission.

2.2 Optus considers that the approach set out in the Europe Economics report is the best methodology to determine the correct level of forward-looking costs for an efficient fixed network operator, since it takes into account assets made obsolete by the NBN and makes more realistic assumptions about a new entrant operator's use of trenches and ducts, which lead to a more efficient cost benchmark.

2.3 Optus recognises that the current inquiry is intended to address the Analysys model specifically, rather than pricing principles for fixed line services more generally. Nevertheless, Optus submits that some of Europe Economics' insights are relevant to the current inquiry.

2.4 Given that the Analysys model adopts a different approach to that set out in the Europe Economics report in a number of respects, the question arises as to the extent to which the Analysys model is compatible with the Europe Economics approach.

2.5 For those assets that will be made redundant by the NBN, the Europe Economics approach (discussed below) is incompatible with, and, Optus submits, superior to the conventional approach followed by Analysys. For those assets that will not be made redundant by the NBN, Optus considers that the two approaches are compatible to a significant extent: Europe Economics' insights should be applied to the costing of ducts whilst other assets (eg, copper cable) could continue to be costed in the conventional manner.

2.6 However, given the fact that the ACCC has not had an opportunity to fully consider the Europe Economics approach, in this submission Optus will not only set out comments relating to the Europe Economics approach but also will submit comments based upon Analysys' conventional approach.

Consideration of assets stranded by the NBN

2.7 Optus notes that as a result of the introduction of the National Broadband Network (NBN), demand for the services of Telstra's ULLS will be significantly affected and a large proportion of Telstra's local loop assets (eg, the copper between the exchange and the pillar) will no longer be used. This fact has implications for the efficient cost of service provision and is therefore a relevant fact to take into account in assessing Analysys' approach to network cost estimation.

[3] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*

2.8 In its model documentation paper, Analysys notes that the network costs are based upon "the capital cost of building the access and core networks",[4] in addition to operating and maintenance costs.

2.9 Optus considers that Analysys' approach – the conventional approach to costing assets – is inappropriate for those assets that will be made redundant by the NBN because it takes no account of NBN-related redundancy. Optus agrees with the statement of Europe Economics that:[5]

> *"those Telstra assets made redundant by the NBN will not be needed in the long term, so it is not realistic or efficient to calculate their prices as if they would"*

2.10 For those assets that will be made redundant by the NBN, the approach recommended by Europe Economics is incompatible with, and, Optus submits, superior to the conventional approach followed by Analysys. For those assets that will be made redundant by the NBN, Europe Economics proposes the following adaptation to the TSLRIC+ method of calculation: [6]

> *"The costs of using those of Telstra's assets expected to be made redundant by the NBN, would be estimated as the costs that would be incurred by an efficient operator in maintaining and repairing the existing assets in a serviceable state for the limited time for which they will be in use - including an appropriate rate of return on the investment that had been made but not including the cost of replacing the assets."*

2.11 Optus submits that this approach is the correct way to estimate the efficient cost of service relating to the assets in question. Consequently, Optus submits that the values for network costs in the Analysys model which relate to network assets that will be made redundant by the NBN are likely to exceed forward-looking efficient costs.

Use of ducts and trenches

2.12 For those assets that will not be made redundant by the NBN, Optus considers that the most efficient mode of entry for a hypothetical fixed line network operator involves the use of existing ducts and trenches. Given the difficulty and high cost of construction of new trenches, it would be more realistic and more efficient for a hypothetical fixed line network operator to enter the market by renting space in the existing ducts and/or trenches instead. According to Europe Economics:[7]

> *"an efficient new entrant would be able to use Telstra's trenches and ducts, paying an appropriate price for their use, rather than having to re-build or replace them."*

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[4] Analysys, Dec 2008, *Fixed LRIC cost model documentation*, p.116

[5] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*, p.16

[6] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*, p.24

[7] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*, p.16

2.13 This raises the question as to the utility of designing a hypothetical efficient network using techniques such as algorithms to calculate minimum distance (as Analysys has done). For those assets that will not be made redundant by the NBN, Optus considers that the Analysys approach is compatible with the Europe Economics approach to a significant extent.

2.14 A hypothetical efficient new entrant, on Analysys' view, would use existing trenches and ducts. However it would not require the use of all existing trenches and ducts, since it would be able to reconfigure its network requirements to avoid legacy inefficiencies. It follows that the length of the trenches and ducts in the network of an efficient operator must always be shorter than the length of the trenches and ducts in Telstra's existing network.

2.15 Optus submits that once the efficient length of trenches and ducts has been determined (using the Analysys model), Europe Economics' insights should be applied to the cost of trenching and ducting on a per-metre basis (whilst other assets such as copper cable should continue to be costed in the conventional manner). For those assets that will not be made redundant by the NBN, Europe Economics proposes the following adaptation to the TSLRIC+ method of calculation: [8]

> *"The cost of using the remaining assets, i.e., those assets that are likely to be used in the long term, would be estimated as the long-run costs of an efficient new entrant allowed to make use of the existing ducts and trenches in return for an appropriate payment to the owner. This is likely to give a lower cost estimate than calculating the cost of the unrealistic prospect that the ducts and trenches would be replicated with new ducts and trenches, as in traditional TSLRIC+ calculations."*

2.16 This issue is discussed further in the chapter on asset costs.

The historic cost ceiling principle

2.17 Optus considers that Analysys should be guided in its modelling by the principle that network elements and technology choices that are protected from optimisation in the model should not be subject to forward looking costing if this leads to a higher cost than what has been incurred historically. This is particularly important in terms of considering trenching and other cost activities that Telstra never actually incurred when originally building the network. As noted by Tom Hird in a 2003 paper: [9]

> *"The decision to adopt a 'scorched node' approach effectively protects some of the incumbent's network from optimisation. However, there is a quid pro quo for customers in this in that elements so protected from optimisation should not be subject to the possibility that forward-looking costs actually exceed historic costs. For example, if the decision is taken not to optimise the use of copper wire in the network it would be inappropriate for the TSLRIC costs of the network to increase significantly due to a rise in the price of copper above the historic price actually paid by the bottleneck owner."*

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[8] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*, p.24

[9] NERA (2003), *Role of TSLRIC in Telecommunications Regulation*, July 2003, p.10

3. Demand estimates

Process and transparency of the inputs

3.1 The Analysys model uses historical information to create demand estimates from 2007 to 2012, which inform the deployment of the access and core network.[10] The methodology and process followed to create this data set was described by Analysys as follows:

> *"The offline demand module has been constructed to allow easy manipulation of projections, which supports scenario testing. Where historical data requires processing to match the service set, assumptions are clearly highlighted. Projections are based on simple compound annual growth rates (CAGR 2007-2012) and curves (see Figure 3.1) on the product market share in the long run. For more detailed information on the projected values, see the off-line 'demand forecast' of the model"* [11]

3.2 Optus takes issue with the approach of having the demand module an "off-line" component of the model. The 'full version' of the Analysys model held by the Commission includes a demand module, however apart from a screen-shot listed in the model documentation (Figure 3.1), this module has not been viewed by any other party than Analysys. [12]

3.3 Whilst Optus accepts that some of the base data used to create the demand projections may be confidential to Telstra (or other parties), the Commission should still be able to publicise the assumptions that have been used to adjust this data. For example, Analysys has used "compound annual growth rates" and various "curves" to produce long-run trends in the demand data and from the screen-shot contained in the documentation it is possible to see that the curve function allows the user to fit a number of projection curves (such as linear, constant, and exponential) to the data via a 'drop-box'. [13]

3.4 Optus cannot see any valid reason why the Commission should not release this information. Optus considers that not knowing precisely what assumptions (e.g. projection curves) have been applied to the data makes it difficult for external parties to understand the reasoning behind the final demand figures. Further as Analysys has already documented all assumptions in the off-line version of the model this information could be released immediately.

3.5 Optus submits that not having access to the assumptions or the off-line module hinders the ability of parties to asses the reasonableness of the final demand figures. Although Analysys have provided some graphs of the demand projections, Optus does not consider this to be an adequate level of information for parties to be able to make strong conclusions about the reasonableness of the results.[14]

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[10] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 20.
[11] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, pages 10 to 17.
[12] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 14.
[13] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 14.
[14] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, pages 15 to 17.

3.6 Optus submits that it will be important for the Commission to address this issue because the final prices produced by the model are sensitive to change in demand.

3.7 This is of concern for Optus and other access-seekers as Telstra has strong incentives to understate demand. Low demand forecasts will push up the price of ULLS, thereby reducing the likely demand for ULLS and softening competition to Telstra in the Retail and Wholesale markets.

3.8 Telstra's recent campaign to overturn its past policy of setting de-averaged prices has caused significant uncertainty for access seekers as the economics of providing ULLS-based services to customers are very different if a $30 per line access price is faced relative to a price of $14 per line. Actual demand, therefore, is very dependent on the price that has been set in the market. Indeed, it is clear that one of the key objectives behind Telstra's ambit claim to obtain averaged ULLS prices was to depress demand to enable it to continue to monopolise the fixed line market.

3.9 Ironically, if demand forecasts are exceeded Telstra will also be the beneficiary as there is no mechanism in the Analysys model to prevent over-recovery of costs. Hence Telstra would simply receive a windfall gain. In contrast, if demand was less than forecast then Telstra would have cause to recoup its unrecovered costs in later regulatory periods/proceedings (e.g. access disputes or pricing principle discussions). There needs to be an objective means of setting demand forecasts and also a mechanism to prevent Telstra over recovering its costs.

3.10 One approach that would overcome the issues associated with forecasting demand is to adopt a tiered pricing structure such that the ULLS specific cost component is adjusted downwards as ULLS volumes increase. This would remove the need to set demand forecasts. It would also give access seekers an appropriate incentive to drive take-up in order to benefit from lower costs per unit. This approach would necessitate the complexity of rebates to be applied to access seekers once volume tiers were met, but this would be preferable to Telstra simply pocketing any windfall gain.

Demand projections

3.11 Optus considers that notwithstanding the comments made above, the final demand projections presented in the model appear to be within reasonable limits.

4. Architecture and Dimensioning Issues

Overhead cabling and other cost-effective technologies

4.1 Optus considers that urban network topology in the Analysys model replicates what has occurred historically but may not necessarily be the topology chosen by an efficient new entrant.[15] Other deployment methods should also be considered as legitimate options.

4.2 Optus notes that the Analysys model typically buries cable connections underground and does not deploy overhead cable.

4.3 Whilst Optus understands that the Commission has purposely protected some network elements and technology choices from optimisation and hence not used anything other than buried cable, Optus questions the validity of this assumption.

4.4 Optus understands that a number of ESAs (e.g. Chatswood) are presently served by Telstra using overhead cable and therefore this method should be integrated into the model. To force the model to provision a completely underground network unfairly over compensates Telstra for costs it has never incurred.

4.5 Optus submits that the Commission should have adequate information from the information collected in the Infrastructure Reporting RKR to integrate details regarding the amount of Telstra's overhead cabling into the model. Optus considers that allowing the model to use overhead cabling (or at least replicating the amount of overhead cabling already in use by Telstra) would significantly reduce the deployment costs derived by the model.

4.6 Further, Optus notes that other more cost-effective technologies may be available and the Analysys model should take these into account. For example, the consultancy Network Strategies has discussed the advantages of shallow trenching and micro-trenching or direct buried cables.[16] Network Strategies has stated that:[17]

> *"We note that operators in other jurisdictions often use more economically efficient direct buried and overhead distribution cabling, particularly for the last few metres of delivery and when poles are already installed for use by other utilities. Although this may not be considered "best practice", operators providing alternative or lower density access networks find it cost effective and efficient. Examples are alternative provider networks in New Zealand cities and eircom's network in Ireland outside of main urban areas."*

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[15] Note that in this section, Optus comments upon the approach taken by Analysys without reference to the new approach recommended by Europe Economics.

[16] Network Strategies, *Review of Telstra TEA model version 1.1 – additional comments*, December 2008, p.5

[17] Network Strategies, TEA model review version 1.1, September 2008 p23

Wireless deployment in the urban environment

4.7 The access network algorithms applied to urban areas are different to those that are applied in rural areas. In rural areas the algorithms use cost-based decision criteria to choose between copper and wireless technology, and subsequently between wireless and satellite in more remote area. In urban areas the algorithms deploy either copper or fibre depending on the demand at each location.

4.8 Optus submits that the access network algorithms used for rural areas should also apply to urban areas. An efficient new entrant may not always consider copper or fibre as the most efficient deployment method in urban areas, particularly in the future as wireless capacity increases. For example, Telstra has stated that its "Next G" network will double in speed by the end of 2009 to reach 42 Mbps.[18]

4.9 Furthermore, Optus notes that Telstra appears to believe that wireless networks will be capable of placing a competitive constraint on its fixed line network. Whilst Optus does not endorse these remarks[19] it notes Telstra's comments on the issue:

i) In Telstra's National Broadband regulatory submission to the Government of June 2008, Telstra's expert consultants believe wireless technology could be a valuable alternative to the fixed network[20]:

(1) Professor George Yarrow and Dr Christopher Decker stated that:

"*A NGAN is only a possible bottleneck because, in <u>high demand density locations</u>, there will frequently be more than one, and in some cases several, NGANs available. Thus, in the Australian case there are likely to be important parts of the national footprint of the proposed National Broadband Network in which there will be inter-NGAN competition, whether from existing HFC networks, higher speed broadband wireless, or city-based fixed broadband networks*" [21]

(2) Similarly, Professor Martin Cave stated that:

"*Additionally, wireless networks place a competitive constraint on NGAs, from either inside or outside the market. Their capability is demonstrated by Telstra's Next G network, which its mobile competitors have indicated they will seek to match. Although wireless networks may have difficulties in fully replicating the characteristics of fibre-based NGAs, because they involve more asset sharing, they nonetheless offer certain end-users a valuable alternative.*" [22]

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[18] Telstra Media Release (Ref: 035/2009), 17 February 2009.

[19] It must be recognised that mobile is not likely to be fully substitutable for a FTTN network.

[20] Telstra, *Public submission on the roll-out and operation of a National Broadband Network for Australia*, 25 June 2008

[21] Professor George Yarrow & Dr Christopher Decker, *Reflections on policy issues raised by next-generation access networks in communications*, Annex A Public Submission on the roll out and operation of a National Broadband Network for Australia, June 2008, p8

[22] Professor Martin Cave, A*nnex C Public submission on the roll-out and operation of a National Broadband Network for Australia*, June 2008, p23

ii) In Telstra's supplementary submission "Competing infrastructure in Band 2 areas: the implications of SingTel Optus' HFC networks for ULLS pricing" to the ACCC in the Telstra's ULLS proceeding of 20 March 2009, Telstra also stated that: [23]

"As set out in Telstra's response to the ACCC's Draft Decision, there is a significant level of other infrastructure competition in Band 2 ESAs, in the form of 3G wireless networks, fixed wireless networks satellite broadband providers and fibre to the curb network (such as TransACT). 3G and satellite technologies in particular, provide blanket network coverage of Band 2 areas, and are capable of providing telephony and broadband services. All ESAs in Telstra's Band 2 are served by at least one competitive network, which is capable of providing end-users with broadband and voice telephony."

Deployment algorithms

4.10 Optus is concerned that the deployment algorithms used in the model may not be capturing all possible efficiencies in terms of the network design. Table 1 below compares the overall trench lengths, number of pits, manholes, copper sheath lengths and fibre sheath lengths produced by the TEA and Analysys network models for Band 2 areas.

Table 1 – Comparison of network deployment variable in the Analysys and TEA network cost models

Parameter (Band 2 only)	**TEA measure** [24]	**Analysys measure** [25]
Trench km (total)	111,516	78,184
Trench km (distribution only)	99,893	Not stated.
Pits & manholes (number)	3,086,063	1,616,217
Copper cable sheath km (total)	162,276	210,618
Copper cable sheath km (distribution only)	137,677	172,223
Fibre sheath km (total)	3,662	89,409

4.11 Optus notes that the Analysys model utilises 30 per cent less trench distance and 48 per cent fewer pits and manholes than the TEA model. However, the copper cable sheath and fibre sheath lengths from the Analysys model are in fact larger than those produced by the TEA model.

4.12 Optus notes that the deployment architecture of the TEA model was heavily criticised by the Commission (and the rest of the industry) for being highly inefficient as it was not optimised and was based on Telstra's existing (legacy)

[23] Telstra, *Supplementary submission to the ACCC "Competing infrastructure in Band 2 areas: the implications of SingTel Optus' HFC networks for ULLS pricing, 20 March 2009*, paragraph 24
[24] Telstra, *Measure of TEA efficiency*, 9 March 2009
[25] It should be noted that they are lower than the reported figures presented in the original table in Telstra's report. Optus has sourced these figures from the access network dimensioning worksheet in the model; however it does not understand the reason for the variation from the figures reported by Telstra. Analysys, Model output, Version 1.2, 19 February 2009

architecture. Further, the ACCC has acknowledged the inefficiency of the TEA design in its draft decision on Telstra's ULLS Band 2 Undertaking, noting that because "the TEA model reflects Telstra's actual network, this suggests that the model has not been implemented using the most efficient network build."[26] Optus considers that an efficient new entrant with perfect foresight (i.e. able to align the network architecture with the location of existing demand) should be able to build a much more efficient network than that produced by TEA.

4.13 The fact that the length of copper and fibre cable sheath in the Analysys model is larger than that created by the TEA model suggests that the Commission needs to re-examine the deployment algorithms in the Analysys model. This difference does not suggest that the TEA model results in a better measure of efficient cost than the Analysys model, since this is only one aspect of the overall network design. Nevertheless, it does suggest that in this particular area the Analysys model may not be capturing all possible efficiencies and as a result it may be overestimating efficient cost. Since a large proportion of the costs in the model relate to the network build, reducing the total cable length would have the effect of significantly decreasing the final ULLS price.

Non-tapered architecture

4.14 The Analysys model uses a non-tapered architecture in the copper distribution network. In the model documentation Analysys described the reasoning behind adopting this deployment architecture as follows:

> *"We understand that the existing network implements a non-tapered distribution network and we have implemented what we believe to be a fair approximation of this."* [27]

4.15 Optus submits that this model should not be based on the architecture of Telstra's <u>existing</u> network but rather the architecture that would be built by an <u>efficient</u> and <u>forward-looking new entrant</u>. There is absolutely no justification for simply accepting the existing network as a proxy for any type of efficiency. This is particularly important considering the significant criticism already levelled at the TEA model which is largely based on Telstra's existing network.

4.16 In its Draft Decision on Telstra's Band 2 ULLS Undertaking the Commission supported the conclusions of the industry and consultants in being critical of Telstra's use of existing architecture:

> *"The ACCC agrees with commissioned reports, including from Ovum and MJA that* ***as the TEA model reflects Telstra's actual network, this suggests that the model has not been implemented using the most efficient network build.*** *…."* [28] [emphasis added]

[26] ACCC, *Assessment of Telstra's Unconditioned Local Loop Service Band 2 monthly charge*, Draft Decision, November 2008, p.71

[27] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 50.

[28] ACCC, *Assessment of Telstra's Unconditioned Local Loop Service Band 2 monthly charge undertaking*, Draft Decision, Public Version, November 2008, page 71

4.17 Optus submits that the decision-making criteria for whether the modelled network is tapered or non-tapered should be based on economic efficiency criteria.

4.18 Furthermore Optus highlights that the Commission is not required to compensate Telstra for legacy decisions about network design unless it can be proven that these result in an access price which is in the LTIE and meet the objectives of the other statutory criteria. Optus notes the Tribunal's clear guidance on the consideration of historic costs in relation to the statutory guidelines of the Act:

"…there is still a need for the Commission (and, on review the Tribunal), to be satisfied, having regards to the matters set out in s 152 AH and the objectives in s 152 AB of the Act that the firm's costs are efficiently incurred. In general terms, an operator in a competitive market should have more of an opportunity to establish the efficiency of its recently incurred costs by reference to its actual costs than a monopolist or dominant operator such as Telstra…" [29]

4.19 As alluded to by the Tribunal, a further issue that should be considered is the market conditions that existed when a network roll-out occurred. Optus submits that given Telstra rolled-out its fixed-line network without competition and whilst it was a government owned corporation its legacy network design (and the costs incurred) should be subject to a high level of scrutiny.

4.20 According to Analysys, a tapered architecture is cheaper than a non-tapered architecture. [30] According to Analysys the tapered annualised costs in Band 1 ESAs and in some geotypes of Band 3 and 4 ESAs are lower than the non-tapered annualised costs, whereas the tapered annualised costs in Band 2 ESA and in the more densely populated geotypes of Band 3 and 4 are higher than the non-tapered annualised cost.

4.21 Analysys further made a comment that a tapered architecture is more susceptible to faults, which leads to higher maintenance costs on the jointing:

"The main issue for the tapered architecture is the higher opex for jointing that arises from the increased likelihood of faults occurring." [31]

4.22 Optus disagrees with Analysys's conclusions and questions the annualised tapered and non-tapered annualised costs that have been presented.

4.23 Optus considers that a tapered architecture should always be cheaper than a non-tapered architecture since a tapered architecture would dimension each segment of the cable proportionate to the number of customers whereas a non-tapered architecture would assume the same number of pair cable to be used for all distribution points.

4.24 An efficient operator would at least consider using a tapered architecture particularly in areas where the demand is low. Furthermore, considering the

[29] Re Optus Mobile Pty Limited & Optus Networks Pty Limited [2006] ACompT 8 (22 November 2006).

[30] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 40.

[31] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 40.

Analysys model is able to presume perfect foresight (as demand is known with certainty) the traditional issues that arise with respect to deploying tapered networks (e.g. difficulty with capacity and upgrades) simply do not exist.

4.25 This view was also conveyed by Network Strategies when it commented on the issue in regards to Telstra's ULLS Undertaking:

"An efficient operator would use a tapered architecture, which would dimension each segment of the cable proportionate to the number of customers it serves so that it is most efficient…However, in a non-tapered architecture, where the same number of pairs is deployed along the entire length of the cable route, pairs are redundant beyond where the customer is connected. Using cable sizes that are larger than required (as the TEA model does) incurs additional costs and is inefficient." [32]

4.26 Other possible justifications to a non-tapered architecture may include economies of scale when purchasing cable and/or a simplification of network design process. [33] However, neither factor is reflected in the Analysys model. Optus submits that the Commission needs to revise the methodology and costs behind the decision to deploy a non-tapered network.

Level of sharing between Access and Core Networks

4.27 Optus considers that, in general, the Analysys model adequately accounts for sharing between the access and core networks. The following table is reproduced from the model and summarises the trench sharing coefficient. [34]

Table 2 - Trench sharing coefficients by ULLS bands

Geotype	Band	Trench sharing coefficient
1	1	82%
2	1	88%
3	2	90%
4	2	93%
5	2	97%
6	2	87%
7	3/4	84%
8	3/4	85%
9	3/4	94%
10	3/4	85%
11	3/4	86%
12	3/4	87%
13	3/4	88%
14	3/4	89%

4.28 Optus submits that these results closely align with what would be expected for an efficient new network build. However Optus would expect the amount of

[32] Network Strategies, *Review of Telstra TEA model version 1.1 – additional comments, Report for Optus*, 19 December 2008, page 15.
[33] Network Strategies, *Review of Telstra TEA model version 1.1 – additional comments, Report for Optus*, 19 December 2008, page 15.
[34] Refer to the *Access – CODE.xls* spreadsheet in the Analysys model.

sharing occurring in Band 1 ESAs (geotypes 1 and 2) to be greater – between 90 and 100 per cent. This is because given the extremely high density of these ESAs, there is likely to be a high degree of overlap between the routes required by the access and core network links.

5. Asset Costs

5.1 Optus considers that the cost data contained in the Analysys model are broadly reasonable, however a limited number of specific network costs are overstated. These are set out in this section.

5.2 In its discussion paper the ACCC provides default values for duct costs which reflect the cost of providing trenched ducts in urban areas and which range from $60 per metre (for one cable) to $150 per metre (for six cables). It notes that ducts "account for over 60 per cent of the access network costs".[35]

5.3 Optus submits that it is inappropriate for duct costs in the Analysys model to reflect the cost of excavating and constructing new trenched ducts. According to Europe Economics:[36]

> *"if the prices that Telstra is permitted to charge for the use of its ULLS assets, including the trenches and ducts, are set on the basis of what a hypothetical new trench-digging entrant would have to charge, these prices will be significantly higher than those that would be needed to cover the efficient costs of using Telstra's assets".*

5.4 Optus submits that the cost of laying cable using Telstra's trenches and ducts and paying an appropriate price for their use is significantly lower than the cost of excavating and constructing new trenched ducts. For example, the current charge for access to ducts, including tunnels, payable by Optus to Telstra is **CiC begins**[37] **CiC ends**.[38]

5.5 To estimate the effect of this change, Optus has re-run the Analysis model (for 2009) after reducing the urban deployment trench cost (for Ducts 1, 2 and 4) from **CiC begins CiC ends** This change lowered the per meter duct costs in the model to the following values:

- Duct 1: from $60 to $38;
- Duct 2: from $89 to $67; and
- Duct 4: from $105 to $82.

5.6 The effect of these changes was to decrease the ULLS price by approximately 10 per cent in Band 1 (to $2.38), 14 per cent in Band 2 (to $12.61), and 13 to 16 per cent in Bands 3 and 4 (to $17.92 - $21.51) depending on whether they are considered as clustered or spread.

5.7 Further, charges for access to ducts set by alternative providers are also significantly lower than the cost of excavating and constructing new trenched ducts. **CiC begins**

[35] ACCC, Discussion paper, p.43

[36] Europe Economics, 2009, *Pricing Principles for the Unconditioned Local Loop Service (ULLS) in Australia, The Conceptual Framework*, p.19

[37] **CiC begins CiC ends**

[38] Source: *Telstra Facilities Access Agreement Price List* dated 24 April 2008 (which forms a part of the existing contractual arrangements for facilities access between Optus and Telstra), *Price List for FA11, - Facilities Access to Ducts*, pp69-70.

CiC begins

CiC ends

5.8 Some further notes on the above:

- Pits: Optus has quoted prices for pits constructed of Aluminium, whereas Analysys has priced plastic pits.

  i) Pits constructed of aluminium are less expensive than plastic pits. Although Optus is unable to directly compare the pit costs because it does not acquire pits of the same size, the table highlights that Optus' pits cost are lower for pits of larger size (e.g. Optus P10 pit price is cheaper than Analysys P9 pit price).

  ii) Plastic would not be used to construct pits of sizes PF8 and above. Optus submits that other materials (e.g. aluminium or concrete) would be used to construct large pits as plastic is not a best-practise material. Plastic pits of PF8 and above are not be viable in the long-run as the side of the pits collapse over time as the plastic ages and deteriorates.

5.9 To estimate the effect of these changes, Optus has re-run the Analysys model (for 2009) after adjusting the unit costs of ducts and pits to those indicated above.

5.10 The effect of these changes was to decrease the ULLS price by approximately 7 per cent in Band 1 (to $2.44), 7 per cent in Band 2 (to $13.69), and 5 to 6 per cent in Bands 3 and 4 (to $19.44 - $24.10) depending on whether they are considered as clustered or spread.

5.11 In conclusion, Optus submits that the default values for certain costs in the Analysys model are likely to exceed forward-looking efficient costs.

6. Costing Parameters

6.1 In this section of the submission Optus makes some specific comments about the economic parameters in the model, namely:

- the WACC;
- asset lives for network assets;
- the tilt parameter,
- the mark-up for allocating of operating expenditure (OPEX), and
- the structure of the monthly service charges.

WACC

6.2 Optus notes that the WACC included in the Analysys model is based completely upon that parameters set by the Commission in the June 2008 Pricing Principles. [39] For the period 2008 to 2009 the model calculates a post-tax WACC of 7.88 per cent.[40]

6.3 Optus' views on selected WACC parameters are set out below.

Risk-free rate

6.4 The risk-free rate estimate that has been used in the model is based on the risk-free rate should be the 10 year government bond rate, averaged in the period leading up to the relevant observation date.

6.5 Optus believes that the ACCC should reconsider its use of a 10 year Government bond rate as the risk free rate for the purpose of estimating the cost of debt capital. Optus believes a reasonable alternative for the ACCC to consider is to match the maturity of the debt instrument with the regulatory period.

6.6 If longer term rates are used to match the useful life of the asset (and there is an upward sloping yield curve) then the allowed cost of debt will compensate the access provider for risks that it is not taking. For example, the yield curve may be upward sloping because either the issuer may be expecting rates to rise, or it may simply be recognising the risk over the longer period. When regulation occurs in the next period, the access provider will be able to reset prices based on the new rates. If rates do actually rise during that first period then the provider will gain. Optus therefore considers that using a bond for a period longer than the regulatory period potentially allows the access providers to be over-compensated (or under-compensate if yield curves are downward sloping).

6.7 Optus considers that the ACCC should therefore consider estimating the risk-free rate using the 3 year government bond rate.

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[39] Analysys, *Fixed LRIC cost model documentation*, 17 December 2008, page 119.

[40] Refer to '*WACC*' spreadsheet in the Cost.xls model file.

Asset and Equity beta

6.8 The Analysys model uses an equity beta of 0.83 and Optus has back-calculated to determine that this means it used an asset beta of 0.5.

6.9 In the 2008 Principles the ACCC took the view that the appropriate WACC for the ULLS is "one based on a business providing access to a fixed-line customer access network either to itself or other providers."[41]

6.10 Optus contends that the ACCC's asset beta should be adjusted to reflect the fact that operation of a CAN is lower than that of an operator of a PSTN. The risks involved in operating the local customer access network are more in the nature of utility businesses (such as electricity and gas transmission assets) and lower than the risks faced in operating the PSTN.

Tax rate

6.11 The model uses a corporate tax rate of 30 per cent. Optus notes that in the Pricing Principles Determination the ACCC stated it supported using an effective tax rate but it was not able to arrive at a reliable estimate of this value. [42]

6.12 Optus contends that there is sufficient information to estimate the effective tax rate and this should be the rate adopted by the ACCC. Optus believes that the effective tax rate applicable to Telstra would be in the order of 20 per cent.

Exclusion of asymmetry sensitivity

6.13 The Analysys model produces a single WACC figure and does not make any allowance for the estimation of a high or low WACC.

6.14 Optus strongly supports this approach and notes the ACCC's view that no allowance should be made to accommodate claims of asymmetric consequences of over-estimating or under-estimating the WACC. [43]

Asset lives

6.15 Optus has some concerns with the asset lives used in the Analysys model. As a general point Optus notes that it is difficult to comment on the asset lives as the model documentation does not provide further information on the specific type of assets that have been used.

6.16 For example this is the case in regards to the 'IT system' assets. The Analysys model currently sets an asset life of 3 years which Optus considers to be conservative. In general, IT software would have a useful life of at least 3 and up to 5 years. However, core network IT systems used by Optus such as **CiC begins CiC ends** have useful lives up to and beyond 15 years.

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[41] ACCC, *Unconditioned Local Loop Service Pricing Principles and Indicative Prices*, Final Decision, June 2008, page 17.

[42] ACCC, *Unconditioned Local Loop Service Pricing Principles and Indicative Prices*, Final Decision, June 2008, page 18.

[43] ACCC, *Unconditioned Local Loop Service Pricing Principles and Indicative Prices*, Final Decision, June 2008, page 18

Tilt factor

6.17 Analysys currently provisions the model with an overall tilt value of 3 per cent.

6.18 The 'tilt' approach is common in access pricing models such as the Analysys model as their purpose is to revalue the asset base at intervals shorter than the life of the assets based on an optimised replace cost of the asset base (or TSLRIC).

6.19 By definition, an annuity provides a return in net present value (NPV) terms for an initial investment over a fixed number of years. An annuity formula is used to set the time path for returns (R) on an investment (V) over the life of the investment (N years). Overall, the NPV of returns over the N years must be equal to the initial investment, and can be represented mathematically as follows:

$$\sum_{t=1}^{N} \frac{R_t}{(1+r)^t} = V$$

6.20 A 'tilt' is placed in the annuity calculation to mimic the price path that might be expected in a market. This is because in a market one would expect the recovery of capital (or more precisely the price path) to reflect the level of competition, expectations of new technologies and to reflect changes in the replacement cost of relevant assets.

6.21 The tilt reflect the expected price trends of assets that are being valued (as these incorporate expectation of new technologies and replacement costs), and this allows regulators to replicate the cost recovery conditions that would be faced by a firm in a competitive market.

6.22 In summary the rationale behind the tilt is as follows:

(a) when input prices are falling, the incumbent operators will know that a new entrant in the future will have a lower cost base. As a result, incumbent operators will only invest in the market today if they can recovery more of their capital in the early periods, because they know they will face a lower cost entrant in the future; or alternatively

(b) when input prices are rising, the incumbent operators will know that a new entrant in the future will have a high cost base, therefore their future return will be 'protected', they are can therefore afford to invest and compete price down today in the knowledge they will not face a new entrant with a lower cost base in the future.

6.23 The inclusion of an annual tilt (α) adjust the annuity formula accordingly:

$$R_t = V \frac{(1+\alpha)^{t-1}(r-\alpha)}{1-\left(\frac{1+\alpha}{1+r}\right)^N}$$

6.24 It is important to note that the derivation above assumes of a constant level of tilt for the relevant period (N years). However, this does not mean that the annuity need follow a single tilt over the life of the asset, as the actual return path can be flexible.

6.25 The assurance that the level of compensation does not change regardless of the tilt applied is the competitive market condition. That is, investors in a competitive market will not invest unless they expect returns will cover the net present value of the invested capital. An annuity with a zero tilt compensates for the initial investment by providing the same annual return over each of those years (i.e. there is no expectation of price changes for assets in the future). A positive (upward) tilt is generally suited to a market environment in which input prices (assets and operating costs) are rising. Conversely when input prices are falling, a negative (downward) tilt provides quicker cost recovery. Therefore, assuming a negatively tilted annuity (prices falling) for example, the formula delivers higher returns initially with lower returns in later years.

6.26 Optus submits that it is therefore reasonable for the Analysys model to include a tilt parameter as it means the final access price will emulate the cost recovery conditions that would be faced by a firm in a competitive market. However, a specific tilt value should be estimated (and then applied) for each individual asset. Calculating an asset's annuity profile (with a tilt) provides for the same NPV of compensation to the network owner but with the profile of that compensation rising/falling over the life of the asset (i.e. the degree of tilt).

Allocation of OPEX

6.27 The Analysys model allocates operating expenses by applying a mark-up to the value of the capital asset.[44] The mark-up ranges from 0 to 9 per cent depending on the asset.

6.28 Optus considers that the mark-ups used appear reasonable and that a opex mark-up of not more than 9 per cent would be expected for assets in a new and efficient fixed line network.

Structure of Monthly Charges

6.29 Optus wishes to highlight that the Analysys model structures the monthly service charges on a de-averaged basis. Optus strongly supports this approach and submits that this is consistent with the findings of the Tribunal which rejected Telstra's proposal to average ULLS charges on the basis that such charges could not be considered to be reasonable. [45]

6.30 Further, Optus notes that the Analysys model creates a new system of categorising ESAs. This system classifies the existing exchange service areas (ESAs) into 16 "geotypes" and Analysys provided detailed notes on the method employed. [46]

[44] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 46.
[45] Australian Competition Tribunal, Telstra Corporation Ltd (No3) [2007] ACompT 3, para 291.
[46] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 23.

6.31 The Commission has not listed Analysys' geotype classification system as an area for specific comment. Optus would assume that if and when the Commission considers moving away from the current system (ULLS Bands 1 to 4) this will need to be raised in a separate and formal inquiry. Notwithstanding this, Optus would like to use this opportunity to make some general comments on the geotype method that Analysys has presented.

6.32 Optus considers that the simple explanation of the geotype classification system is that it is based on the "degree of clustering of locations and the ratio of road to the number of locations". [47] This methodology has the effect of stratifying the 4 bands into 16 'sub-bands' (or 'geotypes' as Analysys has described them).

6.33 As the method of classifying ESA is based on population data (i.e. number of addressed) Optus questions how the geotype classification would be maintained and reviewed into the future. For example the creation of new estates would increase the density of ESAs and potentially mean that they entered a higher class of geotype. Optus considers that the Commission, as the regulatory body, would have to be responsible for monitoring and/or adjusting the classification as a further reporting task. This process would likely create more regulatory burden for both the Commission and the industry.

6.34 Optus understands that the present banding system was developed by Telstra in an effort to classify exchanges (and the accompanying exchange areas) of similar types. That is, ESAs with high-density CBD type landscapes were grouped together as Band 1, lower-density metropolitan suburbs as Band 2 and so on (in decreasing density) to Band 4 including low-density rural ESAs.

6.35 However the Bands were determined by Telstra according to its own methodology and reasoning. Since inception there has been little opportunity for access seekers to adjust or dispute how ESAs were classified. Access seekers have at times disputed the banding system and some change has occurred over time but in general the classification of ESAs has remained constant.

6.36 The continuity of the Band system has meant that it has become entrenched in IT systems that manage all aspects of network services. For example provisioning programs, service requests, error reporting, sales quotation programs and so on. Optus notes that it would be costly for the industry to move away from the Band system completely in the short-term. The Band system is most entrenched in Bands 1 and 2 as these are the Bands most highly utilised by access seekers.

6.37 However, Optus considers that the current system of four broad bands results in significant price averaging within each band. The introduction of 'sub-bands' would mean that the monthly charge more closely matches the actual cost of providing services in each geotype. The value of de-averaged cost-reflective pricing for encouraging efficient investment and promoting competition has been affirmed many times by the ACCC and also by the Tribunal. These benefits are also likely to apply to further de-averaging within the four broad bands.

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[47] ACCC, *Analysys cost model for Australian fixed network services*, Discussion Paper, December 2008, page 24.

6.38 Whilst these benefits must be weighed against the administrative burden as noted above, there is likely to be room for some further disaggregation, particularly in Bands 3 and 4 (in which access seekers have rented relatively few unbundled lines to date). Further de-averaged pricing would encourage access seekers to purchase more services in these Bands, thus having the flow on-effect of increasing the level of access-based competition in these ESAs. This would be a desirable outcome and would improve the type of services available to consumers in rural and regional areas.

6.39 Optus would support a move to a more de-averaged system, particularly in Bands 3 and 4.