



TELSTRA CORPORATION LIMITED

**Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop
Service:**

Response to Access Seeker Submissions on the ACCC's Draft Decision

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Executive Summary

Use of TSLRIC vs. historic cost

1. Since 1997, the ACCC has promoted Total Service Long Run Incremental Cost (“**TSLRIC**”) as the pricing principle that best meets the objectives and legislative criteria of the Trade Practices Act 1974 (“**the TPA**”). The ACCC most recently reaffirmed this position in June 2008 (3 months after Telstra lodged its undertaking) when it concluded that TSLRIC would continue to apply to the ULLS and met the statutory test of promoting the long term interests of end users. The Australian Competition Tribunal (“**the Tribunal**”) and many access seekers including Optus have also strongly supported TSLRIC. Telstra has shown that a properly constructed TSLRIC model, which uses reality based routing and forward looking inputs, produces an efficient cost of over \$30 per month. Now Optus has switched to arguing that the ACCC should abandon its long established TSLRIC pricing principles for ULLS, in favour of either pure historic cost or selective use of forward-looking and historic inputs into a TSLRIC model.
2. Departing from the TSLRIC precedent in favour of historic cost would fail to promote the very objectives of the TPA, which require that the ACCC set prices to balance, among other things, the promotion of competition and encouraging efficient investment in, and use of, infrastructure. Over many years the ACCC, the Tribunal and many access seekers have consistently urged that a TSLRIC pricing principle best meets this balance. Further, Australia does not stand alone in applying TSLRIC – numerous other regulators in the US, Canada and the EU have decided that some form of long run incremental cost best reflects economic costs and is the best basis for setting ULLS prices.
3. Using historic cost principles, or a mix and match of historic and forward-looking inputs, designed solely to lower prices without regard to consistent pricing principles, will not send the proper build/buy signal for the new entrant or provide the proper financial cost recovery incentive to investors. Although in the context of cost recovery between different services, rather than setting inputs to ensure cost recovery for one service, the Chairman of the ACCC, Mr Graeme Samuel, says: “the ACCC has objected to attempts by Telstra to ‘mix and match’. That is, the ACCC expects Telstra to be consistent in its pricing approaches across different services”.¹
4. Contrary to Optus' speculation, TSLRIC pricing does not allow Telstra to recover costs it never incurred. For example, Telstra has shown that it did incur breakout, trenching and reinstatement costs in urban and developed suburban areas, the same types of costs as are found in the TEA model. Since 1995 Telstra has spent over \$13b, in real terms, on the CAN. Indeed, using the level of historical expenditures on breakout, trenching and reinstatement between 2000 and 2009 as the basis for the ratios in the TEA model would increase the monthly cost per SIO by over \$11, relative to adopting the forward-looking values in the TEA Model. If one were to adopt an historical cost approach to the CAN, one would need to assess the full life-cycle costs of assets purchased in the past. More fundamentally, even if TSLRIC did include cost elements that Telstra did not incur, as Prof. Robert Harris and Dr. William Fitzsimmons explain, TSLRIC fails to consider vast amounts of costs that Telstra did historically incur as it built its network. This mismatch does not mean that TSLRIC is not the proper

¹ Samuel, Graeme (2007), Communications issues: noise and bluster or just plain facts, *ATUG Annual Conference 2007*, 7 March 2007.

approach, nor does it entitle the ACCC to select an inconsistent approach that yields the lowest price for any particular cost element.

5. Optus also claims that the ACCC should disregard the entire concept of price-setting to stimulate facilities based competition because the National Broadband Network (NBN) allegedly will create a monopoly with which no one can compete. An NBN, however, is neither a natural monopoly, nor immune from competition in band 2 areas. Telstra has announced that if another firm builds an NBN, it will compete with that network via wireless services and by upgrading its HFC network. Optus is also well placed with its HFC network, if upgraded to DOCSIS 3.0, to compete against an NBN in band 2 areas. Thus, the NBN may stimulate facilities based competition, rather than discourage it, and the ACCC should not abandon TSLRIC+ pricing because of the NBN.
6. However, Optus' actions show that it currently is more profitable for competitors to purchase below-cost ULLS rather than invest in any landline facilities.² Indeed, Optus will not even build lead-ins from its existing HFC distribution facilities to new and many existing homes within 75 metres of its own facilities or to MDUs, but instead buys ULLS from Telstra to service those customers. One goal of telecommunications regulation is to stimulate facilities-based network competition. Proper TSLRIC pricing can stimulate that competition. Until the recent lowering of ULLS prices to \$12.30, the ACCC had stimulated some facilities-based competition. The current price has stopped all building of competing networks, as pointed out by the comments of Unwired ("Unwired is concerned that the Commission has been significantly under-pricing the ULL service"³) – and thus would not meet the long term interests of end users.
7. Artificially lowering ULLS below the cost of a new entrant prevents potential competing carriers from building competitive networks. Optus' refusal to expand its own HFC network proves this point in Australia. The comments of Unwired, pointing out that it cannot build a WIMAX network to compete against these prices, demonstrate that this is also true for wireless broadband carriers.

The TEA model provides an optimised network

8. Optus claims that Telstra has not properly optimised the network in the TEA model. The Telstra optimisation report proves that the TEA model does optimise the network by eliminating approximately 34.5% of the cable routes, among other efficiencies. The ACCC's consultant, Ovum, agrees that the TEA model optimised the network design. To support its assertion, Optus merely refers to Network Strategies reports that claim the TEA model network route design should be compared to a hypothetical model that does not reflect any engineering rules or reality. Neither Optus nor Network Strategies provides any specific comparison of the efficiency of a network in a hypothetical model with the efficiency of the TEA model, despite undertaking other such exercises for other clients within months of making their submissions. If Network Strategies applied the methodologies adopted in its reports for other clients in this context, as Telstra does in this submission, it would find that the TEA model route design is very efficient. Moreover, even though Telstra does not advocate use of a hypothetical model, the TEA model has 9% less distribution trench distance and 41% fewer kilometres of copper cable sheath than the hypothetical ACCC model. The proof is in the pudding – Telstra has fully optimised the network in the TEA model by

² Telstra, *Competing Infrastructure in Band 2 Areas: The Implications of SingTel Optus' HFC Network for ULLS Pricing*, 20 March 2009

³ Unwired (2009), *Submission in response to Assessment of Telstra's Unconditioned Local Loop Service Band 2 monthly charge undertaking- Draft Decision November 2008*

creating a network with less cable and trenching than models of Optus' consultants and the ACCC.

The tilted annuity defers depreciation until a time when it cannot be recovered

9. Optus challenges the TEA model's use of a straight-line depreciation, levelised using a flat annuity. Instead, Optus supports a tilted annuity, which postpones the recovery of depreciation costs far into the future when there will be fewer SIOs from which to recover that depreciation. Optus offers an example of the tilted annuity which simply does not reflect the real problems of the tilted annuity, because it does not show the very low capital recovery in the early years and uses an asset life of ten years, even though major costs of the CAN such as copper and ducts have lives of 20 and 40 years, respectively.
10. The reality is that the tilted annuity does a very poor job of approximating economic depreciation, as shown in the NERA Report. If the ACCC were to continue the tilted annuity that it has applied to date, the network cost component of ULLS prices would increase from approximately \$10 in 2005/06 to approximately \$68. This increase in cost is even starker when a more accurate calculation of network costs, such as the TEA model, is used as a starting point.
11. Even if the ACCC does decide that a tilted annuity is appropriate, copper prices have collapsed to levels last seen years ago and wages and inflation are not expected to rise in the near future. Thus, the tilt of the annuity should be reversed relative to how it has been applied in the past. Such a tilt would result in substantially higher prices than \$30.

The \$30 undertaking price is supported by any reasonable set of inputs to the TEA model

12. Telstra has provided a series of alternate runs of the TEA model which prove that only by using extreme inputs, such as trenching only in grass, or delaying depreciation far into the future when there is far less demand over which to spread and recover depreciation costs, would the ULLS price fall below the \$30 figure set forth in the undertaking.
13. Optus claims that because the retail price of a voice service is lower than the proposed ULLS \$30 price supported by the TEA Model, the \$30 price must be unreasonable. Optus ignores that ULLS lines are almost always used to provide both voice and xDSL services for which Optus charges approximately \$100 and that, according to material that Optus has filed with the Australian Stock Exchange, it would earn almost 50% EBIT margins on the supply of ULLS at a \$30 price.
14. Optus also argues that PIE II yielded lower prices than the TEA model. PIE II was a hypothetical model which did not include several factors covered by TEA. In the ULLS arbitrations decided in 2007, Telstra modified and updated PIE II to include these factors and several changes suggested by the ACCC. This modified PIE II yielded a cost estimate for band 2 of \$42, which is higher than the current undertaking price of \$30 and quite close to the numbers produced by TEA version 1.3.

A Approach to assessing access prices

15. Optus has encouraged the ACCC to find that Telstra's Band 2 ULLS undertaking (**Undertaking**), which applies TSLRIC-based pricing methodologies, is unreasonable for the following reasons:
 - The chief aim of TSLRIC pricing based on forward-looking costs is to encourage efficient entry – as such prices lead to efficient build/buy decisions;
 - The imminent rollout of the NBN means these rationales no longer have force – the NBN tender will put an end to competitive bypass;
 - Consequently, the use of TSLRIC is no longer reasonable, and instead pricing need only allow the recovery of historical costs because this ensures financial capital maintenance; and
 - Telstra has already largely recovered its historical costs, and so access charges may be set at relatively low levels compared to current TSLRIC approaches.
16. Telstra submits that the propositions outlined above are incorrect and, consequently, do not establish that Telstra's undertaking is unreasonable. In particular, Telstra submits that:
 - Optus' contentions about appropriate pricing methodology contradict the ACCC's obligation to assess proposed undertakings under the legislative 'reasonableness' criteria set out in section 152AH of the TPA;
 - Many infrastructure pricing regimes use forward looking optimised costs for sound policy reasons – critically, this pricing method is used even in circumstances where competitive bypass is not relevant;
 - In any case, both competitive bypass can and most likely will occur given an NBN and efficient build/buy incentives remain relevant over the period of this undertaking;
 - The NBN will not, as Optus suggest, represent the culminating step in the evolution of the telecommunications infrastructure. The telecommunications infrastructure will continue to evolve. Prices that discourage efficient bypass by competitors also discourage efficient reinvestment by the incumbents. Setting prices that assume, as Optus suggests, that investment to improve the telecommunication infrastructure will never again be required is a short sighted and flawed policy objective.
 - TSLRIC pricing is more reasonable than historical cost prices, both on theoretical grounds and in practice. Further, international and Australian regulatory preference supports TSLRIC pricing; and
 - Incorrect claims, based on incomplete analysis of CAN asset lives, that Telstra has fully recovered capital costs in the CAN, do not justify adopting historical cost approaches. Calculated on a full and internally consistent basis, historical cost based prices that protect financial capital maintenance may be higher than TSLRIC charges.

17. Each of the factors discussed above is more fully considered below.

A.1 Optus misconstrued the ACCC's role in assessing Telstra's undertaking

18. Telstra submits that Optus' proposal to adopt an alternative pricing methodology fundamentally misconstrues the ACCC's role in the current undertaking process. Notwithstanding Telstra's contention that this proposal has little merit for a number of reasons (see below), such debates are irrelevant to the current process.
19. Telstra has lodged an ordinary access undertaking which, if accepted, would apply until its scheduled expiry on 31 December 2010. Under Part XIC of the TPA, the ACCC must accept or reject the undertaking, with the assessment being based on criteria set out in s.152BV and s.152AH of the TPA. The latter section provides guidance on assessing the reasonableness of the proposed terms and conditions of the undertaking, and imports further guidance from the object of Part XIC set out in s.152AB.
20. The ACCC must determine whether the undertaking proposed is reasonable having regard to the relevant legislative criteria and any relevant pricing principles established by the ACCC. In this case, the ACCC established the relevant pricing principles in November 2007 and reaffirmed them in June 2008, when the ACCC concluded (based on guidance from the Tribunal, the legislative criteria and industry submissions) that TSLRIC+ would continue to apply to the ULLS.⁴ As Telstra set forth in paragraph 13 of its response to the ACCC's Draft Decision, the ACCC must follow its established pricing principles.⁵
21. In developing the 1997 generic telecommunications pricing principles and finalising specific ULLS pricing principles in 2002 and 2007, the ACCC has set clear precedent and communicated to industry that TSLRIC pricing is reasonable generally and for ULLS specifically. The ACCC has stated that the development of these pricing principles is an important aspect of any declaration decision. If the ACCC ignores key elements of the 2007 pricing principles to reject Telstra's undertaking, the transparency and integrity of the ACCC's decision making process will be open to question.

A.2 Forward looking optimised costs used where bypass not relevant

22. Optus asserts that a key rationale for the use of, what it terms, a 'pure' TSLRIC approach utilising forward looking costs is to provide efficient 'build/buy' decisions.⁶ Yet it is uncontroversial that TSLRIC has also been commonly relied on in other sectors in which questions of competitive bypass are either secondary or wholly absent.
23. Examples include electricity transmission and railway transportation of bulk minerals where, in both cases, bypass is not relevant.⁷ In both of these cases regulated prices are typically based on a forward-looking assessment of costs, with asset values typically originally based on replacement cost valuations, updated to reflect subsequently incurred capital costs and depreciation.⁸ By contrast, in Australia and

⁴ ACCC (2007), *Unconditioned Local Loop Service: Final pricing principles*, November 2007, page 11

⁵ Telstra (2008), *Response to the ACCC's Draft Decision*, 23 December 2008, from paragraph 13 and section B generally

⁶ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 2.4

⁷ For example in its report *Draft Statement of Principles for the Regulation of Transmission Revenue* the ACCC had a number of specific considerations separate to any bypass concerns to favour a forward looking optimised replacement cost valuation of electricity transmission assets. See *Re: Application by ElectraNet Pty Limited (No 3)* [2008] ACompT 3 at [34-36]

⁸ See for example, *National Electricity Rules*, Clause 6A.14.3, Clauses 6A.6.6-7 and Schedule 6A.2. Forward-looking costing for rail networks has been approved by the ACCC and also by state regulators such as the WA ERA. For example in its assessment of the

most comparable jurisdictions historic cost and asset value accounting are relatively rare.⁹ Given this, it is plainly unsustainable to argue that TSLRIC pricing for ULLS is dependent on the threat of bypass, or that the use of forward looking approaches is unreasonable even where bypass is unlikely or even impossible.

A.3 Relevance of rollout of the NBN to undertaking assessment

24. Optus has suggested that the planned NBN roll out is a critical factor that renders Telstra's undertaking using the TSLRIC methodology unreasonable.
25. The planned rollout of the NBN, however, provides no grounds for claiming that TSLRIC based prices are unreasonable, because:
 - Both inefficient bypass and efficient entry can occur given an NBN; and
 - Work on the NBN has not started, and is unlikely to be completed for many years, so the basic need for efficient build/buy incentives (along with the other factors that make a TSLRIC approach appropriate) will remain in place for the period of the undertaking.
26. The deployment of the NBN does not inherently make the ULLS loop any greater or lesser of a monopoly service. The NBN, at least as Telstra understands Optus' tender to the government, involves replacing copper main cable with fibre cable. Efficient entry could feasibly occur in the context of a fully constructed NBN just as much as it can occur when main cable is comprised of copper rather than fibre. There is still an ongoing need to provide appropriate build/buy signals. The NBN is not the end of the evolution of the telecommunications infrastructure but rather one step along the path. There is no justification for any 'step change' in regulatory approach.
27. Network deployments in the United States demonstrate that a Next Generation Network (NGN) is neither the end of the evolution of the telecommunication infrastructure nor a technology that is immune from meaningful competition. In urban areas of the United States competitive NGNs are being deployed, and in some cases there are up to three competing facilities. In addition, competition may arise from wireless broadband. For example Verizon is deploying a new fibre-to-the-premise (FTTP) network in competition with cable operator Comcast which is upgrading its network to provide comparable download speeds. Meanwhile, Xohm/Clearwire and Open Range are rolling out WiMax networks.¹⁰ Several satellite operators provide satellite broadband including Wild Blue and Hughes Net. Both Verizon and Sprint Wireless have announced their intent to build 4G wireless networks.¹¹

ARTC's December 2007 undertaking for the interstate rail network, the ACCC approved of the forward-looking costing methodology used (ACCC, *Australian Rail Track Corporation Access Undertaking – Interstate Rail Network: Final Decision*, July 2008). Similarly, the ERA in WA has approved Costing Principles for Westnet Rail which account for the efficient cost of replacing infrastructure over time (Westnet Rail, *Costing Principles*, September 2007)

⁸ 'Comcast Details Its First DOCSIS 3. Deployment', *VON*, 4 April 2008

⁹ See for example discussion by the Queensland Competition Authority (2002), *Draft Decision - Burdekin Haughton Water Supply Scheme: Assessment of Certain Pricing Matters relating to the Burdekin River Irrigation Area*, September 2002, page 38

¹⁰ 'Comcast Details Its First DOCSIS 3. Deployment', *VON*, 4 April 2008

¹¹ See Open Range Home Page, <http://www.openrangecomm.com> (last visited Mar. 16, 2009); Wildblue - "How It Works", http://www.wildblue.com/aboutWildblue/how_it_works_demo.jsp (last visited Mar. 16, 2009); HughesNet Home Page, <http://www.hughesnet.com> (last visited Mar. 16, 2009); Chad Berndtson, Sprint: 4G WiMax Plans 'Full-Speed Ahead,' Despite Verizon LTE, ChannelWeb, Feb. 20, 2009, <http://www.crn.com/mobile/214502170>.

28. With respect to Australia, Optus argues that the ACCC should conclude that cable and HFC networks are not viable competition to NBN due to claimed lack of ability to source content which they say is in turn due to the Foxtel/Telstra relationship. However, this ignores the fact that Telstra is no longer involved in the NBN tender process (but Optus is). Thus, if and when the NBN is built, it is likely that another party (perhaps Optus) will build it. In this case, Telstra will use its HFC and wireless networks to effectively compete against Optus. Thus the NBN may well stimulate both wired and wireless facilities-based competition, in which case ensuring efficient build vs. buy incentives is paramount.
29. Notwithstanding, Optus' claims are also irrelevant to the matter at hand. Even if one accepts the broader Optus argument around the competitiveness of cable networks (which Telstra does not), this does not change the fact that cable provides viable competition for the provision of high speed data services.¹² The extent of that competition has been, and the relevant build/buy decisions will be, affected by ULLS charges.
30. Finally, even if one accepts Optus' assertion that the NBN is a natural monopoly, the rollout timetable makes the NBN irrelevant to the assessment of Telstra's current undertaking. The undertaking expires on 31 December 2010, by which point the initial stages of the NBN are unlikely to be completed.¹³

A.4 Reasonableness of TSLRIC and issues with historical cost approaches

31. This section discusses why TSLRIC pricing is reasonable, while historical cost prices are not, on theoretical grounds and notes that international and Australian regulatory practice supports the reasonableness of TSLRIC pricing approaches.

A.4.1 TSLRIC is reasonable in theory and practice

32. TSLRIC has a number of features which make it reasonable in the context of Telstra's undertaking. TSLRIC seeks to mimic the outcome of a competitive market, provides an internally coherent and consistent approach to cost recovery, and is also the pricing methodology used to set prices for a wider range of services delivered using the CAN.
33. These theoretical strengths have been the basis for reliance on the TSLRIC model by the ACCC, the Tribunal, and Optus in relation to mobile termination charges.
34. For example the ACCC's *Access Pricing Principles – Telecommunications*, set out six rationales for adopting a TSLRIC approach. These include
 - encouraging competition in telecommunications markets by promoting efficient entry and exit in dependent markets;
 - encouraging economically efficient investment in infrastructure;

¹² Optus is certainly using its HFC network to compete for telephony and broadband customers. In September 2008, Optus was using its HFC network to provide broadband to 419,000 customers – almost half its broadband customer base. Similarly for fixed telephony, more than half of Optus' customers are currently served using HFC – Singtel (2008), *Management discussion and analysis of financial condition, results of operations and cash flows for the second quarter and half year ended 30 September 2008*, page 47

¹³ 'NBN: Analysts, industry divided on consortium speculation', *Computerworld*, 23 January 2009

- providing for the efficient use of existing infrastructure;
 - provides incentives for access providers to minimise the costs of providing access;
 - allowing efficient access providers to fully recover the costs of producing the service; and,
 - protecting the interests of persons who have rights to use the declared service.¹⁴
35. Critically, and contrary to the claim by Optus that TSLRIC is no longer a reasonable approach, allowing for efficient build or buy decisions is only one factor among five others considered significant by the ACCC. This means that, even if the argument that the NBN will eliminate facilities-based competition is accepted in theory, the consequences suggested by Optus do not necessarily follow. That is, it does not follow that forward looking TSLRIC is unreasonable. This is because one of the goals of TSLRIC is to establish prices that would emerge in an effectively competitive market. To prefer short term goals of lowering prices to access seekers over all these other economic rationales is not reasonable.
36. In its 2007 ULLS Pricing Principles, the ACCC reinforced its view that a TSLRIC methodology 'best accords' with the legislative criteria relevant to assessing Telstra's ULLS undertakings and that the ACCC 'will continue' to apply the approach.¹⁵ In fact, the ACCC did apply the approach when making the *Unconditioned Local Loop Service Pricing Principles and Indicative Prices* in June 2008, notably, after Telstra lodged its ULLS undertaking.¹⁶
37. In previous proceedings relating to undertakings, Optus has argued that infrastructure competition is viable, and strongly supports TSLRIC methodology. In a submission in response to the ACCC Draft Decision on its MTAS undertaking, Optus supported the use of TSLRIC and noted that forward looking costing encouraged efficient investment decisions.¹⁷
38. Optus bases its historic cost approach on a position that the CAN is a dominant monopoly asset which will never be duplicated or face competitive bypass pressures.¹⁸ This position clearly contradicts previous Optus submissions¹⁹, as well as decisions of the ACCC and Tribunal in the context of the recent rejection of Telstra's 2005 ULLS undertakings proposing averaged ULLS prices.²⁰
39. To summarise, in the context of ACCC decision-making and the subsequent appeal:

¹⁴ ACCC (1997), *Access pricing principles – Telecommunications: a guide*, July 1997, pages 29-30

¹⁵ ACCC (2007), *ULLS Final Pricing Principles*, November 2007, page 11

¹⁶ Available at

<http://www.accc.gov.au/content/item.php?itemId=830403&nodeId=29d9593257bf0c30365af049f90b4a87&fn=Final%20indicative%20prices%20and%20pricing%20principles%20for%20ULLS.pdf>

¹⁷ Optus (2007), *Submission to Australian Competition and Consumer Commission on Draft Decision on Optus 2007 MTAS Undertaking* August 2007, August 2007, paragraph 3.25

¹⁸ See Optus (2008), *Public Submission to ACCC on Telstra's Access Undertaking for the Unconditioned Local Loop Service – Discussion Paper*, August 2008, paragraph 2.12

¹⁹ Optus (2006), *Optus Submission to ACCC on Telstra's ULLS Undertakings*, March 2006, generally and paragraph 2.4

²⁰ *Seven Network Limited (No 4)* [2004] ACompT 11 at [135] to [137]; *Re Telstra Corporation Ltd (No 3)* [2007] ACompT 3 (17 May 2007)

- (a) Optus argued that competitive bypass was a continuing potential in urban areas;
- (b) The ACCC's final decision to reject the 2005 undertakings was based on the possibility of network bypass and the necessity to promote efficient build or buy' decisions;²¹ and,
- (c) The Tribunal has endorsed this approach and reasoning.²²

A.4.2 Effects of applying a historical pricing approach

40. Because a TSLRIC approach has been applied previously to Telstra's ULLS and also is used to set the prices of other declared services, Telstra's reliance on a TSLRIC standard for ULLS is reasonable. Indeed, it would be unreasonable for the ACCC to switch now to applying a historic cost approach and unreasonable to use a mix and match approach, where forward looking and historical inputs are used, whichever yields the lowest result. Rejection of Telstra's TSLRIC-based pricing approach in preference to a methodology based on historic costs would:
- *Undermine investors' capacity to achieve cost recovery* – this would occur due to the recognised flaws in historical cost methodologies and, in particular, their violation of the requirements of intertemporal and inter-service consistency discussed below;
 - *Create significant regulatory risk and uncertainty over future decisions affecting cost recovery* – an ACCC decision to apply a new cost methodology to one service would lead to increased risks to investors over the ability to recover forward costs and worry that, once costs were sunk, pricing methodologies will be opportunistically switched to historic cost approaches;
 - *Overtake the policy objective of the undertaking mechanism to provide regulatory certainty to applicants* – by requiring the adoption of a new cost methodology without precedent in relation to the CAN in the context of an undertaking, the ACCC would create greater uncertainty for access providers, contrary to the general policy intent that undertakings provide a mechanism for infrastructure owners to 'lock in' approved terms and conditions of access that are reasonable; and
 - *Mix a range of cost standards to derive an entirely hypothetical cost base for prices* – the alternative approach suggested by Optus would utilise a forward looking assessment of costs, mixed with a return on capital derived using, essentially, historic accounting records. This approach would estimate forward operating and capital costs assuming a forward looking view of costs required to maintain and upgrade assets that are 'best in commercial use', while the return on capital would be limited to a backward looking accounting records based asset base. This differential treatment necessarily creates circumstances where Telstra might be required to set prices on the basis of costs that neither an efficient new entrant, nor a firm enjoying historical cost advantages could match.

²¹ ACCC Assessment of Telstra's ULLS monthly charge undertaking – Final Decision, August 2006, p.89

²² Telstra Corporation Ltd (No.3) [2007] ACompT 3 at [154-164]

41. Pricing to historical costs raises serious problems. For example, historical costs, as conventionally measured, do not correspond to any economic concept of cost because:
 - They are a sum of outlays at different points in time in different technologies under different prices, so they do not represent the cost of any particular type of infrastructure; and,
 - Accounting depreciation need not bear any relationship to economic depreciation, thus it is unlikely to provide efficient signals for build/buy or consumption decisions.²³
42. As explained below, a basic flaw in historical cost methodologies is that they violate the inter-temporal and inter-service consistency needed to provide assurance of cost recovery.
43. Starting with inter-temporal consistency, the flaw in the Optus approach can be seen by considering an asset with an initial cost of \$100, where, at the time of that asset's entry into service, the cost as recorded in the historical accounts and the costs as evaluated on a TSLRIC basis are equal. However, the path of historical costs, as generally measured, and that of TSLRIC estimates will typically diverge, even if both cost streams have an expected value at the outset of \$100.
44. The essence of Optus' contention is that access prices should recover historical costs largely on the basis that these are lower than TSLRIC costs. In terms of the example above, the valuation method would be shifted from TSLRIC – used in the asset's initial stages – to reliance on historical cost as the asset aged. The “lesser of TSLRIC or historical cost” approach will never fully recover either TSLRIC or historic costs (as one would get TSLRIC when it is lower than historic cost and historic cost when it is lower than TSLRIC). The approach, therefore, does not encourage efficient investment in and use of infrastructure and is inconsistent with the legitimate interests of the access provider and direct costs statutory criteria.
45. As regards consistency between services, achieving efficient investment in and use of infrastructure, consistency with the legitimate interests of the access provider and recovering direct costs requires that, at least in expected value terms, the sum of allowed charges for the various services provided by the network equal the sum of costs. It is difficult to see how this condition could be met if charges for some services are based on historical costs while charges for others are based on TSLRIC. Switching between these within any one of those services makes this adding-up constraint all the more difficult to achieve. Indeed, it is not clear what economic meaning, if any, could be given to a cost concept that involved adding up some elements determined on the basis of TSLRIC and others determined by reference to historical costs.
46. These issues are further discussed in Telstra's previous response to the ACCC Draft Decision.²⁴
47. Further, as regards 'actual costs', these cannot simply be read off historical cost accounts, for reasons Telstra has noted on numerous occasions. Those reasons include

²³ Similar issues were discussed by the Australian Competition Tribunal in the context of establishing forward-looking asset valuations and prices in *Re East Australian Pipeline Limited [2004] ACompT 8* at [28].

²⁴ See Telstra (2008), *Response to ACCC Draft Decision*, December 2008, section B.1-5, pages 3-13

the need to take account of assets that have been fully written off but remain in service, and the need to correct depreciation to properly reflect the effect of inflation over time. There is a long-standing consensus in the accounting and related academic literature that absent such adjustments, historical costs may be difficult to interpret and cannot be assumed to be consistent with capital maintenance.

48. If what Optus argues is that sunk or stranded costs should be ignored, this would be incorrect. Recovering sunk or stranded costs, unless they have been imprudently incurred, would generally be regarded as in a provider's legitimate interests. Moreover, a new entrant would factor in the risk of asset stranding into the determination of its required charges.

A.4.3 Trends in use of TSLRIC internationally

49. Regulation the world over, including in Australia, has increasingly preferred pricing rules intended to recover forward-looking economic costs.
50. Optus cites a Europe Economics report, *Pricing Methodologies for Unbundled Access to the Local Loop*, to support the proposition that, where a copper network is likely to remain a local monopoly for the foreseeable future, the priorities underlying the use of a TSLRIC approach are less important and hence the use of TSLRIC is less appropriate.²⁵
51. The Europe Economics report, however, does not provide support for adoption of a changed approach. The report, in fact, highlights that the predominant approach used by EU member states is long run average incremental cost (LRAIC), not historically based cost methodologies. Many states not currently using LRAIC methodology are moving towards implementing it.²⁶ This consistent pattern should provide *prima facie* evidence that an undertaking based on TSLRIC is reasonable.
52. Critically, the report cited by Optus also argues that the appropriateness of alternative cost methodologies will depend on the policy context and drivers in operation. For example, the recommendations and analysis of the Europe Economics report refer to the EU telecommunications directive goal of “*substantially lowering the costs of using the internet*” and of providing “*maximum benefit*” in terms of price to end users. These are explicit social and economic policy goals for the EU. However, they are not consistent with the legislative criteria set out in the Australian telecommunication access regime on which assessment of the undertaking must be based. Elsewhere, the Europe Economics report makes it clear that regulatory methodologies are critically linked to policy objectives and observes that, if a regulator intends to be “neutral” between ‘build and buy’ decisions, then a LRAIC (or TSLRIC) approach should be adopted.²⁷
53. The section of the Europe Economics report extracted in the Optus submission also suggests that regulatory approaches in electricity, gas and water support a cost methodology for the local loop which focuses only on financing activities (i.e., excludes a return on the assets in place based on current replacement costs).²⁸ This approach is unrealistic in a regulatory pricing context, as it raises the possibility that cost recovery will not be allowed, even in circumstances where it is possible. This, in

²⁵ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 2.4

²⁶ Europe Economics (2004), *Pricing Methodologies for Unbundled Access to the Local Loop*, May 2004, page 43

²⁷ Europe Economics (2004), *Pricing Methodologies for Unbundled Access to the Local Loop*, May 2004, page 53

²⁸ See Optus (2008), *Response to Draft Decision*, December 2008, paragraph 2.4

turn, would distort efficient incentives to finance future activities. It is also inconsistent with the statutory criteria, including direct costs, LTIE and the interests of the access provider.

54. The approach suggested by Europe Economics is not applied to electricity, gas or water networks in Australia, and is relatively uncommon internationally. Most electricity transmission and distribution networks were originally valued by reference to the depreciated optimised replacement cost (**DORC**) methodology.²⁹ Similarly, DORC values were a common input into establishing the initial capital base of gas networks and pipelines under the National Third Party Access Code for Natural Gas Pipeline Systems. More recently, water collection and distribution infrastructure has typically been valued with regard to DORC approaches.³⁰
55. The DORC methodology is based on an assessment of the present day cost of replacing the asset with another asset that offers the same service potential. The approach does not assume that current technology or asset configuration is used, rather it is based on the cost of a set of assets that delivers the current level of service at least cost, using the best commercially available technology.³¹ As such, it is conceptually consistent with TSLRIC based pricing. Indeed, the ACCC has in the past commented in its guidance to market participants on access pricing that:³²

There is a variety of methods of asset valuation (see box on next page). Of these methods, replacement cost is the methodology most consistent with TSLRIC.

56. Given the strong and continuing theoretical consistency between TSLRIC and replacement cost methodologies, Telstra considers that it follows that TSLRIC must be reasonable basis for the purposes of its current proposed undertaking.

A.5 Historical cost recovery for the CAN

57. Optus submits that the TEA model (and TSLRIC more generally) allows Telstra ‘to recover its capital costs [specifically the costs of the CAN] many times over’:³³

The current approach thus provides Telstra with a windfall gain in that it recovers costs that have already [been] fully recovered, in respect of assets that were already fully depreciated.

58. This argument relies on a comparison of stated asset lives to the age of the network. It concludes that since the age of the network exceeds the asset life of most key components, the overall capital cost must have been recovered several times over. However this argument is based on two flawed assumptions:
 - First, it assumes that the architecture of the CAN is the same as it was four decades ago. The CAN has been evolving over the past century to keep up with rapidly changing technology and growing consumer demand. This means that some longer life assets have been replaced with more modern technology and some parts of the CAN have been installed more recently than others.

²⁹ See for example *National Third Party Access Code for Natural Gas Pipeline Systems*, Section 8.10

³⁰ See for example discussion by the Queensland Competition Authority (2002), *Draft Decision - Burdekin Haughton Water Supply Scheme: Assessment of Certain Pricing Matters relating to the Burdekin River Irrigation Area*, September 2002, page 38

³¹ ACCC (1997), *Access pricing principles – Telecommunications: a guide*, July 1997, page 42

³² ACCC (1997), *Access pricing principles – Telecommunications: a guide*, July 1997, page 41

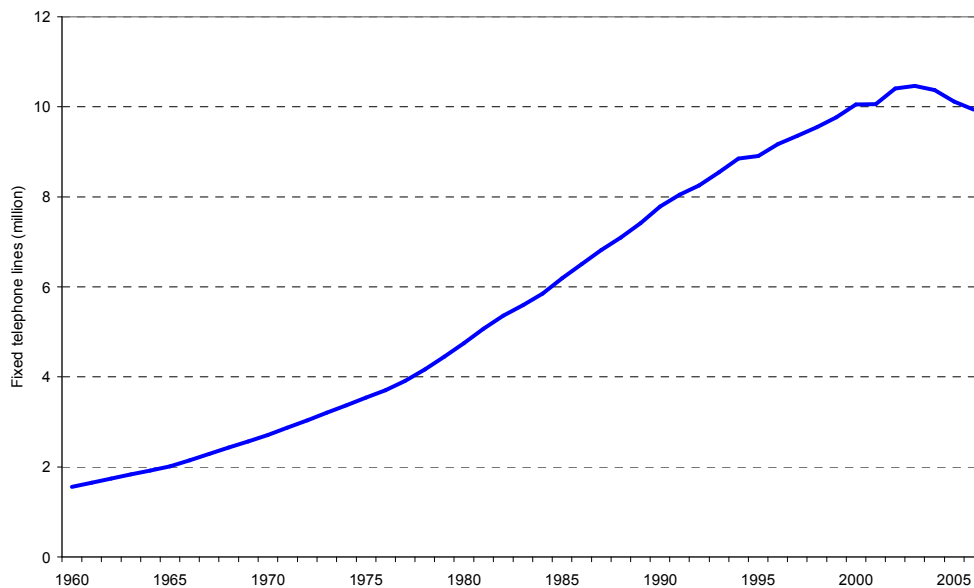
³³ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 2.22, page 11

- Second, it assumes that CAN assets do not need to be renewed as they come to the end of their life. The fact is that existing CAN assets are periodically renewed, giving rise to new costs which need to be recovered through access prices. The cost of renewing assets is incorrectly excluded from Optus' illustrations.
59. The only way in which access pricing might conceivably lead to such a 'windfall gain' is if it is premised on asset lives that are too short (thus allowing recovery of renewal costs before they are actually incurred). However, Optus provides no convincing evidence to suggest this is the case with respect to the costs estimated by the TEA model.

A.5.4 Evolution of the CAN

60. The fixed network has gone through a number of phases, regularly being upgraded and expanded to accommodate new services and changing consumer demand. At each major phase, new foundations are laid and then, as new services and needs emerge, overlays and extensions are added to provide for them.
61. Most obviously, there has been ongoing expansion of the network footprint over the past 50 years as demand for basic telephony services has grown. In 1950, fewer than 1 million customers connected to the PSTN, whereas by 2000 this figure was over 10 million (Figure 1).

Figure 1: Demand for fixed access in Australia 1960-2006



Source: ITU

62. Alongside this expansion of the CAN, there has also been a modernisation of its architecture. Whilst part of the modernisation programs of the 1970s, 80s and 90s was focused on the core (e.g. the FMO program conducted in the late 1980s and early to mid-1990s), there were also significant investments made in the access network.
63. The need for modernisation and upgrades was identified in the *Telecom 2000* report released in 1975. At that time, the network catered for around 3.5 million subscribers and was predominantly used for fixed voice telephony. *Telecom 2000* recognised that

significant investment would be required over the next 25 years to modernise the network and allow it to cater for population growth and growing demand for communications services.³⁴

... an expanding role is foreseen for the telecommunications industry of the future as a result of technological innovation and society's increasing dependence on information transfer.

One aspect of this trend, highly significant for telecommunications, is the greater call for accumulation, storage and transmission of information. This is reinforced by the growing use of computers for information processing in both the industrial and social spheres. To cope with this development, telecommunications may well need an increasing share of the sum total of the economy's resources devoted to capital expenditure.

64. At the time, and without knowledge of the technological developments that would follow in the 1980s and '90s, it was forecast that annual investment in telecommunications would need to be around \$1.5 – 2 billion.³⁵
65. Throughout the 1980s and 1990s, the network continued to expand and its architecture became ever more complex and costly as more overlay networks were used to accommodate new needs (fax, data, image and then mobiles). This required ongoing investment throughout this period. Telstra notes in its 1995 Annual Report in relation to its \$3.2 billion capital expenditure for that year:³⁶

The bulk of this expenditure was attributable to network modernisation and network expansion necessary to meet growing demand for services...

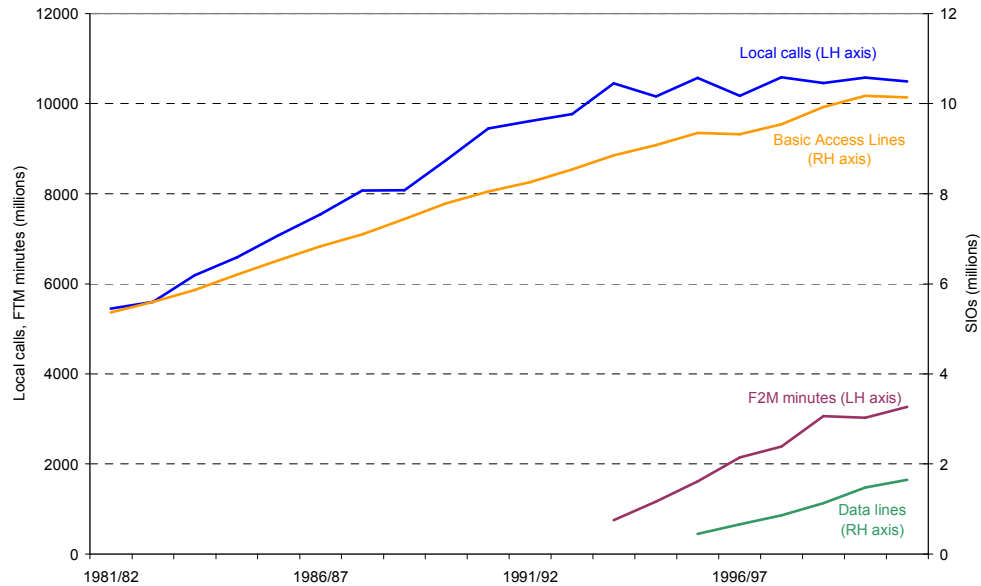
66. Figure 2 shows the growing demand for new and existing services over this period, which contributed to the need for ongoing investment in the CAN.

Figure 2: Demand for network services through the 1980s and '90s

³⁴ Australian Telecommunications Commission (1975), *Telecom 2000: An Exploration of the Long-Term Development of Telecommunications in Australia*, Melbourne, December 1975, page 14

³⁵ Australian Telecommunications Commission (1975), *Telecom 2000: An Exploration of the Long-Term Development of Telecommunications in Australia*, Melbourne, December 1975, page 15

³⁶ *Telstra Annual Report 1995*



Note: 'Data lines' includes fax and ISDN lines

Source: Telstra Annual Reports

67. The evolutionary nature of the CAN implies that static models of investment such as that put forward by Optus (refer to Figure 1 of the Optus submission in particular) are of little relevance. Optus seems to claim that the CAN was entirely built in 1970 and hence the cost of most of the underlying infrastructure (with the exception of the very long-lived components) must have been recovered by now. This is a dramatic oversimplification and ignores the ongoing need for modernisation and expansion of the CAN that has been created by growing demand and technological change. While some of the CAN's underlying infrastructure may have been deployed more than 3 decades ago, much of it is likely to have been deployed since. Hence a great deal of the deployment cost of the CAN remains to be recovered through access prices.

A.5.5 Asset renewal

68. Besides the need for expansion and modernisation of the CAN there is (as with any asset) a need to renew the CAN infrastructure as it ages. Once a component reaches the end of its life, there is not only the potential to recover its cost again through access prices (as the Optus submission points out), but there is also the need to incur its cost again as it needs replacing (as the Optus submission ignores). Thus, in net terms, there is no 'windfall gain to Telstra when assets reach the end of their life - 're-recovery' of those asset costs is simply compensation for 're-incurred' costs.

69. CAN components are continually replaced as they reach the end of their life, contributing to ongoing CAN costs of around \$1 billion per annum (refer to discussion and chart below). If anything the TEA model under-compensates, rather than over-compensates Telstra for such costs since it only takes into account current, not historic costs. Since current costs of network components are likely to be lower than historic costs due to technological developments, the TEA model will typically under-compensate for historic investments in the CAN.

70. The need for asset renewal combined with the need for modernisation referred to in the previous section have led to Telstra consistently investing heavily in the CAN.

Between 1995 and 2007 for example, Telstra invested almost \$1 billion per year (\$11.2 billion in total over the 13-year period) in customer access.

Figure 3: Telstra capital expenditure on customer access 1995-2007



Source: Telstra Annual Reports

71. Over this period, the most significant annual investment in the CAN was in 2000, when nearly \$1.3 billion of Telstra’s capital expenditure was devoted to customer access alone. In that year and in 1999, Telstra invested a great deal in renewing the network and improving its reliability, as it notes in its 2000 Annual Report:³⁷

During the last two years we have undertaken an access renewal project to reduce the level of faults in our customer access network. This capital expenditure has focused on improving the quality and reliability of our customer access network and reducing operating expenses.

A.5.6 What this means for Telstra’s current costs

72. Optus misrepresents the nature of CAN costs recovered through access prices. Optus seeks to represent the costs included in the TEA model as costs incurred in 1970 and not since. As most of the assets concerned have lives shorter than 38 years, Optus claims these costs must have been already recovered through access prices.
73. As has been illustrated by the foregoing analysis, this simplistic view of Telstra’s CAN costs ignores both the evolutionary nature of the access network and the need for renewal of existing assets. Costs sought to be recovered by the TEA model include both the costs of network developments in recent years (for example the cost of upgrades to facilitate new services) and the cost of replacing assets that have reached the end of their life. If Optus argues that these costs are recovered on multiple occasions, it must also acknowledge that they are incurred on multiple occasions. Thus there is no

³⁷ Telstra Annual Report 2000, page 24

'windfall gain' to Telstra from access pricing, but rather fair compensation for capital costs incurred.

74. The only situation in which an access provider such as Telstra might conceivably see a 'windfall gain' is where access prices are calculated based on asset lives that are too short. However Optus has provided no credible evidence to suggest that this is the case with respect to the TEA model. Indeed the evidence provided by Optus on asset lives supports the lives in the TEA model.³⁸ Telstra has estimated the lives of all relevant CAN assets as accurately as possible to ensure appropriate recovery of these costs in the TEA model.
75. Finally, Optus provides no evidence that Telstra's CAN costs have indeed been recovered in the way it claims. Prior to full corporatisation and privatisation, Telecom had a very low, at times negative, economic rate of return, particularly during the 1980s. Moreover, rentals and connections were price controlled for almost all periods since the 1970s, with controlled price levels creating an access deficit at least through to the early 1990s. Given those facts, and the lack of any evidence on returns in Optus' submission, the ACCC should not give any weight to Optus' contentions.
76. Indeed, Telstra's historic trenching and copper cable costs, which represents the majority of ULLS assets, are likely to be higher than TSLRIC for the following reasons:
 - Analysis of Telstra's historical records, provided to the ACCC in response to their information requests, shows that when Telstra's historical trenching activities are inputted into the TEA model, the network costs of ULLS increase by 25% (\$11.46 per SIO per month);³⁹
 - The forward-looking copper cable costs in the TEA model are also below historical costs;⁴⁰
 - Telstra has recently achieved considerable savings in contracting with vendors;⁴¹ and,
 - CIC
[REDACTED]
[REDACTED]

³⁸ Telstra, *Response to Access Seeker Submissions*, 18 November 2008, section F.8

³⁹ Telstra, *Response to the ACCC's request for further information on Telstra's Band 2 ULLS undertaking made pursuant to s152BT of the Trade Practices Act dated 16 December 2008*, 13 March 2009, table 6

⁴⁰ The average cost of reinstatement activities from October 2000 to January 2009 is higher than the prices in the TEA model – Telstra, *Response to the ACCC's request for further information on Telstra's Band 2 ULLS undertaking made pursuant to s152BT of the Trade Practices Act dated 16 December 2008*, 13 March 2009, table 2

⁴¹ 'Telstra Lines up \$2.5bn in Contracts', *Australian IT*, 3 September 2007, <http://www.australianit.news.com.au/story/0,24897,22353392-5013041,00.html>

⁴² Telstra, *Response to the ACCC's request for further information on Telstra's Band 2 ULLS undertaking made pursuant to s152BT of the Trade Practices Act dated 23 January 2009*, 13 March 2009 [Category 2 Confidential Material]

B Reasonableness of TEA model assumptions

B.1 Network design

77. Optus claims:

3.3 Optus submits that the ACCC's finding is correct; the TEA model has not been demonstrated to be optimised sufficiently. There are two separate aspects to this issue:

- *First, Optus submits that in many respects, the network design is not optimal and has been demonstrated to be non-optimal.*

- *Second, Optus submits that for certain key aspects of the network design it is impossible for any party other than Telstra to know whether or not that aspect of network design has been optimised sufficiently, since these aspects are not transparent.*

78. These two points are discussed below. Network Strategies, Optus' consultants, make several specific claims in relation to the TEA model's network design. These are addressed in Attachment 2.

B.1.1 Aspects of network design

79. Optus refers to several claims originally made by its consultant Network Strategies.

80. First Optus states:⁴³

In many respects, the network design employed in the TEA model is not optimal and has been demonstrated to be non-optimal. For example, in its September review of the TEA model, Network Strategies found that:

"The underground conduit and pit construction for both main and distribution cables costed in the model is likely to be the most expensive design a telecoms operator could choose when building a copper access."

81. Network Strategies made the above statement in the concluding paragraph⁴⁴ of their September Review of the TEA model. Network Strategies never provided specific basis for the statement, however, they did make the following comments in this section of the report:

- *the per-metre trenching costs are **higher than we expected** (emphasis added)⁴⁵*
- *the per-metre installed cable costs (including jointing and Telstra's loading factor) appear to be around 30% **higher than we would have expected** (emphasis added)⁴⁶*

⁴³ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.4

⁴⁴ Network Strategies, *Review of the Telstra TEA model version 1.1*, September 2008, Section 2.3

⁴⁵ *Ibid*, Section 2.1.1, Pg. 4

⁴⁶ *Ibid*, Section 2.1.2, Pg. 5

- **We would have expected**, for example, zone 1 per metre costs to lay a new duct line would have been many times those of zone 5 (emphasis added)⁴⁷

Network Strategies also argues that alternative network designs such as overhead lead-ins and alternative cable placement technologies should also be used in the model.⁴⁸ These issues are discussed in detail commencing at paragraph 92 below.

82. The trench and cable costs used in the model were derived from Telstra's Access & Associated Services (A & AS) Contracts which were the result of a competitive bidding process. Telstra has provided a witness Statement,⁴⁹ which provides a detailed description of the competitive bidding process that resulted in the trench and cable costs that were used in the TEA model.

83. Ovum also compared Telstra's cable costs to international benchmarks:⁵⁰

We conclude overall that the cost of cable is broadly in line with international benchmarks.

84. Further, Telstra's cable costs compare favourably to other cost benchmarks provided by other parties in this Undertaking.

85. Network Strategies produces a chart that shows that the cost of trenching and placing conduit in density zone 5 is 52% of the cost of placing conduit in density zone 1. Based on this chart, they conclude that this difference is less than "expected". They believe the following factors contribute to this unexpected result:⁵¹

Due to the fact that only the percentage of mix of trenching techniques vary between zones.

They go on to clarify:

This means, for example, that the cost per metre of trenching across a road is expected to be the same in both rural and metro areas.

and

The per-metre cost of trenching dirt should always reduce in less dense areas where longer and less obstructed trenching can be expected.

86. Telstra did assume lower cost placement activities (i.e. trenching turf as opposed to boring) could be employed to a much greater extent in less dense areas. This is reflected in the TEA model by the adoption of different density bands.

87. There are separate breakout and reinstatement costs for concrete and asphalt, depending on the thickness of the material removed or replaced. Asphalt and concrete footpaths, drives and roads might be thinner in rural areas. However the

⁴⁷ Ibid, Section 2.2.1. pg. 9

⁴⁸ Ibid, Section 2.2.1, pg. 10

⁴⁹ Statement of [REDACTED]

⁵⁰ Ovum Consulting, *Review of the economic principles, capital costs and expense calculations of the Telstra Efficient Access cost model*, Section 2.2 pg 11

⁵¹ Network Strategies, *Review of the Telstra TEA model version 1.1, September 2008, Section 2.2.1, pg. 10*

model assumes only the thinnest (least cost) category of concrete streets and drives would be encountered in all Band 2 exchanges. The cut and restore assumption used in the model for asphalt surfaces was similarly conservative (i.e. minimised cost), assuming no asphalt surfaces would be more than 50 mm thick.

88. In most models the placement options (i.e. trenching, cut and restore, boring, etc.) vary between density groups as in the TEA model. However, the costs for the type of placement activity generally remain the same for all density groups. For instance, the Fixed Network Services Cost model prepared for the ACCC by Analysys uses a single composite cost for placing each size of conduit in all Bands. It is not possible to adjust the relative mix of boring, trenching and cut and restore, other than by changing the cost of placing a size of conduit.⁵² Ovum also recognised the reasonableness of using average prices across all Band 2:⁵³

The costs between areas are not distinguished and averages have been used throughout the model for the pricing of equipment. Ovum agrees that the use of averages is common in regulatory models and appropriate for the costing overall of Band 2 ESAs.

89. Second, Optus states:⁵⁴

Attached to this submission at Attachment 2 is a Network Strategies report containing additional comments on the TEA model. It contains additional material relating to the key points made in the original Network Strategies report and should be read in conjunction with that original paper. In this new report, Network Strategies states that:

“The underground conduit and pit construction proposed by Telstra is expensive mainly because there appears to be little or no optimisation of cable layout to avoid trenching and reinstatement of expensive surface types and the TEA model uses relatively high cost trenching/duct technologies, instead of the more cost-effective technologies that are available, such as shallow trenching and micro-trenching or direct buried cables.”

After discussing these more cost-effective technologies, Network Strategies states that: “None of these alternative approaches to network deployment are considered in the TEA model” and concludes that:

“In its current form, the conduit and pit design used in the TEA model does not accurately model the network that an efficient operator would build in practice to provide ULLS in Band 2 areas.”

90. Network Strategies, made the above comments in an effort to clarify the statement in their original report that the conduit and pit design in the TEA model “is likely to be the most expensive design” that could be used to build a new network. However, in this clarification they state that the primary cause of the expensive design is that there “appears to be little or no optimization of the cable layout”.⁵⁵ Again Network Strategies provides no actual data or analysis to support this conjecture. Further this criticism is

⁵² There is an option to use a % for using plowing to place cable in the ACCC model, however, this option is only selected in Bands %.

⁵³ Ovum Consulting, Telstra Efficient Access cost model-economic issues, An advisory Note to the ACCC, Section 2.1

⁵⁴ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.5-3.6

⁵⁵ Network Strategies, Review of Telstra TEA model version 1.1 – additional comments, Section 2.2, page 4

without merit, since the “trenching and reinstatement of expensive surface types”, which Network Strategies seeks to avoid, is an input to the TEA model, not a by product of “cable layout”. Consequently the amount of each surface type included in TEA is not an indicator of the level of “optimisation of cable layout”, rather it is a direct result of model inputs.

91. Telstra filed with the ACCC its report titled *Measure of TEA Model Efficiency ULLS Band 2*, a comparison of the trench length, the cable length and number of pits and manholes in the TEA network design to the same data for the actual Telstra’s network. As shown in that study, the TEA model eliminates 34.5% of the trench length, 83.2% of the manholes and 20.8% of the pits from the actual network design. These 20 to 80 percent reductions prove there is significant optimisation built into the TEA model.
92. Telstra updated this report to also include draft results from the ACCC’s Fixed Network Services Cost model. While that model is in draft form and has numerous design flaws making it unsuitable for pricing telecommunications elements or services⁵⁶, it does provide a point of comparison between the Telstra model and a model that uses hypothetical mathematical algorithms to determine the network layout. Table 1 below sets out the comparison of the trench and cable sheath length in Telstra’s updated report. As illustrated, the TEA model produces significantly less trench and cable length than the ACCC’s model. While the ACCC’s model produces fewer pits and manholes, Telstra believes this is because of a number of errors in the ACCC’s model.

Table 1: Efficiency in the TEA model

Metric	TEA Measure	ACCC Measure	Efficiency Over ACCC	Inventory Measure	Efficiency Over Inventory
Trench km (Distribution Only)	99,893	118,442	15.7%		
Trench km (Total)	111,516	122,031	8.6%	170,291	34.5%
Pits and Manholes	3,086,063	1,662,508	-85.6%	4,029,563	23.4%
Cable Sheath km (Distribution Only)	137,677	236,316	41.7%		
Cable Sheath km (Total)	162,276	275,809	41.2%	375,482	56.8%
Fibre Sheath km (Total)	3,662	92,058	96.0%		

93. Ovum, the ACCC’s consultant on engineering issues, agrees that the TEA model design, as revised in Version 1.2, incorporates efficiencies across the network design:⁵⁷

With the revised model, as described in our advisory note to the ACCC on engineering issues, we conclude that (p. 4)

“The TEA model, version 1.2, is now working as originally described by Telstra. The cable routes in the model database are the shortest paths within the set of actual paths used for cables.”

⁵⁶ See Telstra’s *Submission with respect to the ACCC’s cost model*, Expert report by Prof. Bob Harris on the ACCC’s cost model and Expert report by Nigel Attenborough on the ACCC’s cost model submitted to the ACCC on 1 April 2009

⁵⁷ Ovum Consulting, *Telstra Efficient Access cost model-economic issues*, An advisory Note to the ACCC, Section 2.1

And:

“The dimensioning of cables, ducts, pits, manholes, cable joints, cable gauges and pillars are all appropriate for a “scorched node” model of a copper access network. These calculations include efficiency gains over the existing network.”

This implies that changes have been made, and the TEA model has included efficiency gains. The methods for calculating efficiency gains over the existing network are appropriate.

94. In their original report, Network Strategies argues that it is more economically efficient to use “direct buried and overhead distribution cabling”⁵⁸ in rural areas. Network Strategies subsequently added “shallow trenching or micro trenching”.⁵⁹ Network Strategies provides no backup or support as to whether these alternative placement approaches are practical, cost effective, efficient over the short and long run or compliant with the laws and regulations of cities where the network would be placed.

95. Telstra filed a statement with the ACCC that explains that the current construction requirements for cable networks virtually preclude the use of aerial facilities.⁶⁰ That statement also discusses the desirability of using conduit to house cable runs.⁶¹ The reasons include:

- Efficiency gains in the ability to install, replace, and remove existing cables;
- The additional protection the conduit provides for the cable; and
- Efficiency improvements in maintaining the cable network.

96. As Optus points out, Network Strategies now supports model options that include the use of shallow and micro-trenching. Network Strategies provides the following justification for incorporating these placement procedures into the model:⁶²

Shallow trenching, such as the kind deployed by the Marais Groupe in France is used extensively in Europe, can accommodate numerous ducts, is quick to roll-out (around 500 metres per day) and can be more cost effective than the approach used in the TEA model, particularly for smaller cables in high population density areas. Cost is saved through the minimal disruption and damage caused by specialised trenching machines when compared to conventional back-hoe and drilling.

97. In a recent online paper Network Strategies discussed micro-trenching:⁶³

⁵⁸ Network Strategies, Review of the Telstra TEA model version 1.1, September 2008, Section 3.3 pg. 23

⁵⁹ Network Strategies, Review of Telstra TEA model version 1.1 – additional comments, Section 2.2, page 5

⁶⁰ Statement of [redacted], paragraph 40 to 55

⁶¹ Statement of [redacted], paragraph 64 to 66

⁶² Strategies, Review of Telstra TEA model version 1.1 – additional comments, Section 2.2, page 5

⁶³ Network Strategies, Micro-trenching: can it cut the cost of fibre to the home, <http://www.strategies.nzl.com/wpapers/2008019.htm>

It makes use of micro-ducts with narrow, vertical cross-sections (12mm by 30mm for example, rather than circular) and very small diameter fibre cables (for example 24 fibres in a 4mm diameter cable, and 72 fibres in a 6.1mm cable).

While digging and re-instating the road for a traditional trench is a time-consuming and expensive exercise, the micro-trench can avoid many costs as it does not penetrate the surface layer of the road (asphalt). This means the crew can dispense with traditional expensive backfill material and road re-surfacing, instead backfilling with grout, concrete or similar substances, which once sealed may be practically invisible.

98. However, in the same paper, not provided by Network Strategies in the context of Telstra's Undertaking, Network Strategies provides a list of the significant problems with micro-trenching:

However micro-trenching is not necessarily a panacea for affordable FTTH in New Zealand - there are a number of practical issues that must be addressed:

Road movement: *The surface of the road can move with the weight of the traffic. Even quite small movements can be sufficient to crush or otherwise damage cables and ducts. To reduce movement, cables are installed along the edge of the gutter of the road, where the curbing will add strength.*

Road thickness: *Micro-trenches must be at least 100mm deep, and thus the road surface needs to be at least that thick. Cutting through the asphalt and into the base of the road will seriously reduce the cost-effectiveness of micro-trenching, as extra measures are required to ensure water does not penetrate the road base (potentially causing subsidence and long term road damage).*

Road resurfacing: *When roads are resurfaced, the fibre must be physically removed from its micro-trench beforehand, and reinstalled afterwards, to avoid any damage being done to it when the old road surface is milled down. This reduces the long term cost-effectiveness of this system.*

Other utilities: *It has been suggested that the trenching saw may "slice through storm water drains, gas pipes and electricity cables before operators even knew they were there" – although we note that in general drains, pipes and other cables are usually well below the asphalt surface of the road. It may be more likely that laying a micro-duct close to the surface of the road will make the telecommunications network more susceptible to damage by general contractors and the maintenance/installation of other utilities.*

99. The following points can be taken from this paper:

- The micro trench cannot hold the standard copper cable 100mm conduit (i.e. in fact copper cables are never even mentioned in the paper);
- Anytime a road is repaved there will be significant service outages as the plant is removed;

- Significant outages will also occur if the road settles or moves; and
- Micro trenching has significant potential to damage roads and other surfaces.

100. Further, micro-trenching does not comply with the Australian standards for building telecommunications networks. The Australian Communication Industry Forum publishes an industry code that specifies a depth of cover over telecommunications carriers of 450mm for most roadways and typically 1000mm to 1200mm for roads controlled by a State or Territorial Road Authority.⁶⁴ In order to meet these standards the trench would have to penetrate through the road surface. Network Strategies concedes that trenching to comply with the Australian industry code, “*will seriously reduce the cost-effectiveness of micro-trenching*”.⁶⁵ The TEA model assumes boring in most instances when crossing roads, a placement method that requires no restoration.

101. Thus, even if none of the problems with micro-trenching existed, Telstra or a new entrant would not be permitted by ACIF codes to undertake such activities.

102. Third, Optus states:⁶⁶

Further, in its original report Network Strategies states that: “In using a non-tapered architecture, Telstra is passing on the costs of over-building its network to its ULLS customers.” In its new report, Network Strategies discusses this issue in more detail and states that: “In our experience, we have never encountered copper access network models which do not use tapering in the design of the distribution networks.” The authors discuss potential justifications for the use of non-tapered architecture in the TEA model, before concluding that “there is no justification.”

103. This issue is discussed in detail in a previous response to Optus.⁶⁷ The non-tapered 100 pair distribution architecture is the standard network design used by Telstra when deploying a new network because it increases efficiency and reduces material costs during installation process, eliminates the cost of jointing cables at cable size changes and increases the ability to of the company to rapidly respond to demand fluctuations across the network. The rationale for using a non-tapered design is discussed in detail in a statement filed by Telstra.⁶⁸

104. Future network demand, even in established neighbourhoods, is never a known quantity. As customers migrate throughout the network, the difference in their telecommunications needs travel with them. In order to provide service in a timely manner, Telstra and any new entrant needs to have capacity available to meet changes (including movement from one area to another) in demand. Ovum recognised these potential benefits of using a non-tapered design:⁶⁹

With regard to tapering in the distribution, Ovum remains of the view, agreeing with Telstra, that a non-tapered design is standard. Ovum’s engineering review showed that tapering the distribution cables would

⁶⁴ Australian Communications Industry Forum, Industry Code, ACIF C524:2004, Section 9.4.3

⁶⁵ Network Strategies, Micro-trenching: can it cut the cost of fibre to the home, <http://www.strategies.nzl.com/wpapers/2008019.htm>

⁶⁶ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.7

⁶⁷ Telstra (2008), *Response to Access Seeker Submissions*, 18 November 2008, section F.1.3

⁶⁸ Statement of [redacted], paragraphs 79 to 100

⁶⁹ Ovum Consulting, *Telstra Efficient Access cost model-economic issues*, An advisory Note to the ACCC, Section 2.1

only save 4% of the cost (see [1], section 4.1) but indicated this would be outweighed by the operational benefits. Non-tapered design of the distribution cables should be used.

105. Ovum also stated:⁷⁰

If we set the fill factor to 100% for all cables, then the tapered design for all ESAs is about 4% cheaper per line than the non-tapered one. This supports the view that a non-tapered design, which provides greater operational efficiency, would be preferred by an efficient operator of a copper-cable access network.

106. The minimal savings in the initial cost of placing a non tapered network would be more than offset by future inefficiencies result from future cable additions required to meet changing demand.

107. Fourth, Optus states:⁷¹

Perhaps the most important single failing of the TEA model is its lack of optimisation through the modelling of hypothetical routes. As Network Strategies have stated, "hypothetical routes are an essential component in any cost model that attempts to build an efficient access network." In their Dec 2008 report, Network Strategies explain why Telstra's criticisms of models which, unlike the TEA model, can determine new efficient cable routes (based on physical obstructions and other arguments) are not generally valid. The authors conclude that:

"It is our conclusion that the fact that the Telstra model does not permit re-clustering and hypothetical cable routes is evidence that TEA is not fully optimised and therefore is not capable of estimating the efficient cost of supply of the ULLS."

108. Telstra disagrees with Network Strategies that "hypothetical routes are an essential component in any cost model that attempts to build an efficient access network". There is nothing optimal about a network design that creates Distribution Areas absent road and geographic awareness, places pillars arbitrarily, and routes cable and conduit "as the crow flies." A network that is efficient must work in practice. Telstra is unaware of a hypothetical route design algorithm that designs a network that would work in practice. Mathematical algorithms (for example clustering algorithms) that design hypothetical networks do not take into account natural and man-made obstacles that, in the real world, make it difficult and costly to build networks. Indeed, the ACCC's Fixed Network Services Model attempts to design hypothetical networks and it fails to build a network that would work in practice⁷² and, in any case, results in a network that has 9.4% longer total trench length than the TEA model.⁷³ The TEA model takes into account these obstacles by starting with the actual rights of way for Telstra's network and optimises the routes by eliminating those that do not provide the shortest way to get between two points. A more complete critique of the use hypothetical networks to "fully optimise" a cost model can be found in Telstra's initial review of the ACCC's Fixed Network Services Model.

⁷⁰ Ovum Consulting, Review of the network design and the engineering rules of the Telstra Efficient Access cost model, Section 4.1

⁷¹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.8

⁷² Telstra's letter to the ACCC, dated 20 March 2009

⁷³ Telstra (2009), *Measure of TEA Model Efficiency: Band 2 – Version 2*, 9 March 2009, section 5

109. The ACCC should consider Network Strategies comments on the efficiency of the TEA model's network design with due suspicion, since they provide no quantification or evidence of their assertion. Not only that, as discussed below, for a different but more recent client Network Strategies conducted an exercise that involved measuring efficient network route length that, if they had done a similar exercise in this context, would show that the TEA model routes are indeed efficient and fully optimised.⁷⁴

110. Additionally, in response to Telstra's submissions, Optus states:⁷⁵

Telstra has attempted to refute Optus' criticisms of the lack of optimisation in the TEA model. For example, Telstra states that Optus' criticism that there is little if any network optimisation in the TEA model is based in a large part on the assumption that the TEA model retains the actual location of all network structures or nodes, including the pits and manholes."

However, Telstra's statement is incorrect. Optus' criticism that there is little if any network optimisation in the TEA model is not based on the assumption that Telstra notes. In its Dec 2008 report, Network Strategies explains why Telstra's attempted rebuttals (including this specific point) are incorrect, and notes that:

"The claim that there is little or no optimisation in the TEA model is based on the observation that it does not attempt to re-define distribution areas based on today's rather than historical demand. This means that inefficient pillar locations and main cable routes are retained. It is also means that inefficient distribution cable routing, based on historical demand growth, is retained. Telstra claims that some of this inefficiency has been removed from the database through its own internal analysis, but we are unable to confirm this. We realise that manhole and pit numbers are re-dimensioned by the model, and this point is irrelevant to the distribution area efficiency and optimisation argument."

111. Network Strategies and Optus argue that inefficient "main cable routes are retained in the TEA model."⁷⁶ The model does not retain cable routes, the actual cable routes are only used to determine the location of existing right of ways. There are only three aspects of the actual network that the TEA model retains:

- Exchange locations;
- Pillar locations; and
- The locations of the existing rights of way.

The cable routes are completely re-dimensioned and redesigned using the locations of existing right of ways. This fact was recognised by Ovum when they stated that the TEA cable paths "represent the shortest paths among the existing paths present in Telstra's cable plant records."⁷⁷

⁷⁴ Network Strategies (2008), *Broadband Strategies for New Zealand: Analysis of Possible Infrastructure Models*, 10 December 2008, pages 94-95

⁷⁵ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.9 – 3.10

⁷⁶ Optus December 2008 Submission, at paragraph 3.9

⁷⁷ Ovum Consulting, *Telstra Efficient Access cost model-engineering issues*, An advisory Note to the ACCC, Section 3.2.1

112. Retention of pillar locations is necessary to assure that pillars are readily accessible to the main cable network and to the customer locations in the distribution area by cable routes that follow actual rights of way. When pillars are moved in hypothetical models, there is no assurance they remain similarly accessible. The benefits of a network design that uses actual legally prescribed rights of way and pillar locations that are known to be accessible far outweigh any potential benefit from moving the location of pillars in a distribution area. In fact, arbitrarily relocating pillars is more likely to result in pillars that are less accessible to customer locations, than it is to result in pillars that are more accessible, because hypothetical models cannot consider accessibility due to lack of road and geographic awareness. Designing a cable network that realistically reflects cost of constructing efficient cable and conduit runs is critical in identifying a realistic TSLRIC.

113. Approximately 84 percent of the total investment in the ULLS network is attributable to the purchase and placement of cables and conduit. These routes must run down every street where customers are located, regardless of the pillar location. Moving the location of the pillars will not significantly affect the location of the conduit and cable routes. Thus, relocating pillars has no material impact on the overall TSLRIC for ULLS.⁷⁸

114. Ovum recognised the reasonableness of retaining the actual pillar locations:⁷⁹

It is legitimate, however, for Telstra to use a scorched node approach – fixing the current pillar points – for purposes of the model.

B.1.2 Transparency

115. Optus argues:⁸⁰

For certain key aspects of the network design employed in the TEA model it is impossible for any party other than Telstra to know whether or not that aspect of network design has been optimised sufficiently, since these aspects are not transparent.

For example, if the ACCC is to test whether the TEA model's cost estimates are consistent with the costs of supply for an efficient forward-looking operator, it must be able to test whether the network routes used in the model are reasonable and whether these routes are likely to be consistent with those adopted by an efficient operator. However, the ACCC cannot test this aspect of the model because to do so it would need to be able to identify the actual locations of modelled customers and structure points (pillars, manholes, pits etc), which is impossible because the network database within the model does not allow this functionality.

It follows that it is impossible for the ACCC to test whether the TEA model's cost estimates are consistent with the costs of supply for an efficient forward-looking operator. Consequently, it is impossible for the ACCC to be satisfied of the reasonableness of Telstra's undertaking.

116. The TEA Model designs an efficient access network for every Exchange Service Area (ESA) in Band 2 in two stages. First, it designs a distribution network that efficiently

⁷⁸ Telstra (2009), *The Impact of Distribution Area Design on Customer Access Network Investment Costs*, 9 March 2009

⁷⁹ Ovum Consulting, *Review of the network design and engineering rules of the Telstra Efficient Access cost model*, Section 2.1

⁸⁰ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.11-3.13 and similarly 3.15. Network Strategies makes a similar argument in Optus (2008), *Response to Draft Decision*, December 2008, Attachment 2, section 2.3.

connects every address in every Distribution Area to the pillar serving that DA. Then it designs a main network that efficiently connects every pillar in an ESA to the exchange building.

117. The model begins design of the distribution network by mapping every address in a DA to the network structure point residing in the legal right of way, which serves that address. The model then identifies the end points of each distribution route (i.e. the address furthest from the pillar) and constructs an efficient route from that point back to the pillar, aggregating demand along the way. The model designs efficient routes by searching all route segments in the existing distribution network, which are known rights of way, and choosing the least distance path from point A to point B at each and every network structure point along the route. The model identifies every point along the route where demand enters the network, identifies the amount of demand entering the network at that point and aggregates total demand on the route for every route segment all the way to the pillar. Aggregate demand is used to determine the size of cable and conduit needed for every route segment.
118. The model then designs efficient main network routes to connect every pillar in an ESA to the exchange building. (Building terminals, which are directly served by the main network, are also included in the routes.) The model designs efficient routes by searching all route segments in the existing main network, which are known rights of way, and choosing the least distance path from point A to point B at each and every network structure point along the route. The model identifies every point along the route where demand enters the network, identifies the amount of demand entering the network at that point and aggregates total demand on the route for every route segment all the way to the exchange building. Aggregate demand is used to determine the size of cable and conduit needed for every route segment.
119. The only step in this process, which is not readily visible in the TEA model's Microsoft Excel spreadsheets, is the selection of least distance route segments from point A to point B from all the route segments in the existing distribution and main networks. Every other step in the process can be tracked in the model's spread sheets. The end point of every distribution and main route is identified. Every conduit segment between the end point and the pillar or exchange building is identified and its length accurately recorded. Every point where a lead-in is jointed to the distribution network or where demand from a pillar or building terminal is jointed to the main network is identified along with the amount of demand entering the network at that point. And aggregate demand and distance from the pillar or exchange building is visible for every route segment.
120. The selection of the least distance route segment between any two points in the network from all the route segments in the existing distribution network is not visible, because it is not done in the Excel modules; the least distance routing selections are done in preprocessing. The source databases are too large and the processing is too sophisticated for the selection to be done in Excel.
121. In any case, an attempt to examine the preprocessing would necessarily require examination of the whole set of actual route segments in Telstra's existing network, from Telstra's NPAMS and CPR2 databases.⁸¹ As explained below, this data cannot be disclosed for national security reasons.

⁸¹ Statement of Frank Hatzenbuehler, 18 November 2008, Annexure A

122. As the Government has previously acknowledged, Telstra's network information data contained in Telstra's databases is subject to some very significant national security considerations. Entirely apart from the potential it may have to harm the commercial interests of Telstra, the disclosure of data about the locations and functionality of telecommunications lines and other facilities poses a real threat to national security.
123. The national security risks associated with the raw data contained in Telstra's NPAMS and CPR2 databases place that data in a different category of sensitivity to the optimised base data contained in the TEA model. Given those risks, disclosure of the data for the purposes of the assessment of Telstra's proposed Band 2 ULLS pricing cannot be justified.

Attacks on facilities and infrastructure

124. It is important to recognise that the risks involved with disclosure of information about the location of telecommunications facilities are not just hypothetical. For instance, numerous incidents have occurred in which telecommunications cabling was intentionally severed or destroyed in order to facilitate large-scale credit card fraud. These incidents have caused disruption to telecommunications services across the local area, as well as to major inter-exchange and inter-state cable links. Several incidents had significant impacts on major enterprise customers such as Coles Myer, Woolworths, National Australia Bank and Westpac, as well as Australia Post and even the New South Wales Police.
125. Attacks have also occurred which were issues-motivated, for example the recent destruction by arson of several telecommunications cables in the Kurnell area (believed to have been the work of persons with motives against the desalination plant located in that area). Such issues-motivated attacks can be well-planned and persistent, and could target any number of high-profile public projects or government or other buildings.
126. These attacks occurred without the assistance of information about the location and connectivity of specific cabling. Targeted attacks would have considerably greater repercussions. And once such information is made available, there is no controlling its dissemination. Considering the purposes and consequences of such attacks, it is clear that specific information about cable routes is extremely valuable and sensitive, and its disclosure has significant security implications.

Government acknowledgment of security risks

127. The Government acknowledged these risks during the course of the recent Request for Proposals for a National Broadband Network (RFP) process, when it requested Telstra to disclose limited samples of its network information in order to allow other bidders in the RFP process to formulate their proposals. The information that Telstra voluntarily supplied was disseminated under a statutory confidentiality regime set out in Part 27A of the Telecommunications Act 1997.
128. That statutory regime was specially implemented in order to ensure that the network information disclosed by carriers would have adequate protection while in the hands of both public officials and private companies. The information could only be disclosed to and used by those persons for strictly limited purposes associated with the RFP process. Detailed security and handling rules were formulated which specified the kinds of physical and electronic security measures that recipients of the information were required to implement prior to, and for the course of, their possession of the network information. Among these was a requirement for every

single disclosure of the protected information to be logged and accounted for. Criminal and civil penalties applied to breach of these requirements.

129. That regime was developed to govern dissemination of only a small, redacted sample of the network data that would have to be disclosed in order to understand the optimisation process. It was developed over a period of several months through the combined efforts of Parliament, the Department of Broadband, Communications and the Digital Economy and specialist government security agencies, in consultation with Telstra and other carriers who voluntarily disclosed such information.
130. Further, in the past, Telstra has provided some network data for the purposes of the Critical Infrastructure Protection Modelling and Analysis (CIPMA) Program, managed by the Critical Infrastructure Protection Branch of the Attorney-General's Department (CIP Branch) in conjunction with Geoscience Australia and the CSIRO. The purpose of that program is to identify interdependencies between key sectors so as to enhance awareness of security vulnerabilities that may not otherwise have been apparent to policy-makers or business participants in the sector. The three priority sectors CIPMA has been examining are banking and finance, energy and communications.
131. The geospatial information and network knowledge Telstra provided for the CIPMA Program is currently held by Geoscience Australia in an ASIO T4-accredited standalone facility. The T4 Protective Security Section of ASIO certifies facilities at a Top Secret security clearance level in accordance with the Government's Protective Security Manual.

Disclosure of network data is not worth the risks

132. These heavy security measures demonstrate how seriously both the Government and Telstra take the potential risks associated with disclosure of any data concerning the actual locations of telecommunications lines and other facilities.
133. It is one thing for the Commission and access-seekers to be able to examine the optimised network models upon which the TEA model operates. Optimised network data pose more limited risks, given that they cannot be used to gain information on the physical location of lines.
134. Raw pre-optimisation data stands in another category altogether. Its sensitivity from a security point of view requires that it be tightly held. Although Telstra would provide the information subject to confidentiality undertakings being signed, those undertakings are of limited utility. In particular, whenever confidential information is disclosed, the undertakings provide no ready means of determining who disclosed it or to whom. This results in considerably greater difficulties of enforcement than would have existed even under the Part 27A statutory confidentiality regime. Confidentiality undertakings are, therefore, patently inadequate for governing access to such sensitive network information.
135. While these concerns mean that the process of selecting the optimised set of routes from the existing routes in Telstra's network is not visible, the efficiency of the results is readily verifiable by several means.
136. Optus made similar arguments to the one quoted above in its submission in response to the ACCC's discussion paper. In response to concerns about the extraction of the base data used in the TEA model from Telstra's engineering databases, Telstra commissioned and filed the statement of Frank Hatzenbuehler, which attached a full

description of the process used to select only the efficient conduit routes in Telstra's CAN in band 2 areas.

137. Telstra submitted this statement to the ACCC on 18 November 2008. It appears, however, that there was a delay between when Telstra lodged the statement and when the ACCC notified parties of its existence and when a copy was ultimately provided to Optus. As a result, it appears that Optus' arguments extracted above have been made without consideration of the material Telstra filed with the ACCC on 18 November 2008.
138. Notwithstanding, Optus incorrectly argues that the ACCC or any party for that matter cannot "test whether the network routes used in the model are reasonable and whether these routes are likely to be consistent with those adopted by an efficient operator". While the TEA model does not have geo-coded information in it, this has no bearing on the ability of parties to test efficiency. There are a number of ways in which parties can test efficiency.
139. First, Telstra's *Measure of TEA Model Efficiency: ULLS Band 2* submission shows that the routes in the TEA model are 34.5% shorter than the actual routes in Telstra's network.
140. Second, the ACCC's cost model uses hypothetical algorithms to determine the location of cable routes in band 2 areas. These algorithms ignore natural or man-made obstacles to deploying trenches (e.g. rivers, buildings, houses etc) that add to the length of a telecommunications network and add to cost. Notwithstanding, the ACCC's cost model shows has 9.4% longer trench lengths than the TEA model⁸², which adds strong support to the efficiency of the route lengths after the optimisation process as described in the Statement of Frank Hatzenbuehler. While generally the user inputs into the ACCC's cost model are only 'placeholders', Telstra notes that very few user inputs go to trench length. Additionally, Telstra has notified the ACCC of many errors in the ACCC's cost model⁸³ Telstra considers that, if the model were fixed, the ACC cost model would produce even longer trench lengths than it does presently.
141. Third, in a very recent report, Network Strategies uses other means of measuring route lengths in a cost model it developed for a new customer access network in New Zealand. Network strategies adopted the following approach to estimating route distances for each exchange area:⁸⁴

In order to estimate access network (trenching) distances for each exchange area, we have determined the total distance of public roading within the boundaries (represented by the blue and red lines in Exhibit 8.3). Access network cables can be placed on both sides of a road or along one side of a road with frequent underground or overhead road crossings. In all cases, the total access network distance in urban and suburban areas is significantly greater than the total road distance. For costing purposes, we have assumed that the access network distance is twice the roading distance for each exchange area (note that this distance does not include the 'drop' distance from the access network in the road to the building or premises).

⁸² Telstra (2009), *Measure of TEA Model Efficiency: ULLS Band 2 – Version 2*, March 2009, section 5.

⁸³ <http://www.accc.gov.au/content/index.phtml/itemId/858091>

⁸⁴ Network Strategies (2008), *Broadband Strategies for New Zealand: Analysis of Possible Infrastructure Models*, 10 December 2008, pages 94-95

142. Network Strategies' approach of measuring the network route distance by twice the road distance yielded a weighted average route distance of 17 metres per home passed in residential areas in New Zealand. Given potential differences between New Zealand and Australian conditions, this figure should not be directly compared to the TEA model. However, Optus and Network Strategies might have conducted the same type of analysis for the Australian network with publicly available data. Table 2 sets out the results from such an analysis. It shows that the route distance in the TEA model is shorter than the route distance derived using Network Strategies approach – Network Strategies measure of network route distance in Band 2 ESAs is 26.53 metres per line and the TEA model's measure of network route distance in the same ESAs is 16.34 metres per line. The network route distance measured by the TEA model is 38% shorter than the measure adopting Network Strategies' approach.

Table 2: Access network per home passed in Band 2 areas in Australia

Measure		Total Distance (km)	Distance Per Line (m) ⁸⁵
Network Strategies' measure of network route distance (twice the total road distance) ⁸⁶		199,812	26.53
TEA model measure of network route distance	Distribution	100,404	13.78
	Main	19,238	2.55
	Total	119,642	16.34

143. It is disingenuous for Network Strategies to assert that the TEA model's network routes are inefficient with no supporting quantification, while at the same time implementing for another client an approach to estimating network route length that, if undertaken for Optus would have shown that the TEA model network routes are efficient. The ACCC should, not only give little weight to, but completely disregard Network Strategies assertions in relation to network route efficiency. They have made no attempt to make sufficient enquiry or undertake any investigation into relevant matters before making quite drastic conclusions, that they themselves have clearly considered appropriate in other contexts.

144. Fourth, previous Telstra's submissions to the ACCC demonstrate that Telstra's costs are lower than those expected to be incurred by carriers in the US serving a market with the same characteristics as the market Telstra serves in Australia.⁸⁷ This study indicates that Telstra's actual network, even before optimisation in the TEA model, is efficient relative to other overseas carriers.

145. Thus, while the TEA model does not include geo-coded information, the efficiency of the routes can be verified by comparing the results of the TEA model with several measures of efficiency. In other words, the proof is in the pudding.

146. Optus also claims:⁸⁸

⁸⁵ These figures are calculated by dividing the total distance by the total number of lines in the TEA model (7.5m), except for the TEA model measure of distribution network distance, which is divided by the number of distribution lines in the TEA model (7.3m).

⁸⁶ The road distance in band 2 is measured from StreetNet 2007 and ExcahngelInfo, which are public sources of information available to Network Strategies and Optus.

⁸⁷ Telstra (2007), *Submissions in the PowerTel-Telstra ULLS Access Dispute*, 16 August 2007, Annexure 9 titled 'Telstra's Cost Efficiency', Figure 4

⁸⁸ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.14

Network Strategies took issue with this non-transparent aspect of the TEA model, noting that it is not possible to vary the network architecture, and that inputs and assumptions in the TEA model are not visible and cannot be checked because of the way pre-modelling data has been incorporated into the TEA model network database. The ACCC noted in its Draft Decision that Network Strategies did not provide evidence to substantiate this view. However, Network Strategies stands by its original conclusions. An information paper produced by Network Strategies responding to this point in the Draft Decision is attached to this submission at Attachment 1. Network Strategies notes that:

“we are not easily able to see customer locations, network topology and the cable routes, because these are not included in the TEA model. We consider this data is crucial to the correct implementation of a model such as the TEA model. Furthermore a significant level of data is stored in the network database and is not easily viewed or able to be modified.”

147. Network Strategies’ claim that “we are not easily able to see customer locations, network topology and the cable routes, because these are not included in the TEA model” is incorrect. While there is no geo-coded mapping of the network, the TEA model clearly records each customer line (of which there are over 7,532,793), identifies each network structure point (of which there are 7,489,427) with which customers connect to the distribution network, the relative distances between network structure points, and traces (in linear form) the cable routes (for example, the cable route can be traced from one structure point to the next to the next and so on).

148. Network Strategies’ claim that “a significant level of data is stored in the network database and is not easily viewed or able to be modified” is similarly incorrect. The base data is stored in a Microsoft Access database (TEA-Data-v1.2.mdb in the Data directory where the TEA model is installed) which is a common application (part of Microsoft’s Office Suite of applications) that allows one to both view and modify data.

149. Optus states:⁸⁹

In the same [Network Strategies] report, the authors explain why determination of distribution area size and line densities are further important aspects of the cost modelling process which are not transparent within the TEA model.

150. Distribution area size and line counts are transparent in the TEA model. They can be seen in the ‘Eng-Dist-Engine’ workbook, ‘Distribution-Collapsed’ worksheet, in the columns labelled ‘Demand Served by Pillar’ and ‘Area (sq. km)’. That data are derived from Telstra’s operational databases.

151. Optus asserts:⁹⁰

Finally, Optus notes that its access to the TEA model has been inadequate. Optus refers the ACCC to its letter to Telstra dated 7 October 2008, attached as Attachment 5, which makes clear that its access to the TEA model has been inadequate despite Telstra’s offer of limited access to a single employee.

⁸⁹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.16

⁹⁰ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.17-3.18

Optus submits that due to the restrictions placed on the confidential information relied upon by Telstra in support of its proposed access price, access seekers have not had adequate opportunity to assess and interrogate the accuracy of that information, as well as to provide comments. Accordingly, the ACCC should place limited reliance upon the confidential information relied upon by Telstra, consistent with its approach in assessing the DTCS exemption applications.

152. Telstra's letter to Optus dated 16 December 2008⁹¹ responds in detail to Optus' non-specific and continued claims of 'inadequate' access to the TEA model. Amongst other matters set out in Telstra's letter, as well as in Telstra's *Response to ACCC Draft Decision*:⁹²

- 10 Optus external consultants are approved for full access to the TEA model - 5 of those have elected to execute and return appropriate confidentiality undertakings and have received the TEA model; and
- 17 Optus employees are approved for access to the 'access seeker' version of the TEA model – 15 of those have elected to execute and return appropriate confidentiality undertakings and have received the 'access seeker' version of the TEA model.

In those circumstances, Telstra rejects Optus' assertion that Optus' or any other access seeker's access to the TEA model has been inadequate.

153. Over 11 months into the process of considering Telstra's undertaking on 22 January 2009⁹³, Optus revised its position on allowing Telstra to access material over which Optus purports to claim confidentiality. Telstra's access is currently limited to a total of 12 individuals (comprising both Telstra employees and external advisers). Prior to this change in position, Optus limited access to only 2 Telstra employees⁹⁴.

154. Optus' revised position on access to Optus' confidential information includes a restriction denying any Telstra employee access to Optus' vendor pricing. This is identical to the position taken by Telstra in relation to the vendor pricing information contained in versions 1.0, 1.1, 1.2 and 1.3 of the TEA model and is consistent with Telstra's position that the 'access seeker' version of the TEA model excludes Telstra's confidential vendor pricing for reasons set out both in Telstra's letter to Optus dated 16 December 2008 and Telstra's *Response to ACCC Draft Decision*.⁹⁵ Optus criticises Telstra for a position which Optus, itself, has adopted.

155. The only other information excluded from the 'access seeker' version of the TEA model is Telstra's confidential network base data. On 2 September 2008, Telstra offered to provide a nominated Optus employee with access to a modified version of the TEA model which contained Telstra's confidential network base data. That offer was rejected by Optus without any compelling explanation.

156. In summary, therefore, Telstra continues to reject Optus' assertion that Optus', or any other access seeker's, access to the TEA model has been inadequate or has denied

⁹¹ Letter from Telstra to Optus dated 16 December 2008.

⁹² Telstra (2008), *Response to ACCC Draft Decision*, December 2008, paragraphs 198 - 223 in particular

⁹³ Email from Optus to Telstra dated 29 January 2009

⁹⁴ Email from Optus to Telstra dated 7 October 2008

⁹⁵ Telstra (2008), *Response to ACCC Draft Decision*, December 2008, paragraphs 206 - 208 in particular

those parties an adequate opportunity to comment on Telstra's undertaking. It is evident from the volume and content of submissions made that the contrary is, in fact, the case.

157. Telstra also considers Optus' submission that "*the ACCC should place limited reliance upon the confidential information relied upon by Telstra, consistent with its approach in assessing the DTCS exemption applications*" to be an inapposite comparison and entirely irrelevant.
158. While the ACCC elected to give less weight to some extremely specific evidence in the context of the DTCS exemption, no party other than the ACCC had access to the evidence. The restriction on access was not attributable to Telstra and the ACCC chose to rely on and give weight to alternate evidence, namely Infrastructure Audit Record Keeping Rule (RKR) data, instead.
159. Given the highly confidential nature of Infrastructure Audit RKR data, only the ACCC can access this material prior to the ACCC electing to rely on it. It is evident that, in the context of the DTCS exemption, the ability for Optus or other interested parties to access and comment on data is not essential for the ACCC to give weight to that information.
160. The TEA model has been widely accessed and commented upon by Optus along with other interested parties and their external advisors/consultants over an extended period of time. In the circumstances, there is no plausible reason to limit reliance upon Telstra's confidential material and the TEA model in any way. Optus' submissions to this effect must be rejected.

B.2 Inputs costs

161. Optus and Network Strategies claim that Telstra's cable and equipment prices are substantially higher than market prices available to Optus.
162. The vendor prices in the TEA model are based on the actual prices in the A&AS contracts (see Statement of CIC Telstra awarded the A&AS contracts after a competitive selection process and they should result in substantial savings to Telstra throughout their term.⁹⁶ The winning competitive firms provide similar services to other telecommunications companies (including Optus). The firms include:
- Visionstream – a subsidiary of Leighton Holdings, itself a publicly listed company on the Australian Stock Market, which built optic fibre networks for NextGen⁹⁷; operates, maintains and builds connectivity to the Reef network, which Optus leases⁹⁸; and installs DSLAM infrastructure in Telstra's exchanges for Optus, iiNet, Primus and others⁹⁹.
 - Servicestream – a publically listed company on the Australian Stock Exchange, which provides conduit and cable installation services for

⁹⁶ See, for example, 'Telstra Lines up \$2.5bn in Contracts', *Australian IT*, 3 September 2007, <http://www.australianit.news.com.au/story/0,24897,22353392-5013041,00.html>

⁹⁷ <http://www2.visionstream.com.au/projectlistingtemplate.php?id=42>

⁹⁸ <http://www2.visionstream.com.au/projectlistingtemplate.php?id=45>

⁹⁹ <http://www2.visionstream.com.au/projectlistingtemplate.php?id=41>

Energex in Queensland¹⁰⁰; installations, maintenance and logistics work for Optus' broadband networks¹⁰¹; and the roll-out of Vodafone's 2G and 3G mobile networks in Australia¹⁰².

- Silcar – a company jointly owned by Siemens Ltd and Thiess Pty Ltd, which provides services for Optus, Country Energy and Hutchison¹⁰³.

163. These successful Australian companies provide services to many different telecommunications firms (including Optus) and firms in other industries. Their success is driven by their ability to provide competitive rates. In light of the competitive selection process for the A&AS contracts, it is difficult to comprehend how one could conclude that their rates are not competitive, forward-looking and efficient.

164. Despite this, Optus states:¹⁰⁴

However, in its review of the TEA model, in the section on main network cable costs, Network Strategies found that:

“the per-metre installed cable costs (including jointing and Telstra’s loading factor) appear to be around 30% higher than what we would have expected, based on our experience of similar costs calculated in 2007.”

165. Network strategies provide no evidence or factual material in coming to this conclusion. Network Strategies simply state:¹⁰⁵

[REDACTED]

Optus CIC
[REDACTED]

[REDACTED]

166. Neither Optus nor Network Strategies provide any detail of Network Strategies' 'estimate'. Even if Network Strategies relied on confidential information, they could at least set out the method with which they carried out their estimate. This is important because, for example, Network Strategies does not state when they have observed input prices in other models. According to the ACCC's past decisions on ULLS copper cable prices have increased by approximately 4-5% per annum.¹⁰⁶ Thus, if the ACCC's price trends are to be considered accurate, input prices in the TEA model should exceed prices Network Strategies might have observed say 5 years ago, even though the prices Telstra pays for inputs have decreased as a result of the most recent contract negotiations.¹⁰⁷

¹⁰⁰ <http://www.servicestream.com.au/upload/2007-07-03%20Energex%20Major%20Services%20Contract.pdf>

¹⁰¹ Servicestream 2007 Annual Report, at page 11, <http://www.servicestream.com.au/upload/2007-09-24%20Service%20Stream%202007%20Annual%20Report%20FINAL.pdf>.

¹⁰² Servicestream 2007 Annual Report, at page 13, <http://www.servicestream.com.au/upload/2007-09-24%20Service%20Stream%202007%20Annual%20Report%20FINAL.pdf>

¹⁰³ http://www.silcar.com.au/html/OPE_TP.htm

¹⁰⁴ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.21

¹⁰⁵ Optus (2008), *Response to Draft Decision*, December 2008, Attachment 2 (Optus Confidential Category 1), page 3

¹⁰⁶ ACCC (2007), *ULLS Access Dispute Between Telstra and Primus (Monthly Charges): Statement of Reasons for Final Determination*, December 2007, paragraph 419

¹⁰⁷ See, for example, 'Telstra Lines up \$2.5bn in Contracts', *Australian IT*, 3 September 2007,

<http://www.australianit.news.com.au/story/0,24897,22353392-5013041,00.html>

167. Telstra, Ovum and Optus provide the only actual data on the record regarding actual cable prices. Ovum found that the Telstra cable costs were “*broadly in line with international benchmarks.*”¹⁰⁸ Optus response was confidential and is discussed in detail in a separate confidential submission. All the empirical evidence filed in this Undertaking shows that the Telstra cable costs are reasonable. Network Strategies’ opinion is not substantiated and is unverifiable. Consequently, the ACCC should place no weight on it.
168. Network Strategies also claims, in relation to the indirect overhead mark up:¹⁰⁹

[Optus Confidential]

Optus CIC
 [Redacted]
 [Redacted]
 [Redacted]
 [Redacted]
 [Redacted]
 [Redacted]

[and Optus Confidential]

169. It is not clear that Optus provided Network Strategies with Telstra’s documentation setting out the calculation of the overhead mark up.¹¹⁰ That documentation shows that Telstra incurred network support costs such as planning, supervision and construction, network and contract management that are directly related to a capital build program and are “*allocated to and capitalised as capital costs in Telstra’s financial accounts.*”¹¹¹ The Statements of [CIC] proceed to explain how the indirect capital ratio used in the model was derived from the amount of capitalised network management costs Telstra incurred. Since Telstra capitalises these costs, they are not accounted for in O&M. Further, since they are allocated directly to network assets, they are not otherwise accounted for as indirect capital.
170. Cable costs in the TEA model are derived directly from the AS&S vendor contracts. These contracts prices represent the amount vendors charge Telstra to provide their services, and would never include costs incurred by Telstra for such items as construction planning and contract oversight.
171. Optus also refers to a confidential statement (Attachment 3 to its report) to conclude:¹¹²

Further, Optus submits that many of the costs of cable (as well as the costs of other equipment) included in the TEA model are significantly higher than prices available in the market.

¹⁰⁸ Ovum Consulting, *Review of the economic principles, capital costs and expense calculations of the Telstra Efficient Access cost model*, Section 2.2 pg 11

¹⁰⁹ Optus (2008), *Response to Draft Decision*, December 2008, Attachment 2 (Optus Confidential Category 1), page 4

¹¹⁰ For example, the statements of [CIC] and [CIC]

¹¹¹ Statement of [CIC], Page 3

¹¹² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.23

172. This statement was premised on a confidential filing in this Undertaking. The contents of that filing are discussed in detail in a separate confidential submission. This attachment shows that the Optus assertion that the costs in the TEA model are “significantly higher” is incorrect.

173. Optus provides additional material in relation to MDF costs in the form of a confidential Optus employee statement, which is responded to in a separate confidential submission.¹¹³

B.3 Surface barrier costs

174. Optus argues:

- Assumptions about surface barriers should be based upon the surface barriers historically faced by Telstra (paragraph 3.32)
- The extent to which trenching and reinstatement costs were incurred historically remains largely unsubstantiated (paragraph 3.28);

175. In relation to the first point, Telstra considers that the historical costs faced by Telstra are irrelevant in an analysis of forward-looking costs. This is addressed in detail in section A above and in section B of Telstra’s *Response to Access Seeker Submissions* dated 18 November 2008.

176. Optus’ attempt to draw support for this aspect of its submission regarding surface barrier costs by reference to the High Court’s decision in *Telstra Corporation Ltd v The Commonwealth*¹¹⁴ is misplaced. In that case, the High Court considered the question of Constitutional validity of particular provisions of the TPA in relation to specific declared services including ULLS and whether those provisions effect an acquisition of property other than on just terms.¹¹⁵

177. The High Court’s judgment does not concern the manner in which the ACCC applies or should apply access pricing methodology to declared services. Nor does it provide any support, directly or indirectly for Optus’ assertion that assumptions about surface barriers should rely upon historic experience and costs.

178. In relation to the second point, despite its lack of relevance Telstra has prepared an analysis of the trenching and reinstatement works that Telstra has undertaken in the past. That analysis, discussed further below, shows that Telstra has incurred substantial costs in trenching and reinstatement historically. Indeed, basing costs on Telstra’s historical trenching works in the TEA model, from 2000 to the 2008, results in a higher cost estimate.¹¹⁶ The ACCC has criticised that analysis on the basis that it reflects only a short period of Telstra’s history. However, prior to approximately 2000, Telstra’s unionised workforce undertook all trenching activities; and consequently, the company did not create detailed records of the type of surface barriers that were dug, trenched through or reinstated, because such a breakdown was not necessary. The external contractors that have undertaken civil works since 2000 do record details

¹¹³ Optus (2008), *Response to Draft Decision*, December 2008, at footnote 74

¹¹⁴ (2008) 234 CLR 210

¹¹⁵ A summary of Telstra’s contentions appear in the judgment at paragraph 2, (2008) 234 CLR 210, paragraph 2.

¹¹⁶ Telstra, *Response to the ACCC’s request for further information on Telstra’s Band 2 ULLS undertaking made pursuant to s152BT of the Trade Practices Act dated 16 December 2008*, 13 March 2009

of the different trenching activities in order to ensure they charge Telstra the correct cost elements (e.g. reinstating asphalt as opposed to turf) for the work undertaken.

179. The facts contrast starkly with Optus' assertions that Telstra has not incurred costs associated with the breakout and reinstatement of surface barriers. In particular, Optus incorrectly asserts:

- The CAN was constructed in a gradual manner, by 1987 all areas in Australia had basic telephone services, and most CAN construction took place from the 1950s to 1980s (paragraphs 3.34-3.36); and
- The bulk of CAN construction occurred in greenfield developments in farmland where the predominant surface is turf (paragraph 3.37)

180. Optus' assertions are incorrect, as explained below.

181. First, the majority of CAN construction did not take place from the 1950s to the 1980s.

- In the 1986/87 financial year Telstra reported that it had 6.8m basic access lines, just 65% of the total number of lines in 2001/02 (10.6m).¹¹⁷
- A significant amount of CAN construction involved adding capacity into the network throughout band 2 areas after the 1980s. The additional capacity was required due to demand from infill housing, for second lines, for fax and later dial-up Internet services, and for the strong growth in apartment complexes and multi-dwelling units in already established areas.¹¹⁸
- The real value of Telstra's investment in CAN trenching, ducting and cables from 1987/1988 to 2006/07 is \$CIC in 2007/08 dollars.

182. Second, it is not true that the bulk of CAN construction occurs in greenfield developments. Instead, Telstra has in recent decades invested, and continues to invest, substantially in the CAN in band 2 areas. Much of this investment is outside of new estates and is undertaken to add capacity to the existing network for infill housing and multi-dwelling units, and for the demand for additional lines from existing customers.

183. Third, while today the developers of new estates typically incur the cost of trenching, this has not always been the case. Indeed, trench sharing in new estates is a relatively recent phenomenon. A statement lodged by Telstra demonstrates that the practice of sharing trenches with developers in new estates became widespread only in the mid 1990s.¹¹⁹ As explained in those statements, prior to the mid 1990s there were barriers to Telstra sharing trenches with other utilities in new estates.

¹¹⁷ See Telstra's Annual Reports 1986/87 and 2001/02, at page 8.

¹¹⁸ See the statements of CIC and CIC

¹¹⁹ Statements of CIC and CIC

184. Even if a historic approach were adopted, a \$30 ULLS price is reasonable. As discussed above (section A.5.6), Telstra’s historic costs of trenching and copper cable are higher than shown in the TEA model and would raise the ULLS cost by \$11.46.

B.4 Trench sharing

185. A forward-looking assumption for trench sharing in new estates should be applied to a forward-looking cost estimate. The trench sharing variable should be based on the proportion of premises that would be in new estates during the construction of a new entrant’s network over the course of one year. Telstra has previously submitted that the proportion of band 2 lots in new estates in a year is **CIC**. Telstra’s input into the TEA model is conservative at 1%.

186. Optus argues for a longer time frame than one year. Optus states:¹²⁰

Optus is pleased that the ACCC has acknowledged these issues in its draft decision, in which it stated:

“The ACCC view is that network construction would generally be planned a significant time in advance and would most likely occur in conjunction with other operators and utility providers resulting in the use of open trenches at no cost to Telstra...In this regard the ACCC considers a trench sharing value of between 13 – 17 per cent approximates cumulative sharing potential in new estates.”

187. Telstra considers that a 1 year build timeframe is a reasonable assumption for a forward-looking cost estimate, particularly since other costs associated with a lengthy build timeframe are not considered in the TEA model but would be incurred by a new entrant building out a new network over an extended period. In particular, a new entrant would incur the costs of capital over the duration of the build of a new network which would not be recoverable from customers (as the network would be unfinished). Also, the new entrant would incur costs associated with building up scale as it deploys the network over time.

188. **CIC**

189. Furthermore, on behalf of Optus, CEG model particular elements of cost that it believes would be incurred by a new entrant, but which are not included either in the ACCC’s Fixed Network Services cost model or the TEA model. The CEG report summarises:¹²¹

Using results of the WIK-MNCM, we have modelled the costs specific to termination that an efficient operator would face in achieving scale. The results of this modelling indicates that the WIK-MNCM cost estimate (including adjustments made by the ACCC) of 6.6 cpm should be increased by around 25% (or 1.7 cpm) to adjust for the costs of entry.

¹²⁰ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.45

¹²¹ CEG (2008), *Efficient Operator Benchmark: Report for Optus*, September 2008, <http://www.accc.gov.au/content/index.phtml/itemId/854270>

190. In short, CEG estimate that a new entrant's costs would increase by around 25% if it had a lengthy network build period to achieve scale. Telstra submits that assuming that a new entrant would build a network over the course of 1 year is conservative as it means that the cost model does not need to include the costs associated with a lengthy network build.¹²² Telstra conservatively estimated the costs of holding capital for a network build timeframe of 17 years to be \$2268 per SIO which is almost double the \$2717 per SIO cost in the TEA model.¹²³

191. Optus also implies that the trench sharing input should reflect Telstra's past ability to share trenches:¹²⁴

Optus submits that the TEA model significantly underestimates the level of trench sharing in new estates (as the model assumes a new entrant replicating the entire CAN within 1 year) and this is inconsistent with Telstra's prudent past ability to share trenches...

192. Optus argues that a value of up to 19% would be reasonable, presumably to reflect Telstra's historic ability to share trenches with the developers of new estates:¹²⁵

...the Commission should apply a value of at least 17 per cent and that a value of up to 19 per cent would not be unreasonable.

193. This claim starts with the 13% previously determined by the ACCC, based on an assumption of a new entrant rolling out a network over 10 years and ending 2003. Optus states that the ACCC should update its analysis to 2008, increasing the roll-out timeframe to 15 years.¹²⁶ Telstra notes that the ACCC has updated its analysis to 2008 and this provides the 17% figure¹²⁷ in the 13%-17% range determined in the ACCC's draft decision. Telstra queries the ACCC's analysis in a separate submission.¹²⁸ Further, Telstra notes that Optus built its HFC network in approximately 3-4 years (beginning in 1995 and ending in 1998/99)¹²⁹; and Telstra built its Next G network in 1 year.

194. Optus also presents its own analysis that increases the 13% figure.¹³⁰ Optus derives a figure of [Optus Cat 1 CiC begins [REDACTED] Optus Cat 1 CiC ends] as well but then, without explanation, states that a figure of 19% is appropriate.¹³² Notwithstanding this discrepancy, Telstra submits that a 15 year roll-out assumption is not reasonable and would warrant the inclusion of additional costs associated with such a timeframe, as argued by Optus in the context of pricing of MTAS. While Optus admits its analysis is simple¹³³, Telstra adds that it is wholly inaccurate as it is not forward-looking and fails to consider works that Telstra must undertake in new estates after they have been developed.¹³⁴ Further, while it is necessary to consider construction of an all copper network for the purpose of pricing ULLS, it is irrational to imagine such construction 10- 15 years in the future. It is unwise and unnecessary to contemplate such construction beyond the term of the Undertaking.

¹²² Telstra (2008), *Response to the ACCC's Draft Decision*, 23 December 2008, paragraph 331

¹²³ Telstra (2008), *Response to the ACCC's Draft Decision*, 23 December 2008, paragraph 331

¹²⁴ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.47

¹²⁵ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.46

¹²⁶ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.48-3.50

¹²⁷ Letter from ACCC to Telstra dated 18 December 2008

¹²⁸ Letter from Telstra to ACCC dated 17 February 2009. See also statements of [REDACTED] and [REDACTED].

¹²⁹ BIS (2001), *Telecommunications Infrastructures in Australia*, July 2001, pages 99 and 102

¹³⁰ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.56-3.59

¹³¹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.58

¹³² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.59

¹³³ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.57

¹³⁴ See also statements of [REDACTED], [REDACTED] dated 11 March 2009, [REDACTED] and [REDACTED].

195. Optus also relies on a United States FCC decision which quoted 55% trench sharing.¹³⁵ However, as set in Telstra's response to Optus' submission, the FCC expressly warned against using this decision in a context outside of its original intention.¹³⁶ The ACCC (and Optus) should heed the FCC's warning on the interpretation of its analysis.

196. In relation to the conduit in the CAN that Telstra leases to third parties, Network Strategies states:¹³⁷

[Optus Cat 1 CiC begins]

CiC
[Redacted text block]

[Optus Cat 1 CiC ends]

197. The TEA model adopts the latter approach for conduit leasing, which Telstra agrees is normal in cost modelling.

198. Network Strategies adds:¹³⁸

[Optus Cat 1 CiC begins]

Optus CiC
[Redacted text block]

[Optus Cat 1 CiC ends]

199. It is inappropriate to adopt an approach that assumes a cost sharing agreement for conduit space between Telstra and third parties when, in fact, no such agreement exists and conduit space is leased by Telstra to third parties. It is, on the other hand,

¹³⁵ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.52
¹³⁶ Telstra (2008), *Response to Access Seeker Submissions*, 18 November 2008, from page 61
¹³⁷ Optus (2008), *Response to Draft Decision*, December 2008, Confidential Attachment 2, page 11
¹³⁸ Optus (2008), *Response to Draft Decision*, December 2008, attachment 2, page 11

- Forward-looking price trends of raw materials mean that the tilted annuity traditionally applied by the ACCC should, in fact, be reversed if Telstra is to be compensated for its investment;
- Optus' illustrations of the application of the ACCC's approach to depreciation charges for ULLS assets are misleading and fail to highlight important adverse consequences for depreciation and ULLS charges to customers;
- Contrary to what Optus claims, the tilted annuity profile for depreciation reflects neither a 'real world' commercial nor an economic outcome; and,
- The application of a tilted annuity to depreciation for ULLS assets threatens the commercial viability of Telstra's investments.

B.6.1 Optus' approach implies a 'reverse' tilted annuity

206. Telstra has already described the contradictions inherent in the ACCC's asset revaluation approach in detail in its response to the ACCC's Draft Decision. Essentially, this approach relies on applying short-term price trends to important inputs for long-lived ULLS assets (such as copper and labour) to regularly revalue these assets. These price trends are volatile and uncertain, so that the ACCC's approach, if it were applied consistently, would imply frequent and major revisions in the valuations of sunk assets as a result of external factors. Contrary to either standard economic theory or commercial practice, these revaluations would take place entirely independently of underlying demand and supply conditions relevant to the ULLS services provided by the asset in question.

207. Predictions about future input costs, which underpin the 'forward-looking' approach to asset valuations that Optus supports, are demonstrably unreliable. The following analysis of ULLS input costs suggests that:

- The historical price trends on which the ACCC bases its recommendation for a tilted annuity bear no resemblance to likely future price trends for CAN assets – as such, the ACCC's forward looking tilted annuity calculation is fundamentally flawed;
- Properly considered, projected price trends for ULLS assets in fact suggest that a 'reverse' tilt should be applied to ULLS capital charges; and,
- The historical price trends on which the ACCC bases its recommendation for a tilted annuity are positive while the input costs in the ACCC's ULLS cost models have fallen over time.

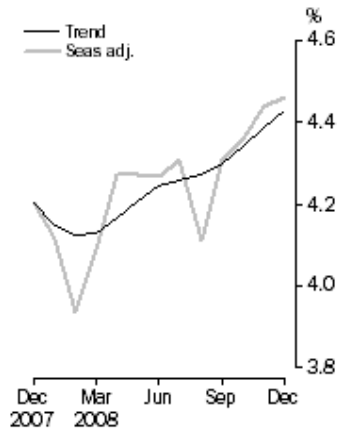
208. For example, ABARE's 2008 forecasts for prices in the order of \$7,000/tonne going forward have been cut by more than half, to around \$3,300/tonne in its November 2008 forecast. By the end of 2008, copper was trading at or below \$3,000/tonne on the London Metal Exchange and, as at early January 2009, prices had returned to their

2004 levels.¹⁴² There no reason to think that these dramatic price changes will be short-lived:

- US demand for copper has been severely affected by the collapse in new housing construction in that country, and that trend shows no sign of reversing;¹⁴³ and,
- Copper inventories are high and already close to 2004 levels, which will put further pressure on prices.¹⁴⁴ An even larger market surplus is expected for 2010.¹⁴⁵

209. Similar trends can be expected for future trends in labour costs. Recent estimates of the labour price index are not yet available, but the Australian Bureau of Statistics' December 2008 labour force survey shows that unemployment has, in fact, been trending upwards since the beginning of 2008 (Figure 4), and the OECD, in its most recent (November 2008) Economic Outlook expects unemployment in Australia to rise to 5.3 per cent in 2009 and 6 per cent in 2010.¹⁴⁶

Figure 4: Unemployment rate (ABS, December 2008)



Source: ABS, December 2008 Labour Force Survey

210. There can then be little doubt that the effects of the global economic downturn will depress wages in Australia. Both the OECD and the IMF warn of exceptional uncertainties affecting the world economies,¹⁴⁷ suggesting that any attempt to forecast future commodity and labour cost trends is fraught with risk. But forecasting errors are not simply a function of the current economic environment. Between 2000 and 2007, for instance, ABARE's forecast of copper prices *one year out*, have, on average under or overestimated actual copper prices by 20 per cent (Figure 5).

¹⁴² Copper Price Update, November 17th, 2008.

¹⁴³ <http://www.bloomberg.com:80/apps/news?pid=20601086&sid=a7Q2VUgEbOGE>.

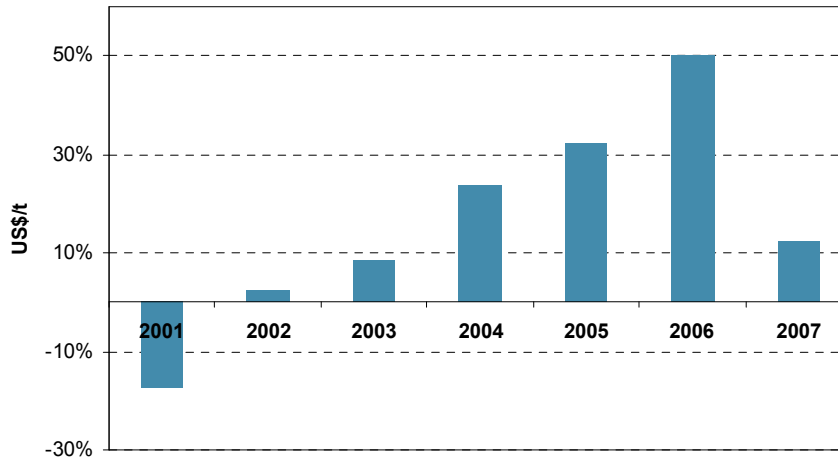
¹⁴⁴ Copper Price Update, November 17th, 2008.

¹⁴⁵ International Copper Study Group, Forecast 2008-2009, Press Release Date issued: 8th October 2008.

¹⁴⁶ <http://www.oecd.org/dataoecd/7/0/20209193.pdf>

¹⁴⁷ International Monetary Fund, World Economic Outlook, November 2008. OECD Economic Outlook No. 84, November 2008.

Figure 5: ABARE forecast error world copper price as a percentage of actual price



Source: ABARE commodities, December Quarter 2000-2007.

211. It is not surprising that ABARE's forecasts perform quite poorly, even over a one-year forecasting horizon. Many and complex factors determine commodity prices, which are, in any case, notoriously volatile. Prices for commodities such as copper are very difficult to forecast over any time horizon other than the immediate future. Optus expressly concedes this point.¹⁴⁸
212. The ACCC has made determinations as to the appropriate prices for plant and equipment in the past. These can be compared to the TEA model input prices to determine a trend for asset prices that has actually been used to set price by the ACCC. Table 3 summarises the prices used in the NERA model, used in 2000 by the ACCC, and the TEA model, to be used for prices in 2008. While the ACCC is yet to provide Telstra with the input for some cells in Table 3, it could be used to show two things. First, that the price trends for the plant and equipment that make up a large proportion of costs in band 2 have decreased over the last 8 years, not increased as assumed by the ACCC for its application of the tilted annuity. Second, the reason the ACCC uses the tilted annuity, that the tilt needs to account for increasing asset prices as the asset base is revalued over time, is undermined by the fact that the asset prices determined by the ACCC have in fact been decreasing, not increasing.

¹⁴⁸ Optus (2008), *Response to Draft Decision*, December 2008, footnote 68.

Table 3: Input prices into ACCC cost models and the TEA model

Equipment	Input prices (\$/metre)		Price trends (per annum)	
	NERA Model (used in 2000 by the ACCC) [A]	TEA Model (to be used for 2008) [B]	Compound average price trend implied by NERA and TEA models $[(B/A)^{(1/8)} - 1]$	Price trend used by ACCC in 2000 ¹⁴⁹
Copper cable 100 pair	*	[Results Distribution-Costs!D15]***	*	0%
Copper cable 400 pair	*	[Results Distribution-Costs!115]***	*	-1%
Copper cable 800 pair	*	[Results Distribution-Costs!H15]***	*	-1%
Trench Metro	*	CIC**	*	1%

* Input for cells is yet to be released by the ACCC (see letter from ACCC to Telstra dated 18 March 2009 and related correspondence)

**Weighted average cost of main and distribution conduit runs

*** Reference to TEA model

213. To summarise, depending on data yet to be provided by the ACCC, three conclusions could be drawn from this analysis:

214. First, the historical price trends on which the ACCC relies bear no resemblance to the price trends for CAN assets likely to occur over the duration of Telstra's Undertaking or the relevant assets' lives. Those historical price trends are particularly unreliable in the current environment.

215. Second, on *current* price trends – which differ profoundly from those assumed by the ACCC in its Draft Decision – and according to the 'forward looking' asset revaluation approach that Optus advocates, a 'reverse tilt' should be applied to the depreciation schedule for Telstra's ULLS assets. Optus appears to accept this conclusion (Para 3.70):

Conversely, if prices were falling then Telstra may potentially be under-compensated

¹⁴⁹ ACCC (2000), *A report on the assessment of Telstra's undertaking for the Domestic PSTN Originating and Terminating Access services*, July 2000, Table A 5.1

216. Third, the historical price trends on which the ACCC bases its recommendation for a tilted annuity are positive¹⁵⁰ while the input costs in the ACCC's ULLS cost models have fallen over time.

217. In the example calculations presented by Optus at Para. 3.73, therefore, and according to Optus' own logic, the figures in the column headed 'Tilted annuity (-4% price trend)' should, therefore apply to ULLS depreciation charges under the ACCC's approach. The profound implications for the depreciation charge applied to Telstra's ULLS assets – and therefore for ULLS charges – as a result of commodity price trends that are neither predictable nor stable over time only serves to highlight the fundamental contradictions inherent in any attempt to revalue long-lived assets on the basis of short-term cost factors.

B.6.2 Optus' example calculations are misleading

218. Optus' recommendations for the application of a tilted annuity mischaracterise the underlying trends in input prices. While these calculations show total capital charges for ULLS assets, they *do not* show that:

- The implied depreciation profile for these assets (that is, the is profile over time when Telstra can recover the cost of these assets) is significantly more backloaded than the overall capital charge;
- A more realistic asset life and depreciation profile significantly postpone not just the point in time when Telstra will have recovered any given proportion of the cost of its ULLS assets, but also the point when Telstra can even begin to recover the costs of these assets; and
- Also for a more realistic asset life, the tilted annuity calculation implies that the overall capital charge is significantly backloaded, so that customers would have to pay charges that are higher by several multiples towards the end of the asset's life.

219. These points are illustrated below with reference to Optus' own calculations. Optus offers an example of a tilted annuity calculation in table and graph form, and then concludes that Telstra "*will be adequately compensated by the ACCC's proposed approach to annuitisation*".¹⁵¹ In fact, Optus' calculation provides a very skewed view of the implications of the ACCC's tilted annuity calculation for the depreciation profile of ULLS assets, for two reasons.

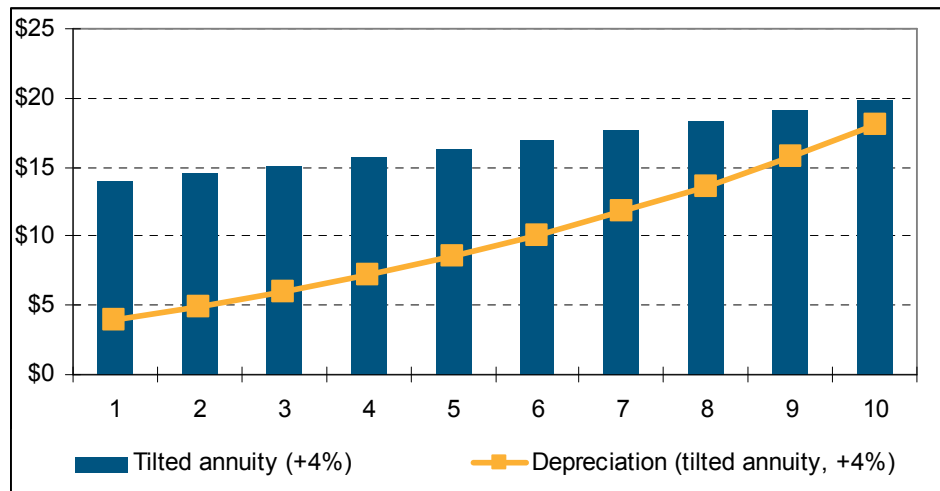
220. First, Optus' calculation shows only the total capital charge resulting from the tilted annuity calculation – represented below by the blue columns in Figure 6. Optus does not show the actual cost recovery component of the capital charge, i.e. the depreciation component. Depreciation is shown below by the orange trend line. The moderate tilt implied by the tilted annuity calculation for the total capital charge translates into a far steeper backloaded depreciation profile. The implication is that

¹⁵⁰ Telstra (2009), *Materiality Testing*, 23 March 2009, paragraph 38

¹⁵¹ Optus (2008), *Response to Draft Decision*, December 2008, paragraphs 3.73-3.76.

cost recovery for the asset in question is postponed far longer than Optus' calculation would suggest. For the short (10-year) time horizon considered here, only around 30 per cent of the cost of the asset will have been recovered half way through the asset's useful life (i.e. at the end of Year 5). Shifting cost recovery forward into an uncertain future creates a risk that, whenever conditions change so that Telstra must reduce its ULLS charges (e.g. because of competitive pressures or regulatory intervention), a significant portion of the cost of the assets that have not been recovered and will never be recovered. This point is illustrated in Section B.6.3 below.

Figure 6: Total capital charge versus the depreciation charge



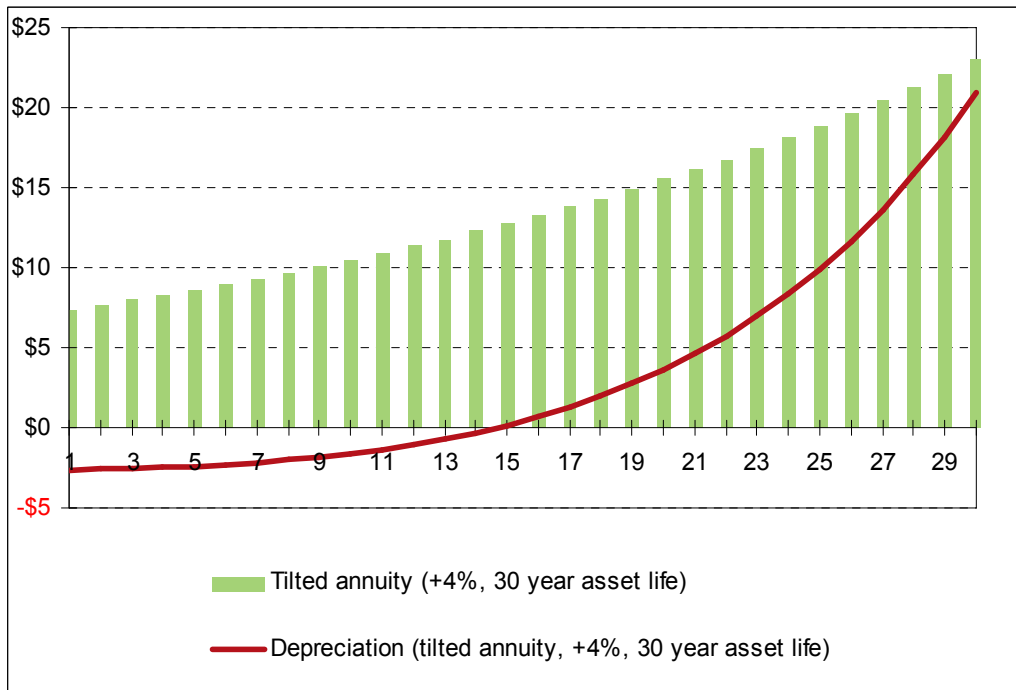
Notes: Same assumptions as Optus.

221. Second, Optus' calculation assumes a useful asset life of 10 years. In fact, only a small subset of IT-related ULLS assets have a useful life of 5 years or less. The great majority of ULLS assets have a useful life of between 10 and 40 years, for instance the useful life of:

- Copper cables is between 10 and 20 years;
- Optical fibre cables is 25 years; and
- Fixed installations, such as ducts/pipes and buildings, is between 30 and 40 years.

222. Delays in cost recovery become far more pronounced when real asset lifetimes are examined rather than misleading examples. Optus' illustration of the tilted annuity fails to highlight a central aspect of the ACCC's depreciation calculation. Under more realistic assumptions about the life of the relevant asset depicted in Figure 7, the depreciation charge is effectively negative for the first few years of the life of the asset, and only turns positive in Year 15.

Figure 7: Total capital versus the depreciation charge



Notes: Same assumptions as Optus.

223. What is equally striking, but not highlighted by Optus' example, is the steep increase in ULLS charges that is implied by the tilted annuity over longer timeframes. While the capital charge is just over \$8 in Year 1, it more than doubles over the life of the asset to more than \$19 by Year 30. In Optus' example customers would pay significantly more in 30 years' time (for what will then be aging assets) than the amount they pay today. Indeed, the implication of the tilted annuity that has been applied by the ACCC to date is set out in Figure 2 of Telstra's submission *Response to the ACCC's Draft Decision* dated 23 December. The network cost component of ULSL charges would increase from \$9.81 in 2005/06 to approximately \$68. If declines in demand are taken into account, the ULL price would increase to a greater extent.

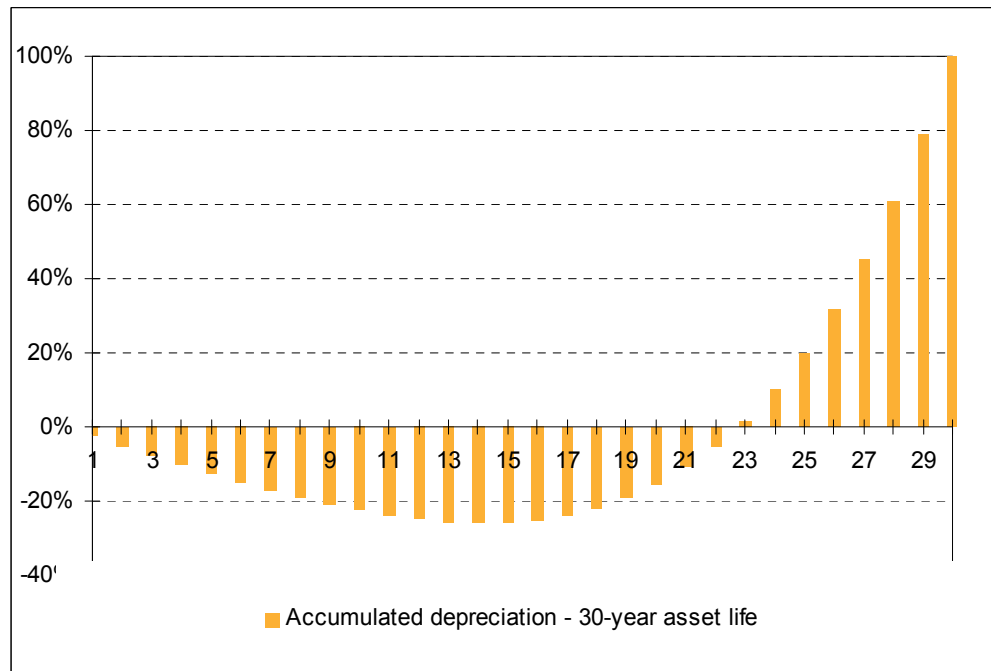
224. Figure 8 below illustrates the implications of a depreciation charge that is effectively negative at the beginning of an asset's life. Figure 8 plots the *accumulated* depreciation corresponding to the depreciation charge for the 30-year asset shown in Figure 7. For an asset with an initial cost of \$100 (as assumed by Optus):

- In Year 14, the accrued depreciation and interest cost that would be owing to shareholders is (-)\$26.00;
- By Year 23, 0.02 per cent of the original cost of the asset would have been recovered;
- By Year 25, less than 20 per cent of the cost of the asset would have been recovered; and
- Only by the end of Year 28 (that is, two years before the end of the asset's useful life), would more than half of the asset's costs have been recovered.

225. The implications of a negative depreciation charge are therefore twofold:

- Telstra must effectively make additional payments towards the cost of the asset and cannot begin to recover any part of the up-front cost of the asset until very late in the asset's life; and
- By the same token, a significant financial burden will be placed on future generations of ULLS users, who will then have to pay for the cost of assets purchased more than twenty years ago, and whose useful life is all but over.

Figure 8: Accumulated depreciation charges



Notes: Same assumptions as Optus.

226. In summary, Optus' calculations entirely fail to illustrate two key points, namely, that the application of a tilted annuity:

- Results in a depreciation profile that is significantly more backloaded than the overall capital charge; and
- Results in a depreciation profile that significantly postpones cost recovery by postponing, not just when Telstra will have recovered any given proportion of the cost of the assets it has invested, but also when Telstra can even *begin* to recover the costs of these assets.

B.6.3 The tilted annuity approach leads to significant regulatory risk

227. As highlighted in the preceding discussion, the tilted annuity leads to a very substantial deferral in the timing of capital cost recovery. This effect is particularly insidious for longer asset lives. For instance, for a typical ULLS asset with a useful life of 30 years, Optus' approach of applying a tilted annuity with a +4 per cent tilt factor implies that actual cost recovery – when accumulated depreciation becomes positive – only begins in Year 23. This effect is compounded by the risk of forecasting error and regulatory intervention. This section shows that, contrary to what is claimed by Optus:

- No enterprise operating on commercial principles would adopt Optus' depreciation approach, since any subsequent change in the tilt would immediately ensure that the full cost of assets could no longer be recovered; and,
- These types of financial risks cannot be handled within the conventional CAPM framework applied by the ACCC.

228. In Footnote 68 , Optus appears to recognise the problems that arise as a result of a reliance on uncertain input price trends, but then discounts them:¹⁵²

Issues of under and/or over compensation might only be posited to arise if forecast future prices (as derived by the price trends) are not equal to the actual future prices. It is correct that future price trends (and technological advancements) are extremely difficult to forecast. Inherent in the approach adopted by Telstra and the Commission is the potential for discontinuity in access prices as expectations change, but this is not inconsistent with what might be expected in a competitive market. Investors should not be concerned by the potential for forecasting error if prices are set based on the best unbiased estimate of future input price trends and technological development. Any residual uncertainty is fully diversifiable and is therefore factored into the equity betas used in the CAPM.

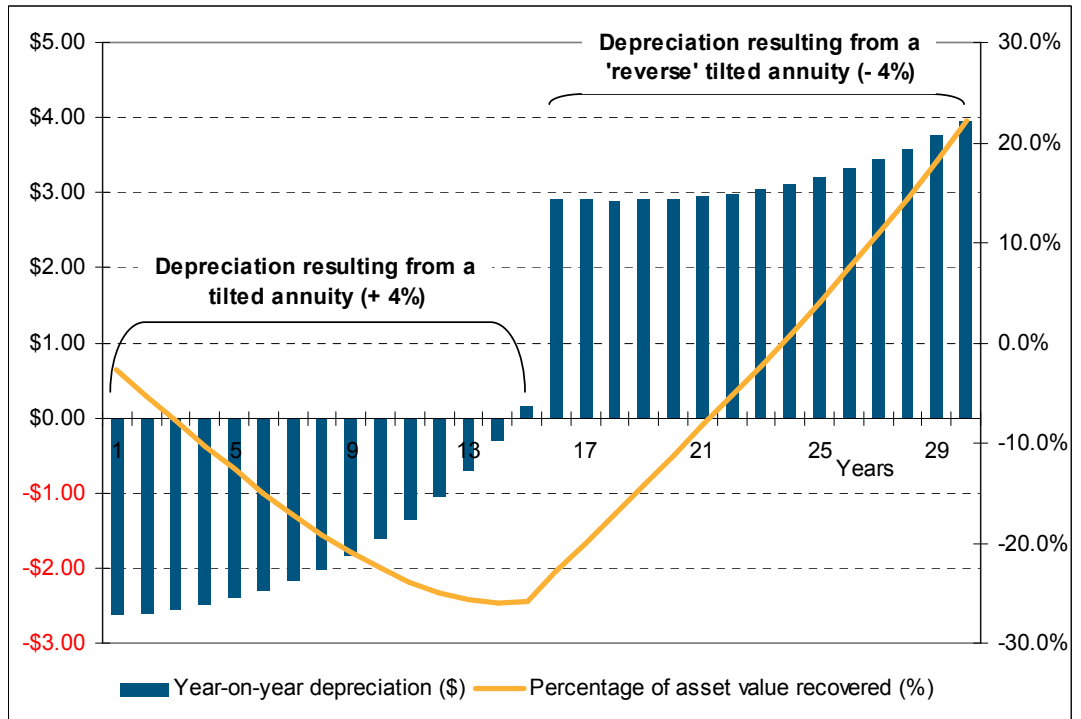
229. Optus attempts to persuade the reader of their submission that any error in predicting price trends is simply a risk, compensated for by the WACC. However, to classify error as a risk is incorrect. It is with a high degree of certainty that the ACCC has adopted a positive price trend for the tilted annuity while decreasing input prices in the models it adopted in successive rulings (see Table 3 above). The WACC does not compensate investors for certain losses associated with this approach to asset pricing.

230. In any case, the “discontinuity” to which Optus refers, represents very significant changes in asset valuations and, therefore, increases and decreases in capital charges, and ULLS charges. The ACCC's approach implies that a different tilt factor is applied to Telstra's ULLS assets with each revaluation for the purposes of deriving capital charges. Optus' recommends s continuously revaluing Telstra's asset base (and changing ULLS prices accordingly) using uncertain and volatile prices of key ULLS inputs, such as copper.

¹⁵² Optus (2008), *Response to Draft Decision*, December 2008, footnote 68

231. Optus claims that Telstra's investors "*should not be concerned by the potential for forecasting error*" resulting from such a valuation approach, but this is neither a 'real world' outcome, nor correct from an economic perspective. No new entrant in a competitive ULLS and downstream market would invest billions of dollars constructing a CAN and then immediately defer recovery of its investment to the distant future. Unless there are some very unusual circumstances, a business operating on commercial principles would expect to recover the costs of the assets it has invested in when it sells the services provided by these assets, i.e. when those assets are used. Quite simply, a business that defers cost recovery far into an uncertain future risks not recovering these costs because either competition or the regulator prevents it.
232. Figure 9 below illustrates the '*discontinuity*' that Optus refers to, and that Telstra's shareholders would bear. It shows the effect on depreciation of changing the tilt of the annuity from (+)4 per cent to (-)4 per cent half way through the asset's life. Such an outcome would be entirely plausible if the ACCC acknowledged its forecasting errors and now expected upward trends in commodities prices to reverse into price falls. As per Figure 7 above, applying a tilted annuity to capital charges implies that depreciation is negative until Year 14 – the cost of the asset can only be recovered in the final (seven) years of the asset's life. In contrast, an annuity with a negative tilt (consistent with falling input prices) implies that depreciation is slightly frontloaded, so that just under 50 per cent of the asset's value would need to be recovered in the second half of the asset's useful life. If the ACCC were then to switch to an annuity with a negative tilt half way through the asset's life, the vast bulk of the asset's cost – almost 80 per cent – could not be recovered. In short, any type of regulatory intervention that would prevent Telstra from raising ULLS charges in the latter years of an asset's useful life to the very high levels that the ACCC's approach implies, simply means that only a fraction of costs can ever be recouped.

Figure 9: Changing the tilt half way through the asset's life – implications for cost recovery



Notes: Tilted annuity of (+)4% applied from Year 1 to Year 15. Tilted annuity of (-)4% applied from Year 16 to Year 30 of an asset's life. Percentage of asset value recovered is accumulated depreciation as a proportion of the initial cost of the asset (\$100).

233. Further, companies do not use tilted annuities in practice. Telstra has reviewed the financial accounts and annual reports for the year ending 30 June 2007 for the following companies operating in the Australian telecommunications market to determine the method of depreciation adopted by them:

- iiNet Limited;
- Primus Telecommunications Pty Ltd;
- SingTel Optus Pty Limited;
- Vodafone Australia Limited;
- NEC Business Solutions Ltd;
- PowerTel Limited; and
- Hutchison Telecommunications (Australia) Limited.

234. Each of those companies and Telstra calculated depreciation on a straight-line basis over the estimated useful life of the asset.

235. Accordingly, adopting the tilted annuity approach would be, quite simply, inconsistent with the commercial practice of the major companies in the Australian telecommunication market.
236. Beyond the fact that the tilted annuity cannot be reconciled with any 'real life' (commercial) outcomes, Optus' reference to the theoretical framework of the Capital Asset Pricing Model (CAPM) as a means for managing financial risks is also incorrect. Telstra earns a risk-adjusted rate of return on its assets that is derived by the ACCC on the basis of the commonly used CAPM. However, the CAPM assumes that regulated returns follow a very specific pattern, which is not the case here.
237. The CAPM assumes that cash flow risks are normally distributed. Any normal distribution can be completely characterised by its mean and variance. Moreover, the normal distribution is symmetric about its mean. Thus, the CAPM assumes that the probability of a particularly poor outcome for cash flows (below average cash flows) – is the same as the probability of a correspondingly good outcome for cash flows (above average cash flows), with the probabilities of each outcome determined by the parameters of the assumed normal distribution. The CAPM cannot take account of skewed distributions of cash flow risks such as 'downside asymmetric risk' whereby upside risks to a firm's cash flow and profits are capped, but the downside risks remain.
238. In reality, it cannot be assumed that regulation has a symmetric effect on the distribution of a firm's cash flows – asymmetry is, in fact, one of the most striking characteristics of regulatory risk.¹⁵³ Regulatory risk arises in two circumstances:
- Ex ante, i.e. before a regulated firm invests, in the rules of the regulatory regime that permit the write-down of regulated assets, so that a regulated firm faces strictly downside risk about the future regulatory asset base; and
 - Ex post, i.e. after a regulated firm has made a non-reversible (sunk) investment, since the regulator cannot commit itself to a certain course of action. A frequently cited case is one where the regulator changes the rules ex post to reduce rates of return that have turned out to be 'supernormal' without compensating for lower than normal rates of return at other times when returns turn out to be poor.
239. Individually and in combination, these risks imply that a regulated firm can expect its profits to be capped, while it will continue to bear the risk of poor business outcomes. Both types of regulatory risk apply to Telstra, which has seen its ULLS asset base written down substantially in successive regulatory determinations.
240. Ex ante or ex post regulatory intervention of this type shifts financial risks from customers to shareholders, and regulation with a downside bias introduces a skew in the distribution of cash flows. In the context of the CAPM, which assumes that cash flows are normally distributed, the effects of regulatory bias can only be compensated

¹⁵³ Pell, Burkhard (2006), 'Regulatory Risk and the Cost of Capital: Determinants and Implications for Rate Regulation', *Birkhäuser*, 2006, P.40ff.

for by adjusting the regulated rate of return by an additional risk premium.¹⁵⁴ This adjustment is potentially substantial, and has not, to date, been made by the ACCC. For instance, if the amount invested in regulated assets is \$100, the expected rate of return for alternative investments with a corresponding risk is 10 per cent and the probability of a \$10 disallowance of the rate base (so that neither depreciation nor interest is earned on the disallowed part of the rate base) is 50%, a risk neutral investor would require a compensatory rate of return of 15.79%.¹⁵⁵ If, all other things are equal, the possible disallowance is raised to \$25, the allowed rate of return is 25.71%.

241. Table 4 illustrates the rates of return required for different combinations of disallowance probabilities and magnitudes to exactly compensate a risk neutral investor for the impact of regulatory risk on the expected rate of return.

Table 4: Probability and percentage of disallowance and the required rate of return

Probability of disallowance	Percentage of disallowance			
	5 %	10 %	25 %	50 %
5 %	10.28 %	10.55 %	11.39 %	12.82 %
10 %	10.55 %	11.11 %	12.92 %	15.79 %
25 %	11.39 %	12.82 %	17.33 %	25.71 %
50 %	12.82 %	15.79 %	25.71 %	46.67 %

Source: Pell, Burkhard, Regulatory Risk and the Cost of Capital: Determinants and Implications for Rate Regulation, Birkhäuser, 2006, P. 43.

B.6.4 The tilted annuity approach creates significant commercial risks for Telstra

242. The ACCC's proposal, supported by Optus, raises a number of concerns fundamental to any business seeking to remain commercially viable (such as Optus itself). Quite aside from the risk of forecasting errors and regulatory intervention in general, capital cost recovery should not be pushed back 20 or 30 years for competitive reasons. There is a significant risk that expenditures on these assets will, in fact, *never* be recovered.

243. Competition for ULLS services is already shifting (and will continue to do so) to alternative technologies and away from ULLS. Revenues from ULLS investments will fall. The risk of competitive bypass to Telstra comes from a number of sources, including from the National Broadband Network, from Optus' hybrid fibre coaxial (HFC) cable network, from wireless voice and broadband services, and from new fixed wireless networks provided by alternative network operators. Additionally, CAN fixed line penetration has been falling in recent years and is expected to continue to do so. Under, the ACCC's approach ever fewer customers would need to pay ever greater depreciation charges for investment undertaken a long way in the past.

244. It is a matter of simple economics that no firm operating in a commercial environment in which competitive pressures will become more pronounced would adopt the charging profile that is recommended by Optus. Optus is effectively asking Telstra's shareholders to finance investments whose costs can likely never be recovered. Singtel's (Optus' parent) own statements in recent investor presentations emphasising its efforts to improve shareholder returns on invested capital only serve to further highlight this general point that no commercial business would embark on

¹⁵⁴ Pell, Burkhard (2006), 'Regulatory Risk and the Cost of Capital: Determinants and Implications for Rate Regulation', Birkhäuser, 2006, P. 41.

¹⁵⁵ The expected return on the regulated investment must equal the expected return of alternative investments so that: $0.5 * 100 * (1+x) + 0.5 * (100-10) * (1+x) = (100) * (1+0.1)$ where x denotes the allowed rate of return on the regulated asset base.

investments without the expectation of a commensurate rate of return.¹⁵⁶ In summary, Optus' approach is neither economically efficient, nor "fair", nor does it represent a commercial outcome.

B.6.5 The stated reasons for applying a tilted annuity do not necessarily apply

245. In its Draft Decision on Telstra's Undertaking, the ACCC stated that "the return on capital and the return of capital should be calculated consistently to ensure fair compensation over the life of the firm's assets."¹⁵⁷ The ACCC's draft view was to adopt a tilted annuity approach on the basis that "if a zero tilt is applied then Telstra may receive an abnormal return when its assets are re-valued upwards in future regulatory periods in response to price trends."¹⁵⁸ The stated reasons for applying a tilted annuity are to ensure against cost over recover when asset prices are increasing over time and the asset base is revalued periodically. However these reasons do not apply.

246. First, data yet to be provided by the ACCC, set out in Table 3, is likely to show that while the ACCC has applied a positive tilt for the tilted annuity, asset prices have actually decreased since the ACCC's 2000 decision. Thus, not applying a tilted annuity would likely underestimate costs. This evidence is likely to highlight that the use of a tilted annuity, and the associated deferral of cost recovery, creates two added sources of risk: the risk of the ex ante price trend forecast being incorrect (which does not exist under the TEA model approach to depreciation), and the risk that future recovery will not be possible, for example, because future competition prevents deferred costs being recovered. There are likely to be both firm-specific and systematic components to the first source of risk, requiring an uplift to the WACC. The extent of the uplift is then further increased by the second source of risk.

247. Second, it is open to the ACCC to ensure there is no asset price revaluation in the future so that the prices in the undertaking carry on beyond the period of the undertaking. The ACCC agrees that this would mean that a flat annuity (similar to Telstra's approach to depreciation) would be reasonable:¹⁵⁹

The ACCC considers that, in principle, an access price based on a recovery of the network asset value using either a tilted annuity or a flat annuity can be reasonable in circumstances where the term of the proposed undertaking matches the life of the assets or where the price trend for the network asset is flat.

248. Thus, Telstra does not consider that over-recovery is the necessary result of adopting a zero-tilt approach. Such a result is premised on the assumption that the ACCC has committed itself to re-valuing assets upwards in future regulatory periods.

249. It is also based on the assumption that in future regulatory periods, the ACCC will determine a price for the ULLS in a vacuum, without regard to the prices previously determined for the ULLS. In fact, one of the relevant considerations in setting the price of ULLS in the future, is the price that has been set in the past. In setting prices for ULLS, it is within the ACCC's power to have regard to how prices for the ULLS were determined in previous regulatory processes. For example, if a zero tilt was applied in a previous regulatory process before the ACCC, the ACCC could consider whether or not

¹⁵⁶ Francis Heng, Investor Presentation, "SingTel: Asia's Leading Communications Company", 8th January 2008.

¹⁵⁷ ACCC, Assessment of Telstra's Unconditioned Local Loop Service Band 2 Monthly Charge Undertaking, Draft Decision, Public Version, November 2008, ("Draft Decision") p 114

¹⁵⁸ Ibid, p 123.

¹⁵⁹ ACCC, Assessment of Telstra's Unconditioned Local Loop Service Band 2 Monthly Charge Undertaking: Draft Decision, November 2008, at page 122

it would be appropriate in the current regulatory process before it, to re-value Telstra's assets upwards. Contrary to the ACCC's assumption, it is not bound to do so.

250. It is within the ACCC's power to take such a matter into account in both undertaking and arbitration processes, because the ACCC's discretion to consider matters other than the criteria listed in sections 152AH(1) and 152CR(1) respectively, is broad.¹⁶⁰ In both the Draft Decision and in its Statement of Reasons for the Final Determination in the PowerTel/Telstra ULLS access dispute ("**PowerTel Statement of Reasons**"), the ACCC not only took into account its previous decisions, but also purported to act consistently with those previous decisions. For example, in the PowerTel Statement of Reasons, the ACCC stated that it took into account "*analysis it has conducted on various issues in previous Part XIC processes*" including its decision in relation to Telstra's December 2005 ULLS Undertaking.¹⁶¹ Similarly, in the ACCC's Draft Decision on the Undertaking, the ACCC notes that it "*has also relied upon relevant information from sources other than submissions...[including] previous ACCC reports.*"¹⁶² Further, in both contexts, the ACCC has made decisions on particular issues which it notes are consistent with its previous decisions.¹⁶³

251. Accordingly, there is nothing to prohibit the ACCC from setting prices in the future so as to ensure consistency with its previous decisions, thus ensuring that Telstra does not over-recover its costs in adopting a zero-tilt approach. In this way the ACCC can ensure consistency between its decisions. Thus, it is open for the ACCC to adopt a zero tilt approach in the Undertaking process currently before it. Further, when the ACCC is setting the ULLS price in a subsequent period, it can take into account the manner in which it had previously set ULLS prices, and set the price so as to ensure that costs are not over-recovered.

B.7 Revised cost estimates

252. Optus changes the inputs into the TEA model to arrive at a cost estimate of \$22.73.¹⁶⁴ Optus had to assume extremely unrealistic assumptions to achieve this outcome. For example, it is patently unreasonable for Optus to assume that all trenches are in turf including across roads and driveways. Optus' result also fails to include ULLS specific costs of \$2.50 as determined by the ACCC.¹⁶⁵ As indicated in Telstra's recently filed materiality testing studies, many sets of reasonable inputs produce costs over the \$30 figure proposed by the undertaking.¹⁶⁶

B.8 Other claims by Optus

253. Optus make several assertions about the claimed benefits of the TEA model.¹⁶⁷ Most of Optus' assertions in relation to the TEA model are, indeed, in relation to the network base data in the TEA model not the TEA model itself. Telstra notes that the process of extracting the network base data from Telstra's engineering databases is documented in the expert statement of Frank Hatzenbuehler.

¹⁶⁰ See sections 152AH(2) and 152CR(2) of the TPA respectively.

¹⁶¹ PowerTel Statement of Reasons, at [64].

¹⁶² ACCC, Draft Decision, p 23.

¹⁶³ See PowerTel Statement of Reasons at [411], and Draft Decision p 110.

¹⁶⁴ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.77-3.79

¹⁶⁵ ACCC (2008), *Unconditioned Local Loop Service Pricing Principles and Indicative Prices*, June 2008; ACCC (2008), *ULLS Access Dispute between Telstra Corporation Limited and PowerTel (access seeker) Statement of Reasons for Final Determination*, April 2008, page 140; ACCC (2008), *ULLS Access Dispute between Telstra Corporation Limited and Primus (monthly charges) Statement of Reasons for Final Determination*, December 2007, page 130 and associated specific cost model.

¹⁶⁶ Telstra (2009), *Materiality Testing*, 23 March 2009

¹⁶⁷ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.82-3.107

254. Optus also claims that:¹⁶⁸

...if the TEA model is indeed based upon “actual cable routes”, this may make it less likely to meet the ‘efficient operator’ standard, since it may demonstrate that the model’s network design is not the design of an efficient operator, but instead is heavily influenced by the design of an inefficient legacy network (albeit that Telstra claims some cable routes have been removed).

255. Telstra has shown the extent of the efficiency of the TEA model in its submission titled *Measure of TEA Model Efficiency: ULLS Band 2*. That submission shows that the TEA model has 34% less trench distance than Telstra’s actual network in Band 2. Clearly, the TEA model base network data and Telstra’s legacy network are distinct.

256. Similarly, the updated efficiency study shows that the TEA model has 8.6% less trench distance than the hypothetical network of an efficient operator designed by the ACCC’s model.¹⁶⁹ Further, adopting the same approach as Network Strategies to measure efficient network route distances, by reference to the length of roads, shows that the TEA model has 38% less network route distance than Network Strategies would consider efficient.

C Benchmarking evidence

C.1 International benchmarking

257. Telstra, following precedent set by the ACCC and the Tribunal, has outlined in its response to the ACCC’s Draft Decision that:

- Many factors need to be considered in an international benchmarking analysis;
- Considering only a subset of these factors is insufficient;
- Considering only purchasing power parity and line density (incorrectly) is insufficient;
- Incorrect comparisons and conclusions are reached when only a subset of factors are considered and/or when those factors are considered incorrectly; and,
- If all factors are considered, this would be the equivalent to building a cost model such as the TEA model.

258. Since that report was lodged, the ACCC has stated:¹⁷⁰

¹⁶⁸ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 3.92

¹⁶⁹ Telstra (2009), *Measure of TEA Model Efficiency: Band 2 – Version 2*, 9 March 2009, section 5

¹⁷⁰ ACCC, *Domestic Mobile Terminating Access Service Pricing Principles Determination and indicative prices for the period 1 January 2009 to 31 December 2011*, pg 20.

However, substantive reliance cannot be placed upon international benchmarks in any arbitration proceedings or assessment of undertakings without making substantive adjustments to account for the differences between Australia and the benchmark countries as envisaged by the Tribunal in the Optus decision.

259. Rather than attempt to make any adjustments to the ACCC's international benchmarking analysis, Optus suggests that the socio economic, state of the relevant market and regulatory environments of the limited European countries surveyed by the ACCC are comparable to Australia.

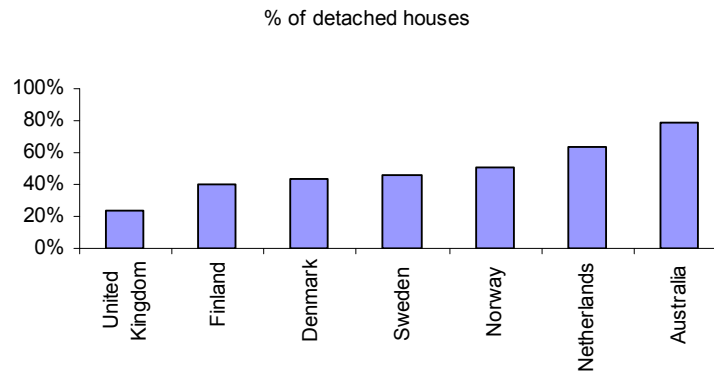
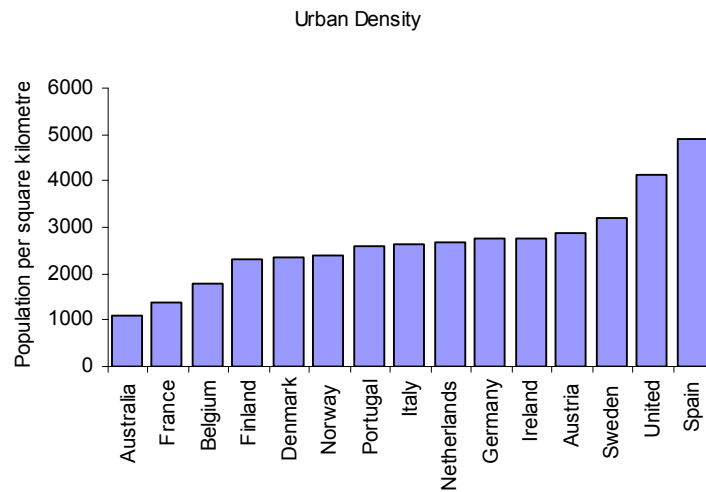
260. However, as discussed in detail in Attachment 1, the evidence provided by Optus is insufficient and inconclusive. Indeed, socio-economic, state of the relevant market and regulatory environment conditions are not highly relevant factors in determining if the drivers of ULLS costs (and therefore prices) in other countries are comparable to Australia.

261. Instead, the following are two important factors in determining if the ULL cost drivers of countries are comparable (there are other important factors discussed in the report of Ingenious Consulting Network dated December 2008):

- Population density of urban areas — all things being equal, lower density results in higher unit costs. Australia's urban density is by far the lowest of the sample countries at 1089 people per urban square kilometre and a national density of just 3 people per square kilometre.
- Type of housing mix — all things being equal, the unit cost to provide fixed telecommunications services to non-detached or shared buildings is lower than free-standing buildings. Australia has 16% more detached (free standing) homes than any country in the sample.

262. These two factors have not been adequately considered by the ACCC in its Draft Decision or by Optus. As shown below in Figure 10, Australia's population density in urban areas or mix of housing types do not resemble any country in the ACCC's ULL price international benchmarking exercise. Australia has a significantly lower urban density and a much higher proportion of detached freestanding houses. Thus, Australia's Band 2 ULL price should be notably higher than all other countries in the ACCC's sample.

Figure 10: Urban density and % of detached houses in Australia and overseas



263. Furthermore, the ACCC's benchmarking exercise excludes non-European nations. The ACCC's analysis is a European benchmarking exercise, not an international benchmarking.

C.2 Retail prices

264. Optus argues that:¹⁷¹

The ACCC has noted that in assessing the reasonableness of the terms and conditions in Telstra's undertaking, it may rely on various information including comparing the proposed access price with the access provider's retail price.

Optus agrees that useful information may be obtained by comparing the proposed access price with Telstra's retail price.

¹⁷¹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.15-4.16

265. Optus then compares Telstra's line rental price (\$30) less its estimate of avoidable retail costs (\$4.84) with the ULLS price of \$30. Such a comparison is inadequate as it does not recognise all the services (e.g. voice and ADSL services) that access seekers and Telstra provide over a ULLS line.

266. Telstra prepared an analysis of Optus' margins for all services it delivers over ULLS lines. That analysis shows that:

- Optus' average revenue on ULLS lines is \$100 per line per month;¹⁷² and,
- Optus' cost of converting a ULLS line into retail services (not including ULSL rental) is \$13 per line per month.¹⁷³

267. Thus, the correct comparison is between \$87 per line per month retail price net of retail costs and the \$30 ULLS price.

C.3 PIE II cost model

268. Optus also claims that the results of the PIE II model are relevant to this undertaking and are considerably lower than the results of the TEA model.

269. Importantly, it is worthwhile reiterating that the PIE II model was developed approximately a decade ago and was best in use for its time. The PIE II model was a hypothetical cost model that underestimated trench lengths as it assumed, for example, that trenches could traverse natural obstacles such as rivers.¹⁷⁴ There is much material that goes to the limitations of the PIE II model that has been filed in respect of Telstra's 2005 ULLS undertaking. Telstra refers the ACCC to all that material to inform the ACCC of the strengths and weaknesses of the PIE II model. Telstra expects that the ACCC has that material available to it. If not, Telstra can provide it on request. Telstra also pointed out in arbitrations with Primus that the PIE II model did not account for numerous factors that have been accounted for in the TEA model. These included trenching in paved areas, lead ins, an uplift in trench distances for laying cable through hills and around obstacles, and additional customer locations.

270. Adding those adjustments to PIE II, Telstra stated that it would yield band II network costs between \$33.51 and \$42.04 for 2007/08 (excluding specific costs).¹⁷⁵ Notably, the ACCC's NERA model produced a monthly network cost estimate higher than Telstra's Undertaking proposes.¹⁷⁶

C.4 Analysys model cost estimates

271. Optus refers to the Analysys cost model for Australian fixed network services (**Analysys model**). Telstra notes that the inputs in that model are 'placeholders' and have not been subject to any process of verification. The ACCC makes this clear in documentation for that model. Therefore, it would be inappropriate for Optus to rely on the values produced by the Analysys model.

¹⁷² Telstra (2008), *Response to the ACCC's Draft Decision*, Attachment 2, 'Optus Data' worksheet, rows 64 to 66

¹⁷³ Telstra (2008), *Response to the ACCC's Draft Decision*, Attachment 2, 'Optus Data' worksheet, row 13

¹⁷⁴ A brief review of the PIE II model is included in *Summary of Telstra's Undertaking*, 21 December 2007, at Attachment 1.

¹⁷⁵ Telstra, *Submission to Arbitrations between Optus and Telstra: Part 3 – ULLS Monthly Charges*, section D.2.7

¹⁷⁶ Telstra, *Submission to Arbitrations between Optus and Telstra: Part 3 – ULLS Monthly Charges*, section D.3

272. Telstra also notes that errors have been discovered in the Analysys model and are yet to be remedied. The ACCC has been notified of these errors.¹⁷⁷

D Impact on investment by access seekers

273. In Section 5 of its submission Optus argues that an increase in the price of ULLS in Band 2 metropolitan areas would significantly discourage investment in DSLAMs and associated infrastructure by access seekers. However, this is not consistent with publicly available figures from Optus on the profitability of ULLS-based supply of services nor is it reflected in the pattern of DSLAM investment that has occurred to date. Indeed, as explained in further detail below, Optus' analysis of DSLAM rollout has errors that lead to Optus' incorrect and inconsistent conclusion.

274. Furthermore, even if the \$30 price proposed by Telstra did lead to a reduction in DSLAM investment, Optus does not explain why this would be inconsistent with the legislative criteria. In particular, Optus assumes that an access price that maximises investment by access seekers in DSLAMs is consistent with the legislation. In Telstra's view, this is incorrect. As confirmed by the Tribunal, the legislation is aimed at encouraging efficient investment both by access providers and access seekers, not maximising investment by access seekers, and certainly not encouraging inefficient investment by access seekers through below cost ULLS prices. Further, the LTIE would be better served by facilities based competition between networks than investment in DSLAMs, which is just one part of the end service provided to consumers.

D.1 Profitability of ULLS-based supply

275. Optus claims that the proposed substantial and rapid increase in the ULLS charge would significantly discourage investment in DSLAMs and associated infrastructure by access seekers.¹⁷⁸ This claim suggests that, at the ULLS price of \$30, there would be insufficient margin available for efficient access seekers to supply services to end-users by using ULLS together with their own DSLAM and associated equipment. Optus provides no evidence to support this.

276. Rather, publicly available information suggests that substantial margins would continue to be available to access seekers at the ULLS price of \$30. As set out in Attachment 1 of Telstra's response to the ACCC's Draft Decision, based on Optus' own figures, Optus could earn a substantial EBITDA margin of 56% and an EBIT margin of 47% at a ULLS price of \$30 per month. These results are reproduced below in Table 5. While these margins are lower than those Optus currently enjoys, they are viable and would not 'significantly discourage investment'.¹⁷⁹

Table 5: Optus Bundled ADSL and Voice Profitability – ULLS price of \$30 (June Qtr 2007 and June Qtr 2008)

¹⁷⁷ <http://www.accc.gov.au/content/index.phtml/itemId/858091>

¹⁷⁸ Optus Response to ACCC's Discussion Paper, paragraph 5.2, p.40.

¹⁷⁹ While these figures were published by Optus prior to recent changes to the Australian economy, those changes are not impacting telecommunications firms. For example, see Communications Day, *Vodafone Resilient to Credit Crunch*, 4 February 2009. Mr Paul O'Sullivan, Optus Chief Executive, stated "despite the difficult environment, Optus delivered strong results in all areas" – SingTel, 'SingTel Group's results for the third quarter and nine months ended 31 December 2008' News Release, 20 February 2009.

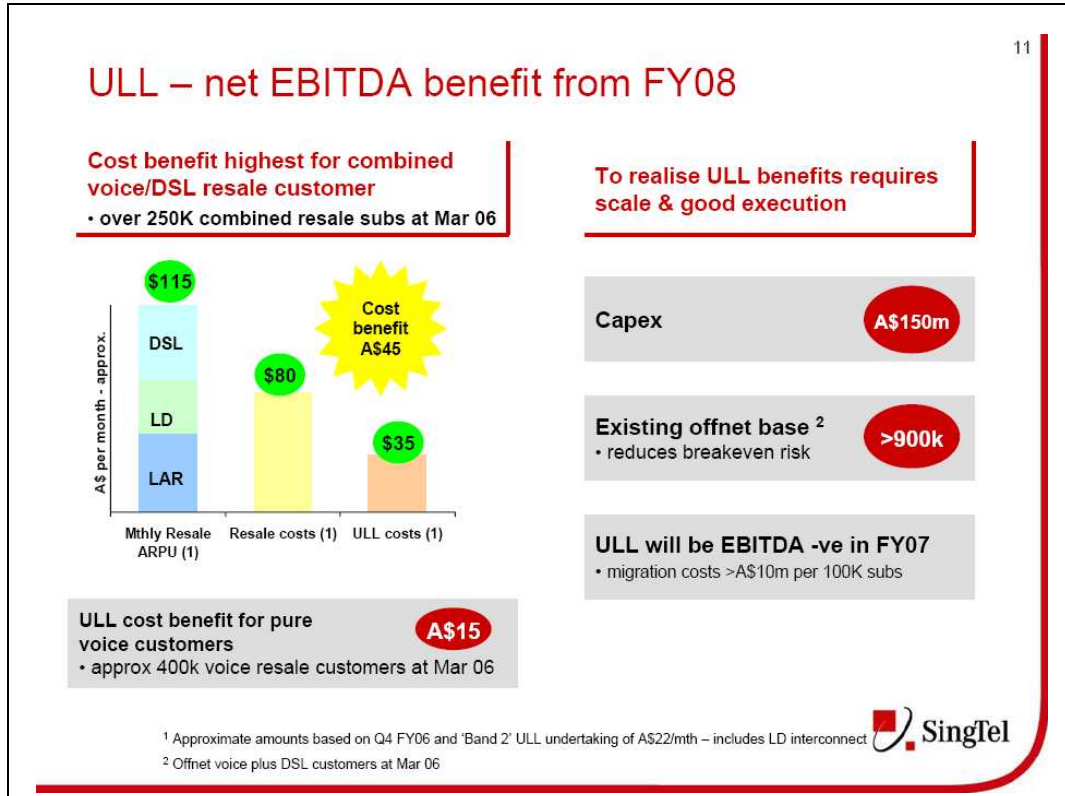
	June Quarter 2007	June Quarter 2008
Revenues	\$47,250,000	\$84,099,000
ULLS Monthly Rental Charges	\$14,175,000	\$26,010,000
Other COGS & Expenses (estimate)	\$6,142,500	\$11,271,000
Total COGS and Operating Expenses	\$20,317,500	\$37,281,000
EBITDA	\$26,932,500	\$46,818,000
EBITDA (%)	57.00%	55.67%
CAPEX charge	\$4,087,370	\$7,500,000
EBIT	\$22,845,130	\$39,318,000
EBIT (%)	48.35%	46.75%

Source: Publicly available Optus management reports, and SingTel Optus, Regulatory Update, SingTel Investor Day 2006, 29 June 2006 –Singapore, Paul Fletcher, Director, Corporate & Regulatory Affairs.

277. These substantial margins are also consistent with claims Optus has made in the past in relation to the benefits associated with ULL-based supply. For example, Slide 11 of SingTel Optus' Regulatory Update¹⁸⁰ (see below) claims a net EBITDA *benefit* of \$45 per month per customer as a result of moving from resale to ULLS and a total EBITDA margin of \$80 per customer per month. The notes to the slides state that this analysis was undertaken using a ULLS price of \$22 per month. Therefore, a ULLS price of \$30 would reduce these very large stated margins by just \$8 per month. It appears implausible that this relatively small reduction in Optus' substantial margin would 'significantly discourage investment' in DSLAM and associated infrastructure.

¹⁸⁰ SingTel Optus – Regulatory Update, SingTel Investor Day 2006, 29 June 2006 –Singapore, Paul Fletcher, Director, Corporate & Regulatory Affairs

Figure 11: Optus Briefing to Investors



278. While the Optus submission provides no margin analysis, it presents a graph of ACCC determined ULLS prices against DSLAM investment in an attempt to show that the total number of access seeker DSLAMs correlates to the indicative price set by the ACCC. Optus states:¹⁸¹

Allowing for a lag of a year or two for investment lead-time, it would appear likely that investment by access seekers in DSLAMs has been stimulated significantly by the ACCC's reductions in ULLS indicative prices in Band 2 first to \$22 and then later to \$14.30.

And¹⁸²

The message from this analysis should be clear: access seekers have made substantial investment in DSLAMs and associated infrastructure on the basis of a reasonable expectation that ULLS prices will remain close to the ACCC's indicative price, which is \$14.30 for the period 1 July 2007 to 30 June 2008 and \$16.00 for the period 1 July 2008 to 30 June 2009. It follows that Telstra's proposed substantial and rapid increase in the ULLS charge from \$14.30 (the regulated price at March 2008) to \$30.00 (the proposed undertaking price) would indeed significantly discourage investment in DSLAMs and associated infrastructure by access seekers.

¹⁸¹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 5.11, p.46.

¹⁸² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 5.14, p.46.

279. The price of ULLS undoubtedly has some influence over the demand for ULLS; indeed a zero price would stimulate demand even more. Sustainable, long term competition, however, is built upon access prices reflective of economic cost, which promote efficient investment. In any event, Optus' analysis is inaccurate. Figure 4 in the Optus submission implies that the ACCC reduced the Band 2 ULLS price to \$12.30 in mid-2005 and then increased the price by a small amount in each following year.¹⁸³ Paragraph 5.6 states that the roll-out of access seeker DSLAM networks commenced in 2005 and by 2007 the number of DSLAMs installed by access seekers in Band 2 areas increased by over 300 per cent. As noted in the quotes above, Optus then concludes that investment by access seekers in DSLAMs has been stimulated significantly by the ACCC's reductions in ULLS indicative prices.

280. However, Optus fails to note that the ACCC did not reduce the Band 2 ULLS price in mid-2005. As can be seen from Table 6 below, the ACCC's determination in relation to Band 2 ULLS prices at the levels indicated by Optus was first made in December 2007 and then backdated to July 2005. Therefore, access seekers would not have based DSLAM investment decisions for the period 2005 to 2007 on the basis of lower ACCC determined prices. In fact, if Optus' claims regarding the one to two year investment lead time are accurate then the price effect of the ACCC's December 2007 decision would affect DSLAM figures for December 2008 and January 2009, data not included in the Optus charts.

281. More likely, a range of other factors impacted the decision of access seekers to invest in DSLAM equipment, such as the significant margins available to Optus even at ULLS prices of \$30, the build-up of sufficient demand in particular Band 2 exchanges, and the reduction in DSLAM and associated equipment prices which made the transfer from resale to ULLS-based supply profitable.

¹⁸³ The exact figure of \$12.30 is not clear from the Optus chart but is inferred based on the ACCC determination rates for 2005/06.

Table 6: Summary of ACCC published arbitration determinations (available on ACCC's website as of January 2009)

Participants	Type of Determination	Date of Det.	Band 2 ULLS prices	Period effective
Chime Telstra	Interim Determination	10 April 2006	264 per annum (i.e. \$22 per month)	10 April 2006 until 12 months after April 2006
Chime Telstra	Revised Interim Determination	11 August 2006	\$17.70 per month	11 August 2006 until 10 April 2007
Chime Telstra	Final Determination	21 April 2008	\$14.30 per month	"Commencement: For the purposes of this schedule the price calculation date is 5 December 2007." (¶3 of Schedule to Determination)
Optus Telstra	Final Determination	21 April 2008	2005-06: \$12.30 2006-07: \$13.70 2007-08: \$14.30	"Commencement: For the purposes of this schedule the price calculation date is 18 November 2005." (¶3 of Schedule to Determination)
PowerTel Telstra	Final Determination	20 March 2008	2005-06: \$12.30 2006-07: \$13.70 2007-08: \$14.30	"Commencement: For the purposes of this schedule the price calculation date is 20 January 2006." (¶3 of Schedule to Determination)
Primus	Final Determination	20 Dec 2007	2005-06: \$12.30 2006-07: \$13.70 2007-08: \$14.30	"For the purposes of this determination the price calculation date is 3 February 2006." (¶16 of Determination)

Source: Published arbitration determinations (available on ACCC's website as of January 2009).

282. More importantly, Optus' argument appears to suggest that simply because a price rise would result in less DSLAM investment it should not be implemented. As discussed further below, the price for ULLS should be set at a level that best meets the legislative criteria not at a level that maximises access seeker investment in DSLAMs.

D.2 Maximising access seeker investment

283. Section 5 of Optus' submission focuses on investment by access seekers and implies that any reduction in access seeker investment is harmful. Optus argues that ULLS prices should be set to maximise access seeker investment in equipment dependent on ULLS such as DSLAMs. In Telstra's view, this clearly violates the legislative criteria and the interpretation of those criteria by the Tribunal.

284. In considering the efficient investment criterion set out in the legislation, the Tribunal states that access pricing must be considered from the perspective of both the access provider and the access seeker.¹⁸⁴ Further, from a societal viewpoint, only efficient investment should be encouraged.

285. Regarding efficient investment by the access provider the Tribunal states:¹⁸⁵

In general terms, efficient investment by an access provider in the infrastructure necessary to supply telecommunications services will be achieved when the firm is just able to recover the costs of such investment (inclusive of a normal return on its investment). If the firm is unable to recover the costs of efficient investment, it will not undertake such investment. If the firm is able to recover more than the costs of its investment, it will have an incentive to expand investment beyond efficient levels. An access charge should be one that just allows an access provider to recover the costs of efficient investment in the infrastructure necessary to provide a declared service.

286. In considering the efficient investment principle in relation to access seekers the Tribunal states:¹⁸⁶

An access seeker will have an incentive to make efficient “build or buy” choices if access charges are set to recover the efficient costs of investing in the infrastructure necessary to provide the declared service. If access charges are set at levels below those necessary to recover efficient costs, a potential access seeker may be encouraged to acquire access to a declared service when it would be more efficient for it to build its own infrastructure and bypass access to the declared service. This may also encourage inefficient investment in other infrastructure necessary to provide telecommunications services. For example, in the case of access to the ULLS, it may lead access seekers to deploy more DSLAM equipment in more of Telstra’s exchanges than it would if access charges were set to allow recovery of efficient costs. It may lead to inefficiently high levels of investment in other infrastructure by access seekers.

287. Overall, the Tribunal concludes that:¹⁸⁷

Overall, therefore, efficient investment by both access providers and access seekers would be expected to be encouraged in circumstances where access charges were set to ensure recovery of the efficient costs of investment (inclusive of a normal return on investment) by the access provider in the infrastructure necessary to provide the declared service.

288. However, Section 5 of the Optus submission on investment fails to discuss access prices with respect to efficient costs and the efficient level of investment by both access providers and access seekers. Instead it incorrectly assumes that the more investment undertaken by access seekers in DSLAMs, connected to the Telstra network, the better the outcome for end-users. This ignores the need to stimulate investment in competing networks and facilities based competition and to assure that access prices promote *efficient build or buy choices*.

¹⁸⁴ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [158].

¹⁸⁵ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [159].

¹⁸⁶ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [162].

¹⁸⁷ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [164].

289. Optus concludes Section 5 by noting that Telstra and other incumbents frequently argue that regulated access leads to lessened investment. Optus counters with a single study by Fontenay and Savin to represent recent research stating that international benchmarks do not support claims linking mandated unbundling and wholesale pricing to lessened investment.¹⁸⁸
290. However, according to Optus, the author of the Fontenay and Savin study has instructed that the article is a working paper and cannot be passed on to Telstra in its current unfinalised form. Therefore, at this stage Telstra has not had any opportunity to consider the detail and, therefore is unable to comment on the claims made by Optus with respect to the Fontenay and Savin study. However, the fact that it is not finalised means that its conclusions might well change. The ACCC, therefore, should certainly not have regard to it.
291. Other publicly available studies which have not been commissioned by Telstra support the contrary view – that regulated access has in fact reduced investment incentives.
292. Most notably a report by Waverman et al. (2007), prepared with the support of the European Telecommunications Network Operators' Association (ETNO), found that the approach to regulation in Europe, and particularly lowering of LLU prices, decreased investment in competing networks. They summarise their results as follows (¶1.11 to 1.14).¹⁸⁹

Our results demonstrate that lower local loop prices cause a strong substitution from broadband offered over alternative access platforms towards LLU-based broadband offerings. The substitution is marked even though our econometric analysis controls for several other key variables (such as the cost of deploying alternative access networks) that also help to explain the share of alternative access in total broadband. This substitution ultimately results in substantially lower investment in these alternative access platforms.

Our econometric analysis shows that, all else equal, a reduction of 10 percent in LLU price causes an 18 percent fall in the subscriber share of alternative infrastructure. This 18 percent fall in subscriber share results in hundreds of thousands less broadband subscriber lines that utilise alternative access technologies. Thus intense access regulation (as measured through the LLU price) weakens facilities-based competition and the benefits that such competition delivers.

This fall in subscriber levels has the impact of reducing investment in alternative access platforms in both the short-term and the long-term. In the short-term, investment associated with connecting customers and upgrading networks is foregone, while in the longer term, the very substantial investment associated with expanding network footprints is also jeopardised.

Based on a set of reasonable assumptions, we calculate that for a hypothetical "Europe" (defined in Section 5), the lost long-term investment

¹⁸⁸ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 5.15, page 46.

¹⁸⁹ LECG (2007), *Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation*, September 2007, Professor Leonard Waverman, Professor Meloria Meschi, Benoit Reillier and Kalyan Dasgupta, prepared with the support of European Telecommunications Network Operators' Association (ETNO).

in alternative access platforms exceeds 10 billion Euros as a result of just a 10 percent LLU price reduction.

293. In concluding, the authors note that “while access regulation may promote short-term competition based on the existing PSTN network, it does so at a substantial cost. This cost is the potential reduction in alternative infrastructure investment by both incumbents and entrants” (¶1.16).

294. In addition to the econometric analysis undertaken by Waverman et al. (2007), less formal empirical analysis and case studies also suggest that investment has been hindered by aggressive access regulation. Thus, Aron and Crandall have argued in a paper (prepared with funding by Telus) that:

This aggressive attitude toward regulation of ILEC broadband facilities is undoubtedly partly responsible for the lack of investment in new facilities in Europe. The European ILECs have lagged substantially behind their North American counterparts in fixed-wire network investment.

295. The authors’ base their views on analysis of data derived from company annual reports, indicating that, over the five year period, 2002-06, nine EU ILECs (Telekom Austria, Belgacom, BT, Deutsche Telekom, KPN, Telecom Italia, TDC, Telefónica, and Telia-Sonera) invested an average of 12.8 percent of annual fixed-wire revenues in their networks while the surveyed large U.S. ILECs invested an average of 16.6 percent of revenues.¹⁹⁰ Crandall (2007) also provides informal empirical evidence that suggests EU regulation has inhibited capital spending.¹⁹¹

296. Access regulation has also been found to affect investment behaviour in the United States. In particular, Crandall, Ingraham and Singer (2004) find that, in the United States, facilities-based line growth relative to unbundled network element (UNE) growth was faster in states where the cost of UNEs was higher relative to the cost of facilities-based investment.¹⁹²

E Impact on competition

297. In Section 6 of its submission, Optus claims that Telstra retains a dominant position in the fixed line telecommunications market and secures higher margins than its competitors, while the margins of resellers have been progressively squeezed. Based on these claims, Optus argues that an increase in the ULLS price would have the effect of reducing competition and strengthening Telstra’s monopoly position in fixed line telecommunications, thereby reversing the competitive gains that ULLS has delivered.

298. There are a number of difficulties with these claims:

- First, Optus confuses the concept of the promotion of competition with maximising the number of ULL services and minimising retail prices.

¹⁹⁰ Debra J. Aron and Robert W. Crandall, undated, *White Paper: Investment in Next Generation Networks and Wholesale Telecommunications Regulation*, p. 35.

¹⁹¹ Ex Ante or Ex Post ? The Change in Telecom Regulation in the EU and North America, Robert W. Crandall, Criterion Economics and the Brookings Institution, Presentation at the London Business School Global Communications Consortium Conference, 12-13 November, 2007.

¹⁹² Do Unbundling Policies Discourage ILEC Facilities-Based Investment, Robert W. Crandall, Allan T. Ingraham and Hal J. Singer, An Article Submitted to The B.E. Journals in Economic Analysis & Policy.

- Second, in presenting and drawing conclusions regarding Telstra’s profitability, Optus fails to take into account Telstra’s high level of capital investment compared with its competitors. To recover the cost of higher levels of investment, any company would need to earn a higher EBITDA.
- Third, Optus incorrectly suggests that the level of Telstra’s profitability implies it is “dominant” and hence there should be no increase in the price of ULLS.
- Fourth, Optus fails to consider that the most obvious explanation for Telstra’s high market share in the local access market is inefficiently low access prices for ULLS.

E.1 The promotion of competition

299. The competition criterion in the legislation is not aimed at achieving particular outcomes such as increasing the take-up of ULLS or minimising retail DSL prices as implied by Optus’ submission. Rather, as explained by the Tribunal, the competition criterion is concerned with the process of competition:¹⁹³

Competition is a process, rather than a situation: Re Queensland Co-Operative Milling Association and Defiance Holdings (1976) 8 ALR 481 at 514-515. It is the way in which firms interact, and respond to each other, to ensure they best achieve their individual objectives. Under traditional economic theories of the firm, firms are normally considered to operate with the objective of maximising profits. In general, it is assumed that firms with this objective will compete to win market share from each other. In turn, competition between firms in this way is desirable from a consumer perspective because it creates incentives for firms:

- to lower their prices towards their costs of production in order to attract more consumers to their business so that they can expand their market share; and

- to seek greater productive efficiencies (now and over time) so that they may lower their costs of production. In turn, this enables them profitably to lower prices for consumers in ways that will attract more consumers to their business in order to increase their share of the market.

And¹⁹⁴

Accordingly, we believe it is important not to confuse the objective of promoting competition with the outcome of ensuring the greatest number of competitors. That is, the Act aims to promote competition because of the benefits that result from the process of competition, such as lower prices for consumers and the displacement of inefficient suppliers by efficient suppliers of services. As the Tribunal observed in Sydney International Airport (supra) at par [108]:

¹⁹³ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [97].

¹⁹⁴ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [99].

“The Tribunal is concerned with furthering competition in a forward looking way, not furthering a particular type or number of competitors.”

(See also Sydney Services Pty Limited [2005] ACompT 7 at par [136]).

300. Effective competition is likely to be promoted when access prices are set at efficient costs so access providers and access seekers must compete on the basis of their relative efficiencies and to ensure access providers can recover their costs over the long-run. Setting access prices below the level of efficient costs will not promote the competitive process. Rather, it will encourage inefficiently high take-up of ULLS and force retail prices to levels that are unsustainable in the long-run.
301. The information put forward by Optus regarding the large increase in the number of competitor DSLAMs, the number of ULL services taken-up, the average cost of ULLS and the take-up of retail DSL services does not imply that the very low prices set for ULLS are consistent with the legislative objectives. It simply demonstrates that if something valuable is given away at very low prices then more of it will be purchased.
302. However, in the longer-run, which is the focus of the legislation, uneconomic, excessively low prices for ULLS are unsustainable and inconsistent with the objective of promoting competition. In particular, prices set below long-run efficient costs will prevent Telstra competing on its merits. Telstra will be forced to subsidise the supply of its own services from elsewhere while access seekers face artificially low ULLS prices, a situation that is unsustainable over the long-run. Access seekers will have no incentive to be efficient; and investment in competing local access networks will never occur even when it would be efficient and in the long-term interests of end-users.
303. If the price of ULLS is not set at the efficient cost of supply then the process of competition will be harmed and there will be no incentive for any significant investment in local access infrastructure.

E.2 Profitability and dominance

304. Optus presents a table of financial data for a number of telecommunications companies in an attempt to illustrate Telstra’s “dominance” in the fixed line market. Optus only presents EBITDA margins which do not take into account the costs associated with capital expenditure. Given the very large investments undertaken by Telstra in local access infrastructure compared with its competitors this gives a highly distorted view of profitability. A more appropriate comparison would be EBIT results, which would take into account the relative capital intensity of the companies that Optus is attempting to compare.
305. Optus provides no explanation why Telstra should not be rewarded for the very substantial investments it has undertaken. Shareholders should be rewarded for committing funds to risky infrastructure projects. If Optus and Telstra’s other competitors were willing to undertake significant investments in local access infrastructure then they might also be rewarded in the form of higher EBITDA margins. However, Telstra’s competitors have made the decision, driven largely by extremely low ULLS prices, to rely on Telstra’s local infrastructure to supply services to end-users.
306. The financial data and other information presented by Optus do not demonstrate dominance in an anti-trust sense and, hence, cannot be used to draw conclusions regarding Telstra’s market power. However, even if Optus’ claims regarding dominance were supported by a proper competition analysis (which they are not),

Optus does not explain why dominance implies that ULLS prices should not be increased to a level that reflects efficient cost, as this standard follows the relevant statutory criteria. Instead, Optus simply asserts “the proposed charge in the undertaking would thus have the effect of reducing competition and strengthening Telstra’s monopoly position in fixed line telecommunications”¹⁹⁵.

307. Optus’ arguments cannot be reconciled. Telstra’s high share of the local access market is driven by inefficiently low prices for ULLS set by the ACCC. The ACCC’s pricing of ULLS has made it more profitable for companies to use ULLS rather than undertake their own investment. Consequently, only Telstra substantially invests in local access infrastructure. This effect is noted by the Tribunal:¹⁹⁶

If access charges are set at levels below those necessary to recover efficient costs, a potential access seeker may be encouraged to acquire access to a declared service when it would be more efficient for it to build its own infrastructure and bypass access to the declared service. This may also encourage inefficient investment in other infrastructure necessary to provide telecommunications services. For example, in the case of access to the ULLS, it may lead access seekers to deploy more DSLAM equipment in more of Telstra’s exchanges than it would if access charges were set to allow recovery of efficient costs. It may lead to inefficiently high levels of investment in other infrastructure by access seekers.

308. Optus also claims that the resale margins available to Telstra’s competitors are tight and have been progressively squeezed.¹⁹⁷ However, Optus provides no evidence to support this claim. The imputation test results that Telstra must submit to the ACCC every quarter under the accounting separation record keeping rules (RKR) suggest that the margins available to Optus and other access seekers across fixed line telecommunications services are substantial and have not been “progressively squeezed”.

309. While margins vary from quarter to quarter, the latest results (September quarter 2008) indicate a margin of 11.02% across the fixed voice bundle for residential customers (see Figure 12 below). This margin was higher than the September quarter results for 2007 (10.48%), 2006 (8.10%) and 2004 (9.44%). While the September quarter results for 2003 (15%) and 2005 (14.30%) were higher than the September 2008 margins, the level and pattern of margins do not support Optus claim that resale margins on fixed voice services are tight and have been progressively squeezed. In fact, the most recent report on imputation testing and non-price terms and conditions, concludes:

*On the whole performance for wholesale customers has generally improved during the reported quarter. The ACCC will continue to monitor Telstra’s performance in ensuing quarters to ensure results remain appropriate.*¹⁹⁸

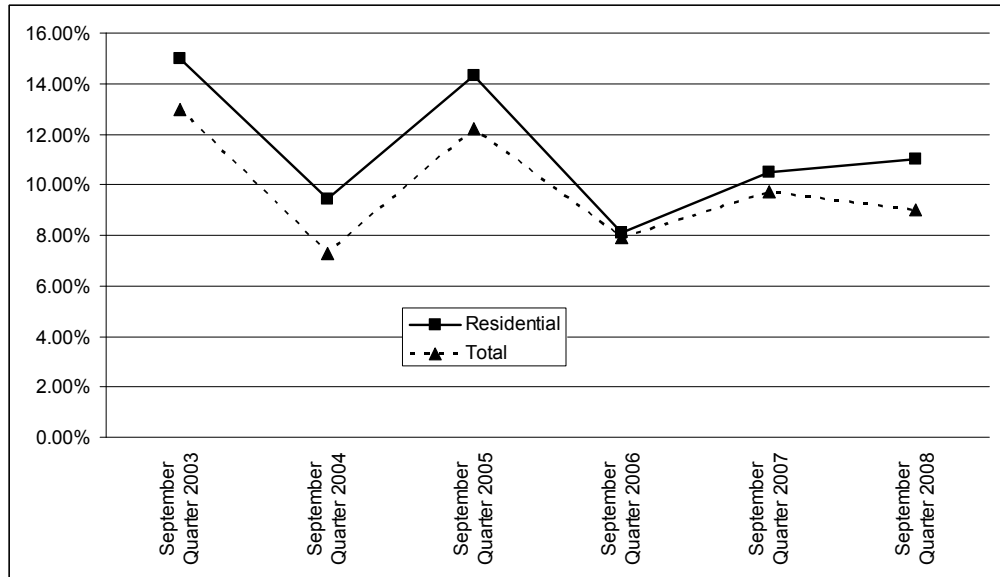
Figure 12: Imputation Test Margins for Fixed Voice Services: September Quarter 2003-2008

¹⁹⁵ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 6.25, page 55.

¹⁹⁶ Telstra Corporation Ltd (no 3) [2007] ACompT 3 at [162].

¹⁹⁷ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 6.9, page 50.

¹⁹⁸ ACCC (2008), *Imputation Testing and Non-Price Terms and Conditions Report relating to the Accounting Separation of Telstra for the September Quarter 2008*, December, page 5



Source: ACCC Imputation Testing and Non-Price Terms and Conditions Reports relating to the Accounting Separation of Telstra for: December Quarter 2004 (issued March 2005), September Quarter 2004 (issued December 2004), September Quarter 2005 (issued December 2005), September Quarter 2006 (issued December 2006), September Quarter 2007 (issued January 2008) and September Quarter 2008 (issued December 2008).

310. In considering the margins available to access seekers using resale services it is important to note that the imputation test margin reported is over and above any normal commercial return, as the ACCC requires Telstra to include the cost of capital (i.e. the return on capital) as a cost item within the imputation test. Consequently, the “margins” measured by the imputation test measure return in excess of the normal commercial returns, which the ACCC uses to measure Telstra’s “legitimate business interest.” Further, the costs that the ACCC requires Telstra to use in the imputation test are Telstra’s actual fully allocated historic costs prepared in accordance with the record keeping rules. Therefore, to the extent that access seekers recover common costs from other services or are more efficient than Telstra in the supply of fixed telecommunications services, the margin available on fixed voice services is even larger than that indicated by the imputation test results.

Attachment 1 European Benchmarking Analysis

[Contains partial Optus CiC throughout]

311. Precedent set by the ACCC and Tribunal with respect to international benchmarking shows that simplistic European benchmarking provides no guidance on whether a ULL price is reasonable. Following this precedent Telstra has outlined in its response to the Draft Decision (see section C.3 of Telstra's response to the Draft Decision) that:

- Many factors need to be considered in an international benchmarking analysis;
- Considering only a subset of these factors is insufficient;
- Considering only purchasing power parity and line density for ULL is insufficient;
- Incorrect comparisons and conclusions are reached when only a subset of factors are considered; and,
- If all factors are considered, this is the equivalent to utilising a cost model such as the TEA model.

312. The set of comparators used by the ACCC and supported by Optus in its response to the Draft Decision are insufficient and inappropriate.

313. The ACCC has submitted to the Tribunal factors which *might* be needed to ensure relevant comparator countries are included in any benchmarking exercise. However the ACCC has not limited itself to only these factors, stating that:¹⁹⁹

Before international benchmarking could be resorted to, [The Australian Competition Tribunal], must be satisfied that, notwithstanding the differences between Australia and the relevant international jurisdictions, those benchmarks were reasonable comparators. It submitted that relevant differences might include matters such as the definition of the regulated service, the applicable regulatory framework, the geographical price structure, the cost of capital, the prescribed cost standard (if any) and population concentration (as opposed to population density).

314. Optus has sought to provide evidence that the comparators provided by the ACCC are appropriate. Optus in its response to the Draft Decision has stated that:²⁰⁰

However, whilst Optus has no doubt that the proposed countries are appropriate comparators for Australia, there may currently be insufficient evidence before the ACCC to demonstrate this, particularly if Telstra were to appeal the ACCC's rejection of its undertaking to the ACT. The ACT has considered international benchmark evidence in the past and set a high standard for how evidence should be taken into account.

¹⁹⁹ Telstra Corporation Limited (No 3) [2007] ACompT 3, at [383-385]

²⁰⁰ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.4, pg 34

315. Optus appeals to the (non-exhaustive) list of criteria for international benchmarking outlined by the Tribunal's rejection of the reasonableness of its MTAS price, where the Tribunal concludes:

We do not consider that the international benchmarking analysis proffered by Optus is of any assistance to us in determining the issue as to the reasonableness of Optus' price. The range of prices derived by CRA is so broad as to be of little assistance. Further, the nature of the adjustments made by CRA and the adjustments to which it gave no consideration, render the figures derived an inadequate comparator for Australian conditions.

In any event, the nature of the international benchmarking exercise was such that it teaches very little, or nothing at all, as to whether Optus' price terms are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. In order to place any reliance upon the international benchmarking analysis it would be necessary to know much more about the regulatory environment within which they were determined, the state of the relevant markets and the socio economic environment in which the mobile services were operative.²⁰¹

316. Based on the Tribunal's statement, Optus concludes that the only factors that the Tribunal will consider as evidence for determining the appropriate comparator countries in a benchmarking exercise are those relating to market conditions, socio-economic, regulatory environment and population density:²⁰²

Optus has taken the guidance provided by the ACT into account in assembling its international benchmarking evidence, in order to demonstrate the relevance of the benchmark countries as comparators to Australia. Optus refers the ACCC to Appendix B for a detailed comparison of the countries; however in summary, Optus would make the following observations.

317. However, the Tribunal has established that, in an international benchmarking exercise and with specific reference to ULL, more than just market conditions, socio-economic, regulatory environment and population density should be considered:²⁰³

We are not satisfied that Telstra has provided sufficient evidence to support the use of international benchmarking. Although Telstra's benchmarking report contains summary information regarding ULLS regulation in other jurisdictions, in order to place any reliance upon the international benchmarking analysis it would be necessary to know much more about the regulatory framework, the cost of capital and the price structures employed in other jurisdictions. The summary tables provided by Telstra did not provide us with sufficient information to determine whether the benchmarks were reasonable comparators for Telstra's ULLS monthly charges. In addition, we are not satisfied that the adjustment of the benchmark ULLS charges only for purchasing power parity and line density takes into account all the adjustments that need to be made to the benchmark ULLS charges for them to be reasonable comparators. The costs of providing the ULLS (or similar services) can vary between jurisdictions for a myriad of reasons and we need to be

²⁰¹ Optus Mobile Pty Ltd & Optus Networks Pty Ltd [2006] ACompT 8 [296-297]

²⁰² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.9, pg 35

²⁰³ Telstra Corporation Limited (No 3) [2007] ACompT 3, at [385-386]

careful when comparing cost estimates across different jurisdictions. The benchmarking analysis conducted by Telstra only makes adjustments for a small number of the possible differences that might exist to generate cost differences in the surveyed jurisdictions. Telstra has not provided us with sufficient evidence to satisfy us that the cost estimates from other jurisdictions considered by Telstra in its international survey do not require further adjustment before we can rely on them to assist in determining the reasonableness of a proposed access charge for the ULLS.

318. The comparator countries included in the benchmarking exercise undertaken by the ACCC in the context of Telstra's current undertaking only include European Union nations. Telstra, in its response to the Draft Decision, raised the concern that no justification for the exclusion of other countries is given.²⁰⁴

Indeed, no justification is given as to why these 14 countries were selected as appropriate comparators in the first place, or why other countries were not selected.

319. The exclusion of non-European nations lends no support to the ACCC's international benchmarking as being truly international, rather it is European benchmarking. Conclusions drawn from the ACCC's ULL price benchmarking provide an incomplete view of international ULL prices and should not be relied upon as evidence of an international benchmarking exercise.
320. In any case, as set out below, the evidence provided by Optus in support of the comparator countries in the ACCC's ULL price benchmarking exercise is insufficient and the conclusions reached by Optus are incorrect.

Population density and mix of housing type

321. Two of the most important drivers of CAN costs have not been considered by the ACCC or Optus in the European benchmarking exercise. The ACCC has implicitly acknowledged the importance of population density as a driver of per loop ULL costs in its Draft Decision by including 'Population per square km' figures in its table of benchmark ULL prices. As discussed in the Ingenious Consulting Network's report attached at Appendix 3: International Benchmarking Report of Telstra's response to the Draft Decision, these figures are misleading as they are averages of national density for other countries but only band 2 densities for Australia.
322. Table 7 provides both national and urban densities per square kilometre of each country in the ACCC's table of benchmark ULL prices. Australia's densities are significantly lower than those in the other countries sampled, with an urban density of 1089 people per square kilometre and a national density of 3 people per square kilometre. This difference implies that Australian prices should be significantly higher than the prices overseas, all other things being equal.

²⁰⁴ Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to the ACCC's Draft Decision. December 2008, pg 116.

Table 7: Urban and national population densities

	Urban Density per square km 2008*	National Density per square km 2008*
Australia	1089	3
France	1393	111
Belgium	1801	345
Finland	2317	16
Denmark	2353	126
Norway	2391	14
Portugal	2587	115
Italy	2642	196
Netherlands	2671	393
Germany	2750	231
Ireland	2761	60
Austria	2866	99
Sweden	3184	20
United Kingdom	4145	249
Spain	4897	87

Source: Calculations from Demographia World Urban Areas: Population & Density

Source: <http://www.oecd.org/dataoecd/36/57/38449405.xls>

323. The mix of house type is another factor that drives the cost of the CAN. All things being equal, the unit cost in an area dominated by apartment blocks or shared buildings is lower than for areas dominated by detached housing. Table 8 provides the housing mix by type for countries in the ACCC benchmarking sample where data is available. Australia has substantially more detached (free standing) homes than any country in the sample for which data is available (16% more than the next highest country the Netherlands). Further, Australia has substantially lower portion of its housing mix comprised of flats and apartment blocks (11%) than the rest of the ACCC benchmarked countries.

Table 8: Type of housing mix

	Detached	Semi-Detached	Flat / Apartment	Other/ Attached/ Terrace
Australia ²⁰⁵	79%	9%	11%	1%
Austria	--	--	--	--
Belgium	--	--	--	--
Denmark ²⁰⁶	43%	15%	42%	--
Finland ²⁰⁷	40%	--	44%	16%
France	--	--	--	--
Germany	--	--	--	--
Ireland	--	--	--	--
Italy	--	--	--	--
Netherlands ²⁰⁸	63%	--	37%	--
Norway ²⁰⁹	51%	11%	24%	14%
Portugal	--	--	--	--
Spain	--	--	--	--
Sweden ²¹⁰	45%	--	55%	--
United Kingdom ²¹¹	23%	32%	18%	26%

324. Therefore based on both urban and national population density measures and housing mix the benchmarked countries in the sample are not appropriate comparators to Australia

Socioeconomic environment

325. Optus in its response to the Draft Decision states:²¹²

The countries in the sample are all comparable to Australia in terms of the socio-economic environment, because in all sample countries (including Australia):

-GDP per capita in 2000 prices was above US\$11,445 (millions) in 2008;

²⁰⁵ [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/E2DF5B5D85C716FACA25748E00125614/\\$File/41020_housing_indicators_2008.xls#Table 2'A1](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/E2DF5B5D85C716FACA25748E00125614/$File/41020_housing_indicators_2008.xls#Table 2'A1)

²⁰⁶ http://www.dst.dk/HomeUK/Statistics/focus_on/focus_on_show.aspx?sci=1009

²⁰⁷ http://tilastokeskus.fi/til/asu/2007/asu_2007_2008-05-21_tie_001_en.html

²⁰⁸ <http://www.vrom.nl/pagina.html?id=37366>

²⁰⁹ http://www.ssb.no/english/subjects/02/01/fobbolig_en/tab-2002-09-23-01-en.html

²¹⁰ http://www.scb.se/templates/tableOrChart___237370.asp

²¹¹ <http://www.statistics.gov.uk/StatBase/Expodata/Spreadsheets/D7520.xls>

²¹² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.11, pg 35

-GDP PPP (Absolute) International Dollars was above \$18,590 (millions) international dollar [sic] in 2007;

-Consumer price indices were in the range of 113 to 126 in 2007;

-Gini index was in the range of 0.27 to 0,41 in 2008;

-Literacy rate was above 98% in 2008; and

-Unemployment rate was lower than 10% of population in 2008.

326. Optus provides insufficient evidence that the socio-economic environment of the comparator countries is properly comparable to Australia for the reasons outlined in the following sections.

CPI measures

327. The column headed 'CPI in 2007' in Table 9 summarises the national CPI figures as provided by Optus in Appendix B: International Benchmarking in its response to the Draft Decision. The CPI is a measure of the percentage change in the price of a common basket of consumer goods and services in relation to the base year of the index.²¹³

²¹³ OECD, *Sources and Definitions: Consumer Price index*, <http://stats.oecd.org/mei/default.asp?lang=e&subject=8>

Table 9: Consumer price index and relative labour cost index

	CPI in 2007	Base year of CPI = 100	CPI Q3:2007 Base 2000	CPI Q3:2008 Base 2000	2007-08 Inflation rate	Relative labour Cost Index Base 2000
Australia		1989-90	123.52	129.70	5.00%	145.32
Austria		2005	114.68	118.95	3.73%	101.39
Belgium		2004	115.07	121.50	5.59%	110.02
Denmark		2000	113.97	118.70	4.15%	127.87
Finland		2005	110.55	115.61	4.58%	89.25
France		1998	113.55	117.25	3.25%	107.75
Germany		2005	112.38	115.83	3.07%	93.15
Ireland		2006	130.56	136.23	4.35%	103.37
Italy		1995	117.49	122.16	3.97%	141.17
Netherlands		2006	116.25	119.93	3.16%	120.92
Norway		1998	111.94	117.22	4.71%	128.26
Portugal		2002	123.44	127.19	3.03%	104.64
Spain		2006	124.46	130.56	4.91%	127.51
Sweden		1980	111.35	116.11	4.28%	86.72
United Kingdom		2005	112.45	117.86	4.81%	93.53

328. The countries in the ACCC sample are not appropriate comparators for several reasons.

329. First, CPI does not measure the cost of inputs to production of firms (supply side inflation) and is therefore not relevant for determining if the comparator countries in the ACCC's benchmarking exercise are comparable to Australia. The column headed 'Relative labour Cost Index Base 2000' shows the inflation of labour costs (or the price at which people in a nation are willing to sell their labour) as reported by the OECD as an input to a firms production since 2000. This index directly captures the costs of labour involved in producing goods and services for firms and therefore directly measures the costs of producing products such as ULL. Australia has the highest reported increase in labour costs since 2000 with an increase of over 45% (above the base of 100). This increase is clearly above that in all the other countries surveyed by the ACCC.

330. Second, even if CPI was relevant for determining the appropriate comparator countries for benchmarking, the OECD warns against the dangers of international comparisons of CPI stating:²¹⁴

²¹⁴ Ibid.

Consumer Price Indices (CPIs) measure the average changes in the prices of consumer goods and services purchased by households. In most instances, CPIs are compiled in accordance with international statistical guidelines and recommendations. However, national practices may depart from these guidelines, and these departures may impact on international comparability between countries. Key methodological issues which can have an impact on the international comparability depending on the approach used by individual countries are...

331. Third, Optus fails to acknowledge that the relevant base year of each nation's CPI is different. The second column of Table 9 'Base year of CPI = 100', is the official year to which each national CPI figure is referenced as reported by the OECD. Thus, for example, the CPI measure for Australia represents the change in consumer prices from 1989-90 to 2007 (26.95%). Without knowing the exact base year of each country, the CPI figures reported by Optus cannot be relied upon as being directly comparable.
332. Fourth, CPI measures adjusted to a common base year show that only two countries (Spain and Portugal) have remotely similar inflation to that of Australia. For example, OECD CPI figures reported in the columns headed 'CPI Q3:2007 Base 2000' and 'CPI Q3:2008 Base 2000' of Table 9 have the year 2000 as their respective base year. Only Spain (124.46 and 130.56) and Portugal (123.44 and 127.19) have remotely similar inflation figures to Australia (123.52 and 129.70) in each respective year.
333. Fifth, CPI measures alone hide differences in the growth rate of inflation from year-to-year. The column headed '2007-08 rate of inflation' gives the calculated change in inflation from 2007 to 2008. The change in inflation highlights even greater differences between Australia and all other countries in the sample. Australia's change in inflation is 5.00 percentage points between 2007 and 2008. Only Spain has a similar rate of 4.91%.
334. In terms of inflation measures, the countries in the sample are not relevant comparators to Australia.

GDP per capita

335. The column headed 'GDP per Capita US\$' in Table 10 summaries the national GDP per capita figures as provided by Optus in Appendix B: International Benchmarking in its response to the Draft Decision. Telstra has added the remaining column. GDP is a measure of the value of the total production of good and services in an economy by the workforce of the nation.²¹⁵ GDP per capita is simply the division of this value by the respective total population.

²¹⁵ <http://stats.oecd.org/glossary/detail.asp?ID=1163>

Table 10: GDP per capita, real GDP per capita and hours worked for GDP per capita

	GDP per Capita US\$ 2000	National average rate of income taxation 2007 [^]
Australia		31%
Austria		42%
Belgium		44%
Denmark		49%
Finland		43%
France		44%
Germany		36%
Ireland		32%
Italy		43%
Netherlands		38%
Norway		43%
Portugal		37%
Spain		37%
Sweden		48%
United Kingdom		37%

[^]Source: OECD .Stats Extract. The reported rate of GDP that is earned as taxation.

336. The countries in the ACCC ULL price benchmarking based on simple GDP per capita comparisons are not appropriate comparators for three reasons.
337. First, the GDP per capita figures reported by Optus (reported in the column headed ‘GDP per capita US\$’) in Table 10 shows a range between countries of \$32,485. Norway has the highest reported figured (US\$43,930) and Portugal the lowest (US\$11,445). These differences are significant. Only Belgium (\$25,833), France (\$23,619) and Germany (US\$25,444) have a reported real GDP per capita figure similar to that of Australia (\$24,432).
338. Second, the test that Optus applies implicitly to determine if the countries in the sample are appropriate comparators is insufficient. Optus concludes that countries in the sample are relevant comparators to Australia because their “GDP per capita in 2000 prices was above \$US11,445 (millions) in 2008”.²¹⁶ This test implies that any nation in the world with a GDP per capita in 2000 prices above \$US11,445 is comparable to Australia. For example Trinidad and Tobago in 2008 had a report GDP per capita of \$US11,596²¹⁷ making Trinidad and Tobago a relevant comparator to Australia using Optus’ test for determining relevant comparator countries to Australia based on GDP per capita. However, Trinidad and Tobago was not included in the benchmarking analysis, potentially making the sample biased according to Optus’ standard.
339. Third, if the average rates of income taxation charged to each worker in earning the given levels of GDP per capita in each nation is studied (the third column in Table 10), then very large disparities between the ACCC’s proposed set of comparators are seen.

²¹⁶ Ibid

²¹⁷ IMF reported figure in 2008 is US\$18,864, and the reported 2008 CPI figure with base in 2000 is 162.26. Therefore US\$11,596 = US\$18,862/1.6226

Australia has the lowest reported level of average income tax in the entire sample (31%). Only Ireland has a similar rate of income tax with 32%. All other nations have reported average rates of income tax greater than 36%.

340. Therefore, based on GDP per capita and average rates of taxation for the GDP per capita earned, the countries in the sample are not relevant comparators to Australia.

Gini Coefficient

341. The column headed 'Gini Coefficient' in Table 11 below is a summary of the national (income) Gini coefficient figures as provided by Optus in Appendix B: International Benchmarking in its response to the Draft Decision. The Gini Coefficient is most commonly used as a measure of how evenly a nation's income is distributed amongst its population.²¹⁸ However it can also be used to measure the equality of distribution of many things such as wealth or social services such as health. As presented by Optus, the Gini coefficient is used to represent only income equality (or inequality).²¹⁹ The Gini coefficient is bounded between 0 and 1, where 1 would imply that a single household or person in a nation receives all (100%) of a nation's income and 0 would represent a pure egalitarian society (in terms of income distribution).

Table 11: Gini coefficient, income distribution and wealth

	Gini Coefficient (income)	Multiple of top to bottom income earners[^]	Household net savings as % of disposable income (wealth)[*]
Australia		3.1	-0.70
Austria		--	9.40
Belgium		--	7.10
Denmark		2.6	-2.70
Finland		2.4	0.60
France		2.9	11.80
Germany		3.3	10.70
Ireland		3.6	10.10
Italy		2.4	--
Netherlands		2.9	6.90
Norway		2.1	2.50
Portugal		--	1.80
Spain		3.5	3.80
Sweden		2.3	-0.10
United Kingdom		3.6	0.60

[^]Source: http://stats.oecd.org/wbos/index.aspx?DatasetCode=DJUR_I

^{*}Source : OECD Factbook 2008: Economic, Environmental and Social Statistics

342. The comparator countries suggested by the ACCC and Optus, based on Gini coefficient comparisons, are not appropriate comparators to Australia because the Gini coefficient does not capture the degree of wealth equality (or inequality) within a nation, or any number of other forms of inequality. For example Sweden has a Gini

²¹⁸ <http://stats.oecd.org/glossary/detail.asp?ID=4842>

²¹⁹ Optus (2008), *Response to Draft Decision*, December 2008, Appendix B: International Benchmarking December 2008, page 3

coefficient for income distribution of 0.30 (a relatively egalitarian income distribution), yet Sweden's Gini coefficient of wealth distribution is 0.89 — the top 10% of income earners hold 66% of the nations wealth.²²⁰ The column headed 'Household net savings as % of disposable income (wealth)' in Table 11 is a measure of the level of household savings for the average household in a nation after taking into account expenses. A negative measure suggests that the average household's spend is greater than income earned.²²¹ The level of savings or ability to save is a proxy for the level of wealth creation in a nation.²²² Australia's average savings rate (-0.7%), is negative and clearly much lower than all countries in the sample except Denmark (-2.7%). This rate implies that the average household is creating a negative wealth position, highlighting a greater wealth disparity between the top wealth and income earners and the average, despite a relatively healthy Gini coefficient of income.

343. Therefore based on Gini coefficients and wealth measures the countries in the sample are not relevant comparators to Australia.

Unemployment Rate

344. The column headed 'Unemployment rate as a proportion of population' in Table 12 summarises the unemployment figures as provided by Optus in Appendix B: International Benchmarking in its response to the Draft Decision. The 'Unemployment rate as proportion of population' is a measure of the number of unemployed people in a nation divided by the national population and is one measure of a nation's unemployment rate.²²³

²²⁰ http://www.scb.se/templates/Publikation____193443.asp

²²¹ <http://www.oecd.org/dataoecd/53/48/32023442.pdf>

²²² *Ibid.*

²²³ <http://stats.oecd.org/mei/default.asp?lang=e&subject=10>

Table 12: Unemployment rates, discouraged workers and duration of unemployment

	Unemployment rate as % of population	Discouraged workers as % of labour force [^]	Portion of unemployed by duration of unemployment [*]	
			< 6 months	> 6 months
Australia		0.005²²⁴	73%	27%
Austria		0.14	56%	44%
Belgium		0.3	32%	68%
Denmark		0.06	70%	30%
Finland		--	62%	38%
France		0.29	41%	59%
Germany		0.18	29%	71%
Ireland		0.04	50%	50%
Italy		4.09	35%	65%
Netherlands		1.09	41%	59%
Norway		--	74%	26%
Portugal		0.34	32%	68%
Spain		0.95	57%	43%
Sweden		2.11	73%	27%
United Kingdom		0.12	58%	42%

[^]Source: http://stats.oecd.org/wbos/Index.aspx?DatasetCode=DW_I

^{*}Source: http://stats.oecd.org/wbos/Index.aspx?DatasetCode=DUR_I

345. Comparator countries based on Optus' unemployment rate comparisons are not appropriate comparators to Australia for several reasons.

346. First, the unemployment rates presented by Optus are not similar and the differences among counties are not trivial. Optus' figures range between a high of 9.54% to as low of 3.85%. The nearest unemployment rate to Australia's reported rate of 5.85% is 4.27% (Norway) — a difference of 1.58%. With Australia's total population in 2007 of approximately 21 million people, a reduction in the unemployment rate of 1.58% (to equal Norway's) corresponds to the creation of approximately 332,000 new jobs, hardly a trivial figure.

347. Second, Optus' definition of unemployment is not appropriate and can hide major differences in a nation's unemployment rate and socio-economic makeup. Optus defines unemployment as the portion of people unemployed to the total population.²²⁵ However, unemployment is most commonly measured as the proportion of people actively seeking employment (the unemployed) to the total labour force (unemployed plus employed).²²⁶ Optus' definition can hide major differences in a nation's unemployment rate. For example, two nations may have the same number of unemployed people and same total population, but one nation has a large retired population and small total labour force and the other a small retired population and large total labour force. Under Optus' definition both nations will have the same unemployment rate. However under the former more common definition of the unemployment rate, the underlying differences in socio-economic and

²²⁴ Calculation based on data from <http://www.abs.gov.au/ausstats/ABS@.nsf/7d12b0f6763c78caca257061001cc588/B3E86B3B58FAFCF4CA2573D20010F230?opendocument>

²²⁵ Optus (2008), *Response to Draft Decision*, December 2008, December 2008, page 36

²²⁶ See Survey Based, Key Statistical Concept <http://stats.oecd.org/mei/default.asp?lang=e&subject=10>

demographic make-up will be evident. That is, the former nation will have a higher calculated unemployment rate (due to a small total labour force) than will the latter nation.

348. Third, when comparing the level of discouraged workers in Table 12 in each nation as a proportion to the total labour force, Australia has the lowest rate (0.005%) to that of the nearest nation (Ireland – 0.04%) by a multiple of 8. Discouraged workers are people who are not seeking employment because they believe that there is no work available, but who nevertheless would like to work.²²⁷
349. Fourth, comparing figures on the duration of unemployment in Table 12 makes clear that the labour market in Australia is much more fluid than that of the majority of countries in the sample. Unemployment duration is defined as the length of time a job seeker spends unemployed from the time he or she begins seeking employment.²²⁸ 73% of people who become unemployed in Australia spend less than 6 months being unemployed. Only Denmark, Norway and Sweden have similar figures. This table highlights the major differences in the flow of job seekers (into and out of the job market) and labour market policies in Australia relative to the rest of the countries in the sample.
350. Therefore, based on the unemployment rate as percentage of population, the level of discouraged workers and tenure of unemployed, the countries in the sample are not relevant comparators to Australia.

State of the market

351. Optus in its response to the Draft Decision states:²²⁹

The countries in the sample are all comparable to Australia in terms of the state of the relevant markets, because in all sample countries (including Australia):

-incumbents still own the majority market share in the fixed line market;

-fixed line telephone penetration was high in 2008;

-internet user percentage of total population was high in 2007;

-fixed line calling costs (local) were in the range of 0.29 to 1.15 Euro in 2005.

- fixed line calling costs (national) were in the range of 0.29 Euro to 1.15 Euro in 2005

352. Optus has not provided sufficient evidence that the regulatory environment of the comparator countries is comparable to that in Australia for the reasons outlined in the following section.

Incumbent fixe line market share

²²⁷ <http://stats.oecd.org/glossary/detail.asp?ID=645>

²²⁸ See Unemployment Duration found in http://www.oecd.org/document/15/0,3343,en_2649_33729_38938959_1_1_1_1,00.html

²²⁹ Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.10, page 35

353. Incumbent fixed line market share in Australia is not comparable to that in the countries in the ACCC international benchmarking sample. Table 13 provides the incumbent fixed line market share as reported by Optus in Appendix B: International Benchmarking in its response to the Draft Decision.

Table 13: Fixed line incumbent market share as provided by Optus

	Fixed Line Market Share
Australia	██████████
Austria	██████████
Belgium	██████████
Denmark	██████████
Finland	██████████
France	██████████
Germany	██████████
Ireland	██████████
Italy	██████████
Netherlands	██████████
Norway	██████████
Portugal	██████████
Spain	██████████
Sweden	██████████
United Kingdom	██████████

354. Fixed line market share of incumbent providers provided by Optus for the comparator countries shows that the not all countries in the sample are appropriate comparators to Australia. The incumbent fixed line market shares are not similar and the differences among counties are not trivial. Optus' figures range between a high of 90% (Norway) to as low as 0% (UK). Also because of the size of the markets (Australia has approximately 10 million fixed lines)²³⁰, even just a 5% change in market share of any incumbent is not a trivial figure (approximately 500,000 fixed line customers for Australia).

Fixed telephone penetration is high

355. The fixed telephone penetration in Australia is not comparable to all countries in the ACCC international benchmarking sample. The second column in Table 14 titled 'fixed line telephone penetration per 100 inhabitants' gives the fixed line penetration per 100 inhabitants as reported by Optus in Appendix B: International Benchmarking in its response to the Draft Decision.

²³⁰[http://www.accc.gov.au/content/item.phtml?itemId=794173&nodeId=10dddaa662b4614c52f4f68236d8a51&fn=Telecommunications%20market%20indicator%20report%202005-06%20\(released%20August%2007\).pdf](http://www.accc.gov.au/content/item.phtml?itemId=794173&nodeId=10dddaa662b4614c52f4f68236d8a51&fn=Telecommunications%20market%20indicator%20report%202005-06%20(released%20August%2007).pdf)

Table 14: Fixed line telephone penetration per 100 inhabitants as provided by Optus

	Fixed line telephone penetration per 100 inhabitants 2008	Total number of fixed lines 2008 (approx.)
Australia		9,247,040
Austria		3,499,860
Belgium		4,732,650
Denmark		3,058,160
Finland		1,804,380
France		37,722,400
Germany		53,801,800
Ireland		--
Italy		24,717,420
Netherlands		7,539,400
Norway		2,071,080
Portugal		4,248,000
Spain		20,383,060
Sweden		6,502,890
United Kingdom		33,596,750

Source: Estimates calculated based on reported OECD total population figures:
<http://oecd.p4.siteinternet.com/publications/doifiles/01-01-01t1.xls>

356. The total number of fixed lines per nation is a more appropriate measure than fixed line penetration. The total number of fixed lines per nation is a proxy for the economies of scale of the fixed network required for each nation. This is extremely relevant in the case of ULL as it is expected that, all else being equal, if a country has a greater number of fixed lines than another country, then its average cost of lines is lower.

357. The third column in Table 14 gives the number of fixed telephone lines²³¹ in each nation of the ACCC's sample in 2008. Table 14 shows that the range in the sample based on total fixed lines in 2008 is extremely large ranging from a high of 53,801,800 for Germany to a low of 1,804,380 lines for Finland, a difference of 51,997,420 lines.

358. The United Kingdom has over 260% more lines than Australia making it a very poor comparator to Australia.

Fixed line telephone prices (basket)

359. The comparator countries based on Optus' fixed line local and national calling costs are not appropriate comparators to Australia for the following reasons.

360. First, Optus does not provide a complete picture of prices based on calling distance, destination (fixed, mobile or international) or time of day.

361. Second, Optus does not provide the price associated with access fees or any indication of access fee prices in relation to calling fees.

²³¹ Total fixed lines are estimated using OECD reported total populations for each nation and the Optus reported lines per 100 inhabitants as Total fixed lines = (Total population/100)*(No. of fixed lines per 100 inhabitants).

362. Third, Optus does not provide any indication of the price differences (if any) of access or calling fees for residential versus business consumers.

363. The countries in the ACCC's benchmarking sample are not relevant comparators when compared on a basket of both access and calling fees paid over the course of one year. Table 15 is the OECD constructed basket of access and calling fees for a residential low spend customer. The basket consists of 600 calls per year broken down according to distance, destination (fixed, mobile and international), and time of day. All prices are given in USD purchasing power parity (PPP) 2006.

Table 15: Basket of yearly prices for access and calling fees for low spend customers

	Low spend US\$ 2006		
	Access fees per year	Calls per year	Total price per year
Australia	\$298	\$152	\$450
Austria	\$220	\$178	\$398
Belgium	\$255	\$190	\$445
Denmark	\$198	\$202	\$400
Finland	\$190	\$200	\$390
France	\$205	\$195	\$400
Germany	\$205	\$180	\$385
Ireland	\$320	\$78	\$398
Italy	\$220	\$183	\$403
Netherlands	\$290	\$110	\$400
Norway	\$220	\$125	\$345
Portugal	\$405	\$145	\$550
Spain	\$330	\$115	\$445
Sweden	\$195	\$108	\$303
United Kingdom	\$225	\$170	\$395

Source: Approximations from OECD Telecommunications Outlook 2008.

364. Not all OECD figures for different OECD defined spend baskets for residential or consumer have been presented as trends appear to be approximately similar across most baskets. Table 15 shows that comparator countries differ greatly in both access and calling prices charged.

Regulatory environment

365. Optus in its response to the Draft Decision states:²³²

The countries in the sample are all comparable to Australia in terms of the regulatory environment because in all sample countries (including Australia):

-the local loop unbundling service was regulated around the late 1990s to early 2000;

²³² Optus (2008), *Response to Draft Decision*, December 2008, paragraph 4.12, page 36

-regulatory practise followed the European Union unbundling regulation to review the tariffs and conditions offered by the incumbent in its reference unbundling offer (RUO);

-tariff charges were set based on cost; and

-tariff charges were informed by a LRIC model.

366. Optus has not provided sufficient evidence to support its contention that the regulatory environment of the comparator countries is comparable to that of Australia for the reasons outlined in the following section.

Regulatory practices followed the European Union unbundling regulation (recommendation)

367. The OECD has stated in regard to the regulatory practices for pricing ULL that:²³³

When it comes to charging for unbundled local loop there is greater variation in what countries say they do than in what they do in practice. A large group of countries claim that their prices for ULL are “cost based”. The EU unbundling recommendation requires that the prices for unbundled access to the local loop shall be “on the basis of cost-orientation”. Consistent with geographically-averaged end-user prices, the regulated tariffs for unbundled local loops are usually geographically averaged (see Table A.7). In fact ULL access prices are usually geographically averaged even in those countries which claim that they are using a “cost-based” or “cost-oriented” approach to the regulation of ULL. The Netherlands, for example, which pursues cost-oriented access prices, unbundles local loop on a geographically averaged basis.

368. The OECD has clearly expressed that it views the stated regulatory objectives and the regulatory practices actually applied within European Union countries to be vastly different.

369. The regulatory practices applied within the sample countries, regardless of the European Union regulatory recommendations, are sufficiently different to Australia as to not be comparable with Australia. This is further highlighted by Table 16, which outlines the regulatory objectives of the nations in the sample and whether deaveraged ULLS prices are applied.

²³³ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

Table 16: Clarity of regulatory objectives

	Clarity of regulatory objectives	Deaveraged ULL prices
Australia		Yes
Austria	(2) The regulatory measures are designed to serve the following objectives: 1. to create a modern electronic communications infrastructure in order to promote high-level locational quality; 2. to ensure equal opportunities and operative competition in the provision of communications networks and communications services by a) ensuring that all users derive maximum benefit in terms of choice, price and quality; b) preventing distortion or restriction of competition; c) encouraging efficient investment in infrastructure and promoting innovation; d) ensuring efficient use and effective management of frequencies and numbering resources; 3. to promote the interests of the citizens by a) ensuring that all citizens have access to universal service; b) ensuring protection for consumers, in particular by simple and inexpensive dispute resolution procedures as well as a high level of protection of personal data and privacy; c) providing information, in particular in the form of transparent tariffs and general terms and conditions; d) ensuring the integrity and security of public communications networks. ²³⁴	No ²³⁵
Belgium	English version unavailable ²³⁶	No ²³⁷
Denmark	"On the one hand, such regulation affords new market players the possibility of using existing networks until they have achieved a volume that makes such access uninteresting, without any need to pay for inefficiency, bad investments etc. on the part of the former monopoly provider. On the other hand, the regulation provides an incentive for them to invest in new alternative networks as soon as their business can bear such costs." ²³⁸	No ²³⁹
Finland	The regulator does not make any clear statements, other than that price must reflect costs and can include a reasonable return on capital. ²⁴⁰	No ²⁴¹
France	There is no clear statement of why the specific methodology was chosen. There are however specific principles that guide ART (from ART decision notes): cost orientation of tariffs; the principle of efficiency; the principle of non-discrimination; and the principle of fair and long-lasting competition. ²⁴²	No ²⁴³
Germany	Telecoms regulation aims to promote competition and to guarantee defined levels of service across the country. Price regulation is therefore a requirement for dominant companies. The price determinations themselves have to be made within a set of constraints anchored in the Telecommunications Act (TKG) and the Telecommunications Rates Regulation Ordinance (TEntgV). ²⁴⁴	No ²⁴⁵
Ireland	It must be remembered that LLU has a wider national importance: electronic communication services are essential to the development of the information-based economy in Ireland. It is also generally recognised that an advanced, thriving electronic communications sector, characterised by healthy competition, is highly important for maintaining and enhancing Ireland's international economic competitiveness. ²⁴⁶	No ²⁴⁷
Italy	Reasons for using the current methodology have not been explicitly stated. ²⁴⁸	No ²⁴⁹
Netherlands	Role of OPTA 27. The amended ONP Voice Telephony Directive specifies that in the	Yes ²⁵¹

²³⁴ http://www.rtr.at/en/tk/TKG2003/TKG_2003_eng.pdf

²³⁵ <http://www.rtr.at/de/komp/Fachpublikationen/GeographicallyLocalLoop.pdf>

²³⁶ <http://www.ibpt.be/ShowDoc.aspx?objectID=1682&lang=en>

²³⁷ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²³⁸ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²³⁹ <http://www.rtr.at/de/komp/Fachpublikationen/UnbundlingLocalLoop.pdf>

²⁴⁰ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁴¹ <http://www.rtr.at/de/komp/Fachpublikationen/UnbundlingLocalLoop.pdf>

²⁴² Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁴³ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²⁴⁴ http://www.bundesnetzagentur.de/enid/8bb4af2e6084a9c7900aa96d8c21375a,0/Telecoms_Regulation/Analytical_Cost_Model_17h.html#local_loop

²⁴⁵ <http://www.rtr.at/de/komp/Fachpublikationen/GeographicallyLocalLoop.pdf>

²⁴⁶ http://www.comreg.ie/_fileupload/publications/ComReg0856.pdf

²⁴⁷ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²⁴⁸ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁴⁹ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

	context of special access, the national regulatory authorities may intervene at any time on their own initiative when this is justified to ensure effective competition and/or the interoperability of services. These authorities may also take measures at the request of either (contracting) party, in order to lay down non-discriminatory conditions which are fair and reasonable for both parties and the most favourable for the users. ²⁵⁰	
Norway	1. access of households and firms nationwide to basic telecommunications services of high quality at a reasonable price and 2. optimal value-added from and efficient utilisation of resources in the telecommunications sector, by securing access to and efficient use of public telecommunications networks and public telecommunications services through effective competition. ²⁵²	No ²⁵³
Portugal	Regulator indicates that ULL charges should promote the development of a sustainable and fair competition. The "info inclusao" is explicitly mentioned as an objective to be achieved through ULL. Geographically averaged charges (as opposed to charges by geo-type) are preferred. This is because they would not only promote the "info-inclusao", but they would also provide an incentive for operators to roll out alternative infrastructure in densely populated areas. ²⁵⁴	No ²⁵⁵
Spain	"The fostering of a sustainable level of competition; The provision of incentives for building alternative infrastructure; The need to avoid distortions of competition and, in particular, margin squeezes between wholesale and retail charges." ²⁵⁶	No ²⁵⁷
Sweden	To develop a reliable model, that is supported by the industry, to calculate costs for access and interconnection according to the LRAIC method recommended by the Commission; to create a regulatory tool for PTS to be used to establish cost-oriented prices for access and interconnection; to encourage the use of existing facilities of the SMP operator where this is economically desirable, avoiding inefficient duplication of infrastructure costs by new entrants (incentive to buy); to encourage investment in new facilities where this is economically justified by new entrants investing in competing infrastructure rather than the SMP operator upgrading and expanding its networks (incentive to build); to increase the transparency of the cost calculations underlying the access and interconnection charges; and to increase predictability of access and interconnection charges for both the SMP operator and other operators. ²⁵⁸	No
United Kingdom	Permit recovery of an appropriate attribution of common costs; permit the recovery of long run incremental costs reasonably and necessarily incurred by BT in or as a result of the provision of these services; and include a reasonable return on capital employed. ²⁵⁹	No

370. All stated regulatory objectives differ even though the European Union unbundling regulation has been reported as adopted by the nation.

371. Only two of the nations in Table 16 applied geographically deaveraged ULL prices, Australia and the Netherlands, further highlighting that the countries in the sample are not appropriate comparators.

Tariffs were set by costs and informed by a LRIC model

372. The comparator countries in the sample are not comparable to Australia purely because tariffs were set by reference to costs and informed by a LRIC model. Table 17 outlines the differences in the cost base, cost standard and type of model used to determine ULL prices in each country.

²⁵⁰ <http://www2.opta.nl/download/codo%2Epdf>

²⁵¹ <http://www.rtr.at/de/komp/Fachpublikationen/UnbundlingLocalLoop.pdf>

²⁵² <http://www.npt.no/iKnowBase/Content/1381/1381-E9971259.pdf>

²⁵³ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²⁵⁴ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁵⁵ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²⁵⁶ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁵⁷ <http://www.oecd.org/dataoecd/26/6/27767944.pdf>

²⁵⁸ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report

²⁵⁹ Ibid.

Table 17: Cost base, standard and model used to calculate ULL costs

	Cost standard used	Type of model used to calculate ULL costs
Australia ²⁶⁰	TSLRIC+	Bottom-up
Austria ²⁶¹	LRAIC	Bottom-up
Belgium ²⁶²	Retail minus	Top-down
Denmark ²⁶³	LRAIC	Hybrid
Finland ²⁶⁴	Varies by company	Varies by company
France ²⁶⁵	LRAIC	Hybrid
Germany ²⁶⁶	LRAIC	Bottom-up
Ireland ²⁶⁷	FDC	Bottom-up
Italy ²⁶⁸	Benchmarking based on HCA	N/A
Netherlands ²⁶⁹	EDC	Bottom-up
Norway ²⁷⁰	Not specified	Not specified
Portugal ²⁷¹	FDC	Top-down
Spain ²⁷²	LRAIC	Top-down
Sweden ²⁷³	FDC	Hybrid
United Kingdom ²⁷⁴	LRAIC for BT and FDC for Kingston	Top-down
HCA=Historic cost accounting, FDC = Fully distributed cost, LRAIC = long run average incremental cost		

373. Of the countries in the sample, there are several countries that use a fully distributed cost standard for determining ULLS prices, which is likely to produce substantially different outcomes to TSLRIC+ and LRAIC.

374. Additionally, even if the cost models were identical across countries, the inputs and assumptions to the models in different countries would not be consistent with those appropriate in Australia.

375. Therefore, the countries in the international benchmarking study are not appropriate comparators to Australia based purely on the fact that tariffs were set by reference to costs and informed by LRIC models. Further, numerous differences between cost

²⁶⁰ <http://www.accc.gov.au/content/item.phtml?itemld=753844&nodeld=67d981616f9b33f50cb4fa62d116638b&fn=Pricing%20of%20unconditioned%20local%20loop%20services%E2%80%94final%20report.pdf>

²⁶¹ Local Loop Unbundling in Austria Summary of the decisions Z 12/00, Z 14/00, Z 15/00 of the Telekom-Control Commission (TKK) of March 12, 2001.

²⁶² Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report, page 73

²⁶³ Report On: Characteristics of the top-down and bottom-up cost analyses. Pg. 34

²⁶⁴ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report, page 77

²⁶⁵ ART Decision no. 00/1171 of the Autorité de Régulation des Télécommunications dated 31 October 2000 in application of article D. 99/24 of the Post and Telecommunications Code.

²⁶⁶ Wissenschaftliches Institut für Kommunikationsdienste GmbH Analytical Cost Model Local Loop Consultative Document 2.0.

²⁶⁷ http://www.comreg.ie/_fileupload/publications/ComReg0856.pdf

²⁶⁸ Europe Europe, Op. cit., pg. 88 and Cullen International Table 6 Pricing regulation and cost accounting system for fixed wholesale services as provided via private email correspondence with AGCOM.

²⁶⁹ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report, pg. 90

²⁷⁰ OECD Developments in Local Loop Unbundling. Pg.50

²⁷¹ Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report, pg. 92

²⁷² Europe Economics Pricing Methodologies for Unbundled Access to the Local Loop Final Report, pg.94

²⁷³ Hybrid Model Documentation(PTS Hybrid model v 2.1)

²⁷⁴ <http://www.ofcom.org.uk/consult/condocs/llu/llu.pdf>

bases, standards and types of models exist such that the countries in the sample are not appropriate comparators to Australia.

Attachment 2 Responses to Network Strategies' reports

376. This Attachment responds to specific issues raised in the Network Strategies report: *Review of the Telstra TEA model version 1.1.*

Network Strategies Section 2: Summary of cost structures and drivers

377. Network Strategies argues that there is an unusual difference in the total costs between various exchanges in the model and that such differences would not be anticipated for a model of band 2 exchanges because they have such similar characteristics:

...but the range of variation of line costs in this version of the TEA model is surprising and not what would be expected from an efficient operator.

378. As shown by Network Strategies²⁷⁵ approximately 90 percent of both the main and distribution network costs are attributed directly to conduit and cable. The primary drivers of these categories of costs are the length of the conduit required to provide service and the number of customers in an exchange. The length of these facilities is directly correlated to the customer density in the serving area. Customer density by exchange ranges from less than 300 to more than 4000 customers per square kilometre. Such large disparities between the customer densities in various exchanges will lead to significant differences in the costs to serve the areas.

Network Strategies Section 2.1: Main network capital

379. In this section Network Strategies discussed the network components that comprise the main network. In discussing these components, Network Strategies notes that there are costs for fibre and multiplexing systems in the ULLS main network. As discussed in the Telstra's original response to the Access Seekers²⁷⁶, the average costs for all lines (including fibre fed lines) are included in the calculation of the ULLS and basic service products to insure that the model accounts for any trench sharing that occurs between the main fibre and copper cable facilities.

Network Strategies Section 2.1.1: Main network structure costs

380. In this section Network Strategies identifies what it perceives as two problems with the model:

...the per metre trenching costs are higher than we had expected...the total distance of main ducting is almost twice the length of main cable²⁷⁷

381. First, the total distance for main conduit is not twice the length of main cable it is roughly the same. The TEA model does place an additional conduit duct in the main network for maintenance and repair purposes. This maintenance duct, however, has no effect on the overall length of conduit. The reasons for placing an additional conduit are discussed in detail in the Statement of **CIC** filed in this

²⁷⁵ Network Strategies, Review of the Telstra TEA model version 1.1 pages 3 and 5 respectively

²⁷⁶ Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to Access Seeker Submissions (Telstra Response to Access Seekers Submissions), Public Version, 18 November 2008, Section F.1.1, P. 44

²⁷⁷ Network Strategies, Review of the Telstra TEA model version 1.1, page 4

Undertaking²⁷⁸. As explained in the statement, the additional conduit is often required to avoid long service outages when replacing or repairing main cable runs.

Network Strategies Section 2.2.1: Distribution network structure costs

382. In this section, Network Strategies points out that the density zone characteristics which are used to segregate DA's into the five density groups appears reasonable:

We note that TEA density zones are similar to those used in other access network models we have reviewed. (Page 7)

383. They also say that the line counts that define the density zones should not be user adjustable inputs because:

Typically this would not be the case as the zones must be carefully aligned with the assumptions used to differentiate costs in each zone. These assumptions are separate inputs to the TEA costing module. (Page 7)

384. Telstra agrees with Network Strategies that the density parameters and the inputs that differentiate costs between the density areas are inextricably linked and changes to one set must be accompanied by corresponding changes to the other set. Although many models do not make the density parameters user adjustable inputs, Telstra decided to maximise the users' ability to make changes to the model.

Network Strategies Section 2.2.2: Distribution network cable and lead-in costs

385. Network Strategies argues that the TEA model uses a standard average cost for lead-ins:

All lead-ins are costed at an average price per lead-in. This is common in access network models based on operator line databases as lead-in information may not be available. (Page 11)

386. Network Strategies concludes:

Given that the figures are averages, Network Strategies is not fully able to determine whether the cost figures are reasonable and efficient. (Page 11)

387. The cost for a two pair lead-in in the TEA model is not based on a calculation of an average price as indicated by Network Strategies. As explained in the Confidential Access Network Modelling Costing Information (the Costing Document)²⁷⁹, the A & AS Contracts have a standard negotiated price for all 2-pair lead-ins up to 20 metres in length. As stated in this Document, the standard cost per lead-in includes:

[REDACTED]

²⁷⁸ Statement of [REDACTED], Dated 3 March 2008, Para 196 to 199, Pgs. 72 thru 74

²⁷⁹ Access Network Modelling Costing Information (the Costing Document) Issue 1.1, attachment [REDACTED] to the Statement of [REDACTED], dated 3 March 2008, P. 36

[REDACTED]

388. The costs include provision and placement of all the conduit, cable, terminating equipment and wiring at the customer premise. All contract labour required placing the facilities and jointing those facilities to the equipment at the customer premise are also included in the standard price. The standard price is [REDACTED] per lead-in. Additional costs are charged for lead-ins that travel farther than 20 metres between the customer boundary and building entrance [REDACTED] and for distances greater than 2 metres between the customer boundary and the serving pit [REDACTED].

389. Telstra adopted the conservative (i.e. cost minimising) assumption that the standard price would apply even when the length of the lead-in exceeded the maximum allowable 20 metres.

Network Strategies Section 3.1: Model Transparency

390. Network strategies argues that in the TEA model there are a “number of areas involving key inputs and model structure which are not as transparent as we would normally expect in a model used for regulatory pricing purposes.” They then argue that the derivation of the network structure costs illustrates this point.

391. Network Strategies argues that the trenching, duct placement and surface breakage/reinstatement comprise a significant portion of the network investment. They then identify the source of these model inputs as being:

...drawn directly from the average costs for the relevant items of supply and/or installation contained in Telstra’s three Access and Associated Services (“A & AS”) contracts. (Page 14)

392. Network Strategies then list criteria that needs to be met to justify the prices including they must apply to Band 2, they should be extracted from a large sample of invoices, should not be skewed to a particular density zone and they should be prices applicable to large projects²⁸¹.

393. The trenching prices were taken directly from the A & AS vendor contracts. The prices can be traced directly to these contracts. There is no sampling or skewing of prices. Tracing prices to contracts is as transparent as it can get in the world of costing.

Network Strategies Section 3.2.1: TEA Model Database

394. Network Strategies states:

Telstra submits that the model optimises cables [sic] dimensioning between the structure points, and that this is sufficient to meet the requirement that the model implements an efficient network. (Page 18)

²⁸⁰ Ibid

²⁸¹ Network Strategies, Review of the Telstra TEA model version 1.1, September 2008, Section 2.2.2, pg. 11

395. Telstra has never said that dimensioning cables between structure points is all that is required to meet the requirements of TSLRIC+. In fact, the TEA model does not just resize cables. As discussed extensively in the Telstra Response to Access Seeker Submissions²⁸², the TEA model reconfigures the location of pits and manholes and completely redesigns the cable network to more efficiently serve customers.

396. This fact that the TEA model optimises the number of pits and manholes in the model was acknowledged by OVUM in their network review when they concluded:

Pits and manholes are placed according to a very clean outside plant design and at least one feature in the placement of manholes is not implemented in the model. The overall effect is to underestimate the number of pits and manholes needed for an actual network. (Section 2.6 Conclusion)

397. The model also eliminates unnecessary conduit and cable runs. Again, all of the efficiencies built into the TEA model are discussed extensively in the statement of Frank Hatzenbuehler.

398. Network Strategies points to the existence of ‘null’ structure point in the network data as further evidence that the use of network data “anchors the design to a historic design...”²⁸³. In discussing the “null” structure points, Network Strategies states:

...‘null’ structure points – structure points that probably had some function in the historic network but in this model they have no lead-ins or route merges and therefore serve no purpose apart from defining a waypoint on the cable route. (Page 18)

399. A ‘null’ structure point in the network database is the point at the end of the customer lead-ins at the customer’s premise. These points are used for one purpose in the model, to determine the average length of lead-ins. These structure points are never used to identify:

- a location for the placement of a pit or manhole; or
- a waypoint along the modelled cable run.

400. Indeed, there are no assets in the TEA model associated with null structure points, other than to signal where the end of a lead-in is.

Network Strategies Section 3.2.3: The efficiency of the scorched node models

401. In this section, Network Strategies argues that the TEA model does not reflect the level of optimisation and efficiency that can be achieved using a scorched node approach. As discussed extensively in the Telstra Response to Access Seeker Submissions²⁸⁴ the TEA model incorporates significant efficiencies into its network design. Ovum finds that, with respect to the TEA model, the “overall effect is to underestimate the number of pits and manholes needed for an actual network”²⁸⁵.

²⁸² Telstra Response to Access Seekers Submissions, Public Version, 18 November 2008, Section F.1

²⁸³ Network Strategies, Review of the Telstra TEA model version 1.1, September 2008, Section 3.2.1, pg. 18

²⁸⁴ Telstra Response to Access Seekers Submissions, Public Version, 18 November 2008, Section F.1

²⁸⁵ Ovum Consulting, Review of the network design and engineering rules of the Telstra Efficient Access cost model, (Engineering Review), Dated 6 August 2008, Section 2.6

402. In a recent filing Ovum goes on to state:

*Ovum agrees that the routes are now populated in the model database in the way Telstra originally intended. That is, the cable paths represent the shortest paths among the existing paths present in Telstra's cable plant records.*²⁸⁶

Network Strategies Section 3.3: Efficient Network design

403. Network Strategies argues that the use of best practice network design is not appropriate when determining efficient forward looking costs:

In fact, "best practice" may often contradict the requirements of efficiency because it has different aims (such as future-proofing or gold plating the network infrastructure). (Page 22)

404. Telstra's best practice engineering rules are adopted because they are the most efficient practices for building and operating a network over the long run. Best practice procedures also comply with the legal and regulatory requirements in the environment in which the company operates. These practices and the reason they were adopted are laid out in detail in the Access Network Dimensioning Rules and supporting Statement of **CIC**²⁸⁷. Network Strategies has not provided any information that illustrates that these rules are not in fact best practice and efficient.

Network Strategies Section 4.1: Network database

405. Network Strategies again argues that the TEA database "preserves much of Telecom Australia's historical network design philosophy." As discussed above, all major components of the network (i.e. conduit and cable runs, pits and manholes, joints, etc.) have been completely redesigned in the network. The only major cost driver from the actual network that is retained by the TEA model is the location of the existing rights of way.

Network Strategies Section 5.3.1: 'Input cost and rules' worksheet

406. Network Strategies makes the following observations regarding this worksheet:

-installed copper cable costs appear to be significantly higher than we have seen in other jurisdictions

-joint costs appear high

-the indirect overhead costs 'loading factor' is not clearly explained. (Page 41)

407. In regards to the capitalised indirect costs, Network Strategies goes on to say "it is unclear whether all of the costs mentioned (such as network management) are required for the provision of ULLS. It is also unclear whether there is any double counting with the indirect factors also listed on this sheet."²⁸⁸

²⁸⁶ Ovum Consulting, Telstra Efficient Access cost model-engineering issues, An Advisory Note to the ACCC, Dated 2 February 2009, Section 3.2.1

²⁸⁷ Statement of **CIC**, Dated 3 March 2008

²⁸⁸ Network Strategies, Review of the Telstra TEA model Version 1.1, Section 5.2.4, Page 42

408. Subsequent to the Network Strategies submission in this undertaking, Telstra filed the Statements of **CIC** and **CIC**. In these statements the authors:

- Identify the functions of the various lines of business that participate in capital related functions and have costs assigned to capital projects;
- Explain the Telstra process for identifying and assigning the capital related costs to the various capital projects; and
- Explain the derivation of the capital loading factor used in the model.

409. The types of functions that have these costs assigned to the capital accounts include:

- Managing vendor contracts;
- Organizing and coordinating work with Telstra's outside contractors;
- Project management services for major initiatives;
- Planning network additions and establishing and managing capital budgets for the projects; and
- Materials and resource management for capital projects.

410. Each of these functions is a critical component in building the Telstra network, including the customer access network. All efficiently run construction projects require network design and planning, materials management, vendor oversight and project management. A detailed description of these functions and the organisations that perform them are incorporated into the Statements of **CIC** and **CIC**.

Network Strategies Section 5.3.3: 'Inputs capital costs' worksheet

411. Network Strategies makes the following observation:

Sharing revenues: it is not normal to use revenue to take into account sharing between operators. TSLRIC is supposed to represent the cost to an efficient forward-looking operator of providing a service, and unless the sharing revenue exactly offsets savings made by such an operator when sharing, then using actual revenue figures cannot be correct. (page 43)

412. Network Strategies is correct when it states that TSLRIC is to represent the cost an efficient provider would incur to provide a given service. If the efficient provider was required by law to lease conduit to other providers at rates established by a regulatory body, the cost savings the company would get for leasing these facilities is the amount of the compensation paid by the party leasing the facilities. These revenues are the only savings an efficient provider could achieve by leasing the

facilities and are equivalent to the revenues that the TEA model deducts to account for this sharing.

Network Strategies Section 5.3.11: 'Investment Summary' worksheet

413. In this section Network Strategies briefly describes the functions performed on this worksheet concluding in part:

*The TSLRIC+ methodology is implemented correctly by using the following steps:
(Page 48)*

414. The submittal then explains how the TSLRIC+ method was implemented.

415. Network Strategies identifies what they believe are two errors in the calculations on this sheet.

Distribution Network: The model allocates the total cost of the network to the ULLS service...

Main Network: The model allocates the entire cost of the main network to all lines. This means that the main network cost is essentially a weighted average between the ULLS service and basic service. (page 51)

416. The TEA model does not allocate the total cost of the distribution network over copper fed (ULLS) distribution lines. The TEA model only calculates costs for distribution areas served by copper main cables when determining the cost of ULLS. The total cost for all copper fed distribution areas (i.e. areas that are capable of providing ULLS) is spread over the total number of lines in copper fed distribution areas. Distribution costs for all exchanges are only used in the calculation of the wholesale basic service.
417. In the TEA model the average main network cost for all lines is used in calculating the cost of both the wholesale basic service and ULLS. This approach insures that the ULLS cost incorporates any savings from main network trench sharing between fibre fed and copper fed exchanges.

Network Strategies Section 5.4: O&M and indirect costs

418. Network Strategies points out that in Version 1.1 of the TEA model the copper cable and ducts and pipes O&M factors were derived by dividing book cost by the forward looking investment from the TEA model. They go on to conclude:

This adjustment is highly unusual. In effect, it insures that these O&M costs are not in fact a proportion of the investment costs but are the original O&M expenses taken from the RAF... (Page 54)

419. Network Strategies goes on to say that in making the forward looking adjustment the factor calculation uses the copper cable and ducts and pipes costs for the Blackburn exchange as opposed to all of band 2. Network Strategies goes on to point out several problems with this approach.
420. The TEA model factors were updated in version 1.3 of the TEA model. The updated factors were based on June 2007 operating results. In this updated filing, the copper cable factor is no longer derived using forward looking investment as the denominator

in the equation. In addition, where forward looking investment was used in the denominator of the factor calculation (i.e. ducts and pipes) total Band 2 as opposed to Blackburn forward looking investment was used to derive the factor. These updates address all the concerns raised by Network Strategies with the exception of the use of forward looking investment in developing the denominator for the ducts and pipes factor.

421. Forward looking investment was used in the denominator of the ducts and pipes factor because it is a conservative (i.e. cost minimising) assumption.
422. Network Strategies also discusses the fact that the O&M factors are applied to investments in the TEA model that include capitalised planning costs. They go on to say:

If the RAF investment costs do not include such planning costs then the factor is a pre-planning cost factor, and should be applied to the model pre-planning investment costs, to ensure that the planning costs do not have O&M expenses added to them. (Page 55)

423. The RAF investment costs do include capitalised indirect overhead costs (planning costs), so the development and application of the factors are consistent.

Network Strategies Section 5.4.2: Indirect Expenses

424. Network Strategies concern with the indirect expense factors used in the TEA model is that they include costs that are not incurred by the provision of the service being costed. Network Strategies goes on to identify two indirect categories of costs in the TEA model that they believe are not incurred in the provision of ULLS:

-retail costs: marketing, sales, billing, bad debt, interconnection, international settlement costs

*-network support costs: power systems, network management systems.
(Page 56)*

425. The retail costs included in the TEA model factors are only those product and customer costs that are assigned to the internal and external wholesale operations in the RAF reports. Network Strategies acknowledges, at footnote 38, that there are legitimate wholesale billing costs. As with billing, there are other product related costs that must be incurred solely for the benefit of wholesale providers such as order processing, dispute resolution etc. No company can run a wholesale operation without some customer contact organisation.
426. Similarly, network management systems are required to build, maintain and operate the access network. Telstra could not operate its network without these systems.