surrounding physical environment as given. While the long-run nature of TSLRIC+ may require the factors of production to be variable, the practical geographic constraints facing the network are not variable. A TSLRIC model that does not take these factors into account will not reflect the efficient costs of supply nor would it reflect the actual services supplied.

And:[114]

The objective of TSLRIC+ pricing principles is to set prices at levels that would occur in a competitive market. These costs are not some hypothetical construct that ignores real world constraints of the environment in which new entrant firms operate. Rather, in the interests of sensible and accurate decision making, those costs must, when possible, reflect the actual and real environment in which the new entrant would build and operate a reliable network with the same service potential as Telstra serving the customers actually using the declared service.

247. In its response to the ACCC's Discussion paper, Telstra further explained what it meant by "real world constraints" with an example.[115]

For instance, TSLRIC estimates derived from hypothetical models assume that trenches, conduit and cable can run through buildings, rivers, parks, harbours and other obstacles.19 Therefore, current prices will not accurately reflect the efficient costs of a new operator unless trenches, conduit and cable are, in fact, able to run through buildings, rivers, parks and harbours. They certainly are not.

248. The ACCC's allegation is unfounded and disingenuous. Even if a passage could be found in Telstra's hundreds of pages of submissions, which was worded such that it could be construed as a statement that the TEA model estimates cost for Telstra's actual existing network, the overwhelming context of Telstra's advocacy, a small sample of which is quoted above, makes Telstra's position clear – the TEA model is designed to model the cost an efficient new entrant would incur in constructing an alternative to Telstra's access network.

249. The TEA model makes use of Telstra's extensive engineering records, not so as to model Telstra's existing network, but to accurately measure the route distances a new, efficient access network would necessarily have to traverse, taking account of the immutable terrain that comprises each of the 584 exchange service areas included in the Undertaking, in order to provide service to all of the addresses the defined service area. In other words, Telstra uses its engineering data to identify the rights of way that all providers must use in constructing a cable network. Telstra's use of actual engineering data in the TEA Model is well documented; and the advantages of this approach have been fully explained.[116]

Use of actual network data provides the following advantages:

· Precise identification of points of ingress, where demand enters the CAN;

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[114] Telstra response to Discussion paper, at page 11, emphasis added
[115] Telstra response to Discussion paper, at page 11, emphasis added
[116] TEA Model Route Optimisation Process, at page 3

· Identification of routing within legal rights of way past virtually every address in Australia;

· Ability to design a network which takes account of all natural and man-made obstacles;

· Ability to select efficient, least distance routes from customer locations to telephone exchange buildings from a vast array of alternative paths providing virtually universal coverage;

· Access to data related to all customer locations, rather than making assumptions based upon sampling;

· Ability to model a network designed with actual, efficient engineering standards, rather than model a simulation based upon hypothetical design algorithms that never have been and never will be used in designing a real network;

· Ability to calculate the required number of network components such as pits, joint covers and manholes, rather than estimating a number based upon route miles; and

· Identification of efficient "last mile" routing for FTTN Networks.

250. Additionally, Telstra has fully documented the rationalisation and optimisation process employed in the development of the TEA Model, which ensures that the use of actual engineering records necessary to bring realism to the network design process does not introduce inefficiencies into the resulting forward-looking network design. As explained in the TEA Model Route Optimisation Process document, actual engineering data is used to identify the points of ingress (where demand enters the access network) and to identify the shortest network routes, which reside within legal rights of way, necessary to serve the entire service area.[117]

The TEA model uses the CAN cable routing information from these databases, which reflect actual cable routes that serve real building addresses, reside in legal rights of way and account for all natural and man-made obstacles, to design an efficient CAN, which is in all ways based upon fundamentally sound, forward-looking engineering principles and best practices placement procedures. This ensures that the engineering design underlying the TEA model would work in the real world – something not assured in other models with hypothetical designs.

Besides use of previously engineered cable routes, three other processes ensure the TEA network design is forward- looking, efficient and reflective of best practices. The provisioning process employed in TEA follows in all ways the Access Network Provisioning Rules provided by Telstra's Network Fundamental Planning (NFP) department. The labour and equipment prices built into the model are taken from the Access Network Modelling Costing Information document also produced by NFP. And, the routing information derived from Telstra's network systems and databases is rationalised and optimised before it is loaded into the TEA Engineering Modules.

[117] TEA Model Route Optimisation Process, at page 1

E.2.6 Efficient forward looking technology

251. As noted above, MJA objects that the TEA Model calculates the cost of a copper network, rather than incorporating alternative technologies into the network. The ACCC also finds fault with the TEA Model's choice of technology.[118]

> *The ACCC also notes that Telstra's application of its TEA model does not incorporate all efficiencies and optimisations that would be theoretically possible using efficient forward-looking technology.*

252. The TEA Model includes two service definition options: one option models cost for ULLS; the other models cost for basic exchange access. The difference between the two options is that the ULLS option necessarily constrains the choice of technology to that which meets the service description and technical parameters of ULLS; while the other has no such constraints. Both options use only forward-looking, best in use technology in network design.

253. The ULLS version of the TEA model makes use of technology proscribed in the Access Network Modelling Costing Information document provided by Telstra's Network Fundamental Planning (NFP) department. As explained in the statement of [redacted], this technology is the most efficient, forward-looking technology in commercial use, which satisfies the service definition and technical parameters of ULLS – unconditioned copper wire.

254. Contrary to the ACCC's claim, there is no unconditioned copper wire in commercial use that is more efficient and forward-looking than the unconditioned copper wire used in the TEA Model. Further, no further technological advancement in unconditioned copper wire is expected for the foreseeable future. Consequently, it is not possible to derive greater efficiencies and optimisations, theoretical or otherwise, through the incorporation of more technologically advanced unconditioned copper wire into the TEA Model's network design.

255. Likewise, MJA's criticism of the TEA Model for "neglecting to optimise by considering alternative technological solutions," cited above, is similarly without merit. Substituting fibre and radio for copper in the modelled network fails to meet the definition and technical parameters of ULLS, which is an all copper service.

256. Under the terms of the ULL service declaration, Telstra is required to provide a copper wire service. Telstra's legitimate interests plainly require that the charges it should be allowed to set for that service reflect the technological constraints the service declaration places upon it. To do otherwise would be inconsistent with any concept of capital maintenance.

257. Further, the TEA Model can be run using the basic exchange access option. This option does incorporate fibre into the access network design, where it provides a lower priced option. Even though this option of the model is inappropriate for costing ULLS, because it employs technology which does not meet the definition of ULLS, it is available to the ACCC for examination of the impacts of alternative technology.[119]

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[118] ACCC Draft Decision, at page 72
[119] MJA Review of the TEA Model, at page 5

In MJA's view efficient cost of supply requires consideration of an array of different options in modelling the access network. In particular, new entrants are unlikely to reproduce a copper based network similar to the one that has already been rolled out by Telstra. Instead, they will roll out the technology that is most appropriate to the areas they serve (for example, using fibre in urban areas and radio in rural areas). This has been clearly evidenced by the long standing debate surrounding the building of a fibre to the node (FTTN) in different geographical areas.

258. The ACCC quotes Ovum confirming that aerial cabling is not available in Australia.[120] Underground cabling reflects the reality of contemporary Australian telecommunications infrastructure installation.

259. Telstra has submitted compelling evidence on network design which shows that the current construction requirements for cable networks virtually preclude the use of aerial facilities.[121] In contradiction to its submission in the context of Telstra's Undertaking, Optus' material submitted to the ACCC on its own CAN in October 2008 clearly acknowledges that installing aerial cable is, in practice, impossible.

260. Optus states:[122]

Local planning authorities have often taken a hardline stance to any telecommunications development within their jurisdiction given community aversion to overhead cables. This is particularly true for aerial cabling. For example, the installation experiences by Optus Vision in the 1990s generally demonstrated that the community and councils had negative views towards aerial cabling. Optus could experience a similar widespread negative backlash if the current HFC network were to be expanded or infilled. This backlash extends beyond the economic cost to Optus to undertake environmental assessments required to obtain planning consent from various councils. Optus relies heavily on its 'brand' which would be adversely impacted.

This is relevant particularly in NSW, where restrictions may apply to overhead cabling that is defined as a 'subscriber connection' (such as an installation for the sole purpose of connecting a building, structure, caravan or manufactured home to a line that is part of an existing telecommunications network).

261. Ovum also expressly acknowledges that the use of conduit to house cable runs in Band 2 exchanges is appropriate and states (at page 10 of the Ovum Economics Review):

The model also assumes that all cables have been laid underground and no alternative use of other technologies such as aerial cable has been included....in Australia there is no alternative. Ovum believes local councils will not accept such usage of alternative equipment. With such an assumption in place the model has been modelled fairly to represent no alternative technologies. [Emphasis added]

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[120] ACCC Draft Decision, at page 67
[121] Statement of [redacted] at paragraphs 40 to 55
[122] Optus (2008), *Optus Public Submission to the Australian Competition and Consumer Commission in Response to its Draft Decision on Telstra's Exemption Application in Respect of the Optus HFC Network*, October 2008, at paragraphs 4.42 and 4.43

262. The reality is, in today's environment, it is very difficult for a telecommunications provider to rollout aerial cabling throughout the major capital cities and established urban areas in Australia. As Optus acknowledges in the statement quoted above, while Optus was rolling out its cable network there was a significant public outcry against putting aerial cables on poles. As has been recently confirmed publicly by an Optus executive, it would be impossible to for similar rollout of aerial cable to be repeated today.[123]

263. Under the existing regime, the installation of aerial cable is governed by the Schedule 3 of the *Telecommunications Act* 1997 (Cth) (**Telco Act**). The Telco Act distinguishes between 'high impact facility' and 'low impact facility'. Schedule 3 to the Telco Act stipulates that a 'designated overhead line' (which includes aerial cables of greater than 13mm external diameter) cannot be a 'low-impact facility'. Therefore, aerial cabling cannot be approved under Commonwealth law. Instead, approval is required from the relevant State or Territory administrative authorities, usually the relevant local council. In the event that a carrier is unable to obtain such approval, the carrier does have the option of applying to the Australian Communications and Media Authority (**ACMA**) for a facility installation permit (**FIP**). ACMA may only issue a FIP in limited circumstances however (for example, the telecommunications network to which the facility relates is of national significance)[124] and the process is lengthy and involves, amongst other matters, public consultation.

264. While leaving the regulation of the installation of aerial cables to, largely, local councils, the Telco Act provides for the removal of installed aerial cables in certain circumstances. Specifically, clause 51 of Schedule 3 to the Telco Act requires carriers to remove aerial cabling within 6 months, where the cable has shared poles with other non-communications cabling (such as electricity cables) and all the non-communications cabling has been permanently removed and not replaced. In this regard, it is relevant to note that across Australia local councils and electricity authorities have plans to relocate the electricity cables underground.[125] Such removal would require the telecommunications carrier to also remove installed aerial cables from the power poles within 6 months.

265. As is apparent from the above:

- the current Telco Act regime severely restricts a carriers ability to install aerial cable;
- installation of aerial cable is subject to approval by relevant State or Territory administrative authorities, usually local councils;
- requisite approvals for aerial cabling are highly unlikely to be forthcoming;

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[123] Commentary by Maha Krishnapillai, Director, Government and Corporate Affairs, Optus at CEDA *Australia's Broadband Future* event, Sydney, 3 December 2008.
[124] See ACMA *Guide to Applying for a Facility installation Permit*, June 2007 available at http://www.acma.gov.au/webwr/telcomm/infrastructure/facility_installation_permit_guide.doc
[125] As recently acknowledged by the Department of Broadband, Communications and the Digital Economy at http://www.dbcde.gov.au/communications_and_technology/policy_and_legislation/carrier_powers_to_install_telecommunications_infrastructure/issues/placing_aerial_cables_underground

- without requisite State or Territory administrative authority approval, a carrier's ability to obtain a FIP via the ACMA process is similarly restricted;

- where aerial cable is already installed, the current Telco Act regime expressly requires a carrier to remove such aerial cable within 6 months of non-communications cabling being removed – such removal is already occurring where, for example, local councils and power authorities are relocating power cables underground;[126] and

- both the ACCC's experts and Optus acknowledge that the installation of aerial cabling is, in practice, unrealistic under the current Telco Act regime.

E.3 Cost valuation (ACCC section B.3)

E.3.1 Vendor Prices

266. The ACCC notes (at page 73) that "*only six individuals gained access to the full version of the TEA model*". This is incorrect. As set out above, 18 individuals had approval for, and 13 individuals had, full access to the TEA model including Telstra's confidential vendor prices. In any event, this fact has no bearing upon the validity of the vendor prices included in Telstra's inputs to the TEA Model.

267. The ACCC states (at page 76):

> *In considering whether the costs in the TEA model are efficient and forward looking, where Australian prices are unavailable for comparison, the ACCC prefers an approach which benchmarks cost values with international equivalents. The ACCC also notes that it is usually the case that vendor prices are confidential. On this basis, the ACCC has relied on Ovum's analysis which suggests that the equipment prices should be lower and Optus' submission that the cost of cable used in the TEA model is high.*

268. With respect to the cost of cable, despite Ovum's conclusion that "*the cost of cable is broadly in line with international benchmarks*",[127] the ACCC appear to place more weight on Optus' arguments that "*copper cable costs and joint costs appear to be significantly higher than those used in other jurisdictions*" and "*on a like for like basis the Optus costs [of copper cable] are significantly lower than the Telstra costs*".[128] However, Optus' view is based on the vendor prices in version 1.2.1 of the TEA model, which has simulated vendor prices to protect confidentiality. Optus' vendor prices for copper cable support the vendor prices in version 1.2 of the TEA model, which is the version that contains Telstra's confidential vendor prices.

269. The table below compares the vendor prices in the TEA model with the vendor prices that Optus made available. Caution must be exercised in making

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[126] See, for example, the Government of Western Australia's *Underground Power Program* which, since 1996 has progressed the conversion of residential suburbs from overhead power to underground cabling. Detail at http://www.energy.wa.gov.au/2/3211/64/underground_pow.pm

[127] Ovum's Economics Report, at page 11.

[128] Optus' response to the ACCC's discussion paper, at page 41

these comparisons for the reasons set out in Optus' Response to the Discussion paper (at paragraph 4.97) and Telstra's Response to Access Seekers' Submissions (at section F.2.6). However, as can be see from Table 3 below, a comparison of vendor prices broadly shows that [**Optus CIC**]

Table 3: Comparison of vendor prices for copper cable

Size	Telstra vendor price (0.40mm)	Telstra vendor price (0.64mm)	Optus vendor price (0.50mm)
2400 pair main cable	[redacted]	n/a	**[Optus CIC]**
1200 pair main cable	[redacted]	[redacted]	**[Optus CIC]**
800 pair main cable	[redacted]	[redacted]	**[Optus CIC]**
400 pair main cable	[redacted]	[redacted]	**[Optus CIC]**
200 pair main cable	[redacted]	[redacted]	**[Optus CIC]**
100 pair main cable	[redacted]	[redacted]	**[Optus CIC]**

270. Ovum's comparison of vendor prices for cable support Telstra's inputs. Ovum, in Telstra's view, compared the incorrect cable costs from the TEA model. As explained in Telstra's response to Ovum[129], Ovum had compared its view of the material cost of cost with Telstra's fully loaded cost (that is, including the cost of material, hauling and indirect overhead). Table 4, below, shows that when a like for like comparison is made, that is material cost with material cost, Telstra's vendor prices are below Ovum's for all sizes of distribution cable.

Table 4: Comparison of loaded costs for copper cable

Size	Telstra vendor price (materials)	Ovum cable cost (materials)
100 pair distribution cable	[redacted]	**[[redacted] Ovum CIC]**
50 pair distribution cable	[redacted]	**[[redacted] Ovum CIC]**
30 pair distribution cable	[redacted]	**[[redacted] Ovum CIC]**
10 pair	[redacted]	[redacted]

[129] Telstra (2008), *Response to Ovum Submissions*, 5 December 2008, at page 14

distribution cable		**Ovum CIC]**

271. The ACCC quotes Network Strategies analysis of cable costs (at page 74), but does not appear to place any weight on it. Network Strategies conclusion that "*...copper cable costs – appear to be high...*"[130] is based on its assertion 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*".[131] However, this assertion is not backed up with any references or statement as to what costs calculated in 2007 Network Strategies is referring to.

272. Consequently, the evidence provided by Ovum and Optus support the vendor prices in the TEA model and the assertion by Network Strategies cannot be relied upon.

273. In relation to the vendor prices for other plant and equipment, the ACCC appears to rely on Ovum's statement (at pages 74):

> *Ovum states that there is no evidence that the network costs submitted in the model have been re-valued and made forward looking. Further, Ovum concludes that the cost inputs are in fact generally historic averaged costs sourced from Telstra's engineering department and mainly drawn from three Access and Associated Services ("A&AS") agreements.*

274. Telstra's response to Ovum's Economics Report shows that the A&AS contract rates are current and forward-looking, as they are applicable until at least [redacted] – they are not historic costs.[132]

275. The ACCC also quote Ovum's conclusion (at page 75):

> *Ovum concludes that the other equipment prices in the TEA model should be lower as they should be valued at current cost of a modern equivalent assets and if the cable costs are adjusted with international benchmarks and other equipment prices are reduced by 10 per cent, then the final ULLS cost falls by 6 per cent.*

276. Ovum's suggestion to reduce equipment prices by 10% is made on the basis that equipment prices have fallen by 5-15% per annum over the last five years. Telstra does not consider such an adjustment is necessary as Telstra's vendor prices were negotiated in 2007 and are current until at least [redacted]. However, even if such a change was warranted, the price trends proposed by Ovum are inconsistent with the ACCC's view that trenching and duct costs are expected to increase over time. For instance the ACCC state (at page 123):

> *The ACCC's analysis indicates that an economically significant positive tilt should be applied to the value of the ULLS, in aggregate, since the value of the ULLS lines and trenches and ducts are expected to be valued significantly higher in the future in nominal terms.*

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[130] Network Strategies response to the ACCC's discussion paper, at page 68, quoted by ACCC in the Draft Decision at page 74
[131] Network Strategies response to the ACCC's discussion paper, at page 5
[132] Telstra's response to Ovum, at page 16

277. Indeed, in its recent determination, the ACCC concluded that distribution conduit and trenching prices increased by 5.11% and main conduit and trenching increased by 5.02%.[133] Consequently, if the ACCC were to adjust Telstra's vendor prices for plant and equipment other than copper cables, then to be consistent with other parts of the Draft Decision, the ACCC would need to increase them.

E.3.2 Lead-ins

278. The ACCC concludes that the cost of a 2 pair lead in should not be included in the TEA model. The ACCC states (at page 76):

> *The ACCC also notes that Telstra has included the cost of a 2 pair lead-in of $282.91 to network costs. The ACCC's preliminary view is that this cost should not be included in the cost of providing the ULLS. As noted in the 2005 Undertaking Final Decision, Telstra has previously submitted that the cost of lead-ins is recovered through connection charges. Further, and consistent with the ACCC's views in recent arbitral final determinations the ACCC does not consider that lead-in costs should be included in network costs as:*
>
> *-the ACCC considers that lead-in costs, being once-off costs associated with connecting a service are more appropriately recovered through connection charges;*
>
> *-the ACCC in not satisfied that the cost of lead-ins is not already fully or partially recovered by Telstra's connection charges; and*
>
> *-lead-in costs may already be recovered in O&M costs.*

279. Telstra's earlier submission that lead-in costs were recovered through connection charges was incorrect. The ACCC's further reasons for considering lead-in costs should not be included in network costs are similarly incorrect for the following reasons.

280. First, whether lead-in costs are 'once-off' or 'ongoing' is irrelevant to how those costs should be recovered. Lead-in costs are 'once-off' in the sense that Telstra (or a new entrant) must incur the cost of installing them upfront, but so are all other network costs in the TEA model. This does not mean that it is unreasonable to recover those costs from ongoing charges rather than connection charges. It is definitely not a justification for denying total or partial recovery of these costs. Indeed, as a matter of principle, it is appropriate to recover lead-in costs via the ULLS monthly charge because installing a lead-in results in a piece of telecommunications infrastructure that Telstra owns and is responsible for, that will provide service for a considerable period of time (25 years), and forms part of the infrastructure required to provide ULLS.[134]

281. Second, Telstra is unable to recover lead-in costs from connection charges as lead-ins are already installed at a loss and connection charges cannot be increased by more than CPI.[135] For example, Telstra's RAF shows that, in 2006/07, Telstra's installation revenue for retail and wholesale end user access

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[133] ACCC (2007), *ULLS Access Dispute Between Telstra and Primus: Statement of Reasons for Final Determination*, December 2007, at paragraph 419

[134] Telstra's response to the ACCC's discussion paper, at page 13

[135] Telstra Carrier Charges — Price Control Arrangements, Notification and Disallowance Determination No. 1 of 2005

under-recovered costs by [redacted] - connection revenues were $[redacted] and installation costs were $[redacted].

282. Third, lead-in costs have been excluded from O&M. They are accounted for by the installation cost category in Telstra's RAF, which is excluded from the factor study.[136] Therefore, they are not recovered from O&M.

E.3.3 Entrance Facilities

283. The ACCC states:[137]

> *The ACCC also notes that the TEA model includes entrance facility costs to total network costs. These costs should not be included in total network costs of providing the ULLS as these costs are already recovered in TEBA charges.*

284. Telstra Equipment Building Access (TEBA) charges compensate Telstra for letting alternative access providers install their equipment in a Telstra exchange building. The TEBA charges compensate Telstra for:

- Floor space used by an access provider equipment
- MDF space (equipment side of MDF) used by the access seekers to allow them to connect to the CAN
- Common infrastructure such as;
  - Superstructure Ironwork
  - Cable trays
  - Optical Fibre trays
  - DC Power systems
  - Air-conditioning
  - Telstra Main Distribution Frame (MDF) equipment side access
  - Digital Distribution Frame (DDF) for transmission cross connection
- Other Building facilities such as;
  - Bricks and mortar building
  - Security and site access management
  - Fire protection systems
  - Remotely monitored alarms

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[136] Telstra (2008), *Operations and Maintenance and Indirect Cost Factor Study*, 7 April 2008, at paragraph 14
[137] ACCC Draft Decision, at page 76

- Back-up power batteries and diesel generators
- Lighting
- General purpose 240volt outlets
- Loading bays or un-crating areas
- Car parks
- Lifts, Hoists or other heavy lifting equipment
- Building washrooms and toilets
- Building cleaning and maintenance

- Other Telstra support systems
  - CADlink - for floor space and MDF block management
  - NPAMS – for MDF cable pair management
  - Netpower - for DC power management
  - TRAC – used for the allocation of tie cables and transmission system

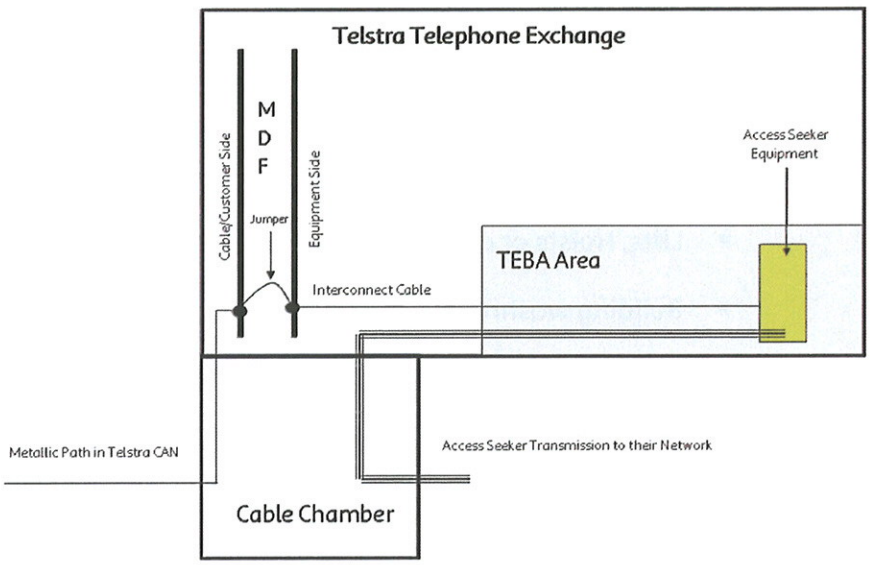
There is also a connection charge that covers the cost of connecting the access providers' lines, which have been terminated at the collocation frame, to the retail customer lines, which have been terminated on the main distribution frame.

285. All of these costs relate to the equipment side of the Main Distribution Frame (e.g. the side where switching, DSLAM, etc equipment is located). The entrance facilities costs in the TEA model relate to the costs on the customer side (line side) of the Main Distribution Frame, that is, the costs associated with terminating cables from Telstra's Main Cable Network on the Main Distribution Frame (MDF) in the exchange building. These costs include:;

- A portion of the cable vault (chamber) where the main cables enter the exchange building;
- The cable racking required to transport the cable from the cable vault to the main distribution frame;
- The line side, or customer side, of the main distribution frame; and
- The blocks where the main cables terminate.

286. All of these facilities are required to terminate copper main cables, regardless of which carrier is providing the actual service over the lines. They are part of the CAN. None of the costs associated with these facilities are included in the TEBA charges.

287. Following is a diagram which identifies the entrance facilities required to connect a loop to the exchange, the TEBA facilities and the cable that is used to connect the two.



288. The TEBA facilities are on the right side of the diagram, and on the equipment side of the Main Distribution Frame. They include all the facilities from the Access Seeker TEBA space to the equipment side of the main distribution frame. The costs for these the facilities are recovered through the TEBA rates. The facilities on the left side of the diagram are on the customer side of the Main Distribution Frame. They are the components of the network required to terminate main cables, and consequently all copper loops, on the main distribution frame. These facilities run from the cable vault/chamber to the customer side of the main distribution frame. These facilities are identified in the TEA model as entrance facilities and are included in the cost of the ULLS.[138]

289. There is a cable that connects the customer side to the equipment side of the main distribution frame. The cost for this wire is recovered through a connecting charge assessed when an alternative access provider acquires a new customer.

290. As shown on the above illustration, there is no overlap between the TEBA facilities and the entrance facilities required to terminate all copper main cables on the main distribution frame. None of the TEBA charges compensate for any of the entrance facility costs in the TEA model.

E.4 Trenching costs (ACCC section B.4)

291. The ACCC has clearly stated that prices that reflect forward-looking efficient costs meet the legislative criterion for evaluating an Undertaking.

[138] Note that only half the cost of the main distribution frame (i.e. line side of the frame) is included in the ULLS cost.

The ACCC considers that ULLS access prices that reflect the efficient (as opposed to actual) cost of supplying the ULLS will best promote the LTIE.[139]

The ACCC considers that prices that reflect efficient forward-looking costs of supply will best promote effective competition in the supply of fixed-line voice services and broadband/DSL services in the present environment.[140]

The ACCC considers that an access price that reflects efficient, forward-looking costs best meet [sic] the objective of encouraging the economically efficient use of and investment in infrastructure.[141]

The ACCC's view is that where access prices are based on costs that are not the costs of a fully optimised and efficient network, the resulting access prices may not reflect the efficient costs of providing the service and will not encourage appropriate build/buy decisions. On this basis the ACCC considers that the objective of promoting efficient investment is not achieved when costs of providing the ULLS are based on a network which has not been fully optimised and does not use forward looking and efficient cost values.[142]

The ACCC considers that, in the context of access prices, prices that reflect the efficient forward-looking costs of the service best meet this criterion [of encouraging the economically efficient operation of a carriage service][143]

292. Despite this unambiguous guidance, the ACCC now wishes to create exceptions to this rule, apparently because it does not like the results of following its own prescriptions. Thus, in the case of trenching costs, the ACCC has created a "*cost incurred*" exception to its finding that forward-looking efficient costs, rather than actual costs, best meet the legislative criterion. The ACCC evidently intends to apply this exception whenever it believes "circumstances" warrant thereby removing any consistency, certainty or predictability from its pricing principles. The ACCC states:[144]

However, the ACCC recognises that there will be sets of circumstances where forward-looking costs do not adequately promote the objectives of the criteria that the ACCC must have regard for in determining whether the undertaking is reasonable. The ACCC is of the view that this is such a circumstance.

Telstra has proposed that forward-looking costs should include the retrenching and repaving of trenches where local copper pairs were initially laid. However, the ACCC agrees with Optus submission that Telstra did not incur trenching costs of the same magnitude as those modelled in the TEA model since, for example housing estate developers excavated many of the trenches which Telstra use (footnote omitted). Therefore by allowing Telstra to include these cost as part of the TEA model would result in Telstra being compensated for costs that it (in most

[139] ACCC Draft Decision, at page 47
[140] ACCC Draft Decision, at page 48
[141] ACCC Draft Decision, at page 50
[142] ACCC Draft Decision, at page 51
[143] ACCC Draft Decision, at page 56
[144] ACCC Draft Decision, at pages 80 to 81

cases) never incurred and is not likely to incur within the economic life of the existing copper pairs.

...In conclusion, the ACCC believes that the inclusion of trenching costs, where they have not been incurred by Telstra, will lead to access prices which discriminate between access seekers and access providers which is not in the LTIE.

293. There are a number of problems with the ACCC's decision.

294. First, the ACCC attempts to achieve the perceived cost savings that Telstra might achieve by building a network over many past decades, and the cost savings that a new entrant might achieve by building a new network today. No carrier can benefit from having both an old network that reaches 100% of the population and a new one. Therefore, the ACCC's approach lacks any link to the practical reality of firms' costs and the competitive process in the markets in which ULLS is supplied.

295. Second, the ACCC's premise is wrong. Telstra has incurred trenching costs of a similar magnitude as those modelled in the TEA Model.

296. Third, the TEA model allows for a significant proportion of cable to be placed in open trenches in the calculation of forward looking efficient network costs.

297. Fourth, the ACCC appears to justify its approach by the basis of the incorrect view that the TEA model is also based on actual costs. The ACCC fails to understand that the TEA model is based on a forward-looking efficient network.

298. Fifth, the ACCC has incorrectly changed the inputs into the TEA model to eliminate trenching and reinstatement costs, which therefore, leads them to the incorrect conclusion that there is a set of inputs that leads to a cost estimate below $30.

E.4.1 Practical reality

299. The ACCC attempts to achieve the perceived cost savings that Telstra might achieve by building a network over many past decades, and the cost savings that a new entrant might achieve by building a new network today.

300. However, no carrier can benefit from the cost savings associated with having both an old network that reaches 100% of the population and the cost savings from having a new network with the most efficient technology and routes to supply current demand. Firms are either one or the other.

301. Therefore, at the most fundamental level, it would not be reasonable for the ACCC to select the time frame for any subset of inputs into the TEA model on the basis of seeking to minimise the estimated cost. For example, it may be that undertaking some construction activities would have cost less 20 years ago than today. However, there are also other activities in which costs as then incurred would have been higher than they currently are. Focussing on the former for one set of inputs and the later for another set, would not accurately reflect costs at any point in time and hence could not be consistent with Telstra's legitimate interests.

302. Furthermore, while the ACCC focuses on the cost saving associated with historical costs incurred, it does not place any concern on the additional, efficiently incurred costs associated with building a network in the past. For

example, when Telstra originally built the network, much of the current demand on the network was unknown. As a result Telstra had to augment the network with new cable and conduit runs as new demand was identified and connected to the network. These reinforcements and redesigns of the network to meet the growth in demand were not a product of inefficient designs but a direct result of building a network to meet an uncertain future demand. In the TEA model these overbuilds and reinforcements have been eliminated due to the forward-looking design, where current demand is known. Similarly, Telstra has efficiently built facilities to customers at one point in time, but who no longer require service, stranding capacity in areas where customer demand decreased after the initial construction of the network.

303. As discussed in the Harris and Fitzsimmons report:[145]

> *The validity of the TSLRIC+ approach rests on its ability to estimate costs that are reasonable proxies for the costs that an efficient firm could actually achieve. The key word is "reasonable". Prices based upon cost estimates that are reasonable approximations of what a real-world firm could achieve will drive efficient and beneficial investment decisions for incumbents and entrants alike.*

And

> *This goes to the fundamental goal of TSLRIC+ pricing, which is to provide the proper signals for efficient investment decisions by incumbents and entrants. To accomplish this, TSLRIC+ must provide estimates that are reasonable approximations of the costs that an efficient firm could actually hope to achieve.*

304. The ACCC's approach lacks any link to the reality of firms' costs and the competitive process in the markets in which ULLS is supplied.

305. Thus, in Telstra's view, mixing costs standards so as to achieve a lower cost estimate is:

- Harmful to the statutory objectives of promoting competition and encouraging efficient investment;
- Inconsistent with Telstra's legitimate interests and goes beyond the legitimate interests of users of the declared service;
- Undermines regulatory predictability in ways that must increase regulatory risk, ultimately increasing costs; and is
- Capricious and unreasonable, and suggestive of a predisposition to attain a particular outcome rather than to dispassionately and objectively apply a method that properly determines outcomes.

E.4.2 Telstra's Costs Incurred

306. The ACCC is of the opinion that Telstra has not incurred costs of the same magnitude of those modelled in the TEA Model. The basis for this belief apparently lies in the fact that developers excavate and reinstate trenches in

[145] Harris, Dr, Robert and Fitzsimmons, Dr William (2008), *An Assessment of Telstra's TEA Cost Model for Use in the Costing and Pricing of Unconditioned Local Loop Services (ULLS)*, 4 November 2008, at pages 11 and 13 and see section 2 generally.

new estates, since this is the only rationale given by the ACCC for its opinion. The ACCC also cites Optus' submission as support for its view. Optus' rationale for its view is the same – that the costs of excavation and reinstatement of trenches is incurred by the developers of new estates. The ACCC states:[146]

> *However, the ACCC agrees with Optus submission that Telstra did not incur trenching costs of the same magnitude as those modelled in the TEA model since, for example housing estate developers excavated many of the trenches which Telstra use. Therefore by allowing Telstra to include these cost as part of the TEA model would result in Telstra being compensated for costs that it (in most cases) never incurred and is not likely to incur within the economic life of the existing copper pairs.*
>
> *For example, when considering this issue in the context of greenfield estate [sic], the ACCC does not consider the following scenario as reasonable:*
>
> *• On Friday, Telstra lays the local copper pairs for a new estate, Telstra then seeks a certain rate of return on the assets which are valued at x, from the ACCC.*
>
> *• On Monday, Telstra return to the ACCC with an increased asset value of x + y on the basis that over the weekend the value of the assets has increased because the council or property developer have back-filled the trenches and laid concrete footpaths.*

307. Optus states:[147]

> *Telstra itself did not historically incur trenching costs of the same magnitude as those modelled as a result of TEA's surface barrier costs in question (eg, since housing estate developers excavated many of the trenches that Telstra currently uses).*

308. First and foremost, the ACCC's example that relates to costs incurred historically and Optus' assertion are not germane. Telstra's Undertaking price is a step closer to the efficient forward-looking TSLRIC+ of a new entrant. Such pricing is what would be produced in an effectively competitive market and is reasonable. Prices based on Telstra's actual costs incurred historically are not those that would eventuate in an effectively competitive market.

309. Notwithstanding, Telstra submits that it has had to dig and reinstate trenches to a similar extent as modelled in the TEA model. In practice, and in the TEA model, the only instance in which Telstra does not incur trenching costs during construction is when trenches are provided by developers in new estates. In all other instances, Telstra must incur trenching costs in order to install conduit in the ground. Furthermore, over time, Telstra must add cable capacity and new routes to customers initially connected to the CAN in a new estate. This requires Telstra to re-dig trenches and reinstate them. Thus, even if Telstra had installed a cable in a developer provided trench in 1980, over the course of the next 30 years, Telstra might have had to re-dig that trench, lay additional cables, and reinstate the trench. As such, the ACCC's scenario where Telstra lays cable in a new estate on Friday and then, on Monday, seeks a higher valuation of those assets due to the street being paved above the cable, is not germane. In the ACCC's simplistic language, over the weekend,

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[146] ACCC Draft Decision, at page 80
[147] Optus' Response to the ACCC's Draft Decision, at page 44

Telstra is likely required to re-dig those trenches to add capacity to the network.

E.4.3 Cable Placed in Open Trench

310. The TEA model estimates the amount of trenching necessary in the construction of a forward-looking, efficient new network. The TEA model does not include the cost of breaking out surface structures (e.g. concrete or asphalt), digging trenches (or boring) or reinstating original surfaces in the calculation of the cost of placing conduit in new estates or where distribution conduit shares a trench with the main cable network or another distribution area. Rather, in such instances, the TEA model only includes the cost of placing conduit in an open trench. Consequently, the forward-looking efficient cost of constructing a network in new estates, as calculated in the TEA model, is substantially lower that the cost of construction elsewhere.

311. The percentage of conduit length, which is assumed to be installed in new estates (New Estates Ratio) or trenches shared between the main and distribution networks or shared between adjacent distribution areas, is a user adjusted input to the model.[148] This amount is input to the model as a ratio of conduit installed in open trenches to total conduit. In a forward-looking context, Telstra estimates 1% of total network construction can be expected to be done in new estates and 5.95% of conduit can be expected to be placed in trenches that are shared between the main and distribution networks or shared between adjacent distribution areas. The total proportion of conduit placed in open trenches is 6.95% in the TEA model. Once a forward looking new estates construction estimate is decided upon, the model excludes that portion of construction from the calculation of trenching costs. The model then calculates trenching costs for only the remaining lines expected to be constructed outside of new estates and not shared between main and distribution networks or within the distribution network.

312. This is an approach that has been consistently applied in all recent ACCC decisions and the ACCC has consistently sought that 13% of trench lengths have no attributed trenching and reinstatement costs. For instance, the ACCC sought the followings values:

- 13% in December 2004;[149]
- 13% in December 2005;[150]
- 13% in August 2006;[151]
- 13% in December 2007, on the basis that this value best met the LTIE;[152]
- 13% in June 2008;[153]

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[148] The input is labelled 'Cable Placed in an Open Trench' in version 1.2 of the TEA model and was previously called 'New Estates Ratio' in version 1.1.
[149] ACCC (2004),*Assessment of Telstra's undertakings for PSTN, ULLS and LCS: Final Decision*, December 2004,at pages 76-77
[150] ACCC (2005), *Assessment of Telstra's ULLS and LSS monthly charge undertakings: Draft Decision*, December 2005, at page 101
[151] ACCC (2006), *Assessment of Telstra's ULLS monthly charge undertaking: Final Decision*, August 2006, at page 56
[152] ACCC (2007), *ULLS Access Dispute between Telstra and Primus: Statement of Reasons for Final Determination*, December 2007, at paragraphs 447 to 454
[153] ACCC (2008), *ULLS Pricing Principles and indicative Prices*, June 2008, at pages 19-20

313. In its Draft Decision the ACCC has increased its preferred value for this input to a range of 13% -17%. It appears that the ACCC uses the new 'cost incurred' constraint to justify such a high trench sharing input.

314. However, since the TEA Model allows for a substantial proportion of conduit to be placed in open trenches (6.95%), which attracts no trenching or reinstatement costs, the ACCC's concern regarding whether or not Telstra actually incurred these costs in the construction of its network is unwarranted and inapposite.

E.4.4 Forward-Looking Costs

315. The TEA model calculates the forward-looking costs an efficient provider would incur today, if it were to build a new access network capable of providing ULLS service. The model designs efficient routes capable of providing service to all current addresses in the serving area (in this case Band 2 ESAs). Next the model provisions the quantum of forward-looking best in use equipment necessary to serve the customers along those efficient routes. Finally the model calculates the investment necessary to purchase and install that equipment.

316. Despite this, the ACCC misrepresents Telstra's use of base data to justify its decision to adopt a "cost incurred" standard. For example, the ACCC states:[154]

> *The ACCC notes that when Telstra developed the TEA model it sought to use actual costs incurred as a basis for determining efficient forward looking costs. However, Telstra has not provided any evidence of incurring costs for the breakout, placement and reinstatement of terrain for new network installations and has only provided evidence of the costs a contractor would charge Telstra for this activity.*

317. As discussed in section E.2 above, Telstra did not seek to use actual costs incurred as a basis for determining efficient forward looking costs in the development of the TEA model. Telstra uses Telstra's conduit locations as the basis for determining the rights of way for an efficient forward-looking trench layout for the CAN.[155] Further, the ACCC implies that, since Telstra has not provided evidence of its historic trenching costs, the company must not have incurred any such cost. Telstra did not provide evidence of having incurred costs for breakout, placement and reinstatement in the past, because Telstra historic costs incurred are irrelevant to the consideration of whether Telstra's Undertaking price is based on efficient forward-looking costs.

318. Furthermore, the ACCC claims:[156]

> *Telstra has proposed that forward-looking costs should include the retrenching and repaving of trenches where local copper pairs were initially laid.*

319. It is not true that the model "*include[s] the retrenching and repaving of trenches where local copper pairs were initially laid,*" as alleged by the ACCC. The TEA model calculates the cost an efficient provider would incur today to build a new network, as would any properly constructed TSLRIC+ model – it does not calculate the cost of the existing network. Consequently, the model does not

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[154] ACCC Draft Decision, at page 80
[155] See Statement of [redacted], 18 November 2008, Annexure A.
[156] ACCC Draft Decision, at page 80

examine existing local copper pairs and where they were initially laid for any purpose, let alone for the purpose of "*retrenching and repaving of trenches*" where they are laid.

E.4.5 ACCC's model inputs

320. The ACCC has tested the reasonableness of Telstra's $30 pricing proposal by running the TEA Model with a set of input parameters. The ACCC presumably considers these parameters – which it has chosen – to be reasonable. One of the assumptions in the ACCC's set of input parameters is that a forward-looking network construction can be accomplished by an efficient new entrant by placing conduit in trenches, which are excavated in turf 100% of the time. The ACCC states:[157]

> *The ACCC also notes that Telstra has asserted that the Proposed Monthly Charge can be supported by the results of the TEA model under any reasonable set of inputs. The ACCC has found that when the TEA model is run with other parameter values, the resulting range of monthly charge estimates are significantly less than $30. This leaves the ACCC with significant doubt as to whether the Proposed Monthly Charge of $30 is reasonable. While this does not, of itself, mean that the ACCC cannot be satisfied of the reasonableness of the $30 price, the ACCC does have concerns that the $30 figure falls outside what could be considered, when all submissions are taken into account, to be a reasonable price range.*
>
> *In particular, the ACCC applied the following assumptions to the TEA model in its scenario run:*
>
> *-trenching of turf only;*
>
> *-Ovum's pre-tax WACC of 9.22, post-tax WACC of 8.58;*
>
> *-tilt to the ducts and pipes of 3 per cent; and*
>
> *-$0 for lead-ins rather than the TEA model assumption of $282.91.*
>
> *In combination, these assumptions result in the monthly charge for the ULLS being significantly less than $30.*

321. The ACCC appears to believe it reasonable to assume that an access network can be built and reinforced over time though the city centre of every suburb and medium sized town in the most populated parts of Australia without ever encountering a concrete footpath, a driveway or a road. Since new estates are excluded from the trenching assumption, and the ACCC believes that 13 to 17% of lines can be constructed in new estates in an efficient forward-looking build, it follows that the ACCC believes that the remaining 83 to 87% of lines, which are constructed outside of new estates, can be placed in turf without exception.

322. Telstra submits that this assumption is plainly unreasonable, even if it is only being used as a 'limiting case'. In effect, there is no possibility that such a 'limiting case' could ever arise, and hence that it could ever properly define or even inform the range of the appropriate cost estimate. Adopting such an assumption in determining that range would be no different from adopting an assumption that vendors would provide equipment without charge.

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[157] ACCC Draft Decision, at page 41

323. Telstra always has and always will incur breakout and restoration costs in building or reinforcing its network. This fact is confirmed by the multitude of municipal and other governmental regulations and rules governing the reinstatement of concrete when roads and footpaths are excavated in order to place new telecommunications facilities. If there is no possibility that roads and footpaths would ever require reinstatement, why would virtually every municipality develop extensive regulations governing the reinstatement of these roads and footpaths? They wouldn't. The regulations are required to address the frequent and extensive need to reinstate road and footpath surfaces as new telecommunications facilities are constructed. Any assumption that this never occurs defies credibility.

324. Finally, even the Ovum engineering report commissioned by the ACCC recognises that surface structures cannot be simply assumed away. Ovum suggests that, "*while this may not be entirely satisfactory for copper cable placement*", concrete breakout and restoration in a suburb could be avoided in suitable circumstances with lateral boring.[158]

> *Further, there is the issue of what a modern, efficient operator would do if it were to duplicate the Telstra infrastructure. Much of the concrete surface breakout and restoration in a suburb could be avoided in suitable circumstances. For example, when Bright laid fibre for a pilot in South Perth, it used lateral boring through the nature strips for the fibre runs. This avoided the concrete footpaths in most cases. While this may not be entirely satisfactory for copper cable placement, it indicates that careful surveying and planning can avoid difficult surfaces*

325. Telstra agrees with this proposition and makes liberal use of boring in its model inputs, wherever feasible. The ACCC, on the other hand, eliminated all boring in its "reasonable set of inputs" and replaced them with turf. However, such an approach is clearly inappropriate as it assumes that all drives, footpaths and roads in Band 2 areas are turf.

E.5 Trench sharing (ACCC section B.5)

326. As the ACCC and Tribunal have previously ruled, a reasonable TSLRIC+ model calculates the cost a new entrant would incur in replicating Telstra's network. A new entrant in a competitive market replicating Telstra's network will not have available to it open trenches that have since been reinstated. Instead, the new entrant could only take advantage of open trenches in new estates that are under development during the course of the new entrant's network build.

327. The duration of a new entrant's network build is not a directly observable variable. In Telstra's 2005 ULLS undertaking, which was an undertaking for prices in all ULLS bands, Telstra considered that it was appropriate to set the proportion of the trenches in new estates on the basis of a national figure assuming that the new entrant would build a network over the course of one year. Approximately 1% of premises in Bands 1, 2, 3 and 4 were added to the network and in new estates each year.

328. However, it is possible to distinguish new estates by different bands. Since Telstra's Undertaking is for Band 2 only, Telstra considers it reasonable to use only the Band 2 ratio of new estates for this input ([redacted] per annum) for the purpose of calculating Band 2 costs. Furthermore, the majority of new estates are

[158] Ovum (2008), *Review of the network design and engineering rules of the TEA cost model*, 6 August 2008, at pages 38-39

deployed with fibre in at least part of the network, making them unsuitable for ULLS. The proportion of Band 2 SIOs that will be developed in new estates with a full copper loop suitable for ULLS is [redacted] per annum.[159] This is a reasonable new estate trench sharing input for determining the costs of Band 2 ULLS with respect to the New Entrant Benchmark.

329. It appears from the Draft Decision that the ACCC agrees that the New Entrant Benchmark is appropriate, however, the ACCC considers that a new entrant would roll out its network over a longer time than the one year assumed by Telstra. In a final determination with respect to an arbitration over ULLS pricing, the ACCC stated:[160]

> *The ACCC considers that the concept of a forward-looking network needs to be related to realities of deployment of the network. The ACCC considers that, in the real world, construction of a network would be planned a significant time in advance with other operators and utilities, and would allow a new entrant to progressively make use of open trenches in new estates at no cost. Accordingly, the best available proxy for trench sharing in new estates is the cumulative (or historical) trench sharing measure.*

330. Similarly, in the Draft Decision (at page 87) the ACCC state:

> *The ACCC considers that, when applying the TSLRIC framework in a practical sense, forward looking network costs need to reflect the realities of network deployment and that it is not possible for the CAN to be constructed in one period (or instantaneously). The ACCC view is that network construction would generally be planned a significant time in advance...*

331. However, in assuming a short roll-out period Telstra has conservatively understated costs. Adopting a longer time frame would require additional costs to be included in the TEA model to reflect the real costs of delaying a new entrant's network build. As discussed in Telstra's response to the ACCC's Discussion Paper:[161]

- An approach that assumes a new entrant would progressively roll out its network beginning at the start of the Undertaking period would necessarily mean that that new entrant would leave many users unserved at the start of the Undertaking period and potentially throughout the course of the Undertaking. Such an assumption is inconsistent with the Standard Access Obligations, which require the service provider to supply an active declared service.

- An approach that assumes that a new entrant commenced rolling out its network some years ago and finished at the start of the Undertaking period would mean that the interest during construction, which would accrue over the 'advance' period from when the network began to be built to the time it was placed in service (start of the Undertaking period), should be accounted for. In the derivation of its 13% to 17% new estate ratio, the ACCC considered a construction timeframe beginning in 1992. The compounded cost

[159] Statement of [redacted] at Annexure [redacted]; and Telstra's Response to the ACCC's Discussion Paper at page 25
[160] ACCC, ULLS Access dispute between Primus and Telstra (monthly charges), Statement of Reasons for Final Determination, December 2007, (Public Version), paragraph 442.
[161] Telstra's Response to the ACCC's Discussion Paper at page 23 to 26

of interest during construction accruals over just 10 years must be added to the ACCC's cost of construction, adding $2268 per SIO in interest to the $2717 per SIO investment cost in band 2 areas.[162] Clearly, assuming a shorter roll-out timeframe results in lower costs on net.

- The TEA Model includes the efficiencies of scope and scale in estimating the cost of ULLS. If the ACCC were to estimate the cost of a provider beginning with a small market share and building share over a decade or more, these economies would not be achievable or achievable to any where near the same extent. Rather, as in mobile termination, a model would need to be constructed which reflected some lower level of the scale and scope efficiencies.

332. Despite these submissions, the ACCC concluded in the Draft Decision (at page 87):

> *In this regard the ACCC considers that a trenching sharing value of between 13-17 per cent approximates cumulative trench sharing potential in new estates...*
>
> *This figure has been re-calculated to include data up to 2006-07.*

333. The ACCC characterises their updated figure as "*the accumulative stock of new estates over the last ten years*"[163] updated to account for data to 2006/07.[164] However, in its 18 December 2008 Letter to Dr. Tony Warren, the ACCC explains that its 17% new estates ratio estimate was calculated using "*data on the number of new dwellings constructed since 1992*". Presumably, the ACCC considers an estimate of the cumulative percentage of new dwellings (adjusted to account for those constructed in already populated areas) constructed nation wide over a 16 year horizon is a reasonable approximation for the number of new estates which would be encountered in a forward looking construction.

334. Aside from differences between Telstra's and the ACCC's assumptions in relation to a new entrant's network roll out timeframe, the ACCC has made two mistakes in their calculation. The ACCC has, first, used the national average ratio, rather than just the Band 2 ratio and, second, used the total historical number of dwellings constructed in new estates, which includes dwellings in those new estates that have been served with fibre and those that are served with all copper lines, even though new estates that have been provisioned with fibre are excluded from the TEA Model, because they are unsuitable for ULLS. Consequently, the ACCC's methodology removes the cost of trenching for lines which are not included in TEA, dramatically overstating the savings in trenching costs and understating the average cost per line.

335. Finally, the forward looking projection of the proportion of Band 2 SIOs that will be developed in new estates is estimated to be [redacted] per annum.[165] The cumulative effect of [redacted] per annum over a 16 year period is [redacted], not 13-17% as the ACCC has calculated using historic data.

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[162] Assuming that construction cost is spread evenly over a 10 year construction period and a compound interest rate of 12.28%.
[163] ACCC (2004), *Assessment of Telstra's undertakings for PSTN, ULLS, and LSS*, December 2004, at fn 156
[164] Draft Decision at fn 232
[165] Statement of [redacted] at Annexure [redacted]. [redacted] of green field new estates in Band 2 multiplied by [redacted] total green field new estates in 2006/07.

336. Consequently, a 1% input into the trench sharing in new estates variable in the TEA model conservatively overstates the proportion of new estates that a new entrant would face within a one year construction timeframe. Conversely, a 13-17% new estate ratio, is more than 50% higher than the proportion of new estates that a new entrant would face within even a 16 year construction timeframe, which is clearly an excessive construction horizon for a properly constructed TSLRIC+ study. The 1% new estates ratio input, therefore, should be considered reasonable by the ACCC.

337. The ACCC also notes that Telstra might be able to share trenches with other utilities, despite noting Telstra's submissions to the contrary. The ACCC states:[166]

> *Telstra, in their submission, state that there is limited ability to share trenches outside of new estates. However, the ACCC notes that on Telstra's website that in their guidance to new home builders that:*
>
> > *"...the trench may be shared with other utilities, such as electricity, gas and water, as well as the phone line (contact your builder to find out)".*
>
> *As such, the ACCC considers this gives further weight to the view that the level of trench sharing is above that stated by Telstra in the 2008 Undertaking application and that 1 percent for trench sharing in new estates is unreasonable.*

338. However, the passage from Telstra's website, as stated therein, relates to trenches from the property boundary to the customer's premise. The cost of this trench is incurred by the property owner, as is also clearly stated on the website. The cost associated with this type of trench is appropriately excluded from the TEA Model. Consequently, any sharing with other utilities in this trench would not result in any savings to Telstra. This sharing should not be considered in the new estates ratio, and it should not weight the ACCC's view that 1% trench sharing in new estates is unreasonable, as the ACCC indicates that it does.

339. To summarise, the ACCC's claim in the Draft Decision that 1% trench sharing in new estates is unreasonable is based, in part, on the weight that the ACCC has given to the incorrect finding that sharing trenches between the property boundary and customer premise would save cost to Telstra. Notwithstanding, the ACCC has incorrectly used a national new estate ratio rather than a Band 2 ratio, and its ratio incorrectly includes fibre connected SIOs which have been excluded from the TEA Model, because they are unsuitable for ULLS. Finally, the ACCC's use of a 16 year construction horizon is beyond the pale, considering that Telstra has constructed and placed in operation a nationwide 3G network in a single year. Consequently, Telstra considers that the ACCC has erred in the Draft Decision that 1% trench sharing in new estates is unreasonable.

E.6 O&M and indirect cost factors (ACCC section B.6)

340. In its conclusion regarding operating and maintenance (O&M) and indirect cost factors the ACCC made the following findings:[167]

[166] ACCC Draft Decision, at page 87
[167] ACCC Draft Decision, Section B6 Pages 92 & 93

- Historic cost factors should have been calculated using the 2006 – 07 Regulatory Accounting Framework (RAF) data as opposed to the 2005 – 06 data used in the actual calculation;

- Telstra should have adjusted the factors to reflect Band 2 provisioning costs;

- The ACCC concurs with Ovum's conclusion that the indirect expenses are extremely high when compared to indirect expenses in other publically available cost models;

- Forward looking O&M costs should be less than the historic counterpart since the new plant is installed throughout the network; and

- O&M and indirect cost factors should not be based on accounting classification of those costs.

341. Based on these findings the ACCC concludes:[168]

> *The ACCC's conclusion is that the O&M costs in the TEA model do not reflect efficient forward-looking O&M costs.*

342. Telstra addresses each of the concerns raised by the ACCC below. First we will address some factor calculation changes that we have made pursuant to the ACCC's Draft Decision and our analysis of issues raised by various parties to this proceeding.

E.6.1 Updated factor calculation

343. Telstra has reiterated numerous times that it stands ready to modify the TEA model to address legitimate concerns raised by the ACCC or other interested parties. As such, Telstra is revising the factors calculation to address those issues raised in the ACCC Draft Decision or other parties' submissions in relation to Telstra's Undertaking, which we believe warrant action. The adjustments that Telstra made to the factors calculation in this regard are:

(a) The new calculation is based on the RAF data for the year ending June 30, 2007;

(b) The new calculation uses book cost as the denominator in the calculation of the copper cable operating and maintenance factor;

(c) The new calculation updates the forward looking investment used in calculating the denominator of the O&M factor for ducts and pipes to equal the ducts and pipes investment in version 1.2 of the TEA model;

(d) The new calculation uses the line ratio proposed by Ovum to convert the Band 2 ducts and pipes investment in the TEA model to a total company investment for use as the denominator in calculating the ducts and pipes O&M factor; and

[168] ACCC Draft Decision, at page 92

(e) The new calculation removes intangibles from the calculation of indirect investment costs.

344. Each of these adjustments was made pursuant to a thorough examination of all issues raised by the ACCC in its Draft Decision and the other parties in their submissions. Each adjustment will be discussed in greater detail below. The net result of the updates and corrections to the factors calculations is a $2.51 reduction in the monthly per loop cost.

345. The ACCC states:[169]

> *In deriving costs inputs to the TEA model, Telstra has chosen to use 2005-2006 RAF data and not 2006-07 data, which was available at the time the TEA model was developed.*

346. The ACCC went on to argue that the factor calculation should have been based on the 2006-07 data since it was the latest available data at the time of filing the Undertaking. Even though the 2006-07 data was available at the time the Undertaking was filed, it was not available sufficiently in advance of the filing to be included in the factor calculation. A significant amount of data and analysis was required to finalise the factor calculation. This analysis began long before the publishing of the 2006-07 data. Nevertheless, the ACCC's request that 2006-07 data be used in the factor calculation is, in Telstra's view, reasonable. With this submission in response to the Draft Decision, Telstra has updated the factors to reflect the 2006 – 07 operating results (i.e. RAF data). The result of this update is to decrease the ULLS monthly cost by $1.78 or 3.7 percent.

347. Ovum and Network Strategies identify problems with using the current copper cable and ducts and pipes costs from the TEA model as the denominator in the O&M factor calculation. Ovum lists the following concern with regard to the factor calculation:[170]

> *the model using the model calculated investment for some asset categories while other types of investment are taken from the RAF accounts (historical investment);*
>
> And
>
> *outputs of the model (investment per line) are used to calculate inputs (O&M factors).*

348. Network Strategies echoed many of these same concerns.[171]

349. Section 2.4 of Ovum's *Review of the Economic Principles, Capital Cost and Expense Calculations of the Telstra Efficient Access Cost Model* (Economic review) contains an analysis in which Ovum claims that the use of factors developed using the book investment as the denominator in the factor equation would reduce the loop cost by 1.4%[172]. In this analysis, book costs were used as the denominator for all the factors except conduit. For conduit Ovum opted to use

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[169] ACCC Draft Decision, at page 92

[170] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, at page 44.

[171] Review of Telstra TEA model version 1.1 (Review of Tea model), Report for Optus, Network Strategies, Section 5.4.1, Pages 54 and 55

[172] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 2.4, Pages 15 and 16

the Telstra factor developed using the current investment from the TEA model as the denominator in the factor calculation. Ovum used this option for calculating the ducts and pipes factor because it produced lower O&M costs than would have been produced using a factor based on booked investment.

350. In this factor update, Telstra has adopted the approach used by Ovum in the above analysis. All of the factors in the new study are developed using the booked investment as the denominator in the equation, except for the ducts and pipes (conduit) factor. The conduit factor is developed using a calculation that relies on the current TEA model investment as the denominator in the equation. The net result of using booked investment as opposed to the forward looking investment in the TEA model as the denominator in developing the copper cable O&M factor is a $0.49 reduction in the ULLS costs. Note that if the conduit factor calculation was similarly adjusted to use book cost as the denominator (as would seem reasonable on grounds of intellectual consistency) the cost of a ULLS line would increase by $2.78.

351. It should be noted that in the Ovum analysis the book cost factors were developed using a book investment amount that included an assignment of indirect network support asset investments. The updated factor calculation discussed above does not adopt this approach since the O&M factors being derived in the study will be applied to the direct network investments and that category that does not include any indirect network support asset assignment. This issue will be discussed in more detail below.

352. As discussed above, the denominator in the conduit factor calculation is derived from the current investment costs in the TEA model. In filing Version 1.2 of the TEA model, the conduit factor was not updated to reflect the revised current cost of the conduit investment in version 1.2 of the model. Ovum recognised this fact in its economic review when it stated:[173]

> *The investment per line of "ducts and pipes" and "copper cables" asset categories and the number of lines in Band 2 used in the factor calculation sheet are not the same as the ones that the model calculates.*

353. In this factor filing, the factor calculation is updated to reflect the current cost per line of conduit in version 1.2 of the TEA model (i.e. [redacted]).

354. This adjustment corrects the mismatch of ducts and pipes investment raised by Ovum in the above statement. The mismatch of copper cables investments is no longer an issue because the use of book investment as the denominator of the copper cable operating and maintenance factor (see above), eliminates the need to update the copper cable investment with the new results from the updated TEA model. The mismatch of line counts was fixed when version 1.2 of the model was filed.

355. The impact of updating the ducts and pipes investment to match the output of the latest run of the TEA model is an increase of $0.05 in the monthly cost of ULLS.

356. O&M factors are calculated by dividing total company O&M costs by the total company investment for each asset account. This is required because O&M expenses are not accounted for by band. In developing factors that are based on booked costs, the total company investment is readily available from the

[173] Ibid, Section 3.4, Page 44

RAF reports. Difficulty arises when the current cost is used as the denominator in the factor calculation (i.e. for the ducts and pipes account). The TEA model only develops investment costs for Band 2 exchanges. In order to develop an O&M factor for conduit, the Band 2 investment needs to be converted to a total company investment so that it matches the O&M costs taken from the RAF. In the original filing of the TEA model this conversion was based on a ratio that was developed by comparing Band 2 and total company investment in an old cost study.

357. In its economic review of the TEA model, Ovum argued that the ratio used for this conversion was unreasonable because it did not reflect the current ratio of Band 2 lines to total company lines. Ovum argued:[174]

> *According to the data above, the ratio of Band 2 lines to total lines should be [redacted] Ovum CIC], instead of [redacted]% as used in the TEA model.*

358. We concur with Ovum that the investment ratio used in the original factor calculation appears outdated. Consistent with the Ovum analysis, a ratio of Band 2 to total company lines is used to convert Band 2 conduit investment to a total company conduit investment for use in factor development. The impact of this change in factors is to reduce the monthly ULLS cost by $0.20 or 0.4 percent.

359. In its economic review Ovum stated:[175]

> *In general financial calculations do not include intangibles because they are not monetary and/or are difficult to measure.*

360. Telstra disagrees with this assessment. We believe intangibles should be included in financial calculations. Nevertheless, we have decided to remove intangibles from the calculation because we have not been able to validate these figures to our satisfaction within the necessary timeframes. Removing intangibles decreases the monthly ULLS cost by $0.09 or 0.2 percent.

E.6.2 The ACCC's findings in the Draft Decision – expense and indirect asset factors

Factors should have been based on 2006-07 RAF

361. Factors have been updated in the latest filing to reflect 2006-07 RAF expenses and indirect asset investments. See above.

Factors should be based on Band 2 specific provisioning costs

362. The ACCC concludes that the Telstra cost model factors should be calculated based on Band 2 costs:[176]

> *The ACCC also notes that Telstra has not made any adjustments to the RAF data to take account of Band 2 specific service provisioning costs. The ACCC considers that the application of RAF values for the entire network implies that O&M costs in Band 2 are equivalent to those in Bands 1, 3 & 4. However, the ACCC's view is that Band 2 costs are likely to be lower than costs in Band 3 and 4 and agrees with submissions that it is inappropriate to apply the total value of all services*

[174] Ibid, Section 2.3, Page 13
[175] Ibid, Section 2.3, Page 12
[176] ACCC Draft Decision, Section B6 Page 92

[illegible] Band 2.

363. Similarly to Optus and Network Strategies, the ACCC argues that the factor calculation should be based solely on Band 2 operating expenses. Calculating allocated expenses and investments by band in order to develop band specific factors is not consistent with the normal process used in TSLRIC+ models. The reason this approach is seldom if ever adopted is:

- Using a standard factor across all bands automatically assigns more costs to those bands with more investment (i.e. less urban areas);
- The additional modelling cost of assigning all operating and maintenance expenses to specific exchanges or geographic regions far outweighs the potential benefits that can be attained by any supposed gain in precision in the factor development;
- As operating and maintenance expenses comprise approximately [redacted] percent of the total ULLS costs, even significant shifts in the assignment of O&M costs have a minimal impact on the ULLS price for any band;
- Presumably, any gains from increasing the allocation of those costs to any one band are matched by higher costs being imposed on other bands; and
- Developing costs for every exchange will at best require numerous allocations predicated in large part on subjective judgements and hence unlikely to result in greater precision.

364. Applying a standard factor across all density groupings or bands results in higher maintenance costs in exchanges with higher investment. When a constant factor is applied to varying levels of investment, the resulting costs are higher in those bands with higher investment. An elaborate and expensive cost allocations system is unlikely to result in a more accurate or precise assignment of costs, since in all likelihood the allocation of many of the costs would be predicated on investment.[177]

365. Also, as explained in Telstra's Response to Access Seeker Submissions[178], developing factors by band would require assigning or allocating all the company's expenses and investments to each band. If the ACCC desired flexibility in assigning exchanges to different bands or density groups, investments and expenses would need to be recorded at an exchange by exchange level. The additional cost of performing this function would far outweigh any potential benefit. Optus has not provided any information that would imply that there is any benefit that could be derived that would justify the significant outlay of resources such an approach would require.

[177] Note that the use of lines to convert Band 2 conduit investment to total company conduit investment implies that the conduit investment in Band 2 is similar to other bands. In theory, the ratio used should be Band 2 conduit investment to total company conduit investment. The only source for a factor of this type was the dated cost study from which the [redacted]% ratio Ovum criticised was derived. This ratio implied that Band 2 investment per line in ducts and pipes was greater than the per line investment in ducts and pipes for all bands. This result did not appear unreasonable since conduit is used in urban areas but not always in non-urban areas. For this reason Telstra feels that using a line ratio to derive total company investment in conduit is reasonable.

[178] Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to Access Seeker Submissions 18 November 2008, Section F.5.2, Page 65

366. In the United States, not one regulatory agency (state or the FCC) requires the calculation of separate factors for each density grouping, when access prices are deaveraged. Models produced by the FCC, all the states, and the access providers (i.e. AT&T's sponsored HAI model, derive operating and maintenance costs using a standard factor or a standard cost per line across all density groups. All these regulators and access providers recognise that the potential benefit of shifting a small amount of costs between bands or density groupings would never justify the significant resources required to compile density group specific operation and maintenance expenses.

367. There is little benefit to be gained in developing factors by Band. Operating and maintenance expenses comprise [redacted] percent of the cost of the loop. The use of factors allocates more costs to Bands with greater investment. If an extensive study were to find that the factors assignment of costs based on investment understates the required assignment of costs to rural areas by 10%, the impact on the ULLS cost will be less than [redacted] percent (i.e. [redacted]).

368. There is also a question of cost recovery. If Telstra incurs the significant cost to develop and maintain a system to account for historic operating expenses and investment by exchange, it would be solely for the purpose of developing Band specific factors. No other reason exists for developing such a system. If the sole purpose of the new system is to set ULLS prices, the cost of developing and maintaining the system would be directly attributable to the ULLS service. Increasing the cost of ULLS for all providers simply to potentially shift a small amount of costs between exchanges at the bequest of a few providers would be inefficient and unreasonable for those providers that do not wish to incur these added costs.

Indirect expenses are high in comparison to other models

369. The ACCC argues that the indirect expense factors in the TEA model are extremely high when compared to other models:[179]

> *Further, the ACCC agrees with Ovum's conclusions that the indirect expenses used as inputs into the TEA model are extremely high relative to other comparable indirect expenses in publicly available costs models used in telecommunications.*

370. In their economic review, Ovum presents a table (Figure 3.16) that compares the O&M and indirect cost factors in the TEA model to those in Danish and Swedish cost models. Ovum states:[180]

> *All factors except indirect expenses seem acceptable in the model. The indirect expenses in the TEA model [redacted] compared to the publicly available models [7.5%-18.0%] are extremely high.*

371. As observed by Ovum, the TEA model factors are reasonably comparable to the factors in these other models, except for the indirect expense factor. However, when making comparisons of this nature it is important to compare like with like. The indirect expense factor used in the TEA model [redacted] is applied to the direct O&M and indirect network expenses in the TEA model.

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[179] ACCC Draft Decision, Section B6 Page 92
[180] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 3.5, Page 49

372. The model developed by the Danish regulator (ITST) does not calculate indirect expenses in the same way. ITST's model calculates indirect expenses by multiplying the indirect expense factor by total cost (including capital costs).[181] The model developed by the Swedish regulator (PTS) calculates indirect expenses in a similar way.[182] Obviously, their indirect expense factors will be lower, since they are applied to a much higher cost base.

373. Therefore, it is not appropriate to compare the indirect expense factor in ITST and PTS's models with the indirect expense factor used in the TEA model without adjustment for the underlying differences. Further inspection of the most recent release of ITST's model for access shows that the amount of overhead allocated to the access network is DKK595m and OPEX is DKK564m.[183] Hence, the ratio of overhead to OPEX, which is more comparable to the indirect expense factor used in the TEA model, is 105%.[184]

374. Consequently, contrary to the conclusion reached by Ovum, the evidence Ovum relies upon indicates that the indirect expense factor used in the TEA model is of a similar value (indeed, slightly lower) than that used in ITST's models.

Forward looking expenses should be less than their historic counterpart

375. The ACCC also agreed with Ovum that forward looking expenses should be less than their historic counterparts. As found by the ACCC:[185]

> *The ACCC also agrees with Ovum's assessment that efficient forward-looking O&M costs should fall, compared to historic costs, when new and modern equipment is installed and that this trend is not reflected in the TEA model O&M costs.*

376. As Ovum stated in their Submission:[186]

> *Currently in the TEA model the operational and maintenance factor is higher for each plant and equipment item, except for ducts and pipes alone, when compared to the historic cost factors.*

377. Ovum relies upon a faulty analysis in making this statement. Following is a copy of a portion of the factor comparison in Figure 2.4 in the Ovum Economic review.[187]

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[181] Telestyrelsen (2002), *Characteristics of the Top-Down and Bottom-Up Cost Analysis*, 15 March 2002, at section A.6.5.1
[182] Post & Telestyrelsen (2004), *Hybrid Model Documentation (PTS Hybrid model v 2.1)*, 10 December 2004, at section 2.6.5
[183] See 'Overview' worksheet at cells L11 and M11. The model can be accessed at http://en.itst.dk/interconnection-and-consumer-protection/lraic/lraic-on-fixed-network/lraic-hybrid-model-2008-1
[184] PTS's model combines direct and indirect expenses so a similar comparison is not possible.
[185] Draft Decision of the ACCC, Section B6 Page 92
[186] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 2.4, Page 15
[187] Ibid

[redacted]

[redacted]

378. The TEA model factors and the Historic factors were obtained or derived from the information in the factor calculation worksheets (i.e. Factor Calculation Final.xls) filed with the ACCC with versions 1.0 and 1.1 of the TEA model. In the RAF reports, indirect network assets (i.e. management systems, vehicles etc.) are combined into the telecommunications asset accounts (e.g. copper cables, pair gain systems, etc.). The investments derived in the TEA model are the direct telecommunications plant and equipment and do not contain any assignment of indirect network assets. The O&M factors in the TEA model are applied directly to the direct telecommunications plant derived by the TEA model. In order to ensure that the denominator in the factor equation is consistent with the type of plant to which the factors are to be applied (i.e. direct telecommunications plant), the indirect network assets must be removed from the telecommunications investment amounts recorded in the RAF. The assets removed from the telecommunication plant accounts are reclassified and used to develop network support asset factors.

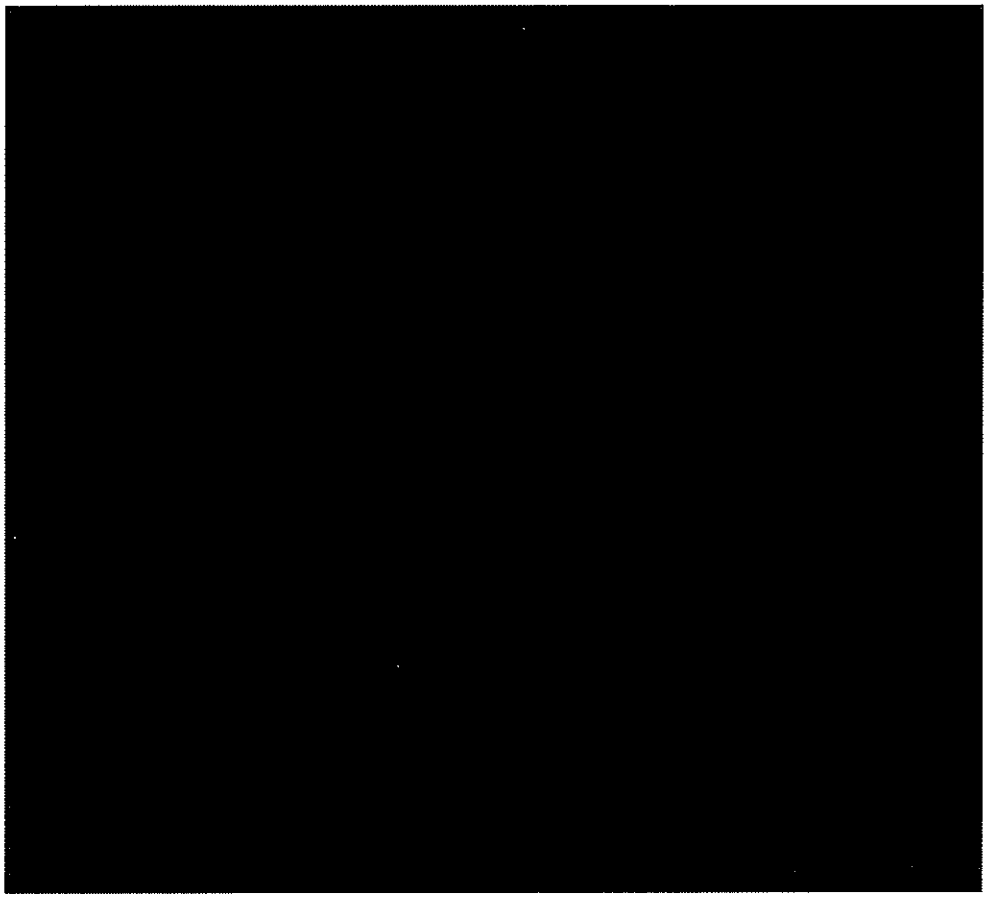
379. The book cost factors that Ovum identifies and compares to the book cost factors in the TEA model include these network support assets in the denominator of the factor calculation. By including these additional assets in the denominator of the factor calculation, Ovum derives a book cost factor that is lower than the book cost factor in the TEA model. Following is a comparison of the Ovum and TEA model factor calculation for the CAN pair systems account:

[redacted]

380. As illustrated, by including the network support assets in the denominator of the factor calculation, Ovum derives a book cost factor that is less than the one derived in the TEA model. However, Ovum does not propose changing the model to apply this factor to both telecommunications plant equipment and network support assets. The Ovum historic factor calculation is inconsistent with the application of the factor in the TEA model. It is this inconsistency that leads Ovum to the erroneous conclusion that "*in the TEA model the*

operational and maintenance factor is higher for each plant and equipment item, except for ducts and pipes alone, when compared to the historic cost factors".[188]

381. The following chart revises the Ovum analysis to eliminate the inconsistency discussed above:



382. As shown above, the only two TEA model factors that vary from the historic cost factors are the two that are derived using the current costs from the TEA model in the factor calculation (i.e. copper cables and ducts and pipes). The copper cable book factor is lower than the current cost factor derived in the original factor calculation. Conversely, the current costs ducts and pipes factor is lower than its booked counterpart. It should be noted that this analysis is based on the factor calculation used in version 1.1 of the TEA model. With the update to the factor calculation being made concurrent with this response; the copper cable factor has been revised to use current book costs so it is no longer higher than the corrected historic based factor. With this change to the model, all factors in the TEA model are equal to or less than their "historic" equivalents.

383. In fact the O&M factors in the TEA model are lower than the O&M factors accepted by the ACCC in the past. Following is a chart of O&M factors adopted by the ACCC in previous proceedings:

[188] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 2.4, Page 15

	TEA Model	ACCC modelling of Telstra's CAN (based on Optus figures)[189]	ACCC modelling of Telstra's Transmission Network[190]	ACCC modelling of Mobile networks[191]
Ducts and Pipes	[redacted]	0.12	n/a	n/a
Copper Cables	[redacted]	0.13	n/a	n/a
Multiplexing Equipment	[redacted]	0.07-0.12	n/a	n/a
Inter-Exchange Cables	[redacted]	0.10	0.10	0.11
Switching Equipment - Local	[redacted]	0.07	n/a	n/a

384. As illustrated, Telstra's O&M factors are lower than the O&M factors adopted by the ACCC in prior decisions.

385. The only argument proffered by the ACCC or any other party to the proceeding regarding the inefficiency inherent in factors calculated using the companies current costs is "*efficient forward-looking O&M costs should fall, compared to historic costs, when new and modern equipment is installed...*[192]". Ovum makes a similar claim when it states (at page 16):[193]

> *It is unlikely newly laid equipment such as copper lines require as much or more maintenance costs as older copper lines.*

386. For a TSLRIC model to measure costs over the long term, it must have regard to O&M over the life of the relevant assets. Therefore, while it might be the case that O&M is lower in earlier years of an asset's life, a TSLRIC cost estimate should be representative of the O&M over the entire life of that asset. The TEA model calculates O&M using Telstra's accounts at 2006/07, which broadly reflects a midpoint in Telstra's assets' lives.

387. As explained in the Response to Optus[194], the TEA model, like all long run incremental cost models, calculates the total life cycle cost associated with a new network build. Capital costs (including depreciation) are calculated using an annuity approach that levelises the capital related costs over the total asset lives. In actuality capital costs are significantly higher in the initial years of an asset's life when assets are undepreciated. These capital

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[189] ACCC (2000), *A report on the assessment of Telstra's undertaking for the Domestic PSTN Originating and Terminating Access services*, July 2000, at tables A1.6 and A2.4

[190] ACCC Transmission Cost Model, http://www.accc.gov.au/content/index.phtml/itemId/823855

[191] WIK (2007), *Mobile Terminating Cost Model of Australia*, January 2007, at table A-3

[192] Draft Decision of the ACCC, Section B6 Page 92

[193] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 2.4, Page 15

[194] Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to Access Seeker Submissions 18 November 2008, Section F.5.1, Pages 62 thru 65

requirements decline as the asset is depreciated.[195] Operation and maintenance expenses need to be treated similarly. While capital costs decrease over an asset's life, maintenance costs increase as assets age. TSLRIC+, being a life cycle cost, needs to levelise both the maintenance expenses and capital costs over the asset lives. Recently incurred expenses reflect costs for assets in virtually every stage of their life cycle. Using current expenses for calculating O&M costs and the annuity method for calculating capital costs results in a TSLRIC+ that reflects costs over the total life cycle of the assets.

388. Finally, as explained in detail in Telstra's response to the access seekers submissions[196], revising the TEA model to reflect only the initial year of a new asset's life (i.e. reducing maintenance costs and replacing the annuity calculation with a capital cost based on undepreciated value of the assets) would significantly increase the costs produced by any forward looking model.

Efficient O&M and indirect factors should not be based on their accounting classification

389. The ACCC notes that the TEA model builds its factors based on the accounting classification of the underlying expenses on the Telstra books. From this observation the ACCC concludes:[197]

> *The ACCC does not consider that the inclusion of costs for calculating O&M and indirect factors simply on the basis of their accounting treatment is an adequate justification. In particular, the ACCC considers the costs incurred by an efficient forward looking operator in supplying the ULLS may differ from allocations based on the accounting framework. On this basis the ACCC considers the O&M cost factor inputs to the TEA model as inefficient.*

390. It is difficult to determine what the ACCC means by the above comments, all the more so as the ACCC does not evidence its concerns or explain why it has not previously sought changes to the RAF so as to accommodate them. Virtually all of Telstra's costs are classified by account on Telstra's books and records using the Australian Accounting Standards Board (AASB) Presentation of Financial Statement 101. Any new or existing competitor in the market, efficient or not, will be required to maintain its books in conformance with these same accounting standards. Operating results, reported to the market, using these accounting rules, provide the only means to economically evaluate a company's operations. If the ACCC is saying that all financially reported results are unreliable, then there is no means by which financial or other evaluation could be reasonably undertaken.

391. Even the assignment of costs to the regulated operating results of Telstra reported into the RAF is dictated by the subsidiary reporting requirements in AASB Statement 101. These regulated operations reflect the combined results for 7 of Telstra's subsidiary operations. Each of these subsidiaries maintains its books and records in conformance with AASB Statement 101. Note that the factors are derived from these total regulated operating expenses and investments.

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[195] The return and related income tax requirements for undepreciated assets are significantly greater than the return requirement for assets nearing the end of their life cycle.
[196] Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to Access Seeker Submissions 18 November 2008, Section F.5.1, Pages 62 thru 65
[197] Draft Decision of the ACCC, Section B6 Page 92

392. The only allocations Regulatory Accounting Framework allocations that impacted the factor calculation were the assignment of costs to the Retail arm of the business. However, a vast majority of these costs are not allocated but directly incurred by Telstra's wholesale or retail customer operations. Those few allocations that were done were required to separate retail and wholesale operation were done pursuant to the Regulatory Accounting Framework (RAF) which Telstra is required to follow in reporting the results of its operations to the ACCC. If the ACCC is dissatisfied with the methods used in assigning costs in the RAF it has the authority to alter the reporting requirements. There is no reason to separate costs by entity if the regulatory body requiring the separation has no faith in the results that are obtained by following their proscribed allocation rules.

393. There are two types of O&M factor calculations:

- Top-down; and
- Bottom-up.

394. These two approaches are discussed in detail in the Telstra's Response to the access seekers.[198] In summary, the bottom-up approach would calculate factors by indentifying each function required to operate and maintain a company's operations over the life of the affected assets. Costs would then be assigned to each function. Cost for all the indirect functions (e.g. network planning, billing, human resources, legal and executive) would similarly need to be identified and costed on a function by function basis. Identifying every function each Telstra employee will perform over the next 10 to 40 years would be a monumental, if not impossible, task. Assuming someone performed the task, the number and complexity of the assumptions required to perform the task would result in endless controversy, debate and criticism. For this reason, virtually every TSLRIC+ model uses some form of top-down approach similar to that used in the TEA model in order to calculate O&M and indirect costs.

395. Under the top-down approach, the actual operating costs of the company generally serve as the starting point for developing an estimate of future costs.[199] All large competitive companies use actual costs for ongoing operations when attempting to estimate future operating costs for business planning, pricing or budgeting purposes. They do this for two reasons:

- Current history is always the best starting point for predicting the future; and
- The enormity of the task and the probability of mistakes when attempting to identify all the functions and the cost of those functions required for operating a large company make a bottom-up approach to forecasting infeasible.

396. Current operating results provide the best basis for predicting future results. Current costs are comprehensive in that they reflect all efficient recently incurred costs for all the functions required to produce and bring a product to

[198] Telstra's Ordinary Access Undertaking for the Unconditioned Local Loop Service: Response to Access Seeker Submissions 18 November 2008, Section F.5.1, Pages 62 thru 65

[199] Sometimes a surrogate company or companies operating results are used, but not frequently.

market. This approach ensures all critical functions are included in the projected operating result.

397. For these reasons, regulators around the world have almost universally recognised the wisdom of basing forward-looking O&M and indirect operating costs on actually incurred and reported expense levels.[200] Following is a table identifying the basis used by international regulators for identifying operating costs in TSLRIC models.

Method for Determining ULL Prices	Basis for Deriving Operating Costs		Countries
	Direct O&M	Indirect	
Incremental Cost (e.g. LRAIC, TSLRIC+, TELRC)	Carrier's cost accounts	Carrier's cost accounts	Denmark*, France, Germany, Sweden, UK, Ireland, New Zealand, US
FDC	Carrier's cost accounts	Carrier's cost accounts	Portugal
Other	Carrier's cost accounts	Carrier's cost accounts	Norway, Netherlands
Other	Carrier's cost accounts	Carrier's cost accounts	Finland, Italy
Retail Minus	N/A	N/A	Belgium
* A bottom up study was done for the direct operating and maintenance costs for two plan categories			

398. Current actual costs are the basis for virtually all O&M and indirect expense forecasts in all forward looking or historic models that develop costs for major established network elements. Trying to estimate each function required to run a nationwide customer access network would be a prohibitive task, and regulators recognise this. Ovum recognised this fact when it stated:[201]

> *It is not unusual to calculate factors using a top-down approach, but, where this is applied, the latest information has been used.*

399. All models rely, to some extent, on costs taken from the books and records of one or more regulated companies. In virtually every instance, the book costs include some allocation of total company accounting data to the regulated operations of the company. In many instances these allocations are significantly more extensive than the minor allocations in the RAF assignment of costs to Telstra's retail operations. Accounting data is the bases by which all firms are evaluated and without these results no one could make any conclusions regarding a company's operations, economic or otherwise.

E.7 Cost of capital (ACCC section B.7)

400. The ACCC agrees with Telstra's position on three of the inputs into the calculation of the WACC. Specifically, the ACCC appear to be satisfied that Telstra's estimates of the risk free rate, debt risk premium and debt beta are reasonable. However, the ACCC does not agree with the following inputs:

- Asset beta;

[200] Denmark used a bottom-up approach for determining the operating costs for network terminating points and copper cables. All other direct and indirect operating costs were based on the actual costs incurred by the telephone company.
[201] Ovum (2008), *Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model*, 6 August 2008, Section 3.4, Page 44

- Gearing;
- Market risk premium;
- Equity issuance costs;
- Debt issuance costs;
- Tax rate; and,
- Gamma.

401. Before responding to the ACCC's discussion on these inputs, it is informative to, first, review the ACCC's views on reasonable WACC inputs and, second, determine which inputs have a material impact on the monthly cost estimate.

402. Table 5 below compares Telstra's estimate of the WACC inputs and the high and low range, with the ACCC's views on WACC parameters. As can be seen, the ACCC has accepted Telstra's best estimate of an input where that input is consistent with the ACCC's inputs in its pricing principles determination (that is, the risk free rate, debt risk premium and the debt beta).

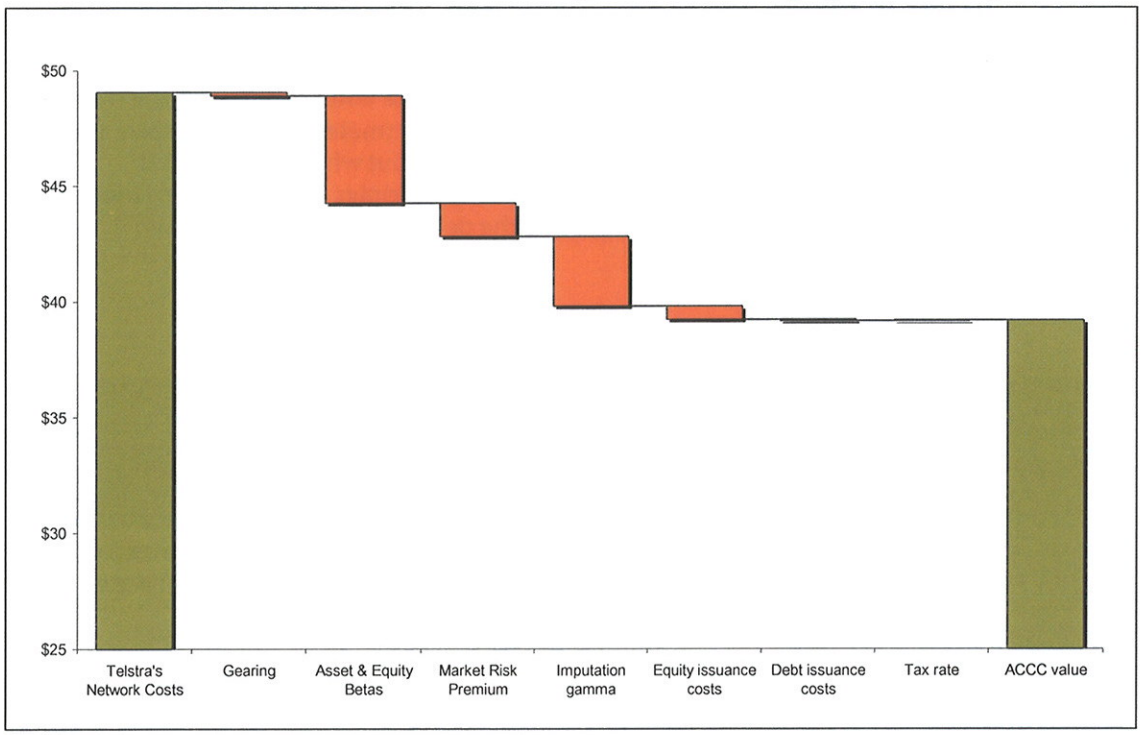
Table 5: Telstra's and the ACCC's WACC inputs

Input	Telstra's range of reasonable values	Telstra's best estimate	ACCC's ULLS Pricing Principles	ACCC's Draft Decision**
Risk Free Rate	0.0633 – 0.0633	0.0633	0.0635	Telstra's best estimate
Gearing	30%	30%	40%	40%
Debt Risk Premium	0.018 - 0.021	0.0195	0.0195	Telstra's best estimate
Debt issuance Costs	0.0007 – 0.0022	0.0015	0.00083	0.00083
Debt Beta	0	0	0	Telstra's best estimate
Tax Rate	30%	30%	30%	20%
Asset Beta	0.625 - 0.825	0.725	0.5	0.5
Equity Issuance Cost	0.0027 – 0.0047	0.004	0	0
Market Risk Premium	5.5% - 8%	7%	6%	6%
Gamma	0	0	0.5	0.5
WACC	10.49% – 13.90%	12.28%	10.15%	10.12%

**Where no specific number is provided by the ACCC in the Draft Decision, the value in the ACCC's pricing principles is adopted. In the Draft Decision the ACCC make use of Ovum's WACC of 9.22%, but do not represent this as their own value.

403. The waterfall chart illustrated in Figure 5 below shows the impact that each of the inputs have on the monthly TSLRIC+ for ULLS. Some inputs have a greater effect on the monthly charge than on the WACC since they are used for the calculation of the WACC and the TEA model separately.

Figure 5: Impact on the monthly TSLRIC+ of changing the CAPM inputs



404. This response to the ACCC's Draft Decision focuses on the following inputs:

- Asset beta/equity beta;
- Imputation credits;
- Market risk premium; and,
- Tax rate.

E.7.3 Asset Beta/Equity Beta

405. The ACCC assess the three sets of analysis that Telstra prepared in its submission on the WACC:

- The direct estimation method

- The benchmarking approach
- First principles estimation

406. In relation to the direct estimation method, there are three steps discussed by the ACCC in the Draft Decision: (i) choosing the correct raw equity beta from a number of variations, (ii) whether or not to apply the Blume adjustment, and (iii) de-levering the equity beta to derive the asset beta.

The Raw Equity Beta

407. The ACCC states (at page 102):

> *The ACCC notes that there are some potential difficulties with using a direct estimation method to calculate equity betas, including selection biases in timeframes or data frequency. However, the ACCC considers that there is scope to conduct a direct estimation of the equity beta.*

408. The ACCC also states (at page 102):

> *The ACCC is of the view that Ovum's direct estimation of Telstra's beta sourced from Bloomberg data uses an appropriate method to directly estimating Telstra beta. When using the direct estimation method, Ovum calculated the unadjusted beta by using the previous 18-months and 5-years prices respectively, on a monthly, weekly of a direct estimate for beta completed using five years of monthly return data should give an appropriate estimate of the systematic risk of a Telstra's equity. Therefore, Ovum's estimate of Telstra's equity beta using this approach of 0.394 seems fair in this situation.*

409. Telstra and Ovum sourced the raw equity beta information from Bloomberg. The only difference between the raw equity beta estimates is that the data was sourced at different times and the Bloomberg estimates were averaged over different periods. Table 6 below summarises the estimates, showing that all measurements produce very similar results, except for the 5-year average calculated using a monthly frequency of data. The ACCC seems to have applied particular weight to this value (0.394) in the Draft Decision. The ACCC provides no justification for choosing the lowest value other than to say (at page 103) it "*seems fair in this situation*". It is clear that the ACC has chosen an outlier that is most likely to be drastically affected by some irregularity in the Bloomberg data.

Table 6: Bloomberg Equity Betas

	5-year average to 13 June 2008 (Ovum Economics Report at figure 3.10)	2-year average to 11 February 2008 (Telstra WACC Report at paragraph 169)	18-month average to 13 June 2008 (Ovum Economics Report at figure 3.10)
Daily frequency	0.556	0.571	0.587
Weekly frequency	0.534	0.503	0.655
Monthly	0.394	0.656	0.553

frequency			

410. The Ovum Economics Report used by the ACCC relies on a Copenhagen Economics study. However, the very same Copenhagen Economics study concludes that a monthly frequency is inappropriate and, instead a weekly frequency should be used. The Copenhagen Economics study states:[202]

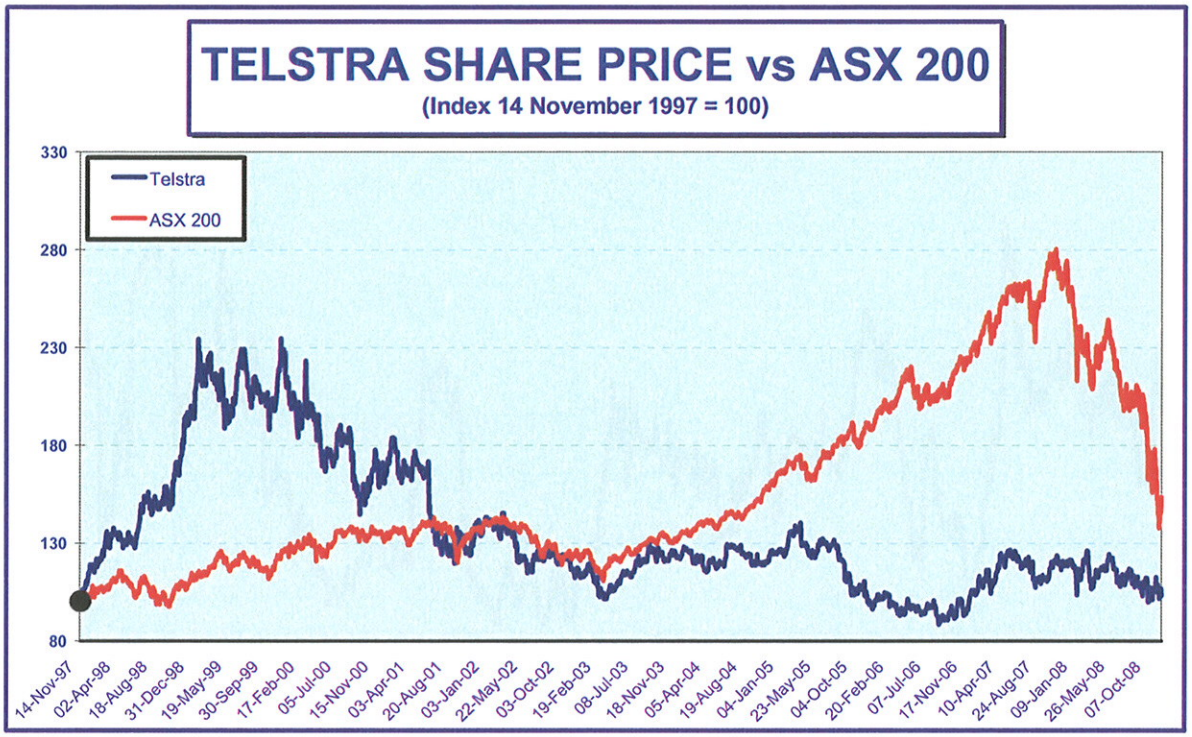
> *Monthly estimates on the other hand are sensitive to the day of the month on which the observations are made. Switching the estimation date by just a few days can lead to significant differences in the estimated beta. This is a major shortcoming, which casts serious doubt on the use of betas estimated on the basis of monthly data.*
>
> *We use weekly observation, because they give the most robust results.*

411. Recent historic equity beta data includes events that reduce equity beta and that are unlikely to continue in the future. The figure below shows the significant increase in the ASX200 index after 2004, which was strongly linked to the commodity price boom driven by the rapid industrialisation of China and the over-representation of resource equities on the ASX200 relative to other countries. The over-riding factor driving the ASX200 higher did not directly relate to other sectors and, specifically, Telstra. Consequently, the estimated equity betas of other sectors (including telecommunications and Telstra) were lower than they would have been absent the short-term resources boom. Now that the resource boom has ended, the low beta observed during the resource boom has even less effect on Telstra.

412. SFG[203] identify similarities between the "technology bubble" period (typically regarded as July 1998 to December 2001) and the "commodity boom". Both episodes were notable in that a single sector (technology, media and communications in the "technology bubble" period and resources in the "commodity boom") were largely responsible for a strong appreciation in value of the overall market. Firms not in these market driver sectors did not perform as well which ultimately reduced their correlation with the overall market and hence estimated beta.

413. This analysis suggests that recent historical equity beta estimates are likely to underestimate the forward-looking equity beta.

[202] Copenhagen Economics (2007), *WACC for the fixed Telecommunications net in Sweden*, 26 October 2007, at page 19
[203] SFG (2008), *The reliability of empirical beta estimates*, 15 September 2008, pages 30-31.



Source: Yahoo.com.au

414. Second, an equity beta measured over a 5-year timeframe covers a period when many ACCC decisions applied considerable downward pressure on Telstra's share price at a time when the market was generally increasing. Thus, the ACCC's decisions over the last five years have, themselves, resulted in a lower beta for Telstra. This is problematic for two reasons. First, the estimated historical beta will underestimate the forward-looking beta. Second, the historical estimates reflect the equity beta over a period when Telstra was becoming much more heavily regulated. If the ACCC had made those decisions before the five year period or not at all, then Telstra's stock would have changed more in line with the market generally and the estimated equity beta would be higher. Importantly, there is an obvious circularity in using the market impact of ACCC decisions *inter alia* on ULLS prices that reduced Telstra's market valuation in the past to justify continuing with artificially low ULLS prices into the future. This alone should suffice to cast doubt on whether the ACCC's approach is reasonable.

415. The chart below depicts the Bloomberg estimate of R-squared that pertain to the beta estimates for Telstra's equity beta shown in the figure above. The average R-squared estimate is 0.20 meaning that around 20% of the variation in Telstra's returns is explained by variation in overall market returns. This implies that either around 80% of the variation in Telstra's returns is explained by factors other than variation in market returns and/or much of the total risk is specific to Telstra's performance.[204]

[204] *Ibid* page 10