TELSTRA CORPORATION LIMITED

Submission in response to the ACCC's Discussion Paper in relation to the Transmission Network Cost Model

8 June 2007

PUBLIC VERSION

Introduction

1. Telstra welcomes the opportunity to respond to the Commission's discussion paper on the transmission network cost model (the model). In its review of the model's methodology, Telstra has discovered several major inconsistencies with well accepted pricing principles. Telstra considers that these issues need to be resolved before any reliance is placed on the model. In this regard, Telstra would like to work with the Commission and/or the Commission's consultants to ensure they have a complete understanding of the issues and a strategy for resolving them.

2. The following points set out the major issues with the model that Telstra has discovered during the course of its review:

   a) The model calculates capacity-based average costs rather than demand-based average costs. That is, total costs are divided by the amount of capacity assumed to exist in the transmission network, rather than the actual or forecast demand for transmission services. The effect of capacity-based average cost pricing is to allocate only a small fraction of transmission costs to the actual or forecast users of transmission services. The remaining costs are assumed away. For example, in some segments of the network, the model assumes that there are 144 strands of transmission fibres in a trench. Since the model assumes only 2 strands would satiate demand for transmission, only 2/144 of the cost of the trench would be recovered from transmission users. It is not apparent from where the remaining 142/144 of trench costs would be recovered. This is a particularly important issue for transmission pricing. Given the lumpy nature of investment in transmission networks, capacity could be well in excess of demand meaning capacity-based pricing will result in an under-recovery of costs.

   b) The model back-loads the depreciation of assets late into the assets' lives. However, since the model calculates average cost on the basis of only the first year's depreciation, those depreciation costs that are back-loaded are never allowed to be recovered.

   c) The average cost of transmission is calculated in a way that is largely independent of the distance between different sites on the same ring (for example, sites that are quite close together may be connected by a ring which is relatively large). However, distance between sites is a major driver of competitive costs. Therefore, the model should allocate costs between routes on the same ring in a way that ensures short routes are not priced too high and long routes are not priced too low.

   d) The model uses an unusual formula to determine the WACC. Telstra considers that the calculation of the WACC, if it is to be based on the CAPM model, must be changed to reflect standard practices.

   e) The model determines the price of a service by calculating the cost of a collection of transmission loops and dividing by the required capacity on those loops. This assumes that every route on the collection of loops contributes the same amount to

the cost of the network irrespective of the length of the route. This is inconsistent with efficient cost allocation principles and current pricing schedules in the market.

3. There are additional issues that Telstra has discovered during the course of its review. These are discussed in the body of this submission.

4. Telstra is also concerned with the process under which the Commission has developed this model. In particular, the Commission did not request the construction of the model and appoint Gibson Quai (GQ) pursuant to a public and transparent process. Telstra is very concerned that parties have not been given the opportunity to view the brief provided to GQ, so that the terms of GQ's appointment could be scrutinised. This is contrary to the previous practice of the Commission in developing similar models. Telstra's concern is heightened by the fact that GQ has on its website a list of clients, which include iiNet and several other access seekers who are in dispute with Telstra. Additionally, iiNet's subsidiary, Chime, is also directly involved in a dispute with Telstra in relation to the transmission service. Clearly, GQ works for one party of a dispute and, in the case of transmission services, the arbiter in that same dispute (the Commission). Telstra believes that the absence of transparency in this case and the apprehended bias calls into question the validity of the model that has been prepared by GQ.

5. Finally, while the Commission states that the empirical inputs currently in the model "*will not necessarily reflect the empirical parameters relied on by the Commission to determine an appropriate price in an arbitral context*", they "*are intended to be indicative*".

6. Where the Commission has asked for comments on the parameters in the model, Telstra has interpreted this as asking whether the parameters that are currently in the model could be populated in a way that would result in the model producing a realistic measure of cost. It would be inappropriate to comment on the correct values that should be used to populate the parameters at this early stage in the development of the model given:

   a) The Commission has advised Telstra that there will be a separate process dealing with that; and,

   b) Telstra considers that substantial changes need to be made to the model, so it would be premature to comment on the correct values for the parameters until the correct parameters have been put into the model.

7. Furthermore, the Commission has told Telstra that there will be a separate data collection process to populate the model with appropriate variables. In addition, neither GQ nor the Commission provide any supporting material for the indicative variables in the model. Consequently, Telstra does not believe that the inputs entered into the model are indicative of anything. Should the Commission seek to rely upon those inputs, Telstra shall deal with the appropriateness of those inputs at that time.

Telstra's concerns with the model

Network design and architecture in the model

8. Telstra recognises that, in its current form, the model does not reflect any particular transmission route. Consequently, Telstra cannot comment on the appropriateness of the particular inputs entered into the model that bear on the appropriate network design and architecture. It is important to note, however, that in some cases the assumptions underlying the architecture of the model are too broad. For example, the utilisation of plant and equipment is set to a constant rate over the entire network, which is not consistent with Telstra's experience in operating a transmission network. Telstra also submits that every loop is likely to have a different architecture that would need to be assessed on an individual basis.

9. Telstra notes that the model applies to only one part of the national transmission network, which is made up of many rings. Thus, while the model might be used to determine the average cost of a subset of rings, there is nothing in the model that ensures that the costs of all the rings that make up the national transmission network are recovered. This is an important consideration, since access seekers are likely to purchase transmission services in higher-demand and lower-cost routes and the average costs of transmission in lower-demand routes are not necessarily recovered from services that utilise transmission.

10. The network design in the model assumes that all transmission services terminate at the LTH. However, this is not true of many applications of transmission. For example, transmission used by mobile networks requires a further connection from the LTH to the mobile tower. Additionally, transmission used for services supplied to businesses requires a customer-access-network component and customer equipment. These elements have not been included in the cost of the model.

11. Furthermore, the GQ documentation at section 1.1.3 states "*...the required transmission link will be to a Telstra exchange downstream from the Telstra POI within the Telstra network, thereby not needing to backtrack to a higher level hub to achieve necessary connectivity*". However, in the model the deployment of DXCs is limited to the MTH. Therefore, to prevent unnecessary backtracking to higher level hubs, there needs to be cross connecting equipment at the lower level exchanges.

Cost inputs and capacity assumptions

12. The model calculates capacity-based average costs rather than demand-based average costs. That is, total costs are divided by the amount of capacity assumed to exist in the transmission network, rather than the actual or forecast demand for transmission services. The effect of capacity-based average cost pricing is to allocate only a small fraction of transmission costs to the actual or forecast users of transmission services. The remaining costs are assumed away. This is a particularly important issue for transmission pricing. Given the lumpy nature of investment in transmission networks, capacity could be well in excess of demand meaning capacity-based pricing will result in an under-recovery of costs.

13. The points below, which relate to Regional LTH to LTH transmission (Conduit Trench Regional Town - Type 1), outline the effect of capacity-based average cost calculation in the model:

    a) In many cases, the model allocates only 50% of the trench costs to transmission and 50% to other users of the trench, but does not suggest how Telstra could recover the costs allocated to other users. It is unclear what other users share Telstra's transmission trenches (indeed sharing of Telstra's transmission trenches is very uncommon). Even where sharing does take place, this has been overstated by the model. For example, it is assumed that 50% of a 400km conduit is shared with an alternative user. Telstra is not aware of any such sharing being possible.

    b) In some cases, the model assumes that there are two optic cables in a trench. In these cases, the model assumes that only 50% of the trench costs that are not allocated to other users of the trench should be recovered from transmission services and the remaining trench costs are assumed away. Furthermore, the model does not include the cost of the second cable in transmission costs, does not suggest what these other cables are used for other than for the supply of transmission services, and does not indicate how Telstra can recover the cost of the second cable (and 50% of the remaining trench costs).

    c) The model then assumes that each optical cable has 24 fibres and that only two fibre strands are needed for transmission. Hence, only 2/24 of the trench and cable costs that have not already been allocated to other users of the trench or to cables not used for transmission are allocated to transmission services. The remaining 22/24 of trench and cable costs are assumed away. The model does not suggest what these other fibres are used for or how Telstra can recover the 22/24 of the remaining trench and cable costs.

14. The impact these assumptions, which are common throughout the model, is to substantially overstate capacity and substantially understate average costs. Prices based on the model's calculation of average costs will be insufficient to recover the total cost of supplying transmission infrastructure. The table below illustrates this problem using several examples from the model.

Transmission Segment	Total transmission cost assumed in the model*	Costs recovered from transmission services		Cost assumed away from transmission services	
MTH-LTH (Conduit Trench Metropolitan - Type 1)	$804,931	$18,193	2.3%	$786,738	97.7%
MTH-LTH (Direct Buried Trench Type 1)	$143,811	$15,979	11.1%	$127,832	88.9%
Regional LTH-LTH (Conduit Trench Regional Town - Type 1)	$214,648	$6,751	3.1%	$207,897	96.9%
Regional LTH-LTH (Direct Buried Trench Type 1)	$172,573	$19,175	11.1%	$153,398	88.9%
Regional LTH-Local Exchange (Conduit Trench Regional Town - Type 1)	$157,409	$4,951	3.1%	$152,458	96.9%
Regional LTH- Local Exchange (Direct Buried Trench Type 1)	$316,384	$35,154	11.1%	$281,230	88.9%

* The total cost includes the trench cost plus the cost of one fibre cable. In some cases the model assumes there is more than 1 cable, but does not include the cost of additional cables. Total trench costs are calculated by setting 'Sharing Factor' and 'No. of OF Cables in Trench' to 1.

15. For the fibre strands that are not assumed away, the model assumes a constant utilisation rate – 75%. This is not appropriate as different sections of the network will have different rates of utilisation. It is not accurate to assume that entering the average utilisation rate across the entire network into the model will result in the same average cost as entering the correct utilisation rates in each section of the network. This could easily be fixed in the model.

16. Telstra submits that an assumption of 75% utilisation overstates the utilisation of fibre. Such a high utilisation rate on the fibre strands that are used does not allow for the provisioning of surplus capacity for future demand. While the '*Trench and Optical Fibre Cable*' sheet of the model does allow for surplus fibre strands and fibre cables, it does not allow the costs of this surplus capacity to be recovered from Transmission services.

17. The model also underestimates the build and installation costs of the network. For example:

    a) The installation cost of fibre cable in conduit or tunnels is assumed to be $0.38/metre. Assuming that the cost of labour is $100/hour, although it is likely to be much higher than this, this would imply that one person would need to install at

least 263m ($100/$0.38) of fibre cable per hour for this assumption to be correct, ignoring any non-labour costs that would also be incurred during installation. This is simply unrealistic.

b) In many cases, installation costs have been left blank.

c) The model does not clearly set out the costs of trenching or installing fibre. Instead, it provides an average cost of trenching and ploughing, which appears to be set on an arbitrary basis. However, the cost of ploughing and trenching is very dependent on the earth composition (i.e. whether it is soil, rock, or concrete), which means that different rings will have different trenching and ploughing costs. This needs to be allowed for in the model.

d) The model assumes that there are only two MTH's per ring. In many cases, there are three MTH's in a ring.

e) It is not clear that the SDH equipment currently in the model includes all the appropriate tributary cards.

f) Fibre costs do not appear to include sheath ends/joins.

g) Network design and engineering costs (for example, site surveys, council permits, design, material procurement, planning) have been excluded.

h) Network management systems and software are excluded.

18. The Commission has told Telstra that there will be a separate data collection process to populate the model with appropriate variables. In addition, neither GQ nor the Commission provide any supporting material for the indicative variables in the model. Consequently, it is difficult for Telstra to comment on any of the empirical inputs to the model. Telstra would be pleased to engage with the Commission in a process of populating the model with appropriate values. For the purpose of this review, however, Telstra simply notes that many variables in the model are incorrect.

Annualisation of costs

19. The model uses a tilted annuity to annualise costs, which in some cases approximates straight-line depreciation but, in many other cases, substantially back-loads the depreciation profile. It is Telstra's view that back-loading of the depreciation profile is inappropriate. Furthermore, in cases where depreciation is back-loaded, the total capital costs are not recovered by the model since prices are based on only the first year's depreciation.

20. An example can be used to demonstrate that in most cases the tilted annuity formula back-loads depreciation. Assume that there is an asset that initially costs $100 to purchase with a life of 10 years. The straight-line depreciation on this asset is $10 in the first year. Any depreciation amount lower than this implies a back-loaded depreciation profile.

21. The tilted annuity depreciation for the first year of the asset's life can be approximated using a simple formula.[1] The year-1 tilted annuity depreciation is set out below for different price trends entered into the tilted annuity formula used in the model:

    - Year-1 depreciation with a -9% price trend is $11.03
    - Year-1 depreciation with a -5% price trend is $10.02
    - Year-1 depreciation with a -3% price trend is $6.81
    - Year-1 depreciation with a 0% price trend is $4.92
    - Year-1 depreciation with a 1% price trend is $4.32
    - Year-1 depreciation with a 4% price trend is $2.63

22. The year-1 depreciation for all assets that have a price trend greater than -5% is less than what would be expected under a straight-line depreciation profile ($10). Thus, for these assets it is shown that depreciation is back-loaded and, in some cases, substantially. Given that prices are modelled for only the year-1 annualised cost, any back-loaded depreciation will not be recovered in the model. This is likely to result in a substantial understatement of annual costs.

Allocation of ring costs to particular routes

23. The model determines the price of a service by calculating the cost of a collection of transmission loops and dividing by the required capacity on those loops. This assumes that every route on the collection of loop contributes the same amount to the cost of the network irrespective of the length of the route. This is inconsistent with efficient cost allocation principles and current pricing schedules in the market.

24. Efficient cost allocation principles would reflect the competition that exists on many of the declared routes, and the impact this has on the ability to allocate costs to shorter routes. For example, assume that a 500km transmission loop exists to service three nodes and that two of those nodes are placed 5km apart. Under the methodology employed by the model, the average cost for the 5km route is set to the cost of the 500km loop divided by capacity on the loop. However, a competitor might be able to undercut a price based on the model's average cost, by installing a much shorter loop between the two closely situated nodes. The competitor's cost for this service would be based on the 5km distance between the two nodes rather than the 500km long loop.

25. To overcome this problem, Telstra's current radial pricing for some transmission services is dependent on the distance between nodes on the transmission network. This structure allows for competitive prices on different parts of the route without preventing overall cost recovery.

[1] See Annexure A.

26. Telstra considers that a more sophisticated method of cost allocation should be employed.

Demand

27. The model adopts a broad approach to estimating demand for transmission traffic. While this part of the model is only used to inform network capacity, Telstra considers that it is flawed, since it is based on national averages rather than the specific demand over particular routes. A consequence of using nationally-averaged demands is that traffic on low demand routes (typically declared services) is over-estimated. Hence, too much capacity would be provisioned in the model for low-demand routes and too little capacity would be provisioned for high-demand routes.

28. Furthermore, if the Commission adopts a demand-based pricing approach (rather than the current capacity-based pricing approach), using nationally-averaged demands will overstate average costs on high-demand routes and understate average costs on low-demand routes.

29. If the model is changed to adopt a demand-based (as opposed to capacity-based) pricing approach, it will be important to include only the transmission demand that Telstra is allowed to charge for. In terms of IP traffic, the ACCC requires that Telstra peer with Optus and other Telco's networks on a bill and keep arrangement. Hence any domestic Internet traffic carried on Telstra's network on behalf of, for example, Optus, does not contribute to the cost of transmission. Therefore, while this traffic should be included for the purposes of dimensioning the transmission network it should not be included in the calculation of average cost.

Connection costs

30. Telstra is concerned that the Commission has glossed over the quantification of connection costs. The Commission concludes "*The Commission has been advised that connection charges for transmission capacity are no [sic] bandwidth dependent and are relatively minimal with a figure of less than $100 in each instance considered to be reasonable*".[2]

31. Telstra is not aware of the identity of the Commission's advisors on this matter. However, if it is GQ, then Telstra reminds the Commission that according to their website, GQ act for access seekers who are in dispute with Telstra over wholesale connection prices for LSS and ULLS. Therefore, Telstra does not consider that GQ would be in a position to offer an independent view on this issue.

32. Additionally, the advice the Commission has received appears to be predicated on the connection costs of LSS and ULLS. However, the connection costs of these services cannot be used as a proxy for the connection costs for transmission. Connection of these services requires substantially different activities, equipment and costs. A brief comparison of connections is presented in the table below.

[2] ACCC Discussion Paper, page 20.

Process	Wholesale Transmission Connection[3]
Customer notification/ order	*Telstra Wholesale Customer Service* (WCS) - Generate [C-I-C] order based on customer notification/order
Service Qualification testing	[C-I-C]
Planning	[C-I-C]
Design	[C-I-C] • Prepare a detailed design solution to meet customer requirements. • For optical based WTx services, designer is required to ensure the Optical power levels are within Telstra and manufacturers specs and also ensure the customer premise equipment can support the interface. May include a site visit to determine fibre path design, customer site equipment location, service delivery point. • For projects requiring external plant cabling, seek Council and Land Access approvals. • Loading [C-I-C] (many) with the particulars of the service. • Generation and Issuing of a design pack (word doc) for Field Construction.
Technical tasks at site	[C-I-C] • Hauling/Ploughing/Splicing/Testing of Optic Fibre cable. • Install customer site rack/equipment/cabling/power. • Augment exchange SDH Network Element with Optical Interface card/s. • Install new exchange Access Transmission Equipment to support WTx services. Eg. SDH Headends/BAU/Optical Distribution Frames and associated power/racking and alarm management systems. • Establish network cross connections at exchange locations to provide connectivity from Wideband Access equipment to Inter Exchange Transmission systems. • Test service end to end. • Claim service as active in [C-I-C]. [C-I-C] order for billing.

[3] Wholesale Transmission service is a Premium product and hence involves a detailed steps in the end-to-end process to ensure the quality of services / customer requirements are met

Responses to the Commission's questions

Overview of the model

Do you agree with the architecture of the routes that are proposed to be modelled? If not, why not?

33. Telstra refers the Commission to paragraphs 8 to 11 above.

Do you agree that the model allows for the appropriate transmission elements and services to be modelled? If not, why not?

34. Telstra refers the Commission to paragraphs 8 to 18 above.

Do you consider the transmission between capital cities and regional centres should be modelled based on Telstra's current optical fibre network architecture? If not, why not?

35. Telstra considers that the model should be firmly based on the current geographic layout and network architecture of the access provider's network. This is the only robust approach that ensures the model reflects the services that are actually provided to access seekers. To assume a different architecture, would be to assume a different transmission service than what is actually supplied to access seekers. For example, if a spoke and hub architecture were modelled instead of the ring architecture that is actually employed, the resultant transmission prices would not reflect the geographic redundancy of the transmission services that are actually provided to access seekers. In this regard, Telstra considers that the Commission should test any application of the model to ensure that it reflects the services it is supposed to be costing.

36. Should the model be premised on an imaginary network architecture, one that costs less than the actual network, then this will send a strong signal to access providers that their investments are subject to regulatory stranding.

In your opinion, to what extent will the cost of transmission differ on a particular route depending on the available bandwidth that is offered to an access seeker?

37. Telstra submits that provided there is sufficient capacity in the network the total cost of the network will not change significantly depending on the bandwidth offered to an access seeker, as many of the costs are common across different transmission services supplied over the same ring. However, if there are capacity constraints, then higher bandwidth services will impose a higher congestion cost on the access provider and other potential users.

Model structure

Do you think that the specified mark-ups listed in Figure 3 are appropriate in a model used to estimate the costs of supplying transmission capacity services? Why or why not?

38. Telstra agrees that, generally, the use of mark-ups is appropriate. However, the specific values for the mark-ups should be based on an analysis of the actual costs of supply.

In your opinion, what is the appropriate magnitude of any mark-ups for the purpose of estimating transmission costs? What evidence is there to support these magnitudes?

39. Telstra is willing to work with the Commission to help populate these variables when the Commission conducts its data collection exercise.

In your opinion, what is the appropriate WACC value to apply when estimating the costs of providing transmission capacity services?

40. Telstra refers the Commission to Annexure B.

To what extent can the WACC value be benchmarked against those applied for the provision of PSTN services?

41. For the following reasons, Telstra does not support the application of a WACC originally calculated for the PSTN to the costing of the declared transmission assets.

42. In some cases, Telstra considers that the CAPM parameters will be the same for the PSTN and declared transmission assets (even though they might need to be updated to reflect the appropriate timing), for example, the risk free rate, the market risk premium and the corporate tax rate.

43. Other CAPM parameters (for example, the debt risk premium, debt issuance costs and equity issuance costs) could take on the same values because they are leveraged from Telstra-wide metrics. In these cases the Telstra-wide quantum is a reliable indicator of the appropriate quantum in both the PSTN and transmission assets context. The appropriateness of the Telstra-wide value at the sub-firm level (ie for the PSTN and/or for the declared transmission assets) should, however, be examined closely as adjustments might need to be made to reflect factors pertinent at the sub-firm level but not relevant or muted at the Telstra-wide level. This could result in differential application or adjustments at the PSTN level vis-à-vis for declared transmission assets.

44. The key CAPM component parameter that varies across projects/assets is the asset beta which reflects the underlying systematic risk of the project/asset cash flows/returns. Telstra recommends that the appropriate asset beta for the declared transmission assets needs to be considered carefully rather than simplistically adopting the PSTN beta (and/or WACC). Since the systematic risk associated with the declared transmission assets is different to that of the PSTN, applying the PSTN beta will mean that the allowed commercial return (ie WACC) underpinning the costing will be invalid resulting in a WACC estimate not commensurate with that of the declared transmission assets. This means that the prices would not result in proper recovery of legitimately incurred costs including capital costs.

45. The analysis surrounding the estimate of the asset beta presented above applies the estimated CAN asset beta as a benchmark and then attempts to identify factors that would result in adjustments to properly quantify the asset beta for the declared transmission assets. There were a number of factors that individually and collectively would push the asset beta of the declared transmission assets above that of the CAN. Telstra considers that these factors need to be specifically accounted for in a consideration of the appropriate asset beta. Clearly the factors mean that there is a

different amount of systematic risk and this should be reflected in a different asset beta (and consequently different WACC estimates).

46. In various WACC-related contexts the Commission has resisted application of multiple WACCs despite the differential systematic risks of the assets involved. The Commission's rationale for this reflected the fact that the assets involved were to be recouped via a single charge applied to the same volume metric suggesting that the systematic risk was identical and/or conjoint. This particular constraint does not apply in this context where clearly the charges relevant for the PSTN OTA service and the declared transmission assets are separate, have distinct volume drivers and separate cash flows. Therefore there is no constraint to the application of multiple WACC estimates to these distinct asset bases.

To what extent (if at all) should a different WACC estimate be used to estimate the costs of providing transmission capacity services on different capital-regional routes?

47. As a matter of theory Telstra accepts that route-specific WACCs would be appropriate, particularly if the asset beta is different for different transmission routes. For example:

    - Different transmission routes could have different traffic mixes affecting their underlying systematic risks. This would imply route-specific asset betas;

    - The income elasticity across the different transmission assets could be different reflecting the differences in demographic and other factors of final customers generating calls over the declared transmission assets. This would imply route specific asset betas.

    - The extent of exposure to the rural economic cycle and other rural influences on willingness to pay and demand could diverge across the different transmission routes. This would imply route specific asset betas.

48. Although Telstra accepts the thesis that different transmission routes would experience different amounts of systematic risk, the informational demands involved in estimating such deviations with a reasonable level of confidence could be large. Additionally, any route specific differences in the WACC may well be minor for most routes and possibly lower than the estimation error inherent in any WACC estimate. Consequently, Telstra submits that transmission costs should be based on a single transmission WACC.

Route design

Are the parameters specified to model the cost of transmission on a [sic] 'interexchange' route appropriate? If not, why?

49. In relation to the specification of the parameters, Telstra refers the Commission to paragraphs 8 to 11 above.

50. In addition, Telstra notes that the model allows the user to enter only one LTH to LTH transmission distance. The model then applies this distance to more than one LTH to LTH leg. Telstra submits that the model should be expanded to allow for different distances to be entered for different LTH to LTH legs. It is not clear that using averages

would be sufficient, because, for example, the cost of two 120km transmission legs might be less expensive than the cost of a 20km transmission leg and a 220km transmission leg, despite both having the same distance. For example, a 220km route would require additional regenerator sites and equipment. The same issue exists for the majority of legs in the model.

51. In relation to the correct values to enter into the parameters, Telstra is willing to work with the Commission to help populate these parameters when the Commission conducts its data collection exercise.

Are the parameters specified to model the cost of transmission on a 'link' route appropriate? If not, why?

52. Telstra refers the Commission to paragraphs 49 to 51 above.

Are the parameters specified to model the cost of transmission on a 'tail-end' transmission route appropriate? If not, why?

53. Telstra refers the Commission to paragraphs 49 to 51 above.

Are the parameters specified to model the cost of transmission on a 'submarine route' appropriate? If not, why?

54. Telstra refers the Commission to paragraphs 49 to 51 above.

Are the additional parameters specified to incorporate the 'additional length of optical fibre into each exchange', the 'optical fibres in exchange cable lead in' and the 'optical fibre cable joints' appropriate? If not, why?

55. Telstra refers the Commission to paragraphs 49 to 51 above.

Technology

Do you agree with the technology choices available in the model? If not, what is the 'best-in-use' technology?

56. Telstra agrees with the high level technology choices in the model. However, Telstra needs more detail on each of the inputs that go into the costing of a particular transmission route before submitting a final view on this aspect of the model. For example, in relation to SDH multiplexer equipment, Telstra would need to understand if the model includes only the chasis equipment and check if the appropriate tributary cards have been equipped to deliver the relevant bandwidths.

Are the assumptions in the Technology selection sheet of the model reasonable?

57. In relation to the correct values to enter into the parameters, Telstra is willing to work with the Commission to help populate these parameters when the Commission conducts its data collection exercise.

Are the parameters specified in the Technology selection sheet appropriate? If not, why?

58. In relation to the correct values to enter into the parameters, Telstra is willing to work with the Commission to help populate these parameters when the Commission conducts its data collection exercise.

Transmission demand

Does the methodology employed in the Demand estimates sheet provide reliable and reasonable estimates of capacity demand?

59. Telstra refers the Commission to paragraphs 27 to 29 above.

Are the assumptions in Demand estimates sheet of the model reasonable?

60. Telstra refers the Commission to paragraphs 27 to 29 above. Telstra submits that when the Commission uses the model to calculate the cost of an actual transmission services, then the demand assumptions should be tested by comparing them to actual transmission demand over the relevant rings being costed. This will provide a sanity check to the broad demand assumptions adopted in the model.

Does the Demand estimates sheet assist with the selection of parameters which are consistent with an efficient network design?

61. Telstra refers the Commission to paragraphs 27 to 29 above.

Accommodation costs

Are the assumptions in the Accommodation cost estimates sheet of the model reasonable?

62. Generally, different routes will have different specific accommodation requirements for the housing of telecommunications equipment. Telstra will need to work with the Commission to arrive at appropriate input values on a case by case basis.

Does the methodology employed in the Accommodation cost estimates sheet provide reliable and reasonable estimates of accommodation costs?

63. As above.

Annualised cost calculation

To what extent are the initial investment costs for each network item a reasonable approximation of actual price trends?

64. Telstra considers that the initial investment costs are substantially understated due to the allocation principles applied. Telstra refers the Commission to paragraphs 12 to 18 above.

To what extent are the price trends assumed for each network item a reasonable approximation of actual price trends?

65. Telstra has not been privy to any material from the Commission or GQ supporting the price trends. The price trends appear to be arbitrarily set.

Is the conversion factor used to convert the 'total cost' of network items into an annualised cost into a 'year 0' tilted annuity value appropriate?

66. Telstra refers the Commission to paragraphs 19 to 22 above.

Is it reasonable that the model should estimate costs for year 0 in a tilted annuity?

67. Telstra refers the Commission to paragraphs 19 to 22 above.

Trench and optical fibre costs

Are the assumptions in the Trench and Optical Fibre Cable sheet of the model reasonable?

68. Telstra refers the Commission to paragraphs 12 to 18 above.

Do you consider distance to be the major driver of trench and optical fibre cable costs?

69. Yes, in addition to the costs of plant and equipment.

Are the calculations performed to estimate Trench and Optical Fibre costs appropriate?

70. Telstra refers the Commission to paragraphs 12 to 18 above.

Inter-exchange, Link, Tail and submarine

Does the methodology employed in the inter-exchange, link, tail and submarine model sheets provide reliable and reasonable estimates of transmission costs?

71. Telstra refers the Commission to paragraph 17 above.

ANNEXURE A: Tilted Annuity Depreciation

1. The tilted annuity formula is used to calculate the combined depreciation and cost of capital for all assets in the model. While the titled annuity formula does not lend itself to splitting between these two components, the split can be approximated using the following formula:

   Tilted Annuity Cost (year 1) = Depreciation (year 1) + WACC * [Opening Asset Value + Opening Asset Value – Depreciation (year 1)]/2

2. Where:

   a) Tilted Annuity Cost (year 1) is the annualised cost in year one from the model;

   b) Depreciation (year 1) is the implied depreciation component of the tilted annuity cost;

   c) WACC is the weighted average cost of capital; and,

   d) Opening Asset Value is the purchase cost of the asset.

3. This formula can be rearranged to determine the implied depreciation in the first year's cost:

   Depreciation (year 1) = [Tilted Annuity Cost (year 1) – WACC * Opening Asset Value] / [1 – WACC/2]

ANNEXURE B: The WACC

1. The cost of capital for any particular investment is the minimum expected required return that capital providers (both debt and equity) would require to incent them to provide the necessary funds for that investment. This required return should reflect the opportunity cost of their funds being the expected returns on alternate investments of similar risk. WACC is premised on the proposition that the return expected by providers of funds depends on the risk associated with the particular project, and that investments in more risky ventures require the prospect of higher returns in order to incent capital provision. The types of risks that are relevant under WACC theory are systematic risks, as other diversifiable risks have been assumed to have been offset by the benefits associated with a fully diversified portfolio. It is also relevant that the level of risk will differ according to whether the funds are provided by way of debt (with attendant regular repayments of capital and interest) or by way of equity (which provides a claim on residual earnings). The WACC will therefore be a weighted average of the cost of debt and the cost of equity with the weights reflecting the gearing structure.

2. Although determined in capital markets, the cost of capital (and most of its component parameters) cannot be observed directly and must be estimated using long-established theories and models. The Commission has consistently applied the Capital Asset Pricing Model (CAPM) in previous deliberations around WACC in both the telecommunications context and for other regulated asset bases. The CAPM is a theoretical simplification and may not accurately estimate the true WACC, especially given the potential for significant measurement error across a range of component parameters. Nevertheless, other parties to WACC debates in various telecommunications contexts have not argued that the CAPM approach is significantly deficient such that it should be supplanted by an alternate theoretical approach to quantifying the appropriate WACC. This support for the CAPM reflects its widespread adoption by regulators around the world (including the Commission) as well as by valuation experts, valuation practitioners and by equity analysts.

3. Given the above, Telstra has again used the various formulae previously applied by both the Commission and Telstra to calculate the WACC. This includes the adoption of the so-called "vanilla" WACC approach in which tax effects (including the effect of imputation, if any) are captured outside the WACC by the so-called "gross-up equation" applied by Telstra (see below) to generate notional annual pre-tax cash flows. This non-WACC approach to effecting tax impacts avoids the complications in dealing with the complexities of the tax system including reflecting the time varying tax burden in a single WACC estimate to be applied uniformly across the asset's entire useful life.

4. It is not clear that the indicative WACC estimate provided as Figure 4 in the Commission's Discussion Paper is consistent with the historical approach applied by the Commission in a number of its deliberations on WACC. Figure 4 is lifted directly from the Gibson-Quai transmission network cost model. The specification of this WACC appears to be post tax (rather than a "vanilla" WACC) and with imputation set by default (it is not a variable explicitly included in the description of the WACC estimate) to 0.0. Although Telstra supports the valuation of the imputation effect at 0.0 (see more detail below), Telstra considers that the WACC estimate applied in any costing of the declared transmission assets should be undertaken outside the transmission model and consistent with previously agreed approaches. Certainly, neither the Commission nor Gibson-Quai has

advocated a change of approach to a post-tax variant of the WACC. As far as Telstra is aware no other interested parties are agitating for such a change. Consequently, the specification of the relevant WACC needs to be changed back to the long-held approach previously adopted by the Commission (ie a "vanilla" WACC).

5. A related issue is the coverage of the corporate tax burden for the provider of the declared transmission assets. Although not a WACC (estimation) issue under a "vanilla" construct, it is important that the overall costing analysis applies the WACC and the other techniques involved in costing in a coordinated manner that enables the provider of the declared transmission network to pay corporate tax as required under legislation and thereafter to provide adequate returns to the capital providers (both debt and equity).

6. The Gibson-Quai transmission costing model applies a post-tax WACC in its annualisation process (in the "Annualised Cost Calc" worksheet). This means that the allowable revenue generated at that stage will not be sufficient to pay any tax on earnings and then provide the expected returns to the capital providers. It is not apparent that the Gibson-Quai transmission costing model captures the corporate tax burden in some other manner or other part of their costing model. Therefore, the implied revenue stream is after corporate tax and needs to be "grossed-up" to accommodate the tax burden otherwise after tax achieved returns will be insufficient to meet the expectations of capital providers.

7. Telstra recommends an adjustment to accommodate the corporate tax burden and ensure that post-tax returns are sufficient to enable the simultaneous payment of any relevant corporate tax and simultaneous achievement of expected returns to capital providers. The gross-up equation developed by Telstra (for application in conjunction with a "vanilla" WACC) is presented below.

$$\Phi V_{pre\text{-}tax} = [\Phi V_{post\text{-}tax} - (V/N+I)*T_c*(1-\gamma)]/(1-T_c*(1-\gamma))$$

where:

$\Phi V_{pre\text{-}tax}$ = the grossed-up (pre-tax) annual capital charge;

$\Phi V_{post\text{-}tax}$ = the annual capital charge using the "vanilla" WACC;

V = the total build cost of the asset;

N = the useful life of the asset;

T_c = the statutory corporate tax rate;

γ = the imputation factor;

I = $D*v*i$ and represents interest expense deductible for tax;

D = the debt ratio;

i = the interest rate applicable to the relevant debt.

8. Another departure from the approach previously consistently applied by Telstra, the Commission and other interested parties in WACC quantification contexts is that Gibson-Quai have incorporated non-interest bearing debt as a direct source of capital and attributed no required return to this. Telstra does not endorse this revised approach predominantly because the type of liabilities classified as non-interest bearing are traditionally (at least in the Telstra context) accounts payable which are not really relied upon to fund the underlying assets of the business and if their inclusion was appropriate (as a source of capital) a range of adjustments (including the identification and quantification of the implicit interest component) would likely be necessary. The details around the Telstra perspective on this issue are outlined below in the section on the appropriate gearing for the declared transmission assets.

Quantifying the Transmission Assets WACC

9. The WACC is simply a weighted average of the (different) returns expected by providers of debt and equity funds. The formulas used by Telstra to calculate the vanilla WACC and component inputs into that WACC formula are set as follows:

10. The nominal vanilla WACC is calculated using the following formula:

$$WACC = R_e (E/V) + R_d (D/V)$$

where

R_e = cost of equity capital, calculated as set out in paragraph 12;

R_d = cost of debt capital, calculated as set out in paragraph 11;

E = market value of equity,

D = market value of debt, and

V = market value of the firm (E+D).

11. The cost of debt capital is calculated using the following formula:

$$R_d = R_f + DRP + R_{IC}$$

where

R_d = cost of debt capital

R_f = risk free rate of return

DRP = debt risk premium, and

R_{IC} = debt issuance cost

12. The cost of equity capital is calculated using a modified version of the capital asset pricing model (**"CAPM"**), being:

$E(R_e) = R_f + [E(R_m) - R_f] * \beta_e + EIC$

where

$E(.)$ = indicates the variable is an expectation,

R_e = cost of equity capital

R_f = risk free rate of return

R_m = market rate of return, and

β_e = systematic risk parameter for equity ("equity beta")

EIC = equity issuance costs

Risk free rate

13. The risk free rate is used as an input into the formulae for estimating both the cost of equity capital and the cost of debt capital. From a theoretical perspective the risk free rate represents the yield available on a notional risk free investment, which is typically assumed to be a government bond. Although government bonds do have some residual risk, they are generally regarded as free of default risk and therefore application of a government bond on a yield-to-maturity basis is generally considered as not materially distortionary in WACC estimation.

14. Telstra has consistently used a 10-year government bond as a proxy for the risk free investment and the yield thereon as an indicator of the risk free rate for WACC purposes where the underlying asset lives are expected to be quite long. This construct matches the useful life of the assets with the duration of the risk free investment. This reflects standard commercial practice (followed within Telstra) of broadly matching the maturity of debt instruments with the useful life of the assets funded. On this basis the average maturity of Telstra's debt would generally approximate half the useful life of the relevant assets assuming regular payments of principal over the life of the debt (asset) such that the debt outstanding declines progressively. The useful lives of transmission assets are reasonably long such that the duration of relevant debt (approximately half their useful life) would likely be close to 10 years. Given that Government bonds typically do not have interim returns of principal (ie entire principle is returned at maturity) their duration is proximate to their maturity. On this basis, Telstra considers that the contemporary yield on Government 10-year bonds is a reliable proxy for the forward-looking risk free rate required for WACC computations. This matching

maintains the principle established by the Australian Competition Tribunal in the GasNet Decision[4] and is reasonably standard across Australian regulators.

15. Telstra's view is that the WACC applicable for annualising capital costs relates to a particular date at which the relevant assets are valued (costed) and that therefore all the components in the WACC calculation, as much as practicable, should be estimated on or projected to that same date. This then enables the identification of the true opportunity cost of the relevant assets in a manner consistent with the TSLRIC pricing principles.

16. The Commission has in the past advocated averaging of the observed risk-free rate rather than applying a rate-on-the-day as proposed by Telstra. The Commission contends that this approach reflects the need to account for day-to-day volatility in government bond yields. However, the Commission does not explain why short-term volatility needs to be redressed and presents no evidence that anomalous market fluctuations exist in relation to the bond market being considered in general or at and around the times relevant in this context. Nor does the Commission explain how a simple averaging of daily closing yields across an arbitrary period will specifically address these anomalous fluctuations. Finally, the Commission does not explain any adverse implications for the determination of an appropriate risk free rate that might flow from using the rate on the day.

17. Application of the WACC in its CAPM form rests on the assumption that market parameters, including the risk-free rate, reasonably reflect the best information available to market participants. It follows that the rate on the day does not supplement but supplants the rate on previous days, because it contains and reflects more information than those previous rates did. As a result, it is only appropriate to average or otherwise blend rates on different days when there are reasons to believe markets are functioning poorly – say because they are too thin – or anomalously (say because they are distorted by temporary "*noise*" or "*bias*" in the information available), and hence are incapable of properly reflecting in prices the best information available. Such anomalous conditions aside (and the Commission has not provided any factual basis to suggest they are relevant to contemporary Australian capital markets), all the components of the WACC must be estimated (to the extent practicable) at the same date as the asset valuation and/or construction (that is the date on which the TSLRIC costing is based). Adopting the rate-on-the-day also ensures that the resultant WACC estimate will be applied to asset valuations specific to a certain and consistent date.

18. Additionally, only using the rate on the day enables quantification of the true opportunity cost associated with the asset base as at the relevant date (ie the construction and/or valuation date often the beginning of a relevant financial year). More specifically, it is not possible for an access provider that did not proceed with the network investment notionally on the construction date to invest in Government bonds (or an alternate investment) at yields averaged over a range of preceding trading days. Telstra therefore submits that the opportunity cost (or WACC) should not be based on a smoothed bond yield unavailable in the market at the relevant date (i.e. the valuation or construction date).

[4] Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6,

19. The appropriate yield should be that available in the relevant government bond market at the time the provider of the assets (in this case the declared transmission assets) notionally commits to their construction at which point the assets are notionally sunk and the opportunity cost of foregone alternative investments effected. This requires a bond yield at the opening of the markets on the valuation and/or construction date. This opening yield is reliably proxied by the closing yield from the previous trading day.

20. Therefore, reflecting the foregoing perspectives Telstra recommends that the appropriate risk free rate should be educated by an observed contemporary yield on a Government 10-year bond. The observed yield should be based on opening yields on a particular date linked to the valuation and/or construction date and proxied by closing yields on the day previous. This information is sourced directly from the Reserve Bank of Australia's (RBA) website (http://www. rba.gov.au).

21. An indicative contemporary estimate of the 10-year bond yield would currently be 6.0%. Actual bond yields have gravitated towards that rate for some time. The final recommended risk free rate will need to be linked to a particular date.

Debt Risk Premium

22. The debt risk premium (DRP) is the margin above the risk-free rate that a particular entity must offer to attract debt funding. The quantum of the DRP will reflect the underlying risk of the relevant business and will reflect the credit rating attributed to that business or the debt of a similar business by the ratings agencies. The DRP that is relevant in this context is that which would apply to a standalone provider of the declared transmission assets but as Telstra does not issue debt specifically hypothecated to those assets the DRP is not observable at that level.

23. Given that the DRP is a component of the cost of debt it must be set relative to and consistent with the risk-free rate. This ideally requires the DRP to be quantified:

    - As a margin that would apply to debt issued by the provider of the declared transmission assets of similar maturity to that assumed for the risk free rate. Given the application of a 10-year government bond as the risk free investment this requires the DRP to be measured at the 10-year maturity;

    - As at the same date as the risk-free rate underpinning the WACC estimate. In circumstances where the risk free rate is determined on a day, the DRP should also be quantified on that same day. This requires the DRP to be estimated at the construction and/or valuation date applied in considering the risk free rate;

    - With the same extent of averaging as applied around the risk free rate. Given Telstra's application of the "rate on the day" without averaging around the relevant construction and/or valuation date, this requires the DRP to also be a "rate on the day" without averaging.

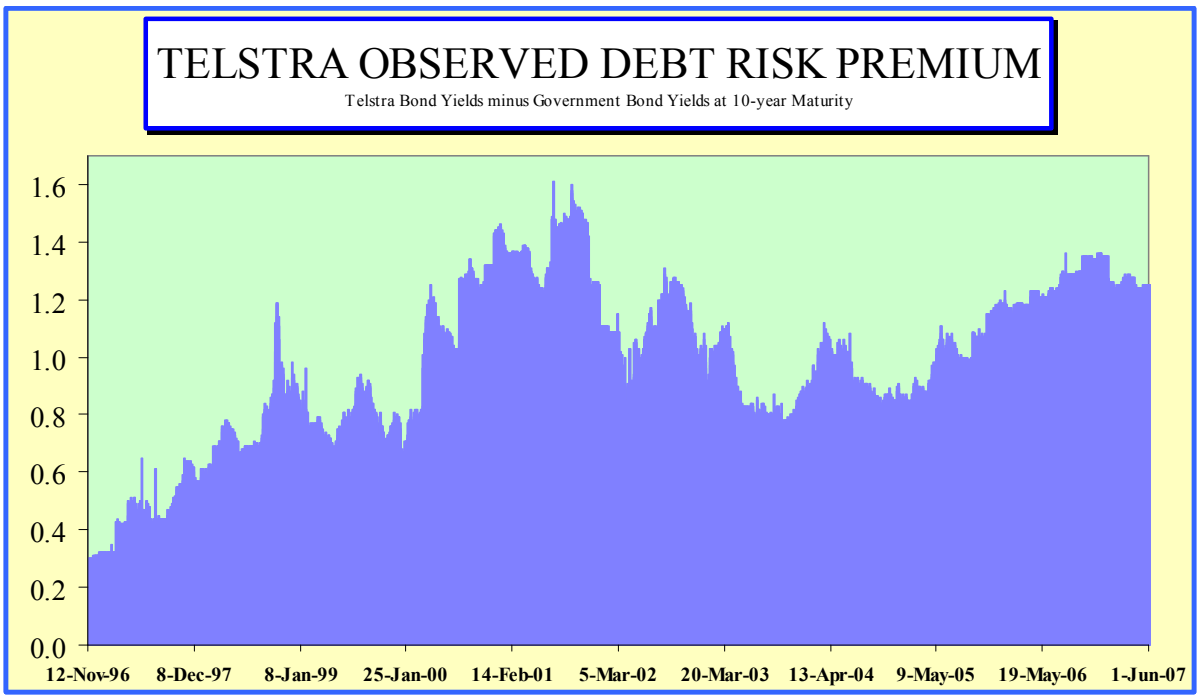
24. The DRP relevant in this context is one that would pertain to a stand-alone provider of the relevant declared transmission assets. There is no direct empirical support for this

metric as Telstra does not issue debt hypothecated to or relevant only to transmission assets. Given the centrality of the declared transmission assets to Telstra's overall business, the Telstra-wide DRP will provide some market-based guide to the likely size of the DRP that would likely apply to the declared transmission assets.

25. The likely quantum of the DRP is affected in part by the ratings ascribed by various ratings agencies to particular debt issuers. In broad terms the current rating attributable to Telstra by the various ratings agencies is likely to be indicative of the likely rating applied by similar agencies to a stand-alone provider of declared transmission assets. This reinforces the view that the Telstra-wide DRP is an appropriate indicator of the DRP relevant for the declared transmission assets.

26. Telstra considers that in estimating the various WACC parameters reliance should be placed on market determined information as much as practicable. Although no direct market information on the DRP for declared transmission assets is available, there is market-derived information available at the Telstra-wide level which provides some reasonable guidance for the DRP of the declared transmission assets.

27. The Telstra-wide DRP for debt with (approximately) 10 years to maturity over much of the last decade is plotted in the chart below. The observed DRP for Telstra averaged 1.26% over the period from January to early-June 2007 and has recently been steady within a narrow range of 1.20% to 1.25%.



Source: Telstra Treasury

28. The business of the declared transmission assets is likely to be slightly less risky than the risk borne by Telstra as a whole, which would suggest a lower DRP in the transmission assets context than that observed at the Telstra level. Offsetting this, the debt gearing

applicable to the stand-alone provider of transmission assets would likely be potentially higher than that optimal for Telstra overall. This would tend to heighten the DRP for the stand-alone provider of transmission assets relative to that for Telstra. On balance, reflecting these partially offsetting influences Telstra contends that the Telstra-wide DRP at 10-year maturity is a reliable guide to the DRP applicable to the declared transmission assets although slightly on the high-side. Therefore Telstra recommends a DRP of somewhere between 1.15% to 1.20% (slightly lower than recent Telstra-wide DRP observations).

29. The Commission has previously advocated the uncritical application of a benchmark debt risk premium for an A-rated benchmark bond[5]. The Commission does not provide the detail on the source of this estimate nor any insight into the relevance of this observation, nor does it establish the relevance of the benchmark bond rating to the particular context (the LSS in that case). Further, the Commission does not provide any detail as to the range of companies sampled in the A-rated benchmark. Telstra submits that these companies will invariably differ to Telstra to some extent in terms of:

    a) Industry structure or competitive dynamics;

    b) Company specific growth or life-cycle dynamics;

    c) Perspective of ratings agencies (eg whether on credit watch negative/positive or not); and

    d) Differential liquidity and/or gearing of A-rated corporates.

30. Given these differentiating factors, the range of company-specific DRPs embedded in any estimate of the average would likely be quite wide and specifically identifying where the transmission network assets would be located in this spectrum would be extremely problematic. The arbitrary adoption of the simple average, without any adjustment for the factors that in practice would lead the DRP to vary from company to company, is simplistic.

31. In Telstra's view it would be preferable to use something closer to the actual context. In other words adjusting from the Telstra-wide DRP is more straight-forward and practical than attempting to adjust an average from a cohort of diverse corporates with sometimes significant differences across parameters that matter for the DRP. This is especially so for the declared transmission assets given their centrality and criticality in Telstra's broader operations.

32. Therefore, Telstra currently recommends a range of 1.15% to 1.20% (slightly lower than the recent Telstra-wide DRP observations) as a reliable estimate of the DRP for the declared transmission assets around June 2007.

[5] ACCC, "*Assessment of Telstra's ULLS Monthly Charge Undertaking*" Final Decision, Public Version, August 2007, page 107

Debt Issuance Costs

33. Debt issuance costs relate to the transaction costs involved in raising new debt and/or in renegotiating or extending current debt instruments. These costs include various fees associated with underwriting and management, coverage by ratings agencies, legal advice, audit scrutiny and accounting advice. They are typically incurred as once-off costs at the establishment of the debt and involve significant scale economies.

34. These costs are legitimately incurred in the long-term provision of the declared transmission assets and need to be recouped to ensure appropriate full-cost recovery. Telstra advocates the inclusion of a margin in the cost of debt to cover the costs associated with the issuance of debt rather than the alternative of specific recognition of these costs in the notional cash flows. This is consistent with the recognition by various Australian regulators of debt issuance as a cost requiring recovery and legitimately includable in the WACC.

35. The Commission has previously recognised the appropriateness of including debt issuance costs as a margin on the cost of debt. This has resulted in the allowance for debt issuance costs of the order of 10.5 to 12.5 basis points being recovered in electricity and gas decisions,[6] and the Tribunal's allowance of 25 basis points being recovered in the context of the GasNet Access. In its final decision regarding Telstra's undertaking in respect of PSTN and LCS[7] the Commission recommended application of a benchmark (annualised) rate reflecting debt issuance costs developed by the Allen Consulting Group[8] (ACG) to reflect annualised debt issuance costs.

36. The most cited analysis of issuance costs[9] provided empirical support for the existence of scale economies associated with these costs and provided detailed estimates of the indicative extent of the costs relative to the quantum of debt raised. Given the likely asset valuation of the declared transmission assets and the extent of debt funding (30% debt), the debt required to fund these assets is likely in the highest dollar range identified by Lee and others (ie above US$500m). This suggests that total debt issuance costs are likely to be around 1.53% of the gross amount of debt raised.

37. Given that these costs associated with debt issuance are typically incurred on a once-off basis (although there can be costs associated with rolling over debt) they need to be converted into annualised amounts for inclusion in the WACC (or alternatively for inclusion as an operating expense). Quantified correctly Telstra is indifferent between these two approaches to recouping debt issuance costs. However, consistent with emerging regulatory best-practice it seems sensible to include these costs as part of the cost of debt (and hence WACC).

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[6] Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT

[7] ACCC, Assessment of Telstra's PSTN and LCS Undertaking, Final Decision, Public Version, 29 November 2006

[8] Allen Consulting Group, "Debt and Equity Raising Transaction Costs – Report to the Australian Competition and Consumer Commission, December 2004, p xvii

[9] I. Lee, S. Lochhead, J. Ritter and Q. Zhao, "*The Costs of Raising Capital*" Journal of Financial Research, Spring 1996, pp 59 – 74.

38. These once-off costs are converted to an annual amount suitable for addition in the cost of debt using the logic of net present value and the coupon yield of the relevant bond as the discount rate.

39. Given the amounts of debt which would be required to fund the declared transmission assets on a stand-alone basis, total debt levels are likely to be close to US$500m. Reflecting this, Telstra estimates an annualised margin for debt issuance costs of 0.22% for the declared transmission assets.

40. The Commission has in the past accepted the appropriateness of including debt issuance costs in the WACC partly because they are not otherwise captured in the cost modelling.[10] However the Commission contends that Telstra's estimated debt issuance costs were too high and relied on benchmarking analysis undertaken by ACG to support its view that debt issuance costs quantified at 8 bps in the network context.

41. Telstra advocates the application of real-world market-based information as much as practicable when quantifying the WACC parameters. Telstra recently raised a significant amount of debt accessing the Euro-bond market. The critical parameters of this debt raising and associated costs are summarised in the table below. Overall they indicate that transaction costs amounted to [C-I-C] of the total amount of debt raised on a once-off basis. Annualising these costs over the life of the debt (10 years) and using the coupon rate to discount suggests an annualised margin (appropriate for inclusion in the cost of debt) of [C-I-C] basis points.

42. Reflecting the above Telstra considers that an indicative figure for annualised debt issuance costs for the declared transmission assets would be somewhere between [C-I-C] and 22 basis points. This has been included as a component of the cost of debt consistent with the WACC equation above.

Market Risk Premium

43. The market risk premium (MRP) relevant in the CAPM is the premium that investors in a fully diversified portfolio expect to earn above the relevant risk free rate over some indeterminate forward period. The *ex ante* MRP relevant for the CAPM is therefore expectational and thus not directly observable and it is not readily apparent how persuasive historical returns (which are at least observable on an annual *ex post* basis) will be in educating expected returns.

44. Telstra recognises the inherent difficulties in quantifying the *ex ante* MRP and relies on a number of sources to derive a reasonable estimate of the Australian MRP.

45. The first strand of analysis relates to various historical estimates of the MRP for Australia. These various estimates are summarised in a paper by Gray and Officer[11] which details estimates of the simple arithmetic mean of *ex post* observed excess returns

[10] ACCC, "Assessment of Telstra's PSTN and LCS Undertaking", Final Decision, Public Version , 29 November 2006, see pages 83-84.
[11] S. Gray and R. R. Officer, *"A Review of the Market Risk Premium and Commentary on Two Recent Papers"* A Report Prepared for the Energy Networks Association, 15 August 2005

for the Australian market over the risk free rate (proxied by 10-year government bond yields). The estimates range from a low of 6.43% (covering 1955 to 2004 inclusive) to a high of 7.70% (covering 1975 to 2004 inclusive). The averaging of the *ex post* MRP is undertaken over different time periods (see table 1) partly to test whether there is any discernible movement (or trend) in the ex post MRP over time. Gray and Officer consider that the acute year-to-year volatility in *ex post* returns makes identification of any reliable trend impossible. Gray and Officer appear to prefer a long time period for analysis as "the preferred approach is to analyse a larger data set that contains both positive and negative shocks" and does not recommend the exclusion of particular years affected by seemingly once-off events (such as 1987) as others do on the basis that they may not be repeated in the forward period for which the MRP applies (or ever). Telstra concurs with this long-term approach to averaging *ex post* returns as this best captures the range of events that will guide investors in considering expected returns into the future.

46. On this basis Telstra suggests that the preferred estimate of the *ex ante* MRP should be based on a simple average of a long time series of *ex post* MRP estimates. Based on Gray and Officer's calculations Telstra's preferred estimate is 7.17% covering the 120 years from 1885 to 2004 inclusive. If a shorter time period is considered, possibly to test whether the *ex post* MRP has declined, Gray and Officer find that the average ex post MRP over the 30 years from 1975 to 2004 inclusive is 7.70%, the highest estimate presented by Gray and Officer covering different time periods. Telstra considers that the analysis of Gray and Officer supports an *ex ante* MRP of 7% as reasonable to the extent that *ex post* returns provide guidance on the true *ex ante* MRP.

47. Gray and Officer find that the *ex post* MRP is substantially above 6% whether data covering 30, 50, 75, 100 or 120 years is employed in the averaging process.[12] They ultimately conclude that there is nothing in the recent data or in their paper (and those they review) that suggests that a regulator should move from the 6% figure that has become regulatory precedent in Australia. Gray and Officer go on to argue that varying the MRP rate traditionally applied will "increase the variability of estimates and the risks of valuation." However, in Telstra's view the Gray and Officer analysis supports a perspective that 7% is the appropriate MRP to apply in regulatory contexts in Australia. The issue is not about whether moving from the historically applied low MRP (6%) to a more valid estimate (7%) will cause some difficulties to regulators, regulated entities and investors; but whether persisting with the historically applied rate is valid given that it appears low. The fact that the historically applied rate is significantly below the rate implied by Gray and Officer's analysis suggests that there is heightened risk of under-recognition of the true MRP and hence the WACC applied in many regulatory costing exercises. This in turn implies that, *ceteris paribus*, equity providers will not earn an adequate risk-adjusted return relative to the risk-free rate.

48. The second approach relied on by Telstra is that developed by Professor Bowman and detailed in various previous reports lodged with the Commission[13]. Bowman's estimation of the MRP was based on a benchmarking approach which specifically recognised that the Australian specific MRP is now established in an environment where

[12] Ibid page 2

[13] R. G. Bowman, "*Report on the Appropriate Weighted Average Cost of Capital for the Services Provided over the CAN*", May 2007, section 6.2

the Australian market is more open and more integrated into the international market. Older estimates of the Australian MRP (before the mid-1980's) were in the context of a highly regulated and non-integrated Australian market and thus not representative of the forward-looking *ex ante* MRP that would pertain today in a globally integrated market environment. Estimates of the Australian *ex post* MRP based on years prior to the mid 1980's are thus likely to be downwards biased in terms of their application in a forward-looking *ex ante* perspective (as required in WACC).

49. The Australian-specific MRP could thus be based on the United States' estimated MRP of 5.5% plus a margin to reflect net incremental risks associated with investment in the Australian market, including taxation, market differences and country risk. This avoids the problem that estimates of the MRP applying observed outcomes before the mid-1980's are not useful for estimating future returns. This problem is encountered with many estimates of the Australian MRP based on long-term data of the observed *ex post* MRP (including those of Gray and Officer discussed above as well as other estimates of the Australian MRP applying data prior to the mid-1980's).

50. The factors Bowman identifies as supporting the case that the Australian specific MRP would be higher than that for the US, and that adjustment for these factors is necessary to robustly quantify the Australian specific MRP, include:

    a) the Australian market has a larger representation than the US market of resource companies with attendant higher systematic risk. This would tend to increase the systematic risk of the overall Australian market relative to other markets (eg the US) with relatively less resource companies. Associate Professor Hathaway does not refute the link between resource companies and systematic risk but questions its relative importance.[14] Professor Bowman presents data that shows that the resource sector comprises about 30% of the top 25 listed companies in Australia and hence are a significant component of the overall Australian market;

    b) the Australian market is significantly smaller than the US market, as is reflected in Professor Bowman's statistics. It is indisputable that systematic risk and total risk are negatively related to size. That is, the smaller the size of the entity the likely higher is the related risk (both total and systematic);

    c) the Australian market and its component listed entities have lower liquidity than their US counterparts;

    d) the Australian market is comprised of smaller companies than the US market;

    e) there is less diversity in the Australian market than the US market; and

    f) there are fewer risk management opportunities in the Australian market.

51. Bowman estimates that the aggregate adjustment to reflect these differences is around 1.5%. Following these adjustments, the resulting MRP estimated by Bowman is

[14] N. Hathaway, "*Telstra's WACC's for Network ULLS and the ULLS and SSS Businesses – A Review of Reports by Prof. Bowman*" Capital research, 15 March 2006

therefore 7%. This estimate of the MRP is relative to a risk free rate based on 10-year Government bond yields.

52. The third source of information relied upon by Telstra is the study by Dimson, Staunton and Marsh.[15] These estimates are globally renowned and often used by international investors, international fund managers and others considering investments in Australia. The *ex post* MRP estimates they present are 6.3% based on geometric averaging and 7.9% based on arithmetic averaging (both relative to government bond yields). Both estimates are based on long term time series (102 years of data covering 1900 to 2001 inclusive) reflecting their perspective that "in order to make inferences we thus need long time series that incorporate the bad times as well as the good."[16] Their perspective is similar to that of Gray and Officer that "investors think and are influenced by arithmetic average returns and hence it is this reason that arithmetic averages tend to be used to forecast future MRP's."[17] Telstra considers that the arithmetic average calculated by Dimson, Marsh and Staunton for Australia (7.9%) is a reasonable estimate of the *ex ante* MRP for Australia for inclusion in the CAPM framework.

53. Based on the above analyses Telstra recommends that the preferred, conservatively low estimate of the future *ex ante* MRP for Australia should be 7%. The estimates detailed above clearly indicate that retention of the 6% MRP historically applied by the Commission is too low. Telstra does not accept that difficulties implementing a changed MRP quantum justify persisting with this artificially low rate.

Corporate Tax Rate

54. In a vanilla WACC costing context corporate tax is specifically captured as an on-going burden and allowed revenue adjusted to cover required corporate tax payments. The WACC is not used to cover corporate tax and therefore does not need to be pre-tax. In this construct the corporate tax rate is only relevant in WACC calculations to de-levering and re-levering beta estimates. Telstra has consistently applied the statutory corporate tax rate for application in various regulatory costing contexts.

55. The effective tax rate will typically differ from the statutory tax rate as a result of differences between accounting depreciation and tax depreciation (e.g., from accelerated depreciation). The corporate tax rate that is relevant in WACC contexts is the forward-looking rate for the years for which WACCs are being estimated.

56. Changes in tax law have virtually eliminated the potential for creating depreciation timing differences for assets purchased or constructed on or after 21 September 1999. In the context of declared transmission assets, Telstra considers that accelerated depreciation is not applicable as such is not available to forward looking costs of transmission assets notionally constructed in the relevant year of the Undertaking. As the Undertaking years are well after the discontinuance of accelerated depreciation it is

[15] E. Dimson, P. Marsh and M. Staunton "*Global Evidence on the Equity Risk Premium*", Journal of Applied Corporate Finance
[16] Ibid page 2
[17] S. Gray and R. R. Officer, *"A Review of the Market Risk Premium and Commentary on Two Recent Papers, A Report Prepared for the Energy Networks Association*", 15 August 2005, page 9.

not relevant and to include it would distort build-buy decisions of access seekers who would not have access to accelerated depreciation if they built their own transmission infrastructure today.

57. The Commission has previously rejected this perspective and favoured its own estimate of the effective tax rate.[18] The basis for the Commission's rejection of the statutory rate appears that many assets were constructed prior to the discontinuance of accelerated depreciation and that therefore accelerated depreciation was available to Telstra in the real world. If that remains the Commission's perspective it should be noted that book depreciation would now likely be above tax depreciation such that the effective rate of tax is likely now above the statutory rate of tax for many of these assets.

58. Telstra also considers that the tax rate relevant in WACC-related considerations is that which is likely to be relevant over the useful life of the relevant assets. Capital providers are interested in likely returns over the asset's entire useful life. If accelerated depreciation is relevant it results in a lower than statutory effective tax rate in some span of early years followed by a period (to the end of the assets useful life) where the effective rate is actually higher than the statutory rate as there is no depreciation to claim at tax once the asset is fully depreciated (on an accelerated basis). On this basis, the average effective tax rate over the entire asset life (that is the tax rate relevant in WACC estimates) approaches the statutory corporate tax rate (although there is a timing advantage). This further reinforces the view that the statutory corporate tax rate is the tax rate applicable in WACC contexts.

59. The narrow application of the corporate tax rate in the re-levering and de-levering equations around beta also reinforces the view that the statutory tax rate is appropriate. Typically when de-levering observed equity betas the statutory tax rate is used. Telstra is not aware of any estimates of the asset beta that do not apply the statutory corporate tax rate in the de-levering process. This likely reflects the high informational demands involved in calculating the effective corporate tax rate. To ensure internal consistency across beta estimation it is imperative that the statutory corporate tax rate is also used in the re-levering process. To apply the statutory corporate tax rate in the beta de-levering process and then a guess of the effective tax rate in the beta re-levering process is inconsistent and distorts the resultant asset/equity beta estimates.

60. Both the Commission and Telstra reflect the corporate tax burden outside the WACC quantum in separate and specific modelling. In this modelling the effect of depreciation on the tax burden is captured by specific variables and therefore its impact does not need to be reflected in the corporate tax rate applied. To specifically apply an effective corporate tax rate in this modelling would double-recognise any advantage of accelerated depreciation.

61. Given the above Telstra considers that the statutory tax rate is appropriate when de-levering and re-levering beta estimates as is the only application of the corporate tax rate in a "vanilla" WACC construct.

[18] Detail on this view is found at ACCC, *Assessment of Telstra's Undertaking for the Domestic PSTN Originating and Terminating Access Services – Final Decision*, July 2000, See appendices 3, 4 and 6.

Imputation

62. A system of dividend imputation was established in Australia from 1 July 1987. Until then Australia had a "classical" taxation system in which corporate profits were taxed twice – once as corporate profits and again in the hands of investors when distributed as dividends. Imputation was introduced to remedy this and to eliminate this double taxation – at least for some investors. The imputation system operates by including with dividends that are paid out of profit after tax (ie corporate tax has been paid) a franking credit which recipient investors utilise as a credit against their individual investor tax liability. This credit reduces the investor tax burden and effectively results in a single tax burden on corporate income commensurate with the applicable rate of investor tax. Australian resident taxpayers can now fully utilise received franking credits whereas non-resident investors/taxpayers are not able to redeem their franking credits and thus they have no value to non-resident investors.

63. Under a "vanilla" WACC approach all tax effects including the benefit of imputation are captured in the notional cash flows rather than the WACC and therefore the value of franking credits is only relevant in the equations for re-levering and de-levering beta estimates. Imputation is only relevant in the WACC calculations due to its inclusion in the Australian-specific re-levering equation to convert an asset beta to an equity beta. Imputation is also relevant when ensuring the access provider earns sufficient capital returns after payment of corporate tax (ie in the modelling to incorporate the tax burden into allowable revenue).

64. Professor Bowman has provided an extensive report on dividend imputation covering a range of issues critical in quantifying the appropriate value for gamma (the variable capturing the effect of imputation on the cost of equity).[19] Interested readers are directed to that report for a comprehensive analysis around imputation issues.

65. Bowman's major conclusion is that, just as the marginal investor is critical in determining share prices, it is the valuation of imputation by the marginal investor that is relevant for quantifying gamma in a WACC-related context. The marginal investor for most (if not all) Australian listed entities is likely to be an international investor given their significant representation on share registers across Australia and the resultant implication that the domestic supply of capital (what domestic capital providers are prepared to provide by way of equity funds) is less than the domestic demand for capital (what domestic businesses need in terms of capital). On that basis, domestic listed entities need to attract overseas investors. Therefore, it is likely that the valuation of imputation by the marginal investor that establishes share prices is by an international investor that cannot utilise these imputation credits and therefore attaches no value to them. This does not mean that dividend imputation has no value to domestic shareholders – that is patently incorrect. However, it does mean that the marginal investor determines the share price at which the relevant market clears and also that domestic shareholders, who would have been prepared to pay a higher amount for those shares (reflecting their valuation of imputation credits), enjoy some consumer

[19] See Bowman R. G. "*Report on the Appropriate Weighted Average Cost of Capital for the Services Provided over the CAN*" May 2007

surplus (ie have a higher personal valuation than that implied by the market clearing price). Similar consumer surplus is a component of most markets.

66. Bowman also details a range of studies into imputation and the quantification of gamma in a WACC context[20]. These are summarised in the table below which is taken directly from the Bowman report. The overwhelming conclusion is that the estimates support a view that gamma is less than 0.5, with six estimates (of the 12 reported in the summary table) suggesting that gamma should be 0.

[20] See Bowman R. G. "*Report on the Appropriate Weighted Average Cost of Capital for the Services Provided over the CAN*" May 2007, table 13.

Study	Methodology	Time Period for Estimation	Value of franking credits (V)	Value of gamma (γ) *
Bruckner, Dews and White (1994)	Dividend drop-off	1987-1990	0.34	0.24
		1990-1993	0.69	0.49
Partington and Walker (1999)	Contemporaneous pricing of shares with and without franking credits	1995-1997	0.96 (average)	0.68
Hathaway and Officer (2004)	Dividend drop-off	1988-2002	0.5	0.36
Bellamy and Gray (2004)	Dividend drop-off (adjusted)	1995-2002	0	0
Cannavan, Finn and Gray (2004)	Analysis of futures and physical market (no arbitrage framework)	Pre- 45 day rule	Up to 0.5 (high-yielding stocks)	0.36
		Post- 45 day rule	0	0
Beggs and Skeels (2006)	Dividend drop-off	1987-2000, 2001-2004	0	0
			0.57	0.41
Gray and Hall (2006)	Consistency between WACC parameters and observed dividend and MRP data	Simulated data	0	0
Feuerherdt, Gray and Hall (2007)	Dividend drop-off for hybrid securities	1995-2002	0	0
Lonergan (2001)	Survey of independent experts' reports	1990-1999	0	0

* Assumes a distribution rate of 71%.

67. Telstra has previously supported the Commission's approach of applying a gamma of 0.5 despite a view that the marginal investor approach provides the superior logic around the valuation of imputation. This support reflected the lack of consensus on the precise valuation of gamma and the adoption of the mid-point of the possible range seemed prudent in that context (especially given that Hathaway and Officer valued imputation at around 0.46)[21]. However, the Bowman paper illustrates that there does seem to be an emerging consensus around imputation with real central tendency around an estimate of gamma at 0. On this basis Telstra accepts that the imputation factor in the "vanilla" WACC (ie part of the conversion from an asset beta to an equity beta) should now be valued at 0. Adopting gamma at 0 will have a minor downward impact on the estimated equity beta and thus WACC (ie relative to gamma at 0.5).

68. To the extent that the earlier estimate of the imputation effect by Hathaway had been influential in the Commission's decision to apply 0.5 previously, it would now appear sensible that the Commission consider adopting the latest update by Hathaway. Hathaway's latest estimate of the value of gamma is 0.355[22]. In Telstra's view adoption of the latest Hathaway estimate would be second-best given the central tendency emerging around 0.

69. Overall, Telstra considers that recent studies indicate an emerging consensus well below 0.5 and central tendency around 0. Consequently it is now appropriate for the Commission to adopt a gamma of 0.

Asset beta

70. The asset beta reflects the level of non-diversifiable risk associated with a particular asset and is measured relative to a fully diversified portfolio of assets (typically proxied by a broad measure of the relevant equity market). The asset beta reflects the underlying extent of systematic business risk on an ungeared basis (ie essentially with no debt). From an equity provider's perspective the adoption of debt increases the risk of equity returns which take account of the burden of debt servicing. The effect of gearing is therefore to increase the risk of returns to equity providers and this effect is incorporated into an equity beta. Normally (for listed entities) equity betas are calculated using information on the total return (dividends plus changes in market value) of a particular asset relative to the total returns of a well diversified portfolio. The market risk premium and the equity beta compounded together determine the risk adjusted premium required for a particular asset/project above the risk free rate.

71. The asset beta required in this context is one narrowly related to a stand-alone provider of the declared transmission assets. Telstra is not aware of a listed entity that uniquely only provides services such as those provided over the declared transmission assets.

[21] Hathaway N. and Officer R. R. "*The Value of Imputation Credits*" Working Paper, Melbourne Business School

[22] Hathaway N. and Officer R. R. "*The Value of Imputation Tax Credits, Update 2004*" Capital Research, November 2004

Consequently, some judgement is required in determining a robust estimate of an asset beta for the declared transmission assets. Generally information from a range of sources can be informative in this process.

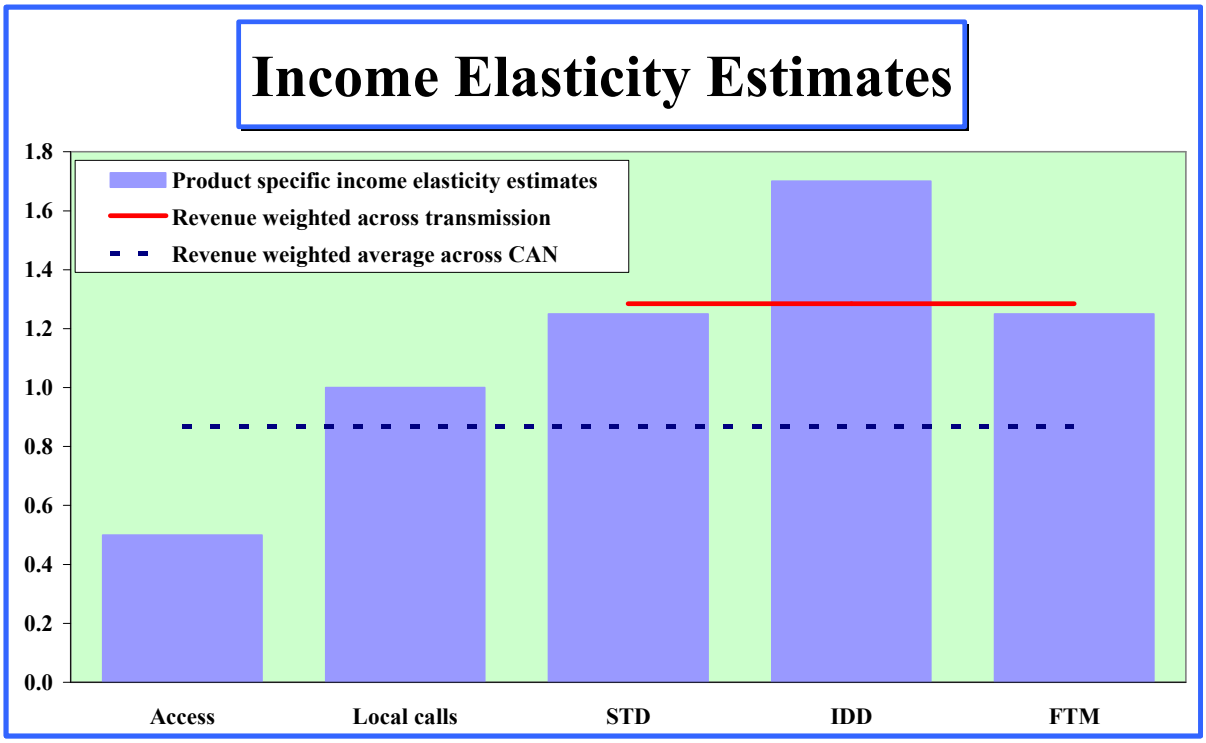
72. In Telstra's view there should be no expectation that the asset beta (and or WACC) relevant or estimated for the PSTN should directly apply to the declared transmission assets. In Telstra's view there are a number of reasons why the asset beta relevant for the declared transmission assets would be different to (higher than) that for the PSTN, especially that used in the context of costing PSTN originating and terminating services. These reasons and the direction and likely magnitude of the impact are discussed below.

73. First, the range of services relevant for PSTN OTA was narrower than those that currently traverse the declared transmission assets. The Commission has continued to apply its original asset beta from the PSTN OTA context[23] to all subsequent considerations of related network costings. In Telstra's view this fails to capture the changed traffic mix that flows over the PSTN today relative to when the original PSTN-specific asset betas were estimated by the Commission. PSTN OTA essentially relates to traditional PSTN-type services such as local calls, STD calls and IDD calls. There is considerably more broadband-related traffic and mobiles-related traffic that is transmitted over the PSTN today than when the Commission first estimated its beta for the PSTN OTA service. Broadband and mobiles cash flows are likely to have significantly higher systematic risk than other services supplied over the PSTN (partly reflecting their more discretionary nature) and hence their increasing weight (ie revenue share) suggests a higher asset beta is more relevant than previously applied.

74. Second, relative to the PSTN, the traffic over the declared transmission assets does not include local calls which have low income elasticity Income elasticity relates to the cyclicality of revenue and is thus a partial indicator of the sensitivity of the particular entity to the economic cycle (and thus systematic risk or beta). Since local calls are generally considered to have low income elasticity relative to the other services in the PSTN suite (see chart below), their non-relevance to the declared transmission assets suggests a higher weighted average income elasticity for the declared transmission assets than the PSTN. This implies that the asset beta for the declared transmission assets will also be higher than that applicable for the PSTN. The average income elasticity inclusive of local calls (ie indicative of the overall CAN income elasticity and thus a loose proxy for the CAN asset beta) is 0.87 and exclusive of local calls (ie indicative of the income elasticity for the declared transmission assets) is 1.28[24]. This suggests that the required uplift to the CAN beta to incorporate the different traffic mix of the declared transmission assets could arguably be quite significant.

[23] ACCC, "*A Report on the assessment of Telstra's Undertaking for the Domestic PSTN Originating and Terminating Access Services*", July 2000, pages 92-94.

[24] This is based on data reported in Bowman, "Report on the Appropriate Weighted Average Cost of Capital for PSTN-OTA and LCS" Appendix F, page 7,



75. Thirdly, the transmission assets have a greater weight of rural driven traffic relative to the PSTN and hence higher systematic risk. This reflects the regional (non-metropolitan) geographic focus of the declared transmission assets. This in turn, suggests that the pattern of traffic over the declared transmission assets will be affected by the more volatile rural economy to a greater extent than the PSTN overall and all transmission assets (ie including the inter-capital and other transmission assets not declared). This implies that the asset beta for the declared transmission assets will be higher than that for the PSTN OTA services.

76. The above factors clearly suggest that the asset beta for the declared transmission assets will be higher than that which the Commission has previously apply to the PSTN in various costing contexts.

77. Professor Bowman recently estimated an asset beta for the CAN of 0.75[25]. Although the direction of the adjustment required to the CAN asset beta is unequivocally upwards the quantum of that adjustment requires some judgement. As noted above the income elasticity relativity suggests a considerably higher asset beta for the declared transmission assets relative to the asset beta for the CAN. Telstra recommends an asset beta of between 0.75 to 0.8 for the declared transmission assets. This largely reflects the range of factors outlined above (traffic mix shift towards broadband, higher income elasticity and greater exposure to heightened rural cyclicality). Arguably this adjustment appears conservative.

[25] See Bowman, "Report on the Appropriate Weighted Average Cost of Capital for the Services Provided over the CAN", section 9.1.

78. The recommended asset beta is then re-levered to incorporate the effect of the gearing likely for a stand-alone provider of the declared transmission assets. This re-levering applies the following formula:

$$\beta e = \beta a + (\beta a - \beta d)\{1-\{Rd / (1 + Rd\}(1-\gamma)Te\} . D/E$$

Where: βe is the equity beta

βa is the asset beta

γ is the imputation factor

Te is the effective corporate tax rate

Rd is the return on debt, and

D/E is the debt to equity ratio

79. This formula is similar to that used by the Commission.

80. The resultant equity beta from application of the above re-gearing equation ranges between 1.06 and 1.14.

Equity Issuance Costs

81. Similar to debt, a company will incur significant costs to raise equity finance. These costs relate to the preparation of financial information and documentation required for an equity issue and for underwriter fees. These are legitimately incurred expenses that need to be recouped through some mechanism, either via explicit recognition in the cost of equity or as a cash flow expense reflecting the annualised extent of these predominantly once-off costs.

82. In Telstra's view the legitimate costs involved with equity issuance should be estimated, converted to an annualised rate of return and included in the cost of equity capital. This mimics the approach recommended for debt issuance costs (which Telstra recommends should be incorporated into the cost of debt).

83. In its Final Decision on GasNet[26] the Commission decided to include an allowance for equity issuance costs but as a cost cash flow. If appropriately quantified Telstra is indifferent between recovering these costs as a specific cash flow or as a margin on the WACC, so long as they are recovered.

[26] ACCC, *"Final Decision GasNet Australia access arrangement revisions for the Principal Transmission System"* dated 13 November 2002

84. Telstra relies on a widely cited paper on issuance costs which presents empirical analysis that shows that the cost of raising equity reflects scale economies (similar to the situation for debt raising).[27] Based on this study (see table 2) and given the approximate value of the declared transmission assets and the equity gearing recommended the amount of equity relevant for the declared transmission assets suggests that the once off costs would amount to either 5.72% or 3.25% of the amount of equity raised. These costs associated with equity raising are essentially once-off costs that need to be annualised over some span of years.

85. There is debate around whether equity issuance costs should be annualised over the useful life of the relevant assets or into perpetuity. Telstra recognises that equity may well be perpetual but the ability to fund these costs will depend on cash flows generated by the assets and will disappear once the assets are no longer useful. On this basis Telstra advocates annualisation over a forward period matching to some extent the useful life of the assets for which the equity funds were raised (ie matched to the useful life of the declared transmission assets in this context). If this were not the case and equity issuance costs were annualised into perpetuity there would be a period beyond the useful life of the relevant assets in which there were no assets available to fund the issuance costs. Either that or the funding would need to be sourced from alternate thus distorting their price.

86. The estimate of equity issuance costs will depend on the extent of once-off costs relative to equity raised, the period over which costs are annualised and the discount rate applied. Applying different mixes of these parameters suggests that annualising the once-off issuance costs of equity raised suggests a margin on the required cost of equity of between 30 to 80 basis points.

Debt gearing

87. The two primary sources of capital for any business, including those involved in the provision of the declared transmission assets, are debt and equity. Financiers and investors will have different expectations about their required return in order for them to invest. These expectations will reflect the different risks associated with debt and equity (from the investor's perspective). The proportions of debt and equity employed by the business (that is, the gearing) are thus important for calculating the weighted average cost of capital.

88. Previous estimates of the WACC in various contexts have only applied two distinct sources of capital – debt and equity. The estimate of WACC provided as Figure 4 in the Commission's Discussion Paper is not consistent with the historical approach applied by the Commission in respect of sources of capital. Figure 4 is lifted directly from the Gibson-Quai transmission network cost model. The specification of this WACC appears to recognise non-interest bearing debt (largely accounts payable in Telstra's experience) as a specific source of long-term capital and attributes no interest cost to such debt. In

[27] I. Lee, S. Lochhead, J. Ritter and Q. Zhao, "The Costs of Raising Capital" Journal of Financial Research, Spring 1996, pp 59 – 74, table 2.

Telstra's view this is not only inconsistent with previous practice but incorrect for a number of reasons.

89. Firstly, it is unlikely that a business involved in the provision of services utilising long-term infrastructure assets would seek to fund these assets using non-interest bearing debt such as accounts payable. As such non-interest bearing debt is not a realistic source of long-term capital and does not justify recognition in the cost of capital of long-lived infrastructure assets.

90. Secondly, accounts payable are really just a result of a timing mis-match in the sense that they relate to accounts unpaid by Telstra whose due or agreed date for payment just happens to fall after the relevant balance date. Any business that relies on such funds to survive over the long-term is likely to be in serious trouble especially, if such is a deliberate strategy from when the assets are constructed.

91. Thirdly, if accounts payable are recognised as a legitimate source of capital it would seem that the quantum recognised should be net of accounts receivable. This would at least then recognise both sides of the timing mis-match at balance date that generates a need for these items to be in balance sheets.

92. Finally, if non-interest bearing debt is actually to be recognised as a source of capital it should be disaggregated into a principal component and an implicit interest component. Most delayed payment arrangements are structured like this with implicit interest incorporated into the amount payable. In fact, when these arrangements are non-current (ie stretch longer than a year) the accounting standards require that the implicit interest component is identified and separated from the implicit principal component (which is left in the balance sheet). In Telstra's view something similar should be undertaken if non-interest bearing debt is to be included as a source of capital. Note that Telstra does not recommend the inclusion of non-interest bearing debt.

93. For the reasons outlined above Telstra does not support a change from the long-held approach of recognising debt and equity as the two sources of long-term capital around which long useful life assets would be funded.

94. The debt gearing recommended for the declared transmission assets is based on the Telstra-wide target market gearing. Telstra considers this to be a reliable broad indicator of likely gearing that would apply to the relevant declared transmission assets. Again there are no listed entities only providing services based on the declared transmission assets which could provide guidance about the typical or desired level of gearing for these assets or these businesses. Given this it seems sensible to use the Telstra-wide gearing as an initial benchmark and then modify as appropriate to as much as practicable reflect the context of the declared transmission assets.

95. The Commission's long-held position is that book gearing around the time of Telstra's initial partial privatization should be the central basis on which to determine the appropriate gearing for the combination of network assets and specific assets.[28]

[28] ACCC, "*Assessment of Telstra's PSTN and LCS Undertaking, Final Decision, Public Version*" 29 November 2006, pages 77-78.

96. The continued adoption of book gearing in the context of determining the WACC is counter to the theory of corporate finance that underpins the determination of the WACC. Those underpinnings hinge on the symbiotic relationship between cash flows, the market value determined WACC and the market value of assets. More specifically, if the WACC is properly determined, it will ensure that the present value of the expected net cash flows derived from a set of assets equals the market value of those assets. However, even if the individual components of the WACC are properly assessed, using book values to then weight their combination into an overall WACC will violate this identity – it will, in other words, cause a divergence between the present value of the expected net cash flows derived from those assets and the assets' market value.

97. Telstra submits that this commingling of an approach to the WACC based on the Capital Asset Pricing Model with the application of weights for determining that WACC that are economically arbitrary and unjustifiable amounts to the same error which the Tribunal found in the Commission's WACC methodology in considering the Application by GasNet Australia[29] and then more recently in the Application by East Australian Pipeline Limited.[30]

98. In Telstra's view, the Commission then compounds the error by relying on gearing from around the time of Telstra's initial partial privatization back in 1997. This is a further departure from accepted theory in that it mixes estimates that are now nearly a decade old (ie the gearing structure) with estimates based on contemporary market conditions (ideally the other components in the WACC calculation). This is not a sound basis for calculating a contemporary WACC estimate.

99. The only justification for this position provided by the Commission (in the past) has been that "*at privatisation, Telstra most closely resembled a pure PSTN provider*"[31]. This may well be true but it ignores radical shifts that have occurred over the years since 1997 in a number of areas of relevance to the estimation of gearing for telcos generally; and which would impact the way in which a telco would consider gearing for the stand-alone declared transmission assets. These include:

    a) A structural shift in interest rates over this period (and hence the market value of debt and equity);

    b) Shifts and re-alignments in financial markets;

    c) The gyrations in Telstra's share price since initial listing late-1997 (and hence in the market value of equity);

    d) The inflation of the dot-com "bubble" and its subsequent bursting;[32]

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[29] Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6, [47]

[30] Australian Competition Tribunal, Application by East Australian Pipeline Limited [2005] ACompT 1, [15] While the Tribunal's decision was overturned by the Federal Court upon appeal, the decision did not relate to this aspect of the Commission's findings.

[31] ACCC, "*Assessment of Telstra's PSTN and LCS Undertaking, Final Decision, Public Version*" 29 November 2006, page 7.

[32] Including the impact on various market metrics which some argue has distorted beta estimates.

e) Rapid technological advance in the telecommunications sector; and

f) The increased competitiveness of the Australian telecommunications industry associated with the shift to open competition in mid-1997 (only months in advance of the initial partial privatization of Telstra).

100. It is likely that these factors too would influence the gearing of the stand-alone provider of the declared transmission assets (as they clearly have at the Telstra-wide level). Furthermore, these factors would not have affected gearing at the time of Telstra's initial partial privatisation. As a result, the Telstra gearing at the time of initial partial privatisation is unlikely to be a meaningful, much less reliable, guide to the contemporary gearing at either the Telstra-wide level or for the declared transmission assets.

101. In November 2005 Telstra publicly announced that it was increasing its target book gearing ratio from a range between [C-I-C] debt to a range between [C-I-C] debt. These targets are presented in book terms because they were aimed at ratings agencies who because of their particular focus on debt tend to work in book gearing terms. For WACC calculations the gearing structure applied should be market based to ensure that opportunity costs are quantified in contemporary terms and on a target basis because equity investors are interested in likely returns over the medium term which are after debt servicing. Consequently, the future direction of gearing is relevant for the future return to equity investors which is relevant for WACC. Applying an indicative contemporary share price for Telstra the target book gearing converts to an indicative target market gearing of between 20% debt and 40% debt. Reflecting the slow take-up of debt towards this revised target, an indicative target market gearing for Telstra therefore would by 25% debt.

102. The appropriate gearing for the declared transmission assets could likely be a little higher than the Telstra-wide mid-point. On this basis a target market gearing of 30% debt has been applied in the declared transmission assets context.

103. Note that changes in debt gearing do not materially impact the "vanilla" WACC estimate providing that the impact of changed gearing is endogenised in the estimate of the equity beta. In other words, increased (reduced) debt gearing increases (reduces) the extent of financial risk to which equity investors are exposed since any given level of investor return is less (more) likely to be met if debt is increased (reduced). This effect largely cancels out the weighting effect under which more (less) debt increase (reduces) the weight applied to lower cost debt and decreases (increases) the weight applied to higher cost equity. Over reasonable gearing ranges these effects largely offset and the resultant point estimates of the WACC are nor materially impacted by the gearing shift (especially relative to the estimation vagaries already inherent in the WACC).

Recommended WACC Estimate for Transmission Assets

104. Combining the recommended values for each of the WACC components parameters as outlined above results in a WACC estimate that ranges from 11.8% to 12.6%. The details of this estimate are set out in schedule 1.

Schedule 1: Summary of WACC Estimate for Declared Transmission Assets

Parameter	Value
Risk free rate	6.0%
Market risk premium	7.0%
Debt ratio	30%
Debt risk premium	1.15% - 1.20%
Debt issuance cost	[C-I-C] - 0.22%
Cost of debt capital	7.21% - 7.42%
Debt beta	0.0
Tax rate	30%
Franking credits	0.0
Asset beta	0.75 - 0.80
Equity beta	1.06 – 1.14
Equity issuance cost	0.30% - 0.80%
Cost of equity capital	13.75% - 14.75%
Vanilla WACC	11.79% - 12.55%