RESPONSE TO ACCC'S DRAFT DECISION ON TELSTRA'S ULLS NETWORK UNDERTAKING

Prepared for Telstra

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August 2006

1. INTRODUCTION

1 I have been asked by Telstra Corporation Limited ("**Telstra**") to give my expert opinion on Appendix D of Australian Competition and Consumer Commission's Draft Decision ("**Draft Decision**")[1] on the appropriate Weighted Average Cost of Capital ("**WACC**") for Telstra's Unconditioned Local Loop Service Network ("**ULLS-Network**").

2 I am instructed that Telstra considers the information in this statement commercially confidential. I have prepared this statement on the assumption that the information and documents referred to herein will remain confidential and that the information and documents will only be disclosed to a person:

(a) who has executed a confidentiality undertaking in terms that are satisfactory to Telstra; and

(b) who may only use the documents and the information for the following purposes:

(i) making submissions to Australian Competition and Consumer Commission ("**ACCC**") in respect of the Access Undertakings; or

(ii) any application made to the Australian Competition Tribunal under s152E of the Trade Practices Act ("**the Act**") for review of a decision made by ACCC in respect of any of the Access Undertakings; or

(iii) any other purpose approved by Telstra in writing.

2. QUALIFICATIONS AND EXPERIENCE

2.1 Qualifications

3 I am a Professor of Finance in the Department of Accounting and Finance at the University of Auckland. In that capacity I am involved in issues related to cost of capital on a regular basis. My curriculum vita is annexed as Appendix A to this report.

4 I am also active as a financial economics expert and consultant. The bulk of my activities as an expert in financial economics over the past few years have been in the environment of regulation and specifically with respect to cost of capital issues.

5 My doctoral dissertation topic at Stanford University (USA) was "An Empirical Investigation of the Debt Equivalence of Leases" which is closely related to capital structure issues and cost of capital.

6 In the past ten years at the University of Auckland, Hong Kong Polytechnic University, National University of Singapore and the University of Queensland I

[1] ACCC, "Assessment of Telstra's ULLS monthly charge undertaking – Draft Decision," dated June 2006.

have taught courses in Introductory Investments, Introductory Financial Management, Advanced Financial Management, Case Studies in Finance, Financial Statement Analysis, and Seminar in Modern Corporate Finance. All of these courses include components on the cost of capital. While at the University of Auckland, I have supervised research on topics relevant to cost of capital at the undergraduate, diploma, MBA, masters and doctorate levels.

7 I have published numerous articles in international journals and books, presented research papers at international conferences and presented invited guest research seminars at numerous universities. Nearly half of my research publications are on topics related to cost of capital, including:

(a) "Estimating Betas Using Comparable Company Analysis: Is it a Reliable Method?,"

(b) "A Test of the Usefulness of Comparable Company Analysis in Australia,"

(c) "Estimating the Market Risk Premium,"

(d) "Cost of Capital under Imputation: An Analysis of Comparative Models,"

(e) "Information Content of Financial Leverage: An Empirical Study: A Comment,"

(f) "Implications of Dividend Imputation for Equity Pricing in New Zealand,"

(g) "The Importance of a Market Value Measurement of Debt in Assessing Leverage,"

(h) "The Debt Equivalence of Leases: An Empirical Investigation," and

(i) "The Theoretical Relationship Between Systematic Risk and Financial (Accounting) Variables."

8 I am currently a consulting editor of the academic journal *(Afro-Asian Journal of Finance and Accounting),* an associate editor of another academic journal (*International Review of Finance)* and an active reviewer for other journals. In these capacities I am involved in evaluating the research work of other scholars on topics including the cost of capital.

2.2 Experience

9 I have been involved in the estimation of cost of capital at both a practical and theoretical level through most of my commercial and academic career. In my academic positions I have regularly taught courses on cost of capital at undergraduate and graduate levels. I have lectured to executive audiences in Australia, New Zealand, Hong Kong, Singapore and the United States. I have consulted and provided expert evidence on topics in financial economics, including cost of capital.

10 In my work as a consultant and expert witness over the past six years, I have been involved in cost of capital estimations for a range of different companies including the following:

Australia

Telstra (including in relation to USO, Public Switched Telephone Network ("**PSTN**") originating and terminating access, GSM, ULLS, SSS, ISDN and Pay TV)

ElectraNet SA

EnergyAustralia

Goldfields Gas Transmission Joint Venture

GasNet Australia

Rail Access Corporation

Queensland Rail

Sunwater

Transend Networks

Westralia Airports Corporation (Perth International Airport)

Argentina

Ente Nacional Regulador de la Electricidad

Fiji

Taveuni Island Resort

Italy

Telecom Italia Mobile

New Zealand

ABN-AMRO (NZ)

Air New Zealand

Board of Airline Representatives of NZ

Hawkes Bay Network

PowerCo

TransWaste Canterbury

Unison Networks Limited

Waste Management NZ

Singapore

PowerGas

United States/Thailand

Sithe Mauritius Power Limited

Venezuela

Telcel

11 I have also been involved in advising regulators and government agencies on cost of capital issues including the following:

Ministry of Economic Development (NZ)

National Competition Council

Office of the Rail Access Regulator

12 I was involved in a project in 2000 to advise the National Competition Council (Australia) on aspects of an application from the Northern Territories Government to certify a regime for access to the Northern Territories electricity networks. This involved advising on the proposed approach to WACC (including issues similar to those involved in this context) and the measurement of the network asset base.

13 In 2002 I was responsible for the preparation of the cost of capital component of a report to the Ministry of Economic Development in New Zealand on Telecom New Zealand. The objective of the report was to develop an appropriate structure for the estimation of WACC for Telecom New Zealand.

14 I have been involved in advising the Office of Rail Access Regulator on appropriate models and parameters to use in setting the WACC for rail access.

15 I was involved in the preparation of the report "International Comparison of WACC Decisions," which was submitted to the Productivity Commission Review of the Gas Access Regime in September 2003.

16 I advised GasNet Australia in its appeal to the Australian Competition Tribunal ("**ACT**") of ACCC's Final Approval of 17 January 2003 in connection with revisions to the access arrangement for GasNet's gas transmission system.

17 I have advised PowerCo on cost of capital issues in its submissions to the New Zealand Commerce Commission on the Gas Control Inquiry. This has involved a number of submissions. An issue which has been addressed a number of times in earlier deliberations before the Commission is the asymmetry of the social costs and benefits of an error in setting WACC. This principle had been acknowledged by the Commission. In my submission in response to the Commission's Draft

Decision,[2] I argued that a sensible consideration of the issue required adopting a statistical structure, setting all ranges as estimates of one standard deviation on the underlying parameter. Then the implications for WACC should be determined using Monte Carlo simulation and the regulatory WACC should be set above the "best estimate" of WACC based upon the severity of the asymmetry of social costs. The Commission adopted my recommendations in its Final Decision.[3]

3. WEIGHTED AVERAGE COST OF CAPITAL

18 It is a fundamental principle of finance and of business that investments are made in projects only if there is an expectation that an appropriate reward will be earned to compensate for any risk that the project entails. The higher the risk, the higher the expected return needs to be to entice investors.

19 The principle that risk will require an appropriate expected return applies to both of the major sources of capital to a business; that is debt and equity. The process of determining the appropriate expected return for a business builds upon the estimates of the appropriate return to each source of capital. Then these costs of capital are weighted by their respective contributions to the total capital.

20 The resulting cost of capital for the business is referred to as the Weighted Average Cost of Capital or WACC.

21 Recent regulatory decisions in Australia, including those of ACCC, have adopted what is referred to as a "vanilla" WACC. In this formulation the tax impact of interest expense is included in costs, rather than in the WACC formula. This approach results in a nominal, post-tax vanilla WACC defined as:

$$WACC = R_e (E/V) + R_d (D/V) \quad \textbf{(1)}$$

where

R_e = cost of equity capital,

R_d = pre-tax cost of debt capital,

E = market value of equity,

D = market value of debt, and

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

22 Some versions of the WACC include the tax rate and/or the value of dividend imputation credits. Although neither of these parameters enter into the estimation of the post-tax vanilla WACC, they are reflected in the costings that are a part of the undertaking.

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2 "Response to WACC Issues in Commerce Commission's Draft Report on the Gas Control Inquiry," dated June 2004.

3 "Commerce Commission's Gas Control Inquiry Final Report," dated 29 November 2004.

23 ACCC has a well established position on the implementation of the WACC. In general, I agree with its models but not its parameter values. However, in my opinion, the models that are used to estimate WACC require assumptions that lead to ignoring some risks faced by regulated companies in Australia. As a result, ACCC's WACC estimates do not provide an adequate cost of capital in that a reward is not allowed for all relevant risks of services such as ULLS-Network.

24 The context in which I consider the establishment of an appropriate WACC is the undertaking for ULLS-Network provided by Telstra to ACCC for the financial years 2005/06 through 2007/08.

4. OVERVIEW OF THE REPORT

25 I submitted a report to ACCC on behalf of Telstra on the appropriate WACC for ULLS-Network (my "**December 2005 Report**").[4]

26 In its Draft Decision, ACCC expresses its opinion on my report and on a report of Associate Professor Neville Hathaway[5] filed by AAPT ("**Hathaway Report**").

27 "The ACCC considers that Telstra's proposed WACC is too high and therefore unreasonable." (page 9)

28 In this report I respond to the information and discussion of WACC parameters for ULLS-Network set out by ACCC in its Draft Decision.

29 Before going further, I identify the ULLS-Network business. ULLS-Network costs are the costs associated with an underlying copper customer access network (CAN). The assets consist mainly of cable and capitalised trenching costs.

30 The correct time frame for the estimation of the WACC is at the beginning of the relevant period, and this Draft Decision is for the three fiscal years 2005/06, 2006/07 and 2007/08. For the fiscal year 2005/06, I estimated WACC as at the beginning of the year, that is as of 1 July. The following years 2006/07 and 2007/08 were in the future, so I forecasted parameter values that were appropriate estimates for the WACC as at the beginning of those years, that is 1 July 2006 and 1 July 2007.

31 In addition to estimating the cost of capital for ULLS-Network, I also address the setting of a WACC for regulatory purposes generally, given the best point estimate of WACC, the scope for estimation error and the asymmetry in social costs of such error. This is an important issue that has been considered by the Commerce Commission in New Zealand but has not been explicitly addressed by Australian regulators.

32 ACCC must estimate the cost of capital in an uncertain environment. Virtually all of its estimates are made with estimation error and, as I will outline later, the error is generally considerable. ACCC therefore needs to give consideration to the

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4 "Report on the Appropriate Weighted Average Cost of Capital for the ULLS Network," dated December 2005.

5 Associate Professor Neville Hathaway, "Telstra's WACCs for network ULLS and the ULLS and SSS Businesses – Review of Reports by Prof. Bowman," dated 15 March 2006.

intermediate and long-term consequences of either over or under estimating the cost of capital. It is widely agreed that in a regulatory environment, the net social costs of under estimating the cost of capital are higher than are the net social costs of over estimation. Therefore I consider that ACCC should set the regulatory WACC above its point estimate of the WACC to reflect the high social cost of setting the WACC too low.

5. PARAMETERS REQUIRED TO APPLY THE WACC MODEL

33 Telstra has submitted its proposed undertakings, which includes estimates of WACC for the three years. A responsibility of ACCC is to reach a decision on whether the WACC is reasonable when assessed against the statutory criteria set out in s. 152AH of the Act. ACCC states in its Draft Decision, section D.2., that it rejects Telstra's proposed WACCs.

34 In this section, I follow the structure of ACCC's Draft Decision with respect to the parameter values in the WACC. In following sections, I address an additional issue that was raised in my earlier report and that is discussed in ACCC's Draft Decision: the issue of asymmetric social consequences

5.1 Gearing (section D.5.1)[6]

35 I support using the optimal gearing ratio for a company. As determining this is problematic, I support using the target gearing ratio, under the assumption that a company is in the best position to assess its optimal gearing and will bear the economic consequences of any error in setting its gearing. Telstra's target gearing ratio was, at the time of my December 2005 Report, **[c-i-c]**.[7] As ULLS-Network may have marginally lower risk than the average across all of Telstra, I adopt a gearing ratio for ULLS-Network of 20%.

36 ACCC has used 40% as the gearing ratio in previous reports and cites gearing ratios of selected overseas regulatory decisions. ACCC expresses its opinion that 40% is reasonable.

37 In another report,[8] ACCC discloses that its estimate of 40% was developed from book value measures of gearing at the time of Telstra's initial public offering in 1997. Virtually any textbook on the topic will state that book values are not acceptable as measures of gearing. Further, the estimation of WACC for a period is to be as of the beginning of the year, not from nearly a decade earlier.

38 The ACCC holds the view that the WACC is not highly sensitive to the debt and equity ratio. However, it does not address the approach upon which I base my

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6 Unless indicated otherwise, all references in this report to statements of ACCC can be found in the relevant section of its Draft Decision.

7 I have been advised by Telstra that it has recently revised its target gearing to the range 25-30%. For ULLS-Network, that would support an estimate for gearing of 30%. However, I do not adjust my estimate here for three reasons. First, the increased gearing has not occurred and will only be affected over time. Second, part of the undertaking period has already passed, so the change of intentions would not apply to the early part. Third, the impact of the change is very marginal. If the gearing is increased to 30%, the vanilla WACC would increase by about 0.1%.

8 Commission Outline, Annexure 6, paragraph 43.

estimation. It then seems compelling that ACCC should accept Telstra's gearing measure for ULLS-Network of 20%.

39 In my opinion, ACCC has provided no basis for not accepting the estimate of 20% for gearing.

5.2 Risk free rate (section D.5.3)

40 ACCC, Telstra and I agree that the measurement of WACC parameters should be as of the beginning of the period. My estimate of the risk free rate is based upon the market yield of government 10-year bonds at the beginning of the relevant period, taken as the closing market yield on the day before the period begins. I comment in my report that there is sufficient liquidity and trading in the market for government bonds that there is no need for averaging.

41 ACCC accepts the 10-year maturity but uses an average of the rates for 10 days leading up to the beginning of the period.

42 ACCC states that I provide no evidence to support my position as to the market liquidity. "(T)he ACCC therefore considers that in the absence of this evidence Professor Bowman's position should not be accepted."

43 I do discuss my position in section 6.1.2 of my December 2005 Report. Furthermore, I align my estimate with the beginning of the period, as is appropriate.

44 It is ACCC that has preferred departing from using the rate at the beginning of the period and introducing averaging of rates.

> *While it is theoretically correct to use the 'on the day' rate under CAPM, the Commission acknowledges a practical difficulty in that use of the 'on the day' rate introduces a degree of short term variability at times of market uncertainty. Therefore, the Commission considers it appropriate to adopt an average over a relatively short period to smooth daily variations.*[9]

45 It is ACCC that has departed from standard estimation because of its concern about volatility in the bond market. I believe it is ACCC that should present evidence that there is a need for averaging. To the best of my knowledge ACCC has never offered or cited any evidence to support its departure from standard practice of aligning estimations with the beginning of the period.

46 ACCC expresses a concern about my choice of dates for one period. The first period of the undertaking is for the six months 1 January 2006 through 30 June 2006. I estimated a WACC for the year 2005/06, so I used the risk free rate at the beginning of 1 July 2005. The reason for this choice was that to calculate a price for the first six months of 2006, the PIE II model was run for the 2005/06 financial year. This necessitated a WACC for the fiscal year. The risk free rate I used was 5.11%. The risk free rate as of the beginning of the six month undertaking period, the close on Friday, 30 December 2005, was 5.20%. Thus, the rate that I used was lower than it would have been if the rate at the beginning of the period was used, as ACCC suggests.

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9 ACCC, "Draft Statement of Principles for the Regulation of Transmission Revenues," p 78.

47 In my opinion, ACCC has provided no basis for not accepting Telstra's estimates of the risk free rate as being reasonable.

5.3 Debt risk premium (section D.5.4)

48 Telstra and I use the difference between 10-year government debt and 10-year Telstra debt as the debt risk premium ("**DRP**"). For periods in the future, the DRP is estimated.

49 ACCC says that the Hathaway Report views my use of the Telstra DRP to estimate the DRP for ULLS-Network as inconsistent with my comments that the ULLS-Network may be less risky than the whole of Telstra. This is not a correct reporting of what is in my report.

50 As to the level of gearing I noted in my December 2005 Report that the whole of Telstra target gearing was 15-20%. I then say (paragraph 80), "*It is my opinion that the leverage ratio for those services should be at least as high as that of the rest of Telstra.*" In my section on DRP I say (paragraph 101), "*It is likely that ULLS-Network have about the same debt riskiness as the aggregate of the other business activities of Telstra. This would be consistent with a comparable DRP.*"

51 Although Hathaway and ACCC are not quite correct as to what I have said, I do believe that ULLS-Network may have marginally lower default risk than the whole of Telstra. But the difference would truly be marginal as Telstra has low default risk.

52 ACCC says "*given Telstra has had both an excellent credit rating and a very low gearing ratio, a small debt premium has been appropriate.*" It is hard then to see how a marginally lower default risk will have more than a very marginal impact on a DRP for ULLS. Yet ACCC goes on to say, "*the inconsistency noted by Associate Professor Hathaway appears significant.*" Clearly that is not the case.

53 In spite of the above, ACCC agrees with the method of estimation I use, but still states that it "*is not satisfied that Telstra's forecast debt risk premiums are appropriate.*" Although not explicitly stated, this seems to be an acceptance that the DRP for 2005/06 is reasonable.

54 ACCC says it is "*unable to verify that the proposed rates for 2006/07 and 2007/08 are correct.*" It does not explain why it is having a problem. The data on government and Telstra bonds is publicly available, and the procedures that I used are clearly set out in my December 2005 Report.

5.4 Debt issuance cost (section D.5.5)

55 The issue with debt issuance costs is one of magnitude. I estimate that the annualised costs are approximately 0.2%.

56 ACCC cites a benchmark rate of 0.104% from a report it commissioned from Allen Consulting Group. It also suggests that the difference between that report and my position may be because I am estimating debt issuance costs rather than refinancing costs.

57 ACCC does not clarify its distinction between debt issuance and refinancing. I assume by refinancing it refers to a situation where the company negotiates with a creditor to renew an existing debt when it comes due. This is often referred to as "rolling over" a debt amount. This is not unusual for private debt, particularly with banks and for relatively small amounts (relative to the debtor). It is not done with public debt issues, which is an important component of Telstra's financing.

58 In my analysis, I assumed that debt would be issued in increments of about $1 billion. This is not a small amount, even relative to Telstra, and is not likely to be refinanced in a simple and low cost transaction.

59 In addition, from the perspective of an access seeker making a build decision, all debt issuance costs would have to be considered.

60 In my December 2005 Report, I note that ACCC has allowed debt issuance costs of up to 0.125% and ACT allowed 0.25% for GasNet, another long-lived infrastructure company. ACCC does not comment on either its prior positions or the decision of ACT.

61 I do not believe ACCC has justified its position that the debt issuance cost estimate of 0.20% is inappropriate.

5.5 Equity and asset beta (section D.5.7)

62 In estimating an asset beta for ULLS-Network, I use three approaches. It is not possible to directly estimate the beta of ULLS-Network, but the equity beta of Telstra is directly estimated. The relevance of this to ULLS-Network is discussed, and I also discuss the range of decisions that must be made in the direct estimation process. I then discuss a first principles approach, based upon characteristics of ULLS-Network that affect its returns relative to the returns to the market. Thirdly I consider beta information from comparable companies. In reaching my final estimate of 0.7 for the asset beta, I consider the information derived from each of the three approaches.

63 In adjusting between asset beta and equity beta, I use the "Monkhouse" formula to be consistent with the method used by ACCC.

64 Using the direct estimation method to estimate a company's beta is always replete with estimation error. Even estimating a historical equity beta of a publicly listed company, such as Telstra, requires judgements to be made on the period to be used, the return estimation interval (i.e., daily, weekly or monthly), the market index to use, and the appropriate statistical technique. Different choices will result in different estimations of equity beta.

65 Estimation uncertainty, even when based only on direct estimation, becomes substantially more uncertain when it is used to estimate a forward-looking beta of an unlisted company as is the case with ULLS-Network.

66 A comprehensive study of estimation error in beta has recently been released.[10] This study estimates equity beta in one period and then uses it to estimate the equity beta in the following period. The report says, "*estimation techniques which produce beta estimates that are subject to a high degree of estimation error have a high probability of producing an estimate that has little relevance for valuation and setting regulated returns.*" (page 2) And the report shows that the vast majority of beta estimates have a high degree of estimation error. The report goes further in testing the usefulness of beta estimates for the purpose of forecasting a forward-looking beta. The conclusion is that even when forecasting an OLS estimate of beta, a simple prediction that the beta equals one, outperforms an OLS estimate.

67 ACCC accepts these difficulties, at least in part, and concludes "*It is not clear whether or not it is appropriate to rely primarily on a direct estimation method to determine the equity beta of Telstra.*"

68 "*Given the availability of alternative methods to estimate the asset beta, it is not clear why Professor Bowman has proposed a first principles analysis. ... The ACCC does not accept that a first principles analysis should be undertaken for beta estimation.*"

69 ACCC goes on to say, "*this analysis is qualitative, and as such is unacceptably subjective in the matters examined and the outcomes reached relative to available alternatives. The ACCC does not consider that this technique is useful or relevant, and it should therefore be excluded from the overall estimation procedure for the beta.*" It further contends that the approach is not commonly used by regulators.

70 ACCC has in the past commissioned reports and relied upon advice from Associate Professor Martin Lally. In his writings on estimating beta he virtually always includes substantial discussion of first principles issues.[11] Both Associate Professor Lally and I refer to the Arbitrage Pricing Theory research, particularly the seminal empirical study by Chen, Roll and Ross,[12] for the structure of our first principles analysis. They find that the factors that explain stock market returns are unexpected changes in real GNP, inflation, market risk aversion and long-term real interest rates. The latter three will usually have a similar impact on the systematic risk of firms, so the first factor is the most useful for structuring first principle analysis.

71 Both Associate Professor Lally and I use the first principles analysis to inform our choices of comparable companies.

72 ACCC seems to rely upon the comparable companies approach to estimation as it has discarded the other two conventional approaches. It rightly says,

> *The use of benchmark companies to provide the primary starting point for beta estimation depends on the availability of suitable benchmark companies or*

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10 S. Gray, J. Hall, J. Bowman, T. Brailsford, R. Faff and B. Officer (May 2005), "The Performance of Alternative Techniques for Estimating Equity Betas of Australian Firms," a report prepared for the Energy Networks Association.

11 For example, see M. Lally, "The Cost of Equity Capital and Its Estimation," volume 3 of the McGraw-Hill Series in Advanced Finance, 2000.

12 N. Chen, R. Roll and S. Ross, "Economic Forces and the Stock Market," *Journal of Business*, 1986, pp 383-403.

> *assets. The closer the comparators are to the base asset the better the beta estimate. Most benchmark comparators will differ in some element such as asset nature, time period or relevant geographic market. The significance of the nature of the difference needs to be assessed.*
>
> *The ACCC remains of the view that benchmarking is still a useful approach for beta estimation.*

73 In applying the comparable company approach, I chose the four remaining Regional Bell Operating Companies ("**RBOCs**") in the US. I also included five telecommunications companies that are major providers of communications services and have some similarities to ULLS-Network: AT&T, BT Group, Deutsche Telekom AG, Telecom de Mexico and Telecom New Zealand.

74 The average asset beta of the RBOC companies is 0.80 and of the other telecommunications companies is 0.90. I concluded that a best estimate of asset beta for ULLS-Network based only on this comparable company data is 0.8.

75 "*The ACCC consider that it remains appropriate to rely on the benchmarking approach it has adopted in previous proceedings.*" ACCC agreed with the choice of the RBOCs, but chose to rely upon estimates of those asset betas that were included in the 1997-98 PSTN undertaking. Its rationale was that the RBOCs were then closer to being PSTN type companies than more recently. ACCC continues with its estimate of asset beta of 0.5.

76 There are evolving changes in the usage of the ULLS-Network. Historically the network was used almost exclusively for voice products and its asset beta reflected this usage. More recently the network is increasingly being used for broadband. The uptake of ULLS-Network services is partly a function of the uptake of broadband. Clearly broadband usage is more discretionary and volatile and therefore has a higher systematic risk than voice product usage. Hence, this evolution in the use of ULLS-Network increases the appropriate asset beta of the service. If ACCC felt an asset beta of 0.5 was appropriate for ULLS-Network in the late 1990s, then it should follow that the asset beta currently should be appreciably higher.

77 The reliance upon comparable company estimates must also be tempered by the knowledge that any estimate of a company's beta requires a series of subjective judgements as to the procedures to be used and has significant estimation error.

78 In reaching my conclusion that the best estimate of a forward-looking asset beta for ULLS-Network is 0.7, I gave consideration to all three approaches – direct estimation, first principles and comparable companies.

> *The information on an asset beta for ULLS-Network can be summarised as follows. Estimates of the beta of Telstra support an equity beta of 0.8 for ULLS-Network. This transforms to an asset beta of 0.74. The range on this should be at least ±0.3. First principles evidence indicated a possible range for an asset beta of 0.4 to 0.9. Comparable companies evidence supports an asset beta estimate of 0.8.*

> *In my opinion, the information from the three sources is consistent and supports an asset beta estimate for ULLS-Network of at least 0.7.*[13]

79 ACCC states that it has based its conclusion on asset beta estimations of four RBOCs from about a decade ago. It has ignored any evidence from direct estimation of Telstra betas or of first principles economic reasoning. I find this inexplicable.

80 As quoted above, ACCC has said that first principles analysis "*is qualitative, and as such is unacceptably subjective in the matters examined and the outcomes reached relative to available alternatives.*"

81 If analysis that is qualitative is unacceptably subjective, then there is no basis for considering any of the evidence that has ever been considered by ACCC in estimating beta. All beta estimation methods require substantial qualitative considerations and decisions. They all require considerable judgement and subjectivity and are subject to substantial estimation error. To rely solely on one approach is unnecessary and unwise.

82 Even if information from direct estimation or first principles is considered to be less reliable than information from comparable company analysis, and I do not accept that it is, the information should still be useful to form an opinion on the appropriate asset beta for ULLS-Network.

83 I do not believe ACCC has justified its position that the estimate of asset beta should be 0.5. In addition, I do not believe ACCC has provided an adequate basis for rejecting the asset beta estimate of 0.7.

5.6 Market risk premium (section D.5.8)

84 I have estimated the market risk premium ("**MRP**") using a benchmarking approach. In this approach, I first estimate the forward-looking, long horizon MRP for the US as 5.5%. I then consider differences between the US and Australia that might affect the estimation of an MRP for Australia. The key factor here is the differences between the equities markets in the two countries. I consider that a number of factors, particularly the size and composition of the markets, would lead to the ex ante MRP for Australia being greater by about two percent. I then conclude that the Australian long horizon MRP is best estimated as being at least 7%.

85 ACCC reviews my position, and then reviews the position of Associate Professor Hathaway. I have replied to the report of Associate Professor Hathaway in a separate report.[14] ACCC then repeats its long-standing position that the MRP should be 6% and concludes, "*an MRP of 7 per cent is not likely to be acceptable.*"

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13 My December 2005 Report, Appendix F, paragraphs 56 and 57.

14 Robert G Bowman, "Telstra's WACCs for Network ULLS and the ULLS and SSS Businesses, A Reply to A/Prof Neville Hathaway 'Review of Reports by Prof. Bowman'", dated July 2006.

86 ACCC states, "*This view (MRP of 6%) was reached and upheld through numerous processes with various submissions made to the ACCC arguing for either an increased of decreased MRP*."

87 However, I do not believe ACCC has ever given consideration to a foundational point of my estimation approach that the historical evidence for Australia prior to about mid-1980s is of little relevance to the estimation of a forward-looking MRP for an open, international market such as Australia.

88 Further, ACCC has not addressed the benchmarking approach that I have used. I have said in numerous reports to ACCC that my approach has three separable issues: the use of a benchmarking approach, the appropriate MRP for the US and the appropriate adjustment to go from the benchmark MRP to a MRP for Australia. ACCC has not commented substantively on any of these issues.

89 The appropriate MRP is very important to the estimation of WACC for ULLS-Network. I believe it is incumbent upon ACCC to address the issues with respect to the MRP that I have addressed in my report.

5.7 Tax rate (section D.5.9)

90 I use the statutory tax rate of 30% as the corporate tax rate.

91 I note that the depreciation tax rules were changed effective 21 September 1999 to bar accelerated depreciation for assets purchased from that date. The TSLRIC method assumes that all assets are put in place on the first day of the period. Therefore, any period starting after the tax change should be predicated on straight-line depreciation, which creates no ability to have an effective tax rate of less than the statutory tax rate of 30%.

92 Even for assets put in place before 21 September 1999, the timing difference advantage of accelerated depreciation would be largely if not completely exhausted by 1 January 2006. In fact, it is likely to be the case that the timing difference between accounting and tax depreciation will have reversed so that Telstra will actually be paying more than the statutory tax rate for ULLS-Network.

93 ACCC acknowledges that Associate Professor Hathaway has supported using the statutory tax rate of 30%.

94 ACCC has acknowledged the relevance of accelerated depreciation on the effective tax rate.

> *(T)he major consideration between an effective or statutory tax rate is dependent upon the ability of access provider to utilise accelerated depreciation. This allows a firm to claim higher tax deductions in the early years of an asset's life. Allowing for the time value of money, this can mean that the effective rate of taxation is lower than the statutory rate.*

95 ACCC arrived at its assumed effective tax rate of 20% in its "Assessment of Telstra's Undertaking for the Domestic PSTN Originating and Terminating Access Services – Final Decision" dated June 2000. This was with respect to the

undertaking for fiscal years beginning with 1996/97. In that Final Decision (page 84) it stated,

> *In subsequent assessments, an increasing proportion of the assets will indeed be ineligible for accelerated depreciation provisions, and these will have to be treated appropriately when making revenue assessments.*

96 ACCC has acknowledged that as assets are acquired subsequent to 21 September 1999, they will not be eligible for accelerated depreciation, thus reducing the timing advantage and increasing the effective tax rate. When all depreciable assets have been put in place after 21 September 1999, there will be no difference between accounting and tax depreciation amounts.

97 What is perhaps more important and not acknowledged by ACCC is that the tax timing advantages of accelerated depreciation diminish over time and eventually reverse so that the effective tax rate actually becomes greater than the statutory tax rate.

98 For assets with a 40 year life, the pivot year on accelerated depreciation is the 11th year. In other words, accelerated depreciation gives a tax advantage relative to straight-line depreciation for the first 11 years, but a tax disadvantage for all years after that. For assets with a 25 year life, the pivot year is the 7th year and for 10 year life, the 3rd year.

99 ACCC correctly points out that I have not conducted a study to measure the effective tax rate relevant for ULLS-Network. However, I note that Telstra stated in its submission on PSTN-OTA in 1998,[15]

> *"... each generation of switching technology has a 20 to 25 year life cycle. This implies that the current generation of switching, which came into use in the early 1980's will be displaced in the period from 2005 to 2010."*

100 Given the passage of about seven years or more for the fiscal years in this undertaking since the tax change, it seems very likely to me that the effective tax rate will be at least as great as the statutory tax rate. Making some assumptions about the life of ULLS-Network assets, I expect that in aggregate, the depreciation advantage on these assets has reversed and that Telstra is now experiencing a tax disadvantage relative to if straight-line depreciation had always been used.

101 In its Final Decision for fiscal years beginning with 1996/97 (page 84) it stated,

> *In subsequent assessments, an increasing proportion of the assets will indeed be ineligible for accelerated depreciation provisions, and these will have to be treated appropriately when making revenue assessments.*

102 Even if ACCC was correct in estimating the effective tax rate at 20% for 1996/97, and I do not agree that it was correct, the effective tax rate must now be higher.

103 Aside from the reversal of the tax advantage of accelerated depreciation for Telstra, it is appropriate to consider that TSLRIC assumes all assets are put in place at the

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15 Telstra Corporation Limited, "Submission in support of the Undertaking for Domestic PSTN Originating and Terminating Access – Part A: Economic Submission," dated 6 May 1998, p 5.

beginning of the period. Further, any new entrant would put its assets in place subsequent to the removal of the accelerated depreciation option. Either of these very relevant perspectives results in no difference between the statutory tax rate and the effective tax rate.

5.8 Imputation factor (section D.5.10)

104 I estimated the value of the imputation factor at 0.5, which is consistent with the standard value estimated by ACCC. I also expressed my opinion that a body of theoretical and empirical evidence is accumulating in support of a lowering of the estimate of the imputation factor and that its true value was likely to be close to zero.

105 The ACCC agrees that further examination of the imputation factor may be required to update the research of the past preferred position.

106 I agree and believe it is time for ACCC to re-examine its position with respect to this variable.

5.9 Debt beta (section D.5.11)

107 The debt beta is used in the Monkhouse formula for de-levering and re-levering betas and has little impact for reasonable amounts used consistently in the formula. I have adopted a value of zero to conform to the position of ACCC.

5.10 Equity issuance cost (section D.5.12)

108 Companies must issue equity and often do so multiple times as they grow and have need for additional funds. Any issuance of equity will incur some costs. Further, investors in a company must have an expectation that they will be able to recoup the costs of issuing equity or it would not be issued. The relevant issues are then the method of allowing recovery of the costs and the amount to be recovered.

109 For a regulated company and with respect to determining appropriate pricing, equity issuance costs can be recouped in at least three different ways. Properly determined, these are economically equivalent.

110 Under the first approach the costs can be treated as an allowable cost when incurred and recovered in the same year. This would not be possible in an unregulated setting and is generally considered inappropriate in a regulated environment due to the "lumpiness" and distortion that it can create across years.

111 The second approach to recovery is through allowable costs but spreading the issuance costs over an appropriate time period.

112 The third approach is to recover the costs through an increment to WACC. The determination of the increment follows closely the procedures for determining the annual allowance when the costs are treated in costs.

113 ACCC refers to the position taken by Associate Professor Hathaway. He dismisses equity issuance costs as sunk costs that should be ignored. ACCC does not comment on this position.

114 "The ACCC views the inclusion of equity issuance costs in the WACC as being inappropriate. It is more appropriate to recover equity issuance costs through a specific allowance as and when they arise, rather than through the WACC."

115 This is equivalent to the first approach above. It is also the position of Associate Professor Hathaway that if any costs are to be included in WACC or cash flow it should only be future costs.

116 This is inconsistent with TSLRIC, including the method used by ACCC. This is also inconsistent with ACCC's Final Decision on GasNet[16] where it decided GasNet's access arrangement should (page 151) "include an allowance for equity raising costs of 0.224 per cent of regulated equity, to be recovered as an annual non-capital cost cash flow."

117 Ignoring all past equity issuance costs and then suggesting that costs would be allowed only if they arise in the future is not consistent with ACCC's treatment of debt issuance costs. It is also not consistent with the treatment of investments in assets that have future value where the investments have been made with a reasonable expectation that the costs would be recouped in the future.

118 In my opinion ACCC's position of ignoring all past equity issuance costs is not supportable. As to the quantum of the issuance costs, ACCC has not questioned my estimate of an annualised cost of 0.15% for ULLS-Network.

6. SOCIAL CONSEQUENCES OF OVER OR UNDER ESTIMATING WACC

119 I have contended that ACCC should set the regulatory WACC above the best estimate of WACC as an adjustment to balance the asymmetric nature of social consequences of over or under estimating WACC. This contention is based upon three factors.

120 First, companies have substantial incentives to engage in profit maximising behaviour in their financial decision making. In financial management, this means companies should not make investments unless they are expected to return more than their WACC.

121 This is true of companies regardless of whether or not they are regulated. Regulated companies should not be expected to invest in infrastructure unless the investment is expected to earn a return above its WACC. Even an investment with a return exactly equal to WACC does not create any value for the firm. As such an investment requires the commitment of resources of the firm and its returns would be uncertain, the firm should not make the investment.

122 Second, in regulatory settings such as with ULLS-Network the social consequences of over estimating WACC (i.e., setting WACC too high) are generally less than the

16 "Final Decision, GasNet Australia access arrangement revisions for the Principal Transmission System," dated 13 November 2002, pp 143-151.

social consequences that might be expected to flow from under estimating WACC. There is an asymmetry of social consequences.

123 Third, estimations of WACC are subject to substantial measurement error. If a regulator sets WACC at its best estimate, there is an equal probability of that estimate being over or under the "true" WACC.

124 Therefore, because the estimation error is symmetric but the consequences of error are asymmetric, the regulator should set WACC above the best estimate to balance the asymmetric social consequences.

6.1 Profit maximisation (section D.6.3)

125 ACCC agrees with the first proposition that companies seek to maximise profits.

> *Firms, regardless of whether they are subject to regulation, are likely to behave in a profit-maximising manner. ... It is not clear why, in these circumstances, a profit-maximising firm would be relatively more likely to invest in higher service quality, or innovate where it was being offered an excessive rate of return compared to a situation in which it was offered a non-excessive rate of return. The firm is likely to undertake profit-maximising investments and service improvements in either case.*

126 ACCC's comment only contrasts an excessive rate of return decision with a non-excessive rate of return decision. By its wording, I take non-excessive return to be a return that is exactly equal to the appropriate WACC. This overlooks the additional possibility of the return being less than the WACC.

127 Investments are undertaken by companies based upon an expectation that an investment will create value for the company. In finance terms, it will invest when a project has positive Net Present Value ("**NPV**"). Whether an investment is positive NPV will depend upon the amount and timing of future cash flows and the appropriate discount rate.

128 With respect to the WACC, if the expected return is above the WACC the NPV is positive, and a firm would be expected to make the investment. If the expected return is below the WACC, the NPV is negative, and the firm should not undertake the investment. If the return is exactly equal to WACC (i.e., what ACCC considers non-excessive), the NPV is zero. This means the investment would not create any value for the company, and the firm should not make the investment.[17]

129 If ACCC sets prices based upon a WACC that is below the regulated company's WACC, the investment would have a negative NPV. Then profit-maximising behaviour is for the company to not undertake the investment. Even in the case where WACC is set so that the NPV of an investment is zero, the company should not undertake the investment, as it would create no value.

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17 This is consistent with practice. See for example, J. Poterba and L. Summers, "A CEO Survey of U.S. Companies' Time Horizons and Hurdle Rates," Sloan Management Review, Fall 1995, 43-53.

6.2 Existence of an asymmetry in social consequences (section D.6.3)

130 ACCC does not accept my claim that in a regulatory environment there is an asymmetry of social consequences where the social costs of under estimating WACC are higher than the social costs of over estimating WACC.

131 In my December 2005 Report (paragraphs 16, 24, 155, 156), I discuss the decision of the New Zealand Commerce Commission to accept the asymmetry of social consequences and to adopt a policy of setting the regulatory WACC above the "best" estimate.

132 In my December 2005 Report (paragraph 142), I quote from a report of the Australian Productivity Commission recognising the existence of the asymmetry of social consequences. The Productivity Commission explicitly says it considers the consequences of under estimation WACC as likely to be worse than over estimation WACC.

133 In my December 2005 Report (paragraph 143), I even quote ACCC saying that it must consider the potential for the WACC adopted to affect the overall performance of the service provider.

134 In the United Kingdom, the Civil Aviation Authority has recommended, "*with investment being a priority, it is preferable to set the cost of capital too high rather than too low given the downside risk.*"[18]

135 The principle economic basis for the asymmetry of social consequences is as follows. If WACC is set above the appropriate "true" WACC, there will be a small loss of consumer surplus (also referred to as "deadweight loss"). However, if WACC is set below the appropriate WACC, there will be the loss of all consumer surplus related to withheld investment. The latter would be expected to be substantially larger than the former.

136 If an infrastructure company is not provided an adequate return on its investments, then it will seek to reduce its investments insofar as possible without doing damage to the value of its existing investments. The under investment that results from setting WACC too low is likely to directly affect the performance of the network over time, and thus adversely affect all users to varying degrees.

137 Concerns have been expressed in Queensland that the regulatory environment may have adversely affected service providers' incentive to properly invest in their networks.[19]

138 The results of under investment in the network are likely to be subtle and take a substantial amount of time to be apparent. Therefore, there is concern that the consequences of under investment may become clear as a result of a "shock" to the infrastructure. Such shocks impose substantial costs on consumers and society.

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18 United Kingdom, Civil Aviation Authority, "CAA Recommendations to the Competition Commission, Cost of Capital Annex," February 2002, para 1.140

19 "Electricity Distribution and Service Delivery for the 21st Century" (the "Somerville Report"), p 51.

139 If WACC is set above the appropriate level, there is a possibility that there will be excessive investment and/or "gold plating" of the network. Among other things, the TSLRIC methodology applied to the ULLS-Network would mitigate any incentive to over invest.

140 The implications of error in setting WACC are clear. The social consequences of under estimating WACC are substantially larger than the social consequences of over estimating WACC.

141 Consumers will benefit or incur cost with marginally higher or lower costs (resulting from WACC above or below the appropriate WACC), but this is likely to be small and perhaps even imperceptible to most consumers. It is likely to have little impact on consumption.

142 I reiterate from my December 2005 Report (page 26),

> *It is widely agreed that in a regulatory environment, the long-term social costs of under estimating the cost of capital are higher than are the long-term social costs of over estimation.*

6.3 Substantial estimation error in WACC (section D.6.3)

143 ACCC does not dispute that there is substantial error in the estimation WACC.

6.4 Conclusion

144 The social consequences of under estimating WACC are substantial. To balance the asymmetry, the WACC should be set above the "best" estimate. The increment above the best estimate should be determined as a function of the magnitude of the asymmetry of social consequences. There is no simple formula that will determine the appropriate increment. It is necessarily a matter of informed judgment. I have expressed my professional judgment as to the increment in my December 2005 Report.