Analysis of ULLS and LSS Undertakings and Subsequent Submissions

Interim Report

prepared for

Australian Competition & Consumer Commission

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CONSULTEL

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Preface

Consultel has prepared this report for the Australian Competition and Consumer Commission (ACCC) to assist it in evaluating the Undertakings submitted by Telstra Corporation in December 2004, as well as the subsequent submissions from Telstra and other parties in response to the ACCC's Discussion Papers on ULLS and LSS published in March 2005.

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Revision Log

Issue Number	Date	Affected Pages (or All)	Reason for Change
0905	5 Sep 2005	All	Initial Draft
1004	4 Oct 2005	All	Internal Review
1011b	11 Oct 2005	All	Client Review
1024c	24 Oct 2005	All	Incorporate LSS and Supplementary Submissions
1111	11 November 2005	All	Finalise Interim Report for client

Disclaimer

This report and the observations it contains were commissioned by and are intended for the sole benefit of the Australian Competition and Consumer Commission (ACCC).

In preparing this report, Consultel BWP Pty Ltd has relied on information supplied to us by the ACCC, including confidential information provided to the ACCC by suppliers of telecommunications services, and subsequently provided to us under a number of confidentiality undertakings. Unless otherwise indicated, this information is taken to be true and valid, and we offer no warranty, express or implied, as to any information provided to us by the ACCC that is contained in this report.

This version of this report contains masked information replacing information that is Commercial-in-Confidence to Telstra Corporation, Singtel Optus, Macquarie Corporate Telecommunications and Competitive Carriers Coalition. This information has been masked with the code (C-i-C).

This report is subject to the limitations, assumptions and qualifications referred to in the body the report.

Executive Summary

Background

In December 2004 Telstra submitted undertakings to the Australian Competition and Consumer Commission (ACCC) containing to proposed charges, terms and conditions relating to the Unconditioned Local Loop Service (ULLS) and Line Sharing Service (LSS).

After industry review of these undertakings, and two Discussion Papers released by the ACCC, further submissions were received from Telstra and other parties, including expert reports. Other submissions and independent expert reports on the LSS were received addressing a related matter, an access dispute between Primus Telecommunications and Telstra regarding LSS connection and disconnection charges.

I have been appointed by the ACCC to provide it with independent expert advice on technical and operational aspects of the ULLS and LSS undertakings, submissions and expert reports, particularly related to the proposed connection and disconnection charges. I understand the ACCC may rely on some of this analysis to assist it in its consideration of these undertakings.

Methodology

I have reviewed and analysed the undertakings documents, models, submissions and expert reports provided to me by the ACCC and Telstra. I have also reviewed and analysed other publicly available documentation relating to the ULLS, the LSS and broadband services in general, from sources including ACIF, the ACCC, and Telstra websites.

I have attended tours of three Telstra exchanges, representative of those within which ULLS and LSS services are being installed, and a tour of Telstra's IDS and DAC groups that perform much of the 'back of house' processing for the services. On these tours Telstra demonstrated key aspects of their processes and systems, and I had the opportunity to clarify aspects of submissions by asking questions.

I have also drawn on my own research and experience within the telecommunications industry in working with DSL technologies, ULLS and LSS services, ACIF standards working groups, and with several key service providers that are using ULLS and LSS services since 1998, before the ULLS and LSS services became declared services.

Based on my reviews, analysis, research and experience I have come to the conclusions summarised below related to the connection and disconnection costs pertaining to ULLS and LSS services:

Conclusions

ULLS and LSS Connection Costs

After analysing the various submissions, I have formed a view of the efficient costs of the largest components factored into Telstra's ULLS connection cost model and Telstra's LSS connection cost model. In my opinion there are considerable differences between the costs incurred to implement Vacant ULLS connections, and those incurred to implement In-use and Transfer ULLS connections, and these two situations have been modelled separately.

The efficient cost to perform the exchange jumpering is derived directly from quotations by third-party contractors.

I have estimated efficient labour costs that are lower than Telstra's calculations, based on Telstra's methodology but reduced to accord with quotations for directly comparable activities by third-party contractors.

Telstra's estimates for 'travel time between jobs', extracted from Telstra's Connect scheduling system, I accept as being reasonable for Vacant ULLS connections. For In-use ULLS and Transfer ULLS situations, and LSS connections, I have calculated a reduced travel time, recognising that these activities can be started and completed without the technician leaving the exchange, so the same technician can complete many such activities without requiring a separate trip to the exchange each time.

I have formed a view that the technician will need to travel from the exchange to the subscriber premises to perform testing and tagging for Vacant ULLS, as modelled by Telstra. In my view it is the 'testing' process that is the main reason for this cost component, and 'tagging' is incidental to the 'testing' process. For this reason this cost component is required for connection of a Vacant ULLS, whether or not the connection is to be 'tagged'.

I have formed a view of the various 'back of house' costs claimed by Telstra, and have concluded that some of the claimed costs do not appear to be efficient, however I have insufficient information to estimate independently what some of the efficient costs should be.

In summary, estimates of the efficient costs that should be incurred in connecting a Vacant ULLS service, for the elements considered within this report, are as follows:

Table 1 - Efficient Cost Elements for Single Vacant ULLS Connections (includes tagging and testing)

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Paras 3.1.3, 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Testing and Pair Tagging) at Customer Premises	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.4.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

In-Use ULLS and Transfer ULLS connections do not require a visit to the customer premises for testing (or tagging), and can be completed wholly within the exchange building and so will likely be batched together automatically with similar services such as ADSL and LSS. They also require a much smaller portion of "back of house" time. The estimates of costs of elements considered within this report are as follows:

Table 2 - Efficient Cost Elements for Single In-use ULLS and Transfer ULLS Connections

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Testing and Pair Tagging) at Customer Premises	N/A	N/A	$0.00	Para 3.4.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

LSS Connection Costs

LSS connections are likely be batched together with activities for similar services that can be completed wholly within the exchange (such as ADSL connections and disconnections), and so it is justifiable that a reduced travel time and cost should be used, compared to the average travel time across all services.

The estimates of costs of elements considered within this report for LSS connections are summarised as follows:

Table 3 - Efficient Cost Elements for Single LSS Connections

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

ULLS Disconnection Costs

I agree with the various access seeker submissions that there is no compelling reason to physically disconnect a ULLS jumper after the ULLS has been cancelled, and that the act of performing this disconnection and removal of the jumper should be incurred when a new service is provisioned to one of the terminations, in which case the disconnection will be an incidental activity of the connection of the new service.

I believe, therefore, that it is not reasonable for Telstra to include any allowance for the cost of cancellation activity or disconnection activity within its connection charge, since it will be recovered within the connection charge of whichever new service eventually re-uses one or both of the MDF end-points of the jumper and results in the previous jumper being disconnected and removed.

LSS Disconnection Costs

In my opinion the efficient cost of handling and performing a LSS cancellation and disconnection (when this is required from a cancellation that is not a transfer of service to a different carrier) is the cost of the technician performing the jumpering within the exchange to restore the service to a standard PSTN connection, combined with 'back of house' costs of the IDS group scheduling the Ticket of Work.

An efficient operator would have implemented a 'LSS transfer' process to facilitate subscribers moving from one service provider's infrastructure to another, and by not implementing such a process Telstra has, in my opinion, benefited through charging extra charges and by hindering migration by end-users.

In my opinion, the disconnection jumpering could be efficiently performed at a later date when the opportunity arises when a technician attends the exchange to perform other work, and so no costs for travel should be ascribed to a LSS disconnection.

The efficient cost to perform the exchange jumpering is derived from quotations by third-party contractors.

The manual systems lookup and data entry performed by back-of-house staff should not be performed by a person, but should instead have been automated in software, and so costs based on labour for this function should not be recovered here, as this may constitute double-dipping with the recovery of the IT development capital costs.

Thus, I believe the fair and reasonable estimate of the efficient costs that should be incurred in cancelling and disconnecting a LSS service that is not being transferred to another service provider, for the elements considered within this report, are as follows:

Table 4– Summary of Efficient Cost Elements for a Single LSS Cancellation and Disconnection (not transfer)

Cost Element	Time	Labour Rate	Cost	Reference
Labour Cost – travel to exchange	N/A	N/A	$0.00	Para 5.1.4
Labour Cost - Perform jumpering		Contractor	(C-i-C)	Para 3.3.3
Back-Of-House (IDS)	N/A	N/A	(C-i-C)	Para 5.2.3

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1. Introduction

This report has been prepared for the purpose of assisting the Australian Competition and Consumer Commission (ACCC) in its evaluation of aspects of Telstra's Access Undertakings relating to the Unconditioned Local Loop Service (ULLS) and the Line Sharing Service (LSS) as submitted in December 2004, and subsequent submissions by Telstra and other parties.

In March 2005, Telstra provided further material in submissions in support of the Undertakings and the ACCC released two Discussion Papers related to the ULLS and LSS services for public comment.

In May 2005, Telstra, Optus, AAPT, Macquarie Corporate Telecommunications (MCT) and the CCC all submitted papers in response to the ACCC Discussion Papers.

I was appointed by the ACCC in June 2005 to provide the Commission with independent expert advice and assessment on relevant technical and operational issues so as to assist it in its undertakings assessment, particularly of the undertakings relating to covering connection and disconnection charges. In August 2005 I received the confidential versions of the various Undertakings and Submissions after completing all the Confidentiality Agreements required by the ACCC and separately by Telstra.

During August and September 2005 the Commission requested further information from Telstra, and the information subsequently provided by Telstra also form material considered by me for this report.

On September 1st 2005 I attended a tour of Telstra's Lonsdale, Carlton and Northcote exchanges in Melbourne, conducted by Telstra. I understand these exchanges are representative of CBD exchanges and suburban residential exchanges in which access seekers have installed equipment to access ULLS and LSS services.

On September 7th 2005 I attended a tour of Telstra's DAC (Data Activations Centre) group in Sydney, and a tour of its IDS group in Parramatta, conducted by Telstra.

The documents I have been provided with to consider for this report are listed in Chapter 2. The specific Project Brief from the ACCC is included in Chapter 6, and my CV is included in Chapter 7.

As required by the Project Brief, this report focuses on the connection and disconnection charges for the ULLS and LSS services. This report does not specifically consider connections and disconnections performed in bulk in ‘Managed Network Migrations’, as the undertakings do not purport to apply to such situations, however, it does indicate scenarios where discounts might be appropriate for multiple orders.

ULLS and LSS lines are similar in that each utilises a copper wire pair from the copper Customer Access Network (CAN) between a Telstra exchange and a subscriber’s premises, each is connected and disconnected by installing or removing jumper wires within the exchange, and each uses the same ‘back of house’ groups within Telstra to monitor, schedule and facilitate the connection and disconnection processes. For this reason, rather than treat each service separately, I consider both services in parallel, reducing duplicated analysis and facilitating inter-comparison of reasoning applied to each. I have also not made any distinction between the terms LSS (Line Sharing Service) used by the ACCC and SSS (Spectrum Sharing Service) used by Telstra, and these two names are treated interchangeably in the body of this report.

2. Information Sources

The following documents have been considered during the preparation of this report.

Table 5 - Documents Considered in preparing this report

Organisation	Date	Document Title
Telstra	December 2004	Access Undertaking for LSS - Connection and Disconnection - Head Agreement
Telstra	December 2004	Access Undertaking for LSS - Connection and Disconnection - Price List
Telstra	December 2004	Access Undertaking for LSS - Connection and Disconnection - Service Schedule
Telstra	December 2004	Access Undertaking for LSS - Monthly Charges - Head Agreement
Telstra	December 2004	Access Undertaking for LSS - Monthly Charges - Price List
Telstra	December 2004	Access Undertaking for LSS - Monthly Charges - Service Schedule
Telstra	December 2004	Access Undertaking for ULLS - Connection and Disconnection - Head Agreement
Telstra	December 2004	Access Undertaking for ULLS - Connection and Disconnection - Price List
Telstra	December 2004	Access Undertaking for ULLS - Connection and Disconnection - Service Schedule
Telstra	December 2004	Access Undertaking for ULLS - Monthly Charges - Head Agreement
Telstra	December 2004	Access Undertaking for ULLS - Monthly Charges - Price List
Telstra	December 2004	Access Undertaking for ULLS - Monthly Charges - Service Schedule
Telstra	March 2005	Submission In Support Of The SSS Connection And Disconnection Charges Undertaking Dated 13 December 2004
Telstra	March 2005	Submission In Support Of The ULLS Connection Charges Undertaking Dated 13 December 2004
Telstra		ULLS ConnectionDisconnection Costs Model

Organisation	Date	Document Title
Telstra		SSS ConnectionDisconnection Costs Model
ACCC	March 2005	Discussion Paper - Telstra's Undertakings for the Line Sharing Service
ACCC	March 2005	Discussion Paper - Telstra's Undertakings for the Unconditioned Local Loop Service (Public Version)
Telstra	May 2005	Submission in Response to The Australian Competition and Consumer Commission's Discussion Paper In Respect of ULLS Received March 2005
Telstra	May 2005	Submission in Response to The Australian Competition and Consumer Commission's Discussion Paper In Respect of SSS Dated March 2005
Telstra	May 2005	Statement of (C-i-C)
Telstra	May 2005	Statement of (C-i-C)
Telstra	May 2005	Statement of (C-i-C)
Telstra	May 2005	Statement of (C-i-C)
Telstra	July 2005	Supplementary Statement of (C-i-C)
Telstra	May 2005	Statement of (C-i-C)
Telstra	May 2005	Statement of (C-i-C)
Telstra	July 2005	Statement of (C-i-C)
Optus	May 2005	Optus Submission to Australian Competition and Consumer Commission on Telstra's ULLS Undertakings
Competitive Carriers Coalition	May 2005	Response To The ACCC Discussion Papers On ULLS And LSS Undertakings
AAPT	May 2005	Submission by AAPT Ltd in response to the Australian Competition and Consumer Commission Discussion Papers

Organisation	Date	Document Title
Macquarie Corporate Telecommunications	June 2005	Macquarie Telecom's Response To Telstra's Undertakings On The Unconditioned Local Loop Service
Telstra	July 2005	Supplementary Submission In Support Of The ULLS Connection Charges Undertaking Dated 13 December 2004
Telstra	July 2005	Supplementary Submission In Support Of The SSS Connection and Disconnection Charges Undertaking Dated 13 December 2004
Telstra	September 2005	Response to ACCC Section 152BT information request of 18 August 2005

In addition, on 1st September 2005 I visited Telstra's Lonsdale, Carlton and Northcote exchanges in Melbourne, and on 7th September 2005 I visited Telstra's DAC Group in Sydney and its IDS group in Parramatta, and I use answers to questions asked during these visits within this report.

3. ULLS Connections and LSS Connections

I have been asked to evaluate the arguments and provide an opinion on (amongst others) the following issues as they relate to connecting and establishing ULLS and LSS services:

1. Estimates of requirements to perform jumpering and other activities;
2. Reasonableness of ‘batching’ arguments and whether it is appropriate to divide travel times over multiple connections;
3. Appropriateness and estimates of costs of performing ‘tagging’ at the subscriber premises; and
4. ‘Back of House’ estimates, such as those relating to the DAC and IDS groups.

In its ULLS Cost Model[1] Telstra estimates that the largest elements factored into their calculations of ULLS connection costs are as follows:

Table 6 - ULLS Connection cost elements under dispute

Element	Time	Hourly Labour Rate	Cost
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)
Labour Cost – Perform jumpering	(C-i-C)	(C-i-C)	(C-i-C)
Testing and Pair Tagging at Customer Premises	(C-i-C)	(C-i-C)	(C-i-C)
Data Activation Centre (DAC)	(C-i-C)	(C-i-C)	(C-i-C)

In its SSS Cost Model[2] Telstra estimates that the largest elements factored into their calculations of SSS connection costs are as follows:

[1] Telstra 2005 “Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004”, Para. 13 and Annexure B

[2] Telstra 2005 “Submission in support of the SSS Connection and Disconnection Charges Undertaking dated 13 December 2004”, Para. 14(a) and Annexure B

Table 7 - LSS Connection cost elements under dispute

Element	Time	Labour Rate	Cost
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)
Labour Cost – Perform jumpering	(C-i-C)	(C-i-C)	(C-i-C)
Data Activation Centre (DAC)	(C-i-C)	(C-i-C)	(C-i-C)

Other elements of Telstra's connection cost models are relatively small in quantum, and their justification relies on economic theory that I am not especially qualified to form an opinion on, so I have not analysed these small components.

The areas of contention within the various submissions relating to individual ULLS and LSS connections revolve around five components, being:

1. Labour rate;
2. Time required in travel to the exchange;
3. Time required to perform exchange jumpering;
4. Whether 'tagging' is required at all, and the time involved; and
5. Time required by the DAC to activate a service.

These are treated separately below.

3.1. Labour Rate

3.1.1. Facts relating to Field Technician Rate

The basis for calculation of the labour rate used for field technicians by Telstra is set out in the (C-i-C) Statement[3]. Telstra derives an effective marked-up labour rate for ULLS activities of (C-i-C) for a CFW4 level technician and (C-i-C) for a CFW5 level technician. This is calculated from the direct labour costs, by deriving an additional mark-up or loading factor of (C-i-C) for indirect costs based on factors specific to ULLS. For LSS activities the indirect cost mark-up is calculated to be (C-i-C) on the direct salary costs, using a different set of inputs based on ADSL service figures, to derive effective marked-up labour rates of (C-i-C) for a CFW4 level technician and (C-i-C) for a CFW5 level technician.

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[3] Telstra 2005, "Statement of (C-i-C)", 26 May 2005,

In Section 17 and Attachment D of his statement Mr Briggs attempts to show these rates are “reasonable” through comparisons with ‘service call‘ rates for six other businesses, where he derives comparative effective hourly rates of between (C-i-C) and (C-i-C) for the activities comprising the jumpering of a ULLS Connection, and between (C-i-C) and (C-i-C) per hour for the activities comprising the jumpering of a SSS Connection or Disconnection.

Macquarie estimates the effective hourly labour rate of a Telstra technician to be $36.50 per hour[4], through estimating an uplift factor to account for business overheads to be 18% of salary, and assuming the number of effective working days per year to be 220, compared to 210 used by the Commission and 217 by Telstra.

Gibson Quai-AAS submitted[5] that the majority of the indirect mark-up factors were excessive, and that a reasonable mark-up factor on the direct labour cost would be around 30 - 33%, on the grounds that this factor had been accepted as reasonable by the ACCC in past assessments relating to PSTN services, as the same technicians that perform ULLS and LSS connections also perform exchange jumpering and field-testing for PSTN services. They derive an effective marked up labour rate of (C-i-C) per hour for a CFW4 level technician and (C-i-C) per hour for a CFW5 level technician.

Telstra provided[6] rates quoted to them by third party contractors for connection activities for ULLS and LSS services, with rates for the equivalent of a “ULLS connection” quoted as follows:

Table 8 - Third Party Contractor rates quoted to Telstra for ULLS Connections

Contractor	Up to 50 ToW per day	50-100 ToW per day	Over 100 ToW per day
Contractor 1	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 2	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 3	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 4	(C-i-C)	(C-i-C)	(C-i-C)

[4] Macquarie Telecom June 2005 “Response to Telstra’s Undertaking on the Unconditioned Local Loop Service”, pp12

[5] Gibson Quai-AAS 2005,” Competitive Carriers Coalition Response To The ACCC Discussion Papers On ULLS And LSS Undertaking”, Para 5.1.1

[6] Telstra 2005, “Response to Commission 152BT Request” dated 29 September 2005, Annexure B. Figures from the ‘Basis 3’ column, where the contractor supplies all labour, laptop computer and field connectivity devices, are used in this paper as this is the basis most comparable to Telstra using its own staff.

Rates for the equivalent of a “LSS connection” are quoted as follows:

Table 9 - Third Party Contractor rates quoted to Telstra for LSS Connections

Contractor	Up to 50 ToW per day	50-100 ToW per day	Over 100 ToW per day
Contractor 1	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 2	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 3	(C-i-C)	(C-i-C)	(C-i-C)
Contractor 4	(C-i-C)	(C-i-C)	(C-i-C)

Telstra states[7] these rates are for work “equivalent to paragraphs 6(c)(v) to 6(c)(xvi) of the Luscombe statement” in the case of a ULLS connection, and “equivalent to paragraphs 11(c)(v) to 11(c)(xxiv) of the Luscombe statement” in the case of a LSS connection. These are the activities that relate to installing and removing jumper wires within the exchange building, and do not include any travel to the customer site or ‘testing and tagging’.

These rates are quoted by contractors on a ‘(C-i-C)’ basis, where (C-i-C). The rates can therefore be assumed to include a portion of cost recovery for direct IT overhead costs such as for the notebook computer and communications devices, and can also be assumed to include portions for cost recovery of depots/offices and other business administration costs, and are therefore directly comparable to Telstra’s fully uplifted costs. It is conceivable they also include extra costs, such as a portion of costs for vehicles and tools which Telstra costs separately.

3.1.2. Discussion relating to Field Technician Rate

Telstra uses very different indirect cost component mark-up rates for ‘Information Technology’ and ‘Property Management’ within its ULLS and LSS connection cost models when uplifting the same base salary cost of CFW4 and CFW5 field technicians, shown in Annexure B of the (C-i-C) statement and reproduced below (emphasis added):

[7] Ibid, Footnote 4 to Annexure B

Table 10 - Telstra Indirect Labour Uplift Factors

Indirect Components	ULLS uplift	LSS Uplift
PO_INFA Information Technology	(C-i-C)	(C-i-C)
PO_BADA Business Administration	(C-i-C)	(C-i-C)
PO_HRMA Human Resource Management	(C-i-C)	(C-i-C)
PO_ACFA Accounting & Finance	(C-i-C)	(C-i-C)
PO_PROPA Property Management	(C-i-C)	(C-i-C)
Total	(C-i-C)	(C-i-C)

It is not clear to me why these uplift factors should be so different, as both services are provisioned using the same technicians, the same 'Back of House' (DAC, IDS and WCSG) groups, and core IT systems (examples being AXIS and Connect) except for the ordering interface system with the access seeker (ULLCIS in one case and LOLO in the other), with much the same procedures and workflow. For example, it does not seem reasonable to me that a technician performing a LSS connection requires (C-i-C) percent more Property Management overhead cost than the same technician performing a ULLS connection. As I do not rely on these factors to arrive at a reasonable labour rate for Field Technician activity (see below), I will not analyse it further. However, if the Commission decides to form a view of an appropriate labour rate or methodology that uses Telstra's claimed indirect uplift factors, the Commission should satisfy itself that the sources of the variation in indirect uplift rates between these two services are justified.

Telstra's uplifted hourly rates equate to a 'recovery rate multiple' of approximately 3.1 times base salary. While I am not an expert in labour costing, as a general business owner, I note that this is comparable to recovery rate multiples derived from charge-out rates used within professional advisory practices, such as accounting and legal firms, and our own firm, for skilled tertiary-qualified employees, and which includes a fair margin for profit. In the absence of independent benchmarks I do not accept that an hourly labour rate equivalent to '3.1 times salary' reflects only cost-recovery, and does not include any profit margin, or that any organisation where the actual marginal cost of employing an individual equated to '3.1 times salary' was operating or was organised efficiently.

The different positions submitted by parties for the hourly labour rate for field technician activities (a CFW4 level technician where specified) are summarised in the following table:

Table 11 - Telstra Field Technician Labour Rate Comparison

Cost Component	Telstra (ULLS)	Telstra (LSS)	Gibson Quai-AAS	MCT
Base Salary	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)
Portion of Team Leaders	(C-i-C)	(C-i-C)	(C-i-C)	
Direct Oncosts	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)
Indirect Labour Costs	(C-i-C)	(C-i-C)	(C-i-C)	
Total Cost	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)
Paid Days Per Year on Fieldwork	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)
Hours Per Day	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)
Hourly Labour Rate	(C-i-C)	(C-i-C)	(C-i-C)	(C-i-C)

I note that Telstra's estimate starts from an initial assumption that Telstra's calculated actual costs, reporting/management structure and pay scales reflects those that an 'efficient operator' would set in place, without providing any data or national or international benchmarking to support this assumption. Telstra appears to assume that its own work practices and policies that lead to field technicians only spending 72% of their available working time actually performing field work is optimally efficient and hence can not be improved upon – an assumption that I believe is unrealistic. The Gibson Quai-AAS estimate differs from Telstra's estimate only in the uplift factor for indirect costs, and by using Telstra's claimed base salary, direct on-costs and staff utilisation factors implicitly includes the same assumptions. Without external independent benchmarks, for the reasons stated above I conclude that these estimates of hourly labour rate are likely higher than the costs a truly efficient operator would incur. Telstra attempts to justify its rates by comparing them to 'piecework' or 'callout' rates in unrelated fields, with quoted rates that do not represent charges that any reasonable enterprise would pay for such work to be performed in bulk with committed recurring volumes, as is the situation with exchange jumpering activities.

I observe that Macquarie's estimate does not allow for any management overheads, and assumes that every technician will spend fully 100% of every hour throughout a whole year performing fieldwork, with no allowance for time away in activities such as staff meetings. I believe this to also be unrealistic, that there will always be some non-productive overhead time, and thus conclude that Macquarie's estimate is likely to be too low, and that Telstra is entitled to recover a higher effective labour rate that this estimate.

I am of the opinion that the competitive nature of the tender process run by Telstra that elicited the quoted rates from the 'Third Party Contractors' can be assumed to have flushed out 'efficient' rates for the stated activities, and that the contractors' estimates will allow them to recover costs and achieve a commercial margin. Telstra, to the extent that their modelling shows that using their own staff for these functions has a higher unit cost than using external contractors, would also rationally recognise that it is in their best interests to use the external contractors as much as possible, while possibly attempting to identify further efficiencies in their own organisation so that their own internal costs approach those of the external contractors.

I note further that, of all the estimates from various parties, this is the only estimate that is derived directly from a contestable tendering process, without an initial starting point of the Telstra staffing and costing status quo, and that all external contractors bidding for the business have (C-i-C). The likely high volume of business mitigates against any incentive for an organisation to submit a 'loss-leader' rate which would cause it to incur a loss, and the degree of similarity between the quoted rates, in as much as we can assume there was no collusion between the parties, leads me to conclude that it is unlikely any party did so in practice. I conclude that the quotes submitted by the external contractors for the exchange jumpering work is closest to the cost structure that an efficient operator would incur for field technician activities – if not through the use of their own people, then by directly engaging contractors.

For comparison purposes I calculate the average of the third-party contractor rates quoted to Telstra to perform the exchange jumpering for ULLS to be (C-i-C) per connection, and for a LSS Connection the average charge is (C-i-C) per connection. I recognise that these contractors are equivalent to the actual field technicians, and that Telstra or any other efficient operator would incur some overhead in management of the contractors such as inspecting and certifying their work and staff periodically, and that portion which is attributable to ULLS or LSS related activities Telstra is entitled to be compensated for. I believe the methodology used by Telstra to apportion the costs of Team Leaders amongst the field staff is fair and comparable for contractor management purposes, thus I conclude that a mark-up in the same proportion – (C-i-C) - is justified.

To the extent that both Telstra and the third-party contractors have built in their own (possibly different) estimates of time required into their own estimates of cost for the exchange jumpering activity, going forward I will simply use the quotes for exchange jumpering (plus a 10% allowance for contract management overhead) as directly comparable figures to reduce Telstra's calculated labour rate on a pro-rata basis, averaged between ULLS and LSS as follows:

Table 12 - Calculation of 'Pro-Rata' labour rate factor

Component	ULLS	LSS
Contractor +10%	(C-i-C)	(C-i-C)
Telstra cost estimate	(C-i-C)	(C-i-C)
Ratio	(C-i-C)	(C-i-C)
Average Ratio	(C-i-C)	

3.1.3. Conclusions relating to hourly labour rates

From the facts presented in various submissions, and for the reasons stated above, I have formed an opinion that Telstra's estimate of their own internal effective labour rate for cost-recovery purposes over-estimates the costs an efficient operator would incur, and that quotes submitted by external third-party contractors for exchange-based jumpering activities is a better basis on which to estimate the efficient cost that an efficient provider would incur.

On that basis, an efficient labour rate might be reasonably estimated by using the ratio of directly comparable estimates for exchange jumpering on a pro-rata basis to reduce Telstra's estimate to approximately (C-i-C) of the claimed labour rate, which is on average (C-i-C). This estimate, in my opinion and experience, forms a realistic estimate of efficient costs, including overheads, and does not require specific knowledge of the actual labour rates or estimates of time required to perform a single jumpering activity on the part of the third-party contractors.

3.2. Time to Travel to Exchange

3.2.1. Facts and Submissions

Telstra measured the average travel time for technicians to reach the designated exchange to begin each job as being between (C-i-C) minutes and (C-i-C) minutes depending on region, by extracting the average travel time between all jobs (not just ULLS or LSS) in a twelve month period as recorded in the 'Connect' workforce scheduling system.

As outlined to me during my visit to the IDS centre, and confirmed subsequently by

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Telstra[8], Telstra's 'Connect' system records the time occupied in travelling between jobs (known as Tickets of Work, or ToWs), and the time required to complete a job/ToW from start to completion, through the technician using his/her portable device to check in and notify the system each time they complete a job, travel to the commencement point of a new job, and start a new job. The average travel times between jobs included jobs/ToWs where the travel time was nil because the technician was already at the required exchange when they notified the system that they had completed the previous job and accepted the new job starting at the same exchange.

Subsequently Telstra stated that they had extracted travel statistics for all the ULLS connection jobs specifically using the same method, and found the average travel times for this subset were slightly higher than those for all ToWs, and hence argued that the travel times within the ULLS undertaking cost models were conservative.

Telstra did not provide any travel statistics specifically for LSS connection jobs.

The 'Connect' system schedules jobs and allocates jobs to technicians using a set of optimisation algorithms that attempt to sequence and combine jobs to minimise travel times between jobs and minimise distance travelled overall away from a nominal 'home' exchange, as much as possible, in order to maximise the overall number of ToWs that can be completed each day across all service and product families, within certain other constraints such as committed installation dates.

Telstra's (C-i-C) Statement[9] states that the Connect system schedules approximately (C-i-C) tasks per day, and (C-i-C) tasks in the twelve months to 31 May 2005. During a visit to the IDS I was told that approximately (C-i-C) tasks per day relate to Installation activities, as opposed to fault repairs and other activities, and the rate of ULLS installations was approximately (C-i-C) per day, less than 1 per exchange per day. Telstra stated[10] that (C-i-C) ULLS services and (C-i-C) LSS services were connected in this same 12-month period.

[8] Telstra 2005, "Response to Commission 152BT Request" dated 29 September 2005, pp1

[9] Telstra 2005, "Statement of (C-i-C)", Para 6

[10] Telstra 2005, "Response to Commission 152BT Request" dated 29 September 2005, Para 2 (a)(ii)

Separately I note Telstra's 2005 Annual Report indicates[11] Telstra increased broadband subscribers by 938,000 within substantially the same period (to 30 June 2005). While this includes HFC Cable and satellite subscribers, the ACCC Broadband Snapshot report[12] indicates (assuming Telstra was responsible for 50% of the increases in Cable and Satellite categories) that the non-ADSL component of these can be no more than 77,000, so I estimate approximately 861,000 ADSL subscribers were added in the same period by Telstra. This is an underestimate of the actual number of connections performed, since it is net of any disconnections and disconnection/re-connections of the same subscriber switching between retail and wholesale or vice-versa.

During a tour of an exchange, Telstra explained to us they have very few technicians permanently stationed at exchanges, and now their standard work practice for individual jobs (ToWs) is for a single technician involved in installation/commissioning activities to take responsibility for an entire job. He/she downloads the details of their next job (at the location where they happen to be), travels to the relevant exchange to perform whatever work must be done there, and then where required travels out to the customer premises, building any intermediate linkages required by installing jumpers in street pillars etc. If required, he/she continues to the subscriber's premises and then tests that the service is correctly connected back to the exchange. Telstra explained that they previously used a practice of having people stationed permanently within the exchange, and a separate team of people permanently in the streets, and that the a technician from each group would work in concert through separate work-orders to build new services. Telstra claimed the new method was more efficient over all job types. They explained that they rely on optimisation rules within the 'Connect' scheduling system, and some manual assignments by the IDS group, to find opportunities to group or 'batch' activities together for each technician or exchange to minimise travel times, and that this occurred for approximately 30% of tickets.

Optus argues[13] that "labour costs associated with travelling between exchanges…is likely to overestimate the actual average travelling times that will exist during the undertaking period", and that economies will arise for the majority of connection-related tasks from

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[11] Telstra 2005, "2005 Annual Report: Operating and Financial Review and Prospectus", pp58

[12] ACCC 2005, "Snapshot of Broadband Deployment as at 30 June 2005",

[13] Optus 2005, "Optus Submission to ACCC on Telstra's ULLS Undertakings", Para 9.2

increases in the number of connections that can be performed per exchange visit and that these have not been factored into Telstra's costings. Optus expresses concerns that Telstra may not optimise travel times and routes travelled[14]. Optus further postulates[15] that as the number of ULLS connections increase, Telstra will need an increased number of technicians and hence the addressable area and average travel time for each individual technician would reduce over time.

Gibson Quai-AAS[16] argues that most large exchanges would have staff permanently on site, and in any case Telstra has opportunities to 'batch' connections and other work required to be performed at unmanned exchanges over a number of days, and so travel time between jobs should be zero, or reduced by averaging the travel time to arrive at an unmanned exchange by the total number of jobs to be performed at that exchange "…especially when Telstra has the opportunity of 10 – 15 days to accumulate and batch activities at a specific exchange".

3.2.2. Discussion relating to ULLS Travel Time

Telstra's figures above indicate that during May 2005, approximately (C-i-C) out of (C-i-C) ToWs per day related to new installation activities across all services - or (C-i-C) of ToWs. Applying this percentage to the annual figures, (C-i-C) of (C-i-C) tasks is almost (C-i-C) service installation ToWs in the 12 months to 31 May 05, of which (C-i-C) were ULLS service connections – approximately (C-i-C) of connections of all services.

In my opinion, the low proportion of ULLS connection jobs within the overall connection job pool makes it unrealistic to expect the method of execution and delivery to be optimised for ULLS services to the detriment of other services, as they are likely to still be a very small proportion of the total job mix even if the rate were to increase many times. To the extent that we must assume Telstra's work practices for ULLS activation are the same as for other services of their own which also require similar activities to activate a new single-copper-pair, such as PSTN lines, ISDN lines, low speed data services etc (to the extent of those that are activated back to an exchange and not to a RIM or similar intermediate

[14] ibid, Para 9.18 – 9.21.

[15] ibid, Para 9.13, 9.14

[16] Gibson Quai-AAS 2005," Competitive Carriers Coalition Response To The ACCC Discussion Papers On ULLS And LSS Undertaking", Para 4.3 and 5.1.2

point), then I accept that Telstra's scheduling and work practices have been designed to improve efficiency and effectiveness of the activation of its own services, and should be accepted also therefore as doing the same for ULLS services.

The CCC/Gibson Quai-AAS submission appears to assume that all the work required for a ULLS activation can be performed by jumpering inside the exchange, and that no field work such as jumpering at intermediate pillars might be required. Thus it is highly likely that multiple such jobs would be scheduled together to be performed 'back to back' within a single exchange, with no requirement to leave the exchange at any stage, effectively 'batching' the work so as to incur greatly reduced travel overhead on a per-job basis.

As explained to us by Telstra, this is not how the majority of their scheduled ToWs are executed in current practice. Under current practices it is likely that, when a technician signs in and receives their next job, they will be located out in the field in their cars at the customer premises where their last job was completed, and they will have to travel to start the next job, possibly but not necessarily back to the same exchange they left for the previous job.

I also understand the argument that Telstra has the opportunity of 10-15 days to accumulate and batch activities at each exchange to be unlikely to occur in practice, as this would only be true of 'background' activities with no committed delivery date. The majority of work orders relating to installation of new services for subscribers would need to be performed on the date committed by the provider to the subscriber, and within the 'morning' or 'afternoon' appointment timeframe specified, so Telstra's opportunity to 'batch' activities together depends more on when multiple subscribers happen to specify when they need their services connected, than any interval between ordering and delivery date – these opportunities are essentially not in Telstra's control. Jobs for the repair of failed subscriber services also is not an activity that the community would likely want Telstra to delay until a number of jobs could be accumulated to be performed in a single visit to an exchange.

Optus' argument that the future increase in the rate of ULLS connections at each exchange, and the need for Telstra to increase staff will reduce the 'addressable area' of each technician I believe is flawed, as any new technicians will still operate largely from exchanges and out to subscriber sites – the number of technicians connecting services to a given exchange may increase to cover any increase in volume, however each is likely to still be travelling throughout the same

Exchange Service Area to connect the services allocated to them, and so the average travel time per technician will not change for this particular reason.

Also, I do not expect the total rate of **new** copper-line-based services being commissioned – the sum of new ULLS and Telstra retail or wholesale PSTN services – to change significantly. Indeed we have seen in Australia as well as many other jurisdictions a general reduction of fixed-line PSTN services. The main difference I expect will be the higher proportion of new lines that will be installed to access seekers' equipment instead of Telstra's PSTN equipment, and thus the increase in new services to Optus and other service providers will be counteracted by a reduction in new services being installed by Telstra for itself. Hence the average 'service load' for each technician will not increase for **new** services.

I believe there are valid grounds for the concern from Optus that average travel times are likely to decrease, but for a different reason. It is likely in my opinion that there will be a 'hump' in transfers of **existing** services between competing service providers, that will later settle to a relatively steady-state level. Efficient work practices – and wholesale costs – would steer these towards being implemented as 'transfers' within the exchange in a single operation, and not as a new ULLS connection on a new copper line followed by a cancellation and disconnection of the previous copper line. To the extent that this In-use ULLS and Transfer ULLS activity (see Section 3.4.2 below for a comparison between In-use, Transfer and Vacant ULLS orders) would require mainly exchange-based activity and not jumpering within the street or testing at subscriber premises, there are grounds to expect the average travel time for ULLS services for technicians will reduce due to a greater proportion of jobs that require only exchange jumpering and no travel out to a subscriber premises – and by implication no requirement to travel **back** to the exchange for the next job. The degree to which this is realised will depend on the proportion of ULLS connections that access seekers request to be provisioned as Transfer ULLSs and In-use ULLSs and not Vacant ULLSs in the future which, in turn, will depend somewhat on access seeker's experiences of trade-offs between the three methods in factors such as new line availability, connection intervals, and pricing, which cannot be predicted at this time. There will also need to be a very significant total number of In-use ULLS and Transfer ULLS connections ordered to have an appreciable effect on the average travel time over all new services (regardless of product), so the net affect on average travel times across all products (and by implication for Vacant ULLS installations) is likely to be small.

I assume that there are no discriminatory optimisation rules within Telstra's Connect system – I note that it would be technically possible, for example, to code rules that discriminated against access seeker services, such as a rule where, after an activity where the technician can complete the job while located at an exchange, the system could prefer to schedule the next job to be a task on behalf of Telstra (a PSTN installation for example) as opposed to a ULLS job (by definition for an access seeker). I have no evidence and do not suggest that this is the case, and assume that Connect is scheduling and optimising task order in a non-discriminatory manner.

After visiting the IDS group and hearing of the optimisation functions of the 'Connect' scheduling system, I accept that it should and most likely does find opportunities to 'batch' activities together for a single exchange across all service providers and product categories without individual access seekers needing to be aware of this happening, (subject to constraints such as achieving committed installation times as outlined in Paragraph 8 of the (C-i-C) Statement), as is considered desirable by access seekers. Also I accept that the average travel time between ToWs as measured by Telstra by using the statistics within Connect already have this proportion of batched and 'zero travel time' jobs factored into the averages reported by the system.

3.2.3. Discussion relating to LSS Travel Time

As illustrated in the (C-i-C) statement[17] and confirmed by Telstra during the exchange visits, the jumpering and exchange activities required for a LSS service are identical to those required to activate a Telstra ADSL service, whether retail or wholesale.

LSS connections (and ADSL connections), unlike ULLS, can be completed entirely within the exchange without requiring any subsequent travel out to the field, and thus when the technician completes the task and downloads the next task, he is already located at an exchange – the next task, if it begins at that same exchange, will require no 'travel between jobs'.

The optimisation algorithms in the Connect scheduling system, in minimising field technician travel requirements, can be expected to find all reasonable opportunities to schedule candidate ADSL and LSS connection activities together to take as much

[17] Telstra 2005, "Statement of (C-i-C)", 25 May 2005, Figure 2 on Page 3 relating to Telstra ADSL, and Figures on Page 6 relating to SSS

advantage as possible of a technician being located at the exchange to perform many activities with no ‘between job’ travel. For this reason I have formed the opinion that the total aggregate rate of LSS and ADSL connections should be used as the basis for determining the degree by which ‘batching’ is likely to occur for LSS.

Telstra asserts that LSS connections cannot be ‘batched’ because the rate of connections is not high enough ((C-i-C) per day per exchange), as found in the (C-i-C) statement[18]. However when combined with the ADSL connections, and making a reasonable assumption that the distribution between exchanges approximates a Pareto distribution and so approximately 80% of connections occur in 20% to 30% of the enabled exchanges, I estimate that in those most popular exchanges there would have been approximately 8 to 12 connections per day on average. This is sufficient in my view to justify reducing the per-connection travel costs by some factor to recognise that the average travel time for LSS connections is likely to be very much lower than the average over all services, in as much as they will likely be scheduled - and should be scheduled by an efficient system operating as Telstra describes –mixed back-to-back with ADSL connections in the same exchange, even without any explicit ‘batching’ mechanisms that might be applied on a per-access seeker basis.

To estimate the effect of this I recognise that Telstra provides opportunities for booking ‘morning’ or ‘afternoon’ appointments, and may not be able to aggregate across these periods, so on average there would have been 4 – 6 connections per trip (say 5) for the 80% of the connections in the popular exchanges, and 1 connection per trip for the 20% of the connections in the least popular exchanges, leading to an estimate that each LSS connection on average should incur approximately 36% of the costs for a single trip to an exchange.

3.2.4. Conclusion

For the reasons above I am of the opinion that the travel times stated by Telstra for the component ‘travel to the exchange’ are reasonable and necessary to perform Vacant ULLS installations on average.

For LSS connections I am of the opinion that the average travel time to begin LSS connections should be significantly lower than the average travel time between all

[18] Telstra 2005, “Statement of (C-i-C)”, 26 May 2005, Para 6:

services, and that the travel times stated by Telstra for the component 'travel to the exchange' should be amortised across multiple LSS and ADSL connections, so the 'per connection' travel cost should be approximately 36% of the cost claimed for a single trip.

In-use ULLS and Transfer ULLS connections also can be completed wholly within the exchange, and an efficient scheduling system would also likely find opportunities to schedule these immediately adjacent to any LSS and ADSL services, and so I believe it is reasonable to divide the cost of a single 'travel to exchange' trip across these forms of ULLS connection in the same manner as for LSS connections (strictly speaking the LSS, In-use ULLS and Transfer ULLS connection travel times should be amortised across the sum of all three non-travel services LSS, ADSL and Transfer/In-use ULLS, however the number of In-use and Transfer ULLS connections are so small compared to that for ADSL connections as to have no appreciable effect).

I noted that the 'average travel time between jobs' is a statistic extracted by Telstra from Connect to update the 'Reference Data' it uses to schedule future jobs every three months[19]. This average travel time will vary over time as the proportion of jobs requiring travel out to the field (such as new PSTN and Vacant ULLS connections) and not requiring travel (such as some In-use ULLS and Transfer ULLS, LSS and ADSL services) changes. It may help inform the Commission as to how much this average travel time has varied historically, and hence provide an indication as to the range of probable future values and any trending of travel times up or down, if the Commission were to request Telstra to provide the Commission with the historical quarterly values for each region of 'average travel time between jobs' for the past few years.

3.3. Time to perform ULLS and LSS Jumpering

3.3.1. Facts and Submissions

The activities required within an exchange building to connect a ULLS by Telstra's field technical staff is set out in the (C-i-C) statement[20] in Sections 6-8. In Section 7 (C-i-C) estimates the average time to complete the jumpering process in the exchange to be "approximately half an hour".

[19] Telstra 2005, "Statement of (C-i-C)", Para 21

[20] Telstra 2005, "Statement of (C-i-C)", 25 May 2005, Section 6-8, pp8-11

The activities required within an exchange building to connect a LSS by the field technical staff is set out for Telstra in Sections 11 and 12 of the (C-i-C) statement[21]. In Section 12 (C-i-C) estimates the average time to complete the jumpering process in the exchange to also be "approximately half an hour", the same as for ULLS Jumpering.

The detailed activities described by (C-i-C) to perform ULLS Jumpering are extracted as follows:

> 6 (c) upon arrival at the relevant exchange, the technician:
>
> (i) logs into Telstra's system to indicate that he or she has arrived at the exchange;
>
> (ii) enters the exchange building;
>
> (iii) signs the visitors' log book;
>
> (iv) makes himself or herself aware of the emergency procedures such as emergency exits;
>
> (v) familiarises himself or herself with the MDF layout in the exchange;
>
> (vi) locates the appropriate Access Seeker Interconnect Cable Block and copper pair. These are marked with the Access Seeker's name, cable number and by groups of pairs, for example pairs 1- 100, 10 1 - 200;
>
> (vii) ensures that the Access Seeker's pair does not already have a jumper on it. If it does, the technician contacts the DAC who cheek the details with the Access Seeker and, if necessary, obtain from the Access Seeker an alternative copper pair to be used by the technician;
>
> (viii) checks whether the Main Cable copper pair already has a jumper on it;
>
> (ix) if it has a jumper on it, checks it for dial tone and what the PSTN number is. If the Main Cable copper pair to be jumpered is being used for an existing service checks that the number provided to him or her is the number in use. If it is not or if the Main Cable copper pair has a jumper on it but ought not, he or she contacts the DAC for advice;
>
> (x) obtains the necessary jumper wire which is generally found in the vicinity of the MDF or if not, obtains it from his or her car;
>
> (xi) lays the jumper wire in the MDF jumper shelves between the Main Cable Block and copper pair and the Access Seeker's Interconnect Cable Block and copper pair. On average the length of the jumper wire which must be run between the Customer Access Network Main Cable Block and copper pair and the Access Seekers Interconnect Cable Block and copper pair varies between 2 metres and 50 metres, with the average being about 15 metres. For the longer jumpers, it may involve climbing ladders to reach the higher levels of the MDF;
>
> (xii) terminates the jumper on the Access Seeker's copper pair;
>
> (xiii) walks back to the Main Cable Block;
>
> (xiv) if the Main Cable copper pair is being used for an existing service:
>
> (A) checks it with special test equipment to determine if a voice or data call is in progress on that line;
>
> (B) if a call is in progress, the technician must wait until the call is terminated before proceeding further;

[21] Telstra 2005, "Statement of (C-i-C)", 25 May 2005, Section 11-12, pp12-15

(C) when the line is clear, disconnects the pre existing voice and, if one is connected, ADSL jumper;

(xv) if the Main Cable copper pair is not being used for an existing service terminates the new jumper on the Main Cable copper pair;

(xvi) removes the old jumper by pulling it out of the MDF jumper trays/shelves. The old jumpers are not left in place because if they were, eventually there would be no space left on the MDF to run any more jumpers. They are also not reused because the pulling on the wire may compromise the wire making it unreliable as a result;

(d) the technician then cleans up the area in which he or she worked, turns off the lights and secures the exchange by turning on the alarm;

(e) the technician then signs out in the visitors' book and leaves the exchange;

The detailed activities described by (C-i-C) to perform LSS Jumpering are extracted as follows:

---

11 (c) upon arrival at the relevant exchange, the technician:

(i) logs into Telstra's system to indicate that he or she has arrived at the exchange;

(ii) enters the exchange building;

(iii) signs the visitors' log book;

(iv) makes himself or herself aware of the emergency procedures such as emergency exits;

(v) familiarises himself or herself with the MDF layout in the exchange;

(vi) locates the appropriate Access Seeker Interconnect Cable Block and copper pair

(vii) ensures that the Access Seeker's pair does not already have a jumper on it. If it does, the technician contacts the DAC who cheek the details with the Access Seeker and, if necessary, obtain from the Access Seeker an alternative copper pair to be used by the technician;

(viii) confirms that the allocated pair has a PSTN service on it by either using a special testing tool or tracing the jumper wire connected to the pair to the termination point at the other end of the jumper. If there is a discrepancy between details provided to him or her and the test results, he or she contacts the DAC to verify the service;

(ix) obtains the necessary jumper wire which is generally found in the vicinity of the MDF or if not, obtains it from his or her car;

(x) lays the jumper wire in the shelves between the Main Cable copper pair and the Access Seeker's copper pair. On average the length of the jumper wire which must be run between the Main Cable Block and copper pair and the Access Seekers copper pair varies between 2 metres and 50 metres, with the average being about 15 metres. For the longer jumpers, it may involve climbing ladders to reach the higher levels of the MDF;

(xi) lays the jumper wire in the MDF jumper shelves between the Access Seeker's copper pair and the termination block and copper pair used for the PSTN equipment. On average the length of the jumper wire which must be run between the Access Seeker's copper pair and the copper pair used for the PSTN equipment varies between 2 metres and 50 metres, with the average being about 15 metres. For the longer jumpers, it may involve climbing ladders to reach the higher levels of the MDF;

(xii) terminates the two jumper on the Access Seeker's copper pair;

(xiii) walks back to the Main Cable Block;

(xiv) checks the Main Cable copper pair with special test equipment to ensure the PSTN or ADSL services are not currently being used for a voice call or data downloads or uploads;

(xv) if a call or download or upload is in progress, the technician must wait until they are terminated before proceeding further;

(xvi) when the line is clear, disconnects the old voice jumper;

(xvii) terminates the new jumper on the Main Cable copper pair;

(xviii) walks back to the termination block for the PSTN equipment;

(xix) disconnects the old jumper from the PSTN termination block and copper pair;

(xx) terminates the new jumper on the PSTN block and copper pair;

(xxi) removes the old jumper by pulling it out of the MDF jumper trays/shelves. That may include the old DSL jumper;

(xxii) tests for dial tone on the Main Cable copper pair to ensure the jumpering and Access Seekers' equipment are all functioning;

(xxiii) if the testing reveals a fault; the technician will repair the fault if it is associated with Telstra's equipment;

(xxiv) if the fault is with the Access Seeker's equipment, the technician contacts the DAC and either awaits repair or further instructions;

(d) the technician then cleans up the area in which he or she worked, turns off the lights and secures the exchange by turning on the alarm;

(e) the technician then signs out in the visitors' book and leaves the exchange;

(f) the technician logs the completed task in the Telstra system

Telstra use a duration of (C-i-C) for a ULLS Connection in its ULLS cost model, derived by "dividing the total time spent on ULLS jobs in the exchange by the number of ULLS jobs at the exchange"[22]. For a LSS Connection Telstra use a duration of (C-i-C) in its LSS cost model, described as the time taken "to remove one or two jumpers, connect another two jumpers at the exchange and test for dial tone"[23].

Gibson Quai-AAS estimates the total time to run a ULLS jumper for a single service, including terminating each end, is approximately (C-i-C) minutes[24], and, for running two

[22] Telstra 2004, "Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004", Annexure B, footnote 37

[23] Telstra 2004, "Submission in support of the LSS Connection and Disconnection Charges Undertaking dated 13 December 2004", Annexure B, Para. 1 (b)(ii), pp2-3 of Annexure B

[24] Gibson Quai-AAS 2005," Competitive Carriers Coalition Response To The ACCC Discussion Papers On ULLS And LSS Undertaking", Para 3.1.3

LSS jumpers for a single service, including terminating each end, they estimate approximately (C-i-C) [25] is required.

During visits to Telstra exchanges I observed technicians entering and leaving the exchange building on several occasions, and did not observe any sign the visitors log book during entry or exit. At the Lonsdale exchange I inspected the visitors logbook on September 1st for the previous days that week, and counted between 4 and 6 entries on each day of the previous three weekdays Monday August 29th – Wednesday August 31st.

3.3.2. Discussion

It is reasonable to suppose that exchange technicians, once familiar with each exchange environment and visiting a given exchange probably several times within a period of a few days or weeks, will not spend appreciable time each and every visit checking for updated emergency procedures, finding their way from the front door to the MDF room, etc. It is apparent from my inspection of the visitors book at one of the largest, and presumably busier, exchanges in Melbourne that few technicians sign the visitors book, so while the steps listed in 6(c)(iii) through 6(c)(v) and 11(c)(ii) through 11(c)(v) may accord with a formal procedure, they appear not be performed for every visit and any time actually spent on these activities over a long time period can be amortised over such a large number of ToWs as to have a negligible effect on time required for each service.

With regard to the time required to actually perform the jumpering, the estimates provided – (C-i-C) by Telstra and (C-i-C) by Gibson Quai-AAS for ULLS and (C-i-C) and (C-i-C) respectively for LSS – are so different that it is not possible to reconcile them by determining if some necessary steps have been omitted from consideration or unnecessary steps have been included. Both parties largely agree on the steps required, however it is the overall time interval that is under dispute. (C-i-C) estimates the time to perform both activities to be the same, which in my opinion is unlikely to be so given the more complex nature of a LSS connection requiring twice the number of new jumper wires to be installed.

Two of the steps detailed by (C-i-C) relating to the LSS appear to bear deeper inspection:

[25] Gibson Quai-AAS 2005," Competitive Carriers Coalition Response To The ACCC Discussion Papers On ULLS And LSS Undertaking", Para 3.1.1

Steps 11(c)(xiv) and (xv) state that a technician checks for the presence of an ADSL service and has to wait until an active upload or download is finished before the jumper can be disconnected. ADSL is an 'always on' technology, active whenever the CPE is powered on, and whether or not actual user traffic in terms of uploads or downloads are occurring. Most subscribers leave their DSL CPE permanently on and connected, and some level of background user traffic will always be present. I think it is unlikely that, in practice, a check for 'ADSL tone' is made, or that any delay in disconnecting the jumper wire is incurred with this step. Not withstanding this, under Telstra's current product description a LSS connection request for a line already connected to a LSS or ADSL service will be rejected, so under current arrangements the technician would never be asked to connect to a service which already has ADSL running in the first place, and a check for 'ADSL activity' is superfluous.

Steps 11 (e) and (f) indicate that the technician signs out, leaves the exchange, and then logs the job as completed and checks for/accepts a new job. In my opinion it would be more efficient if the technician logs the job as completed and checks for a new job **before** signing out and physically exiting the building, as it is probable the next job may start within the same exchange.

Our own desktop estimate, using the steps as described by (C-i-C), assuming an average length of a jumper to be 15 metres, the average length of an MDF frame to be double this (30 metres) as observed during our exchange visits, looking at the number of times a technician must walk around the frame from one side to the other, assuming a relatively slow walking pace of 0.75 metres per second and adding several minutes of additional time for checking blocks with existing jumpers, for threading the new jumper wire through cable trays, portholes and cable guides and then testing for an existing call, I find a reasonable time estimate to be in the vicinity of 10 – 15 minutes to install a ULLS (Vacant) jumper. If there was a previous jumper wire at either point then I believe it is reasonable for it to be removed (for reasons covered in a later section), and this should take no more than an additional 2 to 3 minutes to find the other end, disconnect it and then pull out the free old jumper wire. For a LSS connection a reasonable time would be in the vicinity of 16.5 minutes, including removing the previous single jumper wire.

I do not put forward the times indicated by these 'desktop studies' as true estimates, as I believe an independent 'time and motion' study is the only method to determine the actual time required. However, when compared to both Telstra's estimate or Gibson Quai-AAS estimate, I do not believe either one forms a reasonable estimate of the minimum average time required to efficiently perform exchange jumpering.

In my opinion an estimate of time to perform ULLS and LSS jumpering is actually unnecessary, as we have available the rates quoted to Telstra by various third-party contractors to perform this function, namely an average of (C-i-C) per connection for ULLS jumpering and (C-i-C) per connection for LSS jumpering, which when uplifted by a proportion I believe is reasonable to account for management and supervision overheads as outlined in Section 3.2.2 above (C-i-C) provides a reasonable cost to Telstra for this function of (C-i-C) for ULLS jumpering and (C-i-C) for LSS jumpering. This is lower than Telstra's estimate of its own cost of its own technicians performing this activity, however whether or not Telstra chooses to avail itself of this rate is not material, in as much as, if this exchange jumpering activity was permitted to be performed by an access seeker or their contractor directly, this is a likely estimate of the cost they would incur through engaging the contractors themselves, and this can be regarded as an efficient cost to the industry for this function.

3.3.3. Conclusion

I believe the price quoted by third party contractors in a contestable and competitive tender process forms a reasonable and valid independent estimate of the efficient cost to perform this function, and when uplifted by a factor to account for contract management and supervision overhead a cost of (C-i-C) for the exchange jumpering labour component of a ULLS, and (C-i-C) for LSS jumpers are reasonable costs.

3.4. Testing and Tagging

'Testing and Tagging' is an activity that is only relevant for ULLS connections (and the ULLS undertakings) and which is performed at the subscribers' premises. The activity is not required for a LSS connection as a LSS connection 'piggy backs' on an existing PSTN service and line that is known to be working at the time the exchange jumpering is performed, so continuity of the line can be tested from within the exchange by checking for a PSTN dial tone.

3.4.1. Facts and Submissions

Regarding the "Testing and Tagging" phase at the customer premises, Section 8 of the (C-i-C) statement states, "On average I estimate that the testing component would take approximately (C-i-C) minutes". Telstra estimates a further (C-i-C) minutes travel time is required on average for the technician to travel from the exchange to the customer premises to perform the testing (and tagging).

During my visit to Telstra's Lonsdale exchange, I asked (C-i-C) of Telstra about the requirement for "Tagging" and the relative time required for the testing and tagging components. (C-i-C) indicated that "tagging" the circuit was performed for all 'Vacant ULLS' connections, which in the past 12 months formed over (C-i-C) of ULLS requests, however "tagging" took negligible time – only a few seconds – to write the line number and DAC sequence number on the cardboard tag and connect it to the customer socket or distribution frame. The overwhelming portion of the time at the customer premises was occupied by the 'testing' of the circuit in conjunction with the DAC and the access seeker.

Optus argues[26] that "Pair tagging will not be required for many new services going forward, and it is therefore not appropriate that an undertaking be accepted on the basis of a costing that implies that all services require tagging." Optus appears to accept 'tagging' is required for new Vacant ULLS corporate connections, but argues that tagging is not required for lines that are already "in use", and is also not required for residential services, as the 'first-point' is easily identifiable. They state that (C-i-C).

Gibson Quai-AAS similarly argue[27] that the tagging time claimed by Telstra is valid when tagging is required, however for residential services "there are few instances where this would be required" since "In a residential situation where an LSS or ULLS is required the copper pair supporting the telephone service is clearly identified and requires no further identification." Thus, they conclude, "tagging costs should not be a consideration for connections charges and should only be charged when incurred".

3.4.2. Discussion

The ACIF code relating to ULLS provisioning detail three different methods for an Access seeker to order and provision a ULLS[28]. These are:

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[26] Optus 2005, "Optus Submission to ACCC on Telstra's ULLS Undertakings", Para 9.2

[27] Gibson Quai-AAS 2005," Competitive Carriers Coalition Response To The ACCC Discussion Papers On ULLS And LSS Undertaking", Para 5.1.6

[28] ACIF 2005, "C569:2005 Unconditioned Local Loop Service – Ordering, Provisioning And Customer Transfer", Section 11.1, pp27-29

Vacant ULLS – a new connection on an otherwise un-used copper line, ordered by an access seeker through specifying the street address it is to be delivered to. Telstra indicates that (C-i-C) of services to date have been Vacant ULLS connections[29].

In Use ULLS – a ULLS connection on a copper line that currently carries a PSTN service – ordered by an access seeker through specifying the PSTN number of the line to be converted to a ULLS.

Transfer ULLS – a ULLS connection that is being used by one access seeker ("losing access seeker") is requested to be transferred to another (the "gaining access seeker"), following an end-user subscriber transferring (or 'churning') services from one provider to another. The gaining access seeker orders this through specifying the 16-digit "ULLS Service ID" that was allocated when the line became a ULLS.

The Gibson Quai-AAS submission ignores any time that might be required for a Vacant ULLS for a field technician to perform any intermediate jumpering at other pillars and connection points in the streets to build and establish a complete copper path from the exchange to the customer premises. As explained to me during the Telstra exchange visits, with the exception of a number of CBD buildings located close to an exchange, the majority of buildings and residences do not have a dedicated unbroken copper line to the exchange, and a new line (whether a Vacant ULLS, a new PSTN service, or other new service that requires a copper pair to run on such as Basic Rate ISDN) must be built by jumpering between pairs in different trunk cables at one or more intermediate street pillars to create an unbroken end-to-end copper path. This is identical to the situation where a new PSTN line is provisioned.

Telstra told me that this would typically be done (if required) by the technician after the exchange jumpering is completed, as he or she travels out to the customer premises to perform 'testing and tagging', so would be included within the time estimate for this activity.

For an In-use ULLS connection, there may be no need for the technician to travel to the subscriber premises for testing **or** tagging, as the line is already known to be operating through to the premises, and any testing for access seeker dial-tone can be performed at the subscriber line/Main Cable side of the exchange MDF without leaving the exchange. Further, as it is an In-use ULLS, by definition it will have a PSTN number associated with

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[29] Telstra 2005, "Response to Commission 152BT Request" dated 29 September 2005, Para 4

it, allowing the location at the customer premises to be easily identified by an access seeker's technician at a later time. This is true whether the end customer is a commercial or residential location. The same is true for Transfer ULLS services, where the cable records at the customer premises should already record the ULLS Service ID. While relatively few of these transfers have occurred to date it is reasonable to believe that in the future as residential PSTN lines are converted to ULLS lines that the incidence of transfers or churns to other service providers will increase - clearly (C-i-C).

I accept that it is the **testing** of a new copper path with the access seeker that takes the time and forms the requirement for the travel to the customer premises for a Vacant ULLS, not necessarily the tagging, and so, to the extent that various access seeker submissions take issue with the time estimated and assume it is all used to perform tagging, I believe the concern is misplaced and originates from confused labelling of the activity.

I disagree with both Optus and Gibson Quai-AAS submissions that residential services will not necessarily need to be tagged (or tested), because residential services ordered as Vacant ULLS are ordered by specifying the street address, and not any PSTN number. The service will be provisioned to a location at the designated street address that may or may not be the 'first socket' where the existing PSTN service, on a different copper line, is terminated. I believe there may still be a requirement for a Vacant ULLS at a residential location to be tested by some access seekers, whether or not it is left with a tag.

However, for In-use ULLS connections, I believe no customer premises visit is required, and it is conceivable that the majority of residential services will in the future be ordered as In-use ULLS lines as envisaged by Optus. Optus, however, makes no mention as to whether it expects the majority of its residential services to be 'Vacant' or 'In-use' connections, or whether they believe In-Use ULLS connections will require **testing** at the customer premises quite separate from **tagging**.

Thus in my view it appears in many of the submissions that access seekers have confused the concepts of 'commercial vs. residential' with 'Vacant ULLS vs. In-Use ULLS', and it is not whether a service is for a commercial or residential subscriber that drives whether testing or tagging is required, but more correctly, whether a service is ordered as a Vacant ULLS that will require testing (and tagging), or as an In-use ULLS which may not require either.

I further note, as advised during the exchange tours and the DAC tour, that some access seekers are deliberately not performing any testing with Telstra for Vacant ULLS connections, and Telstra is accommodating this. If an access seeker chooses not to have Telstra test the line at installation time, the service is signed off as correctly installed, and at a subsequent time the access seeker discovers there is a problem with it, then they must open a fault report with Telstra on the line and may have to pay a fault resolution fee if the reason for the fault is found to lie with the access seekers equipment or systems. Optus in their submission notes the fee at (C-i-C) on a business day.

This appears to me to be a justifiable risk/reward trade-off decision by an access seeker, if they can negotiate a reduced ULLS connection fee, to deliberately choose not to perform the testing phase and hence reduce the time and resources required by Telstra to perform the connection, thus increasing the efficiency of the connections process. Given that I calculate a reasonable efficient cost of ‘Testing’ the service, being (C-i-C) minutes of Field Technician time and (C-i-C) minutes of DAC time to be (C-i-C) (see later), then depending on the proportion of services that are subsequently found to need a fault report due to installation problems access seekers have a case that it is more cost effective for them to manage the risk and NOT perform testing at installation time. Thus, I conclude that an efficient connection process would have ‘testing’ as an optional component for each access seeker to decide whether to subscribe to or not, and not have ‘testing’ be bundled into every connection charge.

Telstra’s undertakings do not address any differences between Vacant, In-use and Transfer ULLS connections, and Telstra’s documents appear to assume all services are to be handled as Vacant ULLS. To the extent that In-use ULLS and Transfer ULLS connections may require no tagging or testing component, they can be performed at significantly lower cost and less time than a Vacant ULLS, and in my opinion should be available at a lower price to access seekers. This would provide incentives for access seekers to seek to use In-Use services where available, achieving infrastructure efficiencies through encouraging re-use of the copper plant elements, connection resource efficiencies through shortened connection times by technicians, and consequent improvements in the end-user experience and cost.

3.4.3. Conclusion

For the reasons set out above, for Vacant ULLS connections only, I accept Telstra’s time estimates of (C-i-C) minutes being necessary and reasonable for travelling to the customer’s site, and that another (C-i-C) minutes at site for testing of the new copper path with the access seeker if required is reasonable – with tagging being performed during testing.

For Vacant ULLS only, as it is likely the technician will need to travel at least part-way towards the subscriber in order to perform intermediate jumpering at pillars to build the new service, it is reasonable and efficient that the same technician continue to the subscriber site and 'tag' the termination, even if testing is not required.

In my opinion neither 'testing' or 'tagging' are required for In-Use ULLS connections or Transfer ULLS connections, as these are already connected copper lines with operating services.

Because the testing component forms a significant portion of the costs claimed by Telstra in provisioning ULLS services ((C-i-C) for Band 1 reducing to (C-i-C) in Band 4), I believe that testing should be a separable component for all three forms of ULLS connection, costed separately and be made optional at the discretion of the gaining access seeker. This would allow a more efficient connection process than when testing is bundled with the exchange connection.

3.5. Data Activation Centre (DAC) Component

3.5.1. Facts and Submissions

Telstra indicates in its Undertakings submission[30] that the DAC component covers "Service Qualification Testing, Validation of ULLS at the point of interconnect, and manual assignment of cable pairs when auto assignment fails" and estimates the cost to be (C-i-C). Telstra originally estimated the DAC component cost by multiplying the time required ((C-i-C) minutes) by the CFW5 Labour Rate ((C-i-C))[31], which is itself derived from the actual CFW5 salary rates, increased by a number of factors relevant to field personnel such as the ratio of supervisors to field workers.

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[30] Telstra 2005, "Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004", Annexure B, Para. 1 (f)

[31] ibid, PP5 of Annexure B

Subsequently Telstra submitted a revised method[32] of estimating this component, renamed 'Back of House', incorporating both DAC and IDS groups, by dividing the total calculated labour cost for each group by the number of transactions each handles to arrive at an estimate of 'cost per transaction' as follows:

Table 13 - Telstra estimate of 'Back of House' cost component

	IDS	DAC
Annual Labour Cost	(C-i-C)	(C-i-C)
# Transactions	(C-i-C)	(C-i-C)
Cost per Transaction	(C-i-C)	(C-i-C)
Total	(C-i-C)	

The (C-i-C) Statement estimates[33] that the DAC involvement actually takes, on average, (C-i-C) minutes, however only one of those six major activities (6(c) "Coordinating Provisioning", (testing at subscriber location) is required for all ULLS connections, and others are manual escalations only performed when automated systems fail. In a subsequent Supplementary Statement[34] he acknowledges that it is not known how frequently some of the listed activities occur, and he is unable to estimate an average duration for each connection. One of the manual activities, a manual Service Qualification if automated SQ systems fail, is estimated to occur in (C-i-C) of ULLS connections however see below for an updated estimate.

Optus[35] queries whether a portion of this charge and activity is duplicating the explicit charge of (C-i-C) for each Service Quality test it requests, and whether the portion dealing with "Manual assignment" is covering for shortcomings in the IT systems that should be automatically assigning pairs.

Gibson Quai-AAS estimates the DAC time requirement to be (C-i-C) minutes to "activate charging and create appropriate electronic records".

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[32] Telstra 2005, "Supplementary Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004", Para 8-13

[33] Telstra 2005, "Statement of (C-i-C)", Para. 6 & 7, pp4-8

[34] Telstra 2005, "Supplementary Statement of (C-i-C)", Para. 6

[35] Optus 2005, "Optus Submission to ACCC on Telstra's ULLS Undertakings", Para 9.32 – 9.35

During my visit to the DAC group Telstra demonstrated to us a manual Service Qualification for a Vacant ULLS order that had failed the auto-assignment process where a CAN pair is allocated, as the system could not find a vacant pair automatically. (C-i-C)

With respect to the IDS group, Telstra relies on the (C-i-C) Statement to describe the activities and requirements of the IDS staff and the Connect software scheduling system. None of the other parties were able to comment on the IDS group cost component, as their submissions were all made prior to the Supplementary Submission being released by Telstra in which the IDS group was introduced and the estimation methodology changed.

3.5.2. Discussion – DAC involvement in ULLS

With reference to the stated components, which reflect activity in the DAC group for ULLS as described in the (C-i-C) Statement, I understand that:

"Validation of ULLS at the Point of Interconnect" refers to dealing with queries from the exchange technician, and liaising with the access seeker, on the occasions when the exchange technician finds a jumper wire already in place for the specified access seeker's POI, and there is a need to check if an error has been made and, potentially, assign another access seeker equipment pair, as outlined in the (C-i-C) statement[36]. No data is presented on the proportion of services this is required for, but for an order of magnitude estimate I estimate that this might occur for 10% of services, and it is feasible that this might take between ten and twenty minutes to resolve with the access seeker, so it is reasonable to allocate between 1 and 2 minutes on average for this activity per service.

"Manual assignment of cable pairs when auto assignment fails" was stated by Telstra during the DAC visits to occur in approximately (C-i-C) of cases, and in the one example we witnessed during the DAC visit this took approximately (C-i-C) minutes to find a disconnected service and resolve the cable assignment, thus it is reasonable to allocate between 1 and 1.5 minutes on average per service for this activity. Optus expresses concern that this might be unjustifiably recovering costs that are incurred through deficiencies in the IT systems, however in my experience it is also feasible that at least some proportion of these incidents are due to incomplete cable records, however caused, and that this is inevitable in such a large and complex system to some degree. Thus, I conclude that the effect of any inadequate IT system shortcomings, if present, is likely to

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[36] Telstra 2005, "Statement of (C-i-C)", 25 May 2005, Para 6(c)(vii) and 6(c)(ix)

have only a small effect on this estimate, although (C-i-C) could in my opinion be classed as such a shortcoming, and warrants further clarification with Telstra.

"Service Qualification Testing" (once the cable pairs and end-to-end path are identified) is a misnomer, in that nothing is actually tested – the attenuation of the line is estimated by calculation, and compared mathematically to a limit specified within the ACIF codes. This activity should consist only of a mathematical software lookup and calculation of signal attenuation along the cable pair, and should be a system software function and should occupy negligible elapsed time for the DAC operator to indicate the pair/path to the system in some manner, and have it calculate the attenuation and record it appropriately.

I also note that the same DAC group is involved in every Vacant ULLS testing process, being contacted by the field technician from the customer premises, contacting the access seeker, and waiting on line for the access seeker to conduct tests with the technician, and finally releasing a 'sequence number' to the field technician when tests are successful – this is included as step 6(c) in the (C-i-C) Statement, and is identified in the (C-i-C) statement in paragraphs 6(h) to 6(j). By implication this component can be regarded as requiring no more than the (C-i-C) minutes estimated for the line technician for testing at the subscribers premises on average, and to the extent that a few minutes might be required by the line technician to set out and connect test equipment, make the call to the DAC, and possibly sit in a queue for an available DAC operator, it is reasonable in my view to estimate that testing will occupy approximately (C-i-C) minutes for the DAC operator on average for each connection, including those where problems occur and testing must be performed more than a single time.

Gibson Quai-AAS do not include any time allowance for the DAC for testing a Vacant ULLS connection in their submission, although they do accept the time estimate claimed for the field technician, at least for those ULLS connections that require testing at all. For this reason I disagree with their estimate in relation to Vacant ULLS services. For In-Use ULLS and Transfer ULLS I do not believe that testing will be required, however some form of notification to the access seeker at the time the 'cutover' in the exchange has occurred will be required, so although the underlying activities are different I agree that their estimate of (C-i-C) minutes is reasonable for these forms of ULLS provisioning.

I noted in Telstra's supplementary submissions that, when calculating the IDS group cost, they provided the indirect cost uplift factors for the direct labour costs and these uplift factors, and hence the derived IDS group cost, were different for the ULLS and LSS supplementary submissions. I contrast this with the fully uplifted cost of the DAC in the same submissions, in which the same figure was used in both submissions. Telstra has not specified what indirect uplift factors were used to derive this figure, and so in at least one submission and possibly both, the uplift factors used for the DAC must be inconsistent with the factors used to uplift the IDS group costs. This inconsistency introduces doubt that this is a robust method of arriving at a cost estimate.

3.5.3. Discussion – DAC involvement in LSS

The (C-i-C) statement outlines four major activities that may involve the DAC group for a LSS connection[37], that are estimated to require approximately (C-i-C) minutes per connection:

- Manual Service Qualification Testing if it fails to be handled automatically
- Validation of POI details supplied by the access seeker
- Connection assistance, if the access seeker's POI pair is faulty
- Assistance with resolving Problems experienced during the Connection.

An SSS service 'piggy backs' on an existing operating PSTN service, so there is no change to the copper CAN beyond the exchange jumpering (unlike a ULLS).

Service Qualification Testing, when it is not handled automatically by the system should, in my opinion, require minimal staff time within the DAC. The complete cable path is known ahead of time for the operational PSTN service, and there is no actual testing occurring, just a lookup calculation of predicted attenuation at voice frequencies to ensure there is enough PSTN signal strength to continue to operate when the LSS service is layered over it. As outlined earlier this should be a software function that provides the pass/fail indication when the PSTN line is indicated to it in some fashion, and the DAC involvement should not require more than 2 or 3 minutes to point the attenuation software module at the line in the database, and then cut-and-paste the calculated attenuation or pass/fail result into the required field. If this were required in 10% of services then a generous estimate of this component would be half a minute per service on average.

Validation of the POI details supplied by the access seeker should not in my view be a manual activity at all, as all the information required for forming a decision on whether

[37] Telstra 2005, "Statement of (C-i-C)", Para. 12 & 13, pp9-11

anything is inconsistent is already held within various computer systems. This should be handled automatically by system interactions and database lookups between LOLO and the various databases of record.

The final two activities appear from their descriptions in the (C-i-C) statement to be the same activity – if the technician discovers a problem while connecting the service in the exchange, he/she contacts the DAC, who contacts the access seeker, and they try to resolve the problem, possibly by allocating another POI pair. No data is provided to indicate what proportion of services experience this problem, however if we assume that (as seems to be the same for ULLS) these problems arise in (C-i-C) of service connections, and resolution with the access seeker (or a decision that no resolution can be made immediately, so the order is placed in 'held' status) takes (C-i-C) minutes then, on average across all services, 1 - 2 minutes might be ascribed to this problem-solving function.

For these reasons I estimate that DAC involvement in LSS connections should be no more than 2 – 3 minutes on average across all services. While Telstra estimates their staff spend longer than this, It appears to me this is caused by an apparent lack of systems automation linkages between the LOLO (and ULLCIS) ordering systems and the other core provisioning systems and databases used within Telstra, requiring more manual transcribing of information between different applications and more manual looking up and comparing information held in different systems than should be necessary or efficient.

3.5.4. Discussion - IDS

There are a number of facets of the estimation of the IDS group involvement that appear to indicate the method and costing of the IDS group is not reasonable, in the sense that it may over estimate Telstra's actual cost, or be inefficient, and this may not reflect the efficient costs a different organisation would incur.

I note that the IDS group is claimed to cost (C-i-C) times the cost of the DAC group, yet handles only (C-i-C) times the number of transactions. This seems counter-intuitive, as the DAC group transactions are largely akin to a call centre environment, and the staff are performing manually the activity that automated systems have already tried and failed on. I expect DAC transactions to be much more labour intensive on average than the average 'Ticket of Work' handled by the IDS group, because as described by the (C-i-C) Statement and by the staff of the IDS during the tour, 'Tickets of Work' within the IDS group are largely handled automatically in software, while the IDS staff handle only the exceptions and overflows, 'cleaning' and verifying the subset of tickets with insufficient information in them, and monitoring the automated scheduling of the 'Connect' software system.

If we make a broad estimate that fully 20% of every ToW fed to the Connect system requires some form of manual intervention by the IDS group staff, then the IDS group is handling only (C-i-C) of the number of manual transactions per 'cost unit' than the DAC, with manual intervention requirements that may arguably be less onerous in terms of time per transaction.

I note that the total direct labour cost of the IDS is claimed by Telstra to be (C-i-C), which is then uplifted by indirect uplift ratios for the ULLS service totalling (C-i-C) to derive a total cost of (C-i-C). These are the same uplift factors applied to the field technicians performing exchange jumpering and I question whether this is also an appropriate uplift factor to be using for what is in effect an office worker group, not a field workforce, and where many of the 'on-cost' components must be different and in different proportions. I have the same reservations about the magnitude of the indirect uplift factor as expressed in the section dealing with labour rates. To the extent that we can assume the same methodology of calculation as for exchange technicians, if this leads to an estimated 'cost' of over 3 times salary for the IDS group, then I do not believe they represent efficient staff employment cost overheads, and Telstra is attempting to recover the complete total of their costs, and not just the efficient portion.

I further observe, in the absence of actual data from Telstra, that if I estimate the average salary level and direct on-costs of an IDS group member to be approximately $60,000, then the direct cost of (C-i-C) implies a group headcount of approximately (C-i-C) people – and the total ToW load at an average of just (C-i-C) tickets per day per person - and that is with a multi-million dollar state-of-the-art Connect software scheduling system doing most of the operational work. This seems like a very low ticket/staff ratio, and a very high staffing level for such a highly automated group.

While I do not have any further information on which to make an independent estimate of what the true efficient cost of providing this function might be, for the reasons stated above I am sceptical that the full claimed IDS group cost is both necessary and efficient in performing the described function for ULLS lines.

I am not an expert in labour rate economics or in the underlying structure of the IDS group beyond the information that has been provided by Telstra for this purpose. However, it occurs to me that an alternate method for costing the impact of the ULLS may be to estimate the cost that would be avoided by the IDS group if it were not required to handle ULLS orders, and/or LSS orders. The twelve month past number of ULLS ToWs ((C-i-C)) is (C-i-C) of the IDS group forecast volume. If the relationship between ticket volume handled and staffing levels was linear then a reduction of this proportion would imply a headcount reduction of (C-i-C), but the relationship between staffing levels and ToW volume should be a power-law reflecting better economies of scale as the volume grows, thus staffing levels should be relatively insensitive to a reduction of ToW volume by an amount this small. I calculate, if this reduction in ToW volume might justify a staffing reduction of one person, that this equates to an avoided cost of just (C-i-C) of direct cost per ticket, or (C-i-C) if Telstra's indirect uplift is applied.

As a ULLS order and a LSS order each are represented for the IDS as a single Ticket of Work I conclude the same 'cost' could also be allocated to LSS orders.

These are 'back of the envelope' calculations that involve many assumptions that only Telstra can provide actual figures and factors for, however without determining what the actual true cost might be, for all the reasons listed above I am of the opinion that the claimed cost of (C-i-C) per connection for the IDS group is not an efficient cost. To the extent that the IDS group handling of ToW tickets is more automated than the DAC group's transactions I would expect the per-ticket cost to be lower for the IDS group, and so use a figure of (C-i-C) going forward, with the qualification that this is not derived in any robust manner, but rather is roughly half the DAC cost per transaction and consistent with the 'avoided cost' method described above.

3.5.5. Conclusion

For the reasons outlined above I believe it is a reasonable estimate that the DAC group may be required for an average of 10 minutes for each Vacant ULLS connection to coordinate testing, plus approximately 2 to 4 minutes per line on average for validating manual pair allocations, giving a total involvement of approximately 12 to 14 minutes. This accords with Telstra's original estimate of (C-i-C) minutes, and so I conclude Telstra's original DAC time estimate is reasonable. Telstra's subsequent estimate of (C-i-C) cost attributable to the DAC activity is indicative of a derived hourly labour rate of around (C-i-C), which is very close to an independent estimate of our own, and so I regard (C-i-C) to be reasonable cost for the DAC component.

For In-Use ULLS and Transfer ULLS service provisioning I expect little requirement for testing at the completion of each service, and so I estimate the involvement of the DAC to require no more than 2 to 4 minutes per line, on average, and correspondingly a reduced cost should be attributed. For a LSS connection I find the same 2 to 4 minute average time per line for the DAC is reasonable, but for different reasons than for ULLS. Telstra's new method of estimating DAC costs does not facilitate deriving a direct labour rate that could be used to covert minutes to a cost value, so in the absence of a rate I assign the cost of this component to be approximately (C-i-C), by ascribing a labour rate of (C-i-C) per hour as a high estimate of DAC labour rate.

From my own understanding of the IDS environment and activities as described above, I conclude that Telstra's estimate of IDS cost per ULLS connection is not reasonable, however with the information supplied it is not possible to calculate a more reasonable figure with confidence. Combining these two group costs I therefore estimate the efficient 'Back of House' costs of IDS and DAC groups to be as follows:

Table 14 - Back Of House cost estimates for connections

	Vacant ULLS	In-use/Transfer ULLS	LSS
DAC	(C-i-C)	(C-i-C)	(C-i-C)
IDS	(C-i-C)	(C-i-C)	(C-i-C)
Total 'Back of House'	(C-i-C)	(C-i-C)	(C-i-C)

3.6. Combined ULLS Connection Cost Model – Conclusion

Based on my consideration of submissions and documents related to Telstra's ULLS Undertakings of December 2004 analysed above, my visits to Telstra exchanges and the Telstra DAC and IDS groups arranged by Telstra, and my own research and knowledge of the telecommunications industry as described above, I believe the following table to be a fair and reasonable summary of the efficient costs that would be incurred in performing the elements of Vacant ULLS Connections considered within this report:

Table 15 - Efficient Cost Elements for Single Vacant ULLS Connections (includes tagging and testing)

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Paras 3.1.3, 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Testing and Pair Tagging) at Customer Premises	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.4.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

For In-Use ULLS and Transfer ULLS connections which do not require a visit to the customer premises for testing (or tagging), and can be completed wholly within the exchange building and so will likely be batched together with similar services such as ADSL and LSS, and also require a much smaller portion of DAC time, I believe the following table to be a fair and reasonable summary of the efficient cost elements that would be incurred in connecting these services:

Table 16 - Efficient Cost Elements for Single In-use ULLS and Transfer ULLS Connections (no tagging or testing)

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Testing and Pair Tagging) at Customer Premises	N/A	N/A	$0.00	Para 3.4.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

As the amount of travel has reduced it is possible that a reduction in Telstra's Vehicle costs might also be justified for In-use ULLS and Transfer ULLS connections.

3.7. Combined LSS Connection Cost Model – Conclusion

For LSS connections, which will likely be batched together with activities for similar services that can be completed wholly within the exchange (such as ADSL connections and disconnections), and also require a much smaller portion of DAC time, I believe the following table to be a fair and reasonable summary of the efficient cost elements considered in this report that would be incurred in a LSS connection:

Table 17 - Efficient Cost Elements for Single LSS Connections

Cost Element	Time	Labour Rate	Cost	Basis
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)	Para 3.2.3
Labour Cost – Perform jumpering	N/A	contractor	(C-i-C)	Para 3.3.3
Back-of-house (DAC+IDS)			(C-i-C)	Para 3.5.5

As the amount of travel has reduced it is possible that a reduction in Telstra's Vehicle costs might also be justified.

3.8. Consideration of Multiple Orders

The cost elements for connections of ULLS and LSS services considered above have been obtained through considering the processes required to connect services ordered as individual connections. I have also been asked by the ACCC to consider whether a discount is appropriate for multiple orders, and how that discount might be determined.

For this section I consider the scenario of an access seeker placing multiple orders using the same system and largely the same process flows as for single connections. I do not consider the scenario of a very large number of connections performed in a separate project-managed process as envisaged by Telstra's 'managed network migration' concept, as the prior dedicated planning and special handling of these connections should permit different and optimised processes to be employed, with 'back door' bulk data interactions with core databases and IT systems, which have not been provided to me for this report.

3.8.1. Field Technician Economies for ULLS connections arising from multiple orders

Considering first the field technician activities in performing jumpering, I have already noted in section 3.2.2 above for ULLS connections that any opportunity to directly 'batch' multiple connections together would only be feasible for orders that originate at the same exchange, and have the same subscriber delivery date and time. Multiple orders that span differing exchange service areas, or are for the same exchange but for delivery on different days, could not result in further economies for Telstra.

Under Telstra's current method of allocating ToWs to field technicians, where each ToW is performed sequentially by a given technician, no further economies could be realised as the technician would be continually shuttling between the exchange and the successive subscriber premises.

I note that, since there is no prior service operational on the wire making up a Vacant ULLS line, there is no inherent urgency for all the activities to connect a ULLS to be completed within a short timeframe, provided the final activity occurs at the subscriber's required delivery date and time. It would be possible for a single technician to perform the exchange-based jumpering for multiple services, and then leave the exchange and complete any CAN-based jumpering at intermediate pillars, moving directly from one subscriber's premises to the next to complete each connection and perform testing and tagging. It is probable that the optimal travel path directly between subscriber premises would require less travel time overall than if the technician was continually returning to the exchange building between each job. The same travel time saving would be realised if two or more technicians were employed, one performing the exchange jumpering and one performing the field jumpering and customer premises activities.

This form of optimisation is not restricted to services for a single access seeker, nor is it restricted to ULLS – the same optimisation could be accessed by Telstra to connect multiple PSTN lines, multiple ULLS lines for different access seekers, or a combination of PSTN and ULLS lines for example, and as such is arguably already available to Telstra for its own services, and for ULLS without any explicit activity by the access seekers. It is directly comparable with Telstra's previous method of performing such work, with separate exchange technicians and field technicians.

The level of travel reduction that could be realised in this manner is difficult to predict, and a robust estimate would require extensive monte-carlo modelling taking into account the differing size, shape and population density distribution of each exchange service area, and different numbers of 'multiple services' to be performed in parallel. The cost element for 'travel to the exchange' would be reduced to one trip divided into however many services could be performed together. The cost element associated with the (C-i-C) minutes for the technician to travel from the exchange to the customer premises would also be reduced, by a highly variable amount depending on how the customer premises locations were clustered within the whole exchange service area. If this resulted in an overall travel reduction of (C-i-C), then the resultant time saving would be in the order of (C-i-C)minutes per service (depending on the band). Equivalently the cost saving (using my estimate of efficient labour costs) would be in the order of (C-i-C) per connection – but this is by no means certain to be achieved in the majority of possible scenarios.

There would be a concomitant negative effect, such as a reduction in flexibility with this approach. The field technician would need to 'download' and commit at least a full half-day's jobs to achieve these savings and to optimise the travel pattern. Should he or she encounter difficulties with one of the jobs the subsequent jobs would be delayed, and would be difficult to assign to an alternate technician – at which point any efficiency savings are likely to be lost as the alternate technician spends time determining which portions of the remaining half-completed jobs have been done and which are outstanding.

On the whole, while there may be savings that could be achieved through performing multiple ULLS connections in parallel, it is not possible to estimate with any precision the amount of such savings for the ULLS across all exchanges within the parameters of this report and with the information provided, and to do so will require further study. Considering that Telstra, presumably through robust internal studies, have determined that that method was less efficient over all services than the current method of allocating discrete end-to-end jobs to individual technicians, I feel it is probably unlikely that significant savings are available for the general case of multiple, otherwise unrelated, orders being submitted by an access seeker.

3.8.2. Field Technician Economies for LSS connections arising from multiple orders

I have previously argued that multiple LSS orders for the same exchange and for the same delivery date/time would be scheduled back-to-back by the Connect system, along with any other activities for other services that can be completed without leaving the exchange building. This holds regardless of whether these were ordered by different access seekers or are multiple orders from the same access seeker.

Within the exchange performing the jumpering, I consider there could only be savings for running multiple jumper wires through the MDF if both ends of those wires terminate on the same set of POI blocks. This is not true of the jumper wire joining the access seeker's equipment with the subscriber line termination, as the subscriber line terminations are likely to be scattered throughout the Main Cable side of the MDF. The jumper wires joining the access seeker's equipment to Telstra's PSTN equipment also are unlikely to have this property to a significant extent, as the PSTN equipment terminations will also be scattered throughout the (usually) large numbers of blocks provided for this purpose over a large area of the equipment side of the MDF.

On this basis I do not currently believe there are further optimisations for field technician activities that could be realised for multiple LSS orders from the same access seeker, beyond those outlined previously for single connections.

3.8.3. “Back-of-house” Economies arising from multiple connection orders

Telstra’s ‘back of house’ activities are largely concerned with processing and scheduling the field work (in the case of the IDS), and with providing a centralised resource to handle unforeseen issues arising during the connection and, in the case of the ULLS, mediating between the field technician and the access seeker for testing (in the case of the DAC). Both functions are centralised, so there is no requirement for multiple orders to be correlated with the same exchange area for extra efficiencies to be realised.

After looking through the activities and processes ascribed to the IDS and the DAC workgroups, I have not identified any manual steps that might be merged or eliminated for multiple orders from the same access seeker. Each group operates in an essentially transactional manner, with each call or ToW requiring little or no knowledge of other activities to be dealt with.

For this reason, I have not identified any opportunities for discounts for reduced ‘back of house’ activities arising from access seekers submitting multiple ULLS or LSS orders.

4. ULLS Cancellations and Disconnections

4.1. Facts and Submissions

Telstra estimates in its ULLS cost model[38] that the cost elements factored into the ULLS disconnection cost are as follows:

Table 18 - Telstra cost model for ULLS Disconnections

Cost Element	Time	Labour Rate	Cost
Labour Cost – travel to exchange	0	(C-i-C)	0
Labour Cost - Perform jumpering	(C-i-C)minutes removing jumper wire	(C-i-C)	(C-i-C)
Data Activation Centre (DAC)	(C-i-C) minutes updating relevant systems	(C-i-C)	(C-i-C)
		Total	(C-i-C)

While these costs are not directly levied on disconnection, they are factored into calculations of the lifecycle cost of a single connection, and used with the estimated cost of making the connection to justify the connection charge in the ULLS Undertaking.

Telstra believes “there is no necessity to disconnect ULLS in a timely manner”[39], hence the travel cost to do so is set to zero as it is effectively ‘batched up’ with a different job to be performed at that same exchange in the future. However, it is claimed that at a stage in the near future it is necessary to physically disconnect the ULLS in the exchange from the access seeker’s POI blocks, since at any time after the ULLS is cancelled and the various sections of copper cable are returned to the pool of “available pairs”, portions of the former copper cable path may be re-used for other services.

Telstra’s (C-i-C) Statement details the steps undertaken in disconnecting a ULLS[40]. In particular, she estimates the time required to remove the jumper to be approximately (C-i-C) minutes.

38 Telstra 2005 “Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004”, Para. 13 and Annexure B

39 ibid, Para. 11

40 Telstra 2005, “Statement of (C-i-C)”, 25 May 2005, Para. 9 and 10, pp11, 12

Telstra's (C-i-C) statement in particular states[41] regarding disconnection:

> (8) If Telstra were to leave the ULLS in place:
>
> (a) Access Seeker would be able to continue to use it without Telstra's knowledge. In that regard, it would be very difficult for Telstra to check such use by the Access Seeker
>
> (b) Telstra's systems would not identify the copper pair as being available, which means that the relevant copper pairs would not be available for use by another customer

Telstra's (C-i-C) Statement (confirmed in the Supplementary Statement) indicates the activities that occupy 5 minutes of DAC time[42].

Macquarie Telecom states that it "does not believe that it is necessary to physically disconnect a ULLS at the Telstra exchange" until a subscriber wishes to obtain a ULLS from another provider[43], and thus "there are no, or negligible cost of disconnection of a ULLS".

Optus argues similarly[44] that there is no need for the jumper wire to be removed, and that when a new service (from any provider) is required to use the customer line side pair, the installation charge already factors in costs associated with disconnecting and removing the previous provider's services and jumper.

Gibson Quai-AAS estimates the time to disconnect a service by removing the jumper in the event a ULLS is cancelled to be approximately 1.5 minutes. In the event that the customer is transferring to another service provider then the jumper wire could be disconnected from the old access seeker's POI and reconnected (if close enough) to the new access seeker's POI in 3 minutes. If the old jumper wire was not long enough then the old jumper wire would be removed (1.5 minutes) and a new jumper wire run to the new provider's POI (5.5 minutes). In either case the new access seeker's installation fee covers the removal or relocation of the previous jumper wire, and no cost would be attributable to the former service provider, as also argued by Optus.

Optus further observes that Telstra does not generally remove jumpers for its own disconnected services unless the cable termination needs to be re-used, and that Telstra

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[41] Telstra 2005, "Statement of (C-i-C)", 26 May 2005, Para 8:

[42] Telstra 2005, "Statement of (C-i-C)", Para. 9 & 10, pp8

43 Macquarie Telecom June 2005 "Response to Telstra's Undertaking on the Unconditioned Local Loop Service", pp14

44 Optus 2005, "Optus Submission to ACCC on Telstra's ULLS Undertakings", Para 9.32 – 9.35

maintains the connection for a disconnected service to its own switch to provide a 'soft dial tone' so a new potential subscriber can use the line to contact Telstra to arrange re-connection of the service. If Telstra adopted the same practice for cancelled ULLS services, then alternative providers could also provide a 'soft dial tone' connection to itself for the benefit of any new customer in the same premises.

During the Lonsdale exchange visit Telstra confirmed that they do not remove PSTN jumpers when the underlying service is cancelled, they keep the line connected to the exchange voice switch and activate 'soft dial tone' for emergencies and to access the Telstra customer service. I was told Telstra does remove jumpers for ADSL and LSS when those services are cancelled.

4.2. Observations

In considering whether actual disconnection is required, I find it useful to explicitly separate the concept of "Cancellation", whereby an operating service is flagged to the access provider as no longer being required after a future date, and "Disconnection", which is the physical act of un-jumpering and removing the jumper wires that were necessary for the service to operate, occurring some time later. The word 'Disconnect' is often used interchangeably in submissions in both contexts, leading to subtle confusion. We note the ACIF documents relating to ULLS use the terms 'Cancellation' and 'Handback', and not 'Disconnect'.

Considering the (C-i-C) Statement, I find the second objection 8(b) that, if Telstra were to leave the ULLS jumper in place, then Telstra's systems would not identify the copper pair as being available for use by another (future) customer, as being implausible. If a ULLS service is 'cancelled' or 'handed back', and the cancellation is processed through Telstra's systems and marked as completed, then the Main Block pair, access seeker's POI pair and the various segments in the copper path from the exchange to the end customers premises would surely be marked as 'available' in Telstra's systems, whether or not the jumper in the exchange had actually been removed or not. In this sense it is no different from a cancelled (but not disconnected) PSTN service that Telstra supplies itself.

The other objection (8(a) of the (C-i-C) Statement) is that, if the jumper were left in place after a ULLS was cancelled the access seeker would be able to keep using it to provide a service without Telstra's knowledge. This statement is true, but unlikely to occur in practice, for the reasons that:

1. Once the ULLS service is cancelled, if there was a problem with the line then the access seeker would be unable to report a fault or obtain any restoration service in relation to the cancelled ULLS, as Telstra would not accept a fault report for an inactive or cancelled service.
2. Once the service is cancelled, and all the line components in the exchange and in the field CAN were marked ‘available’ in Telstra’s systems, at any stage after that moment Telstra’s systems may re-allocate portions of that copper path for use in other future services, and the access seeker could expect the ULLS service to be disconnected without warning at any time with no recourse.

It would be a foolish access seeker that knowingly attempted to maintain a service with their end-customer using an underlying ULLS service subject to unpredictable and irreversible disconnection, and I submit that it is not reasonable to assume that access seekers will act in this manner.

Leaving the cancelled ULLS jumper wire in place until either the access seeker POI termination or the Main Cable termination in the MDF is re-allocated and re-jumpered (at which time the jumper wire would be removed) would not lead to a build-up of unused jumper wires within the MDF since, at any moment, there would only be at most one jumper wire per access seeker POI termination. Those jumper wires remaining within the MDF after cancellation and before disconnection would not be completely useless, since they would allow the access seeker in the meantime to also provide soft dial tone and access to its own Customer Service centre, in the same manner as Telstra supplies itself. This would also provide a net benefit to the community in emergencies, since the line will be available for emergency calls through the access seeker, as opposed to the situation if the jumper wire was explicitly removed where the line would be rendered inactive.

Whether the jumper wire is removed or not, I am of the opinion that there should be no provision for DAC labour involvement in a cancellation, since the act of updating systems after receiving a cancellation notice for a ULLS via ULLCIS should be a purely mechanical and automated set of systems interactions and database updates with no human decision making required, and no scheduling of any actual human activity required – it is inefficient for this activity to be a manual activity, as described.

With the ULLS cancellation processing requiring only database updates and no field activity to be scheduled, there would be no IDS costs incurred, and so the total costs of processing a ULLS disconnection should be subsumed within the Operations and Maintenance costs of the ULLS-specific IT systems, which are not considered by Telstra to form part of the cost-base for a ULLS disconnection.

If there was a cost to be allocated to removing the jumper, then for an average exchange with an MDF approximately 30 metres long, and assuming a slow walking pace of 0.75 metres per second, then the act of finding the access seeker POI termination, disconnecting the jumper wire, walking to the Main Cable pair termination, disconnecting that end and then pulling out the free wire I concur with the 1.5 minute estimate of Gibson Quai-AAS. At the labour rate calculated previously, this amounts to (C-i-C).

4.3. Conclusions

For the reasons outlined above I agree with the various access seeker submissions that there is no compelling reason to physically disconnect a ULLS jumper after the ULLS has been cancelled, and that the act of performing this disconnection and removal of the jumper should be incurred when a new service is provisioned to one of the terminations, in which case the disconnection will be an incidental activity of the connection of the new service.

For these reasons I believe it is not reasonable for Telstra to include any allowance for the cost of cancellation activity or disconnection activity within its connection charge, since it will be recovered within the connection charge of whichever new service eventually re-uses one or both of the MDF end-points of the jumper and results in the previous jumper being disconnected and removed.

As a ULLS cancellation should essentially be performed as automated IT database updates with no explicit labour costs, there are no further discounts that could be obtained through submitting multiple disconnection orders in a batch.

5. LSS/SSS Cancellations and Disconnections

Telstra proposes to charge a SSS 'disconnection charge' and in their SSS cost model[45] they estimate that the main cost elements factored into the LSS disconnection cost are as follows:

Table 19 - Telstra cost model elements for LSS Disconnections

Cost Element	Time	Labour Rate	Cost
Labour Cost – travel to exchange	(C-i-C)	(C-i-C)	(C-i-C)
Labour Cost - Perform jumpering	(C-i-C)	(C-i-C)	(C-i-C)
Back Of House (IDS + WCSG)			(C-i-C)

The areas of contention within the various submissions from Telstra and the access seekers for individual SSS cancellations and disconnections revolve around five components, being:

1. Whether and when a Disconnection is required
2. Labour Rate
3. Time required in travel to the exchange
4. Time required to perform exchange jumpering
5. Time required by the 'Back of House' groups to disconnect a service

These are treated separately below.

As with ULLS, in considering whether actual "disconnection" is required, I find it useful to explicitly separate the concept of "Cancellation", whereby an operating service is flagged to the access provider as no longer being required, and "Disconnection", which is the physical act of un-jumpering and removing the jumper wires that were necessary for the service to operate, occurring some time later. The words 'disconnect' and 'cancel' are often used interchangeably in submissions in both contexts, leading to subtle confusion.

[45] Telstra 2005 "Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004", Para. 13 and Annexure B

5.1. When is LSS Disconnection Required

5.1.1. Facts and Submissions

Gibson Quai-AAS lists three circumstances where a LSS service might be cancelled, summarised as follows:

1. A subscriber no longer wants a broadband service, yet wants to retain the Telstra PSTN service. They state that, in this case, the technician could implement this by moving one end of a jumper wire (if long enough) or installing a new jumper wire to directly connect the Telstra PSTN termination point to the subscriber's Main Cable termination point. The other jumper wire is not mentioned, however as the PSTN end would be disconnected and displaced, presumably it would be removed.
2. A subscriber no longer wants a broadband service or a PSTN service. They state that, in this case, both Telstra and the access seeker would electronically disable their respective equipment ports. If Telstra wanted to physically disconnect the jumper wires, then Telstra should simply remove 'disconnect links' at the access seeker's equipment termination points, while leaving both jumper wires intact within the MDF, allowing re-use at a later date.
3. A subscriber wants to take a broadband service from another provider. They state that in this case the two jumper wires to the first access seeker's equipment should be disconnected and moved across to two corresponding positions at the new access seeker's (or Telstra's) equipment, and that this activity should be done as part of the new provider's connection, and no additional cost should result.

Unlike a cancelled ULLS service, Telstra believes it must disconnect a LSS service immediately a cancellation is received, otherwise the integrity of the PSTN voice service may be compromised and the access seeker might use the service after it has been cancelled[46]:

Table 20- paragraphs on LSS Disconnection extracted from Telstra Submission in support of the LSS Connection and Disconnection Charges undertaking

17	When the request to disconnect the SSS is received by Telstra, Telstra must send its staff to the relevant exchange in order to jumper the cable. This cannot wait because: (a) Telstra is under an obligation to continue to provide a voice service on the line; (b) unless the cable is jumpered, that voice service is rendered through the SSS access seeker's equipment; (c) once the SSS is no longer required by the access seeker, the access seeker has no obligation to maintain the equipment nor to leave it in the exchange; (d) if the equipment is either faulty or removed, then the customer will loose his or her Telstra voice service. Therefore in order to prevent the loss or degradation of the voice service, Telstra jumpers the cable immediately after it receives a request to disconnect the SSS and does not wait to see if a SSS connection request is made by another access seeker.
…..	
19	When the end user disconnects the underlying access service, Telstra necessarily incurs the cost of disconnecting the SSS. Unless this is done the SSS remains operative effectively allowing the access seeker to provide both data and voice service over the full copper path. Additionally, the manner in which Telstra's systems have been configured means the disconnection of the access service would mark the cable pair as being available for reallocation, remove the cable record from the service assurance systems as an active pair and cease all billing, including SSS billing to the access seeker.

Telstra states that there is no industry agreed process to facilitate the migration of SSS between carriers (including Telstra), and that a disconnection is required even if the subscriber is transferring to a new service provider as the request to disconnect the service is not provided at the same time as the new request to connect from the new provider:

[46] Telstra 2005 "Submission in support of the ULLS Connection Charges Undertaking dated 13 December 2004", Para. 17, 19

Table 21- paragraphs on LSS Disconnection extracted from Telstra Submission in support of the LSS Connection and Disconnection Charges undertaking

16	The disconnection costs are necessarily incurred by Telstra even if the end user customer chooses to acquire services from another SSS access seeker. This is because the request to disconnect the old SSS and connect the new SSS are not provided to Telstra simultaneously[4].
18	There is no industry agreed process to facilitate the migration of SSS between carriers including the return of the end user to Telstra. Since the disconnection and possible reconnection process is end user driven and orders are lodged with providers at different times, little opportunity presently exists to co-ordinate the disconnection and reconnection orders. This is particularly problematic when a service is returned from an SSS access seeker to Telstra as Telstra's retail front of house staff have no visibility of the previously supplied SSS service.
[4] If an access seeker submits an application for SSS but an existing SSS was still in place then the request would be rejected.	

Telstra's (C-i-C) Statement details the steps undertaken in disconnecting a LSS[47]. In particular, she estimates the time required to remove the jumper to be approximately (C-i-C) minutes.

Telstra's (C-i-C) statement details the steps that a WCSG (Wholesale Customer Service Group) staff member performs to effect a LSS Cancellation[48], which is estimated to take take approximately (C-i-C) minutes per SSS connection. Telstra uses (C-i-C) minutes within its undertaking cost model, using the uplifted CFW5 labour rate, to arrive at a cost estimate of (C-i-C) for the 'Back of House' component. In Telstra's Supplementary Submission they further include the cost of the IDS group within this activity[49] without seeking to increase the cost component in the undertaking, instead leaving it as an underestimate of their true 'back of house' costs.

5.1.2. Discussion relating to Transfer Between Access Seekers

Telstra argues that there is no transfer process by which a subscriber's service can be transferred from one access seeker to another, and therefore it must disconnect each

[47] Telstra 2005, "Statement of (C-i-C)", 25 May 2005, Para. 9 and 10, pp11, 12

[48] Telstra 2005, "Statement of (C-i-C)", 30 May 2005, Para. 5 – 7.

[49] Telstra 2005, "Supplementary Submission in support of the SSS Connection an Disconnection Charges Undertaking dated 13 December 2004", Para 8-13

service when cancelled regardless of whether a subsequent order arrives for the same subscriber address.

This is disingenuous as Telstra is responsible for the ordering and provisioning processes relating to LSS, as well as the IT systems that implement them, and hence is the organisation responsible for there not being a transfer process in the first place.

The industry, including Telstra, has recognised with other similar services that a process to transfer a subscriber service from one carrier to another in one step is a desirable outcome.

In 2003 Telstra created the 'Fast Transfer' process for Service Providers using Wholesale ADSL - In their press release announcing the process[50] they stated:

> **Telstra Wholesale delivers new one-step DSL transfers – 14 April 2003 -** Reference Number: 109/2003
>
> **Telstra Wholesale today announced a new one-step transfer process for DSL broadband users seeking to change service providers.**
>
> Managing Director, Telstra Wholesale, Ms Deena Shiff, said the new system would help boost competition in the DSL broadband market by making transfers faster, simpler, and more secure.
>
> "People will be able to switch service providers on the Telstra DSL network by making a single request to the new provider they have chosen," she said.
>
> Previously, customers wishing to change had to request a disconnection from their existing provider and then a reconnection from their new one. Under the new system, if both their existing and new DSL providers are participating in the new scheme, a customer will simply need to complete one customer authorisation form. The new service is open to all Telstra Wholesale customers who want to deliver this service to their customers.
>
> Telstra Big Pond will be participating in the new process.
>
> "Broadband take-up has been growing rapidly, with Telstra Wholesale's connections increasing by 176 per cent in the nine months to the end of February 2003. As demand grows with healthy competition, demand for transfers will also increase. Most of our wholesale customers are enthusiastic about participating in this new process," Ms Shiff said.
>
> Before changing providers, customers should check the terms and conditions of their existing contract. Newly chosen service providers will inform customers of the expected timing of the transfer process so they are prepared for any potential downtime.

Telstra describes the current process as "The DSL transfer process provides an efficient one step mechanism for moving DSL subscribers/customers between DSL service providers rather than the more time consuming disconnection/reconnection process"[51].

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[50] Telstra 2003, "**Telstra Wholesale delivers new one-step DSL transfers", Press Release ref 109/2003, viewed online on 18 October 2005 at http://www.telstra.com.au/abouttelstra/media/mediareleases_article.cfm?ObjectID=27001**

For the ULLS, the telecommunications industry through the ACIF working groups – with Telstra as a major contributor – created the Transfer ULLS process[52] whereby a ULLS may be moved from a 'losing access seeker' to a 'gaining access seeker' on the basis of a Transfer ULLS order from the gaining access seeker. As with ADSL, the end subscriber need only deal with the chosen new access seeker, and not first cancel the service with the previous provider, and the transfer from one provider to another is effected in a single changeover.

The absence of a 'transfer process' is clearly inefficient, in that an activity that could be performed within a single exchange visit must be split across two separate exchange visits, and so the industry as a whole incurs twice the costs it should otherwise incur.

It is also clearly not in the interests of end-users, since the extra cancellation fees will likely be passed through to end-users either directly or indirectly, and under a transfer process there should be no cancellation charges to be passed on. The end-users must also currently endure a substantial period of time between providers where they are without broadband service at all (measured in days and weeks), compared to a few minutes that would be experienced during a transfer from one provider's equipment to another. Both these factors form unnecessary barriers to competition between providers.

Precisely the same benefits to end-users as described by Telstra above for ADSL would arise from a similar process applied to LSS transfers, including transfers both to and from Telstra's ADSL equipment.

Regardless of the reasons that Telstra has not yet created a LSS transfer process, it is clear that Telstra has enjoyed the benefit of at least two consequences of such a process not being available to access seekers:

(a) In a LSS Transfer situation it is reasonable that the activity of disconnection from the losing access seeker would be subsumed within the process of connecting the service to the gaining access seeker, and hence only the connection charge could be recovered from the gaining access seeker, as is the case with Transfer ULLS and ADSL Fast Transfer connections. Without

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[51] online at http://www.telstrawholesale.com/products/access_broadband.htm, viewed on 18 October 2005.

[52] ACIF 2005, "C569:2005 Unconditioned Local Loop Service – Ordering, Provisioning And Customer Transfer", Section 11.4, pp28

the process, as envisaged by the Undertaking, Telstra has been able to recover extra charges from the losing access seeker. To the extent that Telstra may believe the disconnection charge is only recovering their efficient costs of performing the disconnection, at best this is cost-neutral to Telstra but significantly increases the customer life-cycle cost of a LSS connection to the access seekers and so is inefficient to the detriment of access seekers more than Telstra.

(b) To the extent that a Telstra ADSL service is equivalent to a LSS service that Telstra provides to itself on its own DSLAMs, Telstra appears to have the most to lose from instituting such a process, as it has the overwhelming market share of services – at 30 June 2005 over 1.5 million subscribers on Telstra ADSL DSLAMs[53], compared to less than 100,000 connected to access seeker DSLAMs. Telstra would reasonably expect to be a net loser of connections if a "LSS transfer process" made it easier for subscribers to change to an alternate provider's infrastructure.

There would be no significant barrier to industry acceptance of such a process within the access seekers – as a starting point, the same processes and principles underpinning the ADSL Transfer process that has been accepted by 130 Wholesale ADSL ISPs provides a suitable model. There should also be little technical impediment or time required to implement such a process, given that the process flows, and at least a portion of the interface forms and screens that will be required, are already part of the LOLO provisioning interface by virtue of the ADSL Transfer process. It should be relatively straightforward to utilise these to implement the same process for the LSS at little cost to Telstra or access seekers.

5.1.3. Discussion relating to Disconnection

For cancellations that are NOT part of a transfer from one service provider to another, Telstra claims that it must perform this disconnection as soon as possible, for two reasons:

One reason is that the access seeker might continue to use the service beyond the cancellation period and that there is no mechanism Telstra could reasonably use to monitor whether the service continues to be used or not.

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[53] Telstra 2005, "Telstra posts solid result in increasingly challenging market", Press Release 246/2005.

While this is true, it is the same argument Telstra provides for disconnecting a ULLS service after a cancellation, and I contrast the immediacy requirement for LSS with that for the ULLS disconnection, where "the removal of the jumper cable can take place some time after the ULLS is disconnected" (and I interpret this as being more correctly read as "…after the ULLS is cancelled"), and the same concern about the service continuing to be used is expressed.

I am of the opinion that it **is** necessary to disconnect and remove the jumper wires at some stage after a LSS cancellation, as unlike for a ULLS line, the continuation of underlying PSTN service prevents the access seeker from experiencing any risk that the rest of the copper path will eventually be disconnected. However, as Telstra proposed for a ULLS disconnection, this need not be scheduled immediately, and can be scheduled to be done when a technician is in the exchange for other tasks. The uncertainty in timeframe (but certainty that disconnection will nonetheless occur) before actual disconnection will be sufficient to prevent reasonable providers from attempting to continue to provide a service. For this reason, no travel time cost should be incurred specifically for the LSS jumper wire disconnections.

The second reason Telstra believes it must disconnect immediately is that, if the LSS jumper-wires are not removed, the PSTN service would still operate through the access seeker's equipment, which the access seeker might remove or which might become faulty and compromise the PSTN service.

While theoretically possible, it is unlikely that either circumstance would actually affect any service in the short term until the jumper wires are disconnected.

The access seeker equipment components that the PSTN service operates through are 'passive splitters' – relatively simple devices, composed of simple unchangeable components that do not rely on power to operate, and that will continue to carry the PSTN service whether the access seeker's equipment is powered or not. Given the splitters will have been successfully carrying the service and operating in the period prior to the service cancellation, there is no reason to suppose that they are likely to spontaneously develop any fault within the period immediately after the service is cancelled and before actual disconnection – the MTBF (Mean Time Between Failure) for such devices is typically measured in years and decades.

As for the access seeker removing the devices, we note that typically these are deployed in ‘banks’ with multiple services (currently between 8 and 24 depending on manufacturer) being provided by a single module – unless the service being cancelled is the only remaining service on the module, the module will not be removed.

Finally we note that Telstra has some contractual requirements built into its LSS Undertaking (Clause 4.1) for the access seeker not to interfere with the underlying PSTN service, and that this concern of Telstra could be mitigated by making this clause continue to apply for a reasonable period beyond the service being cancelled. It is also usual for one or more clauses to be incorporated within the ”Facilities Access” contract preventing the access seeker from interfering with other services provided by Telstra or other access seekers. Telstra would usually have recourse under those provisions against any access seeker that did enter the exchange and physically remove their equipment before the LSS jumper wires had been restored. It is my understanding that Telstra also typically requires prior written notice of any access to the exchange and any modifications to access seeker’s equipment, including removal, and has the ability and right to refuse or supervise access if it feels that the access seeker might remove or disconnect equipment or interfere with other services, including before it has had a chance to restore any LSS jumpers that had not been restored.

It is far more likely in my opinion that the more common scenario would be for the access seeker to attempt to re-use the ports on its equipment for a new service, before Telstra has had an opportunity to re-jumper and free up the splitters. This scenario is already handled within the workflow for a new connection, whereby if a field technician finds the access seeker’s termination already has a jumper wire in it, he or she currently will call the DAC to resolve this with the access seeker. This situation could become more common if the jumper wires were left in place for a longer period. I do not believe this is a serious impediment, as the access seekers can easily work around this by quarantining a cancelled port for a month or two before seeking to re-use it for a new service.

For these reasons, in my opinion the LSS service need not be disconnected immediately a cancellation is received, but it should be disconnected at some time later (within one month would be reasonable) when this can be scheduled to coincide with a technician visiting the exchange for other reasons.

5.1.4. Conclusion

For the reasons set out above I believe that a “LSS transfer process” would provide an efficient mechanism for end-users to move from one service provider to another and the lack of such a process currently causes access seekers to incur costs over and above the efficient costs they would be subject to when a subscriber leaves the service provider for another if an "LSS transfer process" was in place. With a LSS transfer process the activity of disconnecting the old service would be an integral part of connecting the LSS with the new provider, hence, no disconnection fee should apply when a subscriber transfers to a new network provider.

For cancellations that are not part of a transfer to another service provider, I believe there is no justification for charging for travel time, as the disconnection can be effected at a later date when the technician is at the exchange for another task.

5.2. Costs of LSS Disconnection

5.2.1. Facts and Submissions

Telstra indicates in its Undertakings submission[54] that a DAC component covers "updating relevant systems" which takes 4 minutes to perform. In their response to the Commission's Discussion Paper they elaborate that this is actually performed by the Wholesale Customer Support Group (WCSG), not the DAC[55]. No update to the labour rate was submitted. Telstra relies on the (C-i-C) statement, which states approximately (C-i-C) minutes are required for the following activities:

> 5. Every time an SSS is sought to be disconnected by an Access Seeker, the WCSG logs onto Telstra systems to:
>
> (a) Check the relevant SSS is being billed to the Access Seeker who is seeking its line disconnection;
>
> (b) Raise an order in Telstra's systems to delete the SSS product codes; and
>
> (c) Create a ticket of work for the field force workgroup to complete the disconnection work necessary at the exchange.
>
> 6. The WCSG then updates LOLO with the order details.

In their Supplementary Submission Telstra includes a component of IDS costs within the 'Back of House' cost.

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[54] Telstra 2005, "Submission in support of the SSS Connection and Disconnection Charges Undertaking dated 13 December 2004", Annexure B, Para. 1 (f)

[55] Telstra 2005, "Submission In Response to the ACCC's Discussion Paper In Respect of SSS Dated March 2005", Para. 35

5.2.2. Observations

As with a ULLS disconnection, Telstra provides no justification for using CFW5 Field Technician labour costs and up-lift ratios for activities performed by the WCSG, which is not a Field Technician group or work environment and would be expected to have significantly different remuneration levels, supervision ratios and overhead costs and ratios.

In my opinion the WCSG activities described should have been completely automated, and would have been automated by an efficient operator when the interactions between the LOLO system software and the other core Telstra systems were first developed. The LOLO system uses usernames, passwords and Public Key Encryption (PKE) technology to authorise and authenticate users, so the system must know and record which access seeker submitted each SSS cancellation order, and should therefore be able to validate that the line in question is already being billed to the same access seeker automatically. The remaining activities – deleting the SSS product codes, raising the field workgroup 'Ticket of Work', and updating LOLO with order details and statuses – appear to not require any decision making processes, so should also be automatically triggered in software by the LOLO order. The whole process could and should be completed with no requirement for human interaction on the part of the WCSG.

Therefore no charges based on WCSG labour costs should be required for a LSS disconnection.

Telstra's inclusion of IDS costs is valid in my view, however as outlined in Sections 3.5.4 and 3.5.5 I believe their estimate of IDS cost of (C-i-C) per LSS ToW is an over-estimate of efficient costs. My estimate of efficient IDS labour cost for a LSS ToW is closer to (C-i-C).

5.2.3. Conclusions relating to LSS Disconnection Cost

As outlined above, in my opinion the efficient cost of handling and performing a LSS disconnection (when this is required from a LSS cancellation that is not a transfer of service to a different carrier) is the cost of the technician performing the jumpering within the exchange, restoring the service to a standard PSTN connection, combined with 'back of house' costs of IDS group scheduling the Ticket of Work.

The efficient cost to perform the exchange jumpering is derived from the quotations by third-party contractors to perform this activity, uplifted as described previously to provide for overhead costs related to supervision and contract management of the contractors.

The travel component should be set to zero as, in my opinion, the disconnection jumpering could be efficiently performed at a later date when the opportunity arises when a technician attends the exchange to perform other work, as Telstra modelled for a ULLS disconnection.

The (C-i-C) minutes of manual systems lookup and data entry performed by the WCSG should not be performed by a person, but should instead have been automated in software, and so costs based on labour for this function should not be recovered here, as this may constitute double-dipping with the recovery of the IT development capital costs.

Thus, I believe the following table to be a fair and reasonable estimate of the efficient costs that should be incurred in disconnecting a LSS service that is not being transferred to another service provider, for the elements considered within this report:

Table 22– Summary of Efficient Cost Elements for a Single LSS Cancellation and Disconnection (not transfer)

Cost Element	Time	Labour Rate	Cost	Reference
Labour Cost – travel to exchange	N/A	N/A	$0.00	Para 5.1.4
Labour Cost - Perform jumpering		Contractor	(C-i-C)	Para 3.3.3
Back-Of-House (IDS)	N/A	N/A	(C-i-C)	Para 5.2.3

With regard to possible discounts for multiple LSS cancellation orders being placed, I can not see any opportunities for further efficiencies to be realised over and above these costs.

6. Project Brief from ACCC

Part B: Assessment of the operational and technical assumptions used in Telstra's cost models for the ULLS and LSS undertakings

This part of the brief relates to the assessment of Telstra's undertakings lodged in December 2004 in relation to the ULLS and LSS, particularly the assumptions which underline the model used by Telstra to support its proposed price charges and non-price terms and conditions.

The ULLS undertakings relate to the monthly and connection charges Telstra proposes for the ULLS and they replace the (rejected) November 2003 ULLS undertakings. The LSS undertakings relate to the monthly, connection and disconnection charges proposed by Telstra for this service. These also follow a Commission decision to reject an earlier September 2003 undertaking in relation to the LSS.

Information provided in Part B may also be used by the Commission in its consideration of the access dispute between Primus Telecom and Telstra in relation to the LSS, under Part XIC of the *Trade Practices Act 1974*. The access dispute only relates to the connection and disconnection charges pertaining to the supply of the LSS from Telstra to Primus.

More specifically, the ACCC seeks the following information in relation to connection and disconnection charges:

- what, technically and operationally, is involved in the connection and disconnection of the ULLS and LSS;
- an assessment of the technical and operational assumptions used to support the calculation of various cost factors which, when totalled and combined, yield charges of $90 for connection (ULLS and LSS) and $90 for disconnection (LSS only). For example, the time it should reasonably take for a technician to make a connection at an exchange and the time a technician might reasonably take to travel to an exchange for that connection;
- the circumstances under which a connection and disconnection charge would be appropriate, noting issues raised in relation to this in the context of the LSS arbitration, including whether it would be appropriate to levy a disconnection charge for the LSS; and

- whether a discount on multiple orders is appropriate and, if so, how might such a discount be determined.

7. CV for Paul Brooks

Dr Paul Brooks

Technology Director

BSc (Hons) Physics & Computer Science, University of Adelaide

PhD Astrophysics & Optics, UNSW

Foundation Member, Internet Society of Australia

Competencies

Paul's expertise in telecommunications design, planning and operation has been forged through a number of executive and consulting appointments within the Australian Internet and telecommunications industry. His practical and pragmatic knowledge of communications protocols, leading equipment suppliers, carriers & service providers and the Australian regulatory environment has assisted many organizations build critical services.

Paul has extensive hands-on experience in Broadband Access and data networking, having designed and built networks based on ATM, Frame Relay, Gigabit Ethernet, IP, either directly or through wholesale/other carrier services and lead implementation teams for carriers and ISPs. In Australia most of these have also been based on Wholesale products from other carriers such as Telstra Unconditioned Local Loop (ULLS) and various DSL flavours, and included negotiating access conditions and working through regulatory concerns.

One of the founders of Consultel BWP, he has been involved in a diverse range of projects, from small, such as assisting a leading Australian DSL network builder in its early days to understand the options and intricacies of deploying telephony services over broadband networks – to large - engaged by Telstra's NDC division to work on very dense broadband network designs in China and India, and developing a national $130 million DSL network.

Experience

Paul has been engaged to advise a number of respected enterprise and telecommunications organisations, including:

- A Voice over Broadband study for NEXTEP Networks;
- A Voice and Data Communications Strategy and subsequent procurement project for a new WAN provider and IP_PBX systems for Southcorp Wines;
- Data Networks integration strategy for TABCORP and TAB Limited;
- A dense city-wide broadband network design in China for NDC;
- Acting as interim CTO for Flowcom Ltd and Macrocom Ltd
- Network Integration and design advice for DDA, bringing the former NTLT, Flowcom and Macrocom networks together

Prior to forming Consultel BWP, Paul's career encompassed executive management roles in a number of influential firms. Sample projects and career highlights include:

- **CTO, TransACT Communications:**
  As Chief Technology Officer for TransACT in Canberra, Paul had overall responsibility for expansion design and planning the "triple-play" voice/data/video integrated broadband network and the internal IT infrastructure, including vendor selection, management of equipment, and the technical/IT support of service development. He designed and led the trials for the first commercial TV over ADSL services in Australia outside

Telstra, and the use of Telstra exchanges and ULLS as an alternative to TransACT's own network

- **CTO, eCom Communications:**
  This seed-stage start-up telco was formed to take advantage of the newly-declared ULLS access. Paul covered the evaluation, selection and deployment of a planned national broadband network and organisation to design and operate the network. Spearheading negotiations with Telstra for exchange access and ULLS, he also provided strategic direction on current and future technologies and business practices to Board members, investors and other executives, and hands-on selection of equipment, transmission, services and management/billing systems suppliers to build underlying infrastructure to support the business.
- **Director, Asia-Pacific Network Engineering, Global One:**
  A core Executive Management role in Global One Australia/New Zealand (now Equant / France Telecom), providing strategic technical leadership and responsible for network planning, design and deployment of the ATM, Frame Relay and Internet backbone networks throughout the APAC region, with personal involvement in complex network designs for large customers, and expansion projects within the global backbone networks.
- **Windows Sockets Team Leader:**
  In the infancy of the Internet, Paul was a leader in the global Windows Sockets (WINSOCK) software standardisation effort, which opened up the use of MS Windows PCs to run TCP/IP-based applications, helping enable the explosion of the World Wide Web.

Paul is an active participant within ACIF, ATUG and the Australian ISP community, is a Foundation Member of the Internet Society of Australia, and is regularly invited to present at industry conferences and seminars.

Technical

Paul has the benefit of exposure to most aspects of telecommunications and IT, having worked with many data and voice technologies as both service provider and customer. He is familiar with most communications technologies and protocols including:

- LAN – Ethernet, Fast Ethernet, Gigabit Ethernet, FDDI
- WAN – Frame Relay, ISDN, DDS, ATM, X25, MPLS
- Metro – SDH, PON, xDSL
- Internet Protocols and operation – DNS, BGP-4, OSPF, ISIS, SNMP, etc, VoIP, VoATM, VoDSL, Video, troubleshooting, IP-VPNs
- OSS/BSS – Network/Service Management, Operational Processes, Billing, Provisioning – eTOM and FCAPS models
- Capacity Planning & Modelling

Summary

Paul is a senior consultant, respected internationally through his various roles and activities on industry panels such as ACIF and ATUG. He personally assisted many of the leading Australian ISPs in the early 90's with designing their global Internet backbone connectivity, and has a wealth of practical experience in designing, building and operating broadband networks and service providers.

Paul is able to liaise at all levels of an organisation, from Board and executive management to technical staff. He has the competency to work on virtually any IT&T consulting assignment from high-level strategy to technical design and specification.