TELSTRA CORPORATION LIMITED

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

Modifications in v1.2 of the TEA model

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A Modifications in v1.2 of the TEA Model

A.1 Cable routes and distribution areas

A.1.1 Main Cable

Ovum claims that Main Cables in the TEA model do not follow shortest-path routes and, consequently, efficient cable paths and duct placements have not been implemented in the TEA model. They base their conclusion upon the existence of structure points in the model that feed 2 different next structure points, which they allege cannot both lie on the shortest path to the exchange, and bidirectional entries in the model.

> *"In the data provided, there are multiple paths to the exchange from some structure points."*

> *"In the BLBN data, there are 31 instances (out of 5958 records) where a structure point has two different next structure points."*

> *"In the BLBN data, there are 80 instances (out of 5958 records) where there are bidirectional entries."*

Telstra addressed these issues in a previous submission and fixed the problem in version 1.1 of the TEA model. A small number of routing problems were overlooked in version 1.1 of the TEA model and have been cleaned up in version 1.2. The impact of this change is a reduction in cost of $0.10. Consequently, the few instances of inefficient routing that were inherent in version 1.0 of the TEA model are no longer present in version 1.2.

A.1.2 Distribution Areas

Ovum makes similar allegations with respect to the Distribution Network in the TEA model. They conclude that structure points appearing in two DAs and segments containing bidirectional cable provide evidence that TEA contains inefficient routing.

> *"A similar problem infects the DA data. There are cables in both directions in some segments and some structure points in two Das."*

> *"For efficient design, the DAs should not overlap. It is legitimate, however, for Telstra to use a scorched node approach – fixing current pillar points – for the purposes of the model. Nevertheless, the data within DAs should be cleansed to remove any overlaps between DAs."*

Telstra does not accept the contention that DAs should neither abut nor overlap in an efficient design. Telstra's DA design as incorporated into the TEA model is efficient. In any event, Telstra addressed Ovum's criticism with a thorough review of its Distribution Network design. Additional efficiencies were identified in the process and were disclosed in the submission accompanying version 1.1 of the TEA model. During that review, Telstra measured the total length of all cable/conduit segments, which appeared in routes serving two different DAs, and those segments shared between the main and distribution networks.

These efficiency gains are reflected in the revised inputs for version 1.2 of the TEA model. Specifically, the percent of time that distribution conduit can be placed in an open trench (Cable Placed in an Open Trench input, previously called New Estates Ratio) has been increased by 5.95 %. This has the effect of excluding the cost of trenching (including the cost of the breakout and reinstatement of any surface structures) from the cost calculation of that portion of any distribution route, which overlapped a route in another DA. Further, the same costs were excluded for that portion of any distribution route which shared trenching with a main cable route. The impact of this change was to reduce the ULLS cost by $0.72. Consequently, rather than adding costs and creating inefficiencies, the TEA model gains efficiency in those few instances where DAs overlap.

A.2 Cables and cable sizing

Ovum claims that Telstra's practice of placing heavier gauge cable in the Main Network closest to the pillar, rather than closest to the exchange, is inefficient.

> *"An efficient cable design would use the heavier gauge cable closest to the exchange. This minimises the total length of heavier gauge cable used. The additional duct volumes required near the exchange have only a minor effect on the installed cost."*

Telstra has already explained why its provisioning rules in this regard are sound practice. Nevertheless, Telstra has tested the impact of changing the TEA model design to place heavier gauge cable closest to the exchange. The impact of the change is a slight increase in cost (+$0.05).

Further, it is worth noting that the TEA model understates the cost of heavier gauge cable in some instances. Ovum makes reference to circumstances where the need for heavier gauge cable is greater than the amount of main cable in the model.

> *"It is not clear from the documentation what the model does if the need for heavier gauge cable exceeds the feeder-cable length."*

When this situation arises, the use of .90 gauge cable is required. As a simplifying assumption, the heaviest gauge cable used in the model for Band 2 is .64 gauge cable. This has the effect of understating the cost of the provision of ULLS in circumstances where .90 gauge cable is necessary.

A.3 Cost calculation module

The following changes have been made to the Cost Calculation Module of the TEA model. Some changes are a result of Telstra's ongoing review of the models and some are made in response to issues raised by OVUM in their three reports to the ACCC dated 6 August 2008:

- The TEA model was revised to insure that all the depreciation rates in the Capital Cost Calculation worksheet properly reference the input sheets;
- The calculation of the savings resulting from trench sharing between IEN and Main was revised to assign only half the trenching costs to the IEN rather than 100%;
- The access line counts used in the factors calculations were changed so that a consistent count is used in all parts of the TEA model; and,
- The lightning protection guard wire and related equipment was moved from the main cable account to the distribution cable account.

In addition, changes were made to the Cost Calculation Module to correct the typographical errors and inconsistent terminology identified in OVUM's Review of the operability of the Telstra Efficient Access cost model.

On page 22 of the report tiled Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model, OVUM correctly pointed out that there were five asset lives in on the Capital Cost Calculation worksheet that were not sourced to inputs on the Inputs Capital Cost Worksheet. In two instances (i.e. Buildings and Switching) the correct inputs were in the model but there was no linkage between the two sheets. In three other instances, the asset lives for the assets were either incorrectly identified in the input sheet (i.e. Network Management) or simply not included in the input sheet (i.e. Support Structures and Building Fitouts). When these asset categories were added to the model the input sheet was not updated to reflect the changes. To correct this oversight the Inputs Capital Costs worksheet was revised to reflect the omitted asset categories and lives. In addition, the Capital Cost Calculation worksheet was revised to correctly link to the new or existing asset lives on the input sheets. These changes had no impact on the cost of the ULLS in band 2, because the model already used the correct life or the asset category in question had zero investment.

In reviewing the model Telstra discovered that the methodology used in the calculation of the impact of trench sharing between IEN and main cable networks could be confusing. In the original model the total cost of the trench was assigned to the IEN network when a particular cable route was shared by the main and IEN cable networks. The costs of the trench and the related sharing savings have traditionally been shared equally between the two networks. The unconventional approach to sharing in the model could lead to confusion when determining the appropriate level of a sharing input. Consequently, the formula in the Cost Calculator – Main worksheet (i.e. cell O209) was revised to assign half the shared trench costs to the main cable network.

Additionally, Telstra believes the appropriate amount of sharing between IEN and Main is 5%. Telstra's input previously resulted in 10% sharing. The impact of this change was an increase in the ULLS cost of $0.13.

On page 13 of the report tiled Review of the economic principles, capital cost and expense calculations of the Telstra Efficient Access cost model, OVUM identifies three instances where the access line counts in the TEA model and supporting studies (i.e. Factors Calculation Worksheet) were not consistent. There were two line counts in the Cost Calculation module. In the Main Costs – Results worksheet the number of Band 2 lines was identified as 7,532,793 (note that OVUM mistakenly identified this amount as being on the Results Main – Qtys worksheet). In the Inputs Capital Costs worksheet the number of lines was identified as 7,504,097 lines. In addition, the factors module used a slightly different line count of 7,504,497. This oversight was corrected in the new model and factor calculations. In the new model and supporting studies, the number of lines used in the TEA model and the factors calculation is 7,532,793. The total impact of synchronizing these inputs was a reduction in the ULLS costs of $0.04.

Finally, the costs for the guard wire and associated equipment used to protect the distribution network from lightning strikes was erroneously assigned to the main cable depreciation category in the model (Investment Summary worksheet). These facilities are actually located in the distribution network and should have been categorized as distribution cable. Reassigning these facilities to the correct category reduces the cost of the ULLS by $0.02.

B Other issues raised by OVUM and Optus

OVUM claims that Telstra has mistakenly included product and customer costs for retail services in the factors used to calculate the ULLS costs.

"The product and customer expense is not associated with the running of ULLS service and should be excluded from the TEA model. The expense should be allocated to the retail business unit of the organization. Such costs as marketing, sales, billing, customer service and retail elements of finance and human resources also belong to the retail increment."

It appears that OVUM believes that Telstra has included retail related costs in its calculation of its ULLS factors. This is a misinterpretation of how the factors model was compiled. In compiling the factor calculations Telstra ensured that retail related costs were excluded from the costs associated with ULLS.

The Telstra Regulatory Accounting Framework reports disaggregate all cost by three lines of business:

- Internal Wholesale Business;
- External Wholesale Business; and
- Retail Business.

The starting point in determining factors for the ULLS was the sum of all internal and external wholesale costs on the RAF reports. Retail costs were specifically ignored to insure that no such costs were assigned to the wholesale product.

Of Telstra's total organization costs for its regulatory business only 29.7 percent was considered in the calculation of wholesale factors for ULLS. Of the total product and customer costs only 7.2 percent was considered in the calculation of ULLS factors.

Optus in its submissions makes numerous claims that are likewise predicated on misinterpretations of how the model operates. A few of these will be discussed below.

First, Optus claims that the operating and maintenance (O&M) factors used in the model were developed by dividing the total operating and maintenance expense by the net book (depreciated) value of the network assets on the Regulatory Accounting Framework (RAF) report.

"First the markup factors for O&M costs are derived from the proportions that exist in Telstra's RAF reporting (ie, the ratio of O&M costs in the RAF to network capital costs in the RAF). But these proportions are inflated because the value for network capital in the RAF is based upon the wholly depreciated value (WDV) of assets; while the O&M costs in the RAF are not depreciated."

Contrary to Optus' claim, the denominators for the O&M factors used in the TEA model are the total undepreciated historic or future value of the assets. These amounts were taken directly from the Fixed Asset statements in the RAF reports for the internal and external wholesale businesses. Therefore, Optus is mistaken in its conclusion that the factors were calculated using the historic net book value of the assets and then applied to the projected gross book value of the assets.

Second, Optus claims that the location of all the pits and manholes in the TEA model are the same pit and manhole locations that are found in the historic network.

"Optus submits that by using the existing locations of the pillars, manholes and pits in the model Telstra dose not allow sufficient (if any) network optimization (para 4.83)."

Telstra does not use the existing locations for pits and manholes in the TEA model. The TEA model does retain the locations of existing Band 2 pillars. However, the remainder of the structure points in the network (including pits and manholes) have been redesigned based on the network design rules. The location of the pits and manholes in the TEA network design is driven by three factors. Pits and manholes are used:

- To house joints where cables merge;
- When a cable run exceeds the maximum allowable distance between pits or manholes, as set out in the network design rules; and
- To house the joints where customer lead-ins are connected to the distribution or main network.

In determining where to place these manholes and pits the existing structure points are only used to identify points where cable merges occur. Since a pit or manhole is required to house all cable merge joints, it stands to reason that these structures would be placed at the location where the two cable runs come together.

Distance pits and manholes are located along cable runs when the maximum distance between structures parameters, as defined in the network design rules, are exceeded. The location of these pits is determined by the user adjustable distance parameters with no regard as to where existing pits or manholes or located. Finally, the location and number of customer serving pits is calculated based on a formula that minimizes the number of pits required by optimizing the number of customers that are being served by each pit. Again, this approach ignores the existing location of customer serving pits and only places those pits that are needed to optimally provide service to all customers (i.e. all serving pits serve four customers). All other existing pits and manholes are eliminated from the network design.