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Document History and Status

Issue	Rev.	Issued To	Qty	Date	Reviewed	Approved
Draft	0	Client	1	11/8/00	D O'Reilly	C Jones
Draft	1	Client				
Final	0	Client	1	16/10/00	D O'Reilly	C Jones
Final	1	Client	1	8/11/00	D O'Reilly	C Jones

Printed: 9 November 2000 11:07 AM
Last Saved: 9 November 2000 11:08 AM
File Name: [\\SKM-BRIS4\VOL1\Qme\WP\QM85701\Report\5701R010.doc](#)
Project Manager: Darryl O'Reilly
Name of Organisation: Queensland Competition Authority
Name of Project: Asset Valuation Review
Name of Document: Report
Document Version: Final
Project Number: QM85701

1. Executive Summary

Sinclair Knight Merz were engaged by the Queensland Competition Authority on 18th January to carry out an oversight review of the Energex and Ergon asset valuations being carried out in early 2000.

A consistent valuation approach has been applied to both corporations with respect to:

- Overall methodology
- Unit costs
- Depreciation rates and standard lives
- Optimisation principles
- Asset Verification

The Depreciated Optimised Replacement Cost (DORC) valuations that have been derived in the September 2000 final reports, are:

Energex:	\$2.772 B
Ergon:	\$2.523 B

These cover the full range of both system and non-system assets owned by the two corporations.

We note that the value of easements has been based on a deprival approach, which has resulted in an increase in their valuation.

The issue of easement valuations requires more work by the Regulators to develop a consistent approach Australia wide. If a deprival method is adopted a procedure to handle "windfall" gains due to increases in land valuations is required. This is discussed further in Section 4.3.5.

We can give qualified endorsement only to the magnitude of the 15% regional adjustment factor and to the levels of optimisation achieved. It is noted that the increases in the valuation since 1996 which have been attributed to additional quantities and better knowledge of asset ages have been reconciled. We have not had access to sufficient data, nor was it within the scope of our assignment to validate this.

We are satisfied however with the methodologies and principles adopted, and this has resulted in fair and appropriate DORC valuations for the two corporations subject to the above qualifications.

2. Introduction and Background

Sinclair Knight Merz were engaged by the Queensland Competition Authority (QCA) on 18 January to carry out an oversight review of the Energex and Ergon asset valuations being carried out in early 2000. The reference date for the valuations was 31 December 1999.

The valuations were undertaken on the basis of Depreciated Optimised Replacement Cost (DORC) and were to provide input into future revenue cap reviews. The review was to be carried out in parallel with the actual asset valuations. It was to assess the overall process, including the application of the DORC methodology and the robustness and accuracy of the resultant valuation. A copy of the brief is included in Appendix A.

Work commenced on 19 January 2000 and a draft report was available on 11 August 2000.

3. Methodology

The review was carried out in parallel with the asset valuation project as a desk top exercise. No site visits or inspections of assets in the field were carried out. The methodology adopted comprised the following:

- An initial scoping meeting was held with Energex/Ergon representatives to determine the overall program and the key milestones for the valuations.
- Unit replacement costs and standard asset lives were reviewed and benchmarked.
- Optimisation criteria and asset verification principles were reviewed.
- The overall methodology to be applied in the valuations was reviewed.
- Meetings were held as required regarding outcomes from the discussion papers provided for comment.

4. Results of the Review

4.1 Asset Valuation and Data Base Verification

The audit process which was carried out for the purposes of asset valuation and data base verification is considered to be reasonable and in accordance with generally accepted practice.

Guidelines for asset validation were developed which covered the processes of data capture, data accuracy and verification of both the assets recorded in the various data bases and the physical assets in the field.

The number of assets in the various classes which have been validated is similar to what has been carried out and accepted in other valuations. It is considered that the overall process of data capture, transfer from records and update of the appropriate data base has been carried out to an acceptable level of accuracy.

4.2 Asset Lives

Standard asset lives have been adopted for the various classes of assets. The asset categories chosen for lives cover the full range of assets for both Energex and Ergon and are in accordance with normal practice. A residual life of 3 years has been used and this is also in accordance with normal practice.

There have been some minor changes to the lives adopted for the previous valuation in 1996 and these are covered below.

4.2.1 Energex Standard Lives

The following changes have been made to the lives adopted in 1996.

- Wood pole subtransmission lines - 35 to 45 years
- Zone substation subtransmission equipment - 40 to 45 years

The increase in the life of the subtransmission wood pole feeders is considered justified based on Energex's records and experience elsewhere. The increase in the life of the zone substation subtransmission equipment is also in keeping with lives used elsewhere and is within the range normally adopted.

The standard lives used for the Energex valuation are within the range normally adopted.

4.2.2 Ergon Standard Lives

The changes from the 1996 values are as follows:

- Wood pole subtransmission lines - 35 years to 45 years
- Zone substation transformer - 40 years to 45 years

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- Zone substation equipment - 40 years to 45 years

The same comments apply to the wood pole lines and zone substation equipment as for Energex. In the case of the zone substation transformers the use of 45 years is acceptable.

The standard lives used for the Ergon valuation are within the range normally adopted.

4.3 Standard Replacement Costs

4.3.1 General

The assets comprising the subtransmission and distribution networks for both utilities were divided into asset groups and sub groups in accordance with normal practice. In some areas the sub groups differed somewhat from those used previously in Queensland and also elsewhere. This made comparisons difficult.

The 'brownfields' as opposed to 'greenfields' basis for costing has been used and this is in accordance with normal practice.

The unit rates have been developed using a building block approach comprising the applicable direct and indirect costs and this process is also in accordance with normal practice.

4.3.2 Adjustment Factors

A number of adjustment factors have been used to cater for difficulties associated with construction in the Energex urban area. The most common one is 15% applied to a number of asset categories. In the case of Ergon, a 15% factor has been applied in the Western areas to cater for increased costs due to remoteness.

Sinclair Knight Merz recognises the validity of the general principle that costs may be higher for certain construction in the South East Region, due to congestion of services, shorter spans and traffic control. We also accept in general that costs for construction in the far Western areas of the Ergon network may also be higher. The actual quantification of the 15% in each case is somewhat unclear. On this basis and on the basis that the materiality of this issue in the overall valuation is modest, we provide endorsement of the approach used but cannot verify the accuracy of the magnitude of the adjustment factor.

4.3.3 Unit Rate Changes

Changes have occurred in a number of unit rates since 1996. The reconciliation of the 1999 valuation to the 1996 valuation which is provided in the September 2000 reports, (refer Appendix B) attributes the following changes in overall valuation to changes in unit rates as follows:

Energex	Increase of 13.2%
Ergon	Increase of 16%

Sinclair Knight Merz carried out a review of the unit rates used. This was based on a sample which was considered in some detail and a high level (ie not detailed) review of the remainder. We found some to have decreased but most have increased since 1996, resulting in the average increases shown above. We would not normally expect unit rate increase of this magnitude over the 3½ year period in question.

A sample of the models used to construct the building blocks for the unit rates showed that the relevant component costs had been included. The overall approach to the construction of the rates is therefore endorsed. After considering all of the factors which have influenced the valuations in both 1996 and 1999 we believe the rates adopted for the 1999 valuation are reasonable.

4.3.4 Modern Equivalent Assets

The valuation has been based on the concept of Modern Equivalent Assets (MEA) where the modern technological equivalent asset is used as the replacement basis for existing assets for establishing the unit rate replacement cost. This is in accordance with normal practice for valuations of this type.

Based on the evidence presented and our own observations we accept the use of concrete pole construction as the MEA for 132/110 kV wood pole lines. In this case the higher initial capital cost is compensated by an expected longer life and a consequent reduction in "whole of life" costs.

Concrete pole construction has also been used as the MEA for single circuit tower lines. In this case the expected lives are approximately equal and there is a reduced capital cost. This is also considered to be a credible alternative.

In general we are of the opinion that the MEA concept has been adequately applied.

4.3.5 Easements

The current valuation has resulted in the following increases in easement values:

	1996	1999	<u>Increase over 1996</u>	
Energex	\$53.7M	\$155.3	\$101.4M	(189%)
Ergon	\$10.9M	\$41.7	\$30.8M	(283%)

The valuation of easements has long been recognised as one of the most difficult aspects of any utility valuation. The various options available and the

issues associated with easement valuation were generally well covered in the discussion paper provided on the subject. In our opinion easements are unique assets and possess the following characteristics:

- An easement is a registered interest in a parcel of land for which compensation is paid to the landowner:
- An easement gives the network entity the right to carry out prescribed activities on the land (eg to construct, operate and maintain a transmission line) and places certain restrictions on the landowners use of the land. The landowner retains ownership of the land under the line.
- An easement is a right and not a physical asset.
- A registered easement is granted in perpetuity. The entity does not have to provide for its replacement.
- An easement has little, if any, value if the line is removed and the easement becomes redundant.
- Some easements for future lines are in developing areas where rezoning may take place. These easements may not be able to be used as planned for future lines due to community, environmental or political pressures.
- There are relatively few costs associated with owning an easement. Most clearing is included as part of the line maintenance budget.

It is noted that a full deprival methodology has been applied in 1999 whereas the written down value or historical cost was used in 1996. Sinclair Knight Merz accept that deprival concepts have a place in easement valuations.

We note that “windfall” gains in value are possible where the full deprival method is used and a mechanism is required to handle this aspect.

The overall problems in easement valuation have been recognised by various regulators but to date the treatment of them has not been consistent. Sinclair Knight Merz believe that a uniform industry-wide approach covering both transmission and distribution utilities throughout Australia is required and more work is necessary to achieve this.

4.3.6 Additional Quantities/Asset Verification

The following table shows the increases in quantities that have occurred since 1996.

Energex	Increase of 12.6%
Ergon	Increase of 19%

After allowing for normal capital expenditure (Refer Appendix A) the increases due to assets not identified previously are:

Energex	Increase of 3.3%
Ergon	Increase of 8%

These increases are acceptable given the improvements in data collection and recording that have reportedly taken place. SKM acknowledge that this aspect of the valuation process is subject to ongoing improvement.

The processes that have been used for asset verification in 1999 are similar to those used elsewhere and are generally in accordance with normal practice.

4.4 Optimisation

Optimisation of the existing assets of both Energex and Ergon Energy has been applied in order to remove excess capacity and unnecessary redundancy or over design in accordance with normal practice.

The principles and criteria including the planning horizons that have been used are generally in accordance with normal practice. It is noted that the following do not appear to have been dealt with:

- Optimisation of multiple transformers to say 2 transformers of standard size.
- The issue of optimisation of 2 single circuit lines to a double circuit line.

It is also noted that the targets for utilisation for distribution transformers which have been used in 1999 are significantly less than used in 1996 and this has resulted in no optimisation in this area in Energex and relatively small optimisation for Ergon.

The principles for derivation of the 1999 utilisation factors are considered generally sound although it is noted that the derived load factor of 0.27 is based on an actual value of kWhr per consumer and a design value of demand (kW) per consumer, not on actual. We note that no optimisation was possible for Energex and that the optimisation achieved for Ergon was relatively small. We would normally expect higher levels of optimisation in this area.

In general the total optimisations have been less rigorous in 1999 than in 1996 as shown below.

	1996	1999
Ergon	-2.2%	-0.4%
Energex	-1.3%	-0.4%

Optimisation is an area where the guiding principles are clear but the rules of application allow some degree of professional discretion to be applied. Sinclair Knight Merz endorse the general principles that have been adopted for the 1999 valuation. We note that the optimisations achieved in both 1996 and 1999 are not material in either valuation.

4.5 Non Network Assets

The methodology adopted for the treatment of the various classes of non-network assets is in accordance with normal practice. Increase have occurred in non-network assets for both Ergon and Energex as follows:

	1996	1999	Increase over 1996
Energex	\$196.2M	\$315.6	\$119.4 (61%)
Ergon	\$134.3M	\$214.3M	\$80M (60%)

The increases in easement valuations for both corporations have contributed significantly to the above overall increases, as discussed in 4.3.5 above. The remainder of the increases in each case are understood to be due to a revaluation of buildings and land. Excluding easements the new system assets are in the range of 5% to 7% (refer Appendix B) of the total 1999 DORC for both utilities. This is an acceptable range and is not overly material in the total valuation.

5. Conclusion

Sinclair Knight Merz has reviewed both the draft and final reports on the asset valuations carried out for Ergon and Energex. We are satisfied that the methodologies and principles adopted have resulted in a fair and appropriate DORC valuation for the two corporations, subject to the qualifications contained herein.

Appendix A - Brief

Appendix B - Reconciliation of 1996 and 1999 Valuations

We have reviewed the recently submitted final reports dated September 2000 for both Ergon and Energex together with the associated quantity reconciliation/verification reports. The ODRC valuations derived in these reports are:

Energex : \$2.772B
 Ergon : \$2.523B

The following table shows the reconciliation between the 1996 valuation and the current valuation for the major factors contributing to the differences between the two valuations.

	Replacement Cost		% of 1996 Replacement Cost	
	Energex	Ergon	Energex	Ergon
Changes due to extra quantities (excludes easements)	\$456M	\$701M	12.6%	19%
Changes due to rate changes	\$479M	\$617M	13.2%	16%
Changes due to market value easements	\$102M	\$30M	2.8%	.8%
Total	\$1348M	\$1026M	28.6%	35.8%

It is noted that the differences between 1996 and the 1999 valuations attributable to rate changes are substantially the same as in the draft report and there has been no change to easements.

After allowing for the normal levels of annual capital expenditure on new assets, the following table shows the increases now attributable to quantity increases not due to new work ie. due to assets not identified in 1996.

	Increase Due to Quantities not identified in 1996
Energex	3.3%
Ergon	8%

We are satisfied that these increases are generally within the accuracy achievable for valuations of this type.