PB ASSOCIATES

REVIEW OF SPI POWERNET ASSET BASE

Prepared for the

AUSTRALIAN COMPETITION AND CONSUMER COMMISSION

PB Associates *Quality System:*

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EXECUTIVE SUMMARY

This report covers PB Associates' review of the SPI PowerNet asset base valuation. The Terms of Reference for this asset base review were to analyse and comment on the assumptions, methodology and findings on the asset base valuation contained in the SPI PowerNet revenue cap application.

The following comments summarise the results of our review of the SPI PowerNet Asset Base: -

- SPI PowerNet has adopted a reasonably rigorous and detailed process to develop their 01 January 2003 Regulatory Asset Base (RAB) valuation for the revenue cap Application. This has been based on a modified version of the 1994 Sinclair Knights Merz (SKM) valuation for the RAB. The jurisdictional 01 July 1994 valuation was $1390.6m.

- This RAB valuation was rolled forward to 01 January 2001 by adjusting for new assets, indexation and depreciation resulting a value of $1,406.9m.

- The value of some assets classified as "omitted assets" was added to the roll forward 1994 SKM valuation to arrive at the RAB valuation as at 01 January 2001. SPI PowerNet calculated the value of omitted assets as at 01 January 2001 as $307.2m resulting in a valuation of RAB at 01 January 2001 of $1,714.1m. From a regulatory policy perspective, it is for the Commission to consider whether it is appropriate to add in the assets omitted from the 1994 SKM valuation to the RAB. Our views on each of these asset classes are provided in section 5.

- One previously omitted asset class was the land for future terminal stations. SPI PowerNet included $25.2m as the value of these sites. It is PB Associates' opinion that these sites should not be included. Another omitted asset class was 66kV lines. SPI PowerNet valued these assets as $11.2m. Our review indicated that the DORC valuation should not be more that $7.3m[1].

- The RAB at 01 January 2003 was determined by roll forward of the 01 January 2001 RAB for two years to include actual and forecast capital expenditure, retirements, inflation and depreciation over the period and making adjustments for re-optimisation and the roll-in of some services previously outside the revenue cap. The opening 01 January 2001 RAB is rolled forward to 31 December 2002 and then added to the values of an asset class classified by SPI PowerNet as "other excluded assets", Victorian Network Switching Centre (VNSC) and re-optimisation to determine the RAB at 01 January 2003.

- For easement valuation SPI PowerNet has used a hybrid method. Actual historical costs were indexed to 2001 and added to the transaction costs estimated in 1997 and escalated to 2001. This resulted in a value of $231.8m. We reviewed this valuation and concluded that the maximum valuation should be $194.7m based on the same methodology.

- SPI PowerNet has performed a re-optimisation and included $271.8m in the valuation. As a result of the review process SPI PowerNet submitted a correction to this re-optimisation. According to this submission the corrected value was $249.6m, reducing the RAB by $22.2m.The re-optimisation of the network is in agreement with the original 1994 SKM valuation and the regulatory principles. However PB Associates recommend that some of the criteria used in the optimisation process be reviewed and that some studies be re-run. PB Associates also recommends that a number of the financial treatments applied by SPI PowerNet[2] also be reviewed.

- If re-optimisation is performed, PB Associates believes that it should be a complete re-optimisation including land. The Land optimisation has not been performed as part of re-optimisation and we believe it should be included in re-optimisation.

[1] *Please refer to section 5.6 for details*
[2] *Please refer to section 7.3*

1. INTRODUCTION

The Australian Consumer and Competition Commission (the Commission) is currently conducting an inquiry into the appropriate revenue cap to be applied to the non-contestable elements of the transmission services provided by the SPI PowerNet transmission network. The revenue cap determined as a result of this inquiry will apply for a 5-year regulatory period commencing 1 January 2003 and finishing on 31 March 2008.

In respect of this inquiry, SPI PowerNet has submitted to the Commission an application for a transmission network revenue cap for the period commencing from 01 January 2003[3]. This document outlines SPI PowerNet's views on the appropriate revenue cap to be applied by the Commission.

PB Associates has been engaged to review the SPI PowerNet application in respect of the following areas that are pertinent to establish an appropriate revenue cap:

- SPI PowerNet's operating and maintenance expenditure over the regulatory period;
- SPI PowerNet's regulatory asset base valuation
- SPI PowerNet's capital expenditure

This report covers PB Associates' review of the SPI PowerNet asset base valuation. The Terms of Reference for this asset base review were to analyse and comment on the assumptions, methodology and findings on the asset base valuation contained in the SPI PowerNet revenue cap application.

This review is primarily concerned with the valuation of the SPI PowerNet assets in service as of 1 July 1994, and how the value of these assets should be adjusted to represent their DORC value as of 1 January 2003. In order to determine a National Electricity Code (Code) compliant valuation of the SPI PowerNet asset base as of 1 January 2003, it is necessary to adjust the valuation to account for asset additions, removals and omissions allowed under the Code between 1 July 1994 and 1 January 2003. The Commission requires these added-in assets to be treated differently in that they should be valued on the basis of actual installation cost rather than an estimated replacement cost.

In undertaking this review PB Associates was required to address the following matters:

- The appropriateness of the assumptions underlying the DORC technique used including those concerning modern engineering equivalents, standard replacements costs, engineering and service standards, depreciation and optimisation;
- The appropriateness of the methodology used in relation to the determination of which asset classes form part of the asset base, asset validation and valuation, treatment of past capital contributions, depreciation, optimisation, rolling-forward past valuations of the asset base, and rolling-forward previous capital expenditure; and
- The appropriateness of the findings in relation to changes to asset values, depreciation adjustments, optimisation adjustments etc

PB Associates was further asked to assess and comment on the appropriateness and practicality of various valuation methodologies consistent with the National Electricity Code and other matters as are necessary to enable the Commission to make a Code-

[3] *SPI PowerNet's Revenue Cap Application For the period from 01 January 2003 to 31 March 2008.*

compliant valuation of the RAB of SPI PowerNet expected to be in service on 1 July 2003.

2. BACKGROUND

2.1 DEVELOPMENT OF THE JURISDICTIONAL ASSET BASE VALUATION

As a result of the desegregation of the State Electricity Commission of Victoria, a single transmission company was formed on 01 July 1994 to operate and maintain Victoria's transmission network. As part of this disaggregation process the Electricity Supply Industry Reform Unit of the Office of State Owned Enterprises (ESIRU) commissioned external consultant Sinclair Knight Merz (SKM) to establish the value of the transmission assets. This valuation of SPI PoweNet's transmission assets as at 1 July 1994 ($1364.5m) is contained in a June 1994 report prepared by SKM.

The 1994 SKM valuation formed the basis of the opening balance sheet values for accounting, taxation, transmission pricing and tariff determination. The Victorian Government established the Victorian Electricity Supply Industry Tariff Order that sets the maximum revenue that could be earned from the transmission network. In 1997 the valuation of assets classified as non-system were drawn from a different source and included in the regulatory asset base (RAB). This resulted a modified RAB value of $1,390.6m as at 01 July 1994. This modified 1994 SKM valuation (known hereafter as the 1994 SKM valuation) is the jurisdictional RAB valuation that forms the basis for this revenue cap application.

The Tariff Order will expire on 31 December 2002. With the Tariff Order expiring, the Commission that will now determine the service benchmarks and the revenue cap for SPI PowerNet's non-contestable transmission network in accordance with the Code.

Section 6.2.3 of the Code requires that, for the determination of a revenue cap for transmission network businesses, the Commission will take the opening asset value as that determined by the jurisdictional regulator, provided that this valuation does not exceed the deprival value. As applicable to SPI PowerNet, the jurisdictional valuation is the modified 1994 SKM valuation ($1390.6m). SPI PowerNet's 01 January 2003 asset valuation must be based on this jurisdictional valuation.

2.2 STATEMENT OF REGULATORY PRINCIPLES

On 27 May 1999 the Commission issued a Draft Statement of Principles for the Regulation of Transmission Revenues. Sections 4 and 5 of this document are pertinent to the valuation of a transmission business's asset base.

It should be noted that the Commission's document was only issued in draft form and that a final document has still to be issued. While the document defines a number of "Regulatory Principles" in relation to the valuation of transmission network assets, there are some areas where the Commission's thinking requires further clarification. This is especially true in respect of depreciation, optimisation and the methodology to be used for the valuation of easements.

Further the Draft Statement of Regulatory Principles indicates that the Commission is presently not inclined to use a formal "economic value" test in the assessment of deprival values. Rather, it is open to network owners to present evidence that an asset's value should be written down if the asset is unable to generate an economic return. Alternatively it is proposed that the Commission could write down the value of the system below DORC on its own initiative in recognition of evidence that the current regulatory asset base valuation exceeds the ODV of the network. The section 3.4 of the Draft SoRP deals with the valuations of the initial regulatory asset base. In SPI PowerNet's situation chapters 4 and 5 are the more relevant chapters as the initial assets base is already fixed which is the 1994 SKM valuation.

3. PB ASSOCIATES REVIEW PROCESS

A series of meetings was held with SPI PowerNet staff and their consultants over a number of days. These meetings took the form of presentations by SPI PowerNet, discussions, and question and answer sessions. These meetings addressed the following issues:

- A general overview of SPI PowerNet's revenue cap application including SPI PowerNet's interpretation of guidance from the Commission
- Specifics of SPI PowerNet's easement valuation
- Details of the re-optimisation; and
- Details of omitted assets.

During the course of this review SPI PowerNet and the Commission provided a number of documents. The review also relied on other documents in the public domain. PB Associates has not undertaken any form of audit to confirm the data collection processes or the authenticity of the data.

A summary of the main documents used for this review is given below:

i. SPI PowerNet's Revenue Cap Application for the period 1 January 2003 to 31 March 2008.

ii. Appendices to SPI PowerNet's Revenue Cap Application for the period 1 January 2003 to 31 March 2008.

iii. Valuation of Victorian ESI Transmission and Distribution Assets Final Report – September 1994 (1994 SKM report).

iv. Optimisation Report by Rolib Pty Ltd.

v. Evaluation of PowerNet – A report for the ACCC prepared by National Economic Research Associates (1997 NERA Report).

vi. VENCorp Electricity Annual Planning Review 2001.

vii. Draft Statement of Principles for the Regulation of Transmission revenues (draft SoRP)

viii. National Electricity Code (Code) - chapters 4 and 6

ix. Transmission Connection Planning Report – produced jointly by the Victorian Electricity Distribution Businesses October 2001

4. REVIEW OF SPI POWERNET'S 1994 REGULATORY ASSET BASE VALUATION

4.1 APPROPRIATENESS OF ASSUMPTIONS

4.1.1 Modern Engineering Equivalents

If any existing asset were replaced today it would be replaced by the modern engineering equivalent. The 1994 SKM valuation assumed all except for the following three asset categories will be replaced on like for like basis.

- Circuit Breakers – Bulk oil and minimum oil circuit breakers would be replaced with SF6 breakers
- Synchronous Condensers – These would be replaced with switched capacitors
- Protection Relays – The main electro-mechanical relays would be replaced with their static electronic/microprocessor based equivalents

We believe that these assumptions are reasonable and valid.

4.1.2 Standard Replacement Costs

The unit costs used in 1994 valuation were obtained from SKM's own databases. These unit costs provided the average installed costs of various asset categories. The costs were summarised in section B1 of appendix B to the SKM valuation report. The basic assets categories for which the unit costs were provided are;

- Switch bays
- Transformers
- Reactors
- Overhead lines and underground cables
- Static Var compensation

The major assumption was the arrangement of switch bays as given in figures 1 and 2 of appendix B to the SKM report. These figures reasonably and accurately represent the actual arrangements in substations of SPI PowerNet.

It is difficult to comment on whether the standard replacement costs used in the 1994 valuation were realistic. It is not valid to use present day costs as a benchmark as the Code allows the 1994 valuation to be rolled forward on the basis of a CPI index. This index is unlikely to accurately reflect the change in replacement cost of transmission network assets over that period.

4.1.3 Asset lives

Asset lives depend on many factors such as material quality, the extent to which the asset is loaded compared to its rating, environmental conditions, maintenance practices, spare parts obsolescence, and rate of technological change. Strictly each asset has its own individual life, but for planning and valuation purposes, utilities and regulating authorities use generic lifetime figures for groups of similar assets with similar duties or

operating conditions. For a particular asset class this represents the mean lifetime of that asset class.

The SKM report states that the 1994 valuation relied on asset lives that were obtained by considering other utilities worldwide. The Table 4-1 below shows these asset lives used by SKM in its 1994 valuation.

Table 4-1

Asset category	Asset life
Transmission lines	70 years
Switch gear	45 years
Transformers, reactors and NERs	45 years
Capacitors	40 years
SVCs	40 years
Underground cable	70 years

In the Table 4-2 below these asset lives are compared with those used elsewhere in Australia, NZ and UK.

Table 4-2

Asset	Powerlink	NSW Guide lines	Transgrid	NZ ODV hand book[4]	PB Power UK
Transmission lines	50	50	50	55	68
Switch gear	40	40	35-40	55	50
Transformers, reactors and NERs	40	50	40	45	
Capacitors	40	40	40	45	40
SVCs	40	40	40	45	40
Underground cable	45	45	45		

The SKM valuation has used a 70-year life for transmission lines compared to the 55-year life recommended by the NSW Treasury Guidelines and the 50-year life recommended by other authorities in Australia. For tower lines the variation in life is mainly due to different climatic and environmental conditions, maintenance practices and ground conditions. Corrosion is the main reason leading to the end of life. After considering estimated data from many countries, a CIGRE report on "Ageing of the

[4] *The NZ ODV handbook published by the NZ Ministry of Economic Development*

System Impact on Planning", November 2000 estimates the mean asset life of steel towers as 63 years, range of asset life as 35-100 years and the standard deviation as 21 years. We believe that a 70-year mean asset life is only appropriate for a steel tower transmission line in a benign inland environment and is inappropriate for lines in polluted or coastal areas. A significant proportion of SPI PowerNet's transmission lines are located in and around Melbourne.

On this basis we could suggest that a standard life of around 60 years would better reflect the average life of SPI PowerNet transmission line assets, given the wide range of environmental conditions in Victoria. About 50% of the asset base is represented by transmission lines and using a reduced asset life would have a material impact on the value of the asset base.

Apart from transmission lines, the asset lives used by SKM for valuation purposes are consistent with those used elsewhere in the industry and are considered appropriate for valuation purposes. The shorter lives used for some assets would tend to reduce the DORC asset value, due to the higher depreciation associated with a shorter life.

4.1.4 Depreciation

In the 1994 SKM valuation the straight-line method was used to depreciate the assets. We believe at that time it was the most appropriate method to use although now in a more mature environment a more refined method could be adopted.

4.1.5 Optimisation

Optimisation is the process of adjusting the replacement cost of the existing network assets to account for over design, over capacity and redundant assets. The optimisation process is consistent with the deprival valuation philosophy in that assets should be optimised out if a network owner, when deprived of the assets, would not rebuild them when constructing a replacement network, designed to provide a similar level of service under similar load growth conditions.

The deprival philosophy suggests a green-field approach to optimisation where a completely new network is configured, in the most efficient way possible, having no regard to the existing network design. However, this ignores the fact that networks evolve over an extended period of time, and are constantly having to be adapted in response to changing patterns of electricity supply and demand. Therefore, regulators generally accept an incremental approach to optimisation.

In the optimisation of the SPI PowerNet's network in 1994, the SKM valuation did not list the specific criteria against which the network was optimised. In the 1994 SKM report it stated that it allowed for the following in the optimisation.

- Future load growth
- System reliability requirements
- Quality of supply requirements
- Allowance of continuity of supply during maintenance procedures
- Interstate agreements for provision of reserve generation
- Easement restrictions

No details of how these factors were allowed for in the optimisation process were provided in the report. The SKM may have performed the optimisation in a reasonable

way, but without properly documented optimisation criteria and specific details as to how the criteria were applied, we are not in a position to comment further.

In the optimisation SKM considered only the network assets although substation land was included in the asset base. It has been the normal practice to provide for a buffer zone around terminal stations both for environmental reasons and to provide room for transmission line terminations. The review of the land sizes still reveals that they are in excess to the actual requirement. We are of the opinion that the land should have been optimised in the original SKM valuation. This has been considered further in Section 7.5 of this report.

4.2 THE APPROPRIATENESS OF METHODOLOGY

4.2.1 Asset classes

The 1994 SKM valuation report classifies network assets into six major separate categories, switch bays, transformers, transmission lines, underground cables, reactors and capacitors.

Each of these asset categories has been subdivided into different sub-categories based on voltage. Then some of these sub-categories have been further subdivided on the basis of switchyard arrangement, line or cable type. Each sub-category has a separate replacement cost. The division of the network into these various categories with the separate replacement costs are provided in Appendix B1 of the 1994 SKM report. We believe these asset classification is sufficiently detailed to achieve an acceptable level of valuation accuracy.

4.2.2 Asset validation and valuation

Asset valuation and validation as applicable to 1994 SKM valuation are described in sections 4.1 and 4.2 of the 1994 SKM valuation report. We believe the process was reasonably accurate, but nowadays a more accurate valuation could be achieved given the improved asset recording systems available to SPI PowerNet.

5. OMITTED ASSETS

5.1 INTRODUCTION

According to SPI PowerNet's revenue cap application, some asset classes were omitted in the original 1994 SKM valuation. The value of the RAB as at 1 January 2001 was calculated by adding the value of these omitted assets at 01 January 2001 to the rolled forward 1994 SKM valuation. SPI PowerNet calculated the total value of omitted assets as $307.2M as at 01 January 2001. The omitted assets consisted of easements, future terminal station sites, system spares, communication assets, and 66kV subtransmission lines.

The value of these omitted assets was not based on any 1994 SKM value, but on valuations later performed by SPI PowerNet.

From a regulatory policy perspective, it is for the Commission to consider whether it is appropriate to add in the assets omitted from the 1994 SKM valuation to the RAB. Apart from the land held for future substation sites, the assets today form an integral part of SPI PowerNet's transmission network and similar assets have been included in the asset valuation of other TNSPs. However at the time of privatisation, the 1994 SKM valuation of RAB formed the basis for future revenue from the SPI PowerNet transmission network.

We have reviewed the SPI PowerNet assessment of the value of each of the omitted asset classes separately and our comments are provided below in sections 5.2 to 5.7.

5.2 EASEMENTS

5.2.1 Background

SPI states in its revenue cap application that it has adopted the Commission's preferred approach outlined in the Draft SoRP which is the easement value to be based on the actual cost to the network of obtaining the easement rights escalated by CPI.

The Draft SoRP does not outline this as the preferred method. Section 4.3 of the draft SoRP proposes that an easement be valued at the actual cost to the TNSP "updated periodically in line with what would be the DORC based valuation of easements" Importantly, however, any increase in the value of the easement over and above the actual cost of obtaining the easement would be offset by a corresponding negative depreciation charge, which would have the effect of reducing the revenue cap in the year the depreciation charge was applied. In effect the TNSP owner would be required to "buy" unexpected benefits in the replacement value of easements. The draft SoRP does not address the issue of whether the historic cost of the easement should be indexed forward before the negative depreciation charge is applied.

PB Associates has reviewed the methodology used by SPI PowerNet to estimate the value at which its existing easements should be rolled into the asset base. The process used was a hybrid process, not dissimilar to the hybrid process proposed by Powerlink in its most recent regulatory application. The valuation included two components:

1. The compensation paid to easement owners. SPI PowerNet has records of the compensation paid to the owners of 97% of its easements. These historical costs were rolled forward to the valuation date of 1 January 2001 using the average of eight cities' all groups CPI.

2. Transaction costs. There were taken from a replacement cost valuation of SPI PowerNet's easement network over privately owned land, prepared by A T Cocks

Consulting (now Urbis) for SPI PowerNet's former owner, GPU PowerNet. The transaction costs in the A T Cocks report have been rolled forward from the valuation date (December 1997) to 1 January 2001.

According to the A T Cocks report, transactions cost includes three components, which are each discussed further in the sections below.

- Acquisition costs
- Solatium
- Land owner's cost or fixed cost

The proposed easement roll in value is shown in the Table 5-1 below.

Table 5-1

Item	Historical ($m nominal)	December 1997 $m	01 January 2001 $m
Easement compensation (Actual)	18.0	72.8	79.7
Acquisition costs (estimated by Urbis)		81.7	89.4
Solatium		34.7	38.0
Land owners cost		22.6	24.7
Total	18.0	211.8	231.8

5.2.2 Payments to Landowners

The SPI PowerNet revenue cap application estimated the rolled forward value as at 1 January 2001 of the historical compensation paid to private landowners on the acquisition of easement rights was $79.7m. In the absence of information to the contrary it is assumed that these payments represent the total paid directly to the landowners as consideration for the acquisition of the easements.

The Land Acquisition and Compensation Act 1986 requires the following payments to be made to landowners affected by the compulsory acquisition of an easement for infrastructure purposes:

- Compensation for the loss of value to the landowner of the land directly affected by the easement.
- Compensation for the injurious affect of the easement. This is calculated by the loss of value of the land around the easement owned by the landowner, as a result of the easement being granted.
- Solatium
- Reimbursement of landowners' costs

SPI PowerNet's valuation, as proposed in its revenue cap application, assumes that historical payments made to landowners represent compensation paid for loss of value and injurious effect only.

5.2.3 Acquisition costs

Acquisition costs cover the costs incurred by the authority in four areas

- Valuation fees and fees for other technical costs
- The cost of surveying
- Legal costs and conveyancing
- Compulsory acquisition management

The A T Cocks report estimated that the average cost of acquisition as at December 1997 was $10,900 per easement. With a total of 7500 easements this resulted in a total acquisition cost of $81.7m.

As shown in Table 5-1, the SPI PowerNet easement valuation includes acquisition costs, calculated in accordance with the current costs as of December 1997, as estimated in the A T Cocks report, rolled forward to January 2001.

5.2.4 Solatium

In the A T Cocks report, solatium is described as an amount payable under Land Acquisition and Compensation Act, up to a maximum of the 10% of market value of the land, for non-pecuniary losses from compulsory acquisition. The A T Cocks report estimated the solatium that would have been payable if all SPI PowerNet easements over private land had been acquired at December 1997 as $34.7M.

In its revenue application SPI PowerNet does not consider solatium as being included in the historical payments to a landowner in compensation for the acquisition of an easement. On this basis, as shown in Table 5-2, the SPI PowerNet easement valuation included in full the solatium estimated by A T Cocks, rolled forward to January 2001.

5.2.5 Land Owner's Fixed Cost

The A T Cocks report describes this cost component as the fixed costs recoverable by the owner of a property subject to a compulsory acquisition. It includes out of pocket expenses for professional assistance in managing the compulsory acquisition process and in assessing and settling the claim for compensation. In most instances this is limited to valuation and legal fees. In our discussions, SPI PowerNet has provided with seven examples of landowner's fixed cost being paid separately to the compensation.

A T Cocks has estimated the total landowner's fixed cost as at December 1997 as $22.6m. The SPI PowerNet easement valuation includes this amount in full, rolled forward to January 2001.

5.2.6 PB Associates' Comments

As mentioned in section 5.2.1 SPI PowerNet states in its revenue cap application that it has adopted the Commission's preferred approach, which is the easement value to be based on the actual cost to the network of obtaining the easement rights escalated by CPI. However the SPI PowerNet valuation of easements uses a hybrid approach that is not completely based on historical values.

The SPI PowerNet easement valuation considers that only the compensation component for loss of value of the land under the easement and for injurious affects to adjoining is based on rolled forward historical costs. SPI PowerNet states that this is because historical costs for other components of the valuation were not available. It therefore had no alternative but to rely on the costs estimated by A T Cocks in its December 1997 easement valuation.

PB Associates considers that, even if the hybrid approach is accepted, the solatium should not be included in the valuation because they are payments made directly to the landowners and SPI PowerNet has not been able to provide any documents to substantiate that they were made as separate payments to compensation.

Our preferred approach would be to value all landowner payments on the basis of historic cost. To be consistent with this, if a payment was not made to land owners, it should not be provided for in the valuation.

Further details of how the various components that make up the SPI PowerNet easement valuation were estimated are given below.

5.2.6.1 Historical Cost of Compensation

SPI PowerNet has records of historical compensation payments for about 97% of the easements. PB Associates has reviewed samples of these records and considers that the payments probably represent total payments to owners and cover both compensation and other easement related expenses excluding some fixed cost components. The indexation of this historical value of $18.0M would result in a value of $79.7M as at 01 January 2001.

5.2.6.2 Acquisition Costs

As SPI PowerNet does not have any records of historical acquisition costs it relied on the A T Cocks report to provide an estimate of these costs. This report break-down of the average acquisition cost per easement is as follows;

Fees for legal, valuation, documentation, notices and disputes	= $ 5,000
Surveying of easement boundaries and titles	= $ 1,200
Administration and management of compulsory acquisitions	= $ 4,700
Total	= $10,900

SPI PowerNet has 7500 easements resulting in an estimated total transaction cost of $81.7M as at December 1997 or $89.4M rolled forward to 01 January 2001.

During the review PB Associates had a meeting with Urbis to obtain further information on the basis of this estimate, as no details were included in the A T Cocks report. Urbis noted that the costs were all based on estimates, as it had no record of the actual transaction costs for easement acquisitions for transmission lines. It quoted verbal enquiries it made regarding VicRoad land acquisitions and easements for gas pipelines and provided hand written notes about various conversations to support these estimates. There is no indication that the estimated transaction costs were excessive.

5.2.6.3 Solatium

In the A T Cocks' report, solatium is described as an amount payable under the Land Acquisition and Compensation Act 1986, up to a maximum of 10% of the market value of the land, for non-pecuniary losses from compulsory acquisition.

In its revenue application SPI PowerNet does not consider solatium as being included in the historical payments to a landowner in compensation for the acquisition of an easement. On this basis, as shown in Table 5-2, the SPI PowerNet easement valuation included in full the solatium estimated by A T Cocks, rolled forward to January 2001. SPI PowerNet provided some documents to substantiate the claim that fixed costs were paid separately to compensation payment. However it has not provided any document to substantiate that solatium was paid separately to compensation. If payments were made to outside parties, we believe that some records of such should exist. Our view with regard to solatium is that the majority of SPI PowerNet easements would not have been subjected to a solatium payment and therefore there is no basis for solatium to be included as a separate component in a rolled forwarded historical cost easement valuation.

5.2.6.4 Land Owner's Cost or Fixed Fee

The A T Cocks report describes this cost component as the fixed costs recoverable by the owner of a property subject to a compulsory acquisition. It includes out of pocket expenses for professional assistance in managing the compulsory acquisition process and in assessing and setting their claim for compensation. In most instances this is limited to valuation and legal fees. In our discussions, SPI PowerNet has provided seven examples of landowner's fixed cost being paid separate to the compensation. It appears inconsistent, given the assiduous approach taken to record keeping by the former SEC, that SPI PowerNet does not have most of these records to obtain the actual historical cost, although they have 97% of records of compensation to land owners.

5.2.7 Summary of Revised easement valuation based on SPI PowerNet valuation methodology

The following Table 5-2 compares and summarises SPI PowerNet easement valuation with PB Associates revised easement valuation based on the SPI PowerNet easement valuation methodology.

Table 5-2

Item	Historical $M		December 1997 $M		01 January 2001 $M	
	SPI	**PB**	**SPI**	**PB**	**SPI**	**PB**
Easement compensation (Actual)	18.0	18.0	72.8	72.8	79.7	79.7
Acquisition costs (estimated by Urbis)			81.7*	81.7*	89.4	89.4*
Solatium			34.7*		38.0	
Land owners cost			22.6*	22.6*	24.7	24.7*
Total					**231.8**	**194.7***

* - Not based on historical cost

5.3 LAND FOR FUTURE TERMINAL STATION SITES – $25.2M AS AT 01 JAN. 2001

As a legacy of privatisation SPI PowerNet owns a number of parcels of land that were purchased by the State Electricity Commission for future terminal stations. SPI PowerNet's revenue cap application states that VENCorp has indicated that it requires these blocks of land to be retained for future terminal station development, even though the new terminal stations are unlikely to be constructed within the 10-year planning horizon. However VENCorp is not responsible for the planning of terminal stations and is responsible for the planning and requisition of augmentation to the shared network only.

These sites were omitted from the 1994 SKM valuation. SPI PowerNet has valued these lands on the basis of "market value for the existing use". The Company commissioned Urbis to perform the valuations as at 01 January 2001 and included in this valuation in the RAB as at 01 January 2001. The valuation includes land that SPI PowerNet believes are allocated to future terminal stations and also sites use for existing radio stations.

PB Associates requested details of the land and considered the justification for including these sites in the RAB as at 01 January 2001.The following Table 5-3 shows the location, size and the valuation of these properties.

Table 5-3

Number	Description	Surburb /Town	Lot Area (ha)	Valuation
1	Future Terminal Station	Cranbourne	48.642	$ 3,900,000
2	Future Terminal Station	Keysborough/Dandenong	7.4128	$ 2,500,000
3	Future Terminal Station	Ravenhall/Deer Park	16.1873	$ 300,000
4	Future Terminal Station	Doncaster	3.46	$ 5,500,000
5	Future Terminal Station	Donnybrook	54.3512	$ 550,000
6	Future Terminal Station	Geelong East	9.1258	$ 125,000
7	Future Terminal Station	Kew	1.759	$ 1,800,000
8	Future Terminal Station	Lilydale	56.384	$ 850,000
9	Future Terminal Station	Lyndhurst	40.468	$ 775,000
10	Future Terminal Station	Narre Warren	68.267	$ 6,150,000
11	Future Terminal Station	Pearcedale North	17.017	$ 400,000
12	Future Terminal Station	Somerton	15.2777	$ 600,000
13	Future Terminal Station	Sunshine	9.627	$ 700,000
14	Future Terminal Station	Truganina	86.455	$ 200,000
15	Future Terminal Station	Pearcedale	36.89	$ 550,000
	Total			$ 24,900,000
1	Radio Station	Allambee East	1.421	$ 30,000
2	Radio Station	Beech Forest	0.0614	$ 500
3	Radio Station	Cockatoo	0.0428	$ 80,000
4	Radio Station	Dromana	0.1012	$ 60,000
5	Radio Station	Healesville	2.5	$ 50,000
6	Radio Station	Jeeralang	0.81	$ 15,000
7	Radio Station	Kinglake	0.0738	$ 50,000
8	Radio Station	Balook/Mt Blackwarry	0.0446	$ 1,000
9	Radio Station	Cheshunt	0.6136	$ 15,000
	Total			$ 301,500

The value of the sites for the radio stations is only a very small fraction of the total and therefore PB Associates focussed only the future terminal station sites.

The planning and directing of new connection assets is entirely the responsibility of the connection customers, in these cases the distribution companies. VENCorp is responsible for the planning and requisition of augmentation to the shared network. The Victorian distribution companies have jointly published a planning report titled "Transmission Connection Planning Report" in October 2001, which details the planning

of the connection assets for the next 10 years. According to this report only one new substation has been planned in the above sites that will be in Cranbourne. Also the extent of land in some of these sites exceeds the requirements for a new terminal station.

SPI PowerNet has provided a letter from Victorian Power Exchange (VPX – Predecessor to VENCorp) dated 18 May 1998, which refers to 26 future sites. It states that only 6 sites are required for future development of the shared network. However according to VENCorp planning review, only one of these sites is required in the next ten years. It appears from the above Table 5-3 that now there are only 15 sites. In PB Associates' opinion, SPI PowerNet would be free to divest itself of these remaining 15 sites in future, even if they are included in the RAB.

Given that these sites (except the Cranbourne site) are not required during the 10-year planning horizon and the construction of Cranbourne and other new terminal stations is potentially contestable, and there is no assurance that any such contracts would be awarded to SPI PowerNet, PB Associates would have expected these sites not to have been included the RAB. Even the Cranbourne land could be optimised down to a smaller parcel. It is also conceivable that the ownership of the Cranbourne land may, at some future date, pass from SPI PowerNet to another TNSP.

As these blocks of land were not included in the valuation of the asset base at the time of privatisation, and due to reasons explained above, our view is that the inclusion of these blocks of land in RAB at this stage would not be necessary.

5.4 SYSTEM SPARES

SPI PowerNet states in section 7.4.3 of its revenue cap application that, as spares were not included in the original 1994 valuation, it is now appropriate to include them in the RAB. SPI PowerNet has valued the spares at their book value (historical cost) at 01 January 2001and included $10.1M in the RAB.

In the 1994 SKM valuation the value of spares was not included. However the report estimated the depreciated replacement value of spares at that time as $12.7m. SPI PowerNet has valued their spares at the actual indexed cost.

If the Commission decides to include all the spares in RAB, we are of the opinion that SPI PowerNet's valuation of spares is not excessive.

5.5 COMMUNICATION ASSETS

SPI PowerNet states in section 7.4.3 of its revenue cap application that, as communication assets were not included in the original 1994 valuation, it is now appropriate to include them in the RAB. SPI PowerNet has valued the communication assets at 01 January 2001and included $28.8M in the RAB on the basis of the current DRC of these assets.

Although not included in RAB, in 1994 SKM valuation, the report valued communication assets at $11.8M.

Given the materiality and the time constraints we have not investigated into the long list of assets but conclude that if the Commission decides to include communication assets in the RAB, SPI PowerNet's valuation is not excessive.

5.6 66KV TRANSMISSION LINES

SPI PowerNet states in section 7.4.3 of its revenue cap application that as 66kV transmission lines were not included in the original 1994 valuation, it is now appropriate to include them in the RAB. PB Associates understands that the 66kV lines were not included in the 1994 SKM valuation because, at that time, it was not clear whether the

TNSP was going to own these lines. We believe that the ownership issue has now been established and from that point of view it is appropriate to include these assets into the RAB. Nevertheless, given that no payment was made for these lines at the time of privatisation, from a regulatory perspective, inclusion could represent an unjustifiable gain for SPI PowerNet.

Also we believe SPI PowerNet's valuation of these lines is excessive. SPI PowerNet has valued the 66kV transmission lines at 01 January 2001and included $11.2M in the RAB.

5.6.1 East Rowville terminal station to Frankston terminal station double circuit 66kV tower line (ERTS to FTS no 1 & 2)

This line is mostly on towers. If this line were to be built today it would be built as a pole line. We consider that the modern equivalent asset for a 66kV line of the rating similar to the ratings of this line is a double circuit pole line.

According to SPI PowerNet valuation, the DORC of this line is $5.2m. We believe the DORC value of this should be $1.3m. For our estimation of the valuation of this 66kV line we have used the replacement cost of double circuit 66kV lines obtained from 1994 SKM report and indexed to 01 January 2001.

5.6.2 Morwell terminal station to Loy Yang double circuit lines. MWTS to LY no1 &2 and MWTS to LY no 3 & 4.

These two double circuit lines are intended to provide N-2 security for LY substation. These were built to provide high level of security for the LY substation. Double circuit line no 3 & 4 are on steel towers and on the 500kV transmission easement. The total route length is 15.8km. Double circuit line no 1 & 2 are 15.4km in route length and a section of 12.8km is on steel poles with ground wire and another section of 2.5km is on steel towers. This line is on a separate route to line 3 & 4. Our view is that the optimised arrangement is to have line no 3 & 4 as they are now on towers and line number 1 & 2 as a normal double circuit 66kV pole line. SPI PowerNet has added $6.0m as DORC valuation of these lines. However we believe a proper probabilistic reliability study should be performed to decide the DORC value of these lines. SPI PowerNet has not provided us with any details of such a study. Our view is that we are not in a position to comment on the DORC value of these lines without the results of such a study.

5.7 COMPARISON OF OMITTED ASSET VALUATION

The following Table 5-4 compares the omitted asset valuations included in the SPI PowerNet revenue cap application with valuations adjusted by PB Associates.

Table 5-4

Omitted asset class	SPI PowerNet's Valuation at 01 January 2001 $m	PB Associates estimated valuation at 01 January 2001 $m
Easements	231.8	194.7*
Future terminal station sites	25.2	0.0
System spares	10.1	10.1
Communication assets	28.8	28.8
66kV transmission lines	11.2	7.3**
Total	**307.2**	**240.9**

*- This is the maximum revised valuation based on SPI PowerNet methodology of easement valuation.

** - This is the maximum value. We are not in a position to comment on the DORC valuation of MWTS – LY No 1& 2 and MWTS – LY No 3 & 4 lines without a proper probabilistic reliability study.

6. ROLL FORWARD OF 1994 VALUATION TO RAB VALUATION AT 01 JANUARY 2001

6.1 INTRODUCTION

The 1994 SKM valuation formed the basis of the opening balance sheet values for accounting, taxation, transmission pricing and tariff determination purposes. The Victorian Government established the Victorian Electricity Supply Industry Tariff Order that set the maximum revenue that could be earned from the transmission network. In 1997 the valuation of assets classified as non-system was drawn from a different source and included in the RAB. This resulted in a modified RAB value as at 01 July 1994.

This modified 1994 SKM valuation is the jurisdictional RAB valuation that forms the basis for this revenue cap application. This is the opening asset base value and is $1,390.6m. Initially this 1994 asset valuation was rolled forward by adjusting for capital expenditure, depreciation, retirements and inflation over the period to 2001. Then SPI PowerNet added the value of some assets classified as omitted assets to form the 01 January 2001 Regulatory Asset Base.

6.2 ROLL FORWARD OF PREVIOUS CAPITAL EXPENDITURE

From 01 July 1994 to 31 December 2000, SPI PowerNet added in a total of $99.3m worth of new assets. This amounts to an average of $15.3m per year and based on actual expenditure. The following Table 6-1 sourced from table 7.1 of the SPI PowerNet revenue cap application shows the roll-forward of the 1994 SKM valuation to obtain the opening asset base at 01 January 2001.

Table 6-1

Period starting	01 July 1994 $m	01 July 1995 $m	01 July 1996 $m	01 July 1997 $m	01 Jan 1998 $m	01 Jan 1999 $m	01 Jan 2000 $m
Opening asset base	1,390.6	1,421.1	1,436.6	1,411.6	1,395.0	1,382.1	1,360.1
New Assets (CAPEX)	12.8	17.7	18.2	10.5	15.5	6.1	18.5
Indexation	63.1	44.6	4.9	-2.4	22.3	25.1	80.0
Depreciation	45.4	46.8	48.1	24.8	50.7	53.2	51.6
Closing asset base	1,421.1	1,436.6	1,411.6	1,395.0	1,382.1	1,360.1	1,406.9
Opening Asset Base at 01 January 2001				**1,406.9**			

6.3 RAB AT 01 JANUARY 2001

The RAB valuation as at 01 January 2001 was obtained by adding the omitted assets (refer section 5) to the above opening asset base. The following Table 6-2 summarises SPI PowerNet's valuation and our revised valuation based on SPI PowerNet's valuation methodology for the RAB as at 01 January 2001

Table 6-2

RAB Valuation at 01 January 2001		
Description	**SPI PowerNet Revenue Cap Application $m**	**PB Associates Estimated Valuation $m**
Opening asset base	**1,406.9**	**1406.9**
Omitted assets (ref sec 5.7)		
Easements	231.8	194.7*
Future terminal station sites	25.2	0.0**
System Spares	10.1	10.1**
Communication assets	28.8	28.8**
66kV Lines	11.2	7.3**
Total Omitted assets	**307.2**	**240.9****
RAB at 01 January 2001	**1714.1**	**1647.8****

* - This is the maximum revised valuation based on SPI PowerNet methodology of easement valuation.

** - This is PB Associates maximum estimate of a fair value assuming that the Commission agrees to allow assets omitted from the 1994 valuation to be rolled into the RAB.

7. RE-OPTIMISATION

7.1 GENERAL

For its revenue cap application SPI PowerNet engaged SKM to perform a re-optimisation of its shared network assets to take into account of the load growth since the optimisation undertaken for the 1994 SKM report. SKM engaged Rolib Pty Ltd to perform the necessary detailed system studies for this optimisation.

As a result of this re-optimisation SPI PowerNet has added $271.8m to their RAB at 01 January 2003. However as a result of this review SPI PowerNet resubmitted their re-optimisation values and requested that the corrected values be included in their revenue cap application. As per their correction on 31 May 2001, the re-optimisation value to be included in the revenue cap application should be $249.6m, $22.2m less than the original value. In our following discussion we have used this SPI PowerNet corrected value as the value applicable to the revenue cap application.

7.2 1994 OPTIMISATION

The following summarises the optimisations included in the 1994 SKM valuation

- Two Yallourn – Rowville 220kV double circuit lines – Replaced with one high rated double circuit
- Hazelwood – Rowville 220kV double circuit lines – Replaced with one high rated single circuit
- Hazelwood-Rowville 500kV line – optimised out completely with extra transformation at South Morang terminal station
- Rowville – South Morang 500kV line – Replaced with 220kV line plus extra transformers
- Moorabool – Heywood – Portland 500kV line – Replaced by 330kV line with series compensation
- Dederang – Glenrowan – Shepparton 220kV double line and single circuit lines – Replaced with single high rated circuit line
- Keilor – Geelong single circuit and double circuit 220kV lines – Replaced with high rated single circuit
- Keilor – Thomastown double circuit 220kV lines – Replace with high rated single circuit

7.3 RE-OPTIMISATION METHODOLOGY

The section 7.6.2 of SPI PowerNet revenue cap application describes the steps of the re-optimisation, undertaken by SKM, as follows:

- Carrying forward at the cost of capital, the written-down value of assets partly or wholly optimised out in 1994;

- Comparing on an optimisation-by-optimisation basis the replacement cost of the reoptimised assets to the present value of the network charges that would result from using the carried forward value; and

- Designating the lesser of these to be the fair value of the re-optimised asset

As a result of re-optimisation SPI PowerNet has added $249.6m as at 01 January 2003. This is made up of the components shown in Table 7-1 below.

Table 7-1

Breakdown of re-optimisation (Total $249.6m)		
Foregone return on capital capitalised into value $m	**Foregone depreciation capitalised into value $m**	**Net DRC Value of assets entering the asset base through re-optimisation $m**
72.0	23.9	153.7

The draft SoRP proposed statement S4.5 states “assets which are optimised out of the regulatory asset base will be carried forward at the rate of return. If they are optimised back into regulatory asset base, their value will be lesser of the carry forward value or depreciated optimised replacement cost. Where assets are reinstated into the assets base the Commission will take into account past level of recovery (that is, the written down value when removed for the regulatory asset base”. SPI PowerNet has used a different approach for their calculation of the foregone return on capital.

SPI PowerNet stated in its revenue cap application (section 7.6.2, page 57), that the SoRP statement seemed at odds with it self. In our discussion with SPI PowerNet they explained that this was on the grounds that the carried forward asset value would always be less than the depreciated replacement cost and therefore it used the methodology explained in its revenue cap application. Our view on this is that the statement S4.5 is a valid statement. In DORC methodology, the replacement is with Modern Equivalent Asset (MEA). If this is considered, in some cases DRC may be higher than the carried forward asset value (e.g. a basic substation replaced with a modern GIS substation). In such situations it should be the carried forward value that is the lessor of the two values. In most of the cases it will be the depreciated replacement cost. We believe that this was the intention of the statement s4.5 and it stands up to that intention.

7.4 RE-OPTIMISATION FOR THE REVENUE CAP APPLICATION

The following Table 7-2 sourced from SPI PowerNet's revenue cap application compares the 1994 optimisation with the optimisation for Revenue Cap Application.

Table 7-2

	1994 Optimisation	Optimisation for the Revenue Cap Application
Two Yallourn – Rowville 220kV double circuit lines	Replaced with one high rated double circuit	Replaced with one high rated double circuit line with extra reactive support
Hazelwood – Rowville 220kV double circuit lines	Replaced with one high rated single circuit	Replaced with one high rated single circuit
Hazelwood-Rowville 500kV line	Optimised out completely with extra transformation at South Morang terminal station	No optimisation
Rowville – South Morang 500kV line	Replaced with 220kV line plus extra transformers	Replaced with 220kV line plus extra transformers
Moorabool – Heywood – Portland 500kV line	Replaced by 330kV line with series compensation	No optimisation
Dederang – Glenrowan – Shepparton 220kV double line and single circuit lines	Replaced with single high rated circuit line	No optimisation
Keilor – Geelong single circuit and double circuit 220kV lines	Replaced with high rated double circuit line	Replace with medium rated double circuit line
Keilor – Thomastown double circuit 220kV lines	Replace with high rated single circuit line	Replace with high rated single circuit line
Yallourn to Hazelwood low rated double circuit 220kV line	No Optimisation	Replaced with high rated single circuit
The East Rowville to Tyabb double circuit 220kV line	No optimisation	Replace with medium rated double circuit line
Synchronous condensers	Capacitor banks	SVCs
Optimised switching configurations associated with above line optimisations		

The following sections from 7.4.1 to 7.4.3 describe various assumptions and parameters used in the study that could impact upon the valuation in a material way.

7.4.1 Load growth or forecast

The load forecasts used are based on those published by NEMMCO. The load or demand forecasts selected were based on ten percent probability of exceedence using the medium growth scenario.

For optimisation of the transmission network supplying the Melbourne CBD and the 500 kV lines between the Latrobe Valley power stations and Melbourne a deterministic n-2 criterion has been used. This means that optimisation has been based on the network being able to supply all required load with two network elements out of service. For other parts of the network an n-1 security criterion was used.

PB Associates considers that use of a load forecast with a 10% probability of exceedance is appropriate when using n-1 criteria. However clause 4.2.3 of the Code states that an n-2 network outage is a non-credible contingency event.

Irrespective of Code requirements, it is accepted that n-2 security criteria may be justified for those parts of the transmission network supplying critical loads. However in this event use of a load forecast with a 50% probability of exceedance could be more reasonable. In our discussions, SPI PowerNet submitted a letter from their consultants SKM stating that the use of load forecast of 10% probability of exceedence would not cause any significant material effect on the outcome. In this re-optimisation we agree with this statement as N-2 criteria were used only in few optimisations.

7.4.2 Planning Horizon

VENCorp uses a 10-year planning horizon for planning purposes. To be consistent with the VENCorp approach, the planning horizon for the re-optimisation should be measured from the start of the regulatory period. However the approach used by SPI PowerNet assumes that 10-year planning horizon starts from end of the regulatory period (end of 2007). According to the Rolib Report, if the transmission network capability exceeds the network requirements 10 years beyond the end of the next regulatory period (i.e. beyond the requirements of December 2017), then the transmission is optimised downwards to the requirements in the period to December 2017. In our view the planning horizon should start from the start of the regulatory period or 01 January 2003 since there is no good reason for SPI PowerNet to use an approach different form that used by VENCorp. On this basis the maximum loads that should be used for optimisation studies are the loads in 2012.

7.4.3 Network Security and Planning Criteria

SPI PowerNet has used deterministic planning criteria for the re-optimisation study. It has described its planning criteria for the re-optimisation process in appendix D of its revenue cap application.

At the time of the 1994 optimisation, SPI PowerNet network planning was based on a deterministic planning criterion. VENCorp no longer applies deterministic planning criteria and instead it uses probabilistic planning criteria subject to a regulatory test.

Generally optimisation should be performed using the same planning criteria used for the network planning. However in this instance the use of deterministic criteria is a reasonable proxy for VENCorp's probabilistic approach, although the n-2 criteria used for the 500 kV network feeding Melbourne and the network supplying the Melbourne CBD will probably give a more conservative result.

The value added to the RAB as a result of re-optimisation is $249.6. Out of this total $219.5M was added as a result of reinstatement of the following lines.

Hazelwood-Rowville 500kV line = $ 67.7M

Moorabool – Heywood – Portland double circuit 500kV lines = $ 144.4

VENCorp has performed detailed studies on the reinstatement of Hazelwood – Rowville 500kV line based on probabilistic planning criteria subject to regulatory test. PB Associates has reviewed these and is satisfied that the reinstatement of the Hazelwood – Rowville 500kV line is justified.

However it is not possible to comment on whether the reinstatement of other parts of the transmission network as a result of the re-optimisation process is justified as the detail study results were based on the optimisation criteria used by SPI PowerNet, which is not consistent with VENCorp planning, the main issue being the planning horizon.

7.5 LAND OPTIMISATION

In its re-optimisation exercise SPI PowerNet has not optimised substation land. Our review indicates that the size of the land areas is, in some cases, in excess of the requirement. We believe the land sizes should be optimised and only the optimised value should be included in the RAB.

The following Table 7-3 shows the various substation land details as provided by SPI PowerNet.

Table 7-3

Description	Surburb /Town	Lot Area (Ha)
Terminal Station	Laverton North	8.339
Terminal Station	Ballarat	4.929
Terminal Station	Bendigo	5.3418
Terminal Station	Brooklyn	9.9799
Terminal Station	Brunswick	4.0663
Terminal Station	Dederang	10.9488
Terminal Station	East Rowville	6.9902
Terminal Station	Frankston	4.5727
Terminal Station	Geelong	5.3563
Terminal Station	Fglenrowan	9.2909
Terminal Station	Hazelwood	42.98
Terminal Station	Heatherton	5.8757
Terminal Station	Heywood	51.9201
Terminal Station	Horsham	9.1053
Terminal Station	Keilor	19.1983
Terminal Station	Kerang	6.3894
Terminal Station	Malvern	3.233
Terminal Station	Moorabool	59.6206
Terminal Station	Morwell	7.41
Terminal Station	Mount Beauty	9.341
Terminal Station	Red Cliffs	9.6283
Terminal Station	Richmond	3.131
Terminal Station	Ringwood	17.28
Terminal Station	Rowville	50.5835
Terminal Station	Shepparton	15.655
Terminal Station	South Morang	60.12
Terminal Station	Springvale	5.23
Terminal Station	Sydenham	23.9
Terminal Station	Templestowe	18.45
Terminal Station	Terang	3.6244
Terminal Station	Thomastown	22.176
Terminal Station	Tyabb	16.234
Terminal Station	Kensington/West M	3.086
Terminal Station	Wodonga	12.75
Terminal Station	Yallourn	4.599

It has been normal practice to provide for a buffer zone around terminal stations both for environmental reasons and to provide room for transmission line terminations. Still in our view some of them are in excess to the actual requirement.

8. ROLL- FORWARD TO 1 JANUARY 2003

8.1 INTRODUCTION

The RAB at 01 January 2003 was determined by roll forward of the 1 January 2001 RAB for two years to include actual and forecast capital expenditure, retirements, inflation and depreciation over the period and making adjustments for re-optimisation and the roll-in of some services previously outside the revenue cap. The opening 01 January 2001 RAB is rolled forward to 31 December 2002 and then the values of other excluded assets, VNSC and re-optimisation were added in to determine the RAB as at 01 January 2003.

8.2 NEW ASSETS (CAPEX)

From 01 January 2001 to 31 December 2002, SPI PowerNet has included a total of $86.9m as its capital expenditure[5]. PB Associates did not investigate the CAPEX in this part of the review but undertook a review of SPI PowerNet's capital expenditure requirements as part of a separate assignment.

8.3 OTHER EXCLUDED ASSETS

SPI PowerNet has listed these items in table 3.1 (section 3.3.2) of the SPI PowerNet revenue cap application. The valuation is provided is $36.1M. These assets included two types of projects; non-contestable works providing services to VENCorp and connection asset projects providing services mainly to distribution companies.

With regard to non-contestable VENCorp initiated projects, VENCorp states in its revenue cap application that they have performed detailed economic assessments using criteria consistent with those set out in the Code's Regulatory Test. We have sighted some of these contracts but not carried out a detailed scrutiny as copies were not available due to the confidential nature of these agreements. If the Commission decides to allow these non-contestable projects amounting to $10.2m to be included in the RAB, we recommend that the Commission scrutinise all the relevant details.

The other projects are mainly connection assets totalling $25.9m. Again we have not performed a detail evaluation of these contracts due to time constraints and unavailability of copies. In our discussions with the SPI PowerNet, it was understood that the values included in the revenue cap application are not the actual project costs. We believe if the Commission decides to include these assets they should be based on the actual costs like any other capital projects. Also we recommend that all contracts be scrutinised.

8.4 VICTORIAN NETWORK SWITCHING CENTRE (VNSC)

VENCorp sold VNSC to SPI PowerNet in 1998 and entered into a contract to buy the services back, outside the current revenue cap. This falls into the non-contestable category and the services are under existing contract to VENCorp. SPI PowerNet has included $7.4m in their 01 January 2003 RAB for VNSC. The agreement between VENCorp and SPI PowerNet makes provision for these services to be included in the revenue cap after 01 January 2003. On this basis inclusion of VNSC into the RAB is appropriate. However, as we have not reviewed the contract in detail, PB Associates is unable to comment on whether the roll-in value is reasonable.

[5] Refer table 7.8 in the SPI PowerNet's revenue cap application

8.5 RE-OPTIMISATION

SPI PowerNet re-optimisation has added $249.6[6]m to the value of the RAB. This is discussed in detail in Section 7.

8.6 RAB AT 01 JANUARY 2003

RAB valuation at 01 January 2001 was rolled forward by adjusting for capital expenditure, depreciation, retirements and inflation over the period to the end of 2002. Then SPI PowerNet added the value of "other excluded assets, VNSC and re-optimisation to form the 01 January 2003 Regulatory Asset Base.

The following Table 8-1 summarises SPI PowerNet valuation for the RAB at 01 January 2003.

Table 8-1

	From January 2001 to 31 December 2002 **SPI Revenue Cap Application $m**
Opening Asset base	**1,714.1**
New Assets	86.9
Indexation	93.1
Depreciation	119.7
Closing Asset base	**1774.4**
VNSC	7.4
Other excluded assets	36.1
Re-Optimisation	249.6
Total	**2067.5**

[6] As a result of this review SPI PowerNet corrected the value in their revenue cap application from $271.8m to $249.6m reducing the RAB by $22.2m.

9. ALTERNATIVE METHODS TO DORC

9.1 ECONOMIC VALUATION

Application of the economic value test is problematic in regulated environments, as the asset valuation requires a forecast of the future income stream. However the future income stream is, in itself, determined by the regulator, generally on the basis of the value of the assets employed. The logic is circular, as the assessment of the potential income stream is not independent of the valuation process.

In the case of a distribution network an economic value test can be applied fairly easily if an agreed mechanism exists for avoiding this circularity problem. The New Zealand ODV guidelines allowed an unregulated electricity price to be assumed for the purpose of application of the test, leaving the valuer free to assume a price based on the cost of alternative energy sources. This approach was not without its problems, and the most recent revision to the New Zealand Guidelines has placed a cap on the electricity price that can be assumed. The New South Wales Guidelines do not address this circularity problem.

The traditional approach to assessment of economic value assumes that, having decided on an appropriate pricing strategy, it is possible to forecast future revenue flows generated by a given asset with a high level of certainty. Assuming a significant variable component in the pricing mix, future revenues from a particular transmission asset will be determined by the location of the generation on the network in relation to the load, as well as by the merit order for generator dispatch.

In the case of transmission networks operating within the National Electricity Market this assumption of predictability is flawed, particularly for the shared portion of network.

The network owner has little control over the location of generators, which is determined by investors in electricity generation. The likelihood is that generator locations will change with time, but this change is unpredictable, and likely to occur relatively quickly when assessed in the context of the engineering lives of transmission assets.

The merit order for generator dispatch is determined, not by SPI PowerNet or VENCorp, but by NEMMCO on the basis of bids into the wholesale electricity market. This will be determined not only by the relative costs of different types of generation, but also by the location of each generator on the network and the real time bidding strategies used by individual generators in the market. The merit order can therefore change quickly, and is likely to be even more volatile and unpredictable than generator location.

The situation is further complicated by the fact that an electricity market will deliver the lowest energy prices only in situations where power flows in the network are unaffected by capacity constraints. This is because when power flows through a network are limited by a constraint, prices on one side of a constraint will be higher than they would have been if the constraint had not existed. Hence the very existence of the market makes a rational economic analysis of the need for a particular transmission asset difficult, since the presence of transmission constraints can be considered to reduce the efficiency of market operation.

In the unshared components of a transmission network, individual assets, generally referred to as connection assets, can be assigned to specific customers, be they generators or loads. Capacity of connection assets can be readily matched to customer requirements. However, removal of excess connection asset capacity is a technical optimisation issue. The economic valuation of connection assets is driven only by the level of asset utilisation, assuming that revenue streams are not protected by bilateral contracts and that there is a high variable component in the pricing mix. As discussed

above, asset utilisations can be volatile, particularly for generator customers, making future revenues difficult to forecast.

With the lack of any economic value analysis in the SPI PowerNet valuation, there is an implicit assumption that the deprival value of the network will be equal to the DORC. This is a pragmatic approach, in the absence of any persuasive evidence to the contrary. It is also consistent with the approach taken by Commission in its draft SoRP.

9.2 HISTORIC COST VALUATION FOR ASSETS WITH FIXED ASSET LIVES

The use of depreciated historic costs as the basis for asset valuation assumes a pricing strategy based on cost recovery. In our view this is incompatible with the economic philosophy that underlies the electricity industry structure in Australia today. This assumes that energy prices should be set, not on the basis of costs, but by market forces. We note that the underlying premise for the deprival valuation methodology is that assets should be valued in terms of the economic loss suffered if deprived of the use of the asset. This loss is measured either on the basis of the cost of replacing the asset with a modern equivalent or, if this is not economic, on the basis of the future income stream foregone. In our view this approach, while not perfect, is more consistent with modern economic thinking.