TOP ENERGY ODV REPORT

Valuation Date: 31 March 2004
Report Date: 9 December 2004

Index

Introduction

This report is compiled by Top Energy Ltd to meet the requirements of the Electricity Disclosure Regulations and has been subject to independent Engineering review. It is intended to derive a value for the fixed distribution assets of the Top Energy network and make that value available to the public in a form that allows comparisons with other similar businesses.

Summary

The following table summaries the valuation of the Top Energy network assets as required. As no Economic valuation adjustment is required the ODV is the same as the ODRC at $96,695,000

Top Energy ODV 2004 Summary

				Replacement Cost $k	**Depreciated Replacement Cost $k**	**Optimised Replacement Cost $k**	**Optimised Depreciated Replacement Cost $k**	**ODV $k**
				183,703	**97,782**	**181,668**	**96,695**	**96,695**
The Valuation is made up of the sum of the following categories								
Subtransmission								
Lines	33kV Total	270	km	13,589	7,482	13,589	7,482	7,482
Cables	33kV Total	2	km	272	248	272	248	248
Zone Substations								
Substation Equipment	Non GIS			2,577	1,090	2,577	1090	1,090
Zone Transformers	Non GIS	17		7,040	2,602	6530	2398	2,398
Substation Swgr	GIS	29		261	116	261	116	116
ABS	Non GIS	86		625	197	510	169	169
CBs	Non GIS	84		2,736	1,007	2646	971	971
Land	Non GIS	10		645	645	444	444	444
Buildings	Non GIS	10		742	375	660	325	325
Mobile Substation	Non GIS	1		1,000	956	1,000	956	956
Distribution								
Lines		2,659	km	67,375	34,525	67,375	34,525	34,525
Cables		115	km	9,778	8,065	9,778	8,065	8,065
Distribution Swgr Total		6,476		15,155	6,602	15,155	6,602	6,602
Substations		5,165		6,800	3,778	6,800	3,778	3,778
Transformers		5,188		20,761	11,365	19,723	10,797	10,797
Low Voltage								
Lines		310	km	7,434	3,939	7,434	3,939	3,939
Cables		417	km	20,704	11,746	20,704	11,746	11,746
Streetlight conductors		-		-	-	-	-	-
Customer Connections		27,347		5,250	2,333	5,250	2,333	2,333
SCADA				462	233	462	233	233
Spares				499	479	499	479	479

Methodology

This report intended to comply with the methodology set out in *Handbook for Optimised Deprival of System Fixed Assets of Electricity Lines Businesses* issued by the Commerce Commission (the Handbook).

In simple terms, the process used is to establish a Replacement Cost (RC) and age for the various components that make up the distribution network. Using that information, along with a prescribed maximum life, a Depreciated Replacement Cost (DRC) is calculated. Having completed that, the assets are reviewed to remove or optimise assets that are over specified or unnecessary and an Optimised Depreciated Replacement Cost (ODRC) is established. Finally, if required, an Economic Valuation (EV) process is used to identify and exclude or reduce the value of assets that are incapable of providing an economic return. The resulting value is referred to as the Optimised Deprival Value (ODV). Note that no Economic Valuation adjustment is required for the Top Energy ODV in 2004.

Optimised Depreciated Replacement Cost (ODRC)

Asset Register

The Top Energy asset register is made up of a number of components.

The prime asset register is the Geographic Information System (GIS) recently installed at Top Energy which is used to record both the location and engineering details of the distribution Network. Details of the asset components have been derived from the initial construction records of the network.

All asset subcategories, quantities, values and multipliers are set out in the applicable spreadsheets in Appendix 1 for those readers with the need to view the detail. However the summary table is consistent with the categories in the handbook and is intended to provide a useful disclosure of Top Energy's assets

The following items are not included in the GIS system

> 33/11kV Substations
>
> Substation equipment records, including circuit breakers and transformers, are kept in spreadsheet and because of the small number of assets involved based on purchase and test records.
>
> Substation land and building valuations have been subject to specific valuation in 2004.
>
> 33kV Line Switchgear
>
> Data for this equipment has not yet been put in the GIS and is listed separately.

The following items are not fully included in the GIS system

Low Voltage Assets

The quantity of Top Energy's LV assets is adequately recorded in urban areas but the records of rural areas have not been well maintained. Limited data capture has been undertaken within the realistic level of resources available to the company. Data has been captured from a total of 5 feeders out of a total of 45 representing mainly rural areas and containing over 900 transformers out of a total population of around 5100. The data captured has been extrapolated to determine a valuation for this asset category using the average length of LV per transformer. The rural nature of the sample means that the data related almost entirely to small pole mounted transformers. It provided quantitative information about both overhead and underground low voltage cable assets. The method has been to calculate the average length of captured LV per transformer outside the urban zones. This was multiplied by the total number of transformers outside the urban zones to give a total length for rural LV. This was then added to the total km of LV in urban zones to provide a total LV for the network. Therefore the total LV asset is 730km.

Trench Data.

Top Energy has not recorded trench details. Therefore this new requirement of the ODV process is not directly provided for in the GIS system. Although where ever there are cables there is a trench, this is not sufficient to determine the quantities of cables in shared trench as required by the Handbook. Top Energy has used the proximity of LV cables to HV cables within the GIS system to obtain a figure of 70km and allowed a further 60m (40m, a typical property frontage, along the road to a shared 20m road crossing) per transformer 100kVA and over to estimate the required shared length at 110km.

Customer Service Connections

The number of underground service lines has been confirmed by a data capture programme which has also provided data on location for 90% of the ICPs.

The proportion of three phase connection points is taken as 10% of the total. This ratio was verified from meter records in 1996.

The number of pillars recorded in the GIS system is 8000. 85% of these will have two connections giving a total number of underground connections of 14,000 or approximately 54% of all consumers.

Assumptions

The following assumptions have been made when populating the GIS system:-

- Lines built prior to 1961 used wooden poles and those after used concrete unless specifically identified. This is based on old company records of pole construction.
- The date of original ESA application reflects the age of the line. This is considered reasonable in that upgrades have required new ESAs to

be produced. This equates to the age of the pole and it is pole age, where available, that has been used for confirmation of data.

- An data extraction problem with the GIS records on 33kV overhead has led to an over calculation of subtransmisson assets at 302km. Because the known length of those assets is 270km, the value of those assets has been reduced proportionately.
- That no underground reticulation was installed prior to 1961 and that since soon after that, all low voltage reticulation has been placed underground.
- Underground LV installation is assumed to be evenly spread since the early 1960s unless specific data is available.
- Underground High Voltage is only used by Top Energy where required by the local Council and where paid for by means of a capital contribution.
- The main field switchgear comprises of Air Break Switches for which there is limited information. It has been assumed that they are the same age as the lines on which they are installed.

Standard Costs

Standard costs used are shown in Appendix 3

Non Standard Costs

The replacement costs and lives specified in the Handbook are utilised where they exist. Assets that use non standard costs are:

Large substation 33kV transformers have been valued at prices based on current budgetary information.

The mobile substation value is based on updated information from the supplier

SCADA equipment has been valued at prices based on current budgetary information.

Three phase HV fuses have been valued at $2k, the same as two phase sets because the GIS system has defaults to three phase but to be compatible with the transformers in the network nearly all of the fuses are two phase.

Three wire Low Voltage Overhead. This is not included in the standard costs and values have been interpolated from the two and four wire standard costs

Heavy 3 wire Primary	$41k per km
Medium 3 wire Primary	$38k per km
Light 3 wire Primary	$33k per km
Heavy 3 wire Underbuilt	$20k per km
Medium 3 wire Underbuilt	$19k per km
Light 3 wire Underbuilt	$16k per km

Three wire Low Voltage Underground. This is not included in the standard costs and values have been adjusted from the four wire standard costs

Heavy 3 wire Primary	$66k per km
Medium 3 wire Primary	$57k per km
Heavy 3 wire Underbuilt	$34k per km
Medium 3 wire Underbuilt	$26k per km

Single phase reclosers have been separated from three phase units and valued at one third of the three phase price, $9k

Voltage regulator values are based on current budgetary information

Multipliers
The following non unity multipliers have been used:

Multiplier	Magnitude	Justification	Applied to	Comments
Urban1	1.5	FNDC Urban zones	HV overhead lines	Applied to those areas zoned Urban residential or commercial in the FNDC District Plan
Remote1	1.1	More than 75km from Depots	HV Lines	Not actually applied due to inadequate data
Rugged1	1.3	Need for helicopter or tracked vehicles	HV overhead lines	Applied to steep off road lines identified for previous valuations
Rocky1	1.5	Where conventional diggers can't operate	HV Cables	Not actually applied due to inadequate data

Traffic management has been handled by using the GIS system to count the poles within 15m of the State Highways' centre lines and converting that to a lineal distance of 206km using 14 poles per km. The value is $800 per km. State Highways are under the jurisdiction of Transit which applies Level 1 traffic management rules.
A CBD cable multiplier has not been applied.

Non Standard Lives
Only Standard lives have been used in this valuation except that assets still in service retain a three year remaining life as required by the Handbook.

Changes to Asset Ages
No changes have been made to asset ages.

Depreciation
Assets have been depreciated on a straight line basis.

Load Growth

Appendix 2 has a schedule of grid exit points, zone substations and high voltage feeders and the company's load predictions for each. Load predictions are based on a detailed review of historic load patterns and current development patterns in the district. As Top Energy constructs virtually all the power reticulation in the district the predictions for load growth in the 2 - 5 year period is considered accurate as they are significantly based on proposed land development.

No individual load above 10MW or 5% of existing Maximum demand has been included in the forecast.

Quality of Supply

The quality of supply requirements used by Top Energy are set out in the Asset Management Plan but the following table provides the main design targets for fault situations

Target Level at Substations			In the event of an outage of one major element of the sub-transmission network load would be restored to the 11kV level according to the following targets:
4	>12MVA	Or >13,000ICPs	Supply would be uninterrupted. However load can still be transferred without interruption by switching if necessary to avoid exceeding ratings.
3	6 - 12MVA	Or 6500 – 13,000 ICPs	Supply would be restored within 30 minutes by switching at sub-transmission or distribution level.
2	3 - 6 MVA	Or 3000 - 6500 – ICPs	Supply would be restored to 50% within 3h, by switching after the faulted element is isolated. Supply to the remainder would not be restored until the faulty element is repaired or replaced.
1	<3MVA	<6500 ICPs	Supply would not be restored until the faulty element is repaired or replaced.

The following are excluded: Transpower outages; extreme conditions or events such as: major storms,(as determined by the NZ Meteorological Office), earthquakes, or other natural disasters; acts or war; or terrorism.

Planned maintenance of substation switchgear which affects all the substation load during the maintenance process is categorised at level 3 in that short interruptions are acceptable if necessary to allow switching but practically the load must be able to be supplied while maintenance is being carried out. The frequency of this work would preclude the meeting of reliability targets if this was not possible. This has an impact on the minimum acceptable size of feeder conductors in some cases as it requires a feeder to have the capability to carry the backed up feeders load.

Network Optimisation

The Top Energy network is substantially radial in nature with the 33kV network and substations configured as shown in Figure 1

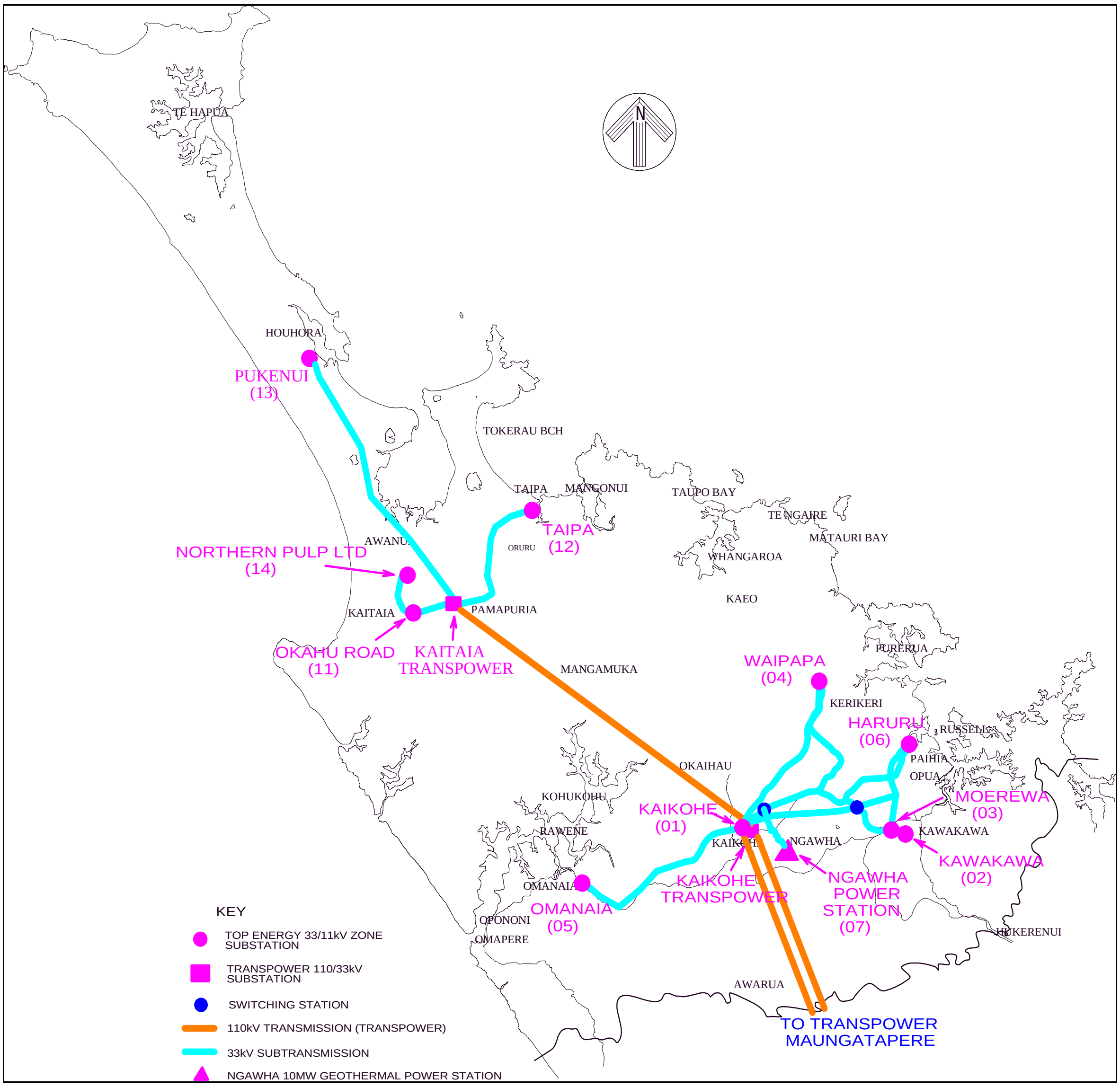


Figure 1- The Top Energy Network 33kV and Substations

a) Grid Exit Points

The two grid exit points Kaikohe and Kaitaia are approximately 80km apart with a range of uninhabited hills in between. The distribution networks are not substantially interconnected and could not be usefully interconnected using 33kV lines.

The grid exit points have only recently been upgraded to provide dual transformers to allow maintenance on the 110kV/33kV banks without loss of supply. Kaikohe has dual circuit line and Kaitaia a single circuit line.

The Ngawha Power Station is located 6km from the Kaikohe grid exit point and connected to the distribution network at 33kV. There is no significant load between the Plant and the grid exit point and it is not practical to use an interconnection voltage below 33kV for a continuous 10MW plant

No Optimisation Required

b) Sub transmission Circuits
Pukenui, Taipa, Omanaia are all supplied with only one 33kV line each and can't be supplied using 11kV due to the distances involved and subsequent volt drop.

In the north, Okahu Road (presently 9 MW) and NPL (presently 13MW) substations are supplied using a shared double circuit 33kV line. This provides n-1 security (apart from pole failure) and does not exceed the reliability standards set out in the Asset Management Plan. Volt drop under n-1 and loss considerations under normal conditions preclude a reduction in wire size.

In the south, Waipapa (presently 14MW) is supplied by two 33kV lines as is Kaikohe (presently 9MW).

Haruru (presently 6MW), Kawakawa (presently 5MW), Moerewa (presently 4MW) all are supplied on two circuits that are configured into a ring at their mid point. These do not exceed Top Energy's quality standard set out in the Asset Management Plan.

There is one line constructed at 33kV and running at 11kV. It will supply the Kaeo Substation to be built in or before 2007 which will remove some of the load off the Waipapa substation and allow for the increasing load on the Mahinepua peninsula.

When considering conductor size the following table indicates the present size and the optimised size to handle the low forecast load for 15 years ahead. The n-1 condition is used where applicable. Where a larger conductor would be appropriate no change is shown.

Line	**Load MW 2019 low forecast**	**Present Size**	**Optimal Size**
Pukenui	2.3	Light	Light
Taipa	7.9	Light	Light
Okahu	26	Heavy	Heavy
NPL	26	Heavy	Heavy
Omanaia	2.8	Light	Light
Waipapa 1	19.2	Light	Light
Waipapa 2	19.2	Heavy	Heavy
Kawakawa 1	19.5	Heavy	Heavy
Kawakawa 2	19.5	Light	Light (to be upgraded)
Ngawha	10	Heavy	Heavy (loss reduction)

No optimisation is required

c) Zone Substations
As can be seen in Figure 1 Top Energy's substations are separated by significant distances and, in general by low density rural land. There is no opportunity to back up zone substations, let alone substitute 11kV lines for them. The only exception to this is the Moerewa Substation which is approximately 5km from Kawakawa. To provide the level of security required by the main industrial consumer two express 11kV lines would be required and the capacity of the Kawakawa substation increased to 2 x 10MVA transformers as a minimum. The rural load currently supplied from the Moerewa Substation would need to be supplied through switches capable of isolating faults without disturbing the industrial customer. The existing situation is the most economic as the 33kV line route has to pass the Moerewa Substation en route to Kawakawa

The mobile substation provides back up for planned substation maintenance for the numerous single line/transformer substations Top Energy owns, and N-1 security for Haruru substation for most of the year.

The configuration within each substation has been considered with the basic requirement of providing levels of reliability compliant with the standards set out in the Asset Management Plan.

The possibility of optimising indoor 11kV switchgear to outdoor was reviewed and rejected on the basis that the cost of the switch and its associated isolation links exceed the value of its indoor equivalent. Top Energy has no double bus bars

In general there is no oil bunding at Top Energy's Zone substation but a programme is in place to install bunding. This has been carried out at NPL and Pukenui and is about to be installed at Okahu substation.

There are no automatic fire fighting or fire detection systems installed at the substations.

There are three areas of zone substation optimisation in the Top Energy network. The first is that some of the actual 33kV / 11kV transformers are dual rated 11.5 /23MVA units. At Moerewa, Haruru, Kaikohe and Okahu these are optimised to reflect a smaller 5/10MVA unit would be more appropriate based on the 10 year forecasts. At Omanaia there are three single phase transformer units with separate voltage regulators. This combination has been optimised to a single three phase unit with on load tap changing.

The second area at zone substations where Top Energy's standard design at the time of construction provided for extra switches. In some cases the substation has been reconfigured in conjunction with line changes to make use of the switches to provide for an N-1 fault situation but where this is not the case the switches have been optimised out.

Lastly the substation land and building values have been adjusted to reflect an appropriate size single 2000sqm and double 3000sqm bank substations as required.

The details of the Optimisation included above are separately scheduled in the calculation sheets of Appendix 1 but are also included in the asset sheets associated with specific asset records.

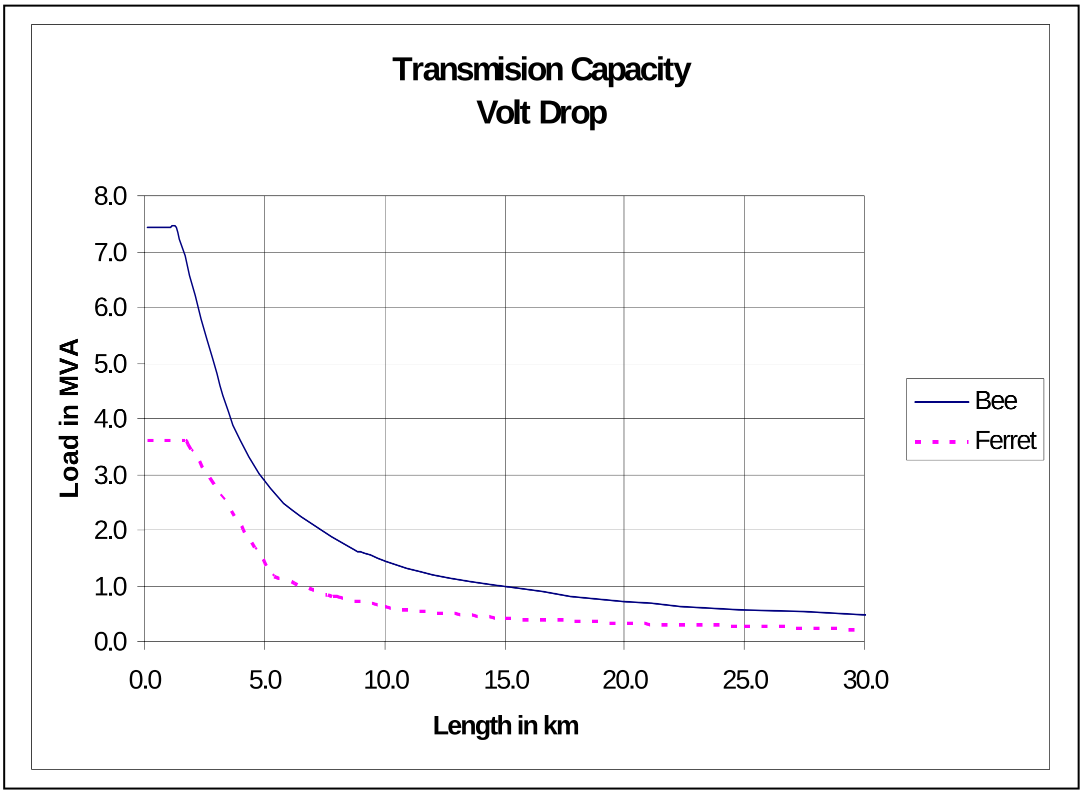
d) 11kV Distribution Lines

Top Energy uses conductors classified by the Handbook as medium or light. In considering whether these should be optimised to a smaller size we have considered the current rating, losses and volt drop. Although from an engineering point of view it would be possible to consider a variety of conductor sizes, for this valuation there is only one option. That is to reduce medium conductors to light. For the purpose of valuation, Top Energy's medium (Bee 130mm^2) and its light conductor (Ferret 40mm^2) have been used to model the options

Reference to the feeder loading tables in Appendix 2 show that a light conductor would have an adequate thermal rating to carry the load of almost all feeders. Although Top Energy does not specify a n-1 criterion for feeders due to the mainly rural nature of the network and therefore the impracticality of providing full back up, it does make use of feeder interconnections close to the substations to reduce the number of outages required for planned substation maintenance. This is in compliance with the level 2 reliability as set out in the Asset Management Plan and repeated above and without this ability reliability targets would not be achievable. To do this a feeder's current rating has to be adequate to carry its own load and that of the feeder it backs up. The appendix indicates those feeders where this criterion precludes optimisation to light conductor.

The next criterion for assessing whether a smaller conductor should be used is to determine the relative cost of losses and capital. If the cost of losses exceeds the capital cost of the increased size of conductor then a smaller conductor should not be used. Using values from the handbook, the change from light to medium 11kV line adds \$3k per kilometre which has an annual cost of around \$300pa. If 5c/kWh is used as the cost of losses and assuming that the peak load is carried for a third of the time and one half that is carried for the rest of the time, the Cost of Losses = $0.5I^2Rx24x365$. For a conductor with a one MW peak load, the loss difference between Bee and Ferret costs \$338pa. Therefore feeders with a peak load of 0.9MW or more have been identified as not requiring optimisation.

The third criterion is the need to maintain voltage within acceptable levels. The chart below show the load capacity for Top Energy's medium (Bee 130mm^2) and its light conductor (Ferret 40mm^2) based on a 4% volt drop.



The chart shows that any feeder with more than 1MW of load evenly spread along its length under normal or back up conditions beyond around 5km should use at least medium conductor. Feeders where this criterion precludes optimisation are marked in the appendix.

Having completed that review only two feeders were still subject to possible optimisation. Tau Block, and Pokapu. Pokapu can not sensibly be used to back up the Affco feeder but has less than 1km of Bee conductor so is not considered material. Tau Block is used to back up the remaining two feeders out of Moerewa and therefore meet the reliability requirements of the industrial customer adjacent to the substation

The Feeder loading tables in Appendix 2 confirm the sizing is appropriate. No optimisation is required.

Top Energy’s design standard 11kV overhead line is two wire unless three phase is required by customers or the load is over 200kVA. The need to reduce the losses on the Top Energy network stated in the AMP requires that where substantially loaded three wire lines should be built rather than two. Two wire lines make up over 1400 km of the HV line asset.

SWER lines have been valued at the same as two wire and the isolating transformers given zero value.

No further optimisation of these assets is required.

e) Distribution Transformers

Top Energy has a peak load of 56MW of which approximately 12MW is taken at 11kV. The remaining 44MW is passed through 174MVA of distribution transformers giving a capacity utilisation of 27%. If the single customer transformers were optimised from 15kVA to 10kVA the utilisation would be 30% without reduction in the Valuation. However this is precluded by the handbook which does not reflect the nature of the Top Energy network.

A reduction of capacity and value of 5% has been applied to optimise utilisation to 30% as required.

f) Low Voltage Network

Top Energy provides no back up of LV circuits. Circuits are either three or four wire, using medium conductor (the smallest size in the Handbook) which precludes optimisation of conductor size. Reviews of current and past designs indicate that a larger conductor would be required if we wish to provide back up of LV circuits but that Volt drop rather than capacity is the constraint. Increasing the conductor size is not the optimal solution in general

New construction consists entirely of underground cables. In urban areas, this is a requirement of the Far North District Council and no optimisation is possible. In the rural areas where customers are not supplied directly from a transformer the extra cost of under ground cables is met by means of capital contributions.

Top Energy is has been unable to achieve a satisfactory extraction of shared trench data from the GIS system to date. The nature of the network, which is radial and has mainly overhead 11kV with underground LV, led to the approach to sample and make an assessment of the amount of shared trench. The use of express feeds is almost non existent on the network and 11kV cables to transformers are almost always radial from overhead. The value chosen is 100km of shared trench in comparison to the total lengths of 11kV and 400V cable of 115km and 417km respectively.

No further optimisation is required.

g) Voltage Control Devices

Voltage regulation is achieved at the Zone Substations using conventional OLTC except at Omanaia. Top Energy has fourteen single phase 11kV voltage regulators typically in pairs. One pair is situated at Omanaia Zone substation and are subject to optimisation with the transformer. The others are on feeders over 30km long where there is too much load at the end of the feeder to maintain statutory voltage.

Top Energy has a small number of unswitched capacitors attached to the 11kV. These were placed to improve power factor at the GXP and are not included in the valuation as there is no category and their omission is not material.

No optimisation is required

h) Load Control Plant
The Company uses Enermet (Zellweger) 33kV injection plant at Kaikohe and Kaitaia. The lack of interconnection between the two GXPs prevents any further aggregation.

No Optimisation is required

i) SCADA Equipment
The Company uses SCADA to monitor and control its Zone Substations and the Transpower points of supply. Top Energy has the right to operate the Transpower 33kV breakers directly.

On top of this the company has installed remote control of selected 33kV and 11kV switches in order to achieve a significant improvement in reliability over the last five years. With only 40 feeders and over 3000km of overhead HV line the ability to reduce the time taken to restore supply to parts of the feeder while locating the fault was necessary to bring customer service levels to acceptable standards. Loss of control of those switches would lead to breaches of the service level requirements of the price control regulations.

No optimisation is required

j) Spares
The only critical spares held and included in the valuation are transformers. The numbers and sizes are defined in a specific agreement with the store in addition to the normal construction stocks.

No optimisation is required

Economic Valuation

Introduction

The ODV of an asset is the lesser of its ODRC and Economic Value ("EV"). The EV of an asset is lower than the ODRC where it is possible to provide the same service, at lower cost to users of the network, by an alternative means.

Valuation of system fixed assets at EV

System fixed assets are valued at their EV when it is possible to supply users by alternative means at a lower cost than the existing network.

The strict application of the above approach would require EV testing for each part of the system. This would be time consuming and impractical in many instances. The Handbook states in paragraph 2.59 however, that a comprehensive EV test need only be applied if it is considered that the write-down in asset value as a result of the EV analysis on all potentially uneconomic assets would be greater than 1% of the ODRC of all system fixed assets. In accordance with clause 2.59 of the Handbook, the EV analysis undertaken for the 2001 ODV has been considered as a guide to determine whether a comprehensive EV test is required.

In 2001, 18 segments were selected for EV testing using the segmentation criteria prescribed in paragraph 3.70 of the Ministry of Economic Development's ODV Handbook (4th edition). Together these segments comprised a total ODRC of $482,815 or 0.67% of the total 2001 ODRC. The EV testing applied to these segments in 2001 resulted in an EV write-down of $113,894 or 0.16% of the ODRC.

Since 2001, there have been no significant changes to the configurations or supply requirements of these spurs and feeders. Increases in the replacement cost of the assets due to revised Handbook values have been partially offset by additional depreciation on the assets since 2001. As a result, there is no reason to consider that the results of the EV testing undertaken in 2001 would be materially different in 2004. In addition, there are no other segments of the network which are believed to be less economic than the segments noted above. Therefore, as the EV write-down in 2001 was considerably less than 1% of the ODRC, it is not necessary to undertake a comprehensive EV analysis for the purposes of the 2004 ODV valuation.

Further support for this conclusion is provided by the cost of the alternative supply options for the relevant feeders and spurs. In 2001, the ODV Handbook prescribed that EV tests must be undertaken using a cost for the alternative supply option (excluding energy, but including transmission) of no more than 30 cents per kWh (or 35 - 40c/kWh including energy). Based on analysis undertaken by PricewaterhouseCoopers in 2001 and again in 2004, for those customers connected to the least economic segments, the least cost alternative use able to provide the same service, is local diesel generation. In 2001, PricewaterhouseCoopers assessed the total costs of supply for remote segments as being greater than the maximum alternative cost allowed in the 2001 Handbook. In 2001 however, in accordance with the Handbook, the EV tests were calculated using the maximum allowable tariff of 30 c/kWh. The EV write-downs calculated in 2001 were therefore potentially overstated due to the Handbook's requirement to use 30 c/kWh as the cost of the alternative.

The 2004 Handbook does not prescribe a maximum value to be used for alternative supply options. The current cost of the fuel itself is in excess of 30c/kWh (for remote locations) and forecasts of diesel prices are not expected to result in prices any lower than 2001 prices. In addition, neither we nor PricewaterhouseCoopers has evidence that the capital costs for diesel generation are lower in 2004 than in 2001, or will become less than 2001 costs in the medium term. These factors support our conclusion that the EV analysis undertaken in 2001 was potentially overstated. Therefore for the purposes of this valuation, and given the 2001 EV results, we conclude that the potential EV write-down in 2004, if any, will be less than 1% of ODRC.

In addition, the potential for by-pass of existing customers by alternative suppliers was considered in order to determine if additional EV analysis was required. Following discussions with PricewaterhouseCoopers, it was concluded that no additional analysis was required as there are no instances where large customers (that is those who are likely to be of most interest to alternative suppliers), could be supplied by another network or the transmission system with costs of supply less than existing costs of supply. Thus the EV of these assets will be greater than their ODRC, based on the higher alternative costs, and the ODV equals the ODRC.

For the reasons outlined above therefore, and in accordance with Clause 2.59 of the Handbook, we have reviewed the system fixed asset base and have identified assets that are potentially uneconomic. As a result, and based on analysis previously undertaken, with consideration of changes in circumstances relevant to these assets, we conclude that an EV of these assets will not result in a material (or > 1%) reduction in the ODV of the total system fixed assets. This conclusion was discussed and confirmed with PricewaterhouseCoopers.

Review Process

An independent review was carried out on this valuation by SKM Ltd. They were chosen because the person involved had thorough knowledge of the ODV process and was doing similar work for other lines companies. Their report is attached in Appendix 4.

Appendix 1: Tables of Assets and Values

The Sheets in this appendix are the detailed data and calculation sheets used to develop the Valuation

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Mobile Substation	Non GIS	1		1,000	956	1,000	956	956
Distribution								
Lines		2,659	km	67,375	34,525	67,375	34,525	34,525
Cables		115	km	9,778	8,065	9,778	8,065	8,065
Distribution Swgr Total		6,476		15,155	6,602	15,155	6,602	6,602
Substations		5,165		6,800	3,778	6,800	3,778	3,778
Transformers		5,188		20,761	11,365	19,723	10,797	10,797
Low Voltage								
Lines		310	km	7,434	3,939	7,434	3,939	3,939
Cables		417	km	20,704	11,746	20,704	11,746	11,746
Streetlight conductors		-		-	-	-	-	-
Customer Connections		27,347		5,250	2,333	5,250	2,333	2,333
SCADA				462	233	462	233	233
Spares				499	479	499	479	479

Schedule of Optimisations

This is provided in addition to the information in the asset schedules

Zone transformers

Substation	Year	ASSET_DESCRIPTION	Replacement Cost	Depreciated RC	Optimised	ORC	ODRC
Moerewa	1970	Zone Transformer 11.5/22MVA	520	127.1	Y	450	110
Haruru	1987	Zone Transformer 11.5/22MVA	520	323.6	Y	450	280
Kaikohe	1970	Zone Transformer 11.5/22MVA	520	127.1	Y	450	110
Kaikohe	1970	Zone Transformer 11.5/22MVA	520	127.1	Y	450	110
Okahu	1979	Zone Transformer 11.5/22MVA	520	231.1	Y	450	200
Okahu	1979	Zone Transformer 11.5/22MVA	520	231.1	Y	450	200
Omanaia	1954	Zone Transformer 1phase 1MVA	130	8.7	Y	350	23
Omanaia	1954	Zone Transformer 1phase 1MVA	130	8.7	Y	0	0
Omanaia	1954	Zone Transformer 1phase 1MVA	130	8.7	Y	0	0
Omanaia	1997	Voltage Regulator	25	21.8	Y	0	0
Omanaia	1997	Voltage Regulator	25	21.8	Y	0	0

Substation Switchgear

Substation Name	System number	ASSET_DESCRIPTION	RC ($000)	DRC ($000)	OPTIMISED	ORC ($000)	ODRC ($000)
Kaikohe	3345	33kV Air Break Switch	9	0.77	Y	0	0
Kawakawa	3381	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	0.77	Y	0	0
Kawakawa	3383	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	0.77	Y	0	0
Moerewa	3352	33kV Air Break Switch	9	0.77	Y	0	0
Moerewa	1131	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	0.3	Y	0	0
Moerewa	1130	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	0.3	Y	0	0
Waipapa	3395	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	0.77	Y	0	0
Waipapa	3394	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	0.77	Y	0	0
Haruru falls	3378	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	4.89	Y	0	0
Haruru falls	3377	EHV Switches - ABS (non Load Break-non Remote Controlled)	9	4.89	Y	0	0
Okahu	3303	33kV Air Break Switch	9	2.31	Y	0	0
Okahu	3304	33kV Air Break Switch	9	2.31	Y	0	0
Taipa	3323	33kV Air Break Switch	9	4.11	Y	0	0
Taipa	3327	33kV Air Break Switch	9	4.11	Y	0	0

Circuit Breakers

Substation Name	System number	ASSET_DESCRIPTION	RC ($000)	DRC ($000)	OPTIMISED	ORC ($000)	ODRC ($000)
Kawakawa	0202	HV Circuit Breakers Indoor Incoming	30	2	Y	0	0
Taipa	1202	HV Circuit Breakers Indoor Incoming	30	17.33	Y	0	0
Taipa	1203	HV Circuit Breakers Indoor Bus Coupler	30	17.33	Y	0	0

Distribution Transformers

	Count	ASSET_DESCRIPTION	RC ($)	DRC ($)	OPTIMISED	ORC ($)	ODRC ($)
	5188	Transformers	20,761	11,365	5%	19,723	10,797

Land

Substation	Val No.	Valuation Land ($)	Land Size (Act)	Optimised Land (Sqm)	ODRC ($)	Non Netwk Land Value ($)
Moerewa	00431-026-03	15,000	3,486	3,000	12,909	2,091
Haruru Falls	227-425-01	120,000	6,406	3,000	56,197	63,803
Kaikohe	523-607-00	85,000	18,666	3,000	13,661	71,339
Waipapa	00213-161-00	185,000	3,541	3,000	156,735	28,265
Taipa	85-173-01	56,000	4,360	3,000	38,532	17,468
Okahu Rd	35-270-00	50,000	4,665	3,000	32,154	17,846

Buildings

Substation	Val No.	Replacement Buildings ($)	DRC Buildings ($)	Optimisation Buildings ($)	ORC Buildings ($)	ODV Buildings ($)
Moerewa	00431-026-03	39,000	12,480	100%	39,000	12,480
Haruru Falls	227-425-01	124,000	79,360	70%	86,800	55,552
Kaikohe	523-607-00	91,000	29,120	100%	91,000	29,120
Waipapa	00213-161-00	48,000	20,160	80%	38,400	16,128
Taipa	85-173-01	117,000	72,540	70%	81,900	50,778
Okahu Rd	35-270-00	104,000	54,080	100%	104,000	54,080

ODV Report for All Equipment

ODV Category	Voltage	Equipment Type	Number Of Phases	Total Units	Max Life (yrs)	Average Age (yrs)	RC per unit (000 $)	Total RC (000 $)	DRC per unit (000 $)	Total DRC (000 $)
Distribution Swgr	11kV	HV Fuse 1 phase	1	163	35	20	1	163	0.42	69
Distribution Swgr	11kV	HV Fuse 2 phase	2	343	35	20	2	686	0.85	290.229
Distribution Swgr	11kV	HV Fuse 3 phase	3	4759	35	20	2	9518	0.83	3970.857
Distribution Swgr	11kV	HV Link 1 phase	1	500	35	24	1	500	0.3	150.6
Distribution Swgr	11kV	HV Link 2 phase	2	11	35	7	2	22	1.61	17.657
Distribution Swgr	11kV	HV Link 3 phase	3	13	35	7	2.5	32.5	1.97	25.643
Distribution Swgr	11kV	HV Switches - ABS (Load Break-Remote Controlled)	3	7	35	22	9.5	66.5	3.41	23.886
Distribution Swgr	11kV	HV Switches - ABS (Load Break-non Remote Controlled)	3	9	35	18	6.5	58.5	3.24	29.157
Distribution Swgr	11kV	HV Switches - ABS (non Load Break-Remote Controlled)	3	1	35	32	6.5	6.5	0.56	0.557
Distribution Swgr	11kV	HV Switches - ABS (non Load Break-non Remote Controlled)	0	1	35	16	3.5	3.5	1.9	1.9
Distribution Swgr	11kV	HV Switches - ABS (non Load Break-non Remote Controlled)	3	432	35	25	3.5	1512	1.04	448.4
Distribution Swgr	11kV	HV Switches - ABS 2 ph (Load Break-non Remote Controlled)	2	1	35	19	2.5	2.5	1.14	1.143
Distribution Swgr	11kV	HV Switches - ABS 2 ph (non Load Break-non Remote Controlled)	2	22	35	22	2.5	55	0.94	20.571
Distribution Swgr	11kV	HV Switches - Other	3	48	35	5	3.5	168	3.02	145.1
Distribution Swgr	11kV	Reclosers (1 Phase) Not Remote Controlled	1	76	40	21	9	684	4.38	332.55
Distribution Swgr	11kV	Reclosers (Not 1 Phase) Not Remote Controlled	3	22	40	23	27	594	11.32	249.075
Distribution Swgr	11kV	Regulators	0	14	55	6	25	350	22.18	310.455
Distribution Swgr	11kV	Ring Main Unit - 3 Way	3	36	40	12	16	576	11.24	404.8
Distribution Swgr	11kV	Ring Main Unit - Extra Fuse Switch	3	4	40	6	8	32	6.75	27
Distribution Swgr	11kV	Ring Main Unit - Extra Oil Switch	3	8	40	12	6	48	4.26	34.05
Distribution Swgr	11kV	Sectionalisers	3	4	40	13	18	72	12.04	48.15
Distribution Swgr	33kV	HV Switches - ABS (non Load Break-non Remote Controlled)	3	1	35	19	3.5	3.5	1.6	1.6
Distribution Swgr	6.35kV	HV Fuse 1 phase	1	1	35	32	1	1	0.09	0.086
Distribution Swgr Total				6476				15154.5		6602.466
LV Swgr	230V	LV Fuses	0	1	35	28	0	0	0	0
LV Swgr	230V	LV Fuses	1	5	35	21	0	0	0	0
LV Swgr	230V	LV Fuses	2	3	35	14	0	0	0	0
LV Swgr	400V	LV Fuses	0	2	35	18	0	0	0	0
LV Swgr	400V	LV Fuses	1	331	35	16	0	0	0	0
LV Swgr	400V	LV Fuses	2	841	35	15	0	0	0	0
LV Swgr	400V	LV Fuses	3	226	35	7	0	0	0	0
LV Swgr	400V	LV Links	1	1	35	19	0	0	0	0
LV Swgr	460V	LV Fuses	1	4	35	28	0	0	0	0
LV Swgr	460V	LV Fuses	2	28	35	20	0	0	0	0
LV Swgr	480	LV Fuses	1	1	35	6	0	0	0	0
LV Swgr	480	LV Fuses	2	10	35	15	0	0	0	0
LV Swgr	480V	LV Fuses	1	3	35	32	0	0	0	0
LV Swgr	480V	LV Fuses	2	68	35	24	0	0	0	0
LV Swgr Total				1524				0		0
Substation Swgr	33kV	EHV Switches - ABS (Load Break-non Remote Controlled)	3	1	35	21	9	9	3.6	3.6
Substation Swgr	33kV	EHV Switches - ABS (non Load Break-non Remote Controlled)	3	29	35	19	9	261	3.99	115.714
Substation Swgr Total				30				270		119.314
Grand Total				8030				15424.5		6721.78

ODV Report for Distribution Transformer by Mounting Type and KVA

Transformer Type	Total Units	Max Life (yrs)	Average Age (yrs)	RC Per Unit (000 $)	Total RC (000 $)	DRC Per Unit (000 $)	Total DRC (000 $)
Dist Subtn Ground Mounted	409	45	12	4	1636	2.96	1211.022
Dist Subtn Kiosk	21	45	28	11	231	4.18	87.756
Dist Subtn Pole Mounted 100kVA	198	45	28	2	396	0.78	153.556
Dist Subtn Pole Mounted 50kVA	4537	45	22	1	4537	0.51	2325.778
Dist Tran 1,2Ph 100kVA	31	45	22	7	217	3.5	108.578
Dist Tran 1,2Ph 10kVA	644	45	39	2.6	1674.4	0.33	215.107
Dist Tran 1,2Ph 15kVA	2633	45	18	2.6	6845.8	1.54	4049.702
Dist Tran 1,2Ph 30kVA	308	45	23	3.3	1016.4	1.59	489.5
Dist Tran 1,2Ph 50kVA	52	45	18	4	208	2.38	124
Dist Tran Ground 3Ph 100kVA	145	45	8	9	1305	7.34	1064.6
Dist Tran Ground 3Ph 200kVA	100	45	17	14	1400	8.75	875.156
Dist Tran Ground 3Ph 300kVA	37	45	14	16	592	10.98	406.4
Dist Tran Ground 3Ph 500kVA	6	45	11	22	132	16.62	99.733
Dist Tran Ground 3Ph 750kVA	2	45	17	26	52	16.18	32.356
Dist Tran Pole 3Ph 100kVA	90	45	27	9	810	3.53	318
Dist Tran Pole 3Ph 15kVA	7	45	11	5	35	3.81	26.667
Dist Tran Pole 3Ph 200kVA	71	45	27	13	923	5.27	374.4
Dist Tran Pole 3Ph 300kVA	6	45	25	16	96	7.17	43.022
Dist Tran Pole 3Ph 30kVA	748	45	18	5	3740	3	2246
Dist Tran Pole 3Ph 500kVA	8	45	33	20	160	5.33	42.667
Dist Tran Pole 3Ph 50kVA	222	45	20	7	1554	3.82	848.867
Isolating Transformer	78	45	27	0	0	0	0

Number of transformers 100kVA and above 465

Optimisation Calculation

	Number	Rating	kVA
Dist Tran 1,2Ph 100kVA	31	100	3100
Dist Tran 1,2Ph 10kVA	644	10	6440
Dist Tran 1,2Ph 15kVA	2633	15	39495
Dist Tran 1,2Ph 30kVA	308	30	9240
Dist Tran 1,2Ph 50kVA	52	50	2600
Dist Tran Ground 3Ph 100kVA	145	100	14500
Dist Tran Ground 3Ph 200kVA	100	200	20000
Dist Tran Ground 3Ph 300kVA	37	300	11100
Dist Tran Ground 3Ph 500kVA	6	500	3000
Dist Tran Ground 3Ph 750kVA	2	750	1500
Dist Tran Pole 3Ph 100kVA	90	100	9000
Dist Tran Pole 3Ph 15kVA	7	15	105
Dist Tran Pole 3Ph 200kVA	71	200	14200
Dist Tran Pole 3Ph 300kVA	6	300	1800
Dist Tran Pole 3Ph 30kVA	748	30	22440
Dist Tran Pole 3Ph 500kVA	8	500	4000
Dist Tran Pole 3Ph 50kVA	222	50	11100
Isolating Transformer	78		
		Total Capacity	173620
	Optimisation adjustment	**5%**	**164939**

Peak Load	59000	
Less load supplied at 11kV	12000	
	47000	
Pf correction	0.95	
Peak KVA transformed		49474
Utilisation without Optimisation		28%
Optimised Utilisation		30%

		RC	DRC	Optimisatic	ORC	ODRC
5165	Substations	6800	3778			
5188	Transformers	20761	11365	5%	19723	10797

ODV Report for LV Customers

Connections

Total at 31 March							
	27347						
							Depreciated
						Replacent	Replacement
				Age		Cost	Cost
Overhead							
	46%		12580				
3ph		10%	$180	25	45	$226	$101
1,2ph		90%	$70	25	45	$793	$352
Underground own pillar							
	4%		1200				
3ph		10%	$800	25	45	$96	$43
1,2ph		90%	$500	25	45	$540	$240
Underground shared pillar							
	50%		13,567				
3ph		10%	$400	25	45	$543	$241
1,2ph		90%	$250	25	45	$3,053	$1,357
					Total	$5,250	$2,333

Overhead : Underground ratio defined by	
GIS count of pillars	8000
Estimate of pillars with 2 connections	85%
Therefore number of underground connections is	14800
Percentage of total connections	54%
Use 54% for ODV calculation	

ODV Report for Lines

Voltage	Line Type	No Of Wires	Underbuilt Code	Pole Material	Urban Factor	Remote Factor	Rugged Factor	Rocky Surface Factor	Traffic Mgmt Code	Total Length (km)	Max Life (yrs)	Average Age (yrs)	RC per km (000 $)
11kV	11KV Line Heavy	3	Primary	Concrete			Rugged1			3.534	60	21	31
11kV	11KV Line Heavy	3	Primary	Concrete						18.812	60	16	31
11kV	11KV Line Heavy	3	Primary	Wood						0.128	45	39	31
11kV	11KV Line Light	1	Primary	Concrete			Rugged1			92.432	60	34	21
11kV	11KV Line Light	1	Primary	Concrete						128.496	60	31	21
11kV	11KV Line Light	1	Primary	Other			Rugged1			0.246	60	24	21
11kV	11KV Line Light	1	Primary	Wood			Rugged1			46.604	45	42	21
11kV	11KV Line Light	1	Primary	Wood						45.829	45	41	21
11kV	11KV Line Light	2	Primary	Concrete	Urban1					20.409	60	18	21
11kV	11KV Line Light	2	Primary	Concrete			Rugged1			23.222	60	22	21
11kV	11KV Line Light	2	Primary	Concrete						740.61	60	23	21
11kV	11KV Line Light	2	Primary	Wood	Urban1					1.022	45	40	21
11kV	11KV Line Light	2	Primary	Wood			Rugged1			11.362	45	41	21
11kV	11KV Line Light	2	Primary	Wood						58.194	45	40	21
11kV	11KV Line Light	2	Underbuilt EHV	Concrete						1.495	60	14	12
11kV	11KV Line Light	2	Underbuilt EHV	Wood						0.31	45	42	12
11kV	11KV Line Light	2	Underbuilt HV	Concrete						1.485	60	9	12
11kV	11KV Line Light	3	Primary	Concrete	Urban1					37.08	60	29	25
11kV	11KV Line Light	3	Primary	Concrete			Rugged1			17.446	60	17	25
11kV	11KV Line Light	3	Primary	Concrete						420.921	60	21	25
11kV	11KV Line Light	3	Primary	Wood	Urban1					2.572	45	40	25
11kV	11KV Line Light	3	Primary	Wood			Rugged1			2.72	45	42	25
11kV	11KV Line Light	3	Primary	Wood						36.115	45	38	25
11kV	11KV Line Light	3	Underbuilt EHV	Concrete						0.444	60	25	13
11kV	11KV Line Light	3	Underbuilt HV	Concrete						2.246	60	3	13
11kV	11KV Line Medium	1	Primary	Concrete						0.221	60	9	28
11kV	11KV Line Medium	2	Primary	Concrete	Urban1					0.595	60	9	28
11kV	11KV Line Medium	2	Primary	Concrete						3.494	60	18	28
11kV	11KV Line Medium	2	Primary	Wood			Rugged1			0.171	45	42	28
11kV	11KV Line Medium	2	Primary	Wood						0.137	45	34	28
11kV	11KV Line Medium	2	Underbuilt HV	Concrete						0.038	60	22	14
11kV	11KV Line Medium	3	Primary	Concrete	Urban1					80.552	60	28	28
11kV	11KV Line Medium	3	Primary	Concrete			Rugged1			19.564	60	23	28
11kV	11KV Line Medium	3	Primary	Concrete						754.827	60	29	28
11kV	11KV Line Medium	3	Primary	Wood	Urban1					0.448	45	36	28
11kV	11KV Line Medium	3	Primary	Wood			Rugged1			0.379	45	34	28
11kV	11KV Line Medium	3	Primary	Wood						42.175	45	41	28
11kV	11KV Line Medium	3	Underbuilt EHV	Concrete						3.861	60	18	14
11kV	11KV Line Medium	3	Underbuilt HV	Concrete	Urban1					1.986	60	31	14
11kV	11KV Line Medium	3	Underbuilt HV	Concrete						1.25	60	24	14
11kV	11KV Line Medium	3	Underbuilt HV	Wood						0.051	45	36	14
11kV	11kV Line Light	0	Primary	Concrete						0.554	60	15	25
11kV	11kV Line Light	0	Primary	Wood						0.037	45	22	25
11kV	11kV Line Light	0	Underbuilt HV	Concrete						0.002	60	19	13
11kV	11kV Line Light	1	Primary	Concrete			Rugged1			4.035	60	53	21
11kV	11kV Line Light	1	Primary	Concrete						14.522	60	39	21
11kV	11kV Line Light	1	Primary	Other			Rugged1			0.039	60	38	21
11kV	11kV Line Light	1	Primary	Wood			Rugged1			1.979	45	38	21
11kV	11kV Line Light	1	Primary	Wood						3.577	45	41	21
11kV	11kV Line Light	2	Primary	Concrete	Urban1					0.269	60	18	21
11kV	11kV Line Light	2	Primary	Concrete			Rugged1			1.304	60	23	21
11kV	11kV Line Light	2	Primary	Concrete						14.175	60	29	21
11kV	11kV Line Light	2	Primary	Wood						2.544	45	41	21
11kV	11kV Line Light	2	Underbuilt HV	Concrete						0.154	60	24	12
11kV	11kV Line Light	3	Primary	Concrete	Urban1					4.161	60	28	25
11kV	11kV Line Light	3	Primary	Concrete			Rugged1			3.349	60	55	25
11kV	11kV Line Light	3	Primary	Concrete						43.07	60	32	25
11kV	11kV Line Light	3	Primary	Wood			Rugged1			2.612	45	42	25
11kV	11kV Line Light	3	Primary	Wood						6.169	45	40	25
11kV	11kV Line Light	3	Underbuilt HV	Concrete	Urban1					0.025	60	32	13
11kV	11kV Line Light	3	Underbuilt HV	Concrete						0.132	60	33	13
11kV	11kV Line Light	3	Underbuilt HV	Wood						0.082	45	39	13
11kV Total										2726.274			

ODV Report for lines – Continued

33kV	33KV Line Heavy	3	Primary	Concrete						110.427	60	22	61
33kV	33KV Line Heavy	3	Underbuilt EHV	Concrete						15.527	60	27	35
33kV	33KV Line Light	3	Primary	Concrete						119.667	60	30	45
33kV	33KV Line Light	3	Primary	Wood						16.679	45	41	45
33kV	33kV Line Medium	3	Primary	Concrete						38.399	60	23	45
33kV	33kV Line Medium	3	Primary	Wood						1.774	45	42	45
33kV Total										302.473			
400V	400V Line Light	0	Primary	Concrete						0.884	60	21	38
400V	400V Line Light	0	Primary	Wood						0.39	45	42	38
400V	400V Line Light	1	Primary	Concrete						0.169	60	34	38
400V	400V Line Light	1	Primary	Wood						0.036	45	42	38
400V	400V Line Light	2	Primary	Concrete						5.245	60	27	33
400V	400V Line Light	2	Primary	Wood						1.696	45	38	33
400V	400V Line Light	2	Underbuilt HV	Concrete						1.108	60	34	16
400V	400V Line Light	2	Underbuilt HV	Wood						0.042	45	42	16
400V	400V Line Light	3	Primary	Concrete						9.102	60	26	33
400V	400V Line Light	3	Primary	Wood						1.982	45	38	33
400V	400V Line Light	3	Underbuilt HV	Concrete						5.595	60	30	16
400V	400V Line Light	3	Underbuilt HV	Wood						0.841	45	41	16
400V	400V Line Light	4	Primary	Concrete						4.389	60	32	38
400V	400V Line Light	4	Primary	Wood						0.417	45	40	38
400V	400V Line Light	4	Underbuilt HV	Concrete						3.658	60	33	21
400V	400V Line Light	4	Underbuilt HV	Wood						0.031	45	33	21
400V	400V Line Light	5	Primary	Wood						0.064	45	19	38
400V	400V Line Medium	0	Primary	Concrete						2.433	60	24	42
400V	400V Line Medium	0	Primary	Wood						0.694	45	36	42
400V	400V Line Medium	0	Underbuilt HV	Concrete						0.183	60	2	21
400V	400V Line Medium	1	Primary	Wood						0.014	45	24	42
400V	400V Line Medium	2	Primary	Concrete						1.872	60	18	38
400V	400V Line Medium	2	Primary	Wood						0.202	45	42	38
400V	400V Line Medium	2	Underbuilt HV	Concrete						0.249	60	22	19
400V	400V Line Medium	3	Primary	Concrete						43.853	60	24	38
400V	400V Line Medium	3	Primary	Wood						3.27	45	32	38
400V	400V Line Medium	3	Underbuilt HV	Concrete						13.022	60	25	19
400V	400V Line Medium	3	Underbuilt HV	Wood						2.7	45	40	19
400V	400V Line Medium	4	Primary	Concrete						3.033	60	25	42
400V	400V Line Medium	4	Primary	Wood						0.032	45	38	42
400V	400V Line Medium	4	Underbuilt HV	Concrete						3.392	60	24	21
400V	400V Line Medium	4	Underbuilt HV	Wood						0.568	45	38	21
400V	LOW VOLTAGE CABLE XLPE	3	Primary	Concrete						0.233	100	21	0
400V	LOW VOLTAGE CABLE XLPE	3	Primary	Wood						0.259	100	48	0
400V	LOW VOLTAGE CABLE XLPE	3	Underbuilt HV	Concrete						0.293	100	31	0
400V	LOW VOLTAGE CABLE XLPE	4	Primary	Concrete						0.106	100	27	0
400V	LOW VOLTAGE CABLE XLPE	4	Underbuilt HV	Concrete						0.057	100	3	0
400V Total										112.114			
480V	400V Line Medium	3	Primary	Concrete						6.18	60	23	38
480V	400V Line Medium	3	Primary	Wood						0.236	45	41	38
480V	400V Line Medium	3	Underbuilt HV	Concrete						0.132	60	24	19
480V Total										6.548			
6.35kV	11kV Line Light	1	Primary	Concrete			Rugged1			43.137	60	34	21
6.35kV	11kV Line Light	1	Primary	Concrete						120.195	60	36	21
6.35kV	11kV Line Light	1	Primary	Wood			Rugged1			14.223	45	42	21
6.35kV	11kV Line Light	1	Primary	Wood						35.741	45	41	21
6.35kV	11kV Line Light	2	Primary	Concrete						3.752	60	6	21
6.35kV	11kV Line Light	3	Primary	Concrete			Rugged1			2.214	60	38	25
6.35kV	11kV Line Light	3	Primary	Concrete						5.66	60	35	25
6.35kV	11kV Line Light	3	Primary	Wood			Rugged1			0.727	45	42	25
6.35kV	11kV Line Light	3	Primary	Wood						2.119	45	41	25
6.35kV Total										227.768			
Grand Total										3375.177			

ODV Report for lines - Continued

Correction to GIS 33kV data

				RC ($000)	DRC ($000)
Total length of 33kV		270	km		
GIS	**33kV Total**	302	km	15,223	8,381
Correction Factor		89%			
Corrected 33kV Values				**13,589**	**7,482**

Allow 10% of HV lines to be Private

10%

11kV Total	2726	km	2857			69,468			36,462
Correction	-273	km	1			- 6,947			- 3,646
			2571						
Corrected total	2454	km				62,521			32,816
6.35kV Total	228	km				5,209			1,802
Correction	-23	km				- 521			- 180
Corrected total	205	km				4,688			1,622
					$000				
Traffic Management Provision	2890	poles	206	km	0.8	165		52%	87
DIST LINES TOTAL	**2659**					**67,375**			**34,525**

400V Correction

Low Voltage Lines Adjustment

Urban LV From GIS	oh	62	km
Rural LV lines from Captured areas	oh	37	km
Transformers in rural areas captured		703	No
Average length per transformer	oh	0.05	
Rural Transformers		4736	No
Total Rural LV	oh	248	km
Total LV	oh	310	km

GIS TOTAL				$000		$000
400V Total	112	km		3,556		1,903
480V Total	7	km		246		148
	119	km				
			RC/km	**RC ($000)**	**Remaining Life**	**DRC ($000)**
Difference 3 wire overhead	**191**	**km**	**19**	**3,632**	**52%**	**1,889**
Total LV Overhead	310	km		7,434		3,939

ODV Report For Cables

Voltage	Conductor Type	No of Wires	Shared Trench Code	Urban Factor	Remote Factor	Rugged Factor	Rocky Surface Factor	Traffic Mgmt Code	Total Length (km)	Max Life (yrs)	Average Age (yrs)	RC per km (000 $)
11kV	11KV Cable Light Marine PILC	3	Parent Trench Not Found						0.258	70	58	125
11kV	11KV Cable Light PILC	3	Parent Trench Not Found	Urban_ughv					4.752	70	13	81
11kV	11KV Cable Light PILC	3	Parent Trench Not Found						9.498	70	15	81
11kV	11KV Cable Light XLPE	1	Parent Trench Not Found						0.467	45	4	81
11kV	11KV Cable Light XLPE	2	Parent Trench Not Found	Urban_ughv					0.734	45	5	81
11kV	11KV Cable Light XLPE	2	Parent Trench Not Found						2.948	45	5	81
11kV	11KV Cable Light XLPE	3	Parent Trench Not Found	Urban_ughv					10.025	45	7	81
11kV	11KV Cable Light XLPE	3	Parent Trench Not Found						57.56	45	6	81
11kV	11KV Cable Medium Marine PILC	3	Parent Trench Not Found						1.6	70	29	125
11kV	11KV Cable Medium PILC	3	Parent Trench Not Found	Urban_ughv					2.141	70	20	103
11kV	11KV Cable Medium PILC	3	Parent Trench Not Found						2.889	70	21	103
11kV	11KV Cable Medium XLPE	3	Parent Trench Not Found	Urban_ughv					2.31	45	11	103
11kV	11KV Cable Medium XLPE	3	Parent Trench Not Found						10.23	45	6	103
11kV	11kV Cable Light XLPE	0	Parent Trench Not Found						0.639	45	2	81
11kV	11kV Cable Light XLPE	3	Parent Trench Not Found	Urban1					0.113	45	30	81
11kV	11kV Cable Light XLPE	3	Parent Trench Not Found	Urban_ughv					2.793	45	14	81
11kV	11kV Cable Light XLPE	3	Parent Trench Not Found						5.92	45	14	81
11kV Total									114.877			
33kV	33KV Cable Heavy XLPE	3	Parent Trench Not Found						1.554	45	4	175
33kV Total									1.554			
400V	400V Cable Medium	0	Parent Trench Not Found						2.465	45	18	57
400V	400V Cable Medium	1	Parent Trench Not Found						5.89	45	19	57
400V	400V Cable Medium	2	Parent Trench Not Found						1.392	45	18	57
400V	400V Cable Medium	3	Parent Trench Not Found						6.358	45	21	57
400V	400V Cable Medium	4	Parent Trench Not Found						53.915	45	19	57
400V	400V Line Heavy	4	Parent Trench Not Found						0.331	100	18	0
400V	400V Line Light	2	Parent Trench Not Found						0.118	100	16	0
400V	400V Line Light	3	Parent Trench Not Found						0.065	100	33	0
400V	400V Line Light	4	Parent Trench Not Found						0.024	100	19	0
400V	400V Line Medium	1	Parent Trench Not Found						0.045	100	1	0
400V	400V Line Medium	3	Parent Trench Not Found						0.643	100	3	0
400V	400V Line Medium	4	Parent Trench Not Found						0.03	100	10	0
400V	LOW VOLTAGE CABLE XLPE	0	Parent Trench Not Found						0.184	45	19	57
400V	LOW VOLTAGE CABLE XLPE	1	Parent Trench Not Found						7.505	45	19	57
400V	LOW VOLTAGE CABLE XLPE	2	Parent Trench Not Found						7.549	45	21	57
400V	LOW VOLTAGE CABLE XLPE	3	Parent Trench Not Found						58.071	45	20	57
400V	LOW VOLTAGE CABLE XLPE	4	Parent Trench Not Found						312.073	45	19	57
400V	Cable	1	Parent Trench Not Found						0.278	45	42	16
400V	Cable	2	Parent Trench Not Found						0.004	45	19	16
400V Total									456.94			
480V	400V Cable Medium	3	Parent Trench Not Found						5.51	45	17	57
480V Total									5.51			
6.35kV	11KV Cable Light XLPE	1	Parent Trench Not Found						1.307	45	7	81
6.35kV Total									1.307			
Grand Total									580.188			

	km	RC ($000)	DRC ($000)
11kV Total	115	9778	8065
Distribution Total	115	9778	8065

Low Voltage Cable Adjustment

Urban LV From GIS	ug	226
Rural LV cable from Captured areas	ug	28.4
Transformers in rural areas captured		703
Average length per transformer	ug	0.04
Rural Transformers		4736
Total Rural LV	ug	191
Total LV	ug	417

GIS TOTAL	**km**	**RC ($000)**	**DRC ($000)**
400V total	457	25962	14708
480V Total	6	314	192
	462	26276	14900

	km		RC/km	RC	Remaining Life	DRC
Difference @ 3 wire	-45 km		57	-2572	57%	-1456
Shared Trench Adjustment			Diff inRC			
100km in Shared Trench		100	-30	-3000	57%	-1698
TOTAL ADJUSTMENT	**-45**			**-5572**		**-3154**
	km			**RC**		**DRC**
ADJUSTED LV CABLES	**417**			**20,704**		**11,746**

Zone Transformers

Substation	Node Number	Owner	kVA	Year	ASSET_DESCRIPTION	Valuation Code	Replacement Cost	MAX_LIFE STD	Real Age	Remaining Life	Depreciated RC	Optimised	ORC	ODRC
Kawakawa	00002	Top Energy	5000	1962	Zone Transformer 5MVA or less	88	350	45	42	3	23.3		350	23
Kawakawa	00002	Top Energy	5000	1962	Zone Transformer 5MVA or less	88	350	45	42	3	23.3		350	23
Taipa	00012	Top Energy	5000	1965	Zone Transformer 5MVA or less	88	350	45	39	6	46.7		350	47
Pukenui	00013	Top Energy	5000	1965	Zone Transformer 5MVA or less	88	350	45	39	6	46.7		350	47
Moerewa	00003	Top Energy	11500	1970	Zone Transformer 11.5/22MVA	90	520	45	34	11	127.1	Y	450	110
NPL	00014	Top Energy	11500	1987	Zone Transformer 11.5/22MVA	90	520	45	17	28	323.6		520	324
Haruru	00006	Top Energy	11500	1987	Zone Transformer 11.5/22MVA	90	520	45	17	28	323.6	Y	450	280
Kaikohe	00001	Top Energy	11500	1970	Zone Transformer 11.5/22MVA	90	520	45	34	11	127.1	Y	450	110
Kaikohe	00001	Top Energy	11500	1970	Zone Transformer 11.5/22MVA	90	520	45	34	11	127.1	Y	450	110
Waipapa	00004	Top Energy	11500	1984	Zone Transformer 11.5/22MVA	90	520	45	20	25	288.9		520	289
Waipapa	00004	Top Energy	11500	1984	Zone Transformer 11.5/22MVA	90	520	45	20	25	288.9		520	289
NPL	00014	Top Energy	11500	1987	Zone Transformer 11.5/22MVA	90	520	45	17	28	323.6		520	324
Okahu	00011	Top Energy	11500	1979	Zone Transformer 11.5/22MVA	90	520	45	25	20	231.1	Y	450	200
Okahu	00011	Top Energy	11500	1979	Zone Transformer 11.5/22MVA	90	520	45	25	20	231.1	Y	450	200
Omanaia	00005	Top Energy	917	1954	Zone Transformer 1phase 1MVA	91	130	45	50	3	8.7	Y	350	23
Omanaia	00005	Top Energy	917	1954	Zone Transformer 1phase 1MVA	91	130	45	50	3	8.7	Y	0	0
Omanaia	00005	Top Energy	917	1954	Zone Transformer 1phase 1MVA	91	130	45	50	3	8.7	Y	0	0
				1997	Voltage Regulator		25	55	7	48	21.8	Y	0	0
				1997	Voltage Regulator		25	55	7	48	21.8	Y	0	0
					Total		7040				2602		6530	2398
	2004				Purchase date									
	Mobile Substation				2002		1000	45	2	43	956		1000	956

Note: RC, DRC, ORC and ORDC in $000

Substation ABS Switches

Substation Name	System number	YEAR	ODV_VALID	ASSET_DESCRIPTION	Replacement Cost	MAX_LIFE TYPES	MAX_LIFESTD	Real Age	Remaining Life	Depreciated RC	OPTIMISED	OPT RC	OPT DRC
Kaikohe	3342	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kaikohe	3345	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77	Y		
Kaikohe	3341	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kaikohe	3344	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kaikohe	3346	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kaikohe	3343	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kaikohe	3340	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Kawakawa	3381	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77	Y		
Kawakawa	3384	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77		9	0.77
Kawakawa	3386	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77		9	0.77
Kawakawa	3382	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77		9	0.77
Kawakawa	3383	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77	Y		
Kawakawa	3385	1962	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	42	3	0.77		9	0.77
Moerewa	1133	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	3351	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Moerewa	3352	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77	Y		
Moerewa	1141	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	3354	1970	93	EHV Switches - ABS (Load Break-Remote Controlled)	12	Standard	35	34	3	1.03		12	1.03
Moerewa	3350	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Moerewa	1131	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3	Y		
Moerewa	1140	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	1135	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	1136	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	3357	1970	93	EHV Switches - ABS (Load Break-Remote Controlled)	12	Standard	35	34	3	1.03		12	1.03
Moerewa	3353	1970	9	33kV Air Break Switch	9	Standard	35	34	3	0.77		9	0.77
Moerewa	1147	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	1143	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	1142	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3		3.5	0.3
Moerewa	3355	1970	93	EHV Switches - ABS (Load Break-Remote Controlled)	12	Standard	35	34	3	1.03		12	1.03
Moerewa	1130	1970	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	34	3	0.3	Y		
Waipapa	1119	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	1118	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	3396	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77		9	0.77
Waipapa	1120	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	3395	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77	Y		
Waipapa	3394	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77	Y		
Waipapa	3393	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77		9	0.77
Waipapa	1125	2001	25	HV Switches - ABS (Load Break-Remote Controlled)	9.5	Standard	35	3	32	8.69		9.5	8.69
Waipapa	1124	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	1128	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	1122	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	1129	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	1126	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3
Waipapa	3392	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77		9	0.77
Waipapa	3391	1965	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	39	3	0.77		9	0.77
Waipapa	1123	1965	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	39	3	0.3		3.5	0.3

Note: RC, DRC, ORC and ORDC in $000

Substation ABS Switches Continued (Note: RC, DRC, ORC and ORDC in $000)

Omanaia	3348	1984	9	33kV Air Break Switch	9	Standard	35	20	15	3.86		9	3.86
Omanaia	1102	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1106	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	3347	1984	9	33kV Air Break Switch	9	Standard	35	20	15	3.86		9	3.86
Omanaia	3349	1984	9	33kV Air Break Switch	9	Standard	35	20	15	3.86		9	3.86
Omanaia	1105	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1104	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1101	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1107	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1103	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Omanaia	1114	1984	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	20	15	1.5		3.5	1.5
Haruru falls	3378	1988	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	16	19	4.89	Y		
Haruru falls	3377	1988	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	16	19	4.89	Y		
Haruru falls	3376	1988	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	16	19	4.89		9	4.89
Haruru falls	3379	1988	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	16	19	4.89		9	4.89
Haruru falls	3374	1988	93	EHV Switches - ABS (Load Break-Remote Controlled)	12	Standard	35	16	19	6.51		12	6.51
Haruru falls	3375	1988	93	EHV Switches - ABS (Load Break-Remote Controlled)	12	Standard	35	16	19	6.51		12	6.51
Okahu	3302	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31		9	2.31
Okahu	3306	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31		9	2.31
Okahu	3305	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31		9	2.31
Okahu	3303	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31	Y		
Okahu	3304	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31	Y		
Okahu	3301	1978	9	33kV Air Break Switch	9	Standard	35	26	9	2.31		9	2.31
Taipa	3323	1985	9	33kV Air Break Switch	9	Standard	35	19	16	4.11	Y		
Taipa	3320	1985	9	33kV Air Break Switch	9	Standard	35	19	16	4.11		9	4.11
Taipa	3322	1985	9	33kV Air Break Switch	9	Standard	35	19	16	4.11		9	4.11
Taipa	3327	1985	9	33kV Air Break Switch	9	Standard	35	19	16	4.11	Y		
Taipa	3326	1985	9	33kV Air Break Switch	9	Standard	35	19	16	4.11		9	4.11
Pukenui	1111	1976	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	28	7	0.7		3.5	0.7
Pukenui	1112	1976	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	28	7	0.7		3.5	0.7
Pukenui	1113	1976	28	HV Switches - ABS (non Load Break-non Remote Controlled)	3.5	Standard	35	28	7	0.7		3.5	0.7
Pukenui	3399	2002	96	EHV Switches - ABS (non Load Break-non Remote Controlled	9	Standard	35	2	33	8.49		9	8.49
NPL	3316	1987	9	33kV Air Break Switch	9	Standard	35	17	18	4.63		9	4.63
NPL	3312	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
NPL	3313	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
NPL	3315	1987	9	33kV Air Break Switch	9	Standard	35	17	18	4.63		9	4.63
NPL	3317	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
NPL	3318	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
NPL	3314	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
NPL	3311	2002	9	33kV Air Break Switch	9	Standard	35	2	33	8.49		9	8.49
					624.5					196.55		509.5	168.71

Substation Circuit Breakers (Note: RC, DRC, ORC and ORDC in $000)

stem num	Substation Name	ODV_VALID	ASSET_DESCRIPTION	Date Purchased	Replacement Cos	MAX_LIFETYPES	MAX_LIFESTD	Real Age	Remaining Life	Depreciated RC	OPTIMISED	OPT RC	OPT DRC
0101	Kaikohe	87	HV Circuit Breakers Indoor Incoming	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0102	Kaikohe	87	HV Circuit Breakers Indoor Incoming	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0103	Kaikohe	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0105	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0106	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0107	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0108	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0109	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0110	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1970	30	Standard	45	34	11	7.33		30	7.33
0111	Kaikohe	85	HV Circuit Breakers Indoor Feeder	01/01/1975	30	Standard	45	29	16	10.67		30	10.67
0142	Kaikohe	32	EHV Circuit Breakers	01/01/1970	45	Standard	40	34	6	6.75		45	6.75
0162	Kaikohe	32	EHV Circuit Breakers	01/01/1970	45	Standard	40	34	6	6.75		45	6.75
0201	Kawakawa	87	HV Circuit Breakers Indoor Incoming	01/01/1962	30	Standard	45	42	3	2		30	2
0202	Kawakawa	87	HV Circuit Breakers Indoor Incoming	01/01/1962	30	Standard	45	42	3	2	Y		
0203	Kawakawa	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1962	30	Standard	45	42	3	2		30	2
0206	Kawakawa	85	HV Circuit Breakers Indoor Feeder	01/01/1962	30	Standard	45	42	3	2		30	2
0207	Kawakawa	85	HV Circuit Breakers Indoor Feeder	01/01/1962	30	Standard	45	42	3	2		30	2
0208	Kawakawa	85	HV Circuit Breakers Indoor Feeder	01/01/1962	30	Standard	45	42	3	2		30	2
0209	Kawakawa	85	HV Circuit Breakers Indoor Feeder	01/01/1962	30	Standard	45	42	3	2		30	2
0210	Kawakawa	85	HV Circuit Breakers Indoor Feeder	01/01/1962	30	Standard	45	42	3	2		30	2
0242	Kawakawa	32	EHV Circuit Breakers	01/01/1962	45	Standard	40	42	3	3.38		45	3.38
0262	Kawakawa	32	EHV Circuit Breakers	01/01/1962	45	Standard	40	42	3	3.38		45	3.38
0301	Moerewa	84	HV Circuit Breakers Outdoor Incoming	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0304	Moerewa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0305	Moerewa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0307	Moerewa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0308	Moerewa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0332	Moerewa	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
0342	Moerewa	32	EHV Circuit Breakers	01/01/1972	45	Standard	40	32	8	9		45	9
0401	Waipapa	84	HV Circuit Breakers Outdoor Incoming	01/01/1965	27	Standard	40	39	3	2.03		27	2.03
0402	Waipapa	84	HV Circuit Breakers Outdoor Incoming	01/01/1965	27	Standard	40	39	3	2.03		27	2.03
0405	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1965	27	Standard	40	39	3	2.03		27	2.03
0406	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0407	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1965	27	Standard	40	39	3	2.03		27	2.03
0408	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1965	27	Standard	40	39	3	2.03		27	2.03
0409	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
0410	Waipapa	82	HV Circuit Breakers Outdoor Feeder	01/01/1989	27	Standard	40	15	25	16.88		27	16.88
0442	Waipapa	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
0462	Waipapa	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
0501	Omanaia	84	HV Circuit Breakers Outdoor Incoming	01/01/1984	27	Standard	40	20	20	13.5		27	13.5
0504	Omanaia	82	HV Circuit Breakers Outdoor Feeder	01/01/1984	27	Standard	40	20	20	13.5		27	13.5
0506	Omanaia	82	HV Circuit Breakers Outdoor Feeder	01/01/1984	27	Standard	40	20	20	13.5		27	13.5
0542	Omanaia	32	EHV Circuit Breakers	01/01/1984	45	Standard	40	20	20	22.5		45	22.5
0601	Haruru falls	87	HV Circuit Breakers Indoor Incoming	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0602	Haruru falls	87	HV Circuit Breakers Indoor Incoming	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0603	Haruru falls	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0606	Haruru falls	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0607	Haruru falls	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0608	Haruru falls	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0609	Haruru falls	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
0642	Haruru falls	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38

Substation Circuit Breakers Continued (Note: RC, DRC, ORC and ORDC and in $000)

1101	Okahu	87	HV Circuit Breakers Indoor Incoming	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1102	Okahu	87	HV Circuit Breakers Indoor Incoming	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1103	Okahu	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1105	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1106	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1107	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1108	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1109	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1110	Okahu	85	HV Circuit Breakers Indoor Feeder	01/01/1978	30	Standard	45	26	19	12.67		30	12.67
1142	Okahu	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
1162	Okahu	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
1201	Taipa	87	HV Circuit Breakers Indoor Incoming	01/01/1985	30	Standard	45	19	26	17.33		30	17.33
1202	Taipa	87	HV Circuit Breakers Indoor Incoming	01/01/1985	30	Standard	45	19	26	17.33	Y		
1203	Taipa	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1985	30	Standard	45	19	26	17.33	Y		
1205	Taipa	85	HV Circuit Breakers Indoor Feeder	01/01/1985	30	Standard	45	19	26	17.33		30	17.33
1206	Taipa	85	HV Circuit Breakers Indoor Feeder	01/01/1985	30	Standard	45	19	26	17.33		30	17.33
1207	Taipa	85	HV Circuit Breakers Indoor Feeder	01/01/1985	30	Standard	45	19	26	17.33		30	17.33
1208	Taipa	85	HV Circuit Breakers Indoor Feeder	01/01/1985	30	Standard	45	19	26	17.33		30	17.33
1242	Taipa	32	EHV Circuit Breakers	01/01/1985	45	Standard	40	19	21	23.63		45	23.63
1305	Pukenui	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
1306	Pukenui	82	HV Circuit Breakers Outdoor Feeder	01/01/1975	27	Standard	40	29	11	7.43		27	7.43
1362	Pukenui	32	EHV Circuit Breakers	01/01/1985	45	Standard	40	19	21	23.63		45	23.63
1401	NPL	87	HV Circuit Breakers Indoor Incoming	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1402	NPL	87	HV Circuit Breakers Indoor Incoming	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1403	NPL	86	HV Circuit Breakers Indoor Bus Coupler	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1406	NPL	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1407	NPL	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1408	NPL	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1409	NPL	85	HV Circuit Breakers Indoor Feeder	01/01/1987	30	Standard	45	17	28	18.67		30	18.67
1442	NPL	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
1452	NPL	32	EHV Circuit Breakers	01/11/2002	45	Standard	40	2	38	42.75		45	42.75
1462	NPL	32	EHV Circuit Breakers	01/01/1975	45	Standard	40	29	11	12.38		45	12.38
1472	NPL	32	EHV Circuit Breakers	01/11/2002	45	Standard	40	2	38	42.75		45	42.75
					2736					1007		2646	971

SCADA

	Replacement Cost	Number	Replacement Cost	Installed	Max Life	Age	Remaining life	Depreciated RC
Radios						2004		
UHF	20000	3	60000	1988	15	16	3	12000
VHF	15000	6	90000	2001	15	3	12	72000
VHF Mobiles	1200	60	72000	2001	15	3	12	57600
Control Room								
PCs	3500	4	14000	2001	5	3	3	8400
Radios	2000	6	12000	2001	15	3	12	9600
Air Con	4000	1	4000	2001	15	3	12	3200
Software and Development								
	210000	1	210000	1994	15	10	5	70000
Total			462,000					232,800

Note: RC and DRC in $

Spares

Transformers

	Number on Stock	Critical Spares	Replacement Cost	Total Replacement Cost	Average Age	Max Life	Depreciated Replacement Cost
Pole Mount 1Phase							
15	32	20	2.6	52	1	45	50.8
30	13	10	3.3	33	1	45	32.3
50	6	6	4	24	1	45	23.5
100	7	2	7	14	3	45	13.1
SWER Isolating	5	5	6.5	32.5	1	45	31.8
Pole Mount 3Phase							
30	5	5	5	25	0	45	25.0
50	7	6	7	42	0	45	42.0
100	2	2	9	18	5	45	16.0
500	1	1	20	20	10	45	15.6
750	1	1	20	20	10	45	15.6
Pad mount 1 phase							
15	1	0	2.6				
30	3	1	3.3	3.3	1	45	3.2
50	2	1	4	4	1	45	3.9
Pad mount 3 phase							
30	2	1	9	9	1	45	8.8
50	5	2	9	18	1	45	17.6
100	11	10	9	90	1	45	88.0
150	1	0	14				
200	5	4	14	56	1	45	54.8
300	5	1	16	16	1	45	15.6
500	3	1	22	22	1	45	21.5
1000	2	0	29	0			
				498.8			479.0

Note: RC and DRC in $000

Substation Miscellaneous

YEAR OF CALCULATIOI **2004**

KAIKOHE SUBSTATION 33/11kV, CONSTRUCTION 1971

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		ODV CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	12					1970	34		4000	40	6	48000	7200		7200
Transformer Protect	2					1970	34		4000	40	6	8000	1200		1200
SCADA	1	Dataterm			Electronic	1985	19		30000	15	3	30000	6000		6000
Load Management	1	Zellweger	SFU 3-63-317		Ripple Control Plant	1981	23		217500	20	3	217500	32625		32625
Battery Charger	1	McKenzie Holland	TNE110/10		Protection	1990	14		15000	20	6	15000	4500		4500
Battery Charger	1	Anglo	AD1220		Supervisory	1986	18		15000	20	3	15000	2250		2250
Batteries	1	Sonnenschein	A412/120		Protection	2000	4		4000	20	16	4000	3200		3200
Batteries	1	Stand	MHS Tech.		Protection	2000	4		4000	20	16	4000	3200		3200
Outdoor Structure	2				Concrete	1971	33		70000	60	27	140000	63000		63000

KAWAKAWA SUBSTATION 33/11kV, CONSTRUCTION 1962

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO	DESCRIPTION	YEAR		ODV CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	10					1962	42		4000	40	3	40000	3000		3000
Transformer Protect	1					1962	42		4000	40	3	4000	300		300
SCADA	1	Dataterm			Electronic	1985	19		30000	15	3	30000	6000		6000
Battery Charger	1	Switchtec	E2734WM	44770	Protection	1995	9		15000	20	11	15000	8250		8250
Battery Charger	1	Anglo	AD1220	11679B	Supervisory	1985	19		15000	20	3	15000	2250		2250
Batteries	1	Oldham Espace	12RG85		Protection,	1995	9		4000	20	11	4000	2200		2200
Batteries	1	Alcad	LP28		Supervisory, 20 cell	1985	19		4000	20	3	4000	600		600
Outdoor Structure	1				Concrete	1962	42		70000	60	18	70000	21000		21000

MOEREWA SUBSTATION 33/11kV, CONSTRUCTION 1970

EQUIPMENT	NO.	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR	AGE	MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	6					1970	34		4000	40	6	24000	3600		3600
Transformer Protect	1					1970	34		4000	40	6	4000	600		600
SCADA	1	Dataterm			Electronic	1985	19		30000	15	3	30000	6000		6000
Battery Charger	1	McKenzie Holland	TR24/15		Protection	1970	34		15000	20	3	15000	2250		2250
Battery Charger	1	Anglo	AD 1220	11679C	Supervisory	1986	18		15000	20	3	15000	2250		2250
Batteries	1	Nife/Alcad	FA4		Protection, 20 cell	1970	34		4000	20	3	4000	600		600
Batteries	1	Alcad	LP28		Supervisory, 20 cell	1986	18		4000	20	3	4000	600		600
Outdoor Structure	1				Concrete	1970	34		70000	60	26	70000	30333		30333

Note: RC, DRC, and ORDC in $

WAIPAPA SUBSTATION 33/11kV, CONSTRUCTION 1985

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	8					1985	19		4000	40	21	32000	16800		16800
Transformer Protect	2					1985	19		4000	40	21	8000	4200		4200
SCADA	1	Dataterm			Electronic	1985	19		30000	15	3	30000	6000		6000
Battery Charger	1	Westinghouse	TR 24/18		Protection	1965	39		15000	20	3	15000	2250		2250
Battery Charger	1	Anglo	AD 1220		Supervisory	1985	19		15000	20	3	15000	2250		2250
Batteries	1	Nife Alcad	EP44X20		Protection	1981	23		4000	20	3	4000	600		600
Batteries	1	Alcad	LP28X20		Supervisory	1985	19		4000	20	3	4000	600		600
Outdoor Structure	2				Concrete	1970	34		70000	60	26	140000	60667		60667

OMANAIA SUBSTATION 33/11kV, CONSTRUCTION 1981

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	3					1981	23		4000	40	17	12000	5100		5100
Transformer Protect	1					1981	23		4000	40	17	4000	1700		1700
SCADA	1	Dataterm			Electronic	1985	19		30000	15	3	30000	6000		6000
Battery Charger	1	Anglo	AD1097		Protection	1984	20		15000	20	3	15000	2250		2250
Battery Charger	1	Anglo	AD1220		Supervisory	1986	18		15000	20	3	15000	2250		2250
Batteries	1	Alcad	EP5.5		Protection, 19 cell	1984	20		4000	20	3	4000	600		600
Batteries	1	Alcad	LP28		Supervisory, 20 cell	1986	18		4000	20	3	4000	600		600
Outdoor Structure	1				Concrete	1981	23		70000	60	37	70000	43167		43167

HARURU FALLS SUBSTATION 33/11kV, CONSTRUCTION 1988

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO	DESCRIPTION	YEAR		MEA	UNIT REPL	STD	REM	REPL	DEP REPL	OPT	OPT DEP
CB Protection	8					1988	16		4000	40	24	32000	19200		19200
Transformer Protect	1					1988	16		4000	40	24	4000	2400		2400
SCADA	1	Dataterm			Electronic	1987	17		30000	15	3	30000	6000		6000
Battery Charger	1	McKenzie Holland	TNE 110/10	C7420/1	Protection	1988	16		15000	20	4	15000	3000		3000
Battery Charger	1	Anglo	AD1220	12289A	Supervisory	1987	17		15000	20	3	15000	2250		2250
Batteries	1	Alcad	LP56		Protection, 90 cell	1988	16		4000	20	4	4000	800		800
Batteries	1	Alcad	LP28		Supervisory, 20 cell	1987	17		4000	20	3	4000	600		600
Outdoor Structure	1				Concrete	1988	16		70000	60	44	70000	51333		51333

Note: RC, DRC, and ORDC in $

OKAHU ROAD SUBSTATION 33/11kV, CONSTRUCTION 1979

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	11					1979	25		4000	40	15	44000	16500		16500
Transformer Protect	2					1979	25		4000	40	15	8000	3000		3000
SCADA	1	Dataterm			Electronic	1987	17		30000	15	3	30000	6000		6000
Battery Charger	2	Inline Components				2003	1		27450	20	19	54900	52155		52155
Outdoor Structure	2				Concrete	1979	25		70000	60	35	140000	81667		81667
Load Management	1	Zellweger	ST-U-G/30/317		Transmitter, 60kVA	1989	15	115	217500	20	5	217500	54375		54375

TAIPA SUBSTATION 33/11kV, CONSTRUCTION 1985

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	8					1985	19		4000	40	21	32000	16800		16800
Transformer Protect	1					1985	19		4000	40	21	4000	2100		2100
SCADA	1	Dataterm			Electronic	1987	17		30000	15	3	30000	6000		6000
Battery Charger	2	McKenzie Holland	TNE 110/10	C7420/1	Protection	1988	16		15000	20	4	30000	6000		6000
Battery Charger	1	Anglo	AD1220	12289A	Supervisory	1987	17		15000	20	3	15000	2250		2250
Batteries	1	Alcad	LP56		Protection, 90 cell	1988	16		4000	20	4	4000	800		800
Batteries	1	Alcad	LP28		Supervisory, 20 cell	1987	17		4000	20	3	4000	600		600
Outdoor Structure	1				Concrete	1985	19		70000	60	41	70000	47833		47833

PUKENUI SUBSTATION 33/11kV, CONSTRUCTION 1976

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	3					1976	28		4000	40	12	12000	3600		3600
Transformer Protect	1					2002	2		4000	40	38	4000	3800		3800
SCADA	1	Dataterm			Electronic	1987	17		30000	15	3	30000	6000		6000
Battery Charger	2	Inline Components				2003	1		27450	20	19	54900	52155		52155
Outdoor Structure	1				Concrete	2002	2		70000	60	58	70000	67667		67667
Oil Bunding	1					2002	2		30000	60	58	30000	29000		29000

NORTHERN PULP SUBSTATION 33/11kV, CONSTRUCTION 1987

EQUIPMENT	NO. OF	MANUFACTURE	MODEL	SERIAL NO.	DESCRIPTION	YEAR		MEA CODE	UNIT REPL COST	STD LIFE	REM LIFE	REPL COST	DEP REPL COST	OPT CHANGE	OPT DEP REP COST
CB Protection	10					1979	25		4000	40	15	40000	15000		15000
CB Protection	3					2002	2		4000	40	38	12000	11400		11400
Transformer Protect	2					2002	2		4000	20	18	8000	7200		7200
SCADA	1	Dataterm			Electronic	1987	17		27450	15	3	27450	5490		5490
Battery Charger	2	In lIne Components				2003	1		30000	20	19	60000	57000		57000
Outdoor Structure	2				Concrete	1979	25		70000	60	35	140000	81667		81667
												$2,577,250	$1,089,683		$1,089,683

Note: RC, DRC, and ORDC in $

Substations Land and Building Optimisation 2004

Val No.	Economic Life (Yrs)		Age (Yrs)	Valuation Land	Land Size (Act)	Optimised Land (Sqm)	Value of Opt. Land	Non Netwk Land Value	Replacemer Buildings	DRC Buildings	Optimisatio Buildings	ORC Buildings	ODV Buildings
00431-026-03	50	1970	34	15,000	3,486	3,000	12,909	2,091	39,000	12,480	100%	39,000	12,480
617- 179-01	50	1982	22	22,000	1,975	1,975	22,000	0	36,000	20,160	100%	36,000	20,160
227-425-01	50	1986	18	120,000	6,406	3,000	56,197	63,803	124,000	79,360	70%	86,800	55,552
523-607-00	50	1970	34	85,000	18,666	3,000	13,661	71,339	91,000	29,120	100%	91,000	29,120
419-185-01	50	1960	44	21,000	2,679	2,679	21,000	0	52,000	6,240	100%	52,000	6,240
00213-161-00	50	1975	29	185,000	3,541	3,000	156,735	28,265	48,000	20,160	80%	38,400	16,128
85-173-01	50	1985	19	56,000	4,360	3,000	38,532	17,468	117,000	72,540	70%	81,900	50,778
11-680-01	50	1977	27	46,000	1,225	1,225	46,000	0	37,000	17,020	100%	37,000	17,020
31-009-00	50	1988	16	45,000	2,865	2,865	45,000	0	94,000	63,920	100%	94,000	63,920
35-270-00	50	1980	24	50,000	4,665	3,000	32,154	17,846	104,000	54,080	100%	104,000	54,080
				645,000			444,189	200,811	742,000	375,080		660,100	325,478
					Land Optimisation		200,811						
					Building Optimisation		49,602						

Note: RC, DRC, and ORDC in $

Appendix 2: Load Forecasts

Zone Substation Forecasts

				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2019
		MaxRating												
Zone Sub		T1	T2	2004-5	2005-6	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13	2013-14	2019-2020
Kaikohe	**HI**	11.5/23	11.5/23	9.6	10.7	11.1	11.1	11.1	11.2	11.2	11.2	11.2	11.2	11.4
	LO			9.2	10.1								10.1	10.3
Kawakaw	**HI**	5	5	5.2	5.6	5.9	6.0	6.1	6.1	6.2	6.3	6.4	6.4	7.1
	LO			5.0	5.4								6.0	6.2
Moerewa	**HI**	11.5/23		4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.0
	LO			3.9	4.0								3.8	3.8
Waipapa	**HI**	11.5/23	11.5/23	14.7	15.5	16.3	17.1	17.9	18.6	19.4	20.2	21.0	21.7	24.2
	LO			14.1	14.2								16.4	19.2
Omanaia	**HI**	2.75		2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.4
	LO			2.4	2.4								2.6	2.8
Haruru	**HI**	11.5/23	5/7.5	7.1	7.4	7.6	8.2	8.4	8.5	8.7	8.9	9.1	9.3	11.3
	LO			6.9	7.1								8.4	9.5
Okahu	**HI**	11.5	11.5	9.8	9.9	9.9	10.0	10.0	10.1	10.1	10.2	10.2	10.3	10.8
	LO			9.7	9.7								9.8	9.9
Taipa	**HI**	5/6.25		5.6	5.8	6.2	6.5	6.8	7.1	7.3	7.6	7.9	8.1	9.9
	LO			5.3	5.4								7.0	7.9
Pukenui	**HI**	5/6.25		1.8	1.8	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.4
	LO			1.7	1.8								2.2	2.3
NPL	**HI**	11.5/23	11.5	14.0	15.8	16.6	19.1	19.6	19.8	20.5	20.6	20.7	20.8	21.8
	LO			13.0	14.0								15.8	16.9

Grid Exit Point Forecasts

				2004-5	2005-6	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13	2013-14	2019-20
KTA	**HI**			24.0	25.7	26.7	28.9	29.6	30.0	30.9	31.3	31.6	32.0	34.6
	LO			22.9	23.0	24.0	24.0	24.0	25.0	25.0	26.0	26.0	26.8	29.0
KOE	**HI**			40.5	43.1	44.0	44.9	45.9	46.8	47.7	48.7	49.6	52.3	57.0
	LO			39.1	40.7	42.0	42.0	42.0	42.0	43.0	43.0	43.0	44.5	48.0

Feeder Forecasts

			Existing	Next Year	Year After	5 Years	10 Years	Optimisation possible			
	Feeder		2003-4 Max Demand (MVA)	2004-5 Forecast MD (MVA)	2005-6 Forecast MD (MVA)	2009 Forecast MD (MVA)	2013-14 Forecast MD (MVA)	Use light Conductor -Current limitation	Use light Conductor -Volt drop limitation	Use light Conductor - Loss limitation	Special Requirement
Kaikohe	4. Prison	HI	0.0	0.9	1.2	1.2	1.2	No		No	
		LO	0.0	0.9	1.2	1.2	1.2	No		No	
Kaikohe	5. Horeke	HI	1.0	0.9	0.9	0.9	1.0		No	No	
		LO	1.0	0.9	0.8	0.8	0.8		No		
Kaikohe	6. Taheke	HI	0.8	0.8	0.9	0.9	1.0		No	No	
		LO	0.8	0.8	0.8	0.8	0.8		No		
Kaikohe	7. Awarua	HI	2.5	2.4	2.5	2.5	2.5	No	No	No	
		LO	2.5	2.3	2.3	2.3	2.3	No	No	No	
Kaikohe	8. Kaikohe	HI	3.0	2.4	2.5	2.4	2.3	No	No	No	
		LO	3.0	2.3	2.3	2.2	2.0	No	No	No	
Kaikohe	9. Rangiahua	HI	1.8	1.9	1.9	2.0	2.0	No	No	No	
		LO	1.8	1.9	1.9	1.9	1.9	No	No	No	
Kaikohe	10. Ohaewai	HI	1.4	1.4	1.4	1.4	1.5	No	No	No	
		LO	1.4	1.4	1.4	1.4	1.4	No	No	No	
Kawakawa	6. Towai	HI	1.0	1.0	1.0	1.0	1.1		No	No	
		LO	1.0	0.9	0.9	0.9	0.9		No	No	
Kawakawa	7. Kawakawa	HI	0.9	0.9	0.9	0.9	0.9			No	
		LO	0.9	0.9	0.9	0.9	0.9			No	
Kawakawa	8. Opua	HI	1.6	1.4	1.5	1.6	1.7		No	No	
		LO	1.6	1.4	1.5	1.5	1.6		No	No	
Kawakawa	9. Spare	HI	0.0	0.0	0.0	2.0	2.0	No		No	
		LO	0.0	0.0	0.0	2.0	2.0	No		No	
Kawakawa	10. Russell	HI	3.1	2.9	3.1	2.5	1.8	No	No	No	
		LO	3.1	2.8	3.0	2.3	1.7	No	No	No	
Moerewa	4. AFFCO	HI	2.7	2.6	2.6	2.6	2.6			No	
		LO	2.7	2.6	2.6	2.6	2.6			No	
Moerewa	5. Tau Block	HI	0.2	0.1	0.1	0.1	0.1				Customer
		LO	0.2	0.1	0.1	0.1	0.1				Customer
Moerewa	7. Pokapu	HI	0.7	0.7	0.7	0.7	0.7				1km of Bee
		LO	0.7	0.7	0.7	0.7	0.7				1km of Bee
Moerewa	8. Moerewa	HI	1.1	1.1	1.2	1.2	1.1			No	
		LO	1.1	1.0	1.1	1.0	0.9			No	
Waipapa	5. Totara Nth	HI	1.8	1.7	1.7	1.7	1.8	No	No	No	
		LO	1.8	1.7	1.7	1.7	1.7	No	No	No	
Waipapa	6. Riverview	HI	3.3	3.6	3.9	4.9	5.9	No	No	No	
		LO	3.3	3.5	3.5	3.8	4.2	No	No	No	
Waipapa	7. Whangaroa	HI	1.9	2.0	2.0	2.1	2.3	No	No	No	
		LO	1.9	1.9	1.9	1.9	2.0	No	No	No	
Waipapa	8. Purerua	HI	2.1	2.4	2.5	3.0	3.6	No	No	No	
		LO	2.1	2.4	2.4	2.6	2.7	No	No	No	
Waipapa	9. Aerodrome R	HI	3.4	3.9	4.1	5.2	6.4	No	No	No	
		LO	3.4	3.5	3.6	4.0	4.5	No	No	No	
Waipapa	10. China Clay	HI	1.9	2.0	2.1	2.4	2.6	No	No	No	
		LO	1.9	1.9	1.9	2.0	2.1	No	No	No	
Omanaia	4. Rawene	HI	1.3	1.4	1.4	1.4	1.4		No	No	
		LO	1.3	1.4	1.4	1.4	1.4		No	No	
Omanaia	6. Opononi	HI	1.1	1.3	1.3	1.5	1.7		No	No	
		LO	1.1	1.2	1.2	1.3	1.4		No	No	
Haruru	6. Ti Bay	HI	2.1	2.2	2.2	2.8	3.3	No		No	
		LO	2.1	2.1	2.1	2.5	2.9	No		No	
Haruru	7. Puketona	HI	2.5	2.4	2.5	2.7	2.8	No	No	No	
		LO	2.5	2.4	2.4	2.5	2.6	No	No	No	
Haruru	8. Onewhero	HI	1.1	1.3	1.3	1.5	1.7	No		No	
		LO	1.0	1.2	1.2	1.4	1.5	No		No	
Haruru	9. Joyces Rd	HI	2.3	2.2	2.3	2.5	2.7	No	No	No	
		LO	2.3	2.2	2.2	2.3	2.5	No	No	No	
Okahu	5. South Rd	HI	1.8	1.6	1.6	1.7	1.7	No	No	No	
		LO	1.8	1.6	1.6	1.6	1.6	No	No	No	
Okahu	6. Kaitaia W	HI	0.8	1.3	1.4	1.5	1.6	No		No	
		LO	0.8	1.3	1.3	1.4	1.4	No		No	
Okahu	7. Redan Rd	HI	2.5	2.5	2.5	2.6	2.6	No		No	
		LO	2.5	2.5	2.5	2.5	2.5	No		No	
Okahu	8. Oxford St	HI	1.0	1.6	1.7	1.7	1.7	No	No	No	
		LO	1.0	1.6	1.7	1.7	1.7	No	No	No	
Okahu	9. Herekino	HI	1.6	1.5	1.5	1.6	1.6	No	No	No	
		LO	1.6	1.5	1.5	1.5	1.5	No	No	No	
Okahu	10. Pukepoto	HI	2.0	2.0	2.0	2.0	2.0	No	No	No	
		LO	2.0	2.0	2.0	2.0	2.0	No	No	No	
Taipa	6. Oruru	HI	1.7	1.7	1.8	1.9	2.1	No	No	No	
		LO	1.6	1.7	1.7	1.7	1.8	No	No	No	
Taipa	7. Tokerau	HI	1.9	1.9	1.9	2.5	3.1	No	No	No	
		LO	1.9	1.9	1.8	2.3	2.7	No	No	No	
Taipa	8. Mangonui	HI	1.8	1.8	1.9	2.3	2.8	No	No	No	
		LO	1.8	1.7	1.7	2.1	2.4	No	No	No	
Pukenui	5. Te Kao	HI	1.0	0.9	0.9	1.0	1.2	No	No	No	
		LO	1.0	0.9	0.9	1.0	1.1	No	No	No	
Pukenui	6. Pukenui Sth	HI	0.9	0.9	0.9	1.0	1.1	No	No	No	
		LO	0.9	0.9	0.9	1.1	1.2	No	No	No	
NPL	5. JNL Nth 2	HI	2.3	1.9	2.9	4.0	5.1	No		No	
		LO	2.3	1.8	2.3	2.6	2.9	No		No	
NPL	6. Awanui	HI	1.8	2.7	2.7	2.8	3.0	No		No	
		LO	1.8	2.7	2.7	2.8	2.9	No		No	
NPL	7. JNL 1	HI	3.4	3.4	3.4	3.4	3.4	No		No	
		LO	3.4	3.4	3.4	3.4	3.4	No		No	
NPL	8. North Rd	HI	1.0	1.6	1.6	1.8	1.9	No		No	
		LO	1.0	1.6	1.6	1.7	1.8	No		No	
NPL	9. JNL 2	HI	3.5	3.6	3.7	3.9	4.2	No		No	
		LO	3.4	3.5	3.5	3.7	3.9	No		No	
NPL	10. JNL Nth 1	HI	1.9	2.7	3.0	4.0	4.9	No		No	
		LO	1.9	1.9	1.9	2.2	2.4	No		No	

Appendix 3 Standard Values Table

ODV_VALID	ASSET_DESCRIPTION	UNIT	MAX_VALUE	MAX_LIFETYPES	MAX_LIFESTD
9	33kV Air Break Switch	No	9	Standard	35
25	HV Switches - ABS (Load Break-Remote Controlled)	No	9.5	Standard	35
26	HV Switches - ABS (non Load Break-Remote Controlled)	No	6.5	Standard	35
27	HV Switches - ABS (Load Break-non Remote Controlled)	No	6.5	Standard	35
28	HV Switches - ABS (non Load Break-non Remote Controlled)	No	3.5	Standard	35
29	HV Switches - Other	No	3.5	Standard	35
30	EHV Links	No	9	Standard	35
31	EHV Fuses	No	9	Standard	35
32	EHV Circuit Breakers	No	45	Standard	40
33	HV Circuit Breakers	No	27	Standard	40
119	HV Switches - ABS 2 ph (Load Break-Remote Controlled)	No	2.5	Standard	35
120	HV Switches - ABS 2 ph (non Load Break-Remote Controlled)	No	2.5	Standard	35
37	Voltage Regulators	No	25	Standard	55
38	Sectionalisers	No	18	Standard	40
39	Step Transformers	No	17	Standard	55
40	Ring Main Units - 3 Way	No	16	Standard	40
41	Extra Oil Switches	No	6	Standard	40
42	Extra Fuse Switches	No	8	Standard	40
43	LV Fuses	No	0	Standard	35
44	LV Links	No	0	Standard	35
45	LV Switches	No	0	Standard	35
46	Dist Tran 1,2Ph 10kVA	No	2.6	Standard	45
47	Dist Tran 1,2Ph 15kVA	No	2.6	Standard	45
48	Dist Tran 1,2Ph 30kVA	No	3.3	Standard	45
49	Dist Tran 1,2Ph 50kVA	No	4	Standard	45
50	Dist Tran 1,2Ph 75kVA	No	5	Standard	45
51	Dist Tran 1,2Ph 100kVA	No	7	Standard	45
52	Dist Tran Pole 3Ph 15kVA	No	5	Standard	45
53	Dist Tran Pole 3Ph 30kVA	No	5	Standard	45
54	Dist Tran Pole 3Ph 50kVA	No	7	Standard	45
55	Dist Tran Pole 3Ph 100kVA	No	9	Standard	45
56	Dist Tran Pole 3Ph 200kVA	No	13	Standard	45
57	Dist Tran Pole 3Ph 300kVA	No	16	Standard	45
58	Dist Tran Pole 3Ph 500kVA	No	20	Standard	45
59	Dist Tran Ground 3Ph 100kVA	No	9	Standard	45
60	Dist Tran Ground 3Ph 200kVA	No	14	Standard	45
61	Dist Tran Ground 3Ph 300kVA	No	16	Standard	45
62	Dist Tran Ground 3Ph 500kVA	No	22	Standard	45
63	Dist Tran Ground 3Ph 750kVA	No	26	Standard	45
64	Dist Tran Ground 3Ph 1000kVA	No	29	Standard	45
65	Dist Tran Ground 3Ph 1250kVA	No	40	Standard	45
66	Dist Tran Ground 3Ph 1500kVA	No	46	Standard	45
67	Dist Subtn Pole Mounted 50kVA	No	1	Standard	45
68	Dist Subtn Pole Mounted 100kVA	No	2	Standard	45
69	Dist Subtn Ground Mounted	No	4	Standard	45
70	Dist Subtn Kiosk	No	11	Standard	45
71	Dist Subtn Customer	No	2	Standard	45
72	Isolating Transformer	No	0	Standard	45
77	LV Customer 1 Phase	No	0.07	Standard	45
78	LV Customer 3 Phase	No	0.18	Standard	45
79	Distribution Pillar	No	0	Standard	45
80	EHV Lightning Arrestor	No	8	Standard	35
81	HV Lightning Arrestor	No	0	Standard	35
82	HV Circuit Breakers Outdoor Feeder	No	27	Standard	40
83	HV Circuit Breakers Outdoor Bus Coupler	No	27	Standard	40
84	HV Circuit Breakers Outdoor Incoming	No	27	Standard	40
85	HV Circuit Breakers Indoor Feeder	No	30	Standard	45
86	HV Circuit Breakers Indoor Bus Coupler	No	30	Standard	45
87	HV Circuit Breakers Indoor Incoming	No	30	Standard	45
88	Zone Transformer 5MVA or less	No	350	Standard	45
89	Zone Transformer 7.5/10MVA	No	450	Standard	45
90	Zone Transformer 11.5/22MVA	No	520	Standard	45
91	Zone Transformer 1phase 1MVA	No	130	Standard	45
92	33kV Air Break Switch Motorised	No	12	Standard	35
93	EHV Switches - ABS (Load Break-Remote Controlled)	No	12	Standard	35
94	EHV Switches - ABS (non Load Break-Remote Controlled)	No	12	Standard	35
95	EHV Switches - ABS (Load Break-non Remote Controlled)	No	9	Standard	35
96	EHV Switches - ABS (non Load Break-non Remote Controlled)	No	9	Standard	35
97	EHV Switches - Other	No	9	Standard	35
130	Reclosers (1 Phase) Remote Controlled	No	12	Standard	40
131	Reclosers (Not 1 Phase) Remote Controlled	No	30	Standard	40
121	HV Switches - ABS 2 ph (Load Break-non Remote Controlled)	No	2.5	Standard	35
122	HV Switches - ABS 2 ph (non Load Break-non Remote Controlled)	No	2.5	Standard	35
123	HV Fuse 1 phase	No	1	Standard	35
124	HV Fuse 2 phase	No	2	Standard	35
125	HV Fuse 3 phase	No	2	Standard	35
126	HV Link 1 phase	No	1	Standard	35
127	HV Link 2 phase	No	2	Standard	35
128	HV Link 3 phase	No	2.5	Standard	35
132	Reclosers (1 Phase) Not Remote Controlled	No	9	Standard	40
133	Reclosers (Not 1 Phase) Not Remote Controlled	No	27	Standard	40

Sinclair Knight Merz
25 Teed Street
PO Box 9806
Newmarket, Auckland New Zealand

Tel: +64 9 913 8900
Fax: +64 9 913 8901
Web: www.skmconsulting.com

APPENDIX 4 INDEPENDENT REVIEW

Roger de Bray,
Top Energy Limited,
Station Road,
PO Box 243,
Kaikohe 0400,
New Zealand
30 Nov 2004

ODV Certification Letter - Top Energy.doc
AP0817

Dear Roger,

Top Energy Ltd – Electrical Network ODV Valuation as at 31st March 2004

As requested, Sinclair Knight Merz (SKM) has provided assistance to Top Energy Ltd to establish the ODV of it's Electrical Line Business (ELB) system fixed assets for statutory disclosure.

The ODV valuation and conclusions contained in this letter are based on the following information that has been provided to SKM:

- An ODRC asset/valuation database for the electrical system fixed assets as at 31 March 2004 compiled by Top Energy.
- Discussions and meetings with Peter Middlemiss of Top Energy.
- Top Energy's Asset Management Plan ("AMP") dated June 2004.
- Security standards, reliability targets and quality of supply information provided by Top Energy.
- Operational statistics and system diagrams.
- Electrical demand forecasts.
- Local authority requirements.

The collation of the asset data and the manipulation of the physical ODV asset/valuation database have been undertaken by Top Energy staff.

SKM has reviewed the physical ODV asset/valuation database (as provided by Top Energy) and the associated database fields, including asset ages, depreciation and database consolidation.

SKM confirms that the valuation has been prepared in accordance with the Commerce Commission's 'Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses' (dated 30th August 2004). The Handbook may be found at the following Internet location : http://www.comcom.govt.nz/.

The following sections outline those major items considered by SKM during the preparation of the ODV valuation, a valuation summary and any other issues that are pertinent to the valuation.

Asset Classification

The assets have been classified in a manner that is consistent with that outlined in the Commerce Commission ODV handbook (dated 30th August 2004).

Asset Quantities

SKM has reviewed the total asset quantities and consider the quantities reported or estimated to be reasonable. In addition we believe that the quantities reported are a reasonable reflection of those assets that are in service on Top Energy's electrical network.

In comparison to Top Energy's 2001 valuation the asset quantities for this current valuation have shifted significantly. The shift is largely the result of Top Energy using a new, significantly more accurate data source; namely a recently implemented Geographic Information System (GIS). SKM is aware of other Electrical Lines Businesses (ELB) that have implemented GIS systems and have experienced significant shifts in asset quantities, and thus such changes are not unusual. Having implemented the GIS it is SKM's expectation that in future valuations significant asset quantity shifts are unlikely to occur. However, SKM notes that the LV lines/cables have yet to be completely captured in Top Energy's GIS. This asset class contributes significantly to the overall magnitude of the network value and out of necessity has been estimated for this valuation. SKM considers the estimates of LV line/cable lengths to be reasonable.

The major asset quantity shifts that have occurred are as follows:

- A 29% increase (4,004 units up to 5,188) in distribution transformer quantities
- A 19% decrease (3048kms down to 2,659kms) of 11kV overhead line
- A 77% increase (65kms up to 115kms) of 11kV underground cable
- An 36% reduction (486kms to 310kms) of LV overhead line
- A 23% decrease (538kms to 417kms) of LV underground cable
- The addition of overhead fuses that were omitted in previous valuations

Audits

SKM has not, in the course of this assignment, conducted anything in the nature of an audit of the database information provided. Accordingly, we do not express an opinion as to the reliability, accuracy or completeness of the information upon which this valuation is based.

In addition no reconciliation has been undertaken between the ODV asset/valuation database and Top Energy's historical accounting fixed asset records. The responsibility for the completeness and accuracy of the data lies with Top Energy. However, we have reviewed the valuation methodology and undertaken a review of the physical asset register valuation/database (as provided by Top Energy) and the associated database fields, including asset ages, depreciation and database consolidation for sensibility.

In addition SKM undertook a random asset field audit to establish the relative accuracy of the asset/valuation database. This audit included a site visit to three zone substations and the reticulation surrounding those substations. The audits identified that asset quantities were reasonable, but that the individual asset ages, as captured within the GIS, were not entirely reliable. Despite this fact it was found that the recorded asset ages were both older and younger than that in the field. However the average ages of the asset classes as recorded are typical for a New Zealand Electrical Lines Business (ELB), and thus SKM is of the opinion that the inconsistencies in asset ages would not materially affect the valuation.

Note also that SKM has not audited the data sources and procedures used to populate Top Energy's GIS or the 'extraction tool/script' used to dump the assets from the GIS to the asset/valuation database. The responsibility for this aspect of the valuation lies with Top Energy.

Replacement Costs

For all standard asset categories the replacement costs used are those maximum replacement costs prescribed by the Commerce Commission ODV Handbook (dated 30th August 2004).

In the case of non-standard asset categories SKM has reviewed with Top Energy the assessed replacement costs. The non-standard replacement costs used are those costs of modern equivalent assets of the same service potential that would be installed on or about the valuation date and include installation, excavation, reinstatement, traffic management, testing, commissioning, design, construction supervision and project management costs. The costs have been derived from recent project costs, engineering estimates and/or manufacturer quotes and cost estimates.

SKM has also undertaken a high level review of the overall substation replacement costs and has concluded that the costs are reasonable.

Replacement Cost Multipliers/Factors

The replacement cost multipliers and factors used in this valuation are within the bounds of those prescribed by the Commerce Commission ODV Handbook (dated 30th August 2004).

SKM have reviewed the magnitudes of the multipliers/factors, in terms of their appropriateness to Top Energy's network and their geographic location. SKM is generally familiar with the geographic regions where multipliers have been applied, and is of the opinion that multiplier application has generally been sparing.

Asset Lives

For all standard asset categories the asset lives used are those prescribed by the Commerce Commission ODV Handbook (dated 30th August 2004).

The ODV handbook allows life extensions to be applied for specific assets based on a review of maintenance practices, test/failure records, loading levels, network fault levels, operating environment and purchase specifications. No life extensions have been applied in this valuation. However note that there are no indications that asset life extensions should not be applied, or that Top Energy's asset maintenance regimes are not appropriate. In the event that Top Energy can meet the Handbook requirements in future valuations asset life extensions may be applied.

No asset age adjustments were made as a result of refurbishment.

Where assets have reached the end of their lives but are still in service, as per the ODV Handbook, a further three years of life has been assumed.

Optimisation

With the exception of some over investment, inherited from the Bay of Islands Electrical Power Board, Top Energy's network is typical of a rural New Zealand electrical network. In the majority the lines are of overhead construction, the network is characterised by zone substations that are separated by large distances and the network is voltage constrained. Generally this means that the opportunities for optimisation are relatively limited.

Furthermore Top Energy's network generally has relatively small capacity 11kV conductors compared to other distribution companies. This is driven by the relatively low electrical loading density characteristics of the region, and as a result the ability to reduce conductor sizes is relatively limited.

SKM has reviewed the optimisation undertaken for valuation and confirms that the optimisation requirements stipulated in the ODV Handbook have been followed. These requirements have used Top Energy's load forecasts and Quality of Supply (QoS) criteria, and have considered the network configuration, capacity and engineering.

SKM's review has also included consideration of the network load forecasts for (i) points of supply, (ii) zone substations, and (iii) distribution feeders. Given the locations and nature of the network the forecasts are considered by SKM to be appropriate.

SKM have had discussions with the Top Energy staff in relation to optimisation, and can confirm that they have considered the minimum optimisation requirements of the ODV Handbook.

SKM confirms that stranded assets have not been included in the assets quantities, and as such have not been optimised.

Economic Value

SKM has not considered Economic Value testing (impairment) in relation to the ODV valuation, on the basis that PriceWaterhouseCoopers (PWC) has undertaken this task.

Opinion

SKM has checked the information supplied by Top Energy and is satisfied that the valuation approach taken is appropriate. In addition, it is SKM's professional opinion that the final figures arrived at are reasonable.

However we stress that the valuation derived using the ODV methodology in the Handbook is only intended for regulatory purposes and may not necessarily represent the fair market value of the ELB.

Valuation Summary

The ODV of Top Energy's ELB system fixed assets as at 31st March 2004 is **$96,695,000**.

In comparison the reported regulatory valuation, as at 31st March 2003, in accordance with the fourth edition of the ODV Handbook (dated October 2000) was $76,065,000. The changed asset value has largely been the result of (i) the implementation of a GIS system, and (ii) the increases in standard asset replacement costs that are contained within the recent ODV Handbook (dated 30th August 2004).

SKM

Valuer

Our opinion has been formulated by the writer and reviewed by Rhys McDougall. Both Mr McDougall and the writer are professionally qualified and experienced in the type of work concerned.

Disclaimer

This opinion is intended to be used only for ODV reporting as at 31st March 2004, and is intended for use and reliance only by Top Energy.

SKM disclaim responsibility to any party other than Top Energy for any loss or damage whatsoever suffered as a result of acting in accordance with any information contained

Non-Publication

Neither the whole or any part of this letter may be included in any published document, circular or statement or published in any way without prior written approval of the form and context in which it may appear.

On behalf of SKM Limited,

Yours sincerely,

Richard Fairbairn
Senior Engineer, BSc(Eng), MSc(Eng), PhD
Phone: (09) 913-8996
Fax: (09) 913-8901
E-mail: rfairbairn@skm.co.nz
cc. Rhys McDougall