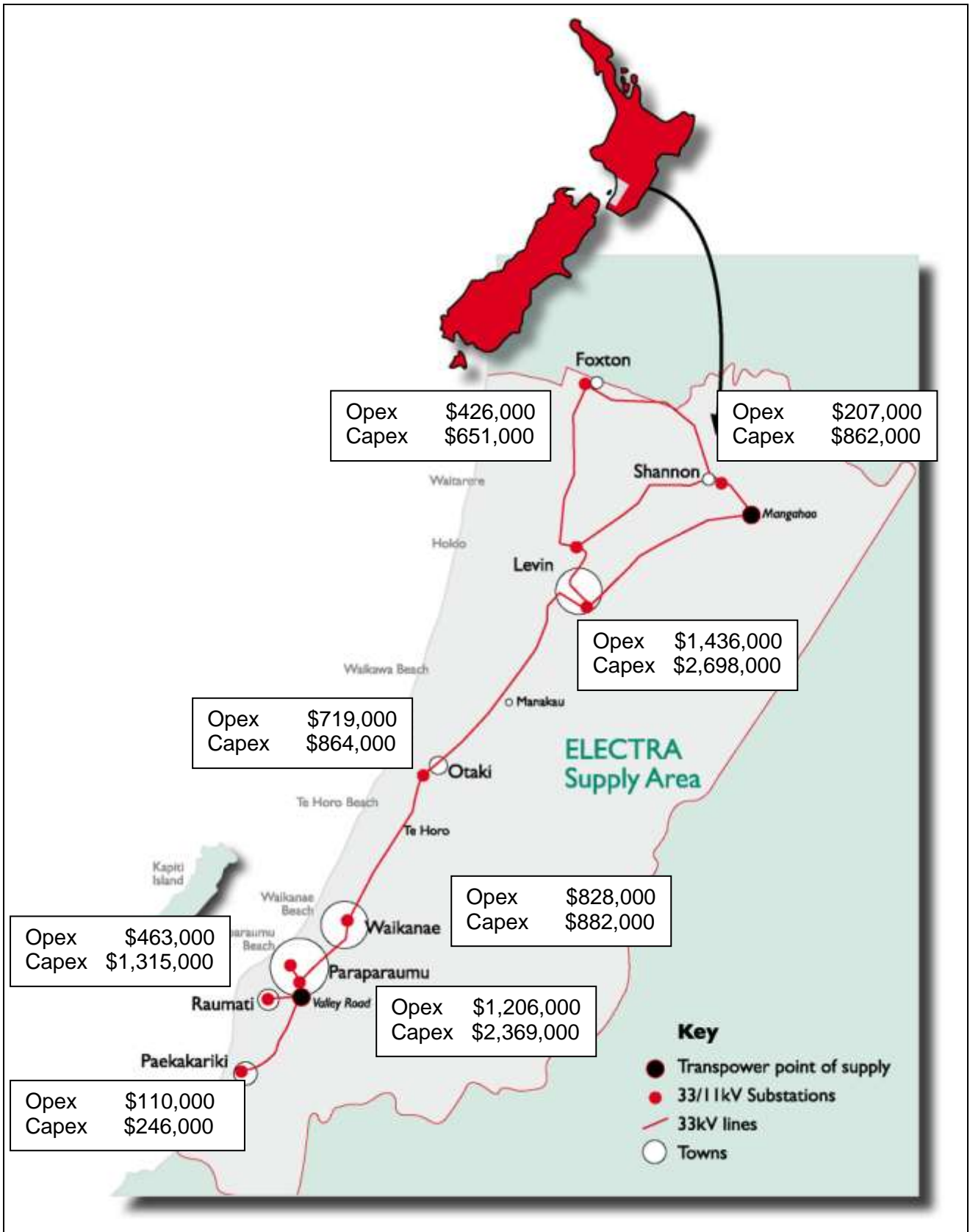


ASSET MANAGEMENT PLAN OVERVIEW 2015-25





Expenditure by location 2015/16

<p>EXECUTIVE SUMMARY</p>	<ul style="list-style-type: none"> • This document reflects the key issues and overall direction of Electra’s detailed 2015-2025 Asset Management Plan (AMP). • The 2015 AMP shows a sustained asset replacement programme in the medium to long term. This continues the path of our previous plan. • While the focus is on renewal and replacement, we also expect the programme to result in an incremental improvement in reliability. Better design is also expected to positively impact safety. • There is reduced focus on growth, partly because we have little indication of any turn around in this area, but also simply because there are increasing numbers of ageing assets that need replacing in a timely fashion to prevent the network from aging further overall and to maintain system reliability. • It highlights opportunities with Transpower along with each main area of the network being: <ul style="list-style-type: none"> • 33kV subtransmission • Zone Substations • 11kV distribution • Distribution transformers • 400V distribution • Consumer connections • Capital costs will average \$10.35m per year over the next 10 years with \$9.89m allocated for 2015/16. These figures are substantially the same as in previous year’s AMP after allowing for inflationary effects. • Operational costs will average \$5.5m per year over the same period. This figure is less in real terms than the last plan. There are gains from increased coordination of maintenance work with the capital investment program. • A summary of key projects for the next 12 months is also included. • Finally, although not specifically covered in the AMP, work has commenced on an Outage Management System to provide improved consumer communications.
<p>FOCUS ON RENEWAL, REPLACEMENT AND RELIABILITY</p>	<ul style="list-style-type: none"> • With continued flat electricity demand in the local economy and the need to replace assets that are at the end of their economic life, the focus of this AMP reinforces the need to concentrate on asset replacement, renewal and reliability. • This investment is intended to stabilise aging of the network, with specific assets to be replaced being identified by inspection/testing and ranking of condition. • Electra will continue to install “smart capable” equipment as part of the renewal and replacement programme that operate and communicate the information needed for faster restoration of supply to customers in the

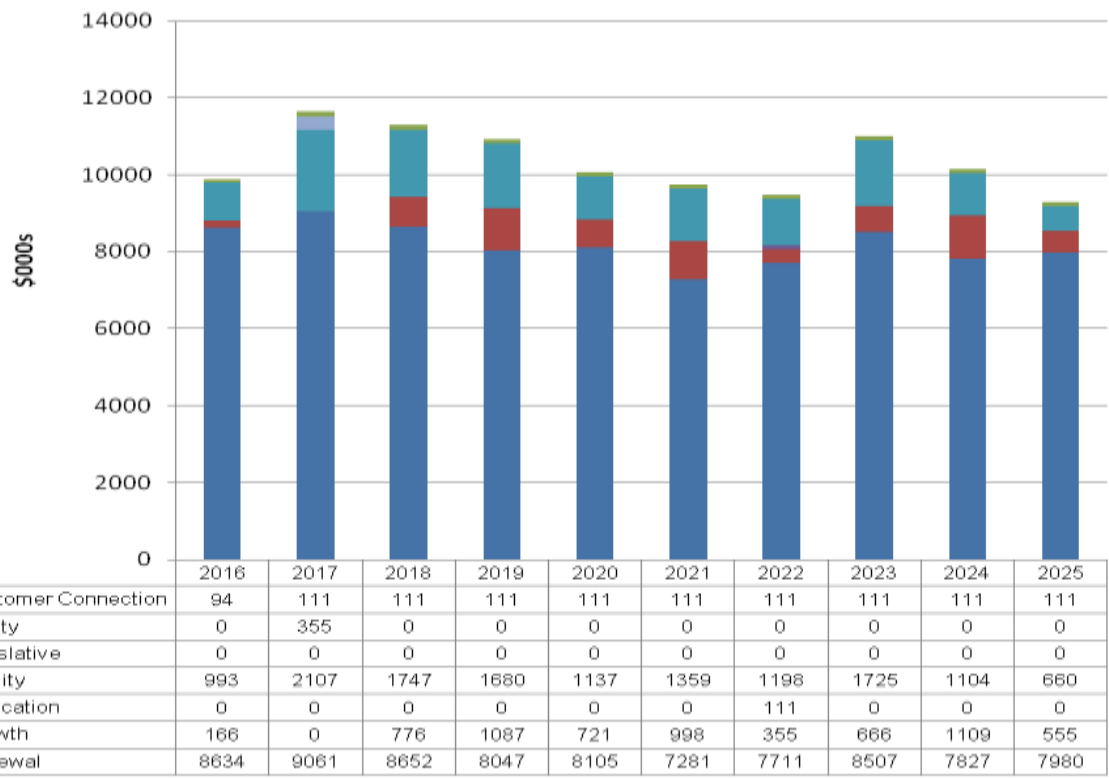
	<p>event of a fault.</p> <ul style="list-style-type: none"> • The percentage of projected capital expenditure over the next 10 years for growth is further reduced from 8% to 6% while the completion of some large reliability driven projects allows the spend in this area to reduce from 16% to 13%. Renewal and replacement work has increased from 74% to 81%. • The rebuilding of the Paraparaumu GXP and consequential increase in capacity has allowed us to focus the Electra network as a stand alone asset without having to include projects to compensate for potential grid constraints. • If load growth returns to the levels experienced prior to 2008, Electra has the flexibility to modify its Capex approach where needed. Any load growth exceeding the 1.5% per annum already allowed for in the AMP would require additional capital expenditure to a maximum of approximately \$1.2 million per percentage point of additional growth.
<p>TRANSPOWER SUPPLY</p>	<ul style="list-style-type: none"> • Transpower has now connected Paraparaumu to its core 220kV network. The new 220kV/33kV transformers have increased firm capacity from 68 to 120MVA and will ensure that Electra has sufficient capacity in that area well beyond the planning period. • With the availability of the 110kV lines between Mangahao and Paraparaumu Electra continues to reassess its sub transmission plans. This specifically applies to the double circuit 33kV line between Mangahao and Levin East. A decision on whether to purchase and use the Transpower lines at 33kV as a more efficient way of complementing the existing line will be made in 2015. • The Transpower lines from Bunnythorpe to the Mangahao GXP are rated at 60MVA, with the existing transformers at 30MVA supplying a peak load of 35MVA last year. This does not include any offset at peak from generation at Mangahao. The transformers are near the end of their economic life and are scheduled to be replaced in 2020 with 60MVA units (the expected standard Transpower size).
<p>33KV SUB TRANSMISSION NETWORK</p>	<ul style="list-style-type: none"> • The separation of the 4 circuits leaving Mangahao on common structures has been completed with the addition of a new underground cable from Mangahao to Shannon substation reducing risk to the northern network and enabling greater operational flexibility. • The second circuit between Paraparaumu GXP and Paraparaumu East (Tongariro Street) Substation is now completed and gives improved operational flexibility in the south and will allow security of supply when Paraparaumu East substation is rebuilt and when major maintenance is scheduled on the 33kV switchboard at Paraparaumu GXP in 2017. • The proposed 33kV cable from Levin East substation will allow full doubling of the circuits between Mangahao GXP and that substation. Currently the double circuit only runs as far as Waihao Road outside Levin and the cable will allow greater operational flexibility by effectively giving us another 33kV circuit from Mangahao. The point of connection for this cable will be finalised once ownership of the existing 110kV Transpower lines is decided as noted.

<p>ZONE SUBSTATIONS</p>	<ul style="list-style-type: none"> • Delayed from last year, money has been budgeted this year for preparatory work associated with removal of the existing structure and civil works for the new substation building at Paraparaumu East • The remainder of the work for zone substations in the planning period involves renewal and replacement of older equipment. This includes phasing out of the last oil filled circuit breakers, along with replacement of electro-mechanical and 1st generation electronic relays with modern equivalents at several of our older substations. • Completion of the Paraparaumu East substation rebuild and cabling along with the Shannon circuit separation completes the major individual projects planned for the next few years. • The possibility of new zone substations north of Otaki and at Waikanae West will be largely dependent on growth, which based on current projections remains outside the planning period. • At this stage it is planned to avoid investment in additional zone substations (particularly Waikanae West/Beach) by reinforcement of the 11kV distribution network in the short term and expansion of capacity at the existing Waikanae substation through the addition of a third transformer in the medium term.
<p>11KV DISTRIBUTION NETWORK</p>	<ul style="list-style-type: none"> • The primary emphasis over the next 10 years will be on consistently meeting reliability targets (SAIDI, SAIFI and CAIDI) and improving operational flexibility. It is anticipated the planned investment will also result in incremental improvement in these measures. • Increased sectionalisation will reduce the number of consumers affected by a single fault. This, coupled with the automation of alternative supply routes, will allow quicker restoration and fault isolation to minimise the duration of outages. • Reducing the number of consumers on each feeder also reduces the impact of faults. In 2014/15 we installed an additional feeder utilising an existing spare circuit breaker at Levin East to supply the south eastern area of Levin and Ohau. In 2015/16 we will carry out a similar project in Shannon for customers on the Tokomaru and Opiki areas. • There are several locations where significant concentrations of consumers do not have an alternative supply. These are primarily in beach front settlements such as Waitarere Beach, Waikawa Beach, Te Horo Beach and Raumati South. <ul style="list-style-type: none"> ○ In 2015/16 the major work will be in providing an alternative supply to Raumati Central and South areas from Raumati zone substation. ○ In subsequent years we plan to carry out similar work in Waitarere Beach. • For the remainder of the period we expect to see an increase in replacement and renewal of assets. As noted this will be due to age and condition rather than a need for increased capacity as had been the case

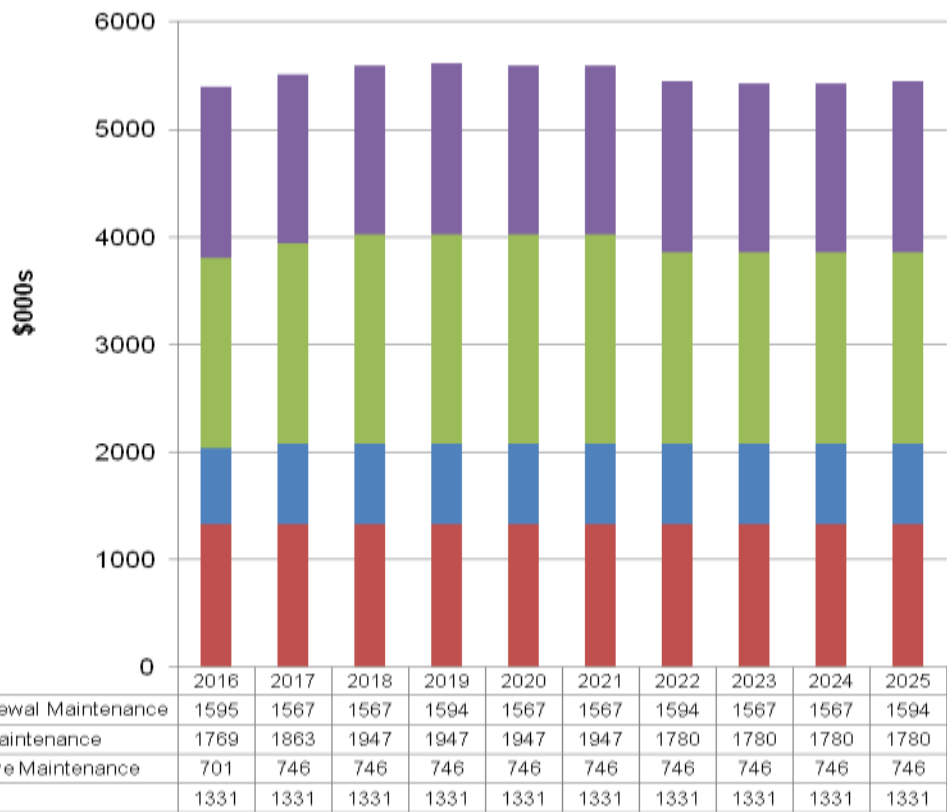
	<p>with the high growth of previous periods. However the opportunity will be taken to install larger capacity cables and wires as part of the renewal work.</p> <ul style="list-style-type: none"> • The expectation is to replace 8-15km of line, 200-300 poles, 800-1000 cross arms and 2-4km of cable in any given year to provide a stable expenditure programme of around \$3.9m per year for these assets. • The removal of the remaining hardwood poles from the network over the next 1-2 years is planned in addition to the routine level of replacement. • Expenditure on vegetation control is anticipated to continue at around \$1.4m per year using two tree crews.
DISTRIBUTION TRANSFORMERS	<ul style="list-style-type: none"> • Work on this asset class is derived from the results of our regular inspection cycles. The previously increasing rate of defects identified has stabilised under our current management system. • As with all distribution assets, we expect to see a long term increase in replacement and renewal rates due to advancing age as they are now less likely to be replaced before their end of life for growth requirements. • The expectation is to replace 15-20 ground mounted and 20-30 pole mounted units each year to provide a stable expenditure programme of around \$1.4m per year. • An active programme targeting the replacement of large two pole deck transformers each year with ground sited transformers is expected to be completed over the next 8 years. This reduces the future maintenance requirements and improves safety overall. • A similar programme for transformers located within buildings owned by consumers is also underway with the same expected outcomes.
400V DISTRIBUTION NETWORK	<ul style="list-style-type: none"> • Work on this asset class is also derived from the results of our regular inspection cycles. • Again, we expect to see an increase in replacement and renewal due to aged assets as they are now less likely to be replaced before their end of life for growth reasons. • The expectation is to replace 6-12km of line, 100-200 poles, 400-600 cross arms and 5-10km of cable each year to provide a stable expenditure programme of around \$2.8m per year. • In 2015/16 we will be carrying out this work mainly in Foxton, Levin, Otaki, Paraparaumu and Raumati South.
CUSTOMER CONNECTIONS (PILLAR BOXES)	<ul style="list-style-type: none"> • We expect to see increasing replacement rates as the earliest pillar boxes are now approaching 50 years of service and may shortly present public safety issues. We have already changed a number of older metal pillar boxes that were potentially unsafe. • The expected replacement rate will be 150-200 annually at a cost of around \$0.6m per year.

EXPECTED COSTS

- Capital and operational expenditure forecasts for the next 10 year planning period are shown in the following tables.
- Average capital expenditure is \$10.35 million per year, with \$9.89 million budgeted for this year.
- Operational expenditure is expected to average \$5.50 million over the next 10 years with \$5.40 million budgeted for this year.
- Reliability and growth expenditure is expected to average \$2.0million per annum based on an average load growth of less than 1.5% per annum, including new consumers.
- If growth were to increase above 1.5% then a maximum of \$1.2 million would be needed for each 1% of growth. This figure has been derived by modelling the network with 50% increased load and customer numbers and apportioning the cost requirement for the extra assets needed in this scenario.



CAPITAL EXPENDITURE



OPERATIONAL EXPENDITURE

KEY CAPITAL PROJECTS FOR 2015/16

Paraparaumu Zone Substation Switchyard Rebuild

Estimated cost, \$2,900,000 (\$1,133,000 in 2015/16)

Primary Benefit – Asset Renewal



This substation was built in 1970 and has had many additions and alterations since then. The outdoor structure is vulnerable to damage from external events. It also has a number of oil filled circuit breakers and aged protection systems. The project which commenced in 2014/15 involves rebuilding the substation using the following construction sequence:

1. Design and gain consents for new building (2014).
2. Remove the existing outdoor structure (2015).
3. Build new indoor switchrooms for both 33kV and 11kV circuit breakers (2015/16).
4. Connect new switchboards to existing Network and reinstate connections to Paraparaumu West and Raumati (2016/17).

Tokomaru, Tane Rd, 11kV Reconductor

Estimated cost, \$555,000

Primary Benefit – Asset Renewal

Secondary Benefit – Power Quality



Replacement of an aged small Copper line 5km long with larger Aluminium conductor. This line has been subject to several faults over the last few years and has structures that need replacing as well. The new conductor will also improve voltage support into Tokomaru.

Levin, Vista Rd, McLeavey Rd, 11kV Reconductor

Estimated Cost, \$355,000

Primary Benefit – Asset Renewal



Replacement of an aged small Copper line 5km long with larger Aluminium conductor. Many of the structures in Vista Rd also need replacing and the opportunity will be taken to link the lines in the two roads together, simplifying construction and giving greater operational flexibility.

Levin, Kimberley Rd, 11kV Reconductor

Estimated Cost, \$333,000

Primary Benefit – Asset Renewal



Replacement of an aged small Copper line 4.5km long with larger Aluminium conductor. The opportunity will be taken to link the lines in Kimberley Rd with those on SH1 minimise customer outages and give more operational flexibility in future.

Raumati South, Rosetta Rd, 11kV Cable Installation

Estimated Cost \$333,000

Primary Benefit – Reliability

Secondary Benefits – Asset Renewal

Installation of a new 11kV cable to link the Raumati South commercial area with Raumati Beach. The installation of the cable will provide an alternative supply that will simplify rebuilding of the overhead lines in Raumati South.



Levin, Collingwood St, Levin, 11kV Cable Replacement.

Estimated Cost \$166,000

Primary Benefit – Asset Renewal

Secondary Benefit – Reliability

Replacement of a small cable to increase load transfer capability in Western Levin.



Levin, Tararua Rd, 11kV reconductor

Estimated Cost \$166,000

Primary Benefit – Asset Renewal

Replacement of a 2.5km long aged small Steel Cored Aluminium line with larger Aluminium conductor to increase transfer capability in Eastern Levin.



Shannon, Otauru Rd, Additional Feeder

Estimated Cost \$166,000

Primary Benefit – Reliability

Installation of a fourth feeder from Shannon Zone Substation to increase transfer capability and provide increase capacity on the backup line to Tokomaru. This project was originally scheduled for the 2013/14 year but was delayed due to consenting issues.



Raumati, Menin Rd, 11kV Reconductor

Estimated Cost \$133,000

Primary Benefit – Renewal

Secondary Benefit – Reliability

Replacement of a 1.0km long aged small Copper line supplying central Raumati and providing a backup supply to the Raumati Beach commercial area.



Raumati, Dale Rd, 11kV Reconductor

Estimated Cost \$133,000

Primary Benefit – Renewal

Secondary Benefit – Reliability

Replacement of a 1.5km long aged small Copper line supplying central Raumati and providing a backup supply to the Raumati South commercial area.



Te Horo, Pukenu Rd, Cable Installation

Estimated Cost \$111,000

Primary Benefit – Reliability

Installation of a new cable between northern Peka and Te Horo Beach to provide alternative supplies to both areas.



Raumati South, Leinster Ave, 11kV reconductor

Estimated Cost \$111,000

Primary Benefit – Asset Renewal

Replacement of aged and damaged 11kV line that is used to transfer load between Paraparaumu, Raumati and Paekakariki Zone Substations.



Waikanae, Eruini St, 400V cable replacement

Estimated Cost \$111,000

Primary Benefit – Asset Renewal

Replacement of aged and damaged 400V cables that are faulting with increasing frequency and are near end of life.

