



Report to Entrust

The Energy Solutions Programme

Financial Year 2017/18

July 2018

## 1 The Energy Solutions Programme

The Company and the Trust agreed that the Energy Solutions Programme Investment for the past year would be spread across overhead improvement (undergrounding conversion) and new technologies as alternatives to overhead lines (community generation, mobile generation, smart poles and smart grids).

Through our commitment to keep the Trust informed on the focus and achievements of the Company, and this programme, we submit this report for the 2017/18 year.

## 2 Expenditure of the Energy Solutions Programme

This programme replaced the Overhead Improvement Programme (OIP) of the previous DREOR.

The new deed requires the Energy Solutions Programme Investment to be \$10.5M each year, unless agreed otherwise.

The total investment made over the past year has been \$11.6M, and is detailed below:

<i>Overhead Improvement:</i>	
Undergrounding	\$6.7M
Undergrounding contributions	(\$0.1M)
<i>New Technologies:</i>	
Community Generation	\$1.2M
Smart Pole	\$0.5M
Smart Grid – Kawakawa Bay	<u>\$3.2M</u>
	\$11.6M

## Energy Solutions Programme Investment

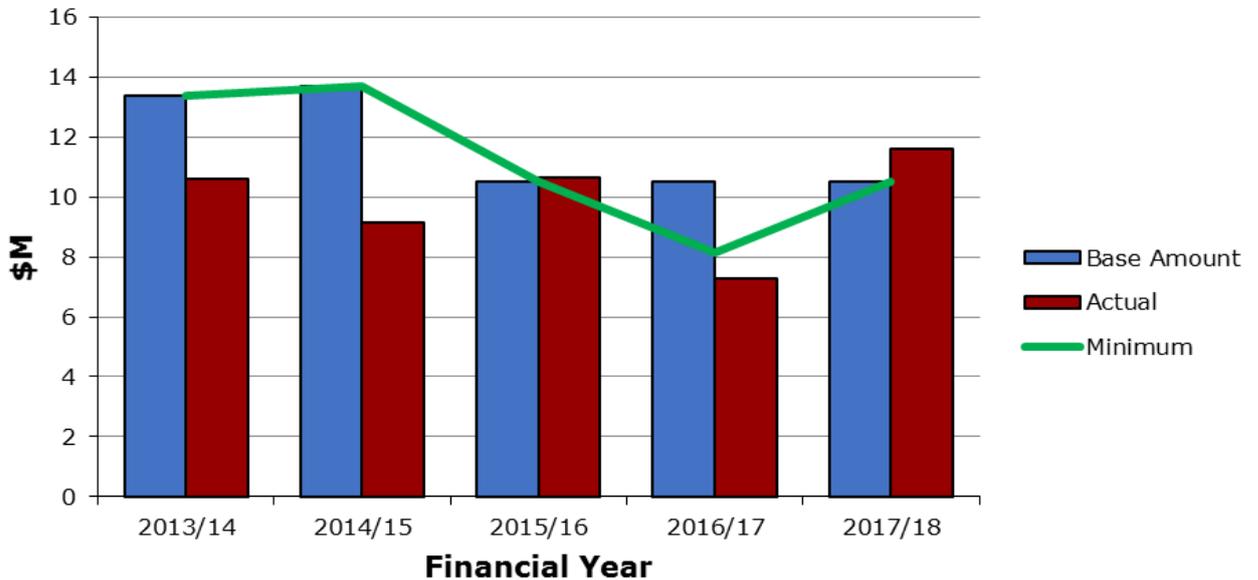
The actual OIP and Energy Solutions Programme Investment expenditure throughout each year of the past five years of the combined programmes is summarised in the table below:

	Target Investment	Actual Investment
2013/14	\$13.4M	\$10.6M
2014/15	\$13.7M	\$9.1M
2015/16	\$10.5M	\$10.6M
2016/17	\$10.5M	\$7.3M
2017/18	\$10.5M	\$11.6M

The investment for the 2017/18 year was \$11.6M. With this, the actual expenditure over the past 5 years is \$49.2M, an average of \$9.8M.

To meet the Energy Solutions Programme Investment, including consideration of Clause 4.4 of the deed, investment during the 2017/18 year needed to be \$10.5M. The investment achieved this year was \$1.1M above the investment needed to satisfy the deed requirement.

## Energy Solutions Programme Investment



## Achievements in 2017/18

### *Undergrounding*

We highlighted in our last two reports that securing Chorus' cooperation to convert the telephone lines simultaneously had been limiting our ability to progress with undergrounding projects.

Despite this limitation, we have completed undergrounding projects during this past year in Massey Road (Mangere), Stack Street (Herne Bay), Morgan Street (Newmarket), Garnet Road (Westmere), Dominion Road (Mt. Roskill), and Carbine Road in Mt. Wellington.

We have also initiated and progressed with undergrounding works in Franklin Road (Freemans Bay), Station Road (Otahuhu), Alba Road (Greenlane), Cowie Street (Newmarket), and Sarsfield Street in Herne Bay.

Through these projects we invested \$6.73M in undergrounding, and have received \$80k in contributions from residents.

Pleasingly, all overhead improvement works were again delivered without a lost time injury, and again have received complimentary customer feedback upon completion.

These projects continued to provide positive brand exposure to Entrust through co-branded project signs, co-branded project information flyers, and references in project correspondences.

Chorus have recently agreed to resurrect support and participation in undergrounding projects. Their driver is to connect properties to their new fibre network, installed through the UFB initiative, and they consider the undergrounding projects will help them to promote and secure fibre to the premise connections. As a result, we have reverted to the development of large scale, suburban undergrounding projects to deliver efficiencies and better customer outcomes. (Note that the last project of this size completed with Chorus' participation was in Pakuranga in 2015.)

We have prioritised a large-scale project in Mt. Albert, and a significant street project in Mangere Bridge, as undergrounding priorities to develop with Chorus during the current financial year.

The following photos depict the "before and after" images of some of the undergrounding works completed or progressed through the year:



Dominion Road, Mt Roskill



Garnet Road, Westmere



Massey Road, Mangere



Morgan Street, Newmarket



Bell Road, Remuera



Stack Street, Herne Bay

### *Community Generation*

We have purchased a range of mobile generator units, and are in the process of co-branding these Vector and Entrust. (Please note the branding shown is indicative only.)

We will employ these to support vulnerable/medically dependent customers, and wider community groups within the Entrust District, during planned outages and extended unplanned outages, such as storms.

- A. We have purchased 60 small scale generators, like these depicted below, to support essential appliances of vulnerable and medically dependent customers. These generators have been appropriately sized, after consultation with the Auckland District Health Board, to support dialysis and other typical medical assistance machines.



- B. We have purchased six trailer and truck mounted mobile generator units with capacities ranging through 200kVA, 500kVA, and 800kVA. These units will be used to support wider community groups through connections made directly into Vector's network.

- C. We intended to purchase smaller, mobile battery generator units for use in the Entrust District. The units are designed and manufacture in the United States. For

use in New Zealand, these units need to be certified to New Zealand Electricity Regulations and related standards. Unfortunately, the supplier has not been able to gain the requisite certification for these units to date. As a consequence Vector has not committed to a purchase during this reporting period.

In total, we took receipt of \$1.236M worth of the mobile generating plant during this year. The balance of the equipment (approx. \$2M) will be delivered during FY'19.

The photo below shows Vector's 200kVA trailer mounted unit. The last photo shows a 500kVA, fully assembled generator on a truck.



200kVA trailer mounted mobile generator (not branded)



500kVA truck mounted mobile generator (branded)

### Smart Pole

We have committed to deploying pilot installations of 6x Smart poles across two separate projects. This commitment accounted for \$0.5M of investment during this period.

The first, in the Mt Albert area, will have 4x Smart poles installed in Selcourt Road to carry low voltage electricity cables utilising Aerial Bundled Conductor (ABC). The image below depicts the relative position of the poles in the street.



Selcourt Rd, Mt Albert schematic

The second project consists of 2x individual Smart poles being installed in the Wynyard Quarter district.

Both projects are expected to be completed in August/September 2018.

The images below depict the different Smart pole configurations being adopted for these pilot projects, funded by Entrust. The poles incorporate a variety of community friendly devices such as electric vehicle chargers, security cameras, electronic sign posting and weather sensors, while lifting the conductor above most tree lines to improve amenity value and reduce vegetation cuts.



Entrust Smartpole concepts for Wynard Quarter



Entrust Smartpole concept for Selcourt Rd using ABC

### *Smart Grid – Kawakawa Bay*

We have committed to developing a smart grid solution to improve the resilience and customer experience at Kawakawa Bay. The network to Kawakawa Bay and Orere Point is exposed to significant geographical challenges, a long feeder from its supply in Takanini, flood prone zones at Clevedon, vegetation conflicts along the feeder route, and road reserve instability. The installation of the microgrid, which consists of a solar and battery system, will reduce the outage times experienced by residents in Kawakawa Bay and Orere Point.

We have established a budget of \$4.5M to develop a combined solar and battery energy storage system at Kawakawa Bay. Of this budget, we have made commitments of \$3.19M through purchases and contracts during the 2017/18 year.

We plan to hold a community day in September to inform residents of Kawakawa Bay details of this solution intending to improve their network supply. The solar and battery system is expected to be completed in November 2018.

The solar and battery system is being installed on WaterCare's land at Kawakawa Bay. The system will also improve reliability to the Watercare pumping systems installed at this location. The images below depict the installation on the Watercare site at Kawakawa Bay upon completion.

*Before:*



*After:*





#### **4 Summary**

Expenditure for the Energy Solutions Programme Investment exceeded the 2017/18 budget, satisfying the DREOR requirement for the year.

A major win during the year has been getting Chorus over the line to start supporting undergrounding initiatives. We expect this will make delivery of the undergrounding projects easier to achieve and therefore should assist our ability to continue to meet the Energy Solutions Programme Investment in future years.

A handwritten signature in blue ink, appearing to read 'A Botha'.

**Andre Botha**  
Chief Networks Officer