Electricity Asset Management Plan Update

Information Disclosure 2014

CONTENTS

1. INTRODUCTION

This Asset Management Plan (AMP) Update (the Update) has been prepared to inform Vector's customers and other stakeholders of material changes and updates to our asset management planning since 31 March 2013, when the last full Electricity AMP (2013-2023) was published.[1] In particular it contains updated 10-year capital investment and maintenance programmes for the electricity distribution network. These have been revised to reflect new improvement programmes initiated over the course of the last year, ongoing analysis of the performance and condition of the network assets, as well as additional information received from third parties, such as Auckland Council's projections on forecast housing growth across the network over the next 5-10 years.

In addition, this Update fulfils our regulatory disclosure requirements, as set out under Clause 2.6 of the Commerce Commission's Electricity Distribution Information Disclosure Determination 2012 (IDD).

As part of Vector's ongoing operation, the AMP, and this AMP Update are important components of our network growth, maintenance and investment planning processes. It also forms a key input into the annual capital and direct operating expenditure budget. However, when reading these documents, it is important to note the following:

- Vector follows an annual budget process for a financial year running from July to June. This does not match the regulatory year, which runs from April to March. As a result, financial year forecasts and Vector's actual budget may differ from those in the attached regulatory schedules.
- The annual electricity budget is finalised 3 months after this Update is published. The budget will therefore be updated and amended as required, to reflect material changes in demand patterns, the economic environment, third party requests and other factors that arise between the date of publishing the AMP, and the finalisation of Vector's budget.
- While the AMP and the Update present Vector's best view of its asset management and network investment intentions at the time of publication, it does not commit Vector to carrying out any of the individual projects or initiatives described within the document. These may be amended to reflect changes to Vector's regulatory or operating environment, customer energy demand trends and requirements, customer or network technology, or Vector's commercial priorities.
- Projects and initiatives described in the AMP or the Update are still subject to internal governance procedures, including meeting financial approval requirements before they can proceed. This may lead to changes in the scope of works or programme.
- Uncertainty associated with the regulatory regime that applies to the electricity distribution business remains a significant factor weighing on the ability to and appetite for investing in line with the forecasts reflected in this Update. The potential for adverse changes to the regulatory regime, the most imminent being the potential review to the allowed regulatory rate of return on investments, is damaging to incentives to invest. Concerns about housing affordability may also put pressure on the acceptable level of up front customer contributions to the forecast capital expenditure; the potential for Vector to have to carry a larger proportion of the capital expenditure, coupled with potentially adverse regulatory outcomes, therefore

[1] A copy of this AMP is available on the Vector website, at http://vector.co.nz/corporate/disclosures/electricity/electricity-asset-mgmt

represents a risk to Vector's ability to deliver on the growth expectations of the Auckland Council and the Government.

1.1 Price Reset Regulatory Uncertainty

Further regulatory uncertainty arises out of the process used by the regulator to set revenues at each five yearly price reset. For Vector in particular there is a wide range of potential outcomes for growth, for example in number of connections to the network, due to the expected rapid increase in the number of new connections. Where the regulator has to make an estimate of these growth rates in setting allowable revenues there is a high risk of material under or over estimation. There is currently no mechanism to adjust for forecast errors of this type.

This is a critical issue for both customers and Vector, accordingly we will engage with the regulator on how this matter can be addressed prior to the next reset.

2. UPDATE TO NETWORK DEVELOPMENT PLANNING

This section discusses factors that lead to material changes to the network development plan described in section 5 of Vector's 2013 AMP.

2.1 The Auckland Plan and Vector's Network Development Plan

A number of significant Council and Government documents have been published since planning was completed for Vector's 2013 AMP, including the Auckland Housing Accord and the draft Auckland Unitary Plan. These have a material impact on Vector's network development planning.

Following the adoption of the Auckland Plan in March 2012, Auckland Council released its *Housing Action Plan Stage 1* in December 2012. This report identified a current shortfall of new dwellings of around 20,000-30,000 in Auckland and a need for 13,000 new homes each year for the next 30 years. The government subsequently released a separate report, *Housing Affordability: Residential Land Available in Auckland Report* on 12 March 2013. This report confirmed the current housing shortfall and observed that residential building consent rates are less than half that required to accommodate the projected population growth.

The Auckland Housing Accord, approved by Auckland Council in September 2013, responded to the aforementioned reports, describing a mechanism to accelerate housing supply in both greenfield and brownfield developments over the interim 3 years prior to Auckland's Unitary Plan becoming operative in about 2016. The Accord will include the facilitation of a more flexible process for residential development approval and consenting.

Historically, long term connections growth on the Vector network has aligned closely with population growth. We currently do not see evidence of population growth supporting a rapid increase in connection numbers, however we recognise the shortfall of new dwellings to meet existing population numbers, which the government wishes to address in the short term. Because the Housing Accord has been implemented to primarily address this housing deficit rather than population growth, it is acknowledged that connections growth based on population increase may not apply until we address the shortfall in housing stock.

Goals set by the Government and Auckland Council as part of the Accord, include targets for new residential building and subdivision consents over the next three years (refer Table 1). However, the Accord acknowledges that these targets will need to be achieved mainly

by private housing developers. The Auckland Unitary plan forecasts 100,000 new houses to be built over the next 10 years.

Year 1[2]	Year 2	Year 3
9,000	13,000	17,000

Table 1 : Auckland Housing Accord targets for residential housing consents

By comparison, there were 3,902 gross residential connections on the Vector network (excluding existing connections that were decommissioned) for the nine months from 1 April 2013 to 31 December 2013. If extrapolated for the year ending 31 March 2014 this provides an equivalent annual gross connection rate of 4,682. Although this is higher than last year's connection rate of 3,715 (and comparable with connection growth levels last seen in 2010/11), it is still some way from the Accord consent targets, albeit recognising that there is always a lag between building consents turning into actual network connections.

The differences between actual connection rates, recent trends, historical trends[3] and the growth explicit in the Housing Accord is still substantial. This uncertainty has material implications on Vector's network development planning, as the number of expected new connections is a key determinant for network expansion and capacity reinforcement. To aid our analysis, Vector commissioned Covec to conduct an independent forecast of connection rates on the electricity network.

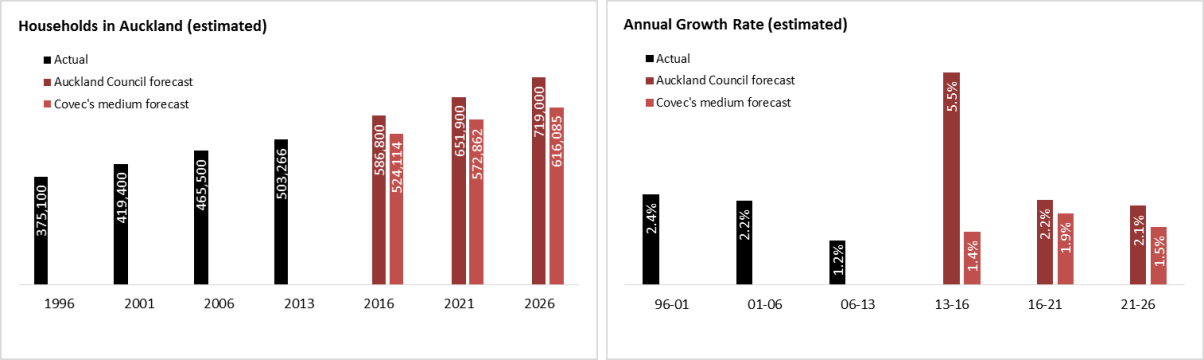
In its review, Covec considered a range of parameters[4]. It concluded that the two key drivers for the future increase in new household connections will still be population growth and household size.

Covec's analysis cautioned that although Auckland Council's growth plans were initially based on Statistics New Zealand's high population growth scenario using 2006 Census data, it seems less likely now that these are realistic, as data from the 2013 Census shows slower actual Auckland population growth over the 2006-2013 period. Covec also noted that growth in the number of households in Auckland has also slowed considerably over the last few years, reflecting both lower population growth and constrained housing supply. Although these constraints are starting to relax, other constraints such as bank loan-to-value ratio (LVR) restrictions are still likely to have a constraining impact on new housing (and hence connection) numbers. Covec's forecast housing growth numbers are shown in Figure 1.

[2] Year 1 starting the date the Unitary Plan was first notified in September 2013.

[3] Average new residential connection rates to the Vector network for the five years prior to 2007 was in the range of 7000 to 8000 per year.

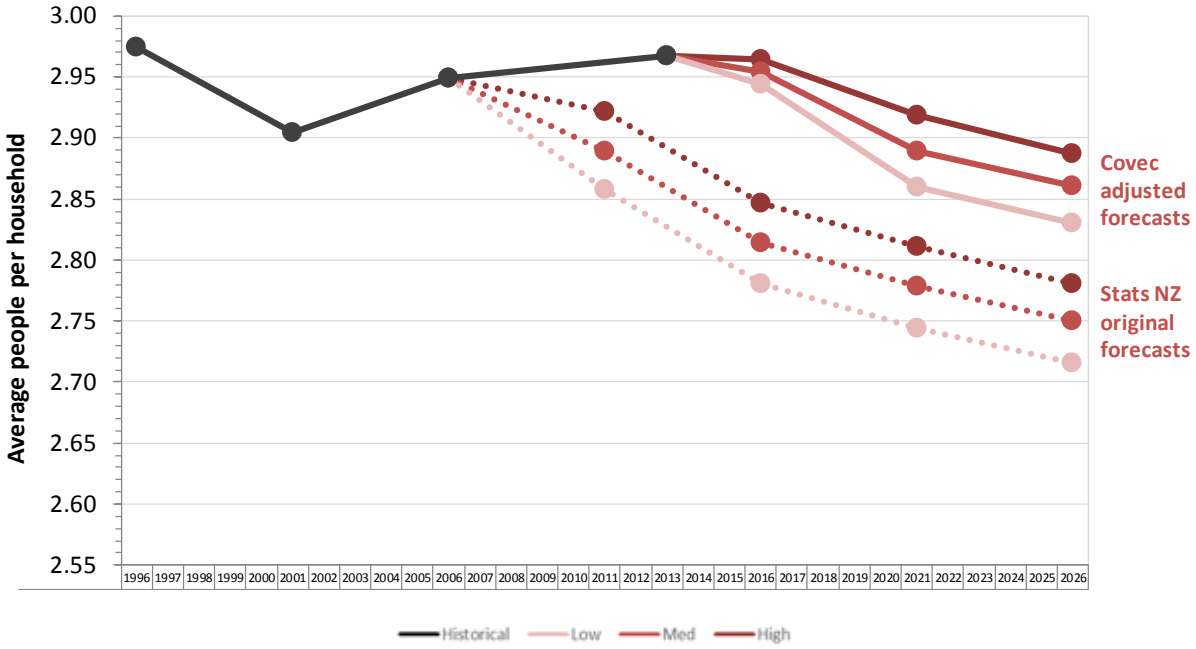
[4] Parameters considered by Covec in their derivation of the forecast included population forecasts (Statistics NZ), historical population growth areas (Statistics NZ), economic forecasts (Reserve Bank), Auckland's historical economic activity (Statistics NZ), historical and forecast mortgage rates (Reserve Bank), residential building activity (Reserve Bank, Statistics NZ), Building consents (Statistics NZ), the Auckland Housing Accord and draft Auckland Unitary Plan.



(Source: Covec)

Figure 1 : Auckland Household Growth: actual and forecasts

Covec's reduced household growth forecast is also partly impacted by their household size forecasts (refer Figure 2).



(Source: Covec)

Figure 2 : Forecasting assumptions – Residential household sizes

2.1.1 Vector's Growth Forecast

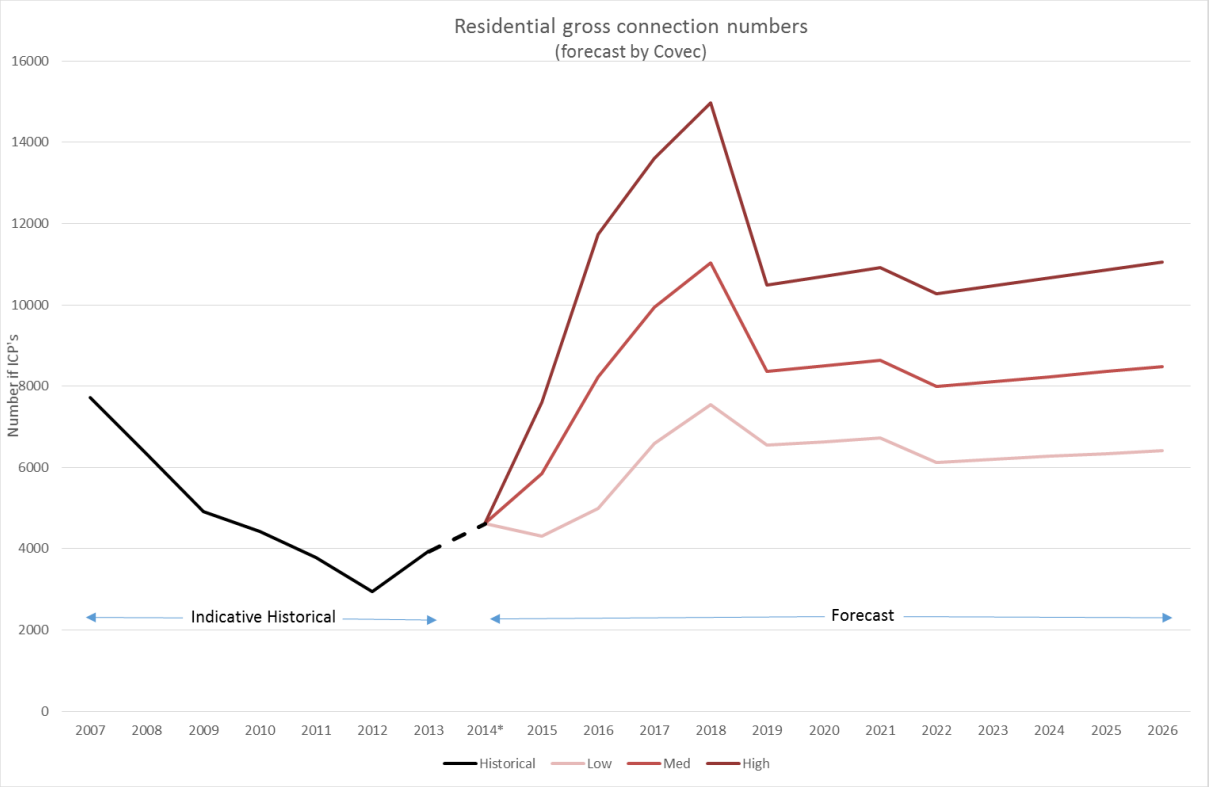
The base case forecasts in this AMP Update are based upon independent advice obtained from Covec, and specifically Covec's 'medium' growth forecast.

Vector strongly supports the government and Auckland Council's housing initiatives, and accepts that rapid strides are being made to achieve the housing targets contained in the Accord. It is also noted that Vector has already seen a 25% connection rate increase on the network over the last year, and the view of local developers is that this will continue to increase. However, the independent advice obtained from Covec suggests that Auckland Council's growth forecast (used as the basis for Covec's 'high' forecast in Figure 3), now looks challenging to achieve in the short term.

The decision to adopt Covec's 'medium' growth forecast as the base case for this AMP Update reflects the conservative demand forecasting approach that is inherent to best

practice network planning[5]. The updated electricity demand figures in this Update - used to develop our network growth plans - also draw on these numbers.

Vector clearly recognises the potential for actual new housing numbers to exceed the forecast (indeed, this medium connection rate forecast is still materially higher than recent growth trends and what is currently seen on the network), and we will continue to keep a close watch on this, adapting the forecasts and network plans adopted in this AMP Update as necessary.



(Source: Covec)

Figure 3 : Residential connection numbers, historical and forecast

FORECAST NEW CONNECTIONS	2015	2016	2017	2018	2019	2020	2021	2022	2026
Low growth	4,314	4,996	6,583	7,539	6,544	6,632	6,721	6,121	6,421
Medium growth (Vector base case)	5,855	8,230	9,941	11,039	8,355	8,493	8,632	7,996	8,485
High growth	7,602	11,731	13,613	14,966	10,488	10,697	10,911	10,277	11,053

Table 2 : Forecast number of connections under different scenarios[6]

2.1.2 Location of Network Growth

By the end of 2013, 22 Special Housing Areas (SHAs) had been announced by the Council as part of the Auckland Housing Accord process. However, these will only provide a portion of the new dwelling targets set by the Housing Accord. Vector's short term modelling has

[5] Since demand growth, which is driven largely by ICP growth, is a strong driver for network investment levels, over-forecasting could lead to excess asset investment – a situation which is difficult to rectify. On the other hand, should actual demand growth exceed forecast levels, this situation can be addressed relatively easily, by increasing network capacity to reflect actual growth rates.

[6] These figures are fiscal year figures (July to June)

therefore been completed primarily based on the location of these and other known greenfield developments, as well as consideration of recent geographic development patterns. Greenfield developments identified by Vector will provide up to 19,500 new dwellings over the next five years, as indicated in Figure 4.

In the longer term, geographic growth has been modelled trended towards projections that reflect the high-level development strategy contained within Section D of the Council's Auckland Plan as well as the associated draft Unitary Plan (our modelling has assumed that 95% of projected Auckland Region growth will occur within Vector's supply area).

The Council's long-term development plans include up to 70% within the 2010 metropolitan area, and up to 40% outside the metropolitan area. There are also significant plans to modify the Council's rural-urban boundary (RUB), expanding the urban limits most notably in the South, North-West and North. However, these changes to the RUB are likely to affect development beyond our 10-year forecasting horizon and so have largely been excluded from our growth modelling.

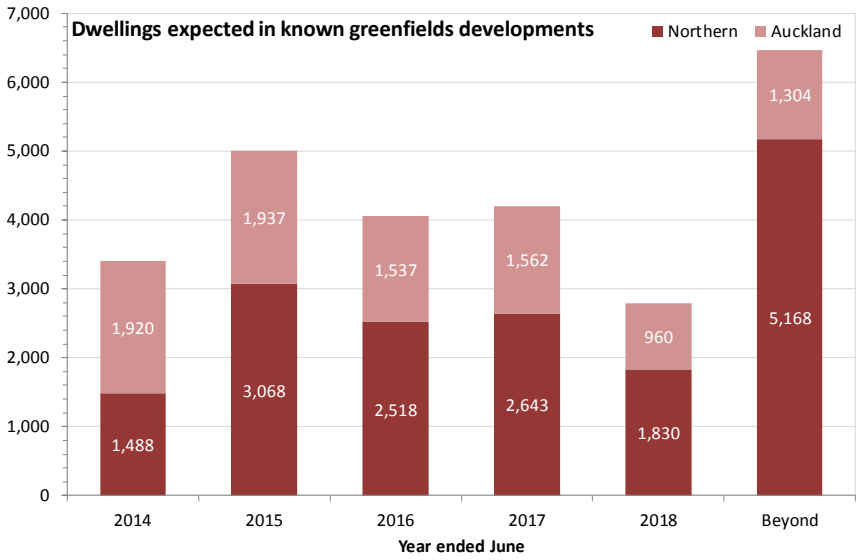


Figure 4 : Connections forecast in known greenfields developments

2.2 Future Technology Outlook

Around the world evidence is mounting of changes in energy consumption patterns, as customers adopt new technology, change their behavioural patterns and in many cases are generating their own electricity, often exporting excess power to the grid. These emerging trends not only have a potential impact on the traditional revenue base of electricity distributors[7], but if not appropriately managed, could also lead to a requirement for large additional network reinforcement investment.[8] This additional investment will be necessary to mitigate against factors such as voltage-instability caused by highly variable levels of distributed generation, compounded by high generation levels during low demand

[7] For example, widespread use of photo-voltaic cells leads to a reduction in energy volumes flowing through networks and hence, under current pricing mechanisms, to a reduction in sales. However, these devices do not offer any relief from network peak demand periods – which typically in New Zealand occur on cold winter evenings, when the PV cells are not generating. Hence, distribution utilities still have to invest as in the past to provide sufficient capacity during peak demand periods.

[8] For a good example of the magnitude of the potential cost impact of changing technology and consumption trends, refer to the EA Technology report titled *"Assessing the impact of low carbon technologies on Great Britain's power distribution networks"*, dated 31 July 2012.

periods causing reverse power flows and high network voltage from widespread electricity exports by consumers, and increases in short term peak demand caused by energy-intensive devices such as electric vehicle chargers.

To provide more customer choice and flexibility, and as an alternative to investing in conventional network assets, utilities are increasingly turning to new network and demand side management technology solutions as a potentially more cost-effective way to manage the effects of changing consumer energy consumption profiles and new technology trends. These new technology solutions form an important component of what is loosely referred to as "smart networks".

Vector is closely monitoring international network technology and consumer energy consumption trends and comparing this with what we observe locally. This informs us of emerging issues that require closer attention, and also of areas where applied research or pilot projects on the Vector network is appropriate, prior to adopting permanent solutions. This is a continuation of Vector's future-focused strategy of the last decade, which has already seen us adopt many advanced network solutions – in some cases market-leading – that are now proving of major benefit on the network.[9] Our current focus is on solutions which will assist to increase asset utilisation and provide greater visibility of network state and condition.

Under Part 6 of the Electricity Industry Participation Code 2010, distributors may require distributed generation on their network to comply with the distributors' connection and operation standards. Although these standards aim to resolve the majority of technical quality issues in most situations, they are not designed to address the more severe network situations that may arise, e.g. from a high concentration of localised distributed generation causing network instability issues. We do not believe it would be consistent with Part 6 – which is to "enable connection of distributed generation" – to impede the connection of such generation to the Vector network (provided that reasonable minimum quality standards are maintained). This means that new technology solutions such as energy storage and more network automation will be important to mitigate the potential network problems that may arise in future from larger scale connection of renewable generation.

2.2.1 Smart solutions currently being implemented or investigated

Vector has an active program of research, pilot programs and implementation of innovative network and demand side management projects.

(a) Solar/battery programme

The past 12 months has seen further significant price drops in solar photovoltaic (PV) panels. Panel costs in 2012 were around US$1.50 per watt, which have fallen to around US$1.00 per watt in 2013, with further material price reductions forecast over the next 2 years. Associated with this price reduction, there are increasing volumes of solar PV being installed on Vector's network, with applications for connections rising sharply in 2013. We anticipate this trend to continue accelerating in the near future.

High penetration of solar PV is proving a significant technical challenge and cost to utilities internationally (feed-in tariffs have led to earlier uptake in some countries), as it is causing voltage instability, power quality and two-way power flow issues.

[9] Examples include Vector's early roll-out of extensive fibre-optic communications on the network, implementation of the advanced IEC61850 communication protocol between "intelligent" substation and network devices and automatic load-transfer schemes between residential and commercial areas.

The problem is compounded by the clustering effect – meaning that while a technology may not yet be widely adopted across a network, it can be prevalent on small, concentrated parts of a network. This means that the challenges associated with new technology uptake can occur on parts of the network well before it is generally anticipated – uptake primarily being driven by consumer appetite and not by distribution network companies.[10] To mitigate these issues without investing in major conventional network reinforcements, requires measures such as energy storage or control of inverter output signal quality. Vector is investigating and piloting various solutions to these problems, including energy storage systems using premise-based or central network batteries. Furthermore, on areas of the network where demand is increasing, these solutions aim to reduce peak network demand and thereby offer opportunities for deferring network reinforcement investments.

The first phase of our solar PV / battery pilot programme will see around 250 units installed across the network by the end of FY14 – providing opportunity for a proof of concept, to iron out implementation issues, test communication and control systems, analyse usage and power quality patterns, establish operational and maintenance procedures, and develop processes to manage customer interaction.

A similarly sized second pilot phase is planned for FY15. For this phase, it is intended to widen out the scope of investigation into various other solar and energy storage solutions, as well as install clusters of PV/battery systems in areas where Vector's network capacity is becoming constrained and has been flagged for reinforcement during the next five years.

Based on the final outcomes of these pilot projects, further decisions on the future roll-out of PV and battery units across the network will be made later in FY15. These decisions will also be informed by improved modelling of the impact of future technology and customer trends that is anticipated to be available later in 2014.

(b) Demand side management

In addition to the network challenges of connected distributed generation, there are also potentially significant impacts from increased uptake of heat pumps and electric vehicles. For example, work undertaken by a consortium of experts led by EA Technologies in July 2012 modelled the potential network impacts of these three technologies on the United Kingdom's distribution networks. Under the "best case" scenario, it is estimated £8 billion (in addition to normal network investment) will need to be spent by distribution companies in the UK over the next 25 years to support the connection of these technologies to their networks.

Demand side solutions which support the intelligent connection of distributed generation, heat pump and electric vehicle loads, offer the potential for a lower cost option than traditional network investments. We are therefore evaluating and piloting advanced demand side management options both for residential and commercial premises.

(c) Other future technology initiatives

In parallel with the above initiatives, Vector has also commenced work on several other future technology trials or initiatives. These include:

[10] This phenomenon is widely observed on overseas networks, for example in the varying rates at which solar PV or electric vehicles, is adopted in particular parts of towns or networks. If not effectively managed, this can ultimately lead to sub-optimal use or stranding of existing assets.

- Monitoring load flows in real or semi-real time down to low voltage level to help inform improved network reinforcement or utilisation decisions
- Application of smart meter consumption data to better inform network development and safety management decisions
- State-estimation, as a platform for further network automation and demand management initiatives
- Monitoring real-time asset capacity rating

Depending on the outcomes of the initial trials larger scale pilot programmes or roll-outs may be launched over the coming years. This will be reflected in future AMPs.

2.2.2 Cost forecasting under uncertainty

Typically, the outcome of research or pilot programmes is to inform the need for further research, guide the extent of future larger scale investments or in some cases confirm that no further investment is justified. At an early stage it is not possible to accurately predict the likely final outcomes of the pilots, or accordingly the future investment profiles that may emerge. Vector's current pilots of smart network solutions fall in this category.

Similarly, it is difficult to predict the impact of changing customer and technology trends on future network demand and the associated investment. Many of the new technologies or trends noticed overseas are just emerging in New Zealand, or are yet to emerge. Therefore, there is still only limited local evidence on which to base reasonable forecasts of technology costs and uptake rates. The cost of many of the new types of network and customer assets is still fluctuating widely, creating uncertainty in future cost estimates.

This uncertainty is problematic from a planning perspective. Vector believes that the application of new customer and network technologies will escalate substantially over the ten year planning period, but the magnitude of such increases and associated expenditure requirements remains uncertain. To address this, Vector is investigating the possible application to our network of a technical/economic model that is widely used by distribution utilities and the energy regulator in the United Kingdom. Using this model, coupled with their understanding of emerging trends, the UK entities are able to more accurately forecast the impact of disruptive technologies on their networks, as well as the optimal solutions and associated investment profiles required to manage this. Vector will be in a position to provide a much more accurate view on its forecast expenditure on new network technologies in its 2015 AMP as a result of using similar techniques.

In the interim, this AMP Update incorporates our current view of future expenditure to be spent on pilots exploring the potential impact and effectiveness of future network technologies on our network (see Table 3).

Table 4 outlines our current view of subsequent roll-outs of new technology solutions, post the successful completion of pilot projects. These roll-outs are anticipated to include:

- Battery systems and other energy storage solutions
- Electric vehicle management systems
- Demand side management systems
- State estimation and network automation
- Real-time network performance and asset rating monitoring

The forecast expenditure on pilot programmes during FY15 will be used in Vector's capex budget, but it is noted that expenditure forecasts further out in the planning period are likely to change materially in future AMPs, as we get better information and visibility of trends.

($million)	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Diverse smart network pilot programmes	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0
Energy storage trials	$6.8									
EV management system trials	$0.2	$0.2	$0.7							
Total ($m)	$9.0	$2.2	$2.7	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0

Table 3 : Forecast expenditure on future pilot projects

($million)	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Technology roll-outs	$0.0	$6.1	$5.5	$7.7	$15.6	$18.3	$19.1	$19.7	$21.7	$21.7
Total ($m)	$0.0	$6.1	$5.5	$7.7	$15.6	$18.3	$19.1	$19.7	$21.7	$21.7

Table 4 : Forecast expenditure on future new technology roll-outs

As noted above, the investment programme in new network technology or alternative energy solutions, will be largely focussed on improving network utilisation and addressing the impact of new technology on energy demand trends. In the longer term (>5 years), this will reflect a reduction in capital and operating expenditure in comparison with traditional network investments to address the same issues (to the extent that it is possible). However, the timing and magnitude of these capex and opex reductions on traditional network expenditure are at this stage uncertain, as is any investment in demand-side network management technologies which will also be required to escalate in size as more solar-PV installations are incorporated onto the network. Vector expects to complete further analysis work on this issue over the next twelve month period, and will address these findings in the next AMP.

3. LIFE-CYCLE ASSET MANAGEMENT CHANGES

This section discusses aspects that have led to material changes to Vector's asset life-cycle management practices previously described in section 6 of the 2013 AMP.

3.1 Arc Flash Risk Mitigation

An arc flash is the light and heat produced from an electric arc. It most commonly occurs during switching, or when there is a condition change that can give rise to an arc. During an arc flash, the electrical energy can be enough to vaporise the surrounding metal, and in a worst case scenario could result in an explosion that damages equipment and results in injuries to personnel or members of the public.

In New Zealand the hazard associated with arc flash is recognised in the industry as a 'significant hazard' under the Health and Safety in Employment Act 1992, and therefore must be addressed according to the hierarchy of the Act, i.e.;

- eliminated, or
- if elimination is impracticable, then isolated, or
- if isolation is impracticable, then the likelihood that the hazard will be a cause or source of harm must be minimised. This may include the provision of personal protective

equipment to protect from any harm that may be caused by or may arise out of the hazard associated with switching and live maintenance. The employee's exposure to the hazard must also be monitored.

The hazard may also be considered a significant hazard to the public and therefore needs to be managed under NZS 7901:2008, Electricity and Gas Industries – Safety Management Systems for Public Safety.

During 2013, Vector undertook an in-depth study of the potential arc-flash hazard on various parts of the electricity network and ranked risk situations according to potential severity and likelihood. Whilst all the highest-ranking arc-flash risks on the Vector network have been mitigated or are in the process of being managed through the roll-out of new safety procedures, a programme to address remaining potential hazards has been included in the 10-year capital expenditure plan ($1m per annum). This includes the systematic replacement for at-risk switchgear.

3.2 Andelect Switchgear

In 2013, Vector completed a review of the 950 Andelect switch-gear units currently in service on our network. It was determined that for safety reasons, remotely-controlled actuators should be utilised to help maintain a safe distance from the units during operation. As a longer term solution, these units should also be replaced over the course of the next 10 years with the most at-risk units being replaced first. The costs for this replacement programme are forecast to ramp up from $3m to $7m per annum over this time (a total of $54m).

3.3 Strategic Spares

Since publication of the 2013 AMP, Vector has conducted a high-level review of its spares inventory and obsolescence management policies and practices. While Vector has a long-standing spares policy in place, this review was considered important from the perspective of ongoing asset management improvements.

Maintaining strategic spare parts is vital to effective remedial maintenance actions and fault response, avoiding potentially prolonged outages. It is therefore important that Vector maintains appropriate levels of spares for critical assets, stores them in the correct fashion to maintain serviceability, and has them readily accessible for maintenance service providers.

During 2014, the key findings of the review will be implemented. It is likely that this will lead to changes in strategic spares levels, with the changes reflected in the 10-year capital investment plan.

4. ASSET MANAGEMENT MATURITY CHANGES

Although a number of initiatives to improve overall Asset Management maturity were initiated over the course of the last year, the majority of these initiatives are longer term programmes that will not immediately result in a material change to the overall AMMAT score provided in the previously published AMP. These initiatives will continue to be progressed and tracked over the next reporting period, with the AMP being updated as required during the next review cycle.

5. DEMAND FORECAST UPDATE (FY14 – FY24)

This section presents updates on the peak demand forecast expected on various parts of the Vector network. Winter peak demand (which is greater than summer demand) drives the need for network reinforcement and these forecasts are therefore fundamental to the network development planning and the growth expenditure forecasts highlighted in the subsequent sections of this Update.

Based on the latest population and economic growth information, the demand forecast of the Vector electricity distribution network at zone substation level for the 10 year planning period to 2014 is summarised in Table 5. A number of growth scenarios have been investigated, and the forecasts below represent Covec's 'medium' growth forecast based on the review discussed in section 2.1.

Substation	Actual	Forecast Demand (MVA) - Winter									
	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Atkinson Road	18.5	18.8	19.0	19.2	19.5	19.7	19.9	20.1	20.3	20.5	20.7
Auckland Airport	14.8	15.1	16.1	17.1	19.3	21.5	22.4	23.2	24.1	28.5	28.5
Avondale	28.2	27.6	27.9	28.2	28.5	28.9	29.3	29.6	30.0	30.3	30.6
Bairds	23.0	22.4	22.6	22.9	23.3	23.6	24.0	24.3	24.7	25.0	25.4
Balmain	7.9	8.5	8.6	8.7	8.8	9.0	9.1	9.3	9.4	9.5	9.6
Balmoral	17.5	16.7	19.9	20.1	20.3	20.6	20.8	21.1	21.3	21.6	21.8
Belmont	13.0	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	13.5	13.6
Birkdale	22.9	22.2	22.5	22.8	23.1	23.4	23.7	23.9	24.2	24.4	24.7
Brickworks	10.0	9.7	9.9	10.0	10.2	10.4	10.6	10.8	10.9	11.1	11.3
Browns Bay	16.7	16.5	16.8	17.1	17.5	17.8	18.2	18.5	18.8	19.1	19.4
Bush Road	23.2	24.6	25.0	25.4	25.8	26.2	26.5	26.9	27.2	27.6	27.9
Carbine	16.5	17.0	18.1	18.4	18.5	18.7	18.9	19.1	19.3	19.5	19.7
Chevalier	20.0	20.2	20.4	20.6	20.8	19.3	19.5	19.7	19.9	20.1	20.3
Clendon	21.6	20.4	20.6	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3
Clevedon	2.8	2.9	2.9	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.2
Coatesville	9.7	9.9	10.0	10.3	10.5	10.8	11.0	11.3	11.5	11.7	11.9
Drive	24.6	27.1	27.6	28.1	28.7	29.2	29.5	29.8	30.1	30.4	30.7
East Coast Road	17.4	17.4	17.7	17.9	18.2	18.5	18.7	18.9	19.2	19.4	19.6
East Tamaki	17.8	17.9	18.0	18.2	18.3	18.4	18.6	18.7	18.9	19.0	19.1
Forrest Hill	17.4	17.5	17.7	17.9	18.2	18.4	18.6	18.8	19.1	19.3	19.4
Freemans Bay	19.7	20.0	20.8	21.2	21.5	21.8	22.1	22.4	22.7	23.0	23.3
Glen Innes	11.0	11.5	11.7	11.8	12.0	12.2	12.4	12.6	12.8	13.0	13.2
Greenhithe	13.2	11.9	12.3	12.8	13.4	14.0	14.5	15.0	15.5	16.0	16.5
Greenmount	38.9	39.1	39.7	40.2	40.5	40.9	41.3	41.7	42.1	42.5	42.9
Gulf Harbour	6.8	7.0	7.2	7.3	7.5	7.7	7.9	8.0	8.2	8.4	8.6
Hans	24.6	24.4	24.7	25.1	25.4	25.8	26.1	26.4	26.8	27.1	27.4
Hauraki	8.7	8.9	9.0	9.2	9.4	9.6	9.8	9.9	10.1	10.2	10.3
Helensville	13.7	14.0	14.3	14.7	15.1	15.5	15.9	16.3	16.7	17.0	17.4

Substation	Actual	Forecast Demand (MVA) - Winter									
	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Henderson Valley	14.7	14.3	14.5	14.8	15.0	15.3	15.5	15.7	16.0	16.2	16.4
Highbrook	5.3	5.5	5.6	5.7	5.8	5.9	5.9	6.0	6.1	6.2	6.3
Highbury	13.2	13.7	13.9	14.2	14.4	14.7	14.9	15.1	15.3	15.6	15.8
Hillcrest	22.7	22.7	23.1	23.4	23.8	24.1	24.5	24.8	25.1	25.4	25.7
Hillsborough	16.6	16.8	16.9	17.1	17.3	17.5	17.7	17.8	18.0	18.2	18.4
Hobson 110/11kV	23.4	24.1	24.5	24.8	25.1	25.3	25.6	25.8	26.1	26.3	26.6
Hobson 22/11kV	17.0	17.5	17.8	18.1	18.3	18.5	18.8	19.0	19.2	19.4	19.7
Hobson 22kV	43.4	44.8	46.8	48.3	49.8	50.9	52.0	53.1	54.1	55.2	56.3
Hobson 22kV distribution	8.8	9.4	10.4	11.4	12.4	13.0	13.6	14.2	14.8	15.4	16.0
Hobsonville	21.4	22.5	26.8	32.6	39.0	43.9	45.0	45.9	46.9	47.8	48.8
Auckland Hospital	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Howick	39.0	38.2	38.5	38.7	39.0	39.3	39.6	39.9	40.2	40.5	40.8
James Street	17.8	18.1	18.4	18.6	18.9	19.2	19.5	19.8	20.0	20.3	20.5
Keeling Road	14.2	17.9	18.2	18.5	18.7	19.0	19.3	19.5	19.8	20.1	20.3
Kingsland	23.0	24.7	30.5	31.0	31.5	32.0	32.5	32.9	33.4	37.4	37.9
Kingsland 22kV	58.9	60.4	66.6	67.5	68.3	67.5	68.3	69.1	70.0	74.3	75.2
Laingholm	9.1	9.1	9.2	9.3	9.3	9.4	9.4	9.5	9.5	9.6	9.6
Liverpool	39.4	40.3	41.0	41.7	42.3	42.9	43.5	44.1	44.6	45.2	45.8
Liverpool 22kV	93.4	95.1	97.5	99.8	101.7	103.8	105.4	107.1	108.9	110.6	112.4
Liverpool 22kV distribution	11.6	11.9	12.6	13.5	14.4	15.3	15.7	16.4	17.0	17.7	18.4
Mangere Central	25.5	24.7	25.4	25.7	26.0	26.3	26.6	26.9	27.2	27.5	27.8
Mangere East	24.9	25.4	25.8	26.3	27.0	27.9	28.7	29.4	30.2	31.0	31.7
Mangere West	19.7	19.1	19.4	19.8	20.0	20.2	20.5	20.7	21.0	21.2	21.5
Manly	19.0	18.8	19.0	19.3	19.6	19.9	20.2	20.5	20.7	21.0	21.3
Manukau	35.4	33.6	34.1	34.6	35.3	36.0	36.7	37.4	38.0	38.7	39.4
Manurewa	50.2	47.3	47.8	48.4	49.0	49.6	50.3	50.9	51.5	52.0	52.6
Maraetai	6.2	6.1	6.3	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8
McKinnon	21.4	22.7	23.2	23.9	24.5	25.2	25.8	26.4	27.0	27.5	28.1
Mcleod Road	11.6	10.7	10.9	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1
McNab	45.0	46.6	48.7	49.8	50.8	51.9	52.5	53.1	53.8	54.4	55.0
Milford	7.6	7.0	7.1	7.2	7.3	7.4	7.6	7.7	7.8	7.9	7.9
Mt Albert	7.2	7.4	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.1
Mt Wellington	16.6	16.5	16.7	16.9	17.1	17.4	17.6	17.8	18.0	18.2	18.4
New Lynn	13.8	14.6	14.9	15.2	15.5	15.9	16.2	16.5	16.9	17.2	17.5
Newmarket	35.1	41.6	44.9	47.4	48.7	50.1	51.5	52.8	54.2	55.5	56.9
Newton	18.0	18.3	18.7	19.1	19.4	19.8	20.2	20.5	20.9	21.2	21.6
Ngataringa Bay	7.8	7.4	7.5	7.5	7.5	7.5	7.6	7.6	7.6	7.6	7.6

Substation	Actual	Forecast Demand (MVA) - Winter									
	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Northcote	9.3	9.6	9.8	9.9	10.0	10.1	10.2	10.3	10.5	10.6	10.7
Onehunga	13.0	13.8	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	15.5
Orakei	22.8	23.2	23.8	24.3	24.6	24.9	25.2	25.5	25.8	26.1	26.4
Oratia	5.3	5.4	5.5	5.5	5.6	5.7	5.7	5.8	5.9	5.9	6.0
Orewa	15.2	15.8	16.9	18.1	19.3	20.6	21.2	21.8	22.4	23.0	23.5
Otara	32.8	33.8	34.6	35.4	36.0	36.7	37.4	38.0	38.7	39.3	39.8
Pacific Steel	54.1	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0
Pakuranga	22.7	23.4	23.7	24.1	24.8	25.5	26.2	26.9	27.5	28.2	28.9
Papakura	25.3	25.7	26.1	26.5	26.8	27.1	27.5	27.8	28.1	28.5	28.8
Parnell	10.9	11.3	11.5	11.7	12.3	13.0	13.7	14.4	14.6	14.9	15.1
Ponsonby	15.9	15.7	15.9	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1
Quay	20.9	21.8	23.3	25.0	25.4	26.2	27.1	27.9	28.8	29.6	30.5
Quay 22kV	37.6	38.9	40.6	42.6	43.7	45.3	47.0	48.5	49.7	50.8	52.0
Quay 22kV distribution	7.2	7.2	7.4	7.5	7.6	7.8	7.9	8.0	8.1	8.3	8.4
Ranui	10.9	11.1	11.3	11.6	11.9	12.3	12.6	12.9	13.2	13.4	13.7
Red Beach	14.1	15.1	16.4	17.7	19.0	20.4	20.9	21.4	21.8	22.3	22.7
Remuera	25.5	26.5	27.8	29.0	30.3	31.7	33.0	33.9	34.8	35.2	35.6
Riverhead	8.4	9.1	9.4	9.7	10.0	10.4	10.7	11.0	11.3	11.6	11.9
Rockfield	22.7	22.8	23.1	23.3	23.5	23.7	23.9	24.1	24.3	24.5	24.7
Rosebank	20.9	20.3	20.6	20.9	21.1	21.4	21.6	21.8	22.1	22.3	22.6
Sabulite Road	20.8	20.8	20.0	20.4	20.9	21.4	21.8	22.2	22.6	23.0	23.4
Sandringham	22.4	22.2	22.4	22.7	22.9	23.2	23.4	23.6	23.9	24.1	24.4
Sandringham 22kV	36.7	35.7	38.8	39.3	39.7	40.1	40.6	41.0	41.5	41.9	42.4
Simpson Road	5.9	4.9	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.8	5.9
Snells Beach	6.3	6.4	6.5	6.6	6.8	6.9	7.1	7.2	7.3	7.5	7.6
South Howick	28.3	27.8	28.0	28.1	28.3	28.5	28.7	28.8	29.0	29.2	29.3
Spur Road	10.5	10.4	10.8	11.2	11.7	12.3	12.8	13.2	13.6	14.1	14.5
St Heliers	22.4	22.1	22.3	22.6	22.8	23.2	23.5	23.8	24.1	24.4	24.7
St Johns	16.7	18.4	19.4	20.6	21.8	23.1	24.3	25.4	26.0	26.6	27.2
St Johns 33kV	61.2	63.0	64.8	66.7	68.5	70.4	72.2	73.8	75.0	76.2	77.4
Sunset Road	17.4	18.5	18.9	19.2	19.5	19.8	20.1	20.3	20.6	20.8	21.1
Swanson	10.5	10.4	10.6	10.8	11.1	11.4	11.6	11.8	12.1	12.3	12.5
Sylvia Park	17.0	13.3	14.5	15.7	16.9	18.1	18.8	19.4	19.6	19.8	20.0
Takanini	13.9	13.9	14.2	14.4	14.7	15.0	15.2	15.5	15.7	16.0	16.2
Takapuna	8.5	8.9	9.1	9.3	9.5	9.7	9.9	10.0	10.2	10.4	10.5
Te Atatu	18.6	19.6	19.9	20.2	20.5	20.8	21.0	21.3	21.6	21.8	22.1
Te Papapa	23.1	23.0	23.4	23.8	24.1	24.3	24.6	24.9	25.2	25.5	25.8
Torbay	7.2	7.4	7.6	7.8	8.0	8.3	8.6	8.8	9.0	9.2	9.4

Substation	Actual	Forecast Demand (MVA) - Winter									
	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Triangle Road	16.6	17.3	17.6	18.0	18.4	18.8	19.1	19.4	19.8	20.1	20.4
Victoria	23.7	24.1	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27.0	27.3
Waiake	8.1	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3
Waiheke	10.1	10.4	10.5	10.6	10.8	10.9	11.1	11.3	11.4	11.5	11.7
Waikaukau	9.3	7.3	7.4	7.6	7.7	7.9	8.1	8.2	8.3	8.5	8.6
Waimauku	4.0	4.3	4.4	4.5	4.6	4.8	4.9	5.0	5.1	5.2	5.3
Wairau Road	17.0	16.2	16.5	16.7	17.0	17.2	17.5	17.7	17.9	18.2	18.4
Warkworth	18.9	18.0	18.3	18.8	19.2	19.7	20.1	20.5	21.0	21.4	21.8
Wellsford	7.7	8.1	8.3	8.5	8.6	8.8	9.0	9.2	9.3	9.5	9.7
Westfield	24.7	25.7	31.5	32.1	32.4	32.9	33.3	33.7	34.1	34.5	34.9
White Swan	30.4	30.2	30.5	30.8	31.1	31.4	31.8	32.1	32.4	32.8	33.1
Wiri	38.0	39.8	40.3	40.8	41.3	41.8	42.3	42.8	43.3	43.8	44.3
Woodford	11.7	11.0	11.2	11.4	11.6	11.8	12.0	12.1	12.3	12.5	12.7

Table 5 : Forecast winter peak demand at Vector zone substations

6. PROJECT PROGRAMME UPDATE

This section presents the updated list of projects on the Vector electricity distribution network capital works programme over the 10-year planning period. These changes reflect the updated planning as influenced by the updated demand forecasts (see section 5) and asset life-cycle management improvements (see section 3). The following table shows the target completion dates of these projects, the previous target completion dates and the reasons for any changes proposed.

2014 AMP Forecast	Substation	Project and Programme Description	2013 AMP Forecast	Reason for Change
FY14	Brickworks	First 33/11kV transformer	FY13	Construction delays
FY14	Ellerslie	Land Purchase	-	New project
FY14	Flatbush	Zone Substation Land Purchase	FY13	New project
FY14	Hillsborough	Install 2nd 22kV Power Transformer & 2nd 22kV Cable	FY14	No change
FY14	Hobson	22kV cabling in Halsey St for Waterfront development	-	New project
FY14	Hobson	Install 3rd 110kV Power Transformer (T5)	FY14	No change
FY14	Hobsonville Point	Land purchase	FY13	Purchasing delays
FY14	Keeling Rd	Install 2nd 33kV Power Transformer & 33kV Reinforcement	FY14	No change
FY14	Kingsland	Install NER	-	New project
FY14	Liverpool	Fire suppression in Penrose tunnel	FY14	No change
FY14	Mangere East	Middlemore Hospital	FY14	No change
FY14	Maraetai	11kV Reinforcement	FY14	No change
FY14	Matakana	Land purchase	FY14	No change
FY14	Newmarket South	Zone Substation Land Purchase	FY14	No change
FY14	Pen_Liv Tunnel	LV power supply reinforcement (genset connection)	-	New project

2014 AMP Forecast	Substation	Project and Programme Description	2013 AMP Forecast	Reason for Change
FY14	Quay	Reinstate 22kV oil filled cable for ripple signal	FY14	No change
FY14	Quay	Upgrade CTs in 22kV interconnectors 1 and 2	FY14	No change
FY14	Rosedale	Zone Substation Construction	FY14	No change
FY14	Takanini	11kV reinforcement	-	New project
FY14	Te Papapa	CHH 11kV reinforcement	-	New project, customer driven
FY14	Hobson	CBD Fish Market 11kV to 22kV conversion	-	New project
FY15	Balmoral	11kV Reinforcement St Lukes	FY14	Provisional, customer driven
FY15	Birkdale	Substation Reconstruction	FY14	Construction delays
FY15	Clevedon	Install Energy meter at Matingarahi	-	New project
FY15	Flatbush	New Zone Substation	FY16	Advanced due to revised load forecast
FY15	Hobson	GXP Construction	FY14	Commissioning FY14, residual works FY15
FY15	Mangere Central	11kV Reinforcement (MCEN 13)	-	New project
FY15	Mangere West	11kV Reinforcement (Systema)	-	New project, customer driven
FY15	McNab	two new 11kV feeders to offload Westfield	-	New project, customer driven
FY15	Newmarket	11kV Reinforcement Broadway	FY13	Deferred by two years
FY15	Newmarket South	Designation & consenting	FY14	Deferred one year
FY15	Papakura	Install Energy meter at Opahake	-	New project
FY15	Red Beach	Second 33/11kV transformer	FY15	No change
FY15	Spur Road	11kV Reinforcement - Weiti development	-	New project
FY15	Various	Portable 11kV switchboard for planned works	-	New project
FY15	Wainui	Zone Substation Land purchase	FY15	No change
FY15	Warkworth	11kV Reinforcement - Matakana Fdr	FY15	No change
FY15	Waterview	Temporary to permanent supply conversion, South Portal	-	New project
FY15	Westfield	new 11kV feeders to supply Bell Av development	-	New project, customer driven
FY16	Greenhithe	33kV cable extension	FY15	Customer driven
FY16	Ihumatao	Zone Substation Land Purchase	-	New project, customer driven
FY16	Kingsland	reinforcement for City Rail supply	-	New project, customer driven
FY16	Kumeu	Land purchase	FY16	No change
FY16	Mangere Central	Third 33/11kV transformer	FY23	Advanced due to revised load forecast
FY16	Mangere West	11kV Reinforcement	FY22	Advanced due to revised load forecast
FY16	Ngataringa Bay	Substation Reconstruction	FY16	No change
FY16	Quay	Extend 22kV switchboard	FY15	Deferred to align with another project
FY16	Te Atatu	Henderson-Westgate duct	-	New project
FY16	Waterview	33/22kV transformer, ducting & cabling to Waterview	FY15	Deferred to align with another project
FY16	Westgate	Zone Substation Construction	FY16	No change
FY17	Flatbush	11kV Reinforcement	-	New project
FY17	Glenvar	Zone Substation Construction	FY17	No change
FY17	Highbury	Second 33/11kV transformer	FY18	Advanced due to revised load forecast
FY17	Hillcrest	Offload Tonar feeder	-	New project
FY17	Liverpool	2nd 22kV tie to Quay	FY15	Deferred two years

2014 AMP Forecast	Substation	Project and Programme Description	2013 AMP Forecast	Reason for Change
FY17	Newmarket South	New Zone Substation	FY16	Deferred one year
FY17	Quay	Customer capacity upgrade Ports of Auckland	FY17	No change
FY17	Rosebank	11kV spare ducts	FY17	No change
FY17	Sandspit	Zone Substation Construction	FY18	Advanced due to revised load forecast
FY17	Takanini South	Zone Substation Land Purchase	FY17	No change
FY17	Te Atatu	New 33/11kV transformers	FY17	No change
FY17	Waiwera	Zone substation land purchase	FY17	No change
FY17	Warkworth South	Zone Substation Construction	FY17	No change
FY18	Brickworks	Second 33/11kV transformer	FY16	Provisional, customer driven
FY18	Coatesville	Second 33/11kV transformer	FY18	Advanced due to revised load forecast
FY18	Ellerslie	New Zone Substation	FY18	No change
FY18	Hobsonville Point	New Zone Substation	FY19	Advanced due to high growth in the area
FY18	Liverpool	22kV Reinforcement Telecom Mayoral Dr	FY16	Provisional, customer driven
FY19	Hobson	22kV ducts in Madden St for Waterfront development	-	Provisional, customer driven
FY19	Kaukapakapa	Zone Substation Construction	FY19	No change
FY19	Keeling Rd	Second 33kV supply from Woodford Ave	-	New project
FY19	Oratia	11kV Reinforcement	FY18	Deferred one year
FY19	Quay	110kV cable Hobson - Quay and Relocate T3A	FY16	Deferred three years
FY19	Quay	Establish 110kV node and 3rd transformer	After FY23	Deferred four years
FY19	Southdown	Land purchase for new substation	-	New project
FY19	Waimauku	33kV Reinforcement	FY19	No change
FY19	Waitakere	Zone Substation Construction	After FY23	Advanced due to high growth in the area
FY20	Greenhithe	Second 33/11kV transformer	FY18	Deferred two years
FY20	Hobson	22kV cabling in Madden St for Waterfront development	-	New project
FY20	Liverpool	Capacity upgrade for University Medical School	FY15	Provisional, customer driven
FY20	Manly	Transformer Upgrade	-	New project
FY20	Orewa	11kV Reinforcement - Savoy Fdr	FY15	Deferred five years
FY20	Orewa	Third 33kV circuit	FY23	Advanced due to high growth in the area
FY20	Spur Rd	Second 33/11kV transformer	FY19	Deferred due to revised load forecast
FY20	Takanini	11kV Reinforcement	FY20	No change
FY20	Wainui	Zone Substation Construction	FY23	Advanced due to high growth in the area
FY20	Wiri West	Zone Substation Construction	FY23	Advanced due to revised load forecast
FY21	Kumeu	Zone Substation Construction	FY21	No change
FY21	Lincoln	Land purchase	FY20	Deferred one year
FY21	Newmarket South	Establish new GXP	FY21	No change
FY21	Red Hills	Zone Substation Land purchase	-	New project
FY21	Southdown	Establish 33kV circuits	After FY23	Advanced due to revised load forecast
FY22	Hobson	22kV Reinforcement Queens Wharf	FY21	Customer driven
FY22	Hobson	3rd 22kV new feeder to supply Waterfront development	-	Provisional, customer driven

2014 AMP Forecast	Substation	Project and Programme Description	2013 AMP Forecast	Reason for Change
FY22	Liverpool	establish additional 110kV bus	-	New project
FY22	Oratia	Second 33/11kV transformer	-	New project
FY22	Victoria	Establish 22kV switchboard	FY22	No change
FY22	Warkworth	11kV Reinforcement - Whangateau Fdr	FY16	Deferred due to revised load forecast
FY23	Atkinson Rd	New 11kV Fdr, redistribute Kaurilands Fdr	FY17	Deferred due to revised load forecast
FY23	Manurewa	11kV Reinforcement	FY23	No change
FY23	Riverhead	New 33/11kV transformers	-	New project
FY23	Southdown	Establish a new zone substation	-	New project
FY23	St Johns	33kV reinforcement	-	New project
FY23	Takapuna	Second 33/11kV transformer	FY20	Deferred due to revised load forecast
FY24	Albany	Zone Substation Construction	FY23	Deferred due to revised load forecast
FY24	Glen Innes	11kV reinforcement to off load Orakei and St Heliers	-	New project
FY24	Kingsland	establish a 110kV node	-	New project
FY24	Liverpool	New 110/22kV transformer	FY18	Deferred due to revised load forecast
FY24	Onehunga	11kV reinforcement	-	New project
FY24	Parnell	11kV reinforcement to offload feeder 13	-	New project
FY24	Te Papapa	11kV Reinforcement	FY20	Deferred due to revised load forecast
FY24	Various	CBD 22kV reinforcement to for security in LIV2 9 and QUA2 1	-	New project
FY24	Westfield	11kV reinforcement to off load Carbine	-	New project
On going	Smart Network	Northern	On going	New project
On going	Smart Network	Southern	On going	New project
On going	Various	CBD 22kV Rollout	On going	No change
On going	Various	Network Management Arising from Electric Vehicles	-	New project
On going	Various	Network Management Arising from Electric Vehicles	-	New project
On going	Various	Network Management Arising from Solar PV	-	New project
On going	Various	Network Management Arising from Solar PV	-	New project
On going	Various	Northern Ducts future-proofing	On going	New project
On going	Various	Northern LV reinforcement	On going	New project
On going	Various	Northern Minor Fdr Reinforcements	On going	New project
On going	Various	Northern - Zone substation - unspecified	-	New project
On going	Various	Solar northern	-	New project
On going	Various	Solar southern	-	New project
On going	Various	Customer network reinforcement - Auckland unspecified	-	New project
On going	Various	Southern Ducts future-proofing	On going	New project
On going	Various	Southern LV reinforcement	On going	New project
On going	Various	Southern Minor Fdr Reinforcements	On going	New project
-	Avondale	Establish 33kV switchboard	FY13	Completed
-	Hans	Customer capacity upgrade	FY14	Completed
-	Hillsborough	Substation Designation	FY13	Completed
-	Hobson	22kV feeder extension for the Tank Farm development	FY13	Completed
-	Hobsonville	Hobsonville - Clark Rd 11kV feeder extension	FY14	Completed

2014 AMP Forecast	Substation	Project and Programme Description	2013 AMP Forecast	Reason for Change
-	Various	Capacitor banks for Northern network	FY13	Completed
-	Waterview	South portal sub for 16MW TBM	FY13	Completed
-	Waterview	11kV reinforcement - Yard 2-3-5-10-11-12	FY13	Completed
-	Waterview	TP Roskill subtran re-termination	FY13	Completed
-	Mangere East	Rearrange 11kV feeders 13, 15 and 19	FY19	Project cancelled
-	Newmarket	ex Lion Breweries site	FY22	Project cancelled, customer driven
-	Penrose	Reactive power measurement of statcom plant	FY14	Project cancelled
-	Rockfield	NZ Technology Park supply	FY16	Project cancelled, customer driven
-	Belmont	New 11kV feeder (Ngataringa Bay)	FY15	Project included in Ngataringa Bay substation rebuild project
-	Helensville	New Rodney GXP for future power plant	FY16	Project postponed beyond planning period due to the new load forecast
-	Hobson West	Designate site	FY20	Project postponed beyond planning period due to the new load forecast
-	Hobson West	Establish zone substation	FY21	Project postponed beyond planning period due to the new load forecast
-	Takapuna	New 11kV feeder (Taharoto)	FY19	Project postponed beyond planning period due to the new load forecast
-	Takapuna	New 11kV feeder (Clifton)	FY19	Project postponed beyond planning period due to the new load forecast
-	Takapuna	New 11kV feeder (Kitchener)	FY19	Project postponed beyond planning period due to the new load forecast
-	Woodford	Second 33/11kV transformer + 33kV reinforcement	FY21	Project postponed beyond planning period due to the new load forecast

Table 6 : Electricity distribution network 10 year capital works programme

7. CAPITAL AND OPERATIONAL EXPENDITURE FORECAST UPDATE

This section describes the capital and direct operational expenditure forecasts for the electricity distribution network assets for the next 10 year period (2014-2024), and provides a comparison with the previous 10 year forecast prepared and disclosed in Section 9 of the 2013 AMP (disclosed in March 2013). These forecasts, are applicable to the development, maintenance, replacement and management of network assets.

As indicated in Section 2.1 of this document, we have looked at different growth scenarios to establish our network development plan. These scenarios are based on population growth and household size trends, recent actual new connection rates, the Auckland Housing Accord, etc. We have chosen to present the 10 year capital and operating expenditure forecasts in this AMP Update based on the medium growth scenario prepared by Covec.

7.1 Capital Expenditure

Vector is facing high levels of uncertainty in relation to its forecast capital expenditure plans. This is primarily as a result of the major uncertainty in the level of new connections that can be anticipated in the Auckland region in the near future.

Figure 5 shows the difference in capital expenditure forecasts between adopting the higher growth scenario based on Auckland Council projections, compared to the more conservative medium growth scenario which Vector has chosen to adopt.

It can be seen that there is a significant difference in proposed capex spend between the two scenarios. As noted in section 2.1, we have adopted a recommended medium-case

ICP growth scenario for this AMP Update, which represents a 65% uplift in forecast connection numbers over the next five years, compared with previous forecast levels. However, should the forecasts contained in Auckland Council's projections be realised, this uplift is anticipated to be upwards of 120%. The additional capital expenditure on connection assets and network reinforcement associated with the higher of these two scenarios is $60m over the next 5 years.

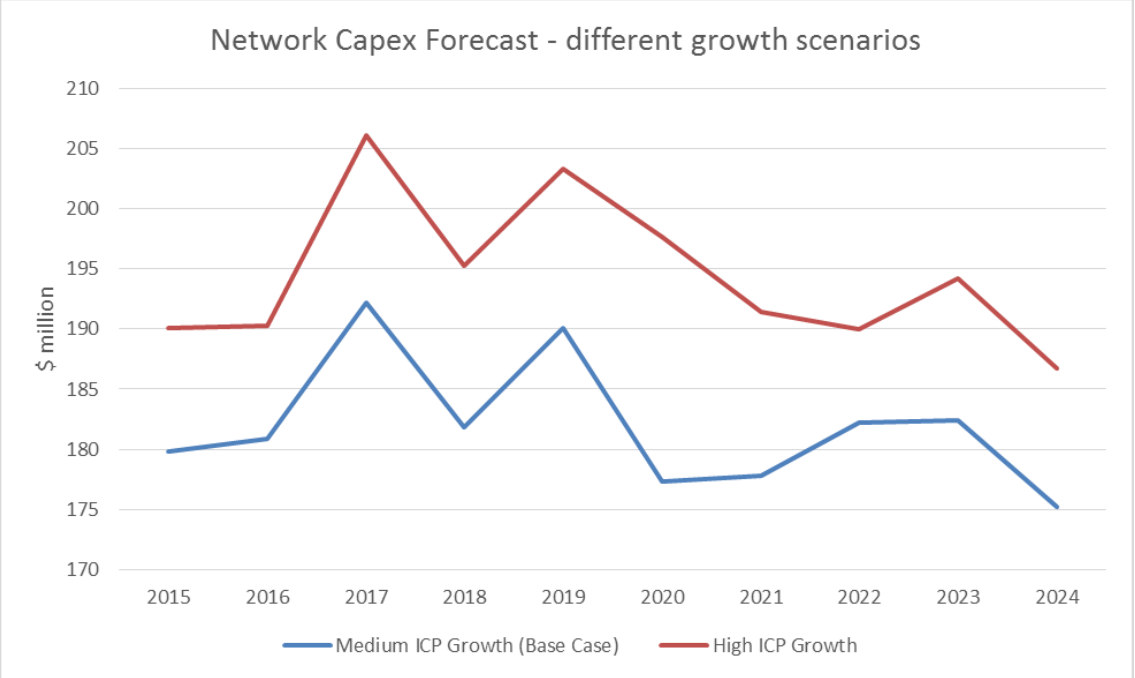


Figure 5 : Comparison of Capex Forecast under different growth scenarios

In this section, we present the proposed capital expenditure forecast[11] based on the base case (medium network growth) scenario (Table 7). The figures are presented in 2015 prices to reflect the expenditure level of this works programme to be implemented in 2015. For reference purposes we have also included the corresponding capital expenditure forecast disclosed in the 2013 AMP[10] (Table 8), escalated to 2015 prices.

It is acknowledged that there is a gradual decrease in capital expenditure forecast over the latter half of the 10-year plan. This is influenced by the level of uncertainty associated with long term network investment requirements in these latter years, and especially the lack of visibility on large customer connections and relocation projects beyond a few years into the future. Based on this observation, care needs to be taken when forming any conclusions on long term capital spend projections.

[11] These figures are different to those disclosed in Schedule 11a which are expenditure on assets.

2014 AMP Update	Financial Year ($000)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Consumer connection	33,790	40,104	44,589	40,562	36,718	36,964	37,139	36,308	36,625	36,805
System growth	44,493	41,579	44,224	40,621	50,492	42,337	47,008	54,478	49,852	46,356
Asset replacement and renewal	65,066	61,414	67,347	67,227	66,070	58,981	54,244	50,825	54,921	50,316
Asset relocations	20,907	22,179	21,657	18,508	18,508	18,508	18,508	18,508	18,508	18,508
Reliability, safety and environment:										
Quality of supply	3,775	3,438	3,134	3,681	7,043	8,372	8,770	9,109	10,128	10,128
Legislative and regulatory	2,024	1,840	920	0	0	0	0	0	0	0
Other reliability, safety and environment	9,729	10,304	10,304	11,224	11,224	12,144	12,144	13,064	13,064	13,064
Non-network assets*	10,355	13,916	9,169	14,261	6,542	9,678	7,455	7,272	6,540	5,836
Total Capital Expenditure	190,140	194,774	201,344	196,084	196,596	186,984	185,269	189,564	189,637	181,013

Table 7 : Proposed capital expenditure forecast

2013 AMP	Financial Year ($000)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Consumer connection	25,149	25,144	25,052	25,052	24,461	24,461	24,423	24,257	24,257	
System growth	43,422	40,473	35,373	36,290	25,095	27,102	29,446	25,057	29,430	
Asset replacement and renewal	64,516	58,613	63,992	60,301	64,190	60,108	56,987	54,212	55,745	
Asset relocations	23,589	20,569	19,093	19,093	19,093	19,093	19,093	19,093	19,093	
Reliability, safety and environment:										
Quality of supply	1,342	1,342	1,342	1,342	1,342	1,342	1,342	1,342	1,342	
Legislative and regulatory	2,770	3,156	2,403	2,309	3,209	1,869	959	959	959	
Other reliability, safety and environment	1,750	1,558	1,486	1,486	1,486	1,486	1,486	1,486	1,486	
Non-network assets*	12,685	12,495	12,297	8,538	8,862	8,149	8,862	8,214	8,214	
Total Capital Expenditure*	175,221	163,350	161,038	154,411	147,737	143,610	142,597	134,619	140,526	

Table 8 : Capital expenditure forecast disclosed in Section 9 of the 2013 AMP

Figure 6 below shows the difference between the 2013 and 2014 expenditure forecasts by expenditure categories. The 2013 forecast has been inflation adjusted (using a PPI of 4.2%) to enable comparison with the 2014 figures.

The associated Table 9 shows the major variances by expenditure categories and years.

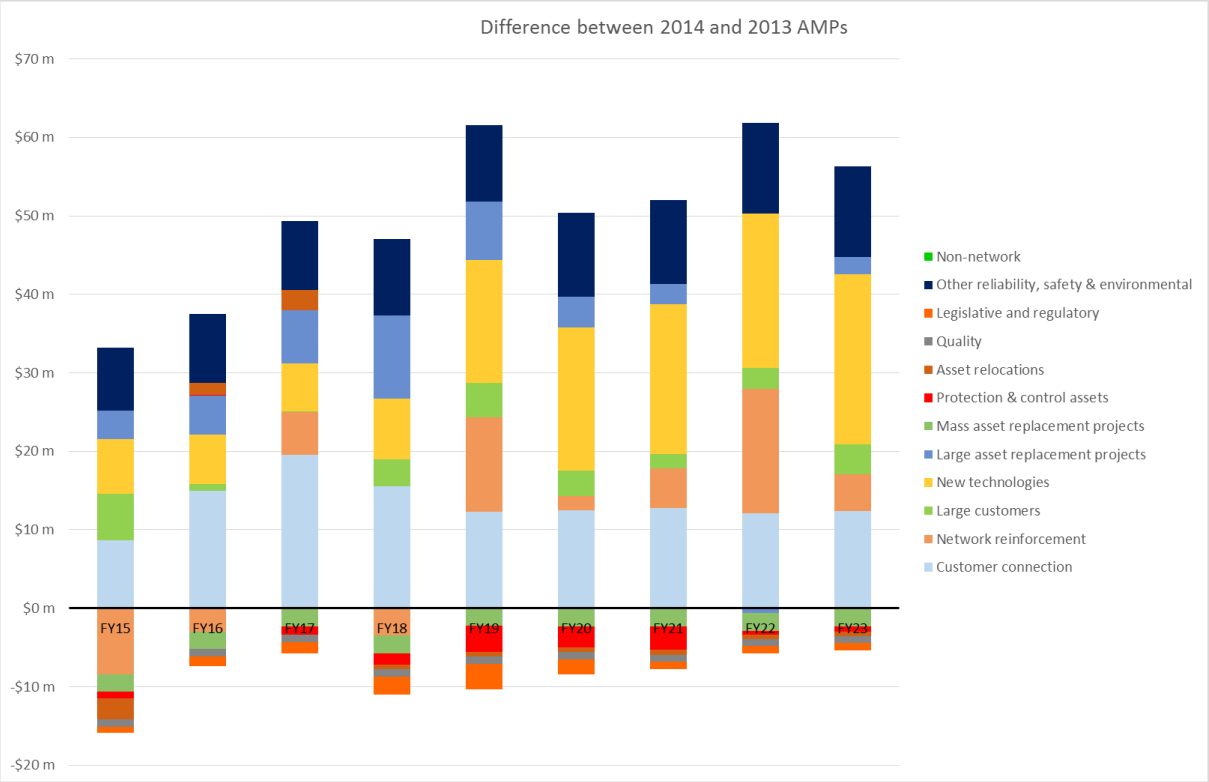


Figure 6 : Variance between 2013 and 2014 capital expenditure forecast

2013/2014 AMP Variances	Financial Year ($000)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Consumer connection	8,642	14,961	19,538	15,510	12,257	12,503	12,717	12,051	12,368	120,545
System Growth	1,071	1,106	8,851	4,331	25,397	15,235	17,562	29,421	20,422	123,395
Asset replacement and renewal	550	2,801	3,355	6,926	1,880	-1,127	-2,742	-3,387	-824	7,431
Asset relocations	-2,682	1,610	2,564	-585	-585	-585	-585	-585	-585	-2,016
Reliability, safety and environment:										
Quality of supply	2,433	2,095	1,792	2,338	5,701	7,030	7,428	7,767	8,786	45,370
Legislative and regulatory	-746	-1,316	-1,483	-2,309	-3,209	-1,869	-959	-959	-959	-13,808
Other reliability, safety and environment	7,979	8,746	8,818	9,738	9,738	10,658	10,658	11,578	11,578	89,492
Non-network	-2,330	1,421	-3,128	5,724	-2,320	1,529	-1,407	-942	-1,674	-3,127
Total Capital Expenditure	14,918	31,424	40,306	41,673	48,859	43,374	42,672	54,946	49,111	367,283

Table 9 : Major variances between 2013 and 2014 capital expenditure forecast

Whilst Table 9 above includes an increase in network growth expenditure associated with battery/inverter installations, it is too early to be certain when net cost benefits to the network (e.g. by delaying more traditional investments like substations) will be seen as a result (see section 2.2 for further discussion).

7.2 Operational Expenditure

In this section, we present the proposed operational expenditure forecast (Table 10). The figures are presented in 2015 prices to reflect the expenditure level of this works programme to be implemented in 2015. For reference purposes we have also included the corresponding operational expenditure forecast disclosed in the 2013 AMP (Table 11), escalated to 2015 prices.

2014 AMP Update	Financial Year ($000)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Service interruptions and emergencies	7,505	7,505	7,505	7,505	7,505	7,505	7,505	7,505	7,505	7,505
Vegetation management	4,850	4,750	4,650	4,550	4,450	4,350	4,250	4,150	4,050	3,950
Routine and corrective maintenance and inspection	15,289	14,848	14,388	14,033	14,129	14,169	14,255	14,307	14,399	14,446
Asset replacement and renewal	14,334	12,334	10,334	10,334	10,334	10,334	10,334	10,334	10,334	10,334
System operations and network support	44,509	44,509	44,509	44,509	44,509	44,509	44,509	44,509	44,509	44,509
Business support	31,769	31,769	31,769	31,769	31,769	31,769	31,769	31,769	31,769	31,769
Total operational expenditure	118,256	115,715	113,155	112,700	112,695	112,636	112,622	112,573	112,565	112,512

Table 10 : Proposed operational expenditure forecast

2013 AMP	Financial Year ($000)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Service interruptions and emergencies	7,350	7,343	7,370	7,363	7,361	7,354	7,354	7,350	7,350	
Vegetation management	4,950	4,950	4,950	4,950	4,950	4,950	4,950	4,950	4,950	
Routine and corrective maintenance and inspection	12,046	12,141	12,258	12,398	12,561	12,749	12,962	13,202	13,471	
Asset replacement and renewal	11,957	11,957	11,540	11,640	11,751	11,875	12,011	12,161	12,324	
System operations and network support*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Business support*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total operational expenditure*	36,303	36,390	36,118	36,350	36,622	36,927	37,277	37,663	38,095	

Table 11 : Operational expenditure forecast disclosed in Section 9 of the 2013 AMP

*Note: System operations, network support and business support costs were not disclosed on a financial year basis in the 2013 AMP

7.3 Explanation of Major Variances

This section highlights the significant changes to the 2013 disclosed expenditure forecasts[12]. The major changes in capital expenditure over the 9-year period for which the AMP and the AMP Update overlap, reflect:

- $121 million increase in consumer connection expenditure forecast and an associated $30 million increase in network reinforcements (including a revised expenditure profile), due to the expected increase in population and new dwelling construction as discussed in section 2.1.
- $26 million increase to provide supply to large customer connections. This reflects current and forecast trends in commercial and industrial activity in the network area, which would result in more large connections to Vector's electricity network.
- $111 million for provision of non-traditional network solutions to provide additional customer choice and flexibility, and manage the potentially adverse network effect of emerging new technologies such as renewable distributed generation and to provide alternatives to traditional network solutions, as discussed in section 2.2.
- $89 million increase reflecting refinements in our risk assessment approach, resulting in additional works to mitigate against the newly identified potential network risks discussed in section 3. It also reflects changes to Vector's policy on managing connections installed down right-of-ways.
- $42 million increase in cost of large asset replacement projects, offset by a $34 million reduction in bulk replacement projects (poles, cross-arms and distribution equipment).

[12] The figures are inflation adjusted.

- $14 million decrease for the final completion of seismic strengthening works to substations etc.

The major changes in operational expenditure include:

- $16 million increase in routine maintenance, inspection, replacement and renewal costs with some front-loading in years 2015-2017. This is to facilitate an acceleration of corrective maintenance work, the need for which was identified in 2013. The revised figure also reflects a re-categorisation of expenditure categories, in line with the Information Disclosure breakdowns introduced in FY2013 (in particular the shared services cost categories).
- $8 million reduction in asset replacement and renewal, as a result of the previously mentioned re-categorisation of expenditure categories.
- In addition to the major opex variances described above, we are also considering a move to a more clearly defined asset manager and service provider structure that is consistent with the related party rules as set out in the Commerce Commission's Input Methodologies and the Information Disclosure Determination. The operational expenditure forecast takes into account the costs associated with the expected new business arrangements.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 1
Report on Forecast Capital Expenditure

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
	11a(i): Expenditure on Assets Forecast	**$000 (in nominal dollars)**										
	Consumer connection	29,918	32,004	38,702	44,875	44,279	41,232	41,413	42,670	43,049	44,167	45,536
	System growth	49,901	45,751	41,938	44,423	43,702	51,997	49,159	52,120	61,325	60,878	57,782
	Asset replacement and renewal	59,983	63,684	63,002	68,496	72,219	73,188	68,649	64,207	61,366	65,642	64,202
	Asset relocations	22,449	20,641	21,982	22,512	20,577	20,294	20,802	21,322	21,855	22,401	22,961
	Reliability, safety and environment:											
	Quality of supply	3,812	3,434	3,494	3,274	3,739	6,733	8,930	9,866	10,525	11,806	12,407
	Legislative and regulatory	2,204	2,386	1,940	1,212	245	-	-	-	-	-	-
	Other reliability, safety and environment	3,280	7,371	9,885	10,296	11,374	12,031	13,150	13,750	14,894	15,558	15,955
	Total reliability, safety and environment	9,296	13,191	15,319	14,782	15,358	18,764	22,080	23,616	25,419	27,364	28,362
	Expenditure on network assets	171,547	175,271	180,943	195,088	196,135	205,475	202,103	203,935	213,014	220,452	218,843
	Non-network assets	11,899	11,774	13,262	10,837	14,053	9,396	10,114	9,335	8,740	8,230	7,544
	Expenditure on assets	183,446	187,045	194,205	205,925	210,188	214,871	212,217	213,270	221,754	228,682	226,387
plus	Cost of financing	3,570	3,885	4,100	4,350	4,441	4,726	4,750	4,888	5,253	5,397	5,357
less	Value of capital contributions	29,599	28,458	34,546	39,042	37,812	35,191	35,658	37,125	37,442	38,346	39,536
plus	Value of vested assets	-	-	-	-	-	-	-	-	-	-	-
	Capital expenditure forecast	157,417	162,472	163,759	171,233	176,817	184,406	181,309	181,033	189,565	195,733	192,208
	Value of commissioned assets	178,269	196,633	165,346	180,012	170,903	188,427	186,363	185,249	183,565	198,026	199,906

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
		$000 (in constant prices)										
	Consumer connection	29,918	31,412	36,895	41,627	39,809	36,084	35,339	35,524	34,970	34,998	35,203
	System growth	49,901	44,989	40,030	41,218	39,286	45,438	41,986	43,372	49,778	48,262	44,687
	Asset replacement and renewal	59,983	62,537	60,131	63,544	64,889	64,022	58,614	53,476	49,860	51,999	49,655
	Asset relocations	22,449	20,275	20,967	20,898	18,508	17,751	17,751	17,751	17,751	17,751	17,751
	Reliability, safety and environment:											
	Quality of supply	3,812	3,369	3,335	3,041	3,357	5,875	7,614	8,212	8,547	9,351	9,592
	Legislative and regulatory	2,204	2,351	1,852	1,130	226	-	-	-	-	-	-
	Other reliability, safety and environment	3,280	7,201	9,430	9,558	10,214	10,523	11,218	11,447	12,094	12,328	12,335
	Total reliability, safety and environment	9,296	12,921	14,617	13,729	13,797	16,398	18,832	19,659	20,641	21,679	21,927
	Expenditure on network assets	171,547	172,134	172,640	181,016	176,289	179,693	172,522	169,782	173,000	174,689	169,223
	Non-network assets	11,899	11,487	12,561	9,985	12,523	8,169	8,578	7,725	7,056	6,482	5,797
	Expenditure on assets	183,446	183,621	185,201	191,001	188,812	187,862	181,100	177,507	180,056	181,171	175,020
	Subcomponents of expenditure on assets (where known)											
	Energy efficiency and demand side management, reduction of energy losses	3,811	3,079	3,046	2,741	3,067	5,661	7,453	8,069	8,341	9,145	9,393
	Overhead to underground conversion	13,882	13,428	13,428	13,428	13,428	13,428	13,428	13,428	13,428	13,428	13,428
	Research and development	426	1,892	1,892	1,892	1,892	1,892	1,892	1,892	1,892	1,892	1,892

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
	Difference between nominal and constant price forecasts	**$000**										
	Consumer connection	-	592	1,807	3,248	4,470	5,148	6,074	7,146	8,079	9,169	10,333
	System growth	-	762	1,908	3,205	4,416	6,559	7,173	8,748	11,547	12,616	13,095
	Asset replacement and renewal	-	1,147	2,871	4,952	7,330	9,166	10,035	10,731	11,506	13,643	14,547
	Asset relocations	-	366	1,015	1,614	2,069	2,543	3,051	3,571	4,104	4,650	5,210
	Reliability, safety and environment:											
	Quality of supply	-	65	159	233	382	858	1,316	1,654	1,978	2,455	2,815
	Legislative and regulatory	-	35	88	82	19	-	-	-	-	-	-
	Other reliability, safety and environment	-	170	455	738	1,160	1,508	1,932	2,303	2,800	3,230	3,620
	Total reliability, safety and environment	-	270	702	1,053	1,561	2,366	3,248	3,957	4,778	5,685	6,435
	Expenditure on network assets	-	3,137	8,303	14,072	19,846	25,782	29,581	34,153	40,014	45,763	49,620
	Non-network assets	-	287	701	852	1,530	1,227	1,536	1,610	1,684	1,748	1,747
	Expenditure on assets	-	3,424	9,004	14,924	21,376	27,009	31,117	35,763	41,698	47,511	51,367

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
	11a(ii): Consumer Connection						
	*Consumer types defined by EDB**	**$000 (in constant prices)**					
	Service connection	8,254	11,009	13,767	15,793	16,674	15,001
	Customer substations	5,535	5,957	6,111	6,111	6,111	6,111
	Business subdivisions	1,144	1,564	1,816	1,909	1,947	1,455
	Residential subdivisions	11,511	9,775	12,235	14,848	12,111	10,551
	Capacity change	2,401	2,430	2,384	2,384	2,384	2,384
	Street lighting	1,016	-	-	-	-	-
	Easement costs	57	677	582	582	582	582
	**include additional rows if needed*						
	Consumer connection expenditure	29,918	31,412	36,895	41,627	39,809	36,084
less	Capital contributions funding consumer connection	19,939	23,528	27,564	30,904	30,381	27,717
	Consumer connection less capital contributions	9,979	7,884	9,331	10,723	9,428	8,367
	11a(iii): System Growth						
	Subtransmission	4,804	4,893	3,311	3,596	7,946	12,141
	Zone substations	23,074	14,539	16,535	22,719	15,409	10,990
	Distribution and LV lines	1,234	-	-	-	-	-
	Distribution and LV cables	11,722	17,672	13,347	8,202	9,181	12,322
	Distribution substations and transformers	1,178	838	824	855	846	844
	Distribution switchgear	1,886	503	495	513	507	506
			-	-	-	-	-
	Other network assets	6,003	6,544	5,518	5,333	5,397	8,635
	System growth expenditure	49,901	44,989	40,030	41,218	39,286	45,438
less	Capital contributions funding system growth	3,235	-	-	-	-	-
	System growth less capital contributions	46,666	44,989	40,030	41,218	39,286	45,438

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
103								
104		for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
105	**11a(iv): Asset Replacement and Renewal**		**$000 (in constant prices)**					
106	Subtransmission		1,774	6,769	4,966	6,563	7,492	6,423
107	Zone substations		17,428	20,879	20,737	22,789	23,682	23,894
108	Distribution and LV lines		17,538	16,025	15,910	15,866	15,849	15,859
109	Distribution and LV cables		5,368	4,545	4,512	4,500	4,495	4,498
110	Distribution substations and transformers		5,413	4,111	4,031	4,067	4,011	4,001
111	Distribution switchgear		5,760	4,236	4,188	4,193	4,171	4,169
			-	-	-	-	-	-
112	Other network assets		6,702	5,972	5,787	5,566	5,189	5,178
113	**Asset replacement and renewal expenditure**		59,983	62,537	60,131	63,544	64,889	64,022
114	*less* Capital contributions funding asset replacement and renewal		-	-	-	-	-	-
115	**Asset replacement and renewal less capital contributions**		59,983	62,537	60,131	63,544	64,889	64,022
116	**11a(v):Asset Relocations**							
117	*Project or programme**							
118	TP Penrose-33kV outdoor to indoor		226	467	1,135	340	-	-
119	TP Hepburn-33kV outdoor to indoor		-	93	587	1,294	370	-
120	TP Henderson-33kV outdoor to indoor		-	93	540	1,195	342	-
	TP Albany-33kV outdoor to indoor		-	-	139	649	1,192	330
121	-		-	-	-	-	-	-
122	Overhead improvement programme		13,882	13,428	13,428	13,428	13,428	13,428
123	**include additional rows if needed*							
124	All other asset relocations projects or programmes		8,341	6,194	5,138	3,992	3,176	3,993
125	**Asset relocations expenditure**		22,449	20,275	20,967	20,898	18,508	17,751
126	*less* Capital contributions funding asset relocations		6,426	4,399	5,368	5,318	3,616	3,079
127	**Asset relocations less capital contributions**		16,023	15,876	15,599	15,580	14,892	14,672
128								
129	**11a(vi):Quality of Supply**							
130	*Project or programme**							
131	Solar PV and Battery programme (Southern & Northern regions)		3,812	2,990	2,956	2,662	2,978	5,496
132			-	-	-	-	-	-
133	-		-	-	-	-	-	-
134	-		-	-	-	-	-	-
135	-		-	-	-	-	-	-
136	**include additional rows if needed*							
137	All other quality of supply projects or programmes		-	379	379	379	379	379
138	**Quality of supply expenditure**		3,812	3,369	3,335	3,041	3,357	5,875
139	*less* Capital contributions funding quality of supply		-	-	-	-	-	-
140	**Quality of supply less capital contributions**		3,812	3,369	3,335	3,041	3,357	5,875
141								
142	**11a(vii): Legislative and Regulatory**							
143	*Project or programme**							
144	Seismic strengthen programme (Southern & Northern regions)		1,697	1,356	1,130	904	226	-
145			-	-	-	-	-	-
146	-		-	-	-	-	-	-
147	-		-	-	-	-	-	-
148	-		-	-	-	-	-	-
149	**include additional rows if needed*							
150	All other legislative and regulatory projects or programmes		507	995	722	226	-	-
151	**Legislative and regulatory expenditure**		2,204	2,351	1,852	1,130	226	-
152	*less* Capital contributions funding legislative and regulatory		-	-	-	-	-	-
153	**Legislative and regulatory less capital contributions**		2,204	2,351	1,852	1,130	226	-
161								

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref

			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
162		for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
163	**11a(viii): Other Reliability, Safety and Environment**							
164	*Project or programme**		**$000 (in constant prices)**					
165	Andelect switchgear replacement (Southern & Northern regions)		-	1,923	2,989	3,201	3,847	4,091
166	ROW assets (Soutern & Northern regions)		-	2,564	3,416	3,414	3,418	3,450
167			-	-	-	-	-	-
168	-		-	-	-	-	-	-
169	-		-	-	-	-	-	-
170	*include additional rows if needed							
171	All other reliability, safety and environment projects or programmes		3,280	2,714	3,025	2,943	2,949	2,982
172	**Other reliability, safety and environment expenditure**		3,280	7,201	9,430	9,558	10,214	10,523
173		*less* Capital contributions funding other reliability, safety and environment	-	-	-	-	-	-
174	**Other reliability, safety and environment less capital contributions**		3,280	7,201	9,430	9,558	10,214	10,523
175								
176								
177								
178	**11a(ix): Non-Network Assets**							
179	**Routine expenditure**							
180	*Project or programme**							
181	IT Programme 2015 onwards		-	10,934	12,119	9,766	12,366	8,012
182			-	-	-	-	-	-
183	-		-	-	-	-	-	-
184	-		-	-	-	-	-	-
185	-		-	-	-	-	-	-
186	*include additional rows if needed							
187	All other routine expenditure projects or programmes		11,899	553	442	219	157	157
188	**Routine expenditure**		11,899	11,487	12,561	9,985	12,523	8,169
189	**Atypical expenditure**							
190	*Project or programme**							
191	-		-	-	-	-	-	-
192	-		-	-	-	-	-	-
193	-		-	-	-	-	-	-
194	-		-	-	-	-	-	-
195	-		-	-	-	-	-	-
196	*include additional rows if needed							
197	All other atypical projects or programmes		-	-	-	-	-	-
198	**Atypical expenditure**		-	-	-	-	-	-
199								
200	**Non-network assets expenditure**		11,899	11,487	12,561	9,985	12,523	8,169

Schedule 11a Explanatory Notes

The box below provides commentary specific to the difference between nominal and constant price capital expenditure forecasts. It is provided in the same format as required for Box 1, Schedule 14a of the Electricity Distribution Information Disclosures, which will be fully disclosed within 6 months of the end of the disclosure year.

Commentary on difference between nominal and constant price capital expenditure forecasts

Vector has used the NZIER (New Zealand Institute of Economic Research) December 2013 PPI (Producer Price Index-outputs) forecast from 2014 to 2018. Thereafter we have assumed a long-term inflation rate of 2.5%. The constant price capital expenditure forecast is then inflated by the above mentioned PPI forecast to nominal price capital expenditure forecasts.

Additional explanatory notes pertaining to Schedule 11a are provided in the box below, in the format required for Schedule 15 of the Electricity Distribution Information Disclosures:

Additional explanatory comment on disclosed information

Vector is in the process of changing our Consumer Connection category definitions (11a(ii)). As of next year, capex spent on street lighting will be rolled into other consumer connection categories, hence no expenditure is forecast in this category from RY2015 onwards.

When forecasting System Growth (11a(iii)), we do not differentiate between LV lines and cables projects when completing forecasts for projects where preliminary engineering has not been completed. All LV lines and cables cost forecasts are therefore consolidated into the LV cables category for projects beyond the current regulatory year.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 2
Report on Forecast Operational Expenditure

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

This schedule requires a breakdown of forecast operational expenditure for the disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms.
EDBs must provide explanatory comment on the difference between constant price and nominal dollar operational expenditure forecasts in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref												
7		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
8	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	6,429	7,744	7,674	7,904	8,165	8,387	8,597	8,812	9,032	9,258	9,490
11	Vegetation management	3,971	4,902	4,943	4,973	5,030	5,040	5,049	5,054	5,056	5,056	5,052
12	Routine and corrective maintenance and inspection	12,058	14,980	15,292	15,272	15,361	15,763	16,219	16,713	17,203	17,734	18,250
13	Asset replacement and renewal	13,990	14,322	13,112	11,399	11,243	11,549	11,837	12,133	12,437	12,748	13,066
14	**Network Opex**	36,448	41,948	41,021	39,548	39,799	40,739	41,702	42,712	43,728	44,796	45,858
15	System operations and network support	46,544	44,422	45,755	47,036	48,635	49,851	51,097	52,375	53,684	55,026	56,402
16	Business support	31,062	31,707	32,659	33,573	34,714	35,582	36,472	37,384	38,318	39,276	40,258
17	**Non-network opex**	77,606	76,129	78,414	80,609	83,349	85,433	87,569	89,759	92,002	94,302	96,660
18	**Operational expenditure**	114,054	118,077	119,435	120,157	123,148	126,172	129,271	132,471	135,730	139,098	142,518

19		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
20	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	6,429	7,514	7,322	7,322	7,322	7,322	7,322	7,322	7,322	7,322	7,322
23	Vegetation management	3,971	4,782	4,682	4,582	4,482	4,382	4,282	4,182	4,082	3,982	3,882
24	Routine and corrective maintenance and inspection	12,058	14,547	14,593	14,149	13,777	13,761	13,814	13,887	13,945	14,025	14,082
25	Asset replacement and renewal	13,990	13,904	12,521	10,570	10,082	10,082	10,082	10,082	10,082	10,082	10,082
26	**Network Opex**	36,448	40,747	39,118	36,623	35,663	35,547	35,500	35,473	35,431	35,411	35,368
27	System operations and network support	46,544	43,338	43,338	43,338	43,338	43,338	43,338	43,338	43,338	43,338	43,338
28	Business support	31,062	30,934	30,934	30,934	30,934	30,934	30,934	30,934	30,934	30,934	30,934
29	**Non-network opex**	77,606	74,272	74,272	74,272	74,272	74,272	74,272	74,272	74,272	74,272	74,272
30	**Operational expenditure**	114,054	115,019	113,390	110,895	109,935	109,819	109,772	109,745	109,703	109,683	109,640
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and demand side management, reduction of energy losses	-	-	-	-	-	-	-	-	-	-	-
33	Direct billing*	-	-	-	-	-	-	-	-	-	-	-
34	Research and Development	-	-	-	-	-	-	-	-	-	-	-
35	Insurance	2,951	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915
36	** Direct billing expenditure by suppliers that direct bill the majority of their consumers*											

37												
38		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
39	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
40	**Difference between nominal and real forecasts**	**$000**										
41	Service interruptions and emergencies	-	230	352	582	843	1,065	1,275	1,490	1,710	1,936	2,168
42	Vegetation management	-	120	261	391	548	658	767	872	974	1,074	1,170
43	Routine and corrective maintenance and inspection	-	433	699	1,123	1,584	2,002	2,405	2,826	3,258	3,709	4,168
44	Asset replacement and renewal	-	418	591	829	1,161	1,467	1,755	2,051	2,355	2,666	2,984
45	**Network Opex**	-	1,201	1,903	2,925	4,136	5,192	6,202	7,239	8,297	9,385	10,490
46	System operations and network support	-	1,084	2,417	3,698	5,297	6,513	7,759	9,037	10,346	11,688	13,064
47	Business support	-	773	1,725	2,639	3,780	4,648	5,538	6,450	7,384	8,342	9,324
48	**Non-network opex**	-	1,857	4,142	6,337	9,077	11,161	13,297	15,487	17,730	20,030	22,388
49	**Operational expenditure**	-	3,058	6,045	9,262	13,213	16,353	19,499	22,726	26,027	29,415	32,878
50												

Schedule 11b Explanatory Notes

The box below provides commentary specific to the difference between nominal and constant price operational expenditure forecasts. It is provided in the same format as required for Box 2, Schedule 14a of the Electricity Distribution Information Disclosures, which will be fully disclosed within 6 months of the end of the disclosure year.

Commentary on difference between nominal and constant price operational expenditure forecasts

Vector has used the NZIER (New Zealand Institute of Economic Research) December 2013 PPI (Producer Price Index-outputs) forecast from 2014 to 2018. Thereafter we have assumed a long-term inflation rate of 2.5%. The constant price operating expenditure forecast is then inflated by the above mentioned PPI forecast to nominal price operating expenditure forecasts.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 3
Report on Asset Condition

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12a: REPORT ON ASSET CONDITION

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a. All units relating to cable and line assets, that are expressed in km, refer to circuit lengths.

sch ref					Asset condition at start of planning period (percentage of units by grade)						
8	**Voltage**	**Asset category**	**Asset class**	**Units**	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade unknown**	**Data accuracy (1–4)**	**% of asset forecast to be replaced in next 5 years**
10	All	Overhead Line	Concrete poles / steel structure	No.	0.0%	0.4%	61.5%	38.1%	0.0%	4	6.1%
11	All	Overhead Line	Wood poles	No.	0.1%	1.7%	73.5%	24.7%	0.0%	4	9.7%
12	All	Overhead Line	Other pole types	No.	0.0%	0.0%	0.0%	100.0%	0.0%	4	0.0%
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	0.0%	0.0%	83.2%	16.8%	0.0%	3	0.0%
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	0.0%	0.0%	98.3%	1.7%	0.0%	3	0.0%
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	0.0%	0.0%	11.4%	88.6%	0.0%	2	0.1%
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km	0.0%	5.0%	73.9%	21.1%	0.0%	2	5.3%
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	km	0.0%	44.5%	55.5%	0.0%	0.0%	2	100.0%
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	km	0.0%	6.1%	87.4%	6.5%	0.0%	2	36.6%
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	km	0.0%	0.0%	0.0%	100.0%	0.0%	2	0.0%
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	km	0.0%	0.0%	73.0%	27.0%	0.0%	2	0.0%
21	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Gas Pressurised)	km	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
22	HV	Subtransmission Cable	Subtransmission UG 110kV+ (PILC)	km	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
23	HV	Subtransmission Cable	Subtransmission submarine cable	km	0.0%	11.8%	42.7%	45.5%	0.0%	2	11.4%
24	HV	Zone substation Buildings	Zone substations up to 66kV	No.	0.0%	4.1%	22.5%	73.4%	0.0%	3	5.1%
25	HV	Zone substation Buildings	Zone substations 110kV+	No.	0.0%	0.0%	28.6%	71.4%	0.0%	3	0.0%
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	0.0%	8.5%	12.4%	79.1%	0.0%	4	8.5%
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	0.0%	14.8%	50.0%	35.2%	0.0%	4	15.3%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	0.0%	23.3%	73.3%	3.4%	0.0%	4	23.3%
30	HV	Zone substation switchgear	33kV RMU	No.	0.0%	0.0%	0.0%	100.0%	0.0%	4	0.0%
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.	0.0%	0.0%	0.0%	100.0%	0.0%	4	0.0%
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.	0.0%	0.0%	0.0%	100.0%	0.0%	4	0.0%
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	0.0%	14.9%	37.5%	47.6%	0.0%	4	25.0%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12a: REPORT ON ASSET CONDITION

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a. All units relating to cable and line assets, that are expressed in km, refer to circuit lengths.

sch ref						Asset condition at start of planning period (percentage of units by grade)						
	Voltage	Asset category	Asset class	Units	Grade 1	Grade 2	Grade 3	Grade 4	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
45	HV	Zone Substation Transformer	Zone Substation Transformers	No.	1.0%	3.4%	47.6%	48.1%	0.0%	4	7.3%
46	HV	Distribution Line	Distribution OH Open Wire Conductor	km	0.0%	0.0%	60.5%	39.5%	0.0%	3	0.3%
47	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
48	HV	Distribution Line	SWER conductor	km	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
49	HV	Distribution Cable	Distribution UG XLPE or PVC	km	0.0%	0.1%	6.2%	93.8%	0.0%	2	1.1%
50	HV	Distribution Cable	Distribution UG PILC	km	0.0%	0.4%	39.7%	59.9%	0.0%	2	0.8%
51	HV	Distribution Cable	Distribution Submarine Cable	km	0.0%	0.0%	86.2%	13.8%	0.0%	2	0.0%
52	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	0.6%	0.6%	0.6%	98.3%	0.0%	4	11.4%
53	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.	0.0%	0.0%	40.0%	60.0%	0.0%	4	0.0%
54	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	4.0%	1.8%	53.4%	40.8%	0.0%	4	9.1%
55	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	0.3%	0.1%	67.2%	32.4%	0.0%	3	8.0%
56	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	0.3%	0.1%	55.3%	44.3%	0.0%	3	3.9%
57	HV	Distribution Transformer	Pole Mounted Transformer	No.	3.5%	0.7%	20.7%	75.1%	0.0%	3	8.1%
58	HV	Distribution Transformer	Ground Mounted Transformer	No.	1.0%	0.7%	28.0%	70.3%	0.0%	3	4.2%
59	HV	Distribution Transformer	Voltage regulators	No.	0.0%	0.0%	0.0%	100.0%	0.0%	4	0.0%
60	HV	Distribution Substations	Ground Mounted Substation Housing	No.	1.5%	1.3%	75.8%	21.4%	0.0%	4	2.8%
61	LV	LV Line	LV OH Conductor	km	0.0%	0.0%	66.6%	33.4%	0.0%	3	0.2%
62	LV	LV Cable	LV UG Cable	km	0.0%	0.3%	35.5%	64.3%	0.0%	2	0.1%
63	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	0.0%	0.0%	0.0%	0.0%	100.0%	1	0.1%
64	LV	Connections	OH/UG consumer service connections	No.	0.0%	0.0%	0.0%	0.0%	100.0%	1	0.0%
65	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	0.0%	10.8%	40.3%	49.0%	0.0%	3	17.2%
66	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	2.2%	6.9%	0.0%	90.9%	0.0%	4	15.2%
67	All	Capacitor Banks	Capacitors including controls	No.	0.0%	0.0%	85.7%	14.3%	0.0%	3	0.0%
68	All	Load Control	Centralised plant	Lot	0.0%	0.0%	100.0%	0.0%	0.0%	4	0.0%
69	All	Load Control	Relays	No.	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%
70	All	Civils	Cable Tunnels	km	0.0%	0.0%	8.6%	91.4%	0.0%	4	0.0%

Schedule 12a Explanatory Notes

Explanatory notes pertaining to Schedule 12a are provided in the box below, in the format required for Schedule 15 of the Electricity Distribution Information Disclosures:

Additional explanatory comment on disclosed information

Since Schedule 12a was last disclosed in 2013, Vector has reviewed the interpretation of the scoring provided in the Data Accuracy column. Scoring provided this year, now reflects the accuracy of the condition grading provided, rather than the accuracy of asset quantities, which is disclosed under Schedule 9a. We believe this interpretation of the Commerce Commission's data accuracy definition is more meaningful in the context of Schedule 12a.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 4
Report on Forecast Capacity

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

sch ref

12b(i): System Growth - Zone Substations

Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %	Installed Firm Capacity +5 years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5 years (cause)	Explanation
Atkinson Road	18.5	24.0	N-1	20.5	77%	24.0	80%	No constraint within +5 years	Meets Vector security criteria
Auckland Airport	16.0	25.0	N-1	0.0	64%	25.0	100%	Other	Meets Customer security criteria, any upgrade is initiated by customer
Avondale	28.2	24.0	N-1 switched	22.0	118%	24.0	120%	No constraint within +5 years	Meets Vector security criteria
Bairds	23.0	24.0	N-1	23.7	96%	24.0	100%	No constraint within +5 years	Meets Vector security criteria
Balmain	7.9	0.0	N-1 switched	13.4	-	0.0		No constraint within +5 years	Meets Vector security criteria
Balmoral	17.5	14.3	N-1 switched	12.5	122%	24.0	90%	No constraint within +5 years	Meets Vector security criteria
Belmont	13.0	14.0	N-1	10.5	93%	14.0	90%	No constraint within +5 years	Meets Vector security criteria
Birkdale	22.9	16.0	N-1 switched	18.7	143%	24.0	100%	No constraint within +5 years	Meets Vector security criteria - Transformer upgrade planned within 5 years
Brickworks	10.0	0.0	N-1 switched	12.8	-	18.0	60%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned within 5 years
Browns Bay	16.7	14.0	N-1 switched	20.0	119%	14.0	130%	No constraint within +5 years	Meets Vector security criteria - Planned Glenvar substation will reduce the load at Browns Bay
Bush Road	23.2	24.0	N-1	13.2	97%	24.0	110%	No constraint within +5 years	Meets Vector security criteria
Carbine	17.1	18.9	N-1	14.7	90%	18.9	100%	No constraint within +5 years	Meets Vector security criteria
Chevalier	20.0	17.1	N-1 switched	16.9	117%	17.1	120%	No constraint within +5 years	Meets Vector security criteria
Clendon	21.6	24.0	N-1	22.9	90%	24.0	90%	No constraint within +5 years	Meets Vector security criteria
Clevedon	2.8	0.0	N-1 switched	3.2	-	0.0		No constraint within +5 years	Meets Vector security criteria
Coatesville	9.7	0.0	N-1 switched	10.1	-	12.5	90%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned within 5 years
Drive	24.6	24.0	N-1 switched	25.6	103%	24.0	120%	No constraint within +5 years	Meets Vector security criteria
East Coast Road	17.4	0.0	N	14.6	-	0.0		No constraint within +5 years	Planned Rosedale substation will reduce the load at East Coast Rd
East Tamaki	17.8	24.0	N-1	9.5	74%	24.0	80%	No constraint within +5 years	Meets Vector security criteria
Forrest Hill	17.4	16.0	N-1 switched	17.7	109%	16.0	120%	No constraint within +5 years	Meets Vector security criteria
Freemans Bay	19.7	21.6	N-1	19.5	91%	21.6	100%	No constraint within +5 years	Meets Vector security criteria
Glen Innes	11.0	12.2	N-1	14.1	90%	24.0	50%	No constraint within +5 years	Meets Vector security criteria
Greenhithe	13.2	0.0	N-1 switched	13.7	-	24.0	60%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned after 5 years
Greenmount	38.9	48.0	N-1	31.4	81%	48.0	90%	No constraint within +5 years	Meets Vector security criteria
Gulf Harbour	6.8	0.0	N-1 switched	13.3	-	0.0		No constraint within +5 years	Meets Vector security criteria
Hans	24.6	24.0	N-1 switched	11.0	103%	24.0	110%	No constraint within +5 years	Meets Vector security criteria
Hauraki	8.7	0.0	N-1 switched	11.2	-	0.0		No constraint within +5 years	Meets Vector security criteria
Helensville	13.7	9.0	N-1 switched	10.1	152%	9.0	170%	No constraint within +5 years	Meets Vector security criteria
Henderson Valley	14.7	16.0	N-1	15.4	92%	16.0	100%	No constraint within +5 years	Meets Vector security criteria
Highbrook	5.5	19.4	N-1	0.0	28%	19.4	30%	No constraint within +5 years	Switching Station
Highbury	13.2	0.0	N-1 switched	16.5	-	16.0	90%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned within 5 years
Hillcrest	22.7	21.1	N-1 switched	22.9	108%	21.1	120%	No constraint within +5 years	Meets Vector security criteria
Hillsborough	16.6	24.0	N-1	21.1	69%	24.0	70%	No constraint within +5 years	Meets Vector security criteria
Hobson 110/11kV	25.9	27.5	N-1	11.9	94%	27.5	90%	No constraint within +5 years	Meets Vector security criteria
Hobson 22/11kV	18.9	16.5	N-1 switched	15.4	115%	16.5	130%	No constraint within +5 years	Meets Vector security criteria
Hobson 22kV	45.1	40.0	N-1 switched	34.4	113%	80.0	70%	No constraint within +5 years	Meets Vector security criteria - third transformer installation planned within 5 years

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

sch ref

Hobsonville	21.4	16.0	N-1 switched	13.9	134%	16.0	280%	No constraint within +5 years	Hobsonbille Point and Westgate substations planned to reduce Hobsonville load
Howick	39.0	46.0	N-1	14.2	85%	46.0	90%	No constraint within +5 years	Meets Vector security criteria
James Street	17.8	16.0	N-1 switched	17.4	111%	16.0	120%	No constraint within +5 years	Meets Vector security criteria
Keeling Road	14.2	0.0	N-1 switched	23.3	-	24.0	80%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned within 5 years
Kingsland	23.0	24.0	N-1	29.2	96%	24.0	140%	No constraint within +5 years	Meets Vector security criteria
Laingholm	9.1	9.0	N-1 switched	10.3	101%	9.0	110%	No constraint within +5 years	Meets Vector security criteria
Liverpool	42.9	44.0	N-1	25.8	98%	44.0	100%	No constraint within +5 years	Meets Vector security criteria
Liverpool 22kV	95.5	135.0	N-1	60.6	71%	135.0	80%	No constraint within +5 years	Meets Vector security criteria
Mangere Central	25.5	24.0	N-1 switched	12.2	106%	48.0	60%	No constraint within +5 years	Meets Vector security criteria
Mangere East	24.9	24.0	N-1 switched	25.4	104%	24.0	120%	No constraint within +5 years	Meets Vector security criteria
Mangere West	19.7	36.0	N-1	6.8	55%	36.0	60%	No constraint within +5 years	Meets Vector security criteria
Manly	19.0	14.0	N-1 switched	15.5	136%	14.0	140%	No constraint within +5 years	Meets Vector security criteria
Manukau	35.4	48.0	N-1	28.9	74%	48.0	80%	No constraint within +5 years	Meets Vector security criteria
Manurewa	50.2	46.9	N-1 switched	27.0	107%	46.9	110%	No constraint within +5 years	Meets Vector security criteria
Maraetai	6.2	18.0	N-1	3.3	34%	18.0	40%	No constraint within +5 years	Meets Vector security criteria
McKinnon	21.4	24.0	N-1	17.6	89%	24.0	110%	No constraint within +5 years	Meets Vector security criteria
Mcleod Road	11.6	0.0	N-1 switched	12.8	-	0.0		No constraint within +5 years	Meets Vector security criteria
McNab	45.0	48.0	N-1	29.2	94%	48.0	110%	No constraint within +5 years	Meets Vector security criteria
Milford	7.6	0.0	N-1 switched	8.1	-	0.0		No constraint within +5 years	Meets Vector security criteria
Mt Albert	7.2	0.0	N-1 switched	8.7	-	0.0		No constraint within +5 years	Meets Vector security criteria
Mt Wellington	16.6	24.0	N-1	21.0	69%	24.0	70%	No constraint within +5 years	Meets Vector security criteria
New Lynn	13.8	14.0	N-1	15.0	99%	14.0	110%	No constraint within +5 years	Meets Vector security criteria
Newmarket	35.1	48.0	N-1	36.7	73%	48.0	110%	No constraint within +5 years	Meets Vector security criteria
Newton	18.0	19.2	N-1	17.4	94%	19.2	110%	No constraint within +5 years	Meets Vector security criteria
Ngataringa Bay	7.8	0.0	N-1 switched	9.5	-	0.0		No constraint within +5 years	Meets Vector security criteria
Northcote	9.3	0.0	N-1 switched	11.0	-	0.0		No constraint within +5 years	Meets Vector security criteria
Onehunga	13.0	14.8	N-1	13.1	88%	24.0	60%	No constraint within +5 years	Meets Vector security criteria
Orakei	22.8	21.6	N-1 switched	17.0	106%	21.6	120%	No constraint within +5 years	Meets Vector security criteria
Oratia	5.3	0.0	N-1 switched	6.4	-	0.0		No constraint within +5 years	Meets Vector security criteria
Orewa	15.2	24.0	N-1	15.6	63%	24.0	90%	No constraint within +5 years	Meets Vector security criteria
Otara	32.8	30.8	N-1 switched	25.5	106%	30.8	120%	No constraint within +5 years	Meets Vector security criteria - Planned Flat Bush substation will reduce the load at Otara within 5 years
Pacific Steel	55.8							Other	Meets Customer security criteria, any upgrade is initiated by customer
Pakuranga	22.7	24.0	N-1	9.4	95%	24.0	110%	No constraint within +5 years	Meets Vector security criteria
Papakura	25.3	24.0	N-1 switched	10.4	105%	24.0	120%	No constraint within +5 years	Meets Vector security criteria
Parnell	10.9	14.6	N-1	16.4	75%	24.0	60%	No constraint within +5 years	Meets Vector security criteria
Ponsonby	15.9	14.4	N-1 switched	10.4	110%	14.4	120%	No constraint within +5 years	Meets Vector security criteria
Quay	23.1	22.0	N-1 switched	25.4	105%	22.0	140%	No constraint within +5 years	Meets Vector security criteria
Quay 22kV	38.5	60.0	N-1	33.5	64%	60.0	80%	No constraint within +5 years	Meets Vector security criteria
Ranui	10.9	0.0	N-1 switched	15.5	-	0.0		No constraint within +5 years	Meets Vector security criteria
Red Beach	14.1	0.0	N-1 switched	16.2	-	24.0	90%	No constraint within +5 years	Meets Vector security criteria - Second transformer installation planned within 5 years
Remuera	25.5	24.0	N-1 switched	17.2	106%	24.0	140%	No constraint within +5 years	Meets Vector security criteria
Riverhead	8.4	9.0	N-1	14.7	93%	9.0	120%	No constraint within +5 years	Meets Vector security criteria
Rockfield	22.7	24.0	N-1	26.6	95%	24.0	100%	No constraint within +5 years	Meets Vector security criteria
Rosebank	20.9	25.8	N-1	22.2	81%	25.8	80%	No constraint within +5 years	Meets Vector security criteria

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

sch ref

	Sabulite Road	20.8	14.0	N-1 switched	21.5	149%	14.0	150%	No constraint within +5 years	Meets Vector security criteria
	Sandringham	22.4	24.0	N-1	24.1	93%	24.0	100%	No constraint within +5 years	Meets Vector security criteria
	Simpson Road	5.9	0.0	N-1 switched	6.3	-	0.0		No constraint within +5 years	Meets Vector security criteria
	Snells Beach	6.3	0.0	N-1 switched	7.3	-	0.0		No constraint within +5 years	Meets Vector security criteria - Planned Sandspit substation will reduce the load at Snells Beach and increase the transfer capacity at this substation
	South Howick	28.3	24.0	N-1 switched	17.2	118%	24.0	120%	No constraint within +5 years	Meets Vector security criteria
	Spur Road	10.5	0.0	N-1 switched	19.5	-	0.0		No constraint within +5 years	Meets Vector security criteria
	St Heliers	22.4	21.0	N-1 switched	17.8	107%	21.0	110%	No constraint within +5 years	Meets Vector security criteria
	St Johns	16.7	24.0	N-1	26.9	70%	24.0	100%	No constraint within +5 years	Meets Vector security criteria
	Sunset Road	17.4	14.0	N-1 switched	16.2	124%	14.0	140%	No constraint within +5 years	Meets Vector security criteria
	Swanson	10.5	0.0	N-1 switched	14.2	-	0.0		No constraint within +5 years	Meets Vector security criteria
	Sylvia Park	17.6	20.2	N-1	5.4	87%	20.2	90%	No constraint within +5 years	Meets Vector security criteria
	Takanini	13.9	18.0	N-1	13.2	77%	18.0	90%	No constraint within +5 years	Meets Vector security criteria
	Takapuna	10.0	0.0	N-1 switched	11.8	-	0.0		No constraint within +5 years	Meets Vector security criteria
	Te Atatu	18.6	14.0	N-1 switched	10.0	133%	24.0	90%	No constraint within +5 years	Meets Vector security criteria - Transformer upgrade planned within 5 years
	Te Papapa	23.1	24.0	N-1	11.9	96%	24.0	100%	No constraint within +5 years	Meets Vector security criteria
	Torbay	7.2	0.0	N-1 switched	9.1	-	0.0		No constraint within +5 years	Meets Vector security criteria - Planned Glenvar substation will reduce the load at Torbay and increase transfer capacity at this substation
	Triangle Road	16.6	12.0	N-1 switched	21.1	138%	24.0	80%	No constraint within +5 years	Meets Vector security criteria - Transformer upgrade planned within 5 years
	Victoria	24.4	20.4	N-1 switched	24.4	120%	20.4	130%	No constraint within +5 years	Meets Vector security criteria
	Waiake	8.1	0.0	N-1 switched	9.7	-	0.0		No constraint within +5 years	Meets Vector security criteria
	Waiheke	10.1	15.0	N-1	3.3	67%	15.0	80%	No constraint within +5 years	Meets Vector security criteria
	Waikaukau	9.3	0.0	N-1 switched	9.4	-	0.0		No constraint within +5 years	Meets Vector security criteria
	Waimauku	5.7	0.0	N-1 switched	6.7	-	18.0	40%	No constraint within +5 years	Meets Vector security criteria
	Wairau Road	17.0	16.0	N-1 switched	20.0	106%	16.0	110%	No constraint within +5 years	Meets Vector security criteria
	Warkworth	18.9	18.0	N-1 switched	14.1	105%	18.0	110%	No constraint within +5 years	Meets Vector security criteria
	Wellsford	7.7	9.0	N-1	6.1	86%	9.0	100%	No constraint within +5 years	Meets Vector security criteria
	Westfield	26.0	22.0	N-1 switched	16.2	118%	22.0	160%	No constraint within +5 years	Meets Vector security criteria
	White Swan	30.4	34.7	N-1	19.9	88%	34.7	90%	No constraint within +5 years	Meets Vector security criteria
	Wiri	38.0	48.0	N-1	17.7	79%	48.0	90%	No constraint within +5 years	Meets Vector security criteria
	Woodford	11.7	0.0	N-1 switched	11.8	-	12.5	100%	No constraint within +5 years	Meets Vector security criteria

29 [1] *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*

Schedule 12b Explanatory Notes

Explanatory notes pertaining to Schedule 12b are provided in the box below, in the format required for Schedule 15 of the Electricity Distribution Information Disclosures:

Additional explanatory comment on disclosed information

Since Schedule 12b was last disclosed in 2013, the Commerce Commission have provided clarifying definitions around 'Installed Firm Capacity' for substations (refer Commerce Commission Issues Register response #342). In addition, we have also taken advantage of this opportunity to review the capacity rating used in these calculations, utilising cyclic capacity rating where possible, rather than continuous rating. This better reflects our operating practices and security standards.

Vector's security standards are also not strictly based on an 'N-1' security definition, but based on supplying the required electricity load x% of the time following a fault (the value of x dependant on the type of consumer being supplied). This standard permits higher loading limits on our substations, and as a result the % utilisation figures calculated in the form required for Schedule 12b could misconstrue the network's true utilisation.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 5
Report on Forecast Network Demand

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12C: REPORT ON FORECAST NETWORK DEMAND

This schedule requires a forecast of new connections (by consumer type), peak demand and energy volumes for the disclosure year and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumptions used in developing the expenditure forecasts in Schedule 11a and Schedule 11b and the capacity and utilisation forecasts in Schedule 12b.

sch ref

12c(i): Consumer Connections

Number of ICPs connected in year by consumer type

Number of connections

for year ended	*Current Year CY* **31 Mar 14**	*CY+1* **31 Mar 15**	*CY+2* **31 Mar 16**	*CY+3* **31 Mar 17**	*CY+4* **31 Mar 18**	*CY+5* **31 Mar 19**
*Consumer types defined by EDB**						
Residential & Small Medium Enterprise (SME)	5,729	7,267	9,143	11,140	12,433	10,694
Industrial & Commercial (I & C)	170	159	159	159	159	159
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
Connections total	5,899	7,426	9,302	11,299	12,592	10,853

**include additional rows if needed*

Distributed generation

Number of connections	90	1,052	2,228	6,926	10,450	10,450
Installed connection capacity of distributed generation (MVA)	-	3	9	23	34	34

12c(ii) System Demand

	for year ended	*Current Year CY* **31 Mar 14**	*CY+1* **31 Mar 15**	*CY+2* **31 Mar 16**	*CY+3* **31 Mar 17**	*CY+4* **31 Mar 18**	*CY+5* **31 Mar 19**
Maximum coincident system demand (MW)							
GXP demand		1,736	1,738	1,788	1,827	1,853	1,891
plus Distributed generation output at HV and above		10	10	12	14	16	18
Maximum coincident system demand		1,746	1,748	1,800	1,841	1,869	1,909
less Net transfers to (from) other EDBs at HV and above		-	-	-	-	-	-
Demand on system for supply to consumers' connection points		1,746	1,748	1,800	1,841	1,869	1,909
Electricity volumes carried (GWh)							
Electricity supplied from GXPs		8,546	8,535	8,554	8,580	8,612	8,650
less Electricity exports to GXPs		-	-	-	-	-	-
plus Electricity supplied from distributed generation		101	103	107	114	125	125
less Net electricity supplied to (from) other EDBs		-	-	-	-	-	-
Electricity entering system for supply to ICPs		8,647	8,638	8,661	8,694	8,737	8,775
less Total energy delivered to ICPs		8,287	8,279	8,299	8,331	8,372	8,408
Losses		360	359	362	363	365	367
Load factor		57%	56%	55%	54%	53%	52%
Loss ratio		4.2%	4.2%	4.2%	4.2%	4.2%	4.2%

Schedule 12c Explanatory Notes

Explanatory notes pertaining to Schedule 12c are provided in the box below, in the format required for Schedule 15 of the Electricity Distribution Information Disclosures:

Additional explanatory comment on disclosed information

Over the last few years, we have seen a slow but steady decline in energy consumption per ICP. However, in contrast, the peak demand per ICP has appeared to remain flat over the same period (albeit with fluctuations for ambient temperature etc.).

If we extrapolate these trends (as we have done in Schedule 12c), the overall network load factor slowly declines. It should be noted that this forecast contains a level of uncertainty; there is no clear indication of what consumer energy demands will look like in the future or when the decreasing energy consumption trend will plateau. We will keep a close eye on this and update future AMPs accordingly.

Electricity Asset Management Plan Update

Information Disclosure 2014

Appendix 6
Report on Forecast Interruptions and Duration
(reported by sub-network)

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**
Network / Sub-network Name	**Vector Limited**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref							
8		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
9	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	21.0	19.6	19.6	19.6	19.6	19.6
12	Class C (unplanned interruptions on the network)	125.5	122.8	122.8	122.8	122.8	122.8
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.1	0.1	0.1	0.1	0.1	0.1
15	Class C (unplanned interruptions on the network)	1.3	1.4	1.4	1.4	1.4	1.4

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**
Network / Sub-network Name	**Southern Region**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8							
9	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	4.0	6.3	6.3	6.3	6.3	6.3
12	Class C (unplanned interruptions on the network)	63.4	70.4	70.4	70.4	70.4	70.4
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.1	0.1	0.1	0.1	0.1	0.1
15	Class C (unplanned interruptions on the network)	0.8	0.9	0.9	0.9	0.9	0.9

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2014 – 31 March 2024**
Network / Sub-network Name	**Northern Region**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8							
9	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	46.9	39.8	39.8	39.8	39.8	39.8
12	Class C (unplanned interruptions on the network)	219.6	202.3	202.3	202.3	202.3	202.3
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.2	0.2	0.2	0.2	0.2	0.2
15	Class C (unplanned interruptions on the network)	2.1	2.1	2.1	2.1	2.1	2.1

Schedule 17 Certification for Year-beginning Disclosures

Clause 2.9.1 of section 2.9

We, Hugh Fletcher and

Alison Paterson, being directors of Vector Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) the following attached information of Vector Limited prepared for the purposes of clause 2.6.1 and subclauses 2.6.3(4), and 2.6.5(3) of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

b) The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

HFletcher

Director

A Paterson

Director

12 March 2014

Date