vector electricity

2022—2032

electricity asset management plan update

Contents

1 – Introduction 3
1.1 Overview of Vector 3
1.2 What is in this AMP? 3
1.3 Information Disclosure Requirements 4
1.4 Managing uncertainty in planning horizons 4
1.5 Investing in the network of the future: embedding Symphony 5
2 – Asset Management Plan Update 8
2.1 Material changes since our last published AMP 8
2.2 Improving our Asset Management and Delivery 9
3 – Expenditure forecast 10
3.1 Overview 10
3.2 CAPEX forecast 10
3.3 CAPEX forecast variance to previous AMP 12
3.4 OPEX Forecast 15
3.5 OPEX forecast variance to previous AMP 16
4 – Appendices 17
4.1 Appendix 1 - Forecast Capital Expenditure (Schedule 11a) 17
4.2 Appendix 2 - Forecast Operational Expenditure (Schedule 11b) 21
4.3 Appendix 3 - Asset Condition (Schedule 12a) 22
4.4 Appendix 4 - Forecast Capacity (Schedule 12b) 24
4.5 Appendix 5 - Forecast Network Demand (Schedule 12c) 27
4.6 Appendix 6 - Forecast Interruptions and Duration (Schedule 12d) 28
4.7 Appendix 7 - Mandatory Explanatory Notes on Forecast Information (Schedule 14a) 30
4.8 Appendix 8 - Certification for Year-beginning Disclosures (Schedule 17) 31

1 – Introduction

1.1 Overview of Vector

The Vector Group is New Zealand's largest energy solutions business. The Group is a diverse portfolio of regulated and unregulated business units delivering products and services across electricity, gas, fibre, metering and new technologies.

We are 75.1% owned by the community trust Entrust, which represents over 350,000 electricity customers in Auckland. The remainder of our shares are listed on the New Zealand stock exchange, an ownership model that achieves both commercial and community objectives. On behalf of our customers and shareholders, and in collaboration with our suppliers and partners, we are committed to facilitating a decarbonised, reliable, resilient, safe and affordable energy future for our customers.

Vector's asset management is a multi-utility practice that includes both electricity and gas distribution, as well as fibre assets. However, for the purposes of this AMP, the scope of asset management practices and investment forecasts described is limited to Vector's electricity distribution network. We manage more than 19,000 kms of overhead lines and underground cables, delivering power to over 500,000 homes and 60,000 businesses throughout the wider Auckland region.

1.1.1 OUR VISION AND OUR SYMPHONY STRATEGY

Our vision is to create a new energy future.

Symphony is our strategy for the new energy future – it is about creating a system for our customers that fits the future, delivering safe, cleaner, more reliable and affordable energy solutions that are developed with customers at the centre, and which helps us navigate future uncertainty. Symphony is how we are transforming the traditional poles and wires of the electricity networks serving the Auckland region into an intelligent energy system where customers have more choice and control.

1.2 What is in this AMP?

1.2.1 AMP UPDATE

In March 2021, we published a comprehensive Asset Management Plan, which is available on our website www.vector.co.nz. This Asset Management Plan Update (2022 AMP Update) is structured to meet the disclosure requirements. We have not attempted to duplicate the detailed explanations provided in our previously published, comprehensive AMP and we would encourage readers to revert to our 2021 AMP whenever a greater level of detail is required.

This 2022 AMP Update is limited to providing information on material changes to the previous AMP including those relating to our network development plans and asset replacement and renewal strategies.

- Section 1 provides an overview of our approach to managing uncertainty in our planning horizons and sets out some examples of how we continue to embed our Symphony strategy to deliver our vision of creating a new energy future.
- Section 2 provides context of the material changes that have occurred since our last published AMP that have influenced our network development plans and asset replacement and renewal strategies. This Section also identifies any material changes to our asset management practices.
- Section 3 presents an update of our capital and operational expenditure forecasts for the electricity distribution network assets for the 10-year planning period (1 April 2022 to 31 March 2032) and provides an overview of major variances between this planning period and our previous disclosure (2021 AMP).
- The Appendices presented in Section 4 set out a summary of the changes that have affected our investment forecasts relative to our previous disclosure, our updated Disclosure Schedules, and the Director's Certificate.

1.2.2 AMP PURPOSE STATEMENT

This AMP is intended to provide transparency to our customers, staff and stakeholders over the context in which we make investment decisions and how our asset management practices support the decision-making process.

1.2.3 AMP PLANNING PERIOD

This AMP covers a 10-year planning period, from 1 April 2022 to 31 March 2032. Consistent with Information Disclosure requirements, a greater level of detail is provided for the first five years of this period.

1.2.4 CERTIFICATION DATE

This AMP was certified and approved by our Board of Directors on 30 March 2022.

1.3 Information Disclosure Requirements

Clause 2.6.3 in the Electricity Distribution Information Disclosure Determination 2012 requires Vector Ltd to complete and publicly disclose, before 1 April 2022, an AMP Update.

Clause 2.6.5 states that the AMP Update must:

i. Relate to the electricity distribution services supplied by the electricity distribution business (EDB);

ii. Identify any material changes to the network development plans disclosed in the last AMP (or AMP Update) per clause 11 of Attachment A or in the last AMP update disclosed under this clause;

iii. Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP pursuant to clause 12 of Attachment A or in the last AMP Update disclosed under this section;

iv. Provide the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b; and

v. Identify any changes to the asset management practices of the EDB that would affect Schedule 13 Report on Asset Management Maturity disclosure.

In addition, clause 2.6.6 requires each EDB to publicly disclose the following reports before the start of each disclosure year:

- Forecast Capital Expenditure in Schedule 11a
- Forecast Operational Expenditure in Schedule 11b
- Asset Condition in Schedule 12a
- Forecast Capacity in Schedule 12b
- Forecast Network Demand in Schedule 12c
- Forecast Interruptions and Duration in Schedule 12d

1.4 Managing uncertainty in planning horizons

This Asset Management Plan sets out our view of the investments we believe will deliver the best outcomes, however we note that, particularly given the uncertainty over future electricity demand, we are not bound to follow the investments described here as we update our views on how to best deliver for our customers. Each investment we make goes through appropriate governance processes to ensure it is delivering against our strategy.

We are facing uncertainty at unprecedented levels around future electricity demand, the impact of climate change and associated policy response, and the extent of regulatory change required to support new technology investment to avoid over investment in traditional assets in our network. In the immediate term, there are also significant supply chain disruptions associated with the Covid-19 pandemic.

The Government is due to respond to the Climate Change Commission's advice, and it's policy response has the potential to have a material impact on electricity distribution networks, both in terms of electric vehicles (EVs) and a transition away from fossil fuel to electricity. As such, the degree of any certainty within our forecasts is significantly lower given we do not know, particularly in these changing times, what may happen.

To this end, we have developed our AMP with a higher degree of accuracy in the near term and reducing level of accuracy thereafter. Given the rate of change in technology, we continuously look for the optimal solution, whether this is through the use of new and emerging digital technologies or optimising existing network solutions.

1.4.1 COVID-19 PANDEMIC

Vector continues to work hard to minimise the ongoing uncertainty and disruption related to the Covid-19 pandemic. As a provider of critical infrastructure services, we took early steps to protect all our people, and in particular those in critical roles, to ensure the safe and reliable operation of our electricity network. Under lengthy periods of lockdown, when our customers are based at home and even more reliant on the continuity of power, we took steps, where possible, to minimise disruption from planned outages and maintenance activity. Towards the end of 2021, as our national response transitioned away from Alert Levels to a traffic light system, we adapted our approach to planned outages and maintenance activity, to ensure we continue to provide a safe and reliable electricity network.

In response to the pandemic we have introduced significant changes to our operating model, including; standing up a second electricity control centre, splitting our critical workforce and providing facilities that allow physical isolation of the operational team, implementing and maintaining field force crew bubbles to help to slow the rate of Covid transmission, and extended periods of working from home for all non-critical workforce. Our planned shift to new premises in 2023 will also help to mitigate future pandemic risk with our workforce operating in a modern HVAC environment.

Our pandemic response plan is designed to ensure the safety and wellbeing of our people, and communities, and the continuity of the critical services we provide. Our Pandemic Response Team actively monitors incidents and evolving situations and determines our level of operational response according to our plan.

1.4.2 SUPPLY CHAIN UNCERTAINTY

Over the last 12 months we have observed high levels of volatility on the supply side of network maintenance and capital delivery (construction). Supplier lead times and costs for network equipment have increased significantly due to disruption to international and domestic freight routes, resource constraints and a surge in demand from consumer goods manufacturers competing for raw materials needed by the electricity sector.

Surging demand for EVs has increased the requirement for specialised materials such as silicon steel, commonly used in the fabrication of power and distribution transformers. We anticipated these pressures in early 2020, taking action to increase inventory levels and partner with strategic suppliers for greater visibility of supply chain risk. This work continued in 2021 with the development of pricing models to help mitigate against price shocks. We expect that 2022 will see continued volatility in the availability and price of raw materials, labour and freight, with domestic freight a particular area of concern.

1.4.3 DECARBONISATION

The energy sector is responsible for 42% of New Zealand's national greenhouse gas emissions, and Vector welcomes the role we can play in the decarbonisation transition. The government strategy to decarbonise the energy sector primarily relies on the electrification of transport and industry, while expanding intermittent renewable generation capacity such as wind and solar. Vector acknowledges that decarbonisation can be driven in an orderly transition, where policy, regulatory settings, societal needs, and technology are in alignment to produce the best outcome for society while achieving our targets. However, a disorderly decarbonisation with misaligned stakeholders and delayed action holds risks for both Vector and wider society. Vector actively engages with the public sector, regulatory bodies, consumers, technological partners and wider industry to drive the orderly decarbonisation strategy. We have therefore been working closely with government to shape the response of the Climate Change Commission[1], and most recently the National Emission Reduction Plan[2].

We primarily advocate for an alignment of regulatory and policy frameworks to drive investment in demand side management and optimised network utilisation to enable large-scale electrification. These investments must occur now to reduce future forecasted customer costs attributed to the peak load impact of disorderly decarbonisation. In particular, we stress the importance of mandated/incentivised smart electric vehicle charging regulations to defer future network upgrades, providing equity across EV and non-EV owners.

Vector also has its own internal decarbonisation goals, to reach 53.5% reduction in Scope 1 and 2 greenhouse gas emissions (excluding electricity line losses) by 2030 from a 2020 baseline. The current strategy focuses on better management of mobile diesel generators to reduce unnecessary generation. For example, we have trialled the use of mobile transformers as an alternative to diesel generators during transformer upgrades. Such initiatives not only reduce emissions, but also noise, urgency of the shutdown window, and overall cost. We have also started exploring Scope 3 emission reductions, which is dominated by fuel used by Field Service Providers. Reducing fuel use requires a transition to an electric fleet, however the current cost of pre-production electric trucks forms a cost barrier that will require additional investment support.

1.5 Investing in the network of the future: embedding Symphony

The following examples illustrate some of the ways Vector is investing in the network of the future, while delivering on the near-term needs of our customers and our commitment to quality compliance.

1.5.1 STRATEGIC RELIABILITY MANAGEMENT

Over recent years we have accelerated specific programmes of work that reflect our commitment to quality compliance and the outcomes customers experience through the regulatory quality compliance framework.

The Strategic Reliability Management Plan (SRMP) specifies how we will ensure compliance with quality standards and sustain this performance in future years, while not compromising health and safety outcomes, to meet the expectations of our customers and other stakeholders. The reliability objectives and reliability strategies within the SRMP are a subset of Vector's broader set of asset management objectives.

The SRMP builds upon the actions taken as part of our response to our reliability performance from RY2016-21, with a heightened focus on initiatives aimed at improving outage duration times, which has been identified as Vector's key reliability challenge. There is an annual review process for the SRMP at the end of the regulatory year which assesses all components of unplanned SAIFI and SAIDI performance including contribution by cause and the effectiveness of the initiatives during that year.

Following that review process the SRMP is revised and some of the initiatives are embedded into business as usual practice while other new initiatives aligned to the reliability strategies are developed for the upcoming year and provided for in the expenditure profile. For RY22 we looked to build on our compliant performance of RY21 and the initiatives comprised:

- Programmes of work (POW) to reduce feeder size based on SAIDI criticality
- Reprioritisation of overhead asset POW in SAIDI critical areas
- Risk review of urban auto-recloser and sub-transmission manual reclose policies
- Review of Fault Passage Indicator (FPI) strategy and additional deployment POW
- Review of Fault Restoration strategy with FSPs and technology solutions to assist fault location
- Review of Vegetation strategy and link to quarterly cut planning
- Formation of a working party with Auckland Transport to enable data sharing for motor vehicle vs asset incidents
- Cost / benefit analysis of fixed relocatable generation at South Head and Piha
- Review of Bird strike mitigation strategy

We returned to quality compliance in RY21 and as at February 2022, unplanned SAIDI and SAIFI are on track to once again be compliant for RY22 despite more extreme weather events than the previous year. The SRMP and associated reliability management targets a margin below the regulatory limit to allow for the variability in network operating conditions from year to year.

[1] https://blob-static.vector.co.nz/blob/vector/media/vector-regulatory-disclosures/vector_submission_ccc_draft_advice.pdf

[2] https://blob-static.vector.co.nz/blob/vector/media/vector2021/vector_transitioning_to_low-emissions_climate-resilient_future_submission.pdf

1.5.2 INVESTING IN CYBER SECURITY

Digital platforms that reduce the cost and improve the efficiency and effectiveness of our core network operations are becoming increasingly important. Consequently, it is becoming even more critical to ensure safe and secure connectivity. At the same time, there is a rapidly escalating threat to cyber security. Vector has invested in improving our cyber security capabilities[3] and maturity and we will continue to do so. It is our view that allowance should be made for distribution businesses to invest in this capability, to ensure that, as the sector transforms, it does so safely and securely.

While we continue to prioritise and increase our own investment in cyber security, we also hold the view that as digitalisation continues to gain importance, allowance should be made for costs associated with procuring the necessary data. Partly because of these omissions from the current DPP regime, we are spending above our allowance in these areas.

1.5.3 IMPROVING CUSTOMER EXPERIENCE THROUGH DIGITAL INVESTMENT

Our Symphony strategy designs solutions based on customer needs, so while we continue to meet investment requirements in delivering new connection requests, we also need to invest in delivering seamless, and great, experiences for our existing customers as they engage with us.

Through ongoing investment into, and development of, our customer experience capabilities, we have a continuous focus on incremental improvement to our communication capability, including self-service, proactive and inbound engagements.

1.5.4 ADVANCED DISTRIBUTION MANAGEMENT SYSTEM

Our investment in our Advanced Distribution Management System (ADMS) is progressing well with Phase I of the project nearing completion. The ADMS will introduce new functionality and capability to our operating model and include modules that provide outage management, electronic switching, automated fault identification and service restoration, as well as integration with Vector's Distributed Energy Resource Management System (DERMS), all of which are key requirements and enablers for our Symphony strategy.

1.5.5 STRATEGIC PARTNERSHIPS

A highlight from the past six months has been our announcement of our strategic collaboration with X on network virtualisation and simulation technology, including the virtualisation of the electricity network in Auckland. These tools will help us, and other transmission and distribution operators, simulate the likely impact of increasing solar and electric vehicles, and proactively invest and manage their networks to maintain a reliable and affordable energy supply.

The strategic collaboration with X is part of our shared vision to reimagine the design, management, and operation of electricity networks; get ahead of increasing demands for clean energy; and transform the network in order to support decarbonisation. Together with continued progress in our strategic alliance with Amazon Web Services to build the New Energy Platform, these initiatives reflect strongly our strategy of looking for the best partners to work with from around the world to transform our energy systems.

1.5.6 SUPPORTING ELECTRIFICATION OF TRANSPORT

Our long-term cooperation with Auckland Transport (AT) on enabling the large-scale bus electrification has transitioned far away from the drawing board and into reality. Boosted by AT's record order of 150 electric buses in 2021, the first electric bus depot is expected to be connected in 2022 and several others with partial or full electric depots will follow.

A network integration study with AT on Ferry electrification is also in progress and will be completed in 2022. The scope involves demand modelling, network design and cost estimation to provide ultra-fast charging across different Auckland ferry terminals.

In 2021, we have also completed our EV Smart Charging Trial with 200 EV owners. The trial demonstrated that smart charging can successfully integrate EVs into the network while delivering customer satisfaction. The trial has also filled a critical gap in international research about how customers feel about managed smart charging.

1.5.7 CLIMATE RESILIENCE

We prioritises climate risk as a critical risk for Vector with Board Risk and Assurance Committee oversight. We provide clear and transparent reporting of sustainability risks, opportunities, and metrics through our Annual Report and Task Force for Climate Related Financial Disclosures (TCFD).

In the context of the asset management plan, climate resilience refers to the ability of the electricity network to anticipate, absorb, accommodate and recover from the effects of a potentially hazardous event related to climate change. For detailed information, refer to our TCFD.

We consider the following to be key climate related risks to the electricity network:

- Increasing extreme wind speeds and cyclonic activity leading to further network disruption.
- Increasing risk of coastal inundation and freshwater flooding leading to asset damage.
- Cascading impacts of extreme winds and flooding leading to delays in network repair.
- Fire risks from reclosers after sustained dry weather.

The impacts of climate change are already materialising, and key controls have been put in place. Examples include a risk-based approach to vegetation management, relocation of assets to manage flood risks, and remotely disabling "risk of fire assets" during

[3] Vector Technology Services (VTS) has been established as our vehicle for providing Vector's electricity network and other EDBs with core technology-based services to underpin operations. These include services relating to both cyber security and the provision of Vector's DERMS platform.

periods of extended dry weather. We have also been trialling microgrid solutions for “grid-edge” resilience such as our Vehicle-To-Home trial and automated generation in Piha.

Knowledge of climate change impacts are still in development, and we are remaining abreast of the latest climate change risk research through our academic partners. Through these partnerships we are preparing the capabilities to forecast and continually monitor climate change impacts through till 2100 based on IPCC scenarios.

2 – Asset Management Plan Update

This Asset Management Plan provides an update on material changes since our last published AMP. While a number of factors (internal and external) continue to influence our network development plans and asset replacement and renewal strategies, our commitment to delivering a safe, reliable, and resilient electricity network to meet our customers' needs remains steadfast. Our commitments are underpinned by our Symphony strategy which is focused around delivering safe, cleaner, more reliable and affordable energy solutions that are developed with customers at the centre.

2.1 Material changes since our last published AMP

The following section presents a high-level overview of material changes that have occurred since our last published AMP that have influenced our network development plans and asset replacement and renewal strategies.

2.1.1 AUCKLAND GROWTH AND NETWORK REINFORCEMENT

- The 2022 AMP Update provides for an increased level of system growth based on updated Auckland Council building consent data and new customer connection forecasts. Our forecasts for ICPs and consequently load have increased over the mid-term (2-5 years). Building consents have been reaching new heights in recent years and we now expect that this was not a temporary rush but is part of a solid extended development boom that will keep pace over the mid-term. A notable contributor is Kainga Ora's long-term housing development plans, including projects in Glenn Innes, Mt Roskill, Mangere and Northcote.
- As a result of the increased level of growth and associated increase in load forecast, the reinforcement of the Highbury and Greenhithe zone substation is now necessary and the development of new zone substations at Redhills and Kumeu will be established over the 10-year planning period.
- Our long-term growth forecasts have not been affected by this mid-term shift and remain aligned with the Statistics New Zealand's long-term average population forecast.
- In addition to forecast ICP growth, Vector has experienced an unprecedented number of large customer connection requests over the past 12 months, particularly relating to new and committed data centres. The data centres are predominantly located in our Henderson and Silverdale planning areas and the anticipated load growth has required certain reinforcement (e.g. Millwater Zone Substation) and asset replacement investments to be brought forward to meet customer's development timeframes.

2.1.2 NETWORK DEVELOPMENT CONTRIBUTION

- From 1 December 2021, the amount customers pay for new electricity connections in Auckland increased. This is primarily because we changed the way we recover overall network growth costs, so that those who are driving the need to invest in network growth cover the costs of doing so. From 1 December 2021, when a customer adds a new connection to the electricity network, or upgrades an existing one, that customer will pay a contribution towards the capital investment we make in the infrastructure that supports overall network growth. This development contribution is in addition to paying the full cost of the connection at the point of supply.

2.1.3 INTEGRITY - ASSET REPLACEMENT

- Annual review of our asset replacement plans using condition-based assessment risk management (CBARM), asset condition and health data sets, and network performance insights (e.g. unexpected failures) help to inform our priorities.
- During FY22 Vector undertook to replace two sub-transmission cable circuits (8km) after experiencing several unplanned outages and unsuccessful attempts to repair the cables. The early generation cross linked polyethylene (XLPE) cables from these two circuits have presented signs of early deterioration and have prompted the development of a strategy to proactively replace the remaining 20km of this cable type. The 2022 AMP Update provides for the increased level of investment in sub-transmission cable asset replacement.
- Vector has further strengthened its asset replacement through the introduction and investment in our composite crossarms replacement programme aimed at extending the asset lifecycle and improving network performance in this area.
- Changes in Covid-19 alert settings and lockdowns have had a bullwhip effect on demand for network equipment, as customer and network projects are urgently paused and then accelerated. We have worked closely with suppliers to reduce the impact of these changes, building value partnerships through demand and cost transparency and more tightly integrated business planning. Vector has been able to use its "safety stock" of commonly used equipment to help to mitigate longer lead times and increased demand, reducing build risk. These inventory levels will need to be maintained in 2022. As the electricity network grows in scale and complexity so too does our investment in the acquisition, storage and maintenance of critical spares to manage the risk of a HILP failure of a strategic network asset.

2.1.4 NON- NETWORK DIGITAL

- The 2022 AMP Update provides for an increase in our investment in network transformation to support our Symphony strategy. Specifically, as we move towards a smarter network, our investment in distributed energy resources (DER) enablement, smart meter data use cases to support network maintenance and planning, investment on our advanced distribution management system (ADMS), and ongoing investment in our strategic collaboration with Google X.
- Cyber Security and IT/IOT Network modernisation continue to be a focus due to the ever-increasing cyber threat landscape. The profile of core non-network capex investment has changed in the 2022 AMP with areas of capital expenditure being reclassified as operational expenditure in accordance with a change to accounting standards relating to cloud-based services (IFRS 16, IAS 38).

2.1.5 IMPACT OF INFLATION

- The last year has seen an increase in cost pressure aligned to the global cost of raw materials, supply chain disruption and local labour resource issues. This has seen the Consumers Price Index (CPI) and the Producers Price Index (PPI) increase to 5.9% and 7.2% respectively on an annual basis.[4]
- The forecast expenditure profile utilises the inflators based on the Commission's methodology which were set for DPP3 in line with the longer-term historical inflation performance and the mid-point of the Reserve Bank of New Zealand (RBNZ) inflation target of circa 2%.
- The Opex inflator used in this AMP has been based upon New Zealand Institute of Economic Research (NZIER) forecasts for the Labour Cost Index (LCI) and PPI which has resulted in an Opex inflator of 4.5% in the current year trending down to 2.3% in 2026.
- The Capex inflator used in this AMP is based upon the actual Capital Goods Price Index (CGPI) and then applying other inflation indices' forecasts to calculate a Capex inflator of 4.5% in the current year trending down to 2.4% in 2026.
- Both of these inflators are higher than previous AMP forecasts and have a detrimental impact on the nominal expenditure forecasts which are used to compare to the expenditure allowances provided for by the Commission for DPP3.
- The longer-term inflator forecast is based upon the mid-point of the RBNZ inflation target of 2% which is in line with previous AMPs' forecasts.

2.2 Improving our Asset Management and Delivery

2.2.1 IMPROVED DATA-DRIVEN DECISION MAKING

Investment in our SAP Planned Maintenance (SAP-PM) system and further integration with our field service providers has enabled a consistent approach to the management and delivery of planned maintenance. In accordance with our refreshed suite of maintenance standards, the SAP-PM systems represent a step change in asset management and provides for improved asset data quality and volume.

Condition Based Asset Risk Management (CBARM) models for our primary distribution assets are progressively being developed and refined. Data from SAP-PM supports and underpins these models, which in turn inform our asset health knowledge and support the development of our asset strategy, renewal and replacement programme, and the AMP.

Vector has entered into an agreement with VIA Science Inc. to build and monitor the performance schedule for our power transformer fleet. The VIA Platform and associated health risk scores will underpin our CBARM approach - allowing Vector to actively monitor power transformer condition and help us inform our asset management practice and asset replacement investment forecasts.

2.2.2 EVOLUTION OF RISK-BASED APPROACH TO CORRECTIVE MAINTENANCE

We have continued our focus on becoming more risk based in our approach to corrective maintenance and vegetation management, in part through improvements in our systems and standards, such as those introduced through our SAP-PM project. The new systems and standards improve our asset lifecycle information and will enable long term improvements to reliability, performance and quality of service to our customers.

The risk-based approach, together with higher quality and more comprehensive asset lifecycle information delivers improved efficiency and reduced customer impact from planned works through work package optimisation.

2.2.3 ASSET MANAGEMENT PRACTICES

There have been no material changes to our asset management practices and ongoing improvement plans that underpinned our previous AMP that would affect a Schedule 13 Report on Asset Management Maturity.

[4] As at the December 2021 quarter https://www.stats.govt.nz/information-releases/business-price-indexes-december-2021-quarter

3 – Expenditure forecast

3.1 Overview

This section describes the CAPEX and OPEX forecasts for the electricity distribution network assets for the next 10-year planning period. It provides a high-level comparison with the forecast included in the 2021 AMP (published in March 2021), highlighting how our investment plan has evolved over the last year to both grow and improve the network to meet Auckland's needs.

The CAPEX and OPEX forecasts presented in this section align with Vector's planning process and financial year (FY) reporting period 1 July to 30 June. All figures presented are in 2022 dollars. The regulatory disclosure forecasts, in Appendix 1 and Appendix 2, are presented in regulatory year (RY) 1 April to 31 March, in both constant and nominal dollars, as per the Information Disclosure requirements.

3.2 CAPEX forecast

The forecast CAPEX update during the next 10-year planning period is presented below, based on our key asset management strategies, demand modelling and customer information available. These are grouped in the following categories:

- **Growth CAPEX** - forecast includes Customer Connection, System Growth and Relocations.
- **Integrity CAPEX** - forecast includes Asset Replacement and Renewal, and Reliability, Safety and Environment.
- **Non-network CAPEX** - forecast includes digital investment, and property and leases.

3.2.1 TOTAL CAPEX

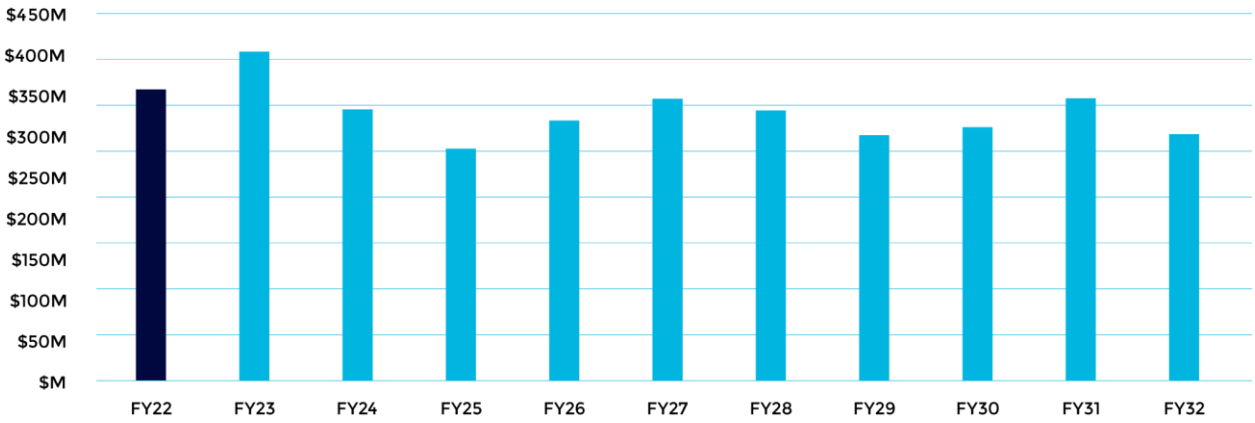


FIGURE 3-1: TOTAL CAPEX

Total capex averages $326m p.a. with expenditure profile reflecting the growth and integrity forecast (see detail in the following sections), which are punctuated by large significant projects for which there is more certainty in the short term. The higher FY23 expenditure includes provision for supply to six data centres and significant investment in reinforcement projects as well as recognition of a new office lease and associated fit out costs. The expenditure profile also aligns with network technology initiatives including ADMS deployment in FY23 and digital platform upgrades from FY26 onwards.

3.2.2 GROWTH CAPEX

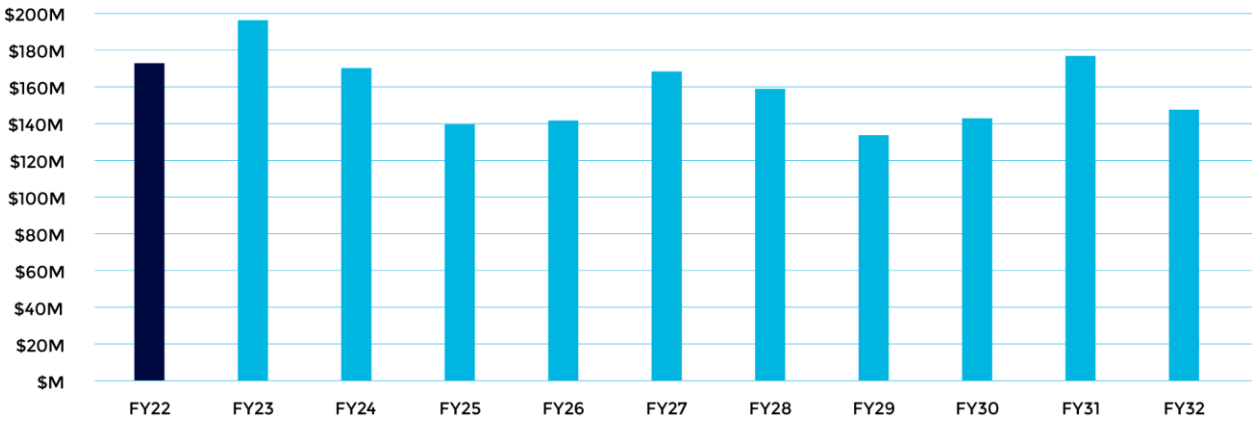


FIGURE 3-2: GROWTH CAPEX

The expenditure profile for Growth CAPEX are influenced by significant projects with large capital outlay. The higher spend in FY23 is driven by demand requirements for six data centres, reinforcement of Takapuna zone substation and large-scale future-proofing duct installation in Warkworth. The expenditure forecast in FY27 and FY31 reflects significant investment for new zone substations in Mangere South, Redhills (FY27) and Mt Eden (FY31), Newmarket zone substation upgrade and a new sub-transmission cable between Hobsonville and Kumeu (FY31).

No provision has been made for any network relocation or reinforcement associated with the proposed Auckland Light Rail infrastructure project due to project uncertainty and the lack of detail on route options and timing.

3.2.3 INTEGRITY CAPEX

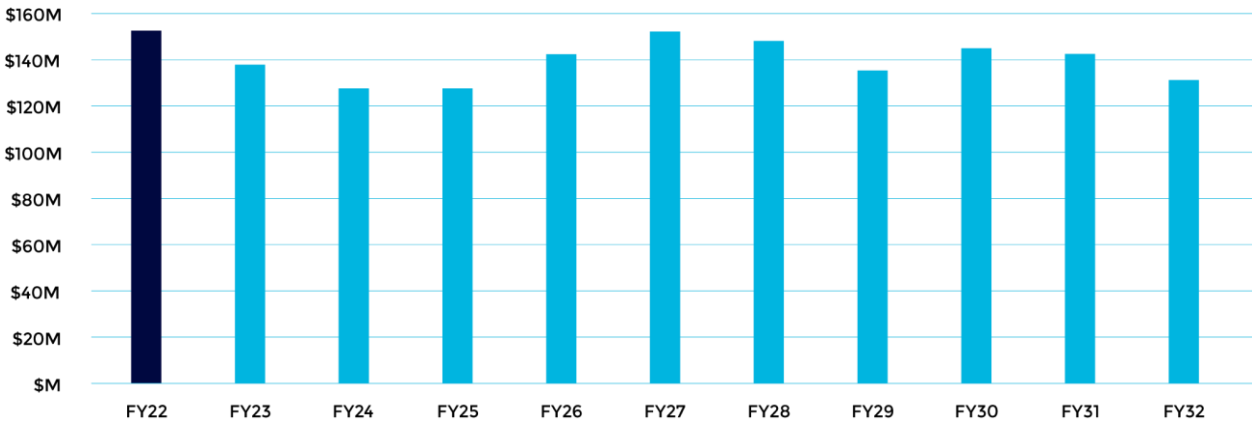


FIGURE 3-3: INTEGRITY CAPEX

FY22 expenditure is higher partly due to provision for a one-off increase in stock of $9m to mitigate supply chain risk. The expenditure from FY23 to FY32 are forecast to average circa $139m with the higher spend in FY27 and FY28 largely due to several sub-transmission cable replacements planned during that period.

3.2.4 NON-NETWORK DIGITAL CAPEX

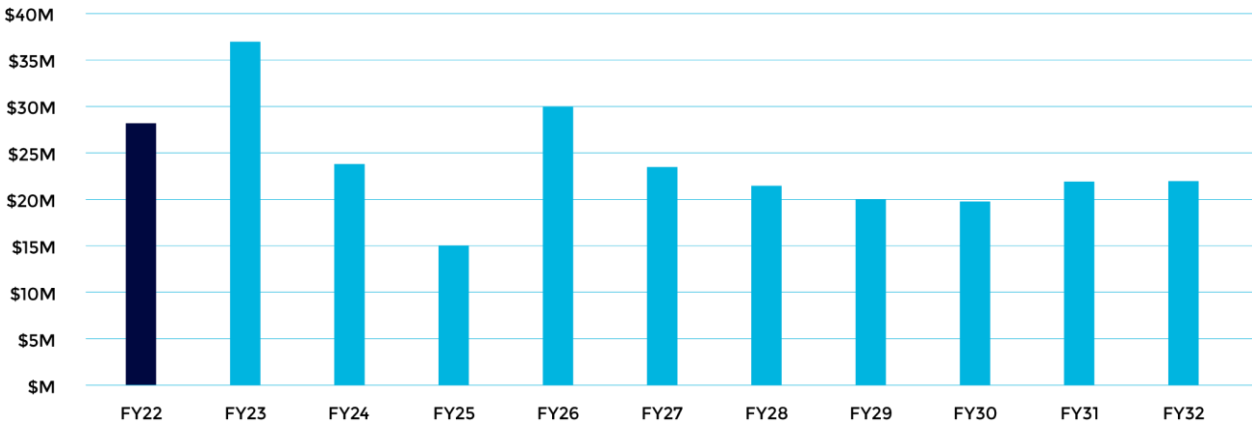


FIGURE 3-4: NON-NETWORK DIGITAL CAPEX

To respond to the fast-changing landscape and the uncertainty in the upcoming years, Digital investments have been brought forward to support the Symphony strategy. The expenditure in FY23 has increased due a delay in completing the planned phases of the ADMS programme. FY24-FY25 has reduced expenditure as we leverage the capabilities of the digital platforms that will have been recently deployed. With Digital investments, lifecycles are typically in the 3-5 year range hence from FY26 investments increase once more as Vector will replace, upgrade platforms or leverage new technologies.

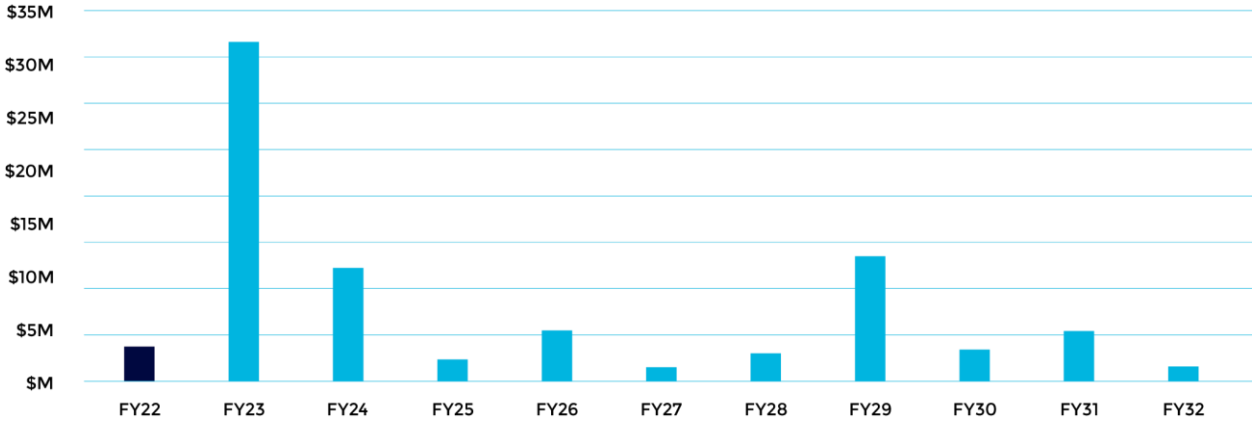


FIGURE 3-5: NON-NETWORK PROPERTY AND LEASES

FY23 reflects an agreement to lease new premises in part of 110 Carlton Gore Road and the provision for office fit-out costs. This will replace the existing premises at 101 and 103 Carlton Gore Road where the leases are now due to expire in 2023. The decision to move to a new building was based on more a competitive commercial deal, better working environment spread over fewer floors and better sustainability and carbon credentials.

Property and leases continue to reflect risk strategies to mitigate the impact of COVID-19 and supply chain risk with increased longer-term warehousing arrangements in FY24 and renewals in FY29.

3.3 CAPEX forecast variance to previous AMP

The forecast CAPEX during the next 10-year planning period is broken down into the key asset categories defined in the Commerce Commission's Electricity Distribution Information Disclosure Amendments Determination 2012 and shown in Table 3-1.

A re-categorisation of LV transformer expenditure ($162m, 10 year FY23-FY32) from Consumer connection to System Growth has occurred to align with the application of our network development contribution.

Figure 3-6 shows the difference between the 2022 and 2021 AMP expenditure forecasts year on year, with Table 3-2 breaking down the variance by expenditure categories.

KEY CAPEX CATEGORIES	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	TOTAL (FY23-32)
Customer Connection	92,510	85,732	73,237	61,142	58,226	64,408	55,478	54,387	49,527	49,527	644,174
System growth	69,150	49,844	35,709	50,179	79,112	63,553	47,247	57,536	96,287	67,021	615,637
Asset relocation	34,232	34,248	30,283	29,993	30,643	30,643	30,643	30,643	30,643	30,643	312,611
Asset replacement and renewal	104,649	92,964	95,996	101,472	112,604	111,075	97,351	107,152	104,211	93,487	1,020,961
Reliability, safety and environment	32,903	34,358	31,339	40,578	39,264	36,707	37,670	37,487	37,980	37,432	365,717
Non-network asset	68,851	34,406	17,023	34,651	24,719	24,031	31,679	22,669	26,570	23,282	307,880
Total Capex	**402,296**	**331,551**	**283,585**	**318,014**	**344,567**	**330,417**	**300,067**	**309,873**	**345,218**	**301,391**	**3,266,980**

TABLE 3-1: AMP 2022 CAPEX FORECAST (FINANCIAL YEAR, $'000 CONSTANT FY22)

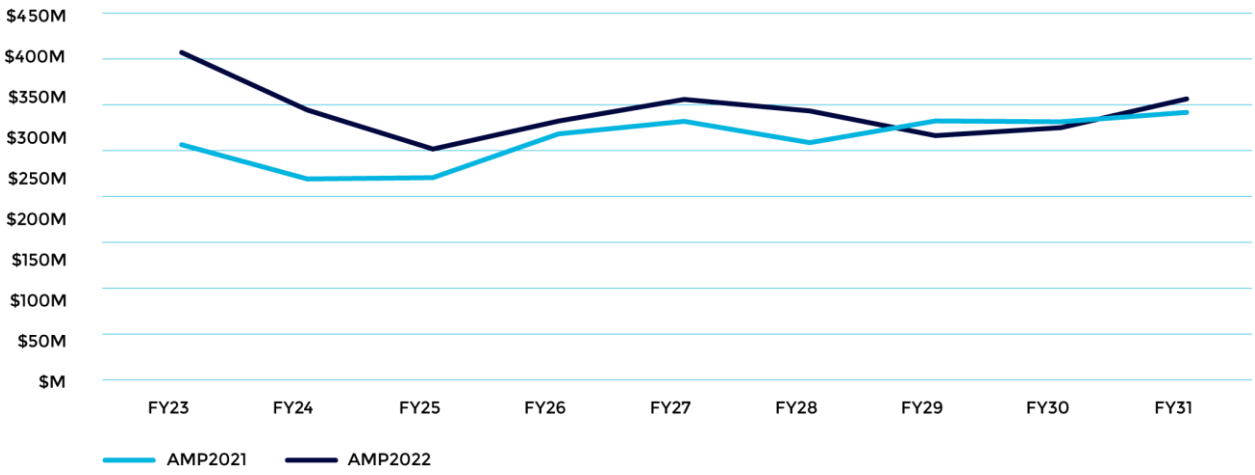


FIGURE 3-6: AMP 2022 VARIANCE TO AMP2021 CAPEX FORECAST (FINANCIAL YEAR, $M CONSTANT FY22)

KEY CAPEX CATEGORIES	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	TOTAL (FY23-31)
Customer Connection	27,158	26,446	13,141	8,710	694	2,286	(6,644)	(7,735)	(12,595)	51,460
System growth	41,975	40,679	22,920	12,540	42,900	28,333	(9,833)	5,004	37,950	222,467
Asset relocation	(3,047)	3,324	(947)	(1,184)	(534)	(534)	(534)	(534)	(534)	(4,526)
Asset replacement and renewal	106	1,387	(1,034)	(4,569)	(1,968)	11,256	4,348	(1,258)	(4,107)	4,161
Reliability, safety and environment	2,902	3,705	1,900	575	336	(1,197)	(3,758)	(1,868)	(1,813)	782
Non-network asset	44,299	9,193	(812)	(294)	(14,491)	(1,172)	(1,619)	(834)	(2,341)	31,928
Total Capex	**113,392**	**84,733**	**35,168**	**15,778**	**26,936**	**38,971**	**(18,041)**	**(7,225)**	**16,559**	**306,271**

TABLE 3-2: AMP 2022 VARIANCE TO AMP2021 CAPEX FORECAST TABLE (FINANCIAL YEAR, $'000 CONSTANT FY22)

3.3.1 EXPLANATION OF MAJOR NETWORK CAPEX VARIANCES

Key changes in Network CAPEX over the 9 years for which the 2021 AMP and 2022 AMP overlap are as follows:

- Consumer connection expenditure is $51m higher than the previous AMP, driven by a higher number of residential development and connections forecast and an increase in large commercial customer connection expenditures ($201m). This is particularly dominant in the near term (FY23 to FY25). The increase is partially offset by the re-categorisation of LV transformer expenditure to System growth to align with the application of growth charges ($150m, 9 years FY23 to FY31).
- An increase of $222m in system growth expenditure is made up of $150m re-categorisation of LV transformers from the Consumer connection category and also in network reinforcement, in particular in the northern network. The increase in investment in network security reflects the increase in load forecast underpinned by a higher residential connection forecast and an increase in large commercial projects including data centres. Additional provisions are made for 22kV reinforcement to align with the cost sharing opportunity of the CRL (CBD) project and future network reinforcement for anticipated Kainga Ora developments.
- Asset relocation has reduced by $5m, largely attributed to the downsizing of the Mill Road and Redoubt Road projects. Similar to the previous AMP the Auckland Light Rail is not included in the forecast due to uncertainly of the project, its route options and timing.
- Asset Replacement and Renewal, and Reliability, Safety and Environment is forecast to be largely in line with the previous AMP ($5m higher). A re-prioritisation of the cable replacement programme will focus on replacement of early generation XLPE sub-transmission cables ($29m). A new programme that is a subset of the overhead replacement programme is set up to dedicate resources to target high risk aging crossarms ($33m).

3.3.2 EXPLANATION OF MAJOR NON-NETWORK CAPEX VARIANCES

Key changes in Non-network CAPEX over the 9 years for which the 2020 AMP and 2021 AMP overlap are as follows:

- Property and leasing costs have increased by $20m compared to the previous AMP and reflects an agreement to lease new premises in part of 110 Carlton Gore Road and additional provision for a new electricity control room and office fit-out costs. This property lease will replace the existing premises at 101 and 103 Carlton Gore Road where the leases were due to expire in 2027.
- Cyber Security and IT/IOT Network modernisation continue to be a focus due to the ever-increasing cyber threat landscape. The profile of core non-network capex investment has changed in the 2022 AMP with areas of capital expenditure ($11.5m) being reclassified as operational expenditure in accordance with a change to accounting standards relating to cloud-based services (IFRS 16, IAS 38).
- Provision for Phase II of our ADMS project to support our next phase of network operations transformation.
- New investment in Smart Meter Data initiatives as Vector invests in solutions that transforms data to unlock insights to support network maintenance and planning.
- Continued investment in our strategic collaboration with X on network virtualisation and simulation technology, including the virtualisation of the electricity network in Auckland.

3.4 OPEX Forecast

The forecast OPEX during the next 10-year planning period is presented in Figure 3-7 below, based on our key asset maintenance standards and operational structure. It is broken down into the key asset categories defined in the Commerce Commission's Electricity Distribution Information Disclosure Amendments Determination 2012 and shown in Table 3-3. The total OPEX expenditure profile is consistent over the AMP horizon.

3.4.1 TOTAL OPEX

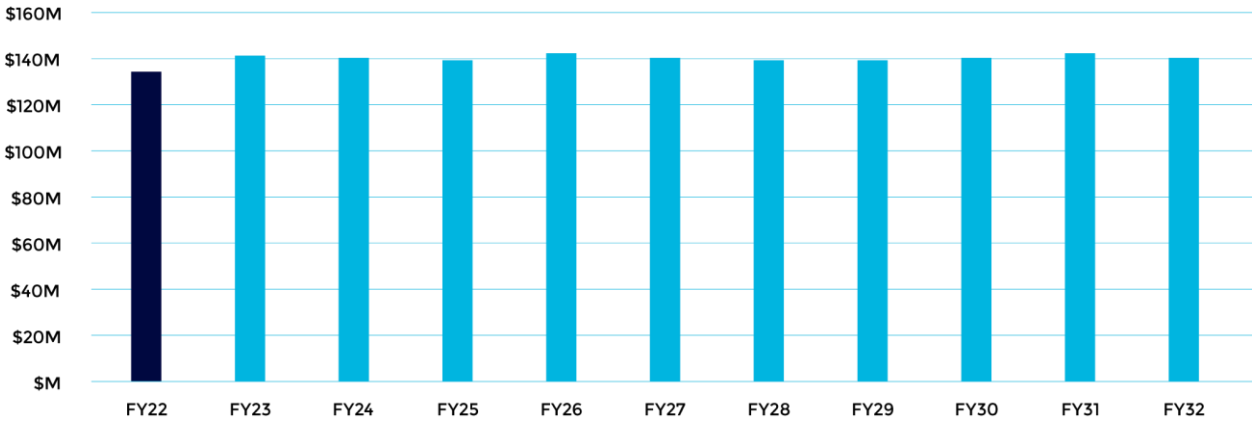


Figure 3-7: TOTAL OPEX (FINANCIAL YEAR, $'000 CONSTANT FY22)

AMP 2022 OPEX FORECAST (FINANCIAL YEAR, $'000 CONSTANT FY22)

AMP22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Service Interruptions and emergencies	14,049	14,156	14,264	14,372	14,482	14,592	14,703	14,816	14,929	15,044
Vegetation management	5,303	5,147	5,021	4,910	4,814	4,719	4,627	4,536	4,447	4,360
Routine and corrective maintenance and inspection	20,407	20,458	20,526	22,466	20,730	20,921	20,891	21,011	22,957	21,221
Asset Replacement and renewal	15,038	14,333	13,629	13,629	13,456	12,467	12,467	12,467	12,467	12,467
System operations and network support	46,001	46,353	46,104	46,438	46,356	46,689	46,608	46,944	46,865	47,203
Business Support	39,887	39,887	39,887	39,887	39,887	39,887	39,887	39,887	39,887	39,887
Total OPEX	**140,686**	**140,333**	**139,429**	**141,701**	**139,724**	**139,276**	**139,184**	**139,661**	**141,553**	**140,182**

TABLE 3-3: OPEX FORECAST

3.5 OPEX forecast variance to previous AMP

Figure 3-7 shows the difference between the 2022 and 2021 AMP expenditure forecasts year on year, with Table 3-24 breaking down the variance by expenditure categories.

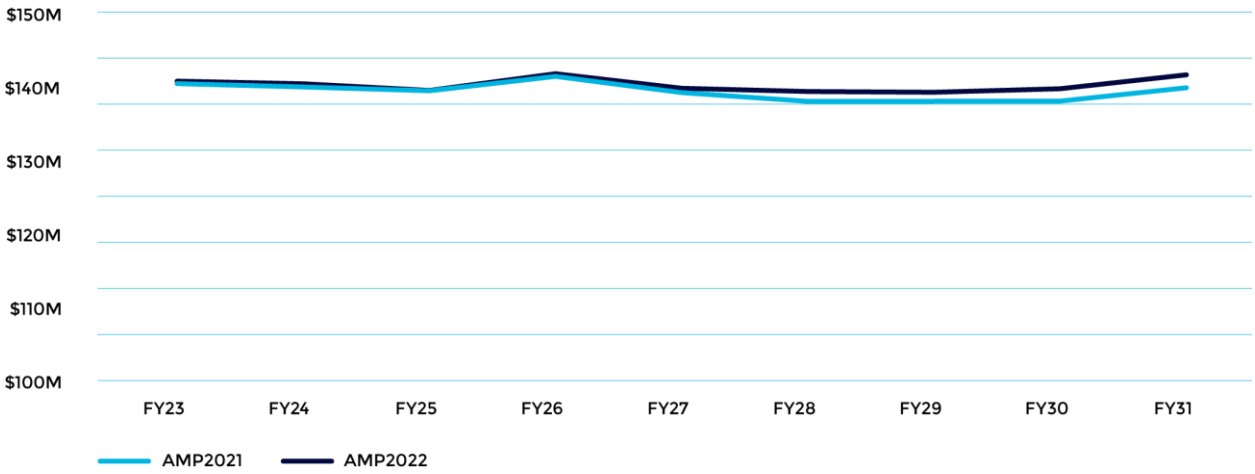


FIGURE 3-8: AMP 2022 VARIANCE TO AMP2021 OPEX FORECAST (FINANCIAL YEAR, $M CONSTANT FY22)

AMP 2022 VARIANCE TO AMP 2021 OPEX FORECAST (FINANCIAL YEAR, $' 000 CONSTANT FY22)

AMP22 V AMP21	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	TOTAL
Service Interruptions and emergencies	(1,358)	(1,325)	(1,291)	(1,255)	(1,220)	(1,186)	(1,152)	(1,118)	(1,085)	(10,990)
Vegetation management	(115)	(177)	(206)	(214)	(210)	(205)	(201)	(197)	(194	(1,719)
Routine and corrective maintenance and inspection	540	605	697	851	947	1,153	1,137	1,277	1,454	8,662
Asset Replacement and renewal	489	489	489	489	489	489	489	489	489	4,402
System operations and network support	1,505	1,566	1,084	1,220	1,311	1,817	1,681	1,961	1,825	13,969
Business Support	(727)	(727)	(727)	(727)	(727)	(727)	(727)	(727)	(727)	(6,545)
Total OPEX	**335**	**430**	**46**	**364**	**590**	**1,340**	**1,227**	**1,684**	**1,763**	**7,779**

Table 3-4: AMP 2022 VARIANCE TO AMP 2021 OPEX FORECAST (FINANCIAL YEAR, $'000 CONSTANT FY22)

3.5.1 EXPLANATION OF MAJOR OPEX VARIANCES

Key changes in Network OPEX over the 9 years for which the 2021 AMP and 2022 AMP overlap are as follows:

- Service Interruptions and emergencies is $10.9m lower due to the reallocation of spend to planned and corrective maintenance, and a small reduction in the expected level of exceptional maintenance expenditure for major weather-related events.
- An increase of $8.6m in Routine and Corrective Maintenance primarily driven by higher planned maintenance costs (largely reallocated from Service Interruptions and emergencies) caused by an increased allowance for time and materials, and an increase in asset dismantling and removal costs due to an uptake in asset removals on the network.
- Asset Replacement and renewal is $4.4m higher primarily due to the reallocation of spend from Service Interruptions and Emergencies activities into the Asset Replacement and renewal programme of work.
- Systems operations and network support expenditure is forecasted to be $13.9m higher due to digital platform charges from increased investment in digitalisation of the Network and increased third party services from greater activity in non-recoverable services. This is slightly offset by lower external network data communications costs
- Business Support costs have decreased by $6.5m due to indirect costs savings as well as a higher proportion of staff working on capital projects.

Company Name	**Vector Electricity**
AMP Planning Period	**1 April 2022 – 31 March 2032**

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 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**
	11a(i): Expenditure on Assets Forecast		**$000 (in nominal dollars)**										
	Consumer connection		111,191	89,557	91,524	81,937	70,485	66,057	71,844	67,275	64,993	61,541	61,270
	System growth		38,052	73,275	56,159	41,318	50,189	79,027	75,634	58,709	64,129	103,062	90,239
	Asset replacement and renewal		129,338	120,865	100,889	102,717	110,526	123,678	128,032	118,085	125,131	127,933	119,576
	Asset relocations		21,745	35,582	35,775	33,489	32,959	34,082	34,949	35,647	36,360	37,088	37,829
	Reliability, safety and environment:												
	Quality of supply		1	-	-	-	-	-	-	-	-	-	-
	Legislative and regulatory		102	-	-	-	-	-	-	-	-	-	-
	Other reliability, safety and environment		11,113	26,839	34,953	33,824	41,288	43,571	41,920	42,854	43,832	45,094	45,647
	Total reliability, safety and environment		11,216	26,839	34,953	33,824	41,288	43,571	41,920	42,854	43,832	45,094	45,647
	Expenditure on network assets		311,542	346,118	319,300	293,285	305,447	346,415	352,379	322,570	334,445	374,718	354,561
	Expenditure on non-network assets		25,642	67,197	45,063	22,945	33,246	30,500	27,680	34,724	29,654	31,064	29,838
	Expenditure on assets		337,184	413,315	364,363	316,230	338,693	376,915	380,059	357,294	364,099	405,782	384,399
	plus Cost of financing		5,470	7,652	6,839	5,794	6,399	7,522	7,456	6,844	7,040	8,443	7,922
	less Value of capital contributions		125,740	137,281	163,103	163,227	206,960	203,820	206,821	200,231	196,671	184,435	184,540
	plus Value of vested assets												
	Capital expenditure forecast		216,914	283,686	208,099	158,797	138,132	180,617	180,694	163,907	174,468	229,790	207,781
	Assets commissioned		197,426	288,185	194,994	150,347	136,352	176,572	198,601	164,784	160,500	223,013	233,594

			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 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**
			$000 (in constant prices)										
	Consumer connection		111,191	86,553	86,108	75,208	63,197	58,065	61,914	56,840	53,835	49,976	48,780
	System growth		38,052	70,817	52,836	37,925	44,999	69,466	65,180	49,602	53,119	83,694	71,844
	Asset replacement and renewal		129,338	116,811	94,919	94,282	99,097	108,715	110,336	99,768	103,648	103,891	95,201
	Asset relocations		21,745	34,388	33,658	30,739	29,551	29,959	30,118	30,118	30,118	30,118	30,118
	Reliability, safety and environment:												
	Quality of supply		-	-	-	-	-	-	-	-	-	-	-
	Legislative and regulatory		102	-	-	-	-	-	-	-	-	-	-
	Other reliability, safety and environment		11,113	25,939	32,885	31,046	37,019	38,300	36,126	36,207	36,307	36,620	36,342
	Total reliability, safety and environment		11,215	25,939	32,885	31,046	37,019	38,300	36,126	36,207	36,307	36,620	36,342
	Expenditure on network assets		311,541	334,508	300,406	269,200	273,863	304,505	303,674	272,535	277,027	304,299	282,285
	Expenditure on non-network assets		25,642	64,943	42,397	21,061	29,808	26,810	23,854	29,338	24,563	25,226	23,756
	Expenditure on assets		337,183	399,451	342,803	290,261	303,671	331,315	327,528	301,873	301,590	329,525	306,041
	Subcomponents of expenditure on assets (where known)												
	Energy efficiency and demand side management, reduction of energy losses												
	Overhead to underground conversion		9,168	8,214	10,952	10,952	10,952	10,952	10,952	10,952	10,952	10,952	10,952
	Research and development		-	-	-	-	-	-	-	-	-	-	-

		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 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32
Difference between nominal and constant price forecasts		$000										
Consumer connection		-	3,004	5,416	6,729	7,288	7,992	9,930	10,435	11,158	11,565	12,490
System growth		-	2,458	3,323	3,393	5,190	9,561	10,454	9,107	11,010	19,368	18,395
Asset replacement and renewal		-	4,054	5,970	8,435	11,429	14,963	17,696	18,317	21,483	24,042	24,375
Asset relocations		-	1,194	2,117	2,750	3,408	4,123	4,831	5,529	6,242	6,970	7,711
Reliability, safety and environment:												
Quality of supply		1	-	-	-	-	-	-	-	-	-	-
Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment		-	900	2,068	2,778	4,269	5,271	5,794	6,647	7,525	8,474	9,305
Total reliability, safety and environment		1	900	2,068	2,778	4,269	5,271	5,794	6,647	7,525	8,474	9,305
Expenditure on network assets		1	11,610	18,894	24,085	31,584	41,910	48,705	50,035	57,418	70,419	72,276
Expenditure on non-network assets		-	2,254	2,666	1,884	3,438	3,690	3,826	5,386	5,091	5,838	6,082
Expenditure on assets		1	13,864	21,560	25,969	35,022	45,600	52,531	55,421	62,509	76,257	78,358

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
11a(ii): Consumer Connection						
*Consumer types defined by EDB**	$000 (in constant prices)					
Service Connection	22,089	18,261	17,719	16,922	15,693	14,627
Customer Substations	36,350	26,273	27,844	19,699	11,688	10,028
Business subdivisions	2,618	1,230	928	928	928	928
Residential Subdivisions	45,037	36,684	35,867	34,074	31,303	28,897
Capacity Changes	3,316	2,948	2,522	2,357	2,357	2,357
Street Lighting	1,769	1,151	1,228	1,228	1,228	1,228
Easements	12	6	-	-	-	-
**include additional rows if needed*						
Consumer connection expenditure	111,191	86,553	86,108	75,208	63,197	58,065
less Capital contributions funding consumer connection	112,882	87,873	87,426	76,360	64,166	58,955
Consumer connection less capital contributions	(1,691)	(1,320)	(1,318)	(1,152)	(969)	(890)
11a(iii): System Growth						
Subtransmission	12,900	8,527	4,514	938	5,219	10,510
Zone substations	7,868	19,106	9,647	7,393	10,490	26,009
Distribution and LV lines	906	1,794	756	930	2,293	3,097
Distribution and LV cables	5,968	33,828	35,269	27,512	26,151	28,159
Distribution substations and transformers	8,683	6,601	4	-	-	-
Distribution switchgear	402	86	-	-	-	-
Other network assets	1,325	875	2,646	1,152	846	1,691
System growth expenditure	38,052	70,817	52,836	37,925	44,999	69,466
less Capital contributions funding system growth	538	24,261	46,001	56,326	105,933	104,778
System growth less capital contributions	37,514	46,556	6,835	(18,401)	(60,934)	(35,312)

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
11a(iv): Asset Replacement and Renewal	**$000 (in constant prices)**						
Subtransmission		16,264	3,386	2,599	830	1,711	12,328
Zone substations		23,842	34,962	21,129	26,380	29,281	27,805
Distribution and LV lines		16,002	14,692	12,134	12,007	11,980	11,987
Distribution and LV cables		36,584	32,990	31,574	28,899	30,311	31,170
Distribution substations and transformers		8,443	6,498	5,719	5,513	5,465	5,469
Distribution switchgear		14,735	16,811	16,824	16,595	16,541	16,095
Other network assets		13,468	7,472	4,940	4,058	3,808	3,861
Asset replacement and renewal expenditure		129,338	116,811	94,919	94,282	99,097	108,715
less Capital contributions funding asset replacement and renewal							
Asset replacement and renewal less capital contributions		129,338	116,811	94,919	94,282	99,097	108,715

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
11a(v): Asset Relocations							
*Project or programme**	**$000 (in constant prices)**						
Overground to underground conversions		9,168	8,214	10,952	10,952	10,952	10,952
**include additional rows if needed*							
All other project or programmes - asset relocations		12,577	26,174	22,706	19,787	18,599	19,007
Asset relocations expenditure		21,745	34,388	33,658	30,739	29,551	29,959
less Capital contributions funding asset relocations		12,320	20,541	20,024	17,137	15,461	15,428
Asset relocations less capital contributions		9,425	13,847	13,634	13,602	14,090	14,531

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
11a(vi): Quality of Supply							
*Project or programme**	**$000 (in constant prices)**						
**include additional rows if needed*							
All other projects or programmes - quality of supply							
Quality of supply expenditure		-	-	-	-	-	-
less Capital contributions funding quality of supply							
Quality of supply less capital contributions		-	-	-	-	-	-

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27

11a(vii): Legislative and Regulatory

*Project or programme**	$000 (in constant prices)					
*include additional rows if needed						
All other projects or programmes - legislative and regulatory	102	-	-	-	-	-
Legislative and regulatory expenditure	102	-	-	-	-	-
less Capital contributions funding legislative and regulatory						
Legislative and regulatory less capital contributions	102	-	-	-	-	-

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27

11a(viii): Other Reliability, Safety and Environment

*Project or programme**	$000 (in constant prices)					
*include additional rows if needed						
All other projects or programmes - other reliability, safety and environment	11,113	25,939	32,885	31,046	37,019	38,300
Other reliability, safety and environment expenditure	11,113	25,939	32,885	31,046	37,019	38,300
less Capital contributions funding other reliability, safety and environment						
Other reliability, safety and environment less capital contributions	11,113	25,939	32,885	31,046	37,019	38,300

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27

11a(ix): Non-Network Assets

Routine expenditure

*Project or programme**	$000 (in constant prices)					
*include additional rows if needed						
All other projects or programmes - routine expenditure	6,032	20,267	18,515	9,005	11,830	9,472
Routine expenditure	6,032	20,267	18,515	9,005	11,830	9,472

Atypical expenditure

*Project or programme**						
*include additional rows if needed						
All other projects or programmes - atypical expenditure	19,610	44,676	23,882	12,056	17,978	17,338
Atypical expenditure	19,610	44,676	23,882	12,056	17,978	17,338
Expenditure on non-network assets	25,642	64,943	42,397	21,061	29,808	26,810

Company Name	**Vector Electricity**
AMP Planning Period	**1 April 2022 – 31 March 2032**

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 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	14,126	14,475	14,988	15,501	15,981	16,435	16,891	17,361	17,843	18,339	18,850
11	Vegetation management	6,044	5,491	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
12	Routine and corrective maintenance and inspection	20,934	21,138	21,686	22,330	24,496	24,056	24,208	24,722	25,316	27,664	27,176
13	Asset replacement and renewal	15,362	14,555	15,386	15,026	15,182	15,348	14,741	14,748	15,043	15,344	15,651
14	**Network Opex**	56,466	55,660	57,559	58,357	61,159	61,338	61,341	62,330	63,702	66,847	67,176
15	System operations and network support	46,067	46,322	49,075	50,262	51,641	52,729	54,052	55,158	56,542	57,702	59,151
16	Business support	38,765	40,890	42,307	43,427	44,434	45,351	46,258	47,183	48,127	49,089	50,071
17	**Non-network opex**	84,832	87,212	91,382	93,689	96,075	98,080	100,310	102,341	104,669	106,791	109,222
18	**Operational expenditure**	141,298	142,871	148,941	152,046	157,235	159,418	161,651	164,671	168,371	173,638	176,399

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 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	14,126	14,085	14,129	14,237	14,345	14,454	14,564	14,676	14,788	14,901	15,015
23	Vegetation management	6,044	5,344	5,186	5,052	4,938	4,838	4,743	4,650	4,559	4,469	4,382
24	Routine and corrective maintenance and inspection	20,934	20,571	20,445	20,509	21,981	21,164	20,873	20,899	20,981	22,471	21,655
25	Asset replacement and renewal	15,362	14,137	14,509	13,805	13,629	13,499	12,715	12,467	12,467	12,467	12,467
26	**Network Opex**	56,466	54,136	54,270	53,603	54,892	53,955	52,895	52,692	52,795	54,308	53,519
27	System operations and network support	46,067	45,043	46,265	46,166	46,354	46,376	46,606	46,629	46,860	46,885	47,119
28	Business support	38,765	39,781	39,887	39,887	39,887	39,887	39,887	39,887	39,887	39,887	39,887
29	**Non-network opex**	84,832	84,824	86,152	86,053	86,241	86,263	86,493	86,515	86,747	86,772	87,005
30	**Operational expenditure**	141,298	138,960	140,422	139,655	141,133	140,218	139,388	139,207	139,542	141,080	140,525
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and demand side management, reduction of											
33	energy losses											
34	Direct billing*											
35	Research and Development											
36	Insurance	3,475	3,677	3,794	3,895	3,985	4,067	4,149	4,232	4,316	4,403	4,491
37	** Direct billing expenditure by suppliers that direct bill the majority of their consumers*											
38												

39		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
40	for year ended	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**
41	**Difference between nominal and real forecasts**	**$000**										
42	Service interruptions and emergencies	-	391	858	1,264	1,636	1,981	2,327	2,685	3,055	3,438	3,834
43	Vegetation management	-	147	314	448	562	662	757	850	941	1,031	1,118
44	Routine and corrective maintenance and inspection	-	567	1,241	1,821	2,515	2,892	3,335	3,823	4,335	5,193	5,521
45	Asset replacement and renewal	-	418	876	1,222	1,554	1,849	2,027	2,281	2,576	2,876	3,183
46	**Network Opex**	-	1,523	3,289	4,754	6,267	7,383	8,446	9,639	10,907	12,539	13,657
47	System operations and network support	-	1,279	2,810	4,096	5,287	6,353	7,446	8,529	9,682	10,817	12,032
48	Business support	-	1,109	2,421	3,540	4,548	5,464	6,371	7,296	8,240	9,203	10,184
49	**Non-network opex**	-	2,388	5,231	7,636	9,834	11,817	13,817	15,826	17,922	20,019	22,217
50	**Operational expenditure**	-	3,911	8,520	12,391	16,102	19,200	22,263	25,464	28,829	32,558	35,874

Company Name	**Vector Electricity**
AMP Planning Period	**1 April 2022 – 31 March 2032**

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	H1	H2	H3	H4	H5	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%	0.1%	21.2%	34.5%	44.2%		4	6.3%
11	All	Overhead Line	Wood poles	No.	0.0%	2.6%	82.2%	9.8%	5.3%		4	33.3%
12	All	Overhead Line	Other pole types	No.	0.0%	0.0%	0.3%	0.1%	99.6%		4	-
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	0.0%	0.0%	91.1%	2.2%	6.6%		3	0.5%
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	0.0%	0.0%	72.3%	25.7%	1.9%		3	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	0.0%	1.5%	4.4%	39.3%	54.8%		2	2.6%
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km	0.0%	0.0%	0.0%	97.6%	2.4%		2	-
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	km	-	-	-	-	-		N/A	-
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	km	0.0%	11.2%	51.5%	32.9%	4.4%		2	30%
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	km	0.0%	0.0%	0.0%	85.8%	14.2%		2	-
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	km	0.0%	0.0%	0.0%	92.1%	7.9%		2	-
21	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Gas Pressurised)	km							N/A	
22	HV	Subtransmission Cable	Subtransmission UG 110kV+ (PILC)	km							N/A	
23	HV	Subtransmission Cable	Subtransmission submarine cable	km	0.0%	0.0%	7.6%	92.4%	0.0%		2	-
24	HV	Zone substation Buildings	Zone substations up to 66kV	No.	0.0%	0.0%	7.6%	69.7%	22.7%		4	1.7%
25	HV	Zone substation Buildings	Zone substations 110kV+	No.	0.0%	0.0%	0.0%	33.3%	66.7%		4	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	0.0%	1.1%	12.0%	14.3%	72.6%		3	1.1%
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	0.0%	7.4%	51.2%	9.1%	32.2%		3	17%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.							N/A	
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	0.0%	9.7%	77.8%	9.7%	2.8%		3	19%
30	HV	Zone substation switchgear	33kV RMU	No.	0.0%	0.0%	0.0%	84.2%	15.8%		3	-
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.	0.0%	0.0%	0.0%	45.0%	55.0%		3	-
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.	0.0%	0.0%	100.0%	0.0%	0.0%		3	-
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	0.0%	7.6%	26.0%	15.7%	50.8%		3	10%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.							N/A	

	Voltage	Asset category	Asset class	Units	Asset condition at start of planning period (percentage of units by grade) H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
39	HV	Zone Substation Transformer	Zone Substation Transformers	No.	0.0%	9.9%	44.1%	18.5%	27.5%		4	4.5%
40	HV	Distribution Line	Distribution OH Open Wire Conductor	km	0.0%	0.0%	85.5%	11.3%	3.1%		3	1.2%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km							N/A	
42	HV	Distribution Line	SWER conductor	km							N/A	
43	HV	Distribution Cable	Distribution UG XLPE or PVC	km	0.6%	0.3%	1.9%	18.8%	78.3%		2	0.8%
44	HV	Distribution Cable	Distribution UG PILC	km	0.3%	1.2%	3.2%	76.0%	19.3%		2	1.5%
45	HV	Distribution Cable	Distribution Submarine Cable	km	0.0%	0.0%	86.2%	13.8%	0.0%		2	-
46	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	0.0%	0.0%	7.5%	56.2%	36.4%		4	11.4%
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.	0.0%	0.0%	12.9%	9.2%	77.9%		4	-
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	1.8%	1.0%	44.4%	20.1%	32.7%		4	9.1%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	8.7%	1.2%	67.1%	15.8%	7.3%		3	9.8%
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	0.5%	1.2%	46.0%	19.1%	33.2%		3	2.7%
51	HV	Distribution Transformer	Pole Mounted Transformer	No.	2.0%	2.0%	46.0%	26.0%	23.0%		3	11.4%
52	HV	Distribution Transformer	Ground Mounted Transformer	No.	4.7%	19.2%	3.8%	12.8%	59.7%		3	2.1%
53	HV	Distribution Transformer	Voltage regulators	No.	0.0%	0.0%	0.0%	30.8%	69.2%		4	-
54	HV	Distribution Substations	Ground Mounted Substation Housing	No.	1.9%	0.9%	71.5%	10.8%	14.9%		4	2.8%
55	LV	LV Line	LV OH Conductor	km	0.0%	0.0%	87.3%	6.9%	5.7%		3	0.2%
56	LV	LV Cable	LV UG Cable	km	0.5%	5.0%	20.5%	39.1%	34.9%		2	5.5%
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km						100.0%	1	0.1%
58	LV	Connections	OH/UG consumer service connections	No.						100.0%	1	-
59	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	0.0%	1.0%	60.0%	21.7%	17.3%		3	1.0%
60	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	0.0%	3.9%	36.0%	40.9%	19.2%		4	3.9%
61	All	Capacitor Banks	Capacitors including controls	No.	0.0%	0.0%	73.1%	22.4%	4.5%		3	9.0%
62	All	Load Control	Centralised plant	Lot	0.0%	0.0%	100.0%	0.0%	0.0%		4	-
63	All	Load Control	Relays	No.							N/A	
64	All	Civils	Cable Tunnels	km	0.0%	0.0%	8.6%	0.0%	91.4%		4	-

Company Name	**Vector Electricity**
AMP Planning Period	**1 April 2022 – 31 March 2032**

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.

ch 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
9	Atkinson Road	20	21	N-1	19	92%	21	88%	No constraint within +5 years	Meets Vector security criteria
10	Auckland Airport	13	25	N-1	-	54%	25	63%	No constraint within +5 years	Meets Vector security criteria
11	Avondale	29	24	N-1 switched	23	120%	24	135%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
12	Bairds	24	24	N-1	23	98%	24	103%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
13	Balmain	9	-	N	8	-	-	-	No constraint within +5 years	Meets Vector security criteria
14	Balmoral	15	24	N-1	13	61%	24	70%	No constraint within +5 years	Meets Vector security criteria
15	Belmont	15	14	N-1 switched	11	107%	14	106%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
16	Birkdale	23	24	N-1	16	95%	24	93%	No constraint within +5 years	Meets Vector security criteria
17	Brickworks	9	-	N-1 switched	12	-	-	-	No constraint within +5 years	Meets Vector security criteria
18	Browns Bay	17	16	N-1 switched	14	108%	16	103%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
19	Bush Road	23	24	N-1	9	95%	24	96%	No constraint within +5 years	Meets Vector security criteria
20	Carbine	13	22	N-1	9	62%	22	64%	No constraint within +5 years	Meets Vector security criteria
21	Chevalier	22	19	N-1 switched	14	115%	24	96%	No constraint within +5 years	Capacity to be increased by subtransmission circuit replacement
22	Clendon	21	24	N-1	15	89%	24	104%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
23	Clevedon	2	-	N-1 switched	3	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup, Counties backup and Kawakawa Bay BESS
24	Coatesville	12	-	N	9	-	12	92%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup and 2nd transformer
25	Drive	24	24	N-1 switched	25	101%	24	124%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup.
26	East Coast Road	16	-	N	9	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup and express 11kV feeder from Rosedale.
27	East Tamaki	15	24	N-1	6	64%	24	85%	No constraint within +5 years	Meets Vector security criteria
28	Flatbush	21	24	N-1	9	87%	24	99%	No constraint within +5 years	Meets Vector security criteria
29	Forrest Hill	18	16	N-1 switched	17	109%	16	108%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
30	Freemans Bay	17	22	N-1	14	79%	22	95%	No constraint within +5 years	Meets Vector security criteria
31	Glen Innes	12	24	N-1	14	50%	24	71%	No constraint within +5 years	Meets Vector security criteria
32	Greenhithe	13	-	N	9	-	24	49%	No constraint within +5 years	Constraint relieved by the installation of the second transformer
33	Greenmount	41	48	N-1	30	85%	48	89%	No constraint within +5 years	Meets Vector security criteria
34	Gulf Harbour	9	-	N-1 switched	10	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
35	Hans	24	24	N-1 switched	14	100%	24	106%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
36	Hauraki	6	-	N-1 switched	8	-	-	-	No constraint within +5 years	Meets Vector security criteria
37	Helensville	13	9	N-1 switched	9	141%	9	133%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup and South Head Diesel generator
38	Henderson Valley	17	15	N-1 switched	19	109%	15	119%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
39	Highbrook	10	21	N-1	-	45%	21	47%	No constraint within +5 years	Meets Vector security criteria

40		Highbury	14	-	N	9	-	16	89%	No constraint within +5 years	Constraint relieved by the installation of the second transformer
41		Hillcrest	21	24	N-1	19	88%	24	102%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
42		Hillsborough	17	24	N-1	18	70%	24	81%	No constraint within +5 years	Meets Vector security criteria
43		Hobson 110/11kV	12	55	N-1	8	21%	55	28%	No constraint within +5 years	Meets Vector security criteria
44		Hobson 22/11kV	15	68	N-1	7	22%	68	24%	No constraint within +5 years	Meets Vector security criteria
45		Hobson 22kV	48	140	N-1	26	35%	140	48%	No constraint within +5 years	Meets Vector security criteria
46		Hobsonville	13	15	N-1	11	86%	15	148%	No constraint within +5 years	Meets Vector security criteria
47		Hobsonville Point	15	20	N-1	9	75%	20	173%	No constraint within +5 years	Meets Vector security criteria
48		Howick	41	48	N-1	17	85%	48	88%	No constraint within +5 years	Meets Vector security criteria
49		James Street	20	15	N-1 switched	19	130%	15	112%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
50		Kaukapakapa	4	-	N-1 switched	4	-	-	-	No constraint within +5 years	Meets Vector security criteria
51		Keeling Road	17	20	N-1	-	83%	20	88%	No constraint within +5 years	Meets Vector security criteria
52		Kingsland	24	24	N-1 switched	21	101%	24	115%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
53		Laingholm	9	9	N-1 switched	10	102%	9	99%	No constraint within +5 years	Meets Vector security criteria
54		Lichfield	16	20	N-1	-	80%	20	80%	No constraint within +5 years	Meets Vector security criteria
55		Liverpool	24	48	N-1	19	50%	48	80%	No constraint within +5 years	Meets Vector security criteria
56		Liverpool 22kV	76	247	N-1	34	31%	247	47%	No constraint within +5 years	Meets Vector security criteria
57		Mangere Central	33	48	N-1	19	68%	48	73%	No constraint within +5 years	Meets Vector security criteria
58		Mangere East	26	24	N-1 switched	23	110%	24	122%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
59		Mangere West	19	30	N-1	3	63%	30	95%	No constraint within +5 years	Meets Vector security criteria
60		Manly	21	14	N-1 switched	15	147%	14	143%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
61		Manukau	31	48	N-1	30	65%	48	71%	No constraint within +5 years	Meets Vector security criteria
62		Manurewa	41	48	N-1	40	86%	48	99%	No constraint within +5 years	Meets Vector security criteria
63		Maraetai	9	18	N-1	5	52%	18	57%	No constraint within +5 years	Meets Vector security criteria
64		McKinnon	19	24	N-1	15	78%	24	117%	No constraint within +5 years	Meets Vector security criteria
65		Mcleod Road	10	-	N-1 switched	10	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
66		McNab	38	48	N-1	22	79%	48	81%	No constraint within +5 years	Meets Vector security criteria
67		Milford	7	-	N-1 switched	8	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
68		Mt Albert	7	-	N	6	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
69		Mt Wellington	16	24	N-1	18	65%	24	87%	No constraint within +5 years	Meets Vector security criteria
70		New Lynn	14	14	N-1 switched	11	102%	14	122%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
71		Newmarket	39	48	N-1	31	80%	48	84%	No constraint within +5 years	Meets Vector security criteria
72		Newton	19	19	N-1 switched	19	102%	19	139%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
73		Ngataringa Bay	9	-	N	4	-	-	-	No constraint within +5 years	Constraint relieved by the installation of cables
74		Northcote	6	-	N-1 switched	7	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
75		Onehunga	15	15	N-1	12	99%	15	127%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
76		Orakei	22	22	N-1 switched	15	102%	22	114%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
77		Oratia	6	-	N	5	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
78		Orewa	21	22	N-1	10	92%	22	113%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
79		Otara	27	36	N-1	28	76%	36	83%	No constraint within +5 years	Meets Vector security criteria
80		Pacific Steel	19	44	N-1	-	43%	44	43%	No constraint within +5 years	Meets Vector security criteria

81		Pakuranga	22	24	N-1	11	92%	24	91%	No constraint within +5 years	Meets Vector security criteria
82		Papakura	27	23	N-1 switched	10	117%	23	127%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
83		Parnell	13	18	N-1	9	72%	18	90%	No constraint within +5 years	Meets Vector security criteria
84		Ponsonby	16	14	N-1 switched	10	110%	14	111%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
85		Quay	18	24	N-1	15	75%	24	93%	No constraint within +5 years	Meets Vector security criteria
86		Quay 22kV	42	120	N-1	23	35%	120	44%	No constraint within +5 years	Meets Vector security criteria
87		Ranui	15	-	N	14	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
88		Red Beach	19	23	N-1	13	85%	23	131%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
89		Remuera	27	24	N-1 switched	23	111%	24	117%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
90		Riverhead	13	9	N-1 switched	13	143%	9	152%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
91		Rockfield	21	24	N-1	25	89%	24	92%	No constraint within +5 years	Meets Vector security criteria
92		Rosebank	22	22	N-1	11	100%	22	113%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
93		Rosedale	14	24	N-1	11	57%	24	55%	No constraint within +5 years	Meets Vector security criteria
94		Sabulite Road	22	14	N-1 switched	20	157%	14	159%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
95		Sandringham	21	24	N-1	19	89%	24	126%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
96		Simpson Road	5	-	N-1 switched	9	-	-	-	No constraint within +5 years	Meets Vector security criteria
97		Snells Beach	8	-	N	6	-	-	-	No constraint within +5 years	Constraint relieved by the BESS and installation of 2nd transformer
98		South Howick	24	18	N-1 switched	16	132%	18	116%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
99		Spur Road	14	-	N-1 switched	15	-	-	-	No constraint within +5 years	Meets Vector security criteria
100		St Heliers	22	21	N-1 switched	21	105%	21	108%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
101		St Johns	21	24	N-1	16	89%	24	101%	No constraint within +5 years	Meets Vector security criteria
102		Sunset Road	15	14	N-1 switched	12	110%	14	112%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
103		Swanson	12	-	N	8	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
104		Sylvia Park	16	24	N-1	9	67%	24	73%	No constraint within +5 years	Meets Vector security criteria
105		Takanini	20	18	N-1 switched	19	109%	18	171%	Other	Individual feeder constraint relieved by new feeders
106		Takapuna	9	-	N-1 switched	9	-	20	57%	No constraint within +5 years	Constraint relieved by the installation of the second transformer
107		Te Atatu	23	14	N-1 switched	12	164%	14	160%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
108		Te Papapa	21	24	N-1	13	86%	24	86%	No constraint within +5 years	Meets Vector security criteria
109		Torbay	9	-	N	9	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
110		Triangle Road	15	12	N-1 switched	15	128%	12	146%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
111		Victoria	16	22	N-1	13	71%	22	88%	No constraint within +5 years	Meets Vector security criteria
112		Waiake	9	-	N	9	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
113		Waiheke	13	15	N-1	-	84%	15	89%	No constraint within +5 years	Meets Vector security criteria
114		Waikaukau	9	-	N-1 switched	9	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
115		Waimauku	12	-	N	8	-	-	-	Other	Constraint relieved by the installation of 2 voltage regulators,and in the future by 2nd 33kV circuit
116		Wairau Road	19	16	N-1 switched	16	119%	16	120%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
117		Warkworth	23	18	N-1 switched	14	126%	18	145%	No constraint within +5 years	Constraint relieved by the Omaha substation and demand response project
118		Wellsford	9	9	N-1	5	98%	9	100%	No constraint within +5 years	Meets Vector security criteria
119		Westfield	24	24	N-1	18	100%	24	120%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
120		Westgate	11	24	N-1	8	45%	24	96%	No constraint within +5 years	Meets Vector security criteria
121		White Swan	29	32	N-1	21	89%	32	121%	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
122		Wiri	43	43	N-1	20	100%	43	124%	Other	Individual feeder constraint relieved by new feeders and West Wiri zone substation
123		Woodford	9	-	N-1 switched	9	-	-	-	No constraint within +5 years	Meets Vector security criteria due to sufficient 11kV backup
29		[1] *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*									

Company Name	**Vector Electricity**
AMP Planning Period	**1 April 2022 – 31 March 2032**

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					
		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
	for year ended	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
*Consumer types defined by EDB**							
Residential & Small Medium Enterprise (SME)		14,052	15,870	15,077	14,324	13,002	12,077
Industrial & Commercial		192	182	173	164	145	131
Connections total		14,244	16,052	15,250	14,488	13,146	12,208

**include additional rows if needed*

Distributed generation

Number of connections		915	622	622	622	622	622
Capacity of distributed generation installed in year (MVA)		5	3	3	3	3	3

12c(ii) System Demand

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
Maximum coincident system demand (MW)	for year ended	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
GXP demand		1,803	1,862	1,922	1,977	2,039	2,094
plus Distributed generation output at HV and above		16	16	16	16	16	16
Maximum coincident system demand		1,819	1,878	1,938	1,993	2,055	2,110
less Net transfers to (from) other EDBs at HV and above							
Demand on system for supply to consumers' connection points		1,819	1,878	1,938	1,993	2,055	2,110
Electricity volumes carried (GWh)							
Electricity supplied from GXPs		8,572	8,829	8,672	8,716	8,741	8,746
less Electricity exports to GXPs							
plus Electricity supplied from distributed generation		136	136	136	136	136	136
less Net electricity supplied to (from) other EDBs							
Electricity entering system for supply to ICPs		8,707	8,965	8,808	8,852	8,877	8,882
less Total energy delivered to ICPs		8,368	8,619	8,473	8,516	8,540	8,544
Losses		340	346	335	336	337	338
Load factor		55%	55%	52%	51%	49%	48%
Loss ratio		3.9%	3.9%	3.8%	3.8%	3.8%	3.8%

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2022 – 31 March 2032**
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 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	117.1	117.1	117.1	117.1	117.1	117.1
12	Class C (unplanned interruptions on the network)	104.8	104.8	104.8	104.8	104.8	104.8
13	**SAIFI**						
14	Class B (planned interruptions on the network)	2.88	2.88	2.88	2.88	2.88	2.88
15	Class C (unplanned interruptions on the network)	1.34	1.34	1.34	1.34	1.34	1.34

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2022 – 31 March 2032**
Network / Sub-network Name	**Southern Network**

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

sch ref							
8		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
9	for year ended	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	50.4	50.4	50.4	50.4	50.4	50.4
12	Class C (unplanned interruptions on the network)	48.9	48.9	48.9	48.9	48.9	48.9
13	**SAIFI**						
14	Class B (planned interruptions on the network)	1.50	1.50	1.50	1.50	1.50	1.50
15	Class C (unplanned interruptions on the network)	0.64	0.64	0.64	0.64	0.64	0.64

Company Name	**Vector Limited**
AMP Planning Period	**1 April 2022 – 31 March 2032**
Network / Sub-network Name	**Northern Network**

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

sch ref							
8		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
9	for year ended	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	66.7	66.7	66.7	66.7	66.7	66.7
12	Class C (unplanned interruptions on the network)	56.0	56.0	56.0	56.0	56.0	56.0
13	**SAIFI**						
14	Class B (planned interruptions on the network)	1.38	1.38	1.38	1.38	1.38	1.38
15	Class C (unplanned interruptions on the network)	0.69	0.69	0.69	0.69	0.69	0.69

4.7 Appendix 7 - Mandatory Explanatory Notes on Forecast Information (Schedule 14a)

1. This Schedule requires EDBs to provide explanatory notes to reports prepared in accordance with clause 2.6.6.
2. This Schedule is mandatory - EDBs must provide the explanatory comment specified below, in accordance with clause 2.7.2. This information is not part of the audited disclosure information, and so is not subject to the assurance requirements specified in Section 2.8.

Commentary on the difference between nominal and constant price capital expenditure forecasts (Schedule 11a)

3. In the box below, comment on the difference between nominal and constant price capital expenditure for the current disclosure year and 10 year planning period, as disclosed in Schedule 11a.

BOX 1: COMMENTARY ON DIFFERENCE BETWEEN NOMINAL AND CONSTANT PRICE CAPITAL EXPENDITURE FORECASTS

Vector has used the capital expenditure inflator based on the model used by the Commerce Commission in its DPP price reset on 1 April 2020. We have used a forecast of the Capital Goods Price Index (CGPI) as the inflator.

The CGPI forecast is based on actuals observed to Sept 2021, which indicated the index was trending upwards in line with other inflation metrics. No external forecasting of the CGPI index is available so the index is assumed to reach a peak of 4.5% in the year to June 2022 trailing down to a long-term growth rate of 2.0% after June 2026, consistent with the expected reduction in other inflation metrics.

The constant price capital expenditure forecast is inflated by the above-mentioned index to convert to a nominal price capital expenditure forecast.

Commentary on the difference between nominal and constant price operational expenditure forecasts (Schedule 11b)

4. In the box below, comment on the difference between nominal and constant price operational expenditure for the current disclosure year and 10-year planning period, as disclosed in Schedule 11b.

BOX 2: COMMENTARY ON DIFFERENCE BETWEEN NOMINAL AND CONSTANT PRICE OPERATIONAL EXPENDITURE FORECASTS

Vector has used the operational expenditure inflator based on the model used by the Commerce Commission in its DPP price reset on 1 April 2020. We have used an inflator which is a mix of the Producer Price Index (PPI) and the Labour Cost Index (LCI). The weighting between PPI (40%) and LCI (60%) is as per the Commission's model.

Vector has used the NZIER (New Zealand Institute of Economic Research) November 2021 PPI (Producer Price Index-inputs) forecast up to March 2025. Thereafter, we have assumed a long-term PPI rate of 2.0%.

Vector has used the NZIER (New Zealand Institute of Economic Research) November 2021 LCI (All Sectors Index) forecast up to March 2026. Thereafter, we have assumed a long-term LCI rate of 2.0%.

The constant price operational expenditure forecast is inflated by the above-mentioned index to convert to a nominal price operational expenditure forecast.

4.8 Appendix 8 - Certification for Year-beginning Disclosures (Schedule 17)

Schedule 17 Certification for Year-beginning Disclosures

Clause 2.9.1

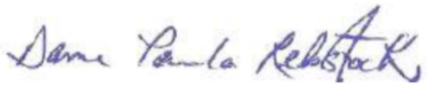
We, Bruce Turner, and Paul Hutchison, being directors of Vector Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) The following attached information of Vector Limited prepared for the purposes of clauses 2.6.3, 2.6.6 and 2.7.2 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 prepared on a basis consistent with regulatory requirements or recognised industry standards.

c) The forecasts in Schedules 11a, 11b, 12a, 12b, 12c,12d and 13 are based on objective and reasonable assumptions which both align with Vector Limited's corporate vision and strategy and are documented in retained records.

Director



Director

30 March 2022

Date

vector electricity

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