Asset Management Plan Update 2020

Cover: Network Operator, Calum Scott, conducting a line patrol of Orion's 11kV and 33kV lines in Banks Peninsula.

In 2019 we entered a new phase in Orion's history. We took a fresh look at the opportunities and challenges facing our customers, in a very changed environment from that of our previous eight years.

This plan is an update on our 2019 Asset Management Plan, published in March 2019, which reflected analysis of our customers' future energy needs, and a very thorough review of our strategies, business objectives, practices and projects to meet those needs.

Our 2020 AMP Update rests on a sound foundation. It sets out the changes in our thinking, planning, projects and investments in our network that have evolved since our 2019 AMP. Our 2019 AMP remains the base document that is the reference point for background information on Orion, our asset management processes and core programme of work. This Update answers the questions: "What's changed?" "What's new?"

We look forward to continuing to support our community's aspirations for a liveable region, with strong connected communities, a healthy environment and a prosperous economy.

Stop press

As we publish this AMP Update, New Zealand has just entered a State of Emergency and Level 4 lockdown in an attempt to prevent the spread of the coronavirus, COVID-19.

The impacts of this pandemic on our plans, forecasts and targets are highly uncertain and have not been taken into account in this AMP Update.

Rob Jamieson
Chief Executive

Orion

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Contents

1 Introduction

This Asset Management Plan Update provides Orion's customers and stakeholders with the material changes and updates to our asset management planning since our 2019 Asset Management Plan was published. It covers our updated strategy, practices, programme of work and expenditure forecasts for the next 10 years from 1 April 2020 to 31 March 2030.

In alternate years, the Commerce Commission allows Electricity Distribution Businesses (EDBs) the option to provide a simple update to their previous Asset Management Plan (AMP), highlighting all material changes. After a comprehensive review of our future planning in our 2019 AMP, Orion's focus remains unchanged in many areas, and we elected to produce this update version to provide a straightforward summary of any changes in our planning.

This Update is a companion document to Orion's 2019 Asset Management Plan (AMP) and needs to be read in conjunction with that document which provides detailed information about Orion, and how we approach the management of our assets.

Orion's Asset Management Plan Update 2020 and our AMP 2019 are available on our website: **www.oriongroup.co.nz**

This Update has been structured to meet information disclosure requirements.

2 About our business

2.1 About Orion

Orion owns and operates the electricity distribution infrastructure powering Christchurch and central Canterbury. Our network is both rural and urban and extends over 8,000 square kilometres from the Waimakariri River in the north to the Rakaia River in the south; from the Canterbury coast to Arthur's Pass. We deliver electricity to more than 205,000 homes and businesses.

By number of customers, Orion is New Zealand's third largest electricity distribution company.

Our network has two distinct supply areas: The Christchurch metropolitan area known as **Region A**; and the Canterbury Plains, Banks Peninsula, and Alpine area known as **Region B**.

Every moment of every day, our 205,000 customers rely on electricity delivered by the Orion network – across 8,000 square kilometres in Christchurch, Banks Peninsula and the Selwyn District.

Our role is to support our community's aspirations for a liveable region, with strong connected communities, a healthy environment and a prosperous economy.

It's an exciting time as we prepare for a future where electricity will be more important than ever.

Focus on the future

This year we reviewed our business strategy to ensure Orion continues to meet the long term interests of our customers in a world undergoing unprecedented change in the energy sector as New Zealand transitions to a low carbon economy.

We have set ourselves ambitious targets, which are embodied in Our Powerful Future, an aspirational programme we began in October 2018 to position Orion for continued success in serving our customers through to 2025 and beyond.

The goals for Our Powerful Future strategy are that, by 2025:

- **We are among the most trusted organisations in our region –** it is critical Orion understands the changes happening in our industry and our broader environment and continues to provide the service our customers need. We want to ensure our community has confidence in Orion and can trust us to meet their future energy needs. To do this we will listen to our customers, create solutions and develop opportunities with them, to be an authentic partner.
- **We are a leader of sustainability in our region –** Orion is uniquely positioned to assist organisations in our region to achieve their sustainability goals. We aim to sustainably manage the economic, environmental and social effects of our business to achieve strong connected communities, a healthy environment and a prosperous economy. We believe that by acting ethically, transparently and responsibly, we can create long-term value for Orion, its shareholders and the communities in our region.
- **We are a leading platform operator –** through the integration and strength of our systems and people capability, Orion has the opportunity to add value to others in our industry and the wider community. We will connect people to critical information and emerging technology and enable customer choice in managing their energy efficiently. In this way we will enable others to leverage the benefits of our recognised strengths in infrastructure, systems and services.
- **We have transformed industry capability and development in New Zealand –** our environment, our industry and the expectations of our stakeholders are changing. As a result, the qualities and skills our people need for us to be successful are also changing. We will think beyond the immediate capabilities and experience our team needs, to what's needed by our people and our industry to deliver the skills and talents asked of us in the future.

Keeping an eye on the fundamentals

At the same time as Our Powerful Future looks to position Orion for continued success, we are mindful of continuing to maintain and meet our customers' most important conditions of satisfaction. We remain utterly committed to providing a safe, reliable and resilient electricity network.

Industry collaboration

We continue to participate in industry forums and take an active role in industry organisations at all levels. Our dedication to collaboration with our colleagues supports our commitment to continuous learning and open sharing of our experience and expertise to the betterment of the industry as a whole. This year more than 35 Orion people were members of industry working groups, boards and committees, and we made more than 16 submissions to government agencies seeking views on proposed changes in the electricity sector.

2.2 Our local context

Regional growth

Growth in the region, particularly new subdivisions, has seen Orion welcome more than 3,000 new customers annually to our network for four consecutive years, although we are starting to see that level tapering off. Building and maintaining our infrastructure to support our region's growth and the regeneration of Christchurch central city remain a priority. So too is helping business and the wider community realise the benefits of New Zealand's sustainable energy resource in their transition to a low carbon economy.

Climate change

From talkback radio to Government legislation, not a day goes by that climate change isn't on the public agenda. According to a recent poll[1], eight in 10 Kiwis are now personally worried about climate change. The Government's Interim Climate Change Committee's report, Accelerated electricification[2], supports using electricity to reduce transport and process heat emissions. Our responsibility as an enabler of access to New Zealand's renewable electricity has never been clearer.

New technology adoption

In April 2019 the Electricity Networks Association (ENA) launched the Network Transformation Roadmap. This roadmap is designed to provide a guideline as to how networks can best position themselves to be ready for a fast-changing future. Traditionally electricity is delivered in one direction across the network to end consumers, increasingly, with distributed generation such as solar, networks have to be capable of supporting two-way flows. We will be using this guideline to assist us to position for the future.

[1] IAG-IPSOS poll 2019

[2] Interim Climate Change Committee Accelerated Electrification report dated 30 April 2019

In 2019, 526 customers connected their own solar generation with a combined operating capacity of 3,038kW. Replacement of fossil fuelled vehicles with electric vehicles will see us focus more on street level electricity distribution assets as we prepare for additional local load and our customers export of generation for the use of others in the community. In 2019 we launched our EV Experience initiative as an opportunity for businesses in our region to experience taking their vehicle fleet electric by test-driving an Orion electric vehicle for a week. It was met with an enthusiastic response by local business. This initiative aligns with our sustainability commitment – especially the role we play in assisting others.

Tree regulations review

Our day to day commitment to our customers to provide a safe, reliable and resilient network is fundamental. In support of this, our management of trees continues to be pivotal. Vegetation contact with our network contributes to 14 percent of unplanned customer outages. We spend $4 million every year to minimise outages caused by trees. In 2019, a review of the Electricity (hazards from trees) Regulations 2003 began. We are taking an active role in helping to shape the revised regulations to ensure a more risk based approach and our ability to maintain electricity supply.

2.3 Asset Management Maturity Assessment (AMMAT)

Orion again engaged WSP Opus to undertake an independent assessment of our asset management documentation, controls and review processes using an instrument developed by the Electricity Engineers' Association (EEA) and known as the Asset Management Maturity Assessment Tool (AMMAT). An overview of the general criteria required to be met for each maturity level is shown below.

The WSP Opus assessment determined that Orion had exceeded the PAS 55 Compliance maturity level of 3 across all elements, and as a result of driving innovation and improvement in the pursuit of asset management excellence, Orion had bettered its 2018 score in 13 elements.

The review commended Orion for its continued elevation of contingency training and legal controls. We were also commended for improvements in our management policy, structure, and risk based thinking. WSP Opus believe Orion has engendered the right culture of change and approach for safety critical, long term asset management operation and its risk approach has become "like the air that is breathed." within the organisation.

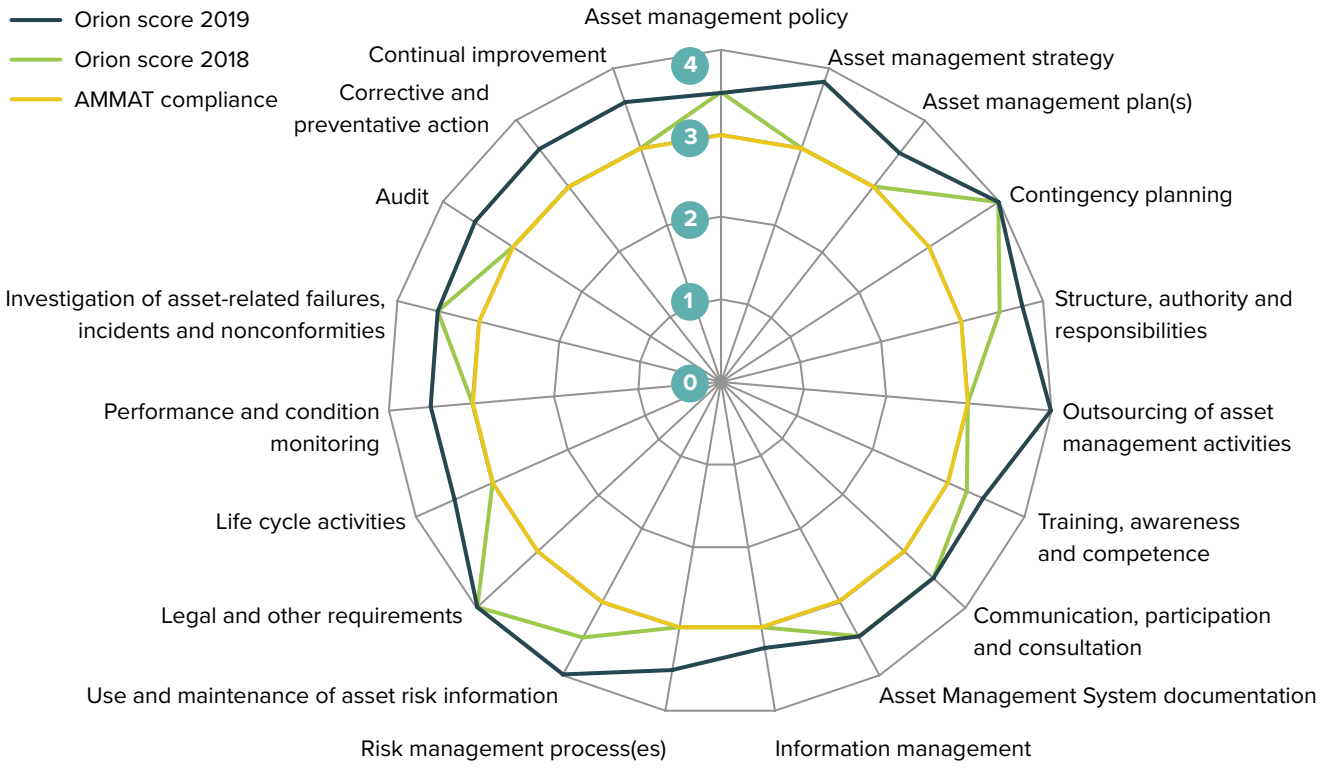
Overall, the review stated that it was "... a very good result for a company with a very appropriate asset management culture and focus."

For full results see Appendix A, Schedule 13.

Figure 2.3.1 AMMAT maturity levels

Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
The elements required by the function are not in place. The organisation is in the process of developing an understanding of the function.	The organisation has a basic understanding of the function. It is in the process of deciding how the elements of the function will be applied and has started to apply them.	The organisation has a good understanding of the function. It has decided how the elements of the function will be applied and work is progressing on implementation.	All elements of the function are in place and being applied and are integrated. Only minor inconsistencies may exist.	All processed and approaches go beyond the requirements of PAS 55. The boundaries of Asset Management Development are pushing to develop new concepts and ideas.
Innocence	**Aware**	**Developing**	**Competent**	**Excellent**

Figure 2.3.2 Orion's 2019 AMMAT scores



3 Managing risk

There are no material changes to our risk management processes or the key risks identified in our 2019 Asset Management Plan.

4 Customer experience

We continue to engage with our customers to seek their views on a variety of asset management proposals, ways we could enhance our customer service and how we can be more effective in our communications with them.

4.1 Customer engagement

We've spent time getting to know our customers' views about electricity and our service through topic based focus groups, deep-dive Powerful Conversations workshops, surveys and our Customer Advisory Panel. The need for rich feedback and data on our customers' usage patterns and our network system is an important input to our future decision making and helps set our priorities and expenditures.

Recognising the importance of broad representation on our Customer Advisory Panel, we recruited new members to speak for people in our community who have a disability, face financial hardship, and those in the health, farming and business sectors. Our Panel met three times throughout the year and continues to provide a lively and informative touchstone for our customers' perspective and an important channel to help inform our decision making.

To improve their effectiveness, we overhauled our community advertising campaigns promoting tree trimming and safety around electricity. Vegetation colliding with powerlines continues to be a significant cause of unplanned power outages, and ensuring safe practices around power lines remains an imperative.

We sought our customers' views on what they thought were the most compelling reasons to trim their trees, and produced a series of new advertisements with messages that applauded positive behaviour.

To increase our audience reach we used new channels and a concerted campaigned approach including online advertisements and direct mail. This resulted in an increase of visitors to the tree trimming information pages of our website, from 80 per month to 800 per month during the campaign.

Customer views in action

The views of our customers provided valuable insights that contributed to a diverse range of our investment decisions, including:

- Encouraging us to maintain our current levels of reliability
- Supporting the decision to build a new grid exit point at Norwood
- Supporting the replacement of our oil-filled 66kV cables
- Encouraging us to explore cost effective ways to manage peak loads due to the impact of growing numbers of electric vehicles
- Prompting us to review our approach to temporary disconnections

4.2 Service performance measures and targets

There is one material change to our service level targets for future years to that identified in our 2019 Asset Management Plan. As part of our transition to a Default Price-Quality Path, the Commerce Commission reset our SAIDI and SAIFI targets for FY21 to FY25.

These measures are:

- SAIDI: System Average Interruption Duration Index, measures the average number of minutes per annum that a customer is without electricity

- SAIFI: System Average Interruption Frequency Index, measures the average number of times per annum that a customer is without electricity.

Our new targets for SAIDI and SAIFI for the next five years are shown below. There are now separate targets for planned and unplanned events, and a new extreme event measure that relates to identification and reporting of rare events.

Table 4.2.1 Service measures for SAIDI and SAIFI for future years (FY21-FY25)

Service measure	Targets and Limits			
	Five year limit	Annual target	Annual limit	Extreme Event limit
Planned SAIDI	198.40	13.23	39.68	
Planned SAIFI	0.7481			
Unplanned SAIDI		66.47	84.71	6 million customer minutes
Unplanned SAIFI		0.837	1.0336	

Our service level performance for FY19 is shown against our measures and targets in Table 4.2.2.

Our FY19 SAIDI target was set for the end of our Customised Price Path (CPP), not long after the 2011 Canterbury earthquakes.

In hindsight the end of the CPP period target of 73.4 was challenging. While we slightly exceeded target we still consider our performance noteworthy given the significant improvement in performance over the CPP period as a whole.

Table 4.2.2 Service descriptions, targets and measures for FY19

Service class	Service measure	FY19 targets	FY19 actual	Achieved?
Network reliability	SAIDI	< 73.4	73.9	✘
	SAIFI	< 0.87	0.79	✓
Network restoration	Unplanned interruptions restored within 3 hours	> 60%	72%	✓
Network capacity	Overall network capacity at GXP	Load < 100% of firm capacity	Minimum – Arthurs Pass 66kV: 10% Maximum – Hororata 33kV: 96%	✓
	Delivering reasonable level	To meet our security standard	Gaps are listed on page 159 of our 2019 AMP	✓
Power quality	Steady state level of voltage	< 80	14	✓
	Level of harmonics or distortion	< 4	2	✓
Safety	Safety of group employees	Zero serious events involving employees	Six serious events involving six group employees	✘
	Safety of service providers	Zero serious events involving service providers	Three serious events involving three employees of service providers	✘
	Safety of public	Zero serious events involving members of the public	Zero	✓
Customer service	Under development			
Environment	SF_6 gas lost	< 0.8% loss	< 0.2% loss	✓
	Oil spilt	Zero	Zero	✓
Efficiency	Capacity utilisation ratio	Although we monitor this, we do not have a specific target	24.8%	n/a
	Load factor	Although we monitor this, we do not have a specific target	64.5%	n/a
	Energy loss	We do not have a specific target	4%	n/a

5 About our network

In the year to 31 March 2020, we delivered three projects that materially changed our network. These projects increased the reliability, resilience, and the network capacity for our customers. They are summarised below.

Lyttelton 11kV cable

In July 2019, we completed a three year programme of upgrades to our network to address reliability and resilience issues with the power supply to Lyttelton, Corsair Bay and Cass Bay community.

The programme addressed historical issues with lengthy power outages due to the sole supply of power to this community being via 11kV lines over the Port Hills which are vulnerable to weather, vegetation and wildlife.

The installation of a new 11kV electricity cable from our Heathcote zone substation, through the ventilation duct above the Lyttelton Road Tunnel was the final, major network enhancement to provide increased security of supply to this community. The 2.2km cable connects with Lyttelton's electricity grid at Orion's Dublin Street substation, and was switched on at the end of July.

With the 11kV cable installed underground and protected in the tunnel, Orion now has alternatives to keep the power on. It runs in tandem with the existing two 11kV power supply lines over the Port Hills.

Lyttelton Port is an essential lifeline for Canterbury and increasing the resilience of the power supporting it is important for the wider region.

To support future growth in this vital community, the new cable alone has a power rating of 10 Megawatts, 3 Megawatts greater than the current average demand.

Dunsandel zone substation upgrade

We undertook a major upgrade of the capacity of our Dunsandel zone substation to power local dairy processor Synlait's installation of a new electrode boiler.

Synlait installed New Zealand's first large-scale electrode boiler in their $125 million advanced dairy liquids facility at Synlait Dunsandel. Commissioned in early 2019, the move from a coal fired boiler to electricity is part of Synlait's sustainability strategy and leads the way for industry to contribute to a lower emissions future for New Zealand.

The upgrade involved:

- more than doubling the transformer capacity by swapping out transformers from 11MVA transformers to 23MVA transformers
- upgrading associated incomer cables, circuit breakers and protection
- extending the substation to accommodate new equipment
- reconfiguring switchgear to allow for two new 11kV supply cables to Synlait's processing facility – sufficient to service the electrode boiler's initial capacity of 6 megawatts
- installing four new 2550kVA Static synchronous compensators (STATCOMs) to enable full utilisation of the network's capacity. These are the first of these units installed on the Orion network

Islington 33kV indoor switchgear

As part of Orion's Spur Asset purchases from Transpower, we incorporated the 33kV section of Transpower's Islington substation into Orion's network. This included the old outdoor structure and switchgear.

We worked with Transpower on the upgrade which involved:

- constructing a new building to house our 33kV switchgear indoors
- installing 33kV Eaton switchgear
- demolishing the old outdoor structure
- upgrading protection and tying the new 33kV indoor switchgear with the existing indoor switchgear.

6 Planning our network

Since our 2019 Asset Management Plan was published, we have reviewed our network development plans and made adjustments to reflect changes in projections of our customers' needs and incorporate programme efficiencies.

There are two material changes to our forecast network development programme in this AMP Update 2020.

The first is our decision to delay completion of four HV major projects related to the new zone substation proposed for the north of Christchurch. We have delayed these projects due to slower than forecast load uptake and to coordinate our works to minimise disruption to the northern Christchurch road transportation links.

The second is the addition of twelve HV major projects associated with our 66kV oil filled cable replacement programme. We have also amended the timing of two of these projects. A brief overview of this programme and our description of each project, can be found in Section 6.3.2.1 of this AMP Update 2020.

6.1 Overview of projects and budgets

The tables in the following sub-sections are a complete overview of all planned network development projects for the next 10 years.

To determine the status of each project compared to our 2019 AMP 10-year plan, use the project number key below:

x x x	Unchanged project (refer to 2019 AMP for details)
x x x - A	Amended project (refer to 2019 AMP Section 6.6 for details)
x x x - N	New project (refer to Section 6.3 for details)

Note: financial numbers are expressed in FY21 dollar terms.

6.1.1 GXP projects

Table 6.1.1 GXP Major projects – $000 — Table 6.6.1 in 2019 AMP

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
996 - A	Norwood GXP – new Region B 220/66kV substation			31,000^							
	GXP projects total			**31,000**							

^ The project values shown are indicative build costs for Transpower.

6.1.2 HV major projects

Table 6.1.2 HV Major projects – $000 — Table 6.6.2 in 2019 AMP

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
541-A	Hawthornden ZS 66kV T-off	2,846									
937	McFaddens ZS 66kV bay	490									
949	Dunsandel ZS to Killinchy ZS line upgrade	31									
964-N	Bromley ZS 66kV bay for Lancaster ZS cable	615									
968-N	Re-terminate Bromley ZS to Lancaster ZS 66kV cable	168									
925-A	Belfast ZS – new 66/11kV substation	3,100	4,452								
926-A	Belfast ZS to Marshland switching station 66kV cable	3,188	3,816								
637-A	Railway Rd 11kV substation		2,918								
940	Norwood GXP to Dunsandel ZS 66kV line		2,898								
946	Dunsandel ZS 66kV line bay		505								
931	Norwood 66kV switching station		1,274	2,587							
491-A	Belfast ZS to McFaddens ZS 66kV cable links			8,537							
939	Dunsandel ZS 3rd transformer			1,898							
941	Norwood GXP to Brookside ZS 66kV line			3,945							
723-A	Milton ZS switchgear and building				4,521						
728	Springston ZS 11kV switchboard ext.				587						
894-A	Springston ZS 2nd 66/11kV transformer bank				1,861						
943	Norwood GXP to Highfield ZS 66kV line				1,264						
962-N	Bromley ZS to Milton ZS 66kV cable				11,899						
589-A	Lancaster ZS to Milton ZS 66kV cable					3,888					
665-N	Hoon Hay ZS 66kV switchgear					3,035					
944	Norwood GXP to Burnham ZS 66kV line					3,120					
953	Norwood GXP 66kV line bays					971					
954	Highfield ZS 66kV line bay					490					
639	Burnham ZS – new 66/11kV substation						8,563				
664-N	Milton ZS to Hoon Hay ZS 66kV cable						6,486				
671-N	Halswell ZS 66kV switchgear						3,673				
919-A	Halswell ZS 3rd transformer						1,801				
934	Walkers Rd 66kV line conversion						164				
1000-N	Burnham ZS 66kV cable						833				
726-N	Hoon Hay ZS to Halswell ZS 66kV cable							4,818			

Table 6.1.2 HV Major projects – $000 (continued)											Table 6.6.2 in 2019 AMP
No.	**Project**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**	**FY29**	**FY30**
587-A	Te Pirita ZS 66kV bays								964		
670-A	Steeles Rd substation								3,066		
731-N	Addington ZS to Oxford-Tuam ZS 66kV cable								4,529		
872-N	Addington ZS 66kV bay								1,213		
965-N	Fendalton ZS 66kV switchgear									1,453	
966-N	Addington ZS to Fendalton ZS 66kV cable									4,307	
967-N	Armagh ZS to Fendalton ZS 66kV cable										7,743
987-N	Selwyn Rd 66kV line										62
1001-N	Burnham ZS 66kV bay										516
1002-N	Burnham School Rd 66kV cable										833
955	Strategic Land Purchase	420	420	420	420	420	420	420	420	420	420
	HV Major projects total	**10,858**	**16,283**	**17,387**	**20,552**	**11,924**	**21,940**	**5,238**	**10,192**	**6,180**	**9,574**

6.1.3 HV minor projects

Table 6.1.3 is an overview of the HV minor projects we have planned for the next 10 years. Projects planned in the first year are considered firm. For years where we have no projects scheduled, a lump-sum is allocated in the budget and projects will be identified closer to date.

Table 6.1.3 HV minor projects – $000					Table 6.6.4 in 2019 AMP
No.	**Project**	**FY21**	**FY22**	**FY23**	**FY24-30**
808-N	Edward Street cables	762			
952	Addington 11kV reinforcement	246			
975-N	Akaroa generator connection site preparation	195			
982-N	Akaroa reliability improvement	133			
993-N	Tennyson St to Izone Business Park reinforcement	166			
994-N	11kV fault indication trial	75			
995-N	Reinforcement of Mairehau Rd 11 kV	77			
1003-N	Springston ZS new 11kV feeder	595			
1004-N	Jones Rd reinforcement	342			
806-N	Gerald Street cable		151		
922-A	Milton ZS 11kV alteration		354		
983-N	Belfast ZS 11kV feeders		1,460		
997-N	Coleridge generator connection and reliability improvement		317		
1055-N	Papanui 11kV primary reconfiguration		261		
663-A	Darfield township reinforcement			666	
913-A	Heathcote Lyttelton reconfiguration			237	
	HV minor projects	**2,591**	**2,543**	**903**	**–**
	Unscheduled HV minor projects	909	900	900	900/yr
	Unidentified HV minor projects	–	57	1,697	2600/yr
	HV minor projects total	**3,500**	**3,500**	**3,500**	**3500/yr**

6.1.4 LV projects

Table 6.1.4 LV projects – $000 — Table 6.6.6 in 2019 AMP

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
384 - A	Unidentified LV reinforcement	100	250	250	300	300	300	350	350	350	350
884	Low voltage monitoring	558	820	804	1,050	1,030	1,261	1,236	1,453	1,424	–
	LV projects total	**658**	**1,070**	**1,054**	**1,350**	**1,330**	**1,561**	**1,586**	**1,803**	**1,774**	**350**

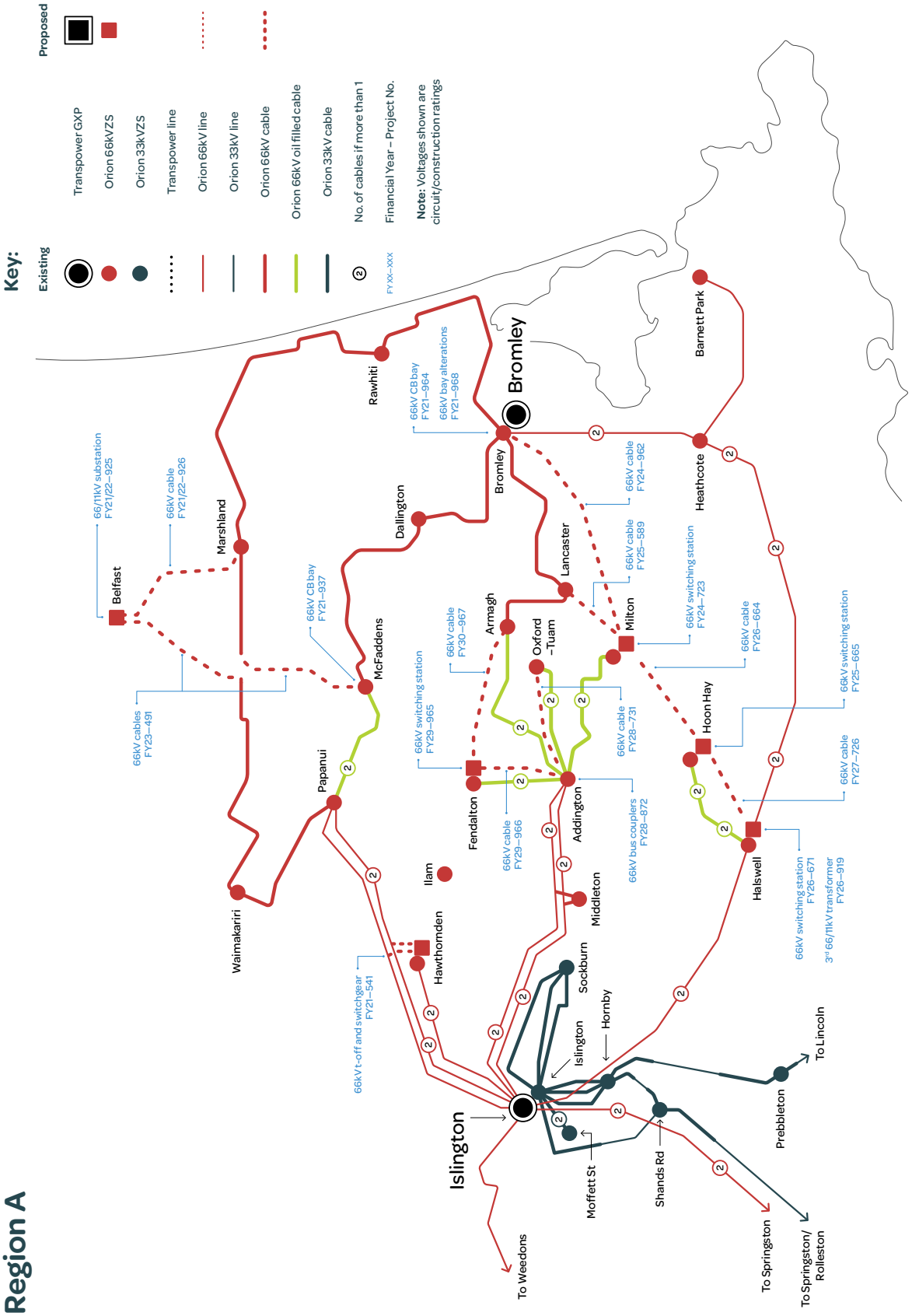
6.1.5 Connections and extensions

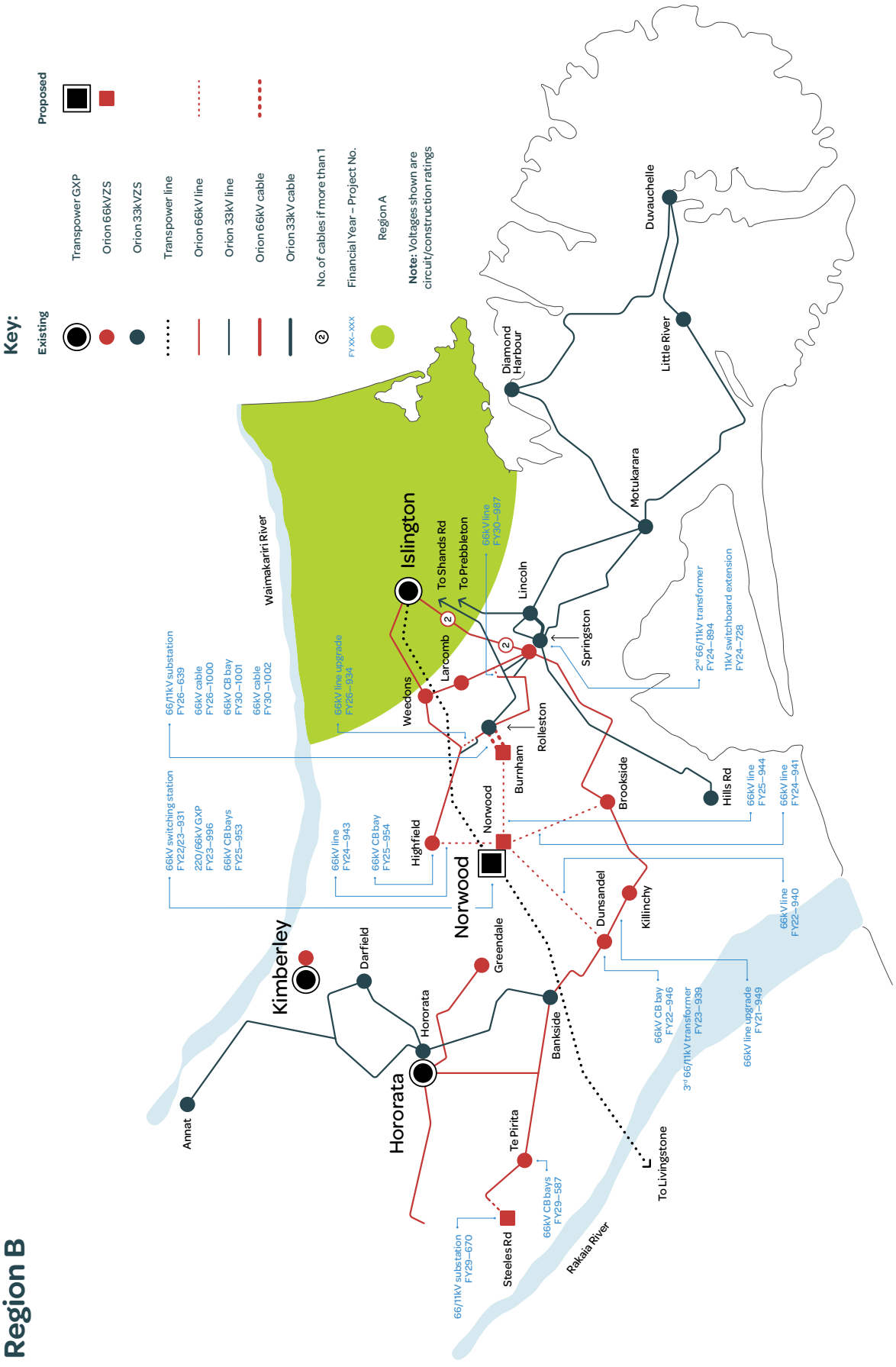
Table 6.1.5 Connections and extensions – $000 — Table 6.6.7 in 2019 AMP

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
General connections	3,615	3,615	3,615	3,465	3,465	3,465	3,465	3,465	3,465	3,465
Large connections	1,270	1,270	1,270	1,217	1,217	1,217	1,217	1,217	1,217	1,217
Subdivisions	2,000	2,000	2,000	1,913	1,913	1,913	1,913	1,913	1,913	1,913
Switchgear purchases	800	800	800	800	800	800	800	800	800	800
Transformer purchases	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Connections and extensions total	**9,185**	**9,185**	**9,185**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**

6.2 66kV and 33kV subtransmission maps

The following maps represent our existing subtransmission network and all the proposed GXP and HV major projects over the next 10 years in Region A and Region B.




Region B
Key:
Existing
Proposed
Transpower GXP
Orion 66kVZS
Orion 33kVZS
Transpower line
Orion 66kV line
Orion 33kV line
Orion 66kV cable
Orion 33kV cable
No. of cables if more than 1
Financial Year – Project No.
Region A
Note: Voltages shown are circuit/construction ratings
Islington
Kimberley
Hororata
Norwood
Duvauchelle
Little River
Diamond Harbour
Motukarara
Lincoln
Springston
Rolleston
Burnham
Weedons
Larcomb
To Shands Rd
To Prebbleton
Waimakariri River
Annat
Darfield
Greendale
Te Pirita
Steeles Rd
Bankside
Dunsandel
Killinchy
To Livingstone
Brookside
Hills Rd
Norwood
Highfield
Rakaia River
66/11kV substation FY26–639
66kV cable FY26–1000
66kV CB bay FY30–1001
66kV cable FY30–1002
66kV line upgrade FY25–934
66kV line FY30–987
2nd 66/11kV transformer FY24–894
11kV switchboard extension FY24–728
66kV switching station FY22/23–931
220/66kV GXP FY23–996
66kV CB bays FY25–953
66kV line FY24–943
66kV CB bay FY25–954
66kV line FY25–944
66kV line FY24–941
66kV line FY22–940
66kV CB bay FY22–946
3rd 66/11kV transformer FY23–939
66kV line upgrade FY21–949
66/11kV substation FY29–670
66kV CB bays FY29–587

6.3 Material changes to our network development plans

The following tables contain the material changes to our 10-year network development plan from that published in our 2019 AMP.

The projects are listed in order of their project number within each table.

6.3.1 GXP projects

Table 6.3.1 GXP projects – Amendments

No.	Project	Budget ($000)	Year	Change and reason
996 - A	Norwood GXP – new Region B 220/66kV GXP substation	31,000	FY23	We have increased the estimated project cost for the construction of the GXP based on Transpower's high-level response (HLR) from our initial estimate of $17.5m.

6.3.2 HV major projects

6.3.2.1 66kV oil filled cable replacement programme

To increase our urban 66kV subtransmission network's resilience against the impact of a major seismic event, we have developed a 10-year programme for replacement of our remaining 40km of 66kV oil filled underground cables commencing in FY24.

The Capex replacement budget for this project was included in our 2019 AMP within Managing our assets Section 7.7, Underground cables – subtransmission. In this AMP Update we have now created a strategic programme that incorporates forecast network growth and lifecycle replacement projects as well as other resilience initiatives across our Region A 66kV network. These projects are now part of our network development plans.

We considered non-network solutions, however due to the capacity required at a subtransmission level these solutions are not suitable to supply base level demand. Non-network solutions are unable to provide subtransmission N-1 security, because repair times on 66kV equipment are far beyond the energy storage capability of existing known Distributed Energy Resource (DER) systems during winter peak load times.

This programme replaces the existing 66kV bulk-supply point spoke-and-hub architecture with an interconnected GXP ring architecture and encompasses several new and amendments to existing projects, as outlined below:

Table 6.3.2 66kV oil filled cable replacement HV major projects – New

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
664 - N	**Milton ZS to Hoon Hay ZS 66kV cable**	**6,486**	**FY26**	**Safe, reliable, resilient system Environment**	**Yes**
	Issue	To facilitate the new Region A 66kV architecture as part of the 66kV oil filled cable replacement programme a cable connection between Milton ZS and Hoon Hay ZS is required.			
	Chosen solution	This project is the purchase, installation and commissioning of a new 66kV cable between the new Milton ZS 66kV switchroom (Project 723) and the new Hoon Hay ZS 66kV switchroom (Project 665).			
	Remarks/alternatives	This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
665 - N	**Hoon Hay ZS 66kV switchgear and building**	**3,035**	**FY25**	**Safe, reliable, resilient system**	**Yes**
	Issue	Hoon Hay ZS is currently supplied via dual circuit transformer cable feeders from Halswell ZS. These cables are 66kV oil filled cables so are programmed for replacement with a new diverse route 66kV closed-ring supply from Bromley ZS. To facilitate this new architecture a 66kV switchroom is required at Hoon Hay ZS			
	Chosen solution	This project is to construct, equip and commission a new 66kV switchroom at Hoon Hay ZS to enable connection of new cable circuits from Halswell ZS (Project 726) and Milton ZS (Project 664)			
	Remarks/alternatives	This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			

Table 6.3.2 66kV oil filled cable replacement HV major projects – New (continued)

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
671 - N	**Halswell ZS 66kV switchgear and building**	**3,673**	**FY26**	**Customers and key stakeholders Safe, reliable, resilient system**	**Yes**
	Issue	Halswell ZS is a pivotal supply point for managing GXP loads on the current and future 66kV subtransmission network, however limitations of the existing 66kV arrangement do not allow loads to be split between Islington and Bromley GXPs. The existing 66kV bus arrangement also does not allow the new 3rd transformer to be easily connected (Project 919).			
	Chosen solution	This project is the construction and commissioning of a new 66kV ring-bus switchroom and adjoining 11kV switchroom and transformer pad for the 3rd transformer at Halswell ZS. See Project 919 for the purchase, install and commissioning of 3rd 11kV bus section and new 23MVA transformer.			
	Remarks/alternatives	This project is part of our strategic 66kV oil filled cable replacement programme and has been timed to coincide with lifecycle replacement of four 66kV CBs at Halswell ZS.			
726 - N	**Hoon Hay ZS to Halswell ZS 66kV cable**	**4,818**	**FY27**	**Safe, reliable, resilient system Environment**	**Yes**
	Issue	Hoon Hay ZS is currently supplied via spur dual circuit 66kV oil filled cables from Halswell ZS. These cables are a seismic vulnerability and are to be replaced with a new closed-ring 66kV architecture.			
	Chosen solution	This project is the purchase, installation and commissioning of a new 66kV cable between the new Halswell ZS 66kV switchroom (Project 671) and the new Hoon Hay ZS 66kV switchroom (Project 665)			
	Remarks/alternatives	This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
731 - N	**Addington ZS to Oxford Tuam ZS T2 66kV cable**	**4,529**	**FY28**	**Safe, reliable, resilient system Environment**	**Yes**
	Issue	Oxford-Tuam ZS is currently supplied via spur dual circuit 66kV oil filled cables from Addington ZS. These cables are a vulnerability and are to be replaced.			
	Chosen solution	This project is to purchase, install and commission a new 66kV transformer feeder cable between Addington ZS and Oxford-Tuam ZS transformer T2.			
	Remarks/alternatives	This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
872 - N	**Addington ZS 66kV bay and bus couplers**	**1,213**	**FY28**	**Safe, reliable, resilient system**	**Yes**
	Issue	Addington ZS currently operates the 66kV busbar split with each of the six substations having a feed from each side of the bus. The Region A architecture proposed moves to a closed-ring design that requires three 66kV bus sections with bus couplers.			
	Chosen solution	This project is the purchase, construction and commissioning of the 66kV switchgear to create the new low profile centre bus section.			
	Remarks/alternatives	This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
962 - N	**Bromley ZS to Milton ZS 66kV cable**	**11,899**	**FY24**	**Safe, reliable, resilient system**	**Yes**
	Issue	As part of the 66kV oil filled cable replacement programme a high-level HILP analysis identified there was a need for an additional circuit out of Bromley GXP to cover for Islington 66kV GXP contingencies.			
	Chosen solution	This project is to purchase, install and commission a new 66kV cable between Bromley ZS and the new Milton ZS 66kV switchroom (Project 723)			
	Remarks/alternatives	The Bromley ZS 66kV bay for this project is the ex Lancaster ZS feeder bay 170. This bay is to be rebuilt under Project 964. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
964 - N	**Bromley ZS 66kV bay for Lancaster ZS cable**	**615**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	At Bromley ZS there is a requirement to relocate the Lancaster ZS 66kV cable termination to a different 66kV bus section to free the existing bay 170 for a new 66kV cable circuit (Project 962).			
	Chosen solution	This project constructs a new bay 130 on the Bromley ZS 66kV bus section B including an upgrade of the cross-bus to 2000A for the Lancaster ZS 66kV feeder.			
	Remarks/alternatives	See Project 968 for the cut-back and re-termination of the Lancaster ZS 66kV feeder. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			

Table 6.3.2 66kV oil filled cable replacement HV major projects – New (continued)

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
965 - N	**Fendalton ZS 66kV switchgear and building**	**1,453**	**FY29**	**Safe, reliable, resilient system**	**Yes**
	Issue	The proposed replacement Region A 66kV architecture has Fendalton ZS on a closed-ring supply requiring a new 66kV switching station.			
	Chosen solution	This project is the modification of the existing Fendalton ZS building to accommodate a basic 66kV switchroom and installation and commissioning of the new 66kV switchgear.			
	Remarks/alternatives	Refer to Projects 965 and 967 for detail on the two new 66kV cable circuits into Fendalton ZS. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
966 - N	**Addington ZS to Fendalton ZS 66kV cable**	**4,307**	**FY29**	**Safe, reliable, resilient system Environment**	**Yes**
	Issue	Fendalton ZS is currently supplied via spur dual circuit 66kV oil filled cables from Addington ZS. These cables are a seismic vulnerability and are to be replaced.			
	Chosen solution	This project is the purchase, installation and commissioning of a new 66kV cable between Addington ZS and Fendalton ZS			
	Remarks/alternatives	At Fendalton ZS the new 66kV cable will terminate into the new 66kV switchroom (Project 965). This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
967 - N	**Armagh ZS to Fendalton ZS 66kV cable**	**7,743**	**FY30**	**Safe, reliable, resilient system Environment**	**Yes**
	Issue	Fendalton ZS is currently supplied via spur dual circuit 66kV oil filled cables from Addington ZS. These cables are a seismic vulnerability and are to be replaced with a new closed-ring 66kV architecture.			
	Chosen solution	This project is the purchase, installation and commissioning of the new 66kV cable between Armagh ZS and Fendalton ZS.			
	Remarks/Alternatives	At Armagh ZS this cable will terminate into an existing 66kV cable bay 122/132 and at Fendalton ZS the new 66kV cable will terminate into the new 66kV switchroom (Project 965). This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			
968 - N	**Re-terminate Bromley ZS to Lancaster ZS 66kV cable**	**168**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	With the proposed Region A 66kV architecture, the Lancaster ZS cable connection at Bromley ZS requires changing			
	Chosen solution	At Bromley ZS re-terminate the Lancaster ZS 66kV cable into the new bay 130			
	Remarks/alternatives	The Bromley ZS bay 130 was built in Project 964. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.			

Table 6.3.3 66kV oil filled cable replacement HV major projects – Amendments

No.	Project	Budget ($000)	Year	Change and reason
589 - A	Lancaster ZS to Milton ZS 66kV cable	3,888	FY25	Brought forward from FY27 to align with the timing of the 66kV SCOF cable replacement programme. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.
723 - A	Milton ZS 66kV switchgear and building	4,521	FY24	Brought forward from FY27 to align with the timing of the 66kV SCOF cable replacement programme. This project is part of an over-arching Region A architecture plan and strategic 66kV cable replacement programme.

6.3.2.2 New Region B projects

The following new HV major projects are all in Region B and are associated with the establishment of Burnham Zone Substation (Project 639) and reinforcement of the 66kV subtransmission network.

Table 6.3.4 Region B HV major projects – New

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
987 - N	**Selwyn Rd 66kV line**	**62**	**FY30**	**Safe, reliable, resilient system**	**TBC**
	Issue	The Islington 66kV GXP is forecast to exceed the N-1 capacity due to continued growth in both Region A and B.			
	Chosen solution	This project enables Larcomb and Weedons ZS to be transferred from Islington to Norwood GXP. This is achieved by utilising and extending the Burnham (ex Rolleston) to Springston ZS 66kV constructed line from the end of Rattletrack Rd onto the Springston to Larcomb ZS 66kV line on Weedons Rd.			
	Remarks/alternatives	This is the most cost effective solution to mitigate the Islington 66kV GXP loading issue. See Project 1001 for the new 66kV bay at Burnham ZS and Project 1002 for the 66kV cable into Burnham ZS.			
1000 - N	**Burnham ZS 66kV cable to Dunns Crossing Rd**	**833**	**FY26**	**Safe, reliable, resilient system**	**TBC**
	Issue	The area surrounding the proposed Burnham ZS (Project 639) is becoming urbanised with residential housing and a school in close proximity. The existing 66kV constructed supply line down Dunns Crossing Rd needs to be diverted down Burnham School Rd into Burnham ZS to provide a N-1 supply.			
	Chosen solution	This project is a new 66kV cable circuit to connect the new Burnham ZS onto the O/H line running down Dunns Crossing Rd			
	Remarks/Alternatives	An overhead line option was considered, but is not suitable due to the proximity of the school and houses.			
1001 - N	**Burnham ZS 66kV bay**	**516**	**FY30**	**Safe, reliable, resilient system**	**TBC**
	Issue	A new 66kV bay is required to terminate a new 66kV circuit that will facilitate the ability to transfer Larcomb and Weedons ZSs between Islington 66kV GXP and Norwood GXP.			
	Chosen solution	This project is the installation and commissioning of a new 66kV bay at Burnham ZS.			
	Remarks/Alternatives	This in conjunction with the Selwyn Rd 66kV line (Project 987) and the Burnham School Rd 66kV cable (Project 1002) enables Larcomb and Weedons ZS's to be supplied by Norwood GXP			
1002 - N	**Burnham School Rd 66kV cable**	**833**	**FY30**	**Safe, reliable, resilient system**	**TBC**
	Issue	A second 66kV circuit heading east out of Burnham ZS is required to connect to the 66kV overhead line down Dunns Crossing Rd.			
	Chosen solution	This project is the installation and commissioning of a new 66kV cable down Burnham School Rd from Burnham ZS to Dunns Crossing Rd to enable Larcomb and Weedons ZS to be supplied from Norwood, including the overhead line termination pole.			
	Remarks/alternatives	To be completed in conjunction with the projects Selwyn Rd 66kV line (Project 987) and Burnham ZS 66kV bay (Project 1001).			

6.3.2.3 Other Region A and Region B project amendments

Table 6.3.5 Region A and B HV major projects – Amendments

No.	Project	Budget ($000)	Year	Change and reason
491 - A	Belfast ZS to McFaddens ZS 66kV cable links	8,537	FY23	Two year project costs (FY22/23) grouped into FY23 and budget refined.
541 - A	Hawthornden ZS 66kV tee-off	2,846	FY21	Brought forward from FY25 to smooth resource needs due to Belfast projects 924-926 being delayed. Budget revised for the implementation of a different configuration.
637 - A	Railway Rd 11kV substation	2,918	FY22	Deferred from FY21 due to uncertainty with major customer's growth plans
666 - A	Porters development	4,600	–	Rescheduled out of AMP period due to uncertainty surrounding timeframes for Porters development.
894 - A	Springston ZS 2nd 66/11kV transformer bank	1,861	FY24	Budget revised to account for purchase and installation of 23 MVA transformers instead of 10 MVA to future-proof for load growth in this area for incremental cost increase.
919 - A	Halswell ZS 3rd transformer	1,801	FY26	Scope revised to cover the purchase, installation and commissioning of the new 3rd transformer and establishment of a 3rd 11kV bus only. A new project has been created to construct the new switchrooms and to install the 66kV switchgear (Project 671).
924 - A	Belfast ZS 11kV feeder integration	–	–	Scope rationalised into Project 983.
925 - A	Belfast ZS – new 66/11kV substation	7,552	FY21-22	Deferred from FY21 due to load growth being slower than anticipated.
926 - A	Belfast ZS to Marshland switching station 66kV cable	7,004	FY21-22	Deferred from FY21 due to uncertainty around achievable cable routes and co-ordination with other parties.
942 - A	Belfast ZS to Papanui ZS 66kV cable	11,694	–	Rescheduled beyond this AMP period to coordinate with the delayed Belfast ZS completion (Project 925) and to manage resourcing around the oil filled cable replacement programme.
945 - A	Papanui ZS 66kV bay for Belfast ZS cable	478	–	Rescheduled 66kV bay to align with the cable project Project 942.
956 - A	Strategic spare 40MVA transformer	1,451	–	Rescheduled out of AMP period due forecast load growth indicating that existing capacity will be sufficient for the next 10 years.

6.3.3 HV minor projects

Table 6.3.6 HV minor projects – New

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
806 - N	**Gerald Street cable**	**151**	**FY22**	**Safe, reliable, resilient system Health and safety**	**TBC**
	Issue	This project (along with Project 808) concludes our reinforcement of the main road circuits in Lincoln township, including the removal of overhead high voltage lines.			
	Chosen solution	The remaining 11kV lines in Gerald Street (Lincoln) will be undergrounded as the sequence of reinforcement is completed.			
	Remarks/alternatives				
808 - N	**Edward Street cables**	**762**	**FY21**	**Safe, reliable, resilient system Health and safety**	**Yes**
	Issue	The overhead down East Belt and Edward St is a safety risk due to the amount of vehicle traffic. The old copper overhead conductor down East Belt is a constraining factor on Lincoln feeder down Edward Street			
	Chosen solution	The existing overhead down East Belt and the first part of Edward St will be undergrounded.			
	Remarks/alternatives	This reinforcement project prepares the network for the future Greenpark ZS proposed for the east side of the Lincoln township. The remaining overhead between Liffey Springs Dr and the corner of Ellesmere Rd will be undergrounded as part of the subdivision development in the area.			
975 - N	**Akaroa generator connection site preparation**	**195**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	Akaroa township is supplied from two 11 kV circuits from Duvauchelle ZS. With the lines mounted one above the other, it is nearly impossible to carry out maintenance without a complete shutdown. Security of supply for Akaroa is becoming increasingly important to the community due to the increasing popularity of the tourist destination.			
	Chosen solution	Upgrade transformers and modify two sites for generator connections. Install new remotely operated line switch on pole between Akaroa Rd and Long Bay Rd tees.			
	Remarks/alternatives	The option of installing a remote controlled ring main unit (RMU) at one of the sites was considered. However, this increase in cost was not warranted when compared to the reliability benefit.			
982 - N	**Akaroa reliability improvement**	**133**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	The retirement of our Akaroa based network operator is likely to result in longer restoration times in this area. As security of supply for Akaroa is becoming increasingly important to the community due to the increasing popularity of this tourist destination, measures should be taken to improve reliability for the township.			
	Chosen solution	Replace existing section links/Air Break Isolators (ABIs) at five sites with remotely operated line switches.			
	Remarks/alternatives	An alternative would be to base two operators in Akaroa. However, the cost of this solution greatly outweighs the cost of Akaroa outages per annum.			
983 - N	**Belfast ZS 11kV feeders**	**1,460**	**FY22**	**Safe, reliable, resilient system**	**Yes**
	Issue	A new Belfast ZS is to be constructed (Project 925), but there will only be limited connectivity to the existing 11kV network after completion of the 11kV feeder integration works (Project 924).			
	Chosen solution	This project is the laying and commissioning of new 11kV feeders out of Belfast ZS to connect into the distribution network on Belfast Rd. This includes the reconfiguration at multiple sites to ensure that the new substation capacity can be utilised.			
	Remarks/alternatives	Alternative topologies were explored to reconfigure the existing closed-ring 11kV network, but were less cost effective and did not achieve the required outcomes for contingency switching.			

Table 6.3.6 HV minor projects – New (continued)

No.	Project	Budget ($000)	Year	Asset management focus areas	Business case
993 - N	**Tennyson St to Izone Business Park reinforcement**	**166**	**FY21**	**Customers and key stakeholders Safe, reliable, resilient system**	**Yes**
	Issue	Growth in Rolleston and Izone, including the new Rolleston Town Centre development, requires additional reinforcement and trunks to be established to provide N-1 capability.			
	Chosen solution	This project creates a trunk feeder between the new Rolleston town centre development off Tennyson St through to Jones Rd.			
	Remarks/alternatives	This project will have minimal disruption to the transportation routes because it will utilise existing spare ducts under Main South Rd and the Kiwirail train tracks.			
994 - N	**11kV fault indication trial**	**75**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	A review of the actual performance of the modified 11 kV network architecture has shown that this is not performing as well as predicted in the original architecture review calculations. This is partially due to unreliable fault indication, making it harder for operators to fault find – resulting in longer outages for customers.			
	Chosen solution	Install five new fault passage indicators (FPIs) at sites with high downstream outage impacts to assess their effectiveness at reducing fault finding times.			
	Remarks/alternatives	Trial results to be assessed before determining benefit of wider FPI rollout.			
995 - N	**Reinforcement of Mairehau Rd 11 kV**	**77**	**FY21**	**Safe, reliable, resilient system Health and safety**	**Yes**
	Issue	The Prestons South residential subdivision is due to connect onto Mairehau Rd creating a new intersection. As part of the associated intersection and road widening works the overhead network on the opposite side of the road will be in conflict with the intersection widening required to create the new turning lane.			
	Chosen solution	New 11kV cable will be installed on the north side of Mairehau Rd replacing the existing overhead line between Marshland Rd and the Prestons South intersection.			
	Remarks/alternatives	These works are to be coordinated with a CCC roading widening project.			
997 - N	**Coleridge generator connection and reliability improvement**	**317**	**FY22**	**Safe, reliable, resilient system**	**Yes**
	Issue	Recent faults on the Coleridge overhead network have highlighted the following issues: Transpower protection can trip before our Line Circuit Breakers (LCBs) operate for an earth fault in the section of line between Coleridge GXP and the ABI feeding up the hill cannot be isolated without isolating the entire Coleridge network; this section of line is difficult to patrol and repair as it runs up a steep hill surrounded by trees. These issues combined with contractors not being able to work in adverse conditions, can result in prolonged outages.			
	Chosen solution	Install new distribution switchgear with protection downstream of Coleridge GXP to provide a generator connection point and improved reliability.			
	Remarks/alternatives	Install a new kiosk outside Coleridge GXP to provide a generator connection point. Replace ABIs currently feeding both overhead circuits out of Coleridge with remote controlled line switches. This does not provide the full reliability or protection grading benefits of the preferred option.			
1003 - N	**Springston ZS new 11kV feeder**	**595**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	Continued residential growth in and around Lincoln has resulted in load exceeding the zone substation's firm capacity in FY20. The Lincoln University has also indicated that they are investigating options to electrify their existing coal boilers.			
	Chosen solution	A new feeder will be established between Springston ZS and Lincoln ZS. A new cable will be laid south down Weedons Rd and east along Ellesmere Junction Rd. The cable will connect to the existing distribution network on Springs Rd.			
	Remarks/alternatives	There is the option to upgrade the existing overhead conductor down Weedons Rd. The next sizes up are not standard for 11kV construction. This option does not establish additional trunks, provide diversity for network configuration or improve the reliability for residential customers fed from Springston ZS.			

Table 6.3.6 HV minor projects – New (continued)

No.	Project	Budget ($000)	Year	Change and reason	Business case
1004 - N	**Jones Rd reinforcement**	**342**	**FY21**	**Safe, reliable, resilient system**	**Yes**
	Issue	Growth in Izone / IPort has reduced available N-1 capacity between Rolleston ZS, Weedons ZS and Larcomb ZS. Further significant growth in the area could compromise the network security and cause longer outages.			
	Chosen solution	Lay a new distribution cable between Tennyson St and George Holmes Rd and reconfigure 11kV to create additional trunk feeder out of Larcomb ZS.			
	Remarks/alternatives	There is an alternative to establish the new trunk through the Midland Port (LPC) site up to IPort Dr. This option is significantly more expensive due to being a longer distance and going through a customer property. There is also the requirement of getting easements over the cable route and land access issues.			
1055 - N	**Papanui 11kV primary reconfiguration**	**261**	**FY22**	**Health & safety**	**No**
	Issue	The network in the north of Christchurch is supplied from Papanui ZS via an 11kV primary feeder group with six feeders operating in parallel. To ensure safety is maintained for all faults on a the 11kV primary feeder group, a multi-feeder protection scheme has been installed at Papanui ZS. The resilience of this network is poor because any downstream busbar, CB or relay failure will result in a loss of supply to all six feeders.			
	Chosen solution	With the completion of Belfast ZS there is now an opportunity to reconfigure the six feeder primary. The proposed works splits the lower part of the six feeder primary into two three feeder primaries. This rearrangement, including the unloading of the top of the primary feeder onto Belfast ZS, greatly reducing the quantity of customers exposed to an outage caused by a failure of a downstream component.			
	Remarks/alternatives	This work increases the resiliency of the feeder group and increases the reliability to Grampian St substation.			

Table 6.3.7 HV minor projects – Amendments

No.	Project	Budget ($000)	Year	Change and reason
663 - A	Darfield township reinforcement	666	FY23	Deferred from FY21 as load growth has been slower than forecast.
913 - A	Heathcote Lyttelton reconfiguration	237	FY23	Deferred from FY21 as reconfiguration is lower priority than other scheduled projects.
920 - A	Southfield Dr cable upgrade	358	–	Rescheduled out of AMP period due forecast load growth indicating that existing capacity will be sufficient for the next 10 years.
922 - A	Milton ZS 11kV alteration	354	FY22	Deferred to FY22 and the project scope revised.

6.3.4 LV general projects

Table 6.3.8 LV general projects – Amendments

No.	Project	Budget ($000)	Year	Change and reason
384 - A	Unidentified LV reinforcement	100	FY21	FY21 budget reduced pending LV constraint study and monitoring results. Subsequent LV reinforcement FY budgets deferred by one year.

6.3.5 Network connections and extensions

The rate of new connections to our network has declined by 30% compared to the previous three years. This decline is sooner than we had previously forecast and has prompted us to reduce the forecast for the next three years.

This is offset by changes in unit costs which is more apparent from FY24 onwards. For details on the 10-year budget refer to Table 6.1.5.

6.4 Investment governance

During 2018 and 2019 we reviewed our processes and controls that manage our capital investment plans. We documented our investment and decision framework. Our process defines the investment thresholds that trigger the need for approval by the Board, Senior Leadership Team and managers. These have strong alignment to our delegations of authority policy.

Our thresholds are:

Table 6.4.1 Investment decision framework

Expenditure type:	Lifecycle	'Customer' projects	'Orion' projects
Driver	Replacement of existing infrastructure	Customer initiated	Orion initiated
Supported by	AMRs	Business case	Business case
Infrastructure managers	All AMRs	All business cases	All business cases
SLT review	• Largest six (in value) annually • Any with changes >10% and >$5m step change (over 10 year AMP period)	Any project >$0.25m (total gross)	Any project >$0.25m (total gross)
Board approval	• Largest two (in value) annually • Any with changes >10% and >$5m step change (over 10 year AMP period)	Any project >$0.5m Board Chair approval required Any project >$1.0m full Board approval required	Any project >$0.5m Board Chair approval required Any project >$1.0m full Board approval required

The Board's role is to ensure that both an appropriate level of diligence has been undertaken and that the investment is in line with Orion's strategic direction.

Our decision-making weighs up the options and alternatives, undergoes multi-layered challenge and recommends cost effective solutions to addressing network requirements for a safe, reliable and resilient network and service.

Customers can be confident Orion is making investment decisions that are prudent and in their long term interests.

7 Managing our assets

There are no material changes to our lifecycle asset management, with one exception. We have re-categorised our 66kV oil filled forecast to network development and integrated it into a wider 66kV architecture project.

8 Supporting our business

There are no material changes to the ways we support our business, to enable it to function.

9 Financial forecasting

9.1 Network expenditure forecasts

Our forecasts are based on our network operational and capital expenditure programmes and projects as set out in Section 6 of this 2020 AMP Update, and Section 7 of our 2019 AMP. These forecasts are based on the best information available at the time of publishing.

Our capex and opex forecasts allow for capitalisation of $3.5m of internal labour into capital works. Our 2019 AMP allowed $2.6m per annum. The $3.5m is apportioned as follows:

- Network capex $3.0m
- Non-network fixed assets $0.5m

All tables in this section correspond to the same table number in our 2019 AMP.

Table 9.1.1 Opex network – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Subtransmission overhead lines	1,974	2,270	2,242	2,227	2,247	2,258	2,258	2,258	2,008	2,008	**21,750**
11kV overhead lines	7,069	6,967	6,647	7,047	7,047	7,047	6,647	6,647	7,047	7,047	**69,212**
400V overhead lines	3,679	3,793	3,793	3,393	3,393	3,393	3,793	3,793	3,393	3,393	**35,816**
Earths	291	330	330	330	330	330	330	330	330	330	**3,261**
Subtransmission underground cables	696	646	596	196	196	196	196	196	196	196	**3,310**
11kV underground cables	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	**21,240**
400V underground cables	2,728	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	**26,668**
Asset information management	538	538	538	538	538	538	538	538	538	538	**5,380**
Storms	245	245	245	245	245	245	245	245	245	245	**2,450**
Monitoring	137	117	302	227	162	182	202	222	232	232	**2,015**
Protection	847	847	847	847	847	847	847	847	847	847	**8,470**
Communication cables	150	150	150	150	150	150	150	150	150	150	**1,500**
Communication systems	405	400	400	400	400	400	400	400	400	400	**4,005**
Control systems	465	435	435	435	454	435	435	435	464	435	**4,428**
Load management	420	360	360	360	360	360	360	360	360	360	**3,660**
Switchgear	1,210	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	**11,470**
Transformers	1,490	1,490	1,490	1,200	960	960	960	960	960	960	**11,430**
Substations	638	638	638	638	638	638	638	638	638	638	**6,380**
Buildings and enclosures	1,415	1,415	1,415	1,415	1,415	1,415	1,415	1,415	1,415	1,415	**14,150**
Grounds	460	460	460	460	460	460	460	460	460	460	**4,600**
Generators (fixed)	40	40	40	40	40	40	40	40	40	40	**400**
Total	**27,021**	**27,065**	**26,852**	**26,072**	**25,806**	**25,818**	**25,838**	**25,858**	**25,647**	**25,618**	**261,595**
Totals from 1 April 2019 AMP	**28,285**	**28,210**	**28,175**	**28,105**	**28,210**	**28,180**	**28,195**	**28,220**	**28,020**	**n/a**	**281,795**

9.1.2 Opex – network (Commerce Commission's categories)

Table 9.1.2 Opex – network (Commerce Commission's categories) – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
System interruptions and emergencies	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922	**79,220**
Vegetation	4,000	4,320	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	**40,320**
Routine and corrective maintenance and inspections	12,634	12,498	12,655	12,565	12,539	12,551	12,571	12,591	12,380	12,351	**125,335**
Asset replacement and renewals	2,465	2,325	2,275	1,585	1,345	1,345	1,345	1,345	1,345	1,345	**16,720**
Total	**27,021**	**27,065**	**26,852**	**26,072**	**25,806**	**25,818**	**25,838**	**25,858**	**25,647**	**25,618**	**261,595**
Totals from 1 April 2019 AMP	**28,285**	**28,210**	**28,175**	**28,105**	**28,210**	**28,180**	**28,195**	**28,220**	**28,020**	**n/a**	**281,795**

9.1.3 Opex contributions revenue

Table 9.1.3 Opex – network (Commerce Commission's categories) – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
USI load management	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	**(1,000)**
Network recoveries	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	**(10,000)**
Total	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(1,100)**	**(11,000)**
Totals from 1 April 2019 AMP	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**(1,200)**	**n/a**	**(12,000)**

9.1.4 Capex summary

Table 9.1.4 Capex summary – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Customer connections / network extensions	9,185	9,185	9,185	8,895	8,895	8,895	8,895	8,895	8,895	8,895	**89,820**
Asset relocations	3,890	4,050	1,150	1,150	900	1,500	1,500	1,800	1,500	900	**18,340**
HV minor projects	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	**35,000**
LV project	658	1,070	1,054	1,350	1,330	1,561	1,586	1,803	1,774	350	**12,536**
HV major projects	10,858	16,283	17,387	20,552	11,924	21,940	5,238	10,192	6,180	9,574	**130,128**
GXP project	–	–	31,000	–	–	–	–	–	–	–	**31,000**
Replacement	33,811	30,292	33,535	33,480	37,527	36,720	42,194	33,999	28,432	26,509	**336,499**
Capitalised internal labour	3,035	3,035	3,035	3,035	3,035	3,035	3,035	3,035	3,035	3,035	**30,350**
Total	**64,937**	**67,415**	**99,846**	**71,962**	**67,111**	**77,151**	**65,948**	**63,224**	**53,316**	**52,763**	**683,673**
Totals from 1 April 2019 AMP	**71,766**	**61,778**	**82,748**	**69,370**	**73,520**	**73,157**	**76,451**	**62,392**	**56,173**	**n/a**	**691,728**

9.1.5 Capital contributions revenue

Table 9.1.5 Capital contributions revenue – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Asset relocations	(3,052)	(3,180)	(740)	(740)	(615)	(1,095)	(1,095)	(1,065)	(915)	(615)	**(13,112)**
Customer connections / network extensions	(995)	(995)	(947)	(887)	(875)	(875)	(875)	(875)	(875)	(875)	**(9,074)**
Major projects	–	(3,160)	(2,922)	–	–	–	–	(2,015)	–	–	**(8,097)**
Total	**(4,047)**	**(7,335)**	**(4,609)**	**(1,627)**	**(1,490)**	**(1,970)**	**(1,970)**	**(3,955)**	**(1,790)**	**(1,490)**	**(30,283)**
Totals from 1 April 2019 AMP	**(6,187)**	**(6,332)**	**(4,792)**	**(1,644)**	**(3,794)**	**(1,544)**	**(1,544)**	**(1,544)**	**(1,544)**	**n/a**	**(32,288)**

9.1.6 Capex – customer connections / network extension

Table 9.1.6 Capex customer connections / network extension – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
General connections	3,615	3,615	3,615	3,465	3,465	3,465	3,465	3,465	3,465	3,465	**35,100**
Large connections	1,270	1,270	1,270	1,217	1,217	1,217	1,217	1,217	1,217	1,217	**12,329**
Subdivisions	2,000	2,000	2,000	1,913	1,913	1,913	1,913	1,913	1,913	1,913	**19,391**
Switchgear purchases	800	800	800	800	800	800	800	800	800	800	**8,000**
Transformer purchases	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	**15,000**
Total	**9,185**	**9,185**	**9,185**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**	**8,895**	**89,820**
Totals from 1 April 2019 AMP	**11,849**	**11,856**	**11,572**	**10,755**	**10,810**	**10,755**	**10,755**	**10,755**	**10,755**	**n/a**	**111,739**

9.1.7 Asset relocations / conversions

On occasion we are required to relocate some of our assets or convert sections of our overhead lines to underground cables at the request of road corridor authorities, councils or developers. We negotiate with the third parties to share costs and agree on timeframes. Our forecast for asset relocations / conversions is shown in Table 9.1.7.

Table 9.1.7 Asset relocation / conversion capex – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
FY21 AMP	3,890	4,050	1,150	1,150	900	1,500	1,500	1,800	1,500	900	**18,340**
Contributions	(3,052)	(3,180)	(740)	(740)	(615)	(1,095)	(1,095)	(1,065)	(915)	(615)	**(13,112)**
Total	**838**	**870**	**410**	**410**	**285**	**405**	**405**	**735**	**585**	**285**	**5,228**
Totals from 1 April 2019 AMP	**945**	**1,000**	**500**	**420**	**510**	**510**	**510**	**510**	**510**	**n/a**	**5,635**

9.1.8 Capex – HV minor projects

Table 9.1.8 Capex – HV minor projects – $000

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
808	Edward Street cables	762	–	–	–	–	–	–	–	–	–	**762**
952	Addington 11kV reinforcement	246	–	–	–	–	–	–	–	–	–	**246**
975	Akaroa generator connection site preparation	195	–	–	–	–	–	–	–	–	–	**195**
982	Akaroa reliability improvement	133	–	–	–	–	–	–	–	–	–	**133**
993	Tennyson St to Izone Business Park reinforcement	166	–	–	–	–	–	–	–	–	–	**166**
994	11kV fault indication trial	75	–	–	–	–	–	–	–	–	–	**75**
995	Reinforcement of Mairehau Rd 11kV	77	–	–	–	–	–	–	–	–	–	**77**
1003	Springston ZS new 11kV feeder	595	–	–	–	–	–	–	–	–	–	**595**
1004	Jones Rd reinforcement	342	–	–	–	–	–	–	–	–	–	**342**
806	Gerald Street cable	–	151	–	–	–	–	–	–	–	–	**151**
1055	Papanui 11kV primary configuration	–	261	–	–	–	–	–	–	–	–	**261**
922	Milton ZS 11kV alteration	–	354	–	–	–	–	–	–	–	–	**354**
983	Belfast ZS 11kV feeders	–	1,460	–	–	–	–	–	–	–	–	**1,460**
997	Coleridge generator connection and reliability improvement	–	317	–	–	–	–	–	–	–	–	**317**
663	Darfield township reinforcement	–	–	666	–	–	–	–	–	–	–	**666**
913	Heathcote Lyttelton reconfiguration	–	–	237	–	–	–	–	–	–	–	**237**
Subtotal		2,591	2,543	903	–	–	–	–	–	–	–	**6,037**
Unscheduled HV minor		909	900	900	900	900	900	900	900	900	900	**9,009**
Unidentified HV minor		–	57	1,697	2,600	2,600	2,600	2,600	2,600	2,600	2,600	**19,954**
Total		**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**35,000**
Totals from 1 April 2019 AMP		**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**n/a**	**35,000**

9.1.9 Capex – LV projects

Table 9.1.9 Capex – LV projects – $000

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
384	Unidentified LV reinforcement	100	250	250	300	300	300	350	350	350	350	**2,900**
884	Low voltage monitoring	558	820	804	1,050	1,030	1,261	1,236	1,453	1,424	–	**9,636**
Total		**658**	**1,070**	**1,054**	**1,350**	**1,330**	**1,561**	**1,586**	**1,803**	**1,774**	**350**	**12,536**
Totals from 1 April 2019 AMP		**793**	**1,048**	**1,082**	**1,322**	**1,302**	**1,577**	**1,553**	**1,764**	**1,736**	**n/a**	**12,731**

9.1.10 Capex – major GXP projects

Table 9.1.10 Capex – GXP projects – $000

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
996	Norwood GXP – new Region B 220/66kV substation	–	–	31,000	–	–	–	–	–	–	–	**31,000**
Total		**–**	**–**	**31,000**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**31,000**
Totals from 1 April 2019 AMP		**–**	**–**	**17,500**	**–**	**–**	**–**	**–**	**–**	**–**	**n/a**	**17,500**

9.1.11 Capex – HV major projects

Table 9.1.11 Capex – HV major projects – $000

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
541	Hawthornden ZS 66kV T-off	2,846	–	–	–	–	–	–	–	–	–	**2,846**
937	McFaddens ZS 66kV bay	490	–	–	–	–	–	–	–	–	–	**490**
949	Dunsandel to Killinchy line upgrade	31	–	–	–	–	–	–	–	–	–	**31**
964	Bromley 66kV bay for Lancaster cable	615	–	–	–	–	–	–	–	–	–	**615**
968	Re-terminate Lancaster ZS 66kV cable	168	–	–	–	–	–	–	–	–	–	**168**
925	Belfast ZS – new 66/11kV substation	3,100	4,452	–	–	–	–	–	–	–	–	**7,552**
926	Belfast ZS to Marshland 66kV cable	3,188	3,816	–	–	–	–	–	–	–	–	**7,004**
637	Railway Rd 11kV substation	–	2,918	–	–	–	–	–	–	–	–	**2,918**
940	Norwood GXP to Dunsandel 66kV line	–	2,898	–	–	–	–	–	–	–	–	**2,898**
946	Dunsandel ZS 66kV line bay	–	505	–	–	–	–	–	–	–	–	**505**
931	Norwood 66kV switching station	–	1,274	2,587	–	–	–	–	–	–	–	**3,861**
491	Belfast to McFaddens 66kV cable links	–	–	8,537	–	–	–	–	–	–	–	**8,537**
939	Dunsandel ZS 3rd transformer	–	–	1,898	–	–	–	–	–	–	–	**1,898**
941	Norwood GXP to Brookside 66kV line	–	–	3,945	–	–	–	–	–	–	–	**3,945**
723	Milton switchgear and building	–	–	–	4,521	–	–	–	–	–	–	**4,521**
728	Springston ZS 11kV switchboard ext.	–	–	–	587	–	–	–	–	–	–	**587**
894	Springston 2nd 66/11kV transformer	–	–	–	1,861	–	–	–	–	–	–	**1,861**
943	Norwood GXP to Highfield 66kV line	–	–	–	1,264	–	–	–	–	–	–	**1,264**
962	Bromley ZS to Milton ZS 66kV cable	–	–	–	11,899	–	–	–	–	–	–	**11,899**
589	Lancaster ZS to Milton ZS 66kV cable	–	–	–	–	3,888	–	–	–	–	–	**3,888**
665	Hoon Hay ZS 66kV switchgear	–	–	–	–	3,035	–	–	–	–	–	**3,035**
944	Norwood GXP to Burnham 66kV line	–	–	–	–	3,120	–	–	–	–	–	**3,120**
953	Norwood GXP 66kV line bays	–	–	–	–	971	–	–	–	–	–	**971**
954	Highfield ZS 66kV line bay	–	–	–	–	490	–	–	–	–	–	**490**
639	Burnham ZS – new 66/11kV substation	–	–	–	–	–	8,563	–	–	–	–	**8,563**
664	Milton ZS to Hoon Hay ZS 66kV cable	–	–	–	–	–	6,486	–	–	–	–	**6,486**
671	Halswell ZS 66kV switchgear	–	–	–	–	–	3,673	–	–	–	–	**3,673**
919	Halswell ZS 3rd transformer	–	–	–	–	–	1,801	–	–	–	–	**1,801**

Table 9.1.11 Capex – HV major projects – $000 (continued)

No.	Project	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
934	Walkers Rd 66kV line conversion	–	–	–	–	–	164	–	–	–	–	**164**
1000	Burnham ZS 66kV cable	–	–	–	–	–	833	–	–	–	–	**833**
726	Hoon Hay to Halswell 66kV cable	–	–	–	–	–	–	4,818	–	–	–	**4,818**
587	Te Pirita ZS 66kV bays	–	–	–	–	–	–	–	964	–	–	**964**
670	Steeles Rd substation	–	–	–	–	–	–	–	3,066	–	–	**3,066**
731	Addington to Oxford-Tuam 66kV cable	–	–	–	–	–	–	–	4,529	–	–	**4,529**
872	Addington ZS 66kV bay	–	–	–	–	–	–	–	1,213	–	–	**1,213**
965	Fendalton ZS 66kV switchgear	–	–	–	–	–	–	–	–	1,453	–	**1,453**
966	Addington to Fendalton 66kV cable	–	–	–	–	–	–	–	–	4,307	–	**4,307**
967	Armagh ZS to Fendalton ZS 66kV cable	–	–	–	–	–	–	–	–	–	7,743	**7,743**
987	Selwyn Rd 66kV line	–	–	–	–	–	–	–	–	–	62	**62**
1001	Burnham ZS 66kV bay	–	–	–	–	–	–	–	–	–	516	**516**
1002	Burnham School Rd 66kV cable	–	–	–	–	–	–	–	–	–	833	**833**
955	Strategic Land Purchase	420	420	420	420	420	420	420	420	420	420	**4,200**
HV major projects total		**10,858**	**16,283**	**17,387**	**20,552**	**11,924**	**21,940**	**5,238**	**10,192**	**6,180**	**9,574**	**130,128**
Totals from 1 April 2019 AMP		**15,793**	**9,044**	**13,629**	**10,982**	**11,077**	**10,953**	**10,553**	**4,328**	**400**	**n/a**	**100,603**

9.1.12 Capex – replacement

Table 9.1.12 Capex – replacement – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Subtransmission overhead lines	909	630	705	705	3,205	705	3,205	705	705	705	**12,179**
11kV overhead lines	3,075	3,075	3,625	5,100	5,100	6,100	8,100	8,000	7,300	7,300	**56,775**
400V overhead lines	2,932	3,412	3,602	4,034	4,514	4,994	5,426	5,906	5,426	4,898	**45,144**
Subtransmission underground cables	–	–	–	–	–	–	–	–	–	–	**–**
11kV underground cables	300	300	300	100	100	100	100	100	100	100	**1,600**
400V underground cables	7,128	7,128	7,128	7,128	7,128	7,246	7,283	1,502	570	570	**52,811**
Communication cables	100	100	100	100	100	100	100	100	100	100	**1,000**
Monitoring	30	30	30	30	30	30	30	30	30	30	**300**
Protection	2,560	2,350	2,400	2,748	2,865	2,855	3,315	3,155	2,815	2,410	**27,473**
Communication systems	688	688	656	356	356	356	356	311	311	311	**4,389**
Control systems	1,518	1,518	1,448	768	1,068	1,718	1,608	100	100	100	**9,946**
Asset information management	220	70	70	40	190	40	40	40	40	40	**790**
Load management	280	180	930	930	230	660	230	230	230	230	**4,130**
Switchgear	7,723	7,853	9,243	9,113	10,313	9,488	10,073	9,060	8,545	7,555	**88,966**
Transformers	5,070	1,820	2,190	1,220	1,220	1,220	1,220	3,820	1,220	1,220	**20,220**
Substations	860	860	860	860	860	860	860	710	710	710	**8,150**
Buildings and enclosures	200	110	80	80	80	80	80	80	80	80	**950**
Grounds	200	150	150	150	150	150	150	150	150	150	**1,550**
Generators (fixed)	18	18	18	18	18	18	18	–	–	–	**126**
Total	**33,811**	**30,292**	**33,535**	**33,480**	**37,527**	**36,720**	**42,194**	**33,999**	**28,432**	**26,509**	**336,499**
Totals from 1 April 2019 AMP	**33,221**	**29,970**	**31,605**	**39,351**	**43,371**	**42,912**	**46,630**	**38,585**	**36,322**	**n/a**	**373,205**

9.1.13 Capex – replacement (Commerce Commission's categories)

Table 9.1.13 Capex – replacement (Commerce Commission's categories) – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Subtransmission	909	630	705	705	3,205	705	3,205	705	705	705	**12,179**
Zone substations	7,748	3,643	4,623	3,478	3,413	2,633	3,073	5,380	2,130	1,120	**37,241**
Distribution and LV lines	5,142	5,622	6,652	8,559	9,039	10,519	10,951	11,556	10,376	9,848	**88,264**
Distribution and LV cables	678	678	678	478	478	596	633	670	670	670	**6,229**
Distribution substations and transformers	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,480	1,480	1,480	**15,850**
Distribution switchgear	5,098	5,933	6,713	6,758	8,023	7,978	8,113	7,160	7,295	7,315	**70,386**
Other reliability, safety and environment	6,990	6,990	6,750	6,750	6,750	6,750	8,750	2,932	2,000	2,000	**56,662**
Quality of supply	105	105	105	105	105	105	105	60	60	60	**915**
Other network assets	5,511	5,061	5,679	5,017	4,884	5,804	5,734	4,056	3,716	3,311	**48,773**
Total	**33,811**	**30,292**	**33,535**	**33,480**	**37,527**	**36,720**	**42,194**	**33,999**	**28,432**	**26,509**	**336,499**
Totals from 1 April 2019 AMP	**33,221**	**29,970**	**31,605**	**39,351**	**43,371**	**42,912**	**46,630**	**38,585**	**36,322**	**n/a**	**373,205**

9.2 Non-network expenditure forecasts

This section describes our forecast operational expenditure to plan, operate and administer our network operations. It does not include operational expenditure on our network assets, consistent with the Commerce Commission's required expenditure breakdowns and definitions.

Table 9.2.1 System operations and network support – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Infrastructure management	1,501	1,501	1,501	1,501	1,501	1,501	1,501	1,501	1,501	1,501	**15,010**
Network strategy and transformation	91	91	91	91	91	91	91	91	91	91	**910**
Network management	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	**33,340**
Network operations	7,185	7,211	7,226	7,241	7,256	7,271	7,286	7,301	7,316	7,331	**72,624**
Contact centre	719	719	719	719	719	719	719	719	719	719	**7,190**
Engineering	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	**18,120**
Works delivery	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	**27,500**
Customer connections	1,939	1,937	1,937	1,937	1,937	1,937	1,937	1,937	1,937	1,937	**19,372**
Procurement and property services	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	**10,110**
Quality, health, safety and environment	819	818	823	818	818	818	823	818	818	818	**8,191**
Asset storage	600	600	600	600	600	600	600	600	600	600	**6,000**
Less capitalised internal labour	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	(2,799)	**(27,990)**
Total	**18,962**	**18,985**	**19,005**	**19,015**	**19,030**	**19,045**	**19,065**	**19,075**	**19,090**	**19,105**	**190,377**
Totals from 1 April 2019 AMP	**20,340**	**20,778**	**20,811**	**20,834**	**20,861**	**20,890**	**20,922**	**20,942**	**20,973**	**n/a**	**207,518**

9.2.2 Board of directors' fees and expenses

Table 9.2.2 Board of directors' fees and expenses – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Board of directors fees and expenses	445	445	445	445	445	445	445	445	445	445	**4,450**
Total	**445**	**445**	**445**	**445**	**445**	**445**	**445**	**445**	**445**	**445**	**4,450**
Totals from 1 April 2019 AMP	**426**	**426**	**426**	**426**	**426**	**426**	**426**	**426**	**426**	**n/a**	**4,260**

9.2.3 Business support

Table 9.2.3 Business support – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Senior leadership	4,330	4,310	4,310	4,310	4,310	4,310	4,310	4,310	4,310	4,310	**43,120**
People and capability	1,088	953	968	953	968	953	968	953	968	953	**9,725**
Our Powerful Future	1,005	1,005	1,005	1,005	1,005	1,005	1,005	1,005	1,005	1,005	**10,050**
Finance	1,334	1,401	1,391	1,401	1,379	1,421	1,371	1,401	1,391	1,409	**13,899**
Information solutions	3,757	3,780	3,803	3,778	3,780	3,803	3,753	3,780	3,803	3,699	**37,736**
Commercial	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	**18,430**
Customer and stakeholder engagement	2,428	2,726	2,724	2,724	2,724	2,724	2,724	2,724	2,724	2,724	**26,946**
Governance and risk	116	116	116	116	116	116	116	116	116	116	**1,160**
Insurance	2,245	2,306	2,371	2,438	2,507	2,578	2,651	2,726	2,803	2,882	**25,507**
Corporate property	877	880	884	887	890	892	892	893	894	895	**8,884**
Vehicles	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	(1,194)	**(11,940)**
Less capitalised internal labour	(701)	(701)	(701)	(701)	(701)	(701)	(701)	(701)	(701)	(701)	**(7,010)**
Total	**17,128**	**17,425**	**17,520**	**17,560**	**17,627**	**17,750**	**17,738**	**17,856**	**17,962**	**17,941**	**176,507**
Totals from 1 April 2019 AMP	**17,985**	**18,165**	**18,347**	**18,366**	**18,482**	**18,507**	**18,623**	**18,673**	**18,781**	**n/a**	**183,595**

9.2.4 Capex non-network

Table 9.2.4 Capex non-network – $000

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Plant and vehicles	1,460	1,183	1,794	985	1,182	1,025	855	2,082	958	960	**12,484**
Information technology	3,865	2,252	3,070	767	1,396	1,042	518	1,291	475	555	**15,231**
Corporate properties	442	397	397	397	397	397	397	397	397	397	**4,015**
Tools and equipment	723	351	236	336	236	236	371	236	236	336	**3,297**
Capitalised internal labour	465	465	465	465	465	465	465	465	465	465	**4,650**
Total	**6,955**	**4,648**	**5,962**	**2,950**	**3,676**	**3,165**	**2,606**	**4,471**	**2,531**	**2,713**	**39,677**
Totals from 1 April 2019 AMP	**3,024**	**3,937**	**3,871**	**3,876**	**3,807**	**3,114**	**3,388**	**3,653**	**3,797**	**n/a**	**37,900**

9.3 Total capital and operations expenditure

Table 9.3.1 Total capital and operational expenditure – $000

	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Capital expenditure	71,892	72,063	74,808^	74,912	70,787	80,316	68,554	67,695	55,847	55,476	**692,350**
Operational expenditure	63,556	63,920	63,822	63,092	62,908	63,058	63,086	63,234	63,144	63,109	**632,929**
Total	**135,448**	**135,983**	**138,630^**	**138,004**	**133,695**	**143,374**	**131,640**	**130,929**	**118,991**	**118,585**	**1,325,279**
Totals from 1 April 2019 AMP	**141,826**	**133,294**	**136,878^**	**140,977**	**145,306**	**144,274**	**148,005**	**134,309**	**128,170**	**n/a**	**1,389,293**

^ Note: This value excludes an estimated $31m (prior year: $17.5m) for a new GXP at Norwood, built for Orion by Transpower, as Orion will not incur the cash capex.

9.4 Changes from our previous forecasts

The material changes to our forecasts are set out below.

9.4.1 Opex – network

The top three Opex material changes are:

- Our emergency budget for 11kV underground cables has been reduced as there have been fewer third party faults and the number of cable failures has been steady
- Our refurbishment work on 66kV joints has been reduced as oil filled cable numbers will reduce during the forecast period
- We have slightly reduced our expectations of radio maintenance and software upgrades as part of our communication systems to align with current forecasts

9.4.2 Capex – network replacement

Our replacement programme is broadly consistent with what we forecast in our 2019 AMP, with these material changes:

- Our 66kV oil filled cable forecast has been re-categorised to network development and integrated into a wider 66kV architecture project
- We forecast an increase of $11m across the nine overlapping years for 400V overhead lines. This is mainly due to an increase of unit rate for pole replacement which takes into account the complexity of work in areas such as Banks Peninsula
- We forecast a decrease of $7.2m for the purchase of distribution transformers. This has been recalibrated to more closely reflect the actual number of units replaced under emergency and capex projects

9.4.3 Connections / extensions

The rate of new connections to our network has declined by 30% compared to the previous three years. This decline in the rate of new connections is sooner than we had previously forecast and has prompted us to reduce the number of connections we have forecast for the next three years. This is offset by changes in unit costs which is more apparent from FY24 onwards.

9.4.4 Asset relocations / conversions

There are no material changes to our asset locations or conversions.

9.4.5 HV minor projects

Our HV minor forecasts remain constant at $3.5M per annum.

9.4.6 LV Projects

We have reduced the LV reinforcement forecast for FY21 pending LV constraint study and monitoring results.

9.4.7 Major projects

There are two material changes. We have:

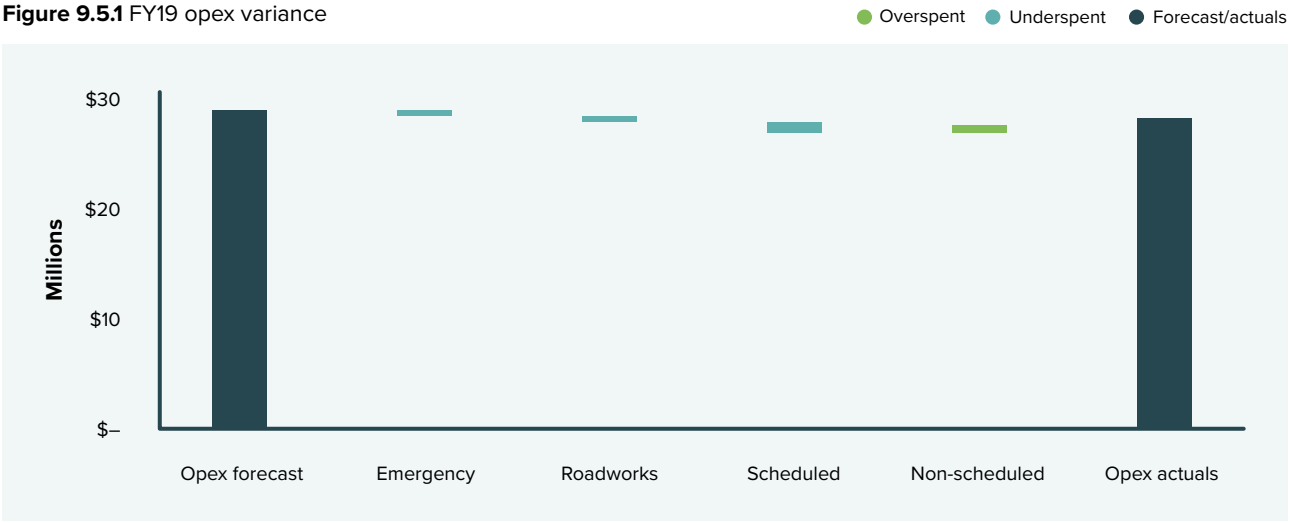
- Delayed completion of four HV major projects related to the new zone substation proposed for the north of Christchurch. We have delayed these projects due to slower than forecast load uptake and to coordinate our works to minimise disruption to the northern Christchurch road transportation links.
- Added 12 HV major projects associated with the 66kV self-contained oil filled cable replacement programme. We have also amended the timing of two of these projects. A brief overview of the programme and description of each project, in this 10-year period, can be found in Section 6.3.2.1.

9.5 Expenditure variation

9.5.1 Network opex variation

Our maintenance costs for FY19 were $27.5m, compared with our budget forecast of $29m. The breakdown is shown in Figure 9.5.1.

Figure 9.5.1 FY19 opex variance



The main drivers for the under-expenditure of $1.5m were:

- $1m underspent in scheduled works largely accounted for by service providers being unable to complete works due to planning/resource issues
- $0.5M underspent for emergency is due to benign winter weather compared to previous years

9.5.2 Network capex variation

Our network capex actuals for FY19 were $70m, compared with our budget forecast of $59m. The breakdown is shown in Figure 9.5.2.

Figure 9.5.2 FY19 capex variance

The main drivers for the over-expenditure of $11M were:

- $6m overspent in major projects due to carry over work from FY18 and some customer driven work that were not in the forecast
- $8.3m overspent is due to higher than expected costs in the customer connections area
- $3.3m underspent is due to less than expected undergrounding work associated with roadworks (NZ Transport Agency driven)

10 Our ability to deliver

There are no material changes to our key philosophies, policies and processes that enable us to deliver our works programme and AMP objectives.

Appendices

Schedule 11a. Report on forecast capital expenditure

Company name: Orion NZ Ltd – AMP planning period: 1 April 2020 – 31 March 2030

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25	CY+6 31 Mar 26	CY+7 31 Mar 27	CY+8 31 Mar 28	CY+9 31 Mar 29	CY+10 31 Mar 30
9	**11a(i): Expenditure on Assets Forecast**	**$000 (in nominal dollars)**										
10	Consumer connection	12,669	9,635	13,029	12,234	10,041	10,322	10,512	10,847	16,185	11,521	11,813
11	System growth	17,799	10,136	17,803	11,079	8,954	10,213	18,414	5,207	5,347	5,531	7,545
12	Asset replacement and renewal	32,064	28,026	24,972	29,452	30,056	35,593	35,295	40,657	38,827	34,159	32,470
13	Asset relocations	1,288	4,161	4,360	1,269	1,298	1,044	1,773	1,829	2,254	1,943	1,195
14	Reliability, safety and environment:											
15	Quality of supply	554	5,646	1,337	11,162	19,840	9,351	13,621	7,511	9,085	9,383	10,363
16	Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
17	Other reliability, safety and environment	-	7,333	7,806	7,451	7,620	7,833	7,977	10,671	3,671	2,591	2,656
18	**Total reliability, safety and environment**	554	12,979	9,143	18,614	27,460	17,184	21,598	18,181	12,756	11,973	13,019
19	**Expenditure on network assets**	64,373	64,937	69,307	72,648	77,810	74,357	87,592	76,722	75,368	65,127	66,043
20	Expenditure on non-network assets	5,433	6,955	4,774	6,281	3,159	4,029	3,535	2,959	5,244	2,990	3,279
21	**Expenditure on assets**	69,806	71,892	74,081	78,929	80,969	78,386	91,127	79,681	80,612	68,117	69,322
23	*plus* Cost of financing	-	-	-	-	-	-	-	-	-	-	-
24	*less* Value of capital contributions	3,363	4,047	7,541	4,863	1,759	1,651	2,237	2,292	4,715	2,187	1,865
25	*plus* Value of vested assets	-	-	-	-	-	-	-	-	-	-	-
27	**Capital expenditure forecast**	66,443	67,845	66,540	74,066	79,210	76,735	88,890	77,389	75,898	65,931	67,457
29	Assets commissioned	89,832	67,145	65,826	73,338	78,467	75,977	88,117	76,601	75,093	65,110	66,620
32		**$000 (in constant prices)**										
33	Consumer connection	12,669	9,635	12,674	11,594	9,287	9,316	9,259	9,324	13,577	9,432	9,438
34	System growth	17,799	10,136	17,317	10,499	8,281	9,218	16,219	4,476	4,485	4,528	6,028
35	Asset replacement and renewal	32,064	28,026	24,291	27,910	27,797	32,125	31,088	34,947	32,571	27,964	25,941
36	Asset relocations	1,288	4,161	4,241	1,203	1,201	943	1,561	1,572	1,891	1,591	955
37	Reliability, safety and environment:											
38	Quality of supply	554	5,646	1,301	10,578	18,349	8,440	11,997	6,456	7,621	7,681	8,279
39	Legislative and regulatory	-	-	-	-	-	-					
40	Other reliability, safety and environment	-	7,333	7,593	7,061	7,047	7,070	7,026	9,172	3,079	2,121	2,122
41	**Total reliability, safety and environment**	554	12,979	8,893	17,640	25,396	15,509	19,023	15,628	10,700	9,802	10,401
42	**Expenditure on network assets**	64,373	64,937	67,415	68,846	71,962	67,111	77,151	65,948	63,224	53,316	52,763
43	Expenditure on non-network assets	5,433	6,955	4,648	5,962	2,950	3,676	3,165	2,606	4,471	2,531	2,713
44	**Expenditure on assets**	69,806	71,892	72,063	74,808	74,912	70,787	80,316	68,554	67,695	55,847	55,476
46	**Subcomponents of expenditure on assets (where known)**											
47	Energy efficiency and DSM, reduction of energy losses	-	-	-	-	-	-	-	-	-	-	-
48	Overhead to underground conversion	1,288	4,161	4,241	1,203	1,201	943	1,773	1,829	2,254	1,943	1,195
49	Research and development	-	585	859	841	1,096	1,079	1,313	1,296	1,526	1,510	-
50												

Notes: Forecast capex totals are consistent with the totals in prior sections of this AMP. However, Schedule 11a has total capex broken into the Commerce Commission disclosure categories and includes the apportionment of capitalised internal labour. The financial section (Section 9) has the amount of internal capitalised labour shown as a single line item.

Some projects have changed their Schedule 11a. category compared to previous disclosures to better reflect their main driver for the expenditure.

Schedule 11a. Report on forecast capital expenditure continued

Company name: Orion NZ Ltd – AMP planning period: 1 April 2020 – 31 March 2030

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25	CY+6 31 Mar 26	CY+7 31 Mar 27	CY+8 31 Mar 28	CY+9 31 Mar 29	CY+10 31 Mar 30
53	**Difference between nominal and constant price forecasts**	**$000**										
54	Consumer connection	-	-	356	640	755	1,006	1,253	1,523	2,608	2,089	2,375
55	System growth	-	-	486	580	673	995	2,195	731	862	1,003	1,517
56	Asset replacement and renewal	-	-	682	1,541	2,259	3,469	4,207	5,709	6,257	6,195	6,529
57	Asset relocations	-	-	119	66	98	102	211	257	363	352	240
58	Reliability, safety and environment:											
59	Quality of supply	-	-	37	584	1,491	911	1,624	1,055	1,464	1,702	2,084
60	Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
61	Other reliability, safety and environment	-	-	213	390	573	763	951	1,498	592	470	534
62	**Total reliability, safety and environment**	-	-	250	974	2,064	1,675	2,574	2,553	2,055	2,171	2,618
63	**Expenditure on network assets**	-	-	1,892	3,802	5,849	7,246	10,441	10,774	12,145	11,811	13,280
64	Expenditure on non-network assets	-	-	126	319	209	353	370	353	773	459	566
65	**Expenditure on assets**	-	-	2,018	4,121	6,058	7,599	10,811	11,127	12,918	12,270	13,846
68	**11a(ii): Consumer Connection**											
69	*Consumer types defined by EDB (see note)*	**$000 (in constant prices)**										
70	General Connections	4,293	3,792	3,785	3,782	3,618	3,629					
71	Large Customers	1,369	1,332	4,385	3,314	1,271	1,275					
72	Subdivisions	3,501	2,098	2,094	2,092	1,997	2,004					
73	Switchgear	1,317	839	838	837	835	838					
74	Transformers	2,189	1,574	1,571	1,569	1,566	1,571					
76	**Consumer connection expenditure**	12,669	9,635	12,674	11,594	9,287	9,316					
77	*less* Capital contributions funding consumer connections	983	995	2,454	1,896	887	875					
78	**Consumer connection less capital contributions**	11,686	8,640	10,220	9,698	8,400	8,441					
79	**11a(iii): System Growth**											
80	Subtransmission	6,746	121	4,897	6,833	1,320	4,798					
81	Zone substations	7,228	7,037	9,468	439	2,994	440					
82	Distribution and LV lines	505	-	-	-	-	-					
83	Distribution and LV cables	2,299	2,025	1,949	262	313	314					
84	Distribution substations and transformers	12	-	-	-	-	-					
85	Distribution switchgear	25	-	-	248	-	-					
86	Other network assets	984	954	1,002	2,717	3,654	3,666					
87	**System growth expenditure**	17,799	10,136	17,317	10,499	8,281	9,218					
88	*less* Capital contributions funding system growth	1,500	-	1,702	1,973	-	-					
89	**System growth less capital contributions**	16,299	10,136	15,615	8,526	8,281	9,218					
90												

Note: Our capex budgets for new connections are broken down into asset types rather than consumer types and therefore the consumer type definitions in this schedule differ from Schedule 12c(i).

Schedule 11a. Report on forecast capital expenditure continued

Company name: Orion NZ Ltd – AMP planning period: 1 April 2020 – 31 March 2030

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25
93	**11a(iv): Asset Replacement and Renewal**	**$000 (in constant prices)**					
94	Subtransmission	1,086	954	660	738	736	3,357
95	Zone substations	3,892	8,128	3,815	4,836	3,631	3,575
96	Distribution and LV lines	4,225	5,394	5,887	6,959	8,936	9,467
97	Distribution and LV cables	586	711	710	709	499	501
98	Distribution substations and transformers	3,108	1,710	1,707	1,705	1,702	1,707
99	Distribution switchgear	5,263	5,348	6,213	7,023	7,055	8,403
100	Other network assets	13,905	5,781	5,300	5,941	5,238	5,115
101	**Asset replacement and renewal expenditure**	32,064	28,026	24,291	27,910	27,797	32,125
102	*less* Capital contributions funding asset replacement	-	-	-	-	-	-
103	**Asset replacement and renewal less capital contributions**	32,064	28,026	24,291	27,910	27,797	32,125
107	**11a(v):Asset Relocations**						
108	*Project or programme*	**$000 (in constant prices)**					
109	NZTA	91	210	209	209	209	209
110	Christchurch City Council	544	700	262	523	522	262
111	Selwyn District Council	331	315	314	157	157	157
112	Developer / 3rd party	309	2,937	3,456	314	313	314
113	Otakaro	12	-	-	-	-	-
115	All other projects or programmes – asset relocations						
116	**Asset relocations expenditure**	1,288	4,161	4,241	1,203	1,201	943
117	*less* Capital contributions funding asset relocations	880	3,052	3,180	740	740	615
118	**Asset relocations less capital contributions**	408	1,109	1,061	463	461	328
122	**11a(vi):Quality of Supply**						
123	*Project or programme*	**$000 (in constant prices)**					
124	Hawthornden tee-off	-	2,986	-	-	-	-
	Northern Christchurch	-	514	-	8,931	-	-
	Region B Subtransmission	-	33	-	-	-	-
	Oil-filled cable replacement	-	821	-	-	17,143	7,251
	Akaroa township	-	344	-	-	-	-
	Rolleston security improvements	-	174	-	-	-	-
	11kV fault indication trial	-	79	-	-	-	-
125	Coleridge reliability improvement	-	-	332	-	-	-
126	Darfield reinforcement	-	-	-	697	-	-
127	LV monitoring	554	585	859	841	1,096	1,079
128	Comms associated with Entec line switches	-	110	110	110	110	110
130	All other projects or programmes – asset relocations						
131	**Quality of supply expenditure**	554	5,646	1,301	10,578	18,349	8,440
132	*less* Capital contributions funding quality of supply	-	-	-	-	-	-
133	**Quality of supply less capital contributions**	554	5,646	1,301	10,578	18,349	8,440

Schedule 11a. Report on forecast capital expenditure continued

Company name: Orion NZ Ltd – AMP planning period: 1 April 2020 – 31 March 2030

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25
137	**11a(vii): Legislative and Regulatory**						
138	*Project or programme*	**$000 (in constant prices)**					
139	N/A						
140							
141							
145	All other projects or programmes – legislative and regulatory						
146	**Legislative and regulatory expenditure**	-	-	-	-	-	-
147	*less* Capital contributions funding legislative and regulatory						
148	**Legislative and regulatory less capital contributions**	-	-	-	-	-	-
151	**11a(viii): Other Reliability, Safety and Environment**						
152	*Project or programme*	**$000 (in constant prices)**					
153	Papanui 11kV reconfiguration	-	-	273	-	-	-
154	LV ties replacement with Krone	-	252	251	-	-	-
155	Supply Fuse Relocation Programme	-	7,081	7,068	7,061	7,047	7,070
159	All other projects or programmes – reliability, safety and environment						
160	**Other reliability, safety and environment expenditure**	-	7,333	7,593	7,061	7,047	7,070
161	*less* Capital contributions funding reliability, safety	-	-	-	-	-	-
162	**Other reliability, safety and environment less capital contributions**	-	7,333	7,593	7,061	7,047	7,070
166	**11a(ix): Non-Network Assets**						
167	**Routine expenditure**						
168	*Project or programme*	**$000 (in constant prices)**					
169	Plant and vehicles	1,317	1,460	1,183	1,794	985	1,182
170	Information technology	2,633	4,330	2,717	3,535	1,232	1,861
171	Corporate land and buildings	940	442	397	397	397	397
172	Tools and equipment	543	723	351	236	336	236
175	All other projects or programmes – routine expenditure	-	-	-	-	-	-
176	**Routine expenditure**	5,433	6,955	4,648	5,962	2,950	3,676
177	**Atypical expenditure**						
178	*Project or programme*						
179	N/A						
180							
185	All other projects – atypical expenditure						
186	**Atypical expenditure**	-	-	-	-	-	-
188	**Expenditure on non-network assets**	5,433	6,955	4,648	5,962	2,950	3,676

Schedule 11b. Report on forecast capital expenditure continued

Company name: Orion NZ Ltd – AMP planning period: 1 April 2020 – 31 March 2030

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25	CY+6 31 Mar 26	CY+7 31 Mar 27	CY+8 31 Mar 28	CY+9 31 Mar 29	CY+10 31 Mar 30
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	8,990	7,922	8,133	8,343	8,551	8,765	8,984	9,209	9,439	9,675	9,916
11	Vegetation management	3,950	4,000	4,435	4,213	4,318	4,426	4,536	4,650	4,766	4,885	5,007
12	Routine and corrective maintenance and inspection	13,140	12,634	12,831	13,327	13,563	13,873	14,234	14,613	15,002	15,119	15,395
13	Asset replacement and renewal	2,115	2,465	2,387	2,396	1,711	1,488	1,525	1,563	1,603	1,643	1,684
14	**Network Opex**	28,195	27,021	27,785	28,279	28,143	28,552	29,279	30,034	30,809	31,321	32,002
15	System operations and network support	20,161	18,962	19,619	20,304	20,985	21,608	22,225	22,870	23,551	24,213	24,970
16	Business support	18,093	17,573	18,432	19,066	19,660	20,252	20,896	21,416	22,113	22,797	23,382
17	**Non-network opex**	38,254	36,535	38,051	39,370	40,645	41,860	43,121	44,286	45,664	47,010	48,352
18	**Operational expenditure**	66,449	63,556	65,836	67,649	68,788	70,412	72,400	74,320	76,473	78,331	80,354
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	8,990	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922	7,922
23	Vegetation management	3,950	4,000	4,320	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
24	Routine and corrective maintenance and inspection	13,140	12,634	12,498	12,655	12,565	12,539	12,551	12,571	12,591	12,380	12,351
25	Asset replacement and renewal	2,115	2,465	2,325	2,275	1,585	1,345	1,345	1,345	1,345	1,345	1,345
26	**Network opex**	28,195	27,021	27,065	26,852	26,072	25,806	25,818	25,838	25,858	25,647	25,618
27	System operations and network support	20,161	18,962	18,985	19,005	19,015	19,030	19,045	19,065	19,075	19,090	19,105
28	Business support	18,093	17,573	17,870	17,965	18,005	18,072	18,195	18,183	18,301	18,407	18,386
29	**Non-network opex**	38,254	36,535	36,855	36,970	37,020	37,102	37,240	37,248	37,376	37,497	37,491
30	**Operational expenditure**	66,449	63,556	63,920	63,822	63,092	62,908	63,058	63,086	63,234	63,144	63,109
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and DMS, reduction of energy losses	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
34	Direct billing*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
35	Research and Development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	Insurance	2,065	2,245	2,306	2,371	2,438	2,507	2,578	2,651	2,726	2,803	2,882
37	** Direct billing expenditure by suppliers that direct bill the majority of their consumers*											
41	**Difference between nominal and real forecasts**	**$000**										
42	Service interruptions and emergencies	-	-	211	421	629	843	1,062	1,287	1,517	1,753	1,994
43	Vegetation management	-	-	115	213	318	426	536	650	766	885	1,007
44	Routine and corrective maintenance and inspection	-	-	332	672	998	1,334	1,683	2,042	2,411	2,739	3,044
45	Asset replacement and renewal	-	-	62	121	126	143	180	218	258	298	339
46	**Network Opex**	-	-	720	1,427	2,071	2,746	3,461	4,196	4,951	5,674	6,384
47	System operations and network support	-	-	634	1,299	1,970	2,578	3,180	3,805	4,476	5,123	5,865
48	Business support	-	-	562	1,101	1,655	2,180	2,701	3,233	3,812	4,390	4,996
49	**Non-network opex**	-	-	1,196	2,400	3,625	4,758	5,881	7,038	8,288	9,513	10,861
50	**Operational expenditure**	-	-	1,916	3,827	5,696	7,504	9,342	11,234	13,239	15,187	17,245

Schedule 12a Report on asset condition

7					Asset condition at start of planning period (percentage of units by grade)							
8 9	**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%	13%	39%	48%	-	3	0%
11	All	Overhead Line	Wood poles	No.	1%	1%	27%	12%	59%	-	3	10%
12	All	Overhead Line	Other pole types	No.	-	-	-	-	-	-	N/A	-
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	-	-	12%	46%	42%	-	3	-
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	-	-	-	-	-	-	N/A	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	-	-	-	-	100%	-	3	-
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km	-	-	13%	86%	1%	-	3	-
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	-	-	-	78%	22%	-	3	-
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	km	-	-	-	-	-	-	N/A	-
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	km	-	-	-	-	-	-	N/A	-
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	-	-	-	-	-	-	N/A	-
24	HV	Zone substation Buildings	Zone substations up to 66kV	No.	-	1%	7%	58%	33%	-	3	-
25	HV	Zone substation Buildings	Zone substations 110kV+	No.	-	-	-	-	-	-	N/A	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	-	-	-	-	100%	-	3	-
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	-	5%	33%	40%	23%	-	3	37%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.	-	-	-	-	-	-	N/A	
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	-	-	47%	9%	44%	-	3	12%
30	HV	Zone substation switchgear	33kV RMU	No.	-	-	-	-	-	-	N/A	-
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.	-	-	-	-	-	-	N/A	-
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.	-	-	11%	3%	87%	-	4	4%
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	-	-	30%	6%	63%	-	4	17%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.	-	-	-	-	-	-	N/A	-

Schedule 12a Report on asset condition continued

36					Asset condition at start of planning period (percentage of units by grade)							
37 38	**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**
39	HV	Zone Substation Transformer	Zone Substation Transformers	No.	-	3%	33%	36%	27%	-	3	4%
40	HV	Distribution Line	Distribution OH Open Wire Conductor	km	-	-	7%	36%	57%	-	3	9%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km	-	-	-	-	-	-	N/A	-
42	HV	Distribution Line	SWER conductor	km	-	-	13%	24%	62%	-	3	-
43	HV	Distribution Cable	Distribution UG XLPE or PVC	km	-	-	0%	0%	100%	-	3	-
44	HV	Distribution Cable	Distribution UG PILC	km	-	-	16%	51%	32%	1%	3	-
45	HV	Distribution Cable	Distribution Submarine Cable	km	-	-	-	-	-	-	N/A	-
46	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) – reclosers and sec	No.	-	-	2%	2%	97%	-	4	-
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.	-	-	53%	12%	35%	-	4	21%
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	1%	3%	10%	46%	40%	0%	2	5%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) – except RMU	No.	-	93%	7%	-	-	-	4	93%
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	-	-	21%	22%	57%	-	4	8%
51	HV	Distribution Transformer	Pole Mounted Transformer	No.	0%	1%	11%	24%	64%	-	3	5%
52	HV	Distribution Transformer	Ground Mounted Transformer	No.	-	-	20%	23%	58%	-	3	5%
53	HV	Distribution Transformer	Voltage regulators	No.	-	-	27%	-	73%	-	3	-
54	HV	Distribution Substations	Ground Mounted Substation Housing	No.	0%	0%	12%	47%	40%	-	3	2%
55	LV	LV Line	LV OH Conductor	km	-	0%	6%	59%	35%	0%	3	-
56	LV	LV Cable	LV UG Cable	km	-	-	0%	13%	87%	0%	3	0%
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	-	-	-	-	-	100%	1	-
58	LV	Connections	OH/UG consumer service connections	No.	-	-	5%	85%	10%	-	1	5%
59	All	Protection	Protection relays (electromechanical, solid state)	No.	-	-	18%	23%	59%	-	3	22%
60	All	SCADA and communications	SCADA and comms equipment operating as a single system	Lot	-	7%	30%	22%	41%	0%	3	60%
61	All	Capacitor Banks	Capacitors including controls	No.	-	-	-	-	100%	-	2	-
62	All	Load Control	Centralised plant	Lot	-	-	16%	67%	18%	-	3	3%
63	All	Load Control	Relays	No.	-	-	-	-	-	100%	1	-
64	All	Civils	Cable Tunnels	km	-	-	-	-	100%	-	3	-

Schedule 12b Report on forecast capacity

	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	Addington 11kV #1	16	30	N-1	16	52%	30	62%	No constraint within +5 years	
10	Addington 11kV #2	20	30	N-1	20	66%	30	69%	No constraint within +5 years	
11	Armagh	15	40	N-1	15	38%	40	50%	No constraint within +5 years	Central City Rebuild expected to give large load increase over next few years
12	Barnett Park	9	15	N	9	59%	15	61%	No constraint within +5 years	Single 66kV line and 23MVA transformer backed up by 11kV but limited to 15MVA by compliance with security of supply standard
13	Bromley	31	60	N-1	31	52%	60	55%	No constraint within +5 years	
14	Dallington	27	40	N-1	27	68%	40	70%	No constraint within +5 years	
15	Fendalton	33	40	N-1	33	83%	40	85%	No constraint within +5 years	
16	Halswell	17	23	N-1	17	75%	23	98%	No constraint within +5 years	Install 3rd transformer when needed
17	Hawthornden	30	40	N-1	30	75%	40	78%	No constraint within +5 years	
18	Heathcote	23	40	N-1	23	57%	40	61%	No constraint within +5 years	
19	Hoon Hay	31	40	N-1	31	78%	40	83%	No constraint within +5 years	
20	Hornby	15	20	N-1	15	73%	20	81%	No constraint within +5 years	
21	Ilam	7	11	N-1	7	66%	11	71%	No constraint within +5 years	
22	Lancaster	19	40	N-1	19	47%	40	51%	No constraint within +5 years	
23	McFaddens	33	40	N-1	33	83%	40	87%	No constraint within +5 years	
24	Middleton	23	40	N-1	23	57%	40	68%	No constraint within +5 years	
25	Milton	35	40	N-1	35	87%	40	92%	No constraint within +5 years	
26	Moffett	12	23	N-1	12	54%	23	68%	No constraint within +5 years	
27	Oxford Tuam	12	40	N-1	12	30%	40	42%	No constraint within +5 years	Central City Rebuild expected to give large load increase over next few years
	Papanui	39	48	N-1	39	81%	48	99%	Other	Install new Belfast zone substation to alleviate 11kV constraint which also avoids emerging transformer constraint
	Prebbleton	7	15	N	7	45%	15	48%	No constraint within +5 years	
	Rawhiti	27	40	N-1	27	66%	40	69%	No constraint within +5 years	
	Shands	9	20	N-1	9	44%	20	56%	No constraint within +5 years	
	Sockburn	25	29	N-1	25	88%	29	88%	No constraint within +5 years	
	Waimakariri	17	40	N-1	17	42%	40	46%	No constraint within +5 years	
	Annat	4	-	N	3	-	-	-	No constraint within +5 years	
	Bankside	6	-	N	4	-	-	-	No constraint within +5 years	
	Brookside 66kV	10	-	N	7	-	-	-	No constraint within +5 years	
	Darfield	5	-	N	4	-	-	-	No constraint within +5 years	
	Diamond Harbour	2	-	N	2	-	-	-	No constraint within +5 years	
	Dunsandel	17	23	N-1	12	73%	23	99%	No constraint within +5 years	Install 3rd transformer when needed
	Duvauchelle	5	8	N-1	5	62%	8	62%	No constraint within +5 years	
	Greendale	7	-	N	5	-	-	-	No constraint within +5 years	

Schedule 12b Report on forecast capacity continued

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
	Highfield	6	-	N	4	-	-	-	No constraint within +5 years	
	Hills	7	-	N	5	-	-	-	No constraint within +5 years	
	Hororata	9	-	N	6	-	-	-	No constraint within +5 years	
	Killinchy	10	-	N	7	-	-	-	No constraint within +5 years	
	Kimberley	14	23	N-1	10	62%	23	66%	No constraint within +5 years	
	Larcomb	12	23	N-1	8	52%	23	78%	No constraint within +5 years	
	Lincoln	11	10	N-1	7	107%	10	123%	Transformer	Constraint to be resolved by transfers to Springston zone substation
	Little River	1	-	N	1	-	-	-	No constraint within +5 years	
	Motukarara	2	8	N-1	2	29%	8	33%	No constraint within +5 years	
	Rolleston	9	10	N-1	7	93%	10	104%	Transformer	Constraint to be resolved by transfers to Larcomb, Weedons and Highfield
	Springston 66/11kV	7	-	N	5	-	10	73%	No constraint within +5 years	Staged upgrade to 2 x 10MVA transformers
	Te Pirita	8	-	N	5	-	-	-	No constraint within +5 years	
28	Weedons	11	23	N-1	8	48%	23	63%	No constraint within +5 years	

Schedule 12c Report on forecast network demand

7	**12c(i): Consumer Connections**						
8	*Number of ICPs connected in year by consumer type*	**Number of connections**					
9		Current year	CY+1	CY+2	CY+3	CY+4	CY+5
10	For year ended	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25
11	*Consumer types defined by EDB**						
12	Streetlighting	7	25	25	25	25	25
13	General	3,715	4,260	4,030	3,330	2,830	2,830
14	Irrigation	7	20	20	20	20	20
15	Major Customer	13	25	25	25	25	25
16	Large Capacity	-	-	-	-	-	-
17	**Connections total**	3,742	4,330	4,100	3,400	2,900	2,900
18							
19	**Distributed generation**						
20	Number of connections	600	570	570	570	570	570
21	Capacity of distributed generation installed in year (MVA)	9	7	7	7	7	7
22	**12c(ii) System Demand**						
23							
24	**Maximum coincident system demand (MW)**						
25	GXP demand	604	618	627	638	646	651
26	*plus* Distributed generation output at HV and above	1	1	1	1	1	1
27	**Maximum coincident system demand**	605	619	628	639	647	652
28	*less* Net transfers to (from) other EDBs at HV and above	-	-	-	-	-	-
29	**Demand on system for supply to consumers' connection points**	605	619	628	639	647	652
30	**Electricity volumes carried (GWh)**						
31	Electricity supplied from GXPs	3,310	3,343	3,377	3,410	3,444	3,479
32	*less* Electricity exports to GXPs	-	-	-	-	-	-
33	*plus* Electricity supplied from distributed generation	9	9	10	10	11	11
34	*less* Net electricity supplied to (from) other EDBs	-	-	-	-	-	-
35	**Electricity entering system for supply to ICPs**	3,319	3,353	3,386	3,421	3,455	3,490
36	*less* Net transfers to (from) other EDBs at HV and above	3,180	3,212	3,246	3,278	3,310	3,344
37	**Losses**	139	141	141	143	145	147
38							
39	**Load factor**	63%	62%	62%	61%	61%	61%
40	**Loss ratio**	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%

Schedule 12d Report forecast interruptions and duration

	For year ended	Current year 31 Mar 20	CY+1 31 Mar 21	CY+2 31 Mar 22	CY+3 31 Mar 23	CY+4 31 Mar 24	CY+5 31 Mar 25
10	**SAIDI**						
11	Class B (planned interruptions on the network)	6.7	9.4	9.8	10.1	10.5	10.9
12	Class C (unplanned interruptions on the network)	77.3	67.6	66.7	66.0	65.8	65.6
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.03	0.04	0.04	0.04	0.04	0.04
15	Class C (unplanned interruptions on the network)	1.06	0.83	0.83	0.83	0.82	0.82

Schedule 13 Report on asset management maturity

Schedule 13 is laid out with the questions and Orion's maturity level (Score) results on left hand page with the questions repeated on the facing page along with the detailed maturity level assessment criteria.
See Section 2.9 for information regarding the assessment process.

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
3	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	3.5	The AM Policy document also clearly reflects the drivers of Orion 2 main stakeholders (both local councils), they are their to serve the needs of their communities. The Asset Management Policy is now embedded into the AMP 2019 in section 2.7. It is clear, concise and brief. It sets the asset management direction for Orion and is easy for people to understand the key aims.	Widely used AM practice standards require an organisation to document, authorise and communicate its asset management policy (eg, as required in PAS 55 para 4.2 i). A key pre-requisite of any robust policy is that the organisation's top management must be seen to endorse and fully support it. Also vital to the effective implementation of the policy, is to tell the appropriate people of its content and their obligations under it. Where an organisation outsources some of its asset-related activities, then these people and their organisations must equally be made aware of the policy's content. Also, there may be other stakeholders, such as regulatory authorities and shareholders who should be made aware of it.	Top management. The management team that has overall responsibility for asset management.	The organisation's asset management policy, its organisational strategic plan, documents indicating how the asset management policy was based upon the needs of the organisation and evidence of communication.
10	Asset management strategy	What has the organisation done to ensure that its asset management strategy is consistent with other appropriate organisational policies and strategies, and the needs of stakeholders?	4	The Orion NZ Asset Management Strategy is imbedded within the AMP 2019 document in section 2.8. Orion's Asset Management Strategy has six stated focus areas: 1. Listening to our customers 2. Continuous improvement to ensure a safe, reliable and resilient network and operations 3. Being committed to continuous improvement in health and safety 4. Minimising our impact on the environment 5. Continually developing our capability as effective asset managers 6. Enabling our customers to take advantage of future technologies.	In setting an organisation's asset management strategy, it is important that it is consistent with any other policies and strategies that the organisation has and has taken into account the requirements of relevant stakeholders. This question examines to what extent the asset management strategy is consistent with other organisational policies and strategies (eg, as required by PAS 55 para 4.3.1 b) and has taken account of stakeholder requirements as required by PAS 55 para 4.3.1 c). Generally, this will take into account the same polices, strategies and stakeholder requirements as covered in drafting the asset management policy but at a greater level of detail.	Top management. The organisation's strategic planning team. The management team that has overall responsibility for asset management.	The organisation's asset management strategy document and other related organisational policies and strategies. Other than the organisation's strategic plan, these could include those relating to health and safety, environmental, etc. Results of stakeholder consultation.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
3	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	The organisation does not have a documented asset management policy.	The organisation has an asset management policy, but it has not been authorised by top management, or it is not influencing the management of the assets.	The organisation has an asset management policy, which has been authorised by top management, but it has had limited circulation. It may be in use to influence development of strategy and planning but its effect is limited.	"The asset management policy is authorised by top management, is widely and effectively communicated to all relevant employees and stakeholders, and used to make these persons aware of their asset related obligations. Whilst the policy has not changed, the asset management practise within the policy has been updated (see below) and shows greater engagement."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The asset management policy, cautious approach to risk and clear understanding of why Orion was using its assets in this manner were spread well through the organisation and its contractors. "
10	Asset management strategy	What has the organisation done to ensure that its asset management strategy is consistent with other appropriate organisational policies and strategies, and the needs of stakeholders?	"The organisation has not considered the need to ensure that its asset management strategy is appropriately aligned with the organisation's other organisational policies and strategies or with stakeholder requirements. OR The organisation does not have an asset management strategy."	The need to align the asset management strategy with other organisational policies and strategies as well as stakeholder requirements is understood and work has started to identify the linkages or to incorporate them in the drafting of asset management strategy.	Some of the linkages between the long-term asset management strategy and other organisational policies, strategies and stakeholder requirements are defined but the work is fairly well advanced but still incomplete.	"All linkages are in place and evidence is available to demonstrate that, where appropriate, the organisation's asset management strategy is consistent with its other organisational policies and strategies. The organisation has also identified and considered the requirements of relevant stakeholders. Specific asset management practises (i.e. Reporting & capturing suspect poles) are well understood by the staff running the process. Recent changes to structure and staffing levels reflect the importance placed on these linkages."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Some processes are functional but are not documented formally."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
11	Asset management strategy	In what way does the organisation's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organisation has stewardship?	3.5	For each of these focus areas, a detailed explanation is provided within section 2.8 of AMP 2019. Each focus area topic has the following specific details documented: • Purpose; • Focus area objectives, and; • Initiatives	Good asset stewardship is the hallmark of an organisation compliant with widely used AM standards. A key component of this is the need to take account of the lifecycle of the assets, asset types and asset systems. (For example, this requirement is recognised in 4.3.1 d) of PAS 55). This question explores what an organisation has done to take lifecycle into account in its asset management strategy.	Top management. People in the organisation with expert knowledge of the assets, asset types, asset systems and their associated life-cycles. The management team that has overall responsibility for asset management. Those responsible for developing and adopting methods and processes used in asset management	The organisation's documented asset management strategy and supporting working documents.
26	Asset management plan(s)	How does the organisation establish and document its asset management plan(s) across the life cycle activities of its assets and asset systems?	3.5	Latest AMP sets out Orion's asset management policy, strategy, practices and expenditure forecasts for the next 10 years from 1 April 2019. This current 372 page document has been substantially updated from the last AMP and is of very high quality.	The asset management strategy need to be translated into practical plan(s) so that all parties know how the objectives will be achieved. The development of plan(s) will need to identify the specific tasks and activities required to optimize costs, risks and performance of the assets and/or asset system(s), when they are to be carried out and the resources required.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers.	The organisation's asset management plan(s).
27	Asset management plan(s)	How has the organisation communicated its plan(s) to all relevant parties to a level of detail appropriate to the receiver's role in their delivery?	3.5	Latest AMP sets out Orion's asset management policy, strategy, practices and expenditure forecasts for the next 10 years from 1 April 2019. This current 372 page document has been substantially updated from the last AMP and is of very high quality.	Plans will be ineffective unless they are communicated to all those, including contracted suppliers and those who undertake enabling function(s). The plan(s) need to be communicated in a way that is relevant to those who need to use them.	The management team with overall responsibility for the asset management system. Delivery functions and suppliers.	Distribution lists for plan(s). Documents derived from plan(s) which detail the receivers role in plan delivery. Evidence of communication.
29	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	3.5	Responsibility for AMP actions and focus is now included in in staff Job Descriptions and Contractors scopes of work.	The implementation of asset management plan(s) relies on (1) actions being clearly identified, (2) an owner allocated and (3) that owner having sufficient delegated responsibility and authority to carry out the work required. It also requires alignment of actions across the organisation. This question explores how well the plan(s) set out responsibility for delivery of asset plan actions.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers. If appropriate, the performance management team.	The organisation's asset management plan(s). Documentation defining roles and responsibilities of individuals and organisational departments.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
11	Asset management strategy	n what way does the organisation's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organisation has stewardship?	"The organisation has not considered the need to ensure that its asset management strategy is produced with due regard to the lifecycle of the assets, asset types or asset systems that it manages. OR The organisation does not have an asset management strategy."	The need is understood, and the organisation is drafting its asset management strategy to address the lifecycle of its assets, asset types and asset systems.	The long-term asset management strategy takes account of the lifecycle of some, but not all, of its assets, asset types and asset systems.	"The asset management strategy takes account of the lifecycle of all of its assets, asset types and asset systems. Asset management strategy is evident in the discussions and decision-making process. It was clearly articulated and there was understanding ""around the table.""""	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The Strategic Asset Management documentation is articulated and well understood, but not full documented."
26	Asset management plan(s)	How does the organisation establish and document its asset management plan(s) across the life cycle activities of its assets and asset systems?	The organisation does not have an identifiable asset management plan(s) covering asset systems and critical assets.	The organisation has asset management plan(s) but they are not aligned with the asset management strategy and objectives and do not take into consideration the full asset life cycle (including asset creation, acquisition, enhancement, utilisation, maintenance decommissioning and disposal).	The organisation is in the process of putting in place comprehensive, documented asset management plan(s) that cover all life cycle activities, clearly aligned to asset management objectives and the asset management strategy.	"Asset management plan(s) are established, documented, implemented and maintained for asset systems and critical assets to achieve the asset management strategy and asset management objectives across all life cycle phases.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
27	Asset management plan(s)	How has the organisation communicated its plan(s) to all relevant parties to a level of detail appropriate to the receiver's role in their delivery?	The organisation does not have plan(s) or their distribution is limited to the authors.	"The plan(s) are communicated to some of those responsible for delivery of the plan(s). OR Communicated to those responsible for delivery is either irregular or ad-hoc."	The plan(s) are communicated to most of those responsible for delivery but there are weaknesses in identifying relevant parties resulting in incomplete or inappropriate communication. The organisation recognises improvement is needed as is working towards resolution.	"The plan(s) are communicated to all relevant employees, stakeholders and contracted service providers to a level of detail appropriate to their participation or business interests in the delivery of the plan(s) and there is confirmation that they are being used effectively. Orion AMP is published and available via Web. The AMP is used for capital projects and planning. Business Case submissions to the Board revolve around the AMP"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Broad circulation of capital projects/ operations."
29	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	The organisation has not documented responsibilities for delivery of asset plan actions.	Asset management plan(s) inconsistently document responsibilities for delivery of plan actions and activities and/or responsibilities and authorities for implementation inadequate and/ or delegation level inadequate to ensure effective delivery and/ or contain misalignments with organisational accountability.	Asset management plan(s) consistently document responsibilities for the delivery of actions but responsibility/authority levels are inappropriate/ inadequate, and/or there are misalignments within the organisation.	Asset management plan(s) consistently document responsibilities for the delivery actions and there is adequate detail to enable delivery of actions. Designated responsibility and authority for achievement of asset plan actions is appropriate. Yes and delegations documented.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
31	Asset management plan(s)	What has the organisation done to ensure that appropriate arrangements are made available for the efficient and cost effective implementation of the plan(s)? (Note this is about resources and enabling support)	3.5	The Annual Work Plan continues to be the core communication as to what activities are planned. There is a robust process to manage the approval of forward projects and their inclusion onto the Annual Work Plan. There appears to be an increased confidence into the quality and accuracy of the proposed project justifications.	It is essential that the plan(s) are realistic and can be implemented, which requires appropriate resources to be available and enabling mechanisms in place. This question explores how well this is achieved. The plan(s) not only need to consider the resources directly required and timescales, but also the enabling activities, including for example, training requirements, supply chain capability and procurement timescales.	The management team with overall responsibility for the asset management system. Operations, maintenance and engineering managers. If appropriate, the performance management team. If appropriate, the performance management team. Where appropriate the procurement team and service providers working on the organisation's asset-related activities.	The organisation's asset management plan(s). Documented processes and procedures for the delivery of the asset management plan.
33	Contingency planning	What plan(s) and procedure(s) does the organisation have for identifying and responding to incidents and emergency situations and ensuring continuity of critical asset management activities?	4	Orion are continuing to develop and improve their contingency planning and resilience capabilities. Example of this are the Crisis Simulation – Exercise Blue Sky – 16 May 2019, Document No. NW70.00.14 - Disaster Resilience Summary (Amendment 10), Emergency Incident Response – Power Outage, Emergency response – Asset Failure Assessment and Emergency response – accident/injury/fatality.	Widely used AM practice standards require that an organisation has plan(s) to identify and respond to emergency situations. Emergency plan(s) should outline the actions to be taken to respond to specified emergency situations and ensure continuity of critical asset management activities including the communication to, and involvement of, external agencies. This question assesses if, and how well, these plan(s) triggered, implemented and resolved in the event of an incident. The plan(s) should be appropriate to the level of risk as determined by the organisation's risk assessment methodology. It is also a requirement that relevant personnel are competent and trained.	The manager with responsibility for developing emergency plan(s). The organisation's risk assessment team. People with designated duties within the plan(s) and procedure(s) for dealing with incidents and emergency situations.	The organisation's plan(s) and procedure(s) for dealing with emergencies. The organisation's risk assessments and risk registers.
37	Structure, authority and responsibilities	What has the organisation done to appoint member(s) of its management team to be responsible for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	3.5	Part of the recent organisational structural change at Orion focused on people skills, training and understanding of the community's needs to engender that trust. As part of the operating principles, and no surprises, those approaches are taken not only for Accounts and Finance but also for Asset Management, Public Relations and Legal (Liabilities).	In order to ensure that the organisation's assets and asset systems deliver the requirements of the asset management policy, strategy and objectives responsibilities need to be allocated to appropriate people who have the necessary authority to fulfil their responsibilities. (This question, relates to the organisation's assets eg, para b), s 4.4.1 of PAS 55, making it therefore distinct from the requirement contained in para a), s 4.4.1 of PAS 55).	Top management. People with management responsibility for the delivery of asset management policy, strategy, objectives and plan(s). People working on asset-related activities.	Evidence that managers with responsibility for the delivery of asset management policy, strategy, objectives and plan(s) have been appointed and have assumed their responsibilities. Evidence may include the organisation's documents relating to its asset management system, organisational charts, job descriptions of post-holders, annual targets/objectives and personal development plan(s) of post-holders as appropriate.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
31	Asset management plan(s)	What has the organisation done to ensure that appropriate arrangements are made available for the efficient and cost effective implementation of the plan(s)? (Note this is about resources and enabling support)	The organisation has not considered the arrangements needed for the effective implementation of plan(s).	The organisation recognises the need to ensure appropriate arrangements are in place for implementation of asset management plan(s) and is in the process of determining an appropriate approach for achieving this.	The organisation has arrangements in place for the implementation of asset management plan(s) but the arrangements are not yet adequately efficient and/or effective. The organisation is working to resolve existing weaknesses.	"The organisation's arrangements fully cover all the requirements for the efficient and cost effective implementation of asset management plan(s) and realistically address the resources and timescales required, and any changes needed to functional policies, standards, processes and the asset management information system. Orion have documented the changed organisation structure, their function and Job Description, along with their delegated authority."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
33	Contingency planning	What plan(s) and procedure(s) does the organisation have for identifying and responding to incidents and emergency situations and ensuring continuity of critical asset management activities?	The organisation has not considered the need to establish plan(s) and procedure(s) to identify and respond to incidents and emergency situations.	The organisation has some ad-hoc arrangements to deal with incidents and emergency situations, but these have been developed on a reactive basis in response to specific events that have occurred in the past.	Most credible incidents and emergency situations are identified. Either appropriate plan(s) and procedure(s) are incomplete for critical activities or they are inadequate. Training/ external alignment may be incomplete.	"Appropriate emergency plan(s) and procedure(s) are in place to respond to credible incidents and manage continuity of critical asset management activities consistent with policies and asset management objectives. Training and external agency alignment is in place. Disaster response plans are in place and are comprehensive. Active progress on security of stores has been evidenced."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. With learnings from the earthquakes, Orion has implemented a new IL 4 building which houses the staff and control room, along with a second containerised control room with associated generation to ensure a hot switch with zero delay in the event of a disaster. Mechanisms and operations are in place for this change, and are tested regularly - next scheduled IS/IT test October 2018"
37	Structure, authority and responsibilities	What has the organisation done to appoint member(s) of its management team to be responsible for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	Top management has not considered the need to appoint a person or persons to ensure that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s).	Top management understands the need to appoint a person or persons to ensure that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s).	Top management has appointed an appropriate people to ensure the assets deliver the requirements of the asset management strategy, objectives and plan(s) but their areas of responsibility are not fully defined and/or they have insufficient delegated authority to fully execute their responsibilities.	"The appointed person or persons have full responsibility for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s). They have been given the necessary authority to achieve this. Appointed staff have a job description and delegation with a clear understanding of what they are doing. Whilst not everyone articulated their purpose in terms of the asset management strategy and plan, none communicated process or actions that did not support them."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
40	Structure, authority and responsibilities	What has the organisation done to appoint member(s) of its management team to be responsible for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	3.5	Part of the recent organisational structural change at Orion focused on people skills, training and understanding of the community's needs to engender that trust. As part of the operating principles, and no surprises, those approaches are taken not only for Accounts and Finance but also for Asset Management, Public Relations and Legal (Liabilities).	Optimal asset management requires top management to ensure sufficient resources are available. In this context the term 'resources' includes manpower, materials, funding and service provider support.	Top management. The management team that has overall responsibility for asset management. Risk management team. The organisation's managers involved in day-to-day supervision of asset-related activities, such as frontline managers, engineers, foremen and chargehands as appropriate.	Evidence demonstrating that asset management plan(s) and/or the process(es) for asset management plan implementation consider the provision of adequate resources in both the short and long term. Resources include funding, materials, equipment, services provided by third parties and personnel (internal and service providers) with appropriate skills competencies and knowledge.
42	Structure, authority and responsibilities	To what degree does the organisation's top management communicate the importance of meeting its asset management requirements?	4	Part of the recent organisational structural change at Orion focused on people skills, training and understanding of the community's needs to engender that trust. As part of the operating principles, and no surprises, those approaches are taken not only for Accounts and Finance but also for Asset Management, Public Relations and Legal (Liabilities).	Widely used AM practice standards require an organisation to communicate the importance of meeting its asset management requirements such that personnel fully understand, take ownership of, and are fully engaged in the delivery of the asset management requirements (eg, PAS 55 s 4.4.1 g).	Top management. The management team that has overall responsibility for asset management. People involved in the delivery of the asset management requirements.	Evidence of such activities as road shows, written bulletins, workshops, team talks and management walk-about would assist an organisation to demonstrate it is meeting this requirement of PAS 55.
45	Outsourcing of asset management activities	The organisation has not considered the need to put controls in place.	4	Orion NZ have started the improvement process with out-sourcing and procurement of asset management processes. We believe that the contractors utilised are a good fit for the goals that Orion NZ is striving to achieve.	Where an organisation chooses to outsource some of its asset management activities, the organisation must ensure that these outsourced process(es) are under appropriate control to ensure that all the requirements of widely used AM standards (eg, PAS 55) are in place, and the asset management policy, strategy objectives and plan(s) are delivered. This includes ensuring capabilities and resources across a time span aligned to life cycle management. The organisation must put arrangements in place to control the outsourced activities, whether it be to external providers or to other in-house departments. This question explores what the organisation does in this regard.	Top management. The management team that has overall responsibility for asset management. The manager(s) responsible for the monitoring and management of the outsourced activities. People involved with the procurement of outsourced activities. The people within the organisations that are performing the outsourced activities. The people impacted by the outsourced activity.	The organisation's arrangements that detail the compliance required of the outsourced activities. For example, this this could form part of a contract or service level agreement between the organisation and the suppliers of its outsourced activities. Evidence that the organisation has demonstrated to itself that it has assurance of compliance of outsourced activities.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
40	Structure, authority and responsibilities	What has the organisation done to appoint member(s) of its management team to be responsible for ensuring that the organisation's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	The organisation's top management has not considered the resources required to deliver asset management.	The organisations top management understands the need for sufficient resources but there are no effective mechanisms in place to ensure this is the case.	A process exists for determining what resources are required for its asset management activities and in most cases these are available but in some instances resources remain insufficient.	"An effective process exists for determining the resources needed for asset management and sufficient resources are available. It can be demonstrated that resources are matched to asset management requirements. Management was in the process of changing resources to meet the changed demands of the regions development. New structures were in place and financial delegations updated (but planned for review in the near future for escalation.)"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
42	Structure, authority and responsibilities	To what degree does the organisation's top management communicate the importance of meeting its asset management requirements?	The organisation's top management has not considered the need to communicate the importance of meeting asset management requirements.	The organisations top management understands the need to communicate the importance of meeting its asset management requirements but does not do so.	Top management communicates the importance of meeting its asset management requirements but only to parts of the organisation.	"Top management communicates the importance of meeting its asset management requirements to all relevant parts of the organisation. Clear understanding across various departments and levels on asset management approach and criteria."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
45	Outsourcing of asset management activities	The organisation has not considered the need to put controls in place.	"The organisation has not considered the need to put controls in place."	The organisation controls its outsourced activities on an ad-hoc basis, with little regard for ensuring for the compliant delivery of the organisational strategic plan and/or its asset management policy and strategy.	Controls systematically considered but currently only provide for the compliant delivery of some, but not all, aspects of the organisational strategic plan and/ or its asset management policy and strategy. Gaps exist.	"Evidence exists to demonstrate that outsourced activities are appropriately controlled to provide for the compliant delivery of the organisational strategic plan, asset management policy and strategy, and that these controls are integrated into the asset management system. Orion are the first responder, but all field works are undertaken by pre-qualified and assessed contractors via a controlled access process."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. There was some evidence that the contractors understood Orion's asset management focus, but mostly an understanding of how they had to comply with Orion's technical specification, maintenance, assessments and works via the competency assessment and access controls."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
48	Training, awareness and competence	How does the organisation develop plan(s) for the human resources required to undertake asset management activities - including the development and delivery of asset management strategy, process(es), objectives and plan(s)?	3.5	Orion are working on training and looking to take a person who may fit the requirements at 80% and then do additional necessary in-house development.	There is a need for an organisation to demonstrate that it has considered what resources are required to develop and implement its asset management system. There is also a need for the organisation to demonstrate that it has assessed what development plan(s) are required to provide its human resources with the skills and competencies to develop and implement its asset management systems. The timescales over which the plan(s) are relevant should be commensurate with the planning horizons within the asset management strategy considers e.g. if the asset management strategy considers 5, 10 and 15 year time scales then the human resources development plan(s) should align with these. Resources include both 'in house' and external resources who undertake asset management activities.	Senior management responsible for agreement of plan(s). Managers responsible for developing asset management strategy and plan(s). Managers with responsibility for development and recruitment of staff (including HR functions). Staff responsible for training. Procurement officers. Contracted service providers.	Evidence of analysis of future work load plan(s) in terms of human resources. Document(s) containing analysis of the organisation's own direct resources and contractors resource capability over suitable timescales. Evidence, such as minutes of meetings, that suitable management forums are monitoring human resource development plan(s). Training plan(s), personal development plan(s), contract and service level agreements.
49	Training, awareness and competence	How does the organisation identify competency requirements and then plan, provide and record the training necessary to achieve the competencies?	3.5	Human Resources also are updating the training matrix. This is not fully across the company yet, but they are looking at a proposal including terms of references, as well as minimum parameters required for contractors.	Widely used AM standards require that organisations undertake a systematic identification of the asset management awareness and competencies required at each level and function within the organisation. Once identified the training required to provide the necessary competencies should be planned for delivery in a timely and systematic way. Any training provided must be recorded and maintained in a suitable format. Where an organisation has contracted service providers in place then it should have a means to demonstrate that this requirement is being met for their employees. (eg, PAS 55 refers to frameworks suitable for identifying competency requirements).	Senior management responsible for agreement of plan(s). Managers responsible for developing asset management strategy and plan(s). Managers with responsibility for development and recruitment of staff (including HR functions). Staff responsible for training. Procurement officers. Contracted service providers.	Evidence of an established and applied competency requirements assessment process and plan(s) in place to deliver the required training. Evidence that the training programme is part of a wider, co-ordinated asset management activities training and competency programme. Evidence that training activities are recorded and that records are readily available (for both direct and contracted service provider staff) e.g. via organisation wide information system or local records database.
50	Training, awareness and competence	How does the organization ensure that persons under its direct control undertaking asset management related activities have an appropriate level of competence in terms of education, training or experience?	3.5	As part of this in-house training, individuals are looked at across multiple departments to see who a possible "advancement person" could be. For example, AS/NZS 3910 contract training to provide consistency of approach to contractors across the organization. In addition, an individual may be sent out to site with a planner to go into the field to look at an installation look at the area look at the environment and look at the appropriate nature of the technology.	A critical success factor for the effective development and implementation of an asset management system is the competence of persons undertaking these activities. organisations should have effective means in place for ensuring the competence of employees to carry out their designated asset management function(s). Where an organisation has contracted service providers undertaking elements of its asset management system then the organisation shall assure itself that the outsourced service provider also has suitable arrangements in place to manage the competencies of its employees. The organisation should ensure that the individual and corporate competencies it requires are in place and actively monitor, develop and maintain an appropriate balance of these competencies.	Managers, supervisors, persons responsible for developing training programmes. Staff responsible for procurement and service agreements. HR staff and those responsible for recruitment.	Evidence of a competency assessment framework that aligns with established frameworks such as the asset management Competencies Requirements Framework (Version 2.0); National Occupational Standards for Management and Leadership; UK Standard for Professional Engineering Competence, Engineering Council, 2005.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
48	Training, awareness and competence	How does the organisation develop plan(s) for the human resources required to undertake asset management activities - including the development and delivery of asset management strategy, process(es), objectives and plan(s)?	The organisation has not recognised the need for assessing human resources requirements to develop and implement its asset management system.	The organisation has recognised the need to assess its human resources requirements and to develop a plan(s). There is limited recognition of the need to align these with the development and implementation of its asset management system.	The organisation has developed a strategic approach to aligning competencies and human resources to the asset management system including the asset management plan but the work is incomplete or has not been consistently implemented.	"The organisation can demonstrate that plan(s) are in place and effective in matching competencies and capabilities to the asset management system including the plan for both internal and contracted activities. Plans are reviewed integral to asset management system process(es). Staff training was clearly demonstrated and EAC/PHC were tracked and recorded, both for staff and approved contractors with substation/asset access."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
49	Training, awareness and competence	How does the organisation identify competency requirements and then plan, provide and record the training necessary to achieve the competencies?	The organisation does not have any means in place to identify competency requirements.	The organisation has recognised the need to identify competency requirements and then plan, provide and record the training necessary to achieve the competencies.	The organisation is the process of identifying competency requirements aligned to the asset management plan(s) and then plan, provide and record appropriate training. It is incomplete or inconsistently applied.	"Competency requirements are in place and aligned with asset management plan(s). Plans are in place and effective in providing the training necessary to achieve the competencies. A structured means of recording the competencies achieved is in place. Competency against job descriptions are recorded and reviewed along with delegations when promotions or re-organisations are undertaken,"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
50	Training, awareness and competence	How does the organization ensure that persons under its direct control undertaking asset management related activities have an appropriate level of competence in terms of education, training or experience?	The organization has not recognised the need to assess the competence of person(s) undertaking asset management related activities.	Competency of staff undertaking asset management related activities is not managed or assessed in a structured way, other than formal requirements for legal compliance and safety management.	The organization is in the process of putting in place a means for assessing the competence of person(s) involved in asset management activities including contractors. There are gaps and inconsistencies.	"Competency requirements are identified and assessed for all persons carrying out asset management related activities - internal and contracted. Requirements are reviewed and staff reassessed at appropriate intervals aligned to asset management requirements. Competency against job descriptions are recorded and reviewed along with delegations when promotions or re-organisations are undertaken."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
53	Communication, participation and consultation	How does the organisation ensure that pertinent asset management information is effectively communicated to and from employees and other stakeholders, including contracted service providers?	3.5	Overall internal and external communications is improving. A new Orion 2019 – 20 Stakeholder & Customer Engagement Framework has been developed. This chart helps to identify objectives, who stakeholders and customers are and the three areas of focus (Relationship Building. Our Powerful Future, Customer Experience).	Widely used AM practice standards require that pertinent asset management information is effectively communicated to and from employees and other stakeholders including contracted service providers. Pertinent information refers to information required in order to effectively and efficiently comply with and deliver asset management strategy, plan(s) and objectives. This will include for example the communication of the asset management policy, asset performance information, and planning information as appropriate to contractors.	Top management and senior management representative(s), employee's representative(s), employee's trade union representative(s); contracted service provider management and employee representative(s); representative(s) from the organisation's Health, Safety and Environmental team. Key stakeholder representative(s).	Asset management policy statement prominently displayed on notice boards, intranet and internet; use of organisation's website for displaying asset performance data; evidence of formal briefings to employees, stakeholders and contracted service providers; evidence of inclusion of asset management issues in team meetings and contracted service provider contract meetings; newsletters, etc.
59	Asset Management System documentation	What documentation has the organisation established to describe the main elements of its asset management system and interactions between them?	3.5	As part of the asset management, there has been improved documentation of process, guidelines and standards, with review of any gaps. This is still ongoing within the organization and includes review of staff position descriptions, external contracting and reporting.	Widely used AM practice standards require an organisation maintain up to date documentation that ensures that its asset management systems (ie, the systems the organisation has in place to meet the standards) can be understood, communicated and operated. (eg, s 4.5 of PAS 55 requires the maintenance of up to date documentation of the asset management system requirements specified throughout s 4 of PAS 55).	The management team that has overall responsibility for asset management. Managers engaged in asset management activities.	The documented information describing the main elements of the asset management system (process(es)) and their interaction.
62	Information management	What has the organisation done to determine what its asset management information system(s) should contain in order to support its asset management system?	3.5	With respect to changes of the overall information system, Orion has agreed that they do not require an enterprise system for asset management, but they need to focus on an effective Asset Management System which may require some merging of individual applications. A new post has been created for an information manager, who will continue to ensure that the information gathered is accurate and effectively relates to the needs of the asset management plan. This role will also review the use of technology as tools to improve field information gathering, such as the use of tablets in the field, (as opposed to paper).	"Effective asset management requires appropriate information to be available. Widely used AM standards therefore require the organisation to identify the asset management information it requires in order to support its asset management system. Some of the information required may be held by suppliers. The maintenance and development of asset management information systems is a poorly understood specialist activity that is akin to IT management but different from IT management. This group of questions provides some indications as to whether the capability is available and applied. Note: To be effective, an asset information management system requires the mobilisation of technology, people and process(es) that create, secure, make available and destroy the information required to support the asset management system."	The organisation's strategic planning team. The management team that has overall responsibility for asset management. Information management team. Operations, maintenance and engineering managers	Details of the process the organisation has employed to determine what its asset information system should contain in order to support its asset management system. Evidence that this has been effectively implemented.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
53	Communication, participation and consultation	How does the organisation ensure that pertinent asset management information is effectively communicated to and from employees and other stakeholders, including contracted service providers?	The organisation has not recognised the need to formally communicate any asset management information.	There is evidence that the pertinent asset management information to be shared along with those to share it with is being determined.	The organisation has determined pertinent information and relevant parties. Some effective two way communication is in place but as yet not all relevant parties are clear on their roles and responsibilities with respect to asset management information.	"Two way communication is in place between all relevant parties, ensuring that information is effectively communicated to match the requirements of asset management strategy, plan(s) and process(es). Pertinent asset information requirements are regularly reviewed. Clear evidence of communications and understanding"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
59	Asset Management System documentation	What documentation has the organisation established to describe the main elements of its asset management system and interactions between them?	The organisation has not established documentation that describes the main elements of the asset management system.	The organisation is aware of the need to put documentation in place and is in the process of determining how to document the main elements of its asset management system.	The organisation in the process of documenting its asset management system and has documentation in place that describes some, but not all, of the main elements of its asset management system and their interaction.	"The organisation has established documentation that comprehensively describes all the main elements of its asset management system and the interactions between them. The documentation is kept up to date. Very active documentation and drive to document and review"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The asset management policy is well recorded and documented - it is being actively reviewed and revised to suit the changing needs of the region and stakeholders. This was pro-active in approach and not left to lag."
62	Information management	What has the organisation done to determine what its asset management information system(s) should contain in order to support its asset management system?	The organisation has not considered what asset management information is required.	The organisation is aware of the need to determine in a structured manner what its asset information system should contain in order to support its asset management system and is in the process of deciding how to do this.	The organisation has developed a structured process to determine what its asset information system should contain in order to support its asset management system and has commenced implementation of the process.	"The organisation has determined what its asset information system should contain in order to support its asset management system. The requirements relate to the whole life cycle and cover information originating from both internal and external sources. Documented and available - A clear concise summary would be very useful."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen,"

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
63	Information management	How does the organisation maintain its asset management information system(s) and ensure that the data held within it (them) is of the requisite quality and accuracy and is consistent?	3	With respect to changes of the overall information system, Orion has agreed that they do not require an enterprise system for asset management, but they need to focus on an effective Asset Management System which may require some merging of individual applications. A new post has been created for an information manager, who will continue to ensure that the information gathered is accurate and effectively relates to the needs of the asset management plan. This role will also review the use of technology as tools to improve field information gathering, such as the use of tablets in the field, (as opposed to paper).	"The response to the questions is progressive. A higher scale cannot be awarded without achieving the requirements of the lower scale. This question explores how the organisation ensures that information management meets widely used AM practice requirements (eg, s 4.4.6 (a), (c) and (d) of PAS 55)."	The management team that has overall responsibility for asset management. Users of the organisational information systems.	The asset management information system, together with the policies, procedure(s), improvement initiatives and audits regarding information controls.
64	Information management	How has the organisation's ensured its asset management information system is relevant to its needs?	3	Continuous Improvement - As part of the improvement on as the drawings and records the following is being tested: • field forms are being revised o field Collect survey information on location of joints and works done. o Log photographs where equipment has been amended or changed. • tablet with a daily synchronization. 3rd Party Aspects - The field information records the work done and attaches materials used. This paperwork can be essential, such as third-party cost recovery from an accident of car versus pole.	Widely used AM standards need not be prescriptive about the form of the asset management information system, but simply require that the asset management information system is appropriate to the organisations needs, can be effectively used and can supply information which is consistent and of the requisite quality and accuracy.	The organisation's strategic planning team. The management team that has overall responsibility for asset management. Information management team. Users of the organisational information systems.	The documented process the organisation employs to ensure its asset management information system aligns with its asset management requirements. Minutes of information systems review meetings involving users.
69	Risk management process(es)	How has the organisation documented process(es) and/ or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle?	3.5	The asset management plan has a complete risk section, (chapter three), which looks at the electricity networks their sustainability, resilience, reliability and safe operating process. Orion's key focus with risk is to look at the added value that it may bring, and whilst they are not driven purely by the financial dividend, this is a consideration for shareholders.	Risk management is an important foundation for proactive asset management. Its overall purpose is to understand the cause, effect and likelihood of adverse events occurring, to optimally manage such risks to an acceptable level, and to provide an audit trail for the management of risks. Widely used standards require the organisation to have process(es) and/or procedure(s) in place that set out how the organisation identifies and assesses asset and asset management related risks. The risks have to be considered across the four phases of the asset lifecycle (eg, para 4.3.3 of PAS 55).	The top management team in conjunction with the organisation's senior risk management representatives. There may also be input from the organisation's Safety, Health and Environment team. Staff who carry out risk identification and assessment.	The organisation's risk management framework and/or evidence of specific process(es) and/ or procedure(s) that deal with risk control mechanisms. Evidence that the process(es) and/ or procedure(s) are implemented across the business and maintained. Evidence of agendas and minutes from risk management meetings. Evidence of feedback in to process(es) and/ or procedure(s) as a result of incident investigation(s). Risk registers and assessments.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
63	Information management	How does the organisation maintain its asset management information system(s) and ensure that the data held within it (them) is of the requisite quality and accuracy and is consistent?	There are no formal controls in place or controls are extremely limited in scope and/or effectiveness.	The organisation is aware of the need for effective controls and is in the process of developing an appropriate control process(es).	The organisation has developed a controls that will ensure the data held is of the requisite quality and accuracy and is consistent and is in the process of implementing them.	"The organisation has effective controls in place that ensure the data held is of the requisite quality and accuracy and is consistent. The controls are regularly reviewed and improved where necessary. The IS system is secure and well backed-up. GIS and BASIX were active and appeared accurate on the specific assets we sampled."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. No integrated management system, but the level of IS/IT was very appropriate for the size of Orion's organisation"
64	Information management	How has the organisation's ensured its asset management information system is relevant to its needs?	The organisation has not considered the need to determine the relevance of its management information system. At present there are major gaps between what the information system provides and the organisations needs.	The organisation understands the need to ensure its asset management information system is relevant to its needs and is determining an appropriate means by which it will achieve this. At present there are significant gaps between what the information system provides and the organisations needs.	The organisation has developed and is implementing a process to ensure its asset management information system is relevant to its needs. Gaps between what the information system provides and the organisations needs have been identified and action is being taken to close them.	"The organisation's asset management information system aligns with its asset management requirements. Users can confirm that it is relevant to their needs. Users were enthusiastic about the system and the fact that their feedback was taken into consideration."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Feedback was received and incorporated into the change of various key reports, such as suspect pole reports, to ensure better information was received. Disposed assets information was retained and was searchable so that past trends could be reviewed against current issues."
69	Risk management process(es)	How has the organisation documented process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle?	The organisation has not considered the need to document process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle.	The organisation is aware of the need to document the management of asset related risk across the asset lifecycle. The organisation has plan(s) to formally document all relevant process(es) and procedure(s) or has already commenced this activity.	The organisation is in the process of documenting the identification and assessment of asset related risk across the asset lifecycle but it is incomplete or there are inconsistencies between approaches and a lack of integration.	"Identification and assessment of asset related risk across the asset lifecycle is fully documented. The organisation can demonstrate that appropriate documented mechanisms are integrated across life cycle phases and are being consistently applied. Risk management was clearly articulated from all aspects, including technical, operational, sub-contracts and financial/administrative and procurement."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
79	Use and maintenance of asset risk information	How does the organisation ensure that the results of risk assessments provide input into the identification of adequate resources and training and competency needs?	4	Orion has decided to replace the oil field cables over the next 15 years. This has been precipitated by geotechnical analysis of the Alpine Fault, and the business case for this a collaborative approach. Oil filled cables react badly to seismic events and are reaching their thermal constraints when modelled for future growth. The availability for skilled, experienced jointing and on-going support of oil filled cables is now rare and is seen as a risk issue.	Widely used AM standards require that the output from risk assessments are considered and that adequate resource (including staff) and training is identified to match the requirements. It is a further requirement that the effects of the control measures are considered, as there may be implications in resources and training required to achieve other objectives.	Staff responsible for risk assessment and those responsible for developing and approving resource and training plan(s). There may also be input from the organisation's Safety, Health and Environment team.	The organisations risk management framework. The organisation's resourcing plan(s) and training and competency plan(s). The organisation should be able to demonstrate appropriate linkages between the content of resource plan(s) and training and competency plan(s) to the risk assessments and risk control measures that have been developed.
82	Legal and other requirements	What procedure does the organisation have to identify and provide access to its legal, regulatory, statutory and other asset management requirements, and how is requirements incorporated into the asset management system?	4	Orion has decided to replace the oil field cables over the next 15 years. This has been precipitated by geotechnical analysis of the Alpine Fault, and the business case for this a collaborative approach. Oil filled cables react badly to seismic events and are reaching their thermal constraints when modelled for future growth. The availability for skilled, experienced jointing and on-going support of oil filled cables is now rare and is seen as a risk issue.	In order for an organisation to comply with its legal, regulatory, statutory and other asset management requirements, the organisation first needs to ensure that it knows what they are (eg, PAS 55 specifies this in s 4.4.8). It is necessary to have systematic and auditable mechanisms in place to identify new and changing requirements. Widely used AM standards also require that requirements are incorporated into the asset management system (e.g. procedure(s) and process(es)).	Top management. The organisations regulatory team. The organisation's legal team or advisors. The management team with overall responsibility for the asset management system. The organisation's health and safety team or advisors. The organisation's policy making team.	The organisational processes and procedures for ensuring information of this type is identified, made accessible to those requiring the information and is incorporated into asset management strategy and objectives
88	Life Cycle Activities	How does the organisation establish implement and maintain process(es) for the implementation of its asset management plan(s) and control of activities across the creation, acquisition or enhancement of assets. This includes design, modification, procurement, construction and commissioning activities?	3.5	Orion is off the CPP and is now in a carry-over year with their focus currently on network growth. This is driven by the connections process, which is facilitated by the district plan and zoning from the councils. Looking further forward areas such as Lincoln may be constrained within 8 to 10 years. Resilience of the network continues to be a priority and the network topology is being reviewed to ascertain where an additional substation would be of benefit. The priority is to keep the network functioning as a highly reliable, safe, low risk system. Orion continue to review peak loading and looking for any areas that move outside of the security standard.	Life cycle activities are about the implementation of asset management plan(s) i.e. they are the “doing” phase. They need to be done effectively and well in order for asset management to have any practical meaning. As a consequence, widely used standards (eg, PAS 55 s 4.5.1) require organisations to have in place appropriate process(es) and procedure(s) for the implementation of asset management plan(s) and control of lifecycle activities. This question explores those aspects relevant to asset creation.	Asset managers, design staff, construction staff and project managers from other impacted areas of the business, e.g. Procurement	Documented process(es) and procedure(s) which are relevant to demonstrating the effective management and control of life cycle activities during asset creation, acquisition, enhancement including design, modification, procurement, construction and commissioning.
91	Life Cycle Activities	How does the organisation ensure that process(es) and/ or procedure(s) for the implementation of asset management plan(s) and control of activities during maintenance (and inspection) of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	3.5	Orion are continuing to update their technical specification in line with modern developments and industry best practice experiences. They have a focus to standardise equipment where possible and to phase out equipment with know issues or risks.	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action (eg, as required by PAS 55 s 4.5.1).	Asset managers, operations managers, maintenance managers and project managers from other impacted areas of the business	Documented procedure for review. Documented procedure for audit of process delivery. Records of previous audits, improvement actions and documented confirmation that actions have been carried out.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
79	Use and maintenance of asset risk information	How does the organisation ensure that the results of risk assessments provide input into the identification of adequate resources and training and competency needs?	The organisation has not considered the need to conduct risk assessments.	The organisation is aware of the need to consider the results of risk assessments and effects of risk control measures to provide input into reviews of resources, training and competency needs. Current input is typically ad-hoc and reactive.	The organisation is in the process ensuring that outputs of risk assessment are included in developing requirements for resources and training. The implementation is incomplete and there are gaps and inconsistencies.	Outputs from risk assessments are consistently and systematically used as inputs to develop resources, training and competency requirements. Examples and evidence is available.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Clear thought had been given to the risk process in related fields such as procurement and how this responded to legal and easement / access / maintenance and subsequent operational safety and reliability. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
82	Legal and other requirements	What procedure does the organisation have to identify and provide access to its legal, regulatory, statutory and other asset management requirements, and how is requirements incorporated into the asset management system?	The organisation has not considered the need to identify its legal, regulatory, statutory and other asset management requirements.	The organisation identifies some its legal, regulatory, statutory and other asset management requirements, but this is done in an ad-hoc manner in the absence of a procedure.	The organisation has procedure(s) to identify its legal, regulatory, statutory and other asset management requirements, but the information is not kept up to date, inadequate or inconsistently managed.	Evidence exists to demonstrate that the organisation's legal, regulatory, statutory and other asset management requirements are identified and kept up to date. Systematic mechanisms for identifying relevant legal and statutory requirements. Complied.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Orion reviewed their compliance in detail, including giving clear responsibility to one person in each key department who advised the Board on their obligations and potential impacts (not just financial or PR risk.) The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
88	Life Cycle Activities	How does the organisation establish implement and maintain process(es) for the implementation of its asset management plan(s) and control of activities across the creation, acquisition or enhancement of assets. This includes design, modification, procurement, construction and commissioning activities?	The organisation does not have process(es) in place to manage and control the implementation of asset management plan(s) during activities related to asset creation including design, modification, procurement, construction and commissioning.	The organisation is aware of the need to have process(es) and procedure(s) in place to manage and control the implementation of asset management plan(s) during activities related to asset creation including design, modification, procurement, construction and commissioning but currently do not have these in place (note: procedure(s) may exist but they are inconsistent/ incomplete).	The organisation is in the process of putting in place process(es) and procedure(s) to manage and control the implementation of asset management plan(s) during activities related to asset creation including design, modification, procurement, construction and commissioning. Gaps and inconsistencies are being addressed.	Effective process(es) and procedure(s) are in place to manage and control the implementation of asset management plan(s) during activities related to asset creation including design, modification, procurement, construction and commissioning. Orion are actively reviewing asset operational life with respect to their environment. They have reviewed defects and unplanned outages with respect to age of asset and are clearly aware of the issues.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Have started down the path of correlation of trends against previous decisions/designs and are beginning to modify the process accordingly. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
91	Life Cycle Activities	How does the organisation ensure that process(es) and/ or procedure(s) for the implementation of asset management plan(s) and control of activities during maintenance (and inspection) of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	The organisation does not have process(es)/procedure(s) in place to control or manage the implementation of asset management plan(s) during this life cycle phase.	The organisation is aware of the need to have process(es) and procedure(s) in place to manage and control the implementation of asset management plan(s) during this life cycle phase but currently do not have these in place and/or there is no mechanism for confirming they are effective and where needed modifying them.	The organisation is in the process of putting in place process(es) and procedure(s) to manage and control the implementation of asset management plan(s) during this life cycle phase. They include a process for confirming the process(es)/procedure(s) are effective and if necessary carrying out modifications.	The organisation has in place process(es) and procedure(s) to manage and control the implementation of asset management plan(s) during this life cycle phase. They include a process, which is itself regularly reviewed to ensure it is effective, for confirming the process(es)/ procedure(s) are effective and if necessary carrying out modifications.	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	3.5	Project works and maintenance activities are closely managed by Orion staff to ensure agreed standards are maintained.	Widely used AM standards require that organisations establish implement and maintain procedure(s) to monitor and measure the performance and/or condition of assets and asset systems. They further set out requirements in some detail for reactive and proactive monitoring, and leading/lagging performance indicators together with the monitoring or results to provide input to corrective actions and continual improvement. There is an expectation that performance and condition monitoring will provide input to improving asset management strategy, objectives and plan(s).	A broad cross-section of the people involved in the organisation's asset-related activities from data input to decision-makers, i.e. an end-to end assessment. This should include contactors and other relevant third parties as appropriate.	Functional policy and/or strategy documents for performance or condition monitoring and measurement. The organisation's performance monitoring frameworks, balanced scorecards etc. Evidence of the reviews of any appropriate performance indicators and the action lists resulting from these reviews. Reports and trend analysis using performance and condition information. Evidence of the use of performance and condition information shaping improvements and supporting asset management strategy, objectives and plan(s).
99	Investigation of asset-related failures, incidents and nonconformities	How does the organisation ensure responsibility and the authority for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances is clear, unambiguous, understood and communicated?	3.5	System Performance – The overall system continues to be monitored not only, SAIDI/SAFI but also in areas of security standards and network performance. Looking at the leadership team. Clarity has been provided in terms of their directions their goals and their community interaction.	Widely used AM standards require that the organisation establishes implements and maintains process(es) for the handling and investigation of failures incidents and non-conformities for assets and sets down a number of expectations. Specifically this question examines the requirement to define clearly responsibilities and authorities for these activities, and communicate these unambiguously to relevant people including external stakeholders if appropriate.	The organisation's safety and environment management team. The team with overall responsibility for the management of the assets. People who have appointed roles within the asset-related investigation procedure, from those who carry out the investigations to senior management who review the recommendations. Operational controllers responsible for managing the asset base under fault conditions and maintaining services to customers. Contractors and other third parties as appropriate.	Process(es) and procedure(s) for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances. Documentation of assigned responsibilities and authority to employees. Job Descriptions, Audit reports. Common communication systems i.e. all Job Descriptions on Internet etc.
105	Audit	What has the organisation done to establish procedure(s) for the audit of its asset management system (process(es))?	3.5	Orion continue to look at the alignment of the health and safety, both in terms of public safety 79001, internal health and safety and associated ISO 45000 processes. They continue to look at the integration of these systems, not only to reduce the number of separate audits, but to improve the integration between the systems and reduce possible gaps. Works delivery managers are dealing with individual projects, they meet monthly with the contractors, based on a 3910 contract, they review any events, trends. Actions are documented for any quality defects and remediation that is required. Over the past year there has been an increased focus on undertaking more audits of processes, by both internal and external parties. Experienced internal staff have been used to target asset areas where risks have been identified. From there audits, actions have been raised, approved and improvements implemented, in many cases.	This question seeks to explore what the organisation has done to comply with the standard practice AM audit requirements (eg, the associated requirements of PAS 55 s 4.6.4 and its linkages to s 4.7).	The management team responsible for its asset management procedure(s). The team with overall responsibility for the management of the assets. Audit teams, together with key staff responsible for asset management. For example, Asset Management Director, Engineering Director. People with responsibility for carrying out risk assessments	The organisation's asset-related audit procedure(s). The organisation's methodology(s) by which it determined the scope and frequency of the audits and the criteria by which it identified the appropriate audit personnel. Audit schedules, reports etc. Evidence of the procedure(s) by which the audit results are presented, together with any subsequent communications. The risk assessment schedule or risk registers.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	The organisation has not considered how to monitor the performance and condition of its assets.	The organisation recognises the need for monitoring asset performance but has not developed a coherent approach. Measures are incomplete, predominantly reactive and lagging. There is no linkage to asset management objectives.	The organisation is developing coherent asset performance monitoring linked to asset management objectives. Reactive and proactive measures are in place. Use is being made of leading indicators and analysis. Gaps and inconsistencies remain.	"Consistent asset performance monitoring linked to asset management objectives is in place and universally used including reactive and proactive measures. Data quality management and review process are appropriate. Evidence of leading indicators and analysis. This was met but not yet exceeded, although pockets of excellence were in evidence"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
99	Investigation of asset-related failures, incidents and nonconformities	How does the organisation ensure responsibility and the authority for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances is clear, unambiguous, understood and communicated?	The organisation has not considered the need to define the appropriate responsibilities and the authorities.	The organisation understands the requirements and is in the process of determining how to define them.	The organisation are in the process of defining the responsibilities and authorities with evidence. Alternatively there are some gaps or inconsistencies in the identified responsibilities/ authorities.	"The organisation have defined the appropriate responsibilities and authorities and evidence is available to show that these are applied across the business and kept up to date. Yes and currently under review to match the new structure. This is a positive mark of an active organisation."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."
105	Audit	What has the organisation done to establish procedure(s) for the audit of its asset management system (process(es))?	The organisation has not recognised the need to establish procedure(s) for the audit of its asset management system.	The organisation understands the need for audit procedure(s) and is determining the appropriate scope, frequency and methodology(s).	The organisation is establishing its audit procedure(s) but they do not yet cover all the appropriate asset-related activities.	"The organisation can demonstrate that its audit procedure(s) cover all the appropriate asset-related activities and the associated reporting of audit results. Audits are to an appropriate level of detail and consistently managed. There is evidence of sufficient internal checking (such as authorising beyond the financial limits specified) but this is not embedded in the system and relies on another internal person to pick this up. Whilst documents indicate a review procedure and some meetings have a review function, this is frequently carried out in an informal manner. In many ways this is appropriate to the organisation size/culture but could be difficult to transfer."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Score	Evidence—Summary	Why	Who	Documented info
109	Corrective & Preventative action	How does the organisation instigate appropriate corrective and/or preventive actions to eliminate or prevent the causes of identified poor performance and non conformance?	3.5	A new manger role has been established to manage the asset data to improve the preventative actions and increase asset reliability. A new asset planning role has also been established to ensure forward plans are in place more improvement initiatives.	Having investigated asset related failures, incidents and non-conformances, and taken action to mitigate their consequences, an organisation is required to implement preventative and corrective actions to address root causes. Incident and failure investigations are only useful if appropriate actions are taken as a result to assess changes to a businesses risk profile and ensure that appropriate arrangements are in place should a recurrence of the incident happen. Widely used AM standards also require that necessary changes arising from preventive or corrective action are made to the asset management system.	The management team responsible for its asset management procedure(s). The team with overall responsibility for the management of the assets. Audit and incident investigation teams. Staff responsible for planning and managing corrective and preventive actions.	Analysis records, meeting notes and minutes, modification records. Asset management plan(s), investigation reports, audit reports, improvement programmes and projects. Recorded changes to asset management procedure(s) and process(es). Condition and performance reviews. Maintenance reviews
113	Continual Improvement	How does the organisation achieve continual improvement in the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle?	3.5	All documents are reviewed and updated at least annually. Improvement opportunities are investigated and future funded as appropriate. This ensures that a full five-year review will be undertaken. Looking across other areas, failure rates are fairly low, and any increase in failure examined through both inspection and review of failure modes. If necessary, maintenance is amended or life cycle replacement reviewed. Assets that show a trend of failure are thus planned for earlier replacement. Multiple feedback routes are used to obtain this information - including information from customers and first responders.	Widely used AM standards have requirements to establish, implement and maintain process(es)/procedure(s) for identifying, assessing, prioritising and implementing actions to achieve continual improvement. Specifically there is a requirement to demonstrate continual improvement in optimisation of cost risk and performance/condition of assets across the life cycle. This question explores an organisation's capabilities in this area—looking for systematic improvement mechanisms rather that reviews and audit (which are separately examined).	The top management of the organisation. The manager/team responsible for managing the organisation's asset management system, including its continual improvement. Managers responsible for policy development and implementation.	Records showing systematic exploration of improvement. Evidence of new techniques being explored and implemented. Changes in procedure(s) and process(es) reflecting improved use of optimisation tools/techniques and available information. Evidence of working parties and research.
115	Continual Improvement	How does the organisation seek and acquire knowledge about new asset management related technology and practices, and evaluate their potential benefit to the organisation?	3.5	Low Carbon Response - Orion believe they are a lines company and prefer to focus on that. However, they are aware that in the near future, Orion may need to consider the separate issues of power generation or carbon sinks. This may require separate companies to be formed to focus on these issues as it does not fit directly with the lines company responsibilities.	One important aspect of continual improvement is where an organisation looks beyond its existing boundaries and knowledge base to look at what 'new things are on the market'. These new things can include equipment, process(es), tools, etc. An organisation which does this (eg, by the PAS 55 s 4.6 standards) will be able to demonstrate that it continually seeks to expand its knowledge of all things affecting its asset management approach and capabilities. The organisation will be able to demonstrate that it identifies any such opportunities to improve, evaluates them for suitability to its own organisation and implements them as appropriate. This question explores an organisation's approach to this activity.	The top management of the organisation. The manager/team responsible for managing the organisation's asset management system, including its continual improvement. People who monitor the various items that require monitoring for 'change'. People that implement changes to the organisation's policy, strategy, etc. People within an organisation with responsibility for investigating, evaluating, recommending and implementing new tools and techniques, etc.	Research and development projects and records, benchmarking and participation knowledge exchange professional forums. Evidence of correspondence relating to knowledge acquisition. Examples of change implementation and evaluation of new tools, and techniques linked to asset management strategy and objectives.

Schedule 13 Report on asset management maturity continued

No.	Function	Question	Maturity Level 0	Maturity Level 1	Maturity Level 2	Maturity Level 3	Maturity Level 4
109	Corrective & Preventative action	How does the organisation instigate appropriate corrective and/or preventive actions to eliminate or prevent the causes of identified poor performance and non conformance?	The organisation does not recognise the need to have systematic approaches to instigating corrective or preventive actions.	The organisation recognises the need to have systematic approaches to instigating corrective or preventive actions. There is ad-hoc implementation for corrective actions to address failures of assets but not the asset management system.	The need is recognized for systematic instigation of preventive and corrective actions to address root causes of non compliance or incidents identified by investigations, compliance evaluation or audit. It is only partially or inconsistently in place.	"Mechanisms are consistently in place and effective for the systematic instigation of preventive and corrective actions to address root causes of non compliance or incidents identified by investigations, compliance evaluation or audit. Active PM and CM process which has been effectively used to detect unplanned outage trends."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. No planned maintenance system per se - everything is run on a calendar system and not tracked on hours run/load levels or switching cycles - although some of these factors are taken into account."
113	Continual Improvement	How does the organisation achieve continual improvement in the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle?	The organisation does not consider continual improvement of these factors to be a requirement, or has not considered the issue.	A Continual Improvement ethos is recognised as beneficial, however it has just been started, and or covers partially the asset drivers.	Continuous improvement process(es) are set out and include consideration of cost risk, performance and condition for assets managed across the whole life cycle but it is not yet being systematically applied.	"There is evidence to show that continuous improvement process(es) which include consideration of cost risk, performance and condition for assets managed across the whole life cycle are being systematically applied. CI is active"	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. Orion operate sin a conservative industry and their operation of assets within definite tolerances reflects this (Not sweating assets) but they are improving through the changes of process and procedure."
115	Continual Improvement	How does the organisation seek and acquire knowledge about new asset management related technology and practices, and evaluate their potential benefit to the organisation?	The organisation makes no attempt to seek knowledge about new asset management related technology or practices.	The organisation is inward looking, however it recognises that asset management is not sector specific and other sectors have developed good practice and new ideas that could apply. Ad-hoc approach.	The organisation has initiated asset management communication within sector to share and, or identify 'new' to sector asset management practices and seeks to evaluate them.	"The organisation actively engages internally and externally with other asset management practitioners, professional bodies and relevant conferences. Actively investigates and evaluates new practices and evolves its asset management activities using appropriate developments. Staff are frequently sent to various asset management seminars with engagement with EEA, EA and CIGRE. This is very similar to other lines companies who are acutely aware of ComCom focus on AMMAT."	"The organisation's process(es) surpass the standard required to comply with requirements set out in a recognised standard. The assessor is advised to note in the Evidence section why this is the case and the evidence seen."

Appendix B Mandatory explanatory notes on forecast information

Company name: Orion NZ Ltd

For year ended: 31 March 2021

Schedule 14a Mandatory explanatory notes on forecast information

Box 1: Comment on the difference between nominal and constant price capital expenditure forecasts

In our AMP we have disclosed our:

- constant price (real) opex and capex forecasts
- nominal opex and capex forecasts for the ten years FY21 to FY30 inclusive.

In escalating our real forecasts to nominal forecasts, we have:

- split our forecast opex and capex into a number of groups
- forecast an escalation index for each group that represents a reasonable proxy for forecast movements in unit costs for each group
- applied the forecast escalation indices for the ten-year forecast period.

We applied forecast opex and capex escalators as follows:

- network labour – NZIER labour index forecasts to FY23, extrapolated by PwC to FY30
- non-network labour – Management's forecast to FY30
- other – NZIER producer price index (PPI) forecasts to FY24, extrapolated by PwC to FY30.

Box 2: Comment on the difference between nominal and constant price operational expenditure forecasts

- Please refer to Box 1 above.

Appendix C Certificate for year-beginning disclosures

Schedule 17. Certificate for year-beginning disclosures

We, Jane Taylor and Bruce Gemmell, being directors of Orion New Zealand Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) the following attached information of Orion New Zealand Limited prepared for the purposes of clauses 2.6.1, 2.6.6 and 2.7.2 of the Electricity Distribution Disclosure Determination 2012 in all material respects complies with that determination.

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

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

Director	18 June 2020 Date
Director	18 June 2020 Date

Orion

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