Best in Service
Best in Safety

2017 UPDATE

WEL Networks
Asset Management Plan

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ENABLING
OUR COMMUNITIES

CONTENTS

1 INTRODUCTION

1 INTRODUCTION

WEL Networks Ltd (WEL) supplies electricity to the Northern Waikato and small networks in Cambridge and Auckland. Hamilton is the main electrical load centre. Outside of Hamilton the network area is predominantly rural.

Our network is more than 6,580 km in length and is comprised of more than 200,000 individual asset components. Within the network we maintain and operate 26 zone substations and 17 switching stations (11kV) to enable a reliable supply of electricity to our customers.

WEL is owned by the WEL Energy Trust. As a community owned company we consider our stakeholder requirements to have utmost importance. Accordingly we have considerable focus on identifying and meeting stakeholder expectations.

We have targeted our renewal and maintenance programmes based on our assessment of asset health, condition and risk. This has resulted in an asset base that is in good condition, with the assets that present the highest risk being targeted for replacement.

Good asset management is central to achieving our vision, strategic and business plans and the performance outcomes, and therefore significant effort is placed on continually improving our asset management practices and building our capability.

1.1 – PURPOSE OF THIS DOCUMENT

The Asset Management Plan (AMP) describes the nature and characteristics of our assets and investment requirements by providing an overview of our asset management planning, systems, procedures and practices.

A significant amount of work was put into the 2015 and 2016 AMPs to;

- improve the readability and usability of the document,
- ensure that the projects put forward are in line with our key initiatives,
- challenge the anticipated future development assumptions,
- apply risk management tools to our decision making process, and
- ensure that the projects can withstand commercial analysis.

Due to the effort undertaken in the last two years, there are only minor changes proposed this year. For this reason, this document represents an update to WEL's 2016 AMP, which is a comprehensive document relating to the electricity distribution services supplied by WEL and is available online via **wel.co.nz**

The 2017 AMP Update should be read in conjunction with the 2016 AMP, which contains a greater level of detail. For the purpose of the 2017 AMP Update we have not attempted to duplicate the detailed explanations as set out in the full 2016 AMP.

The 2017 AMP Update covers the planning period from 1 April 2017 to 31 March 2027 and provides the latest information relating to our key initiatives, performance, forecast network and non-network investments and our long-term strategies for asset management.

2

MATERIAL CHANGES

2 MATERIAL CHANGES

This section provides a summary of the drivers and rationale for changes to our forecasts, schedules and any material changes to network development plans, asset lifecycle plans and asset management practices. Section 3 contains Schedules 11a-12d.

Overall, there is a 0.8% increase in total network capital expenditure (asset renewal, network development and customer driven projects) across the 10 years compared to the 2016 budget. *The main changes are outlined below*.

2.1 – MATERIAL CHANGES TO NETWORK DEVELOPMENT PLAN

The main changes to our Network Development Plan are outlined in the Table 2.1 below. Overall there has been a slight decrease in the 10 year expenditure profile compared to 2016 for network development.

Table 2.1 Material Changes to the Network Development Plan

Year	Cost	Description of changes
2017/18	-$300k	Review of the arc flash projects resulted in the cancellation of some of the proposed project.
2017/18	-130k	Transfer of fibre projects to 2025/26.
2017/18	-280k	Decrease in distribution transformer and LV feeder upgrades.
2018/19	146k	Installation of check meters at Pukete and Windfarm to assist in event analysis.
2025/26	100k	Planning and consenting of the 3rd Chartwell transformer brought forward.
2025/26	130k	Transfer of fibre budget from 2017/18.

2017 WEL 11 Year Network Development Expenditure Projection

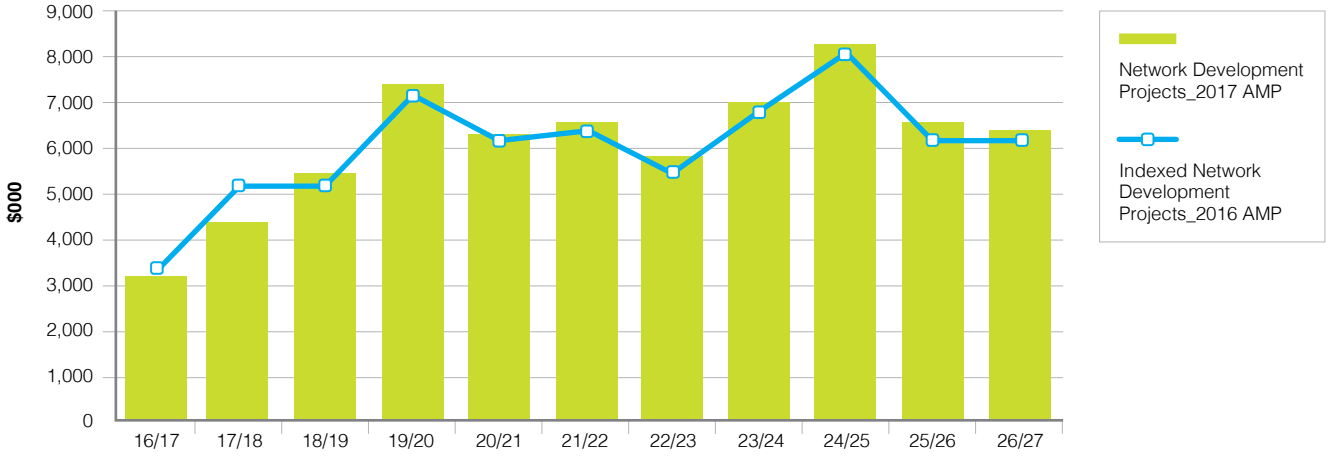

Figure 2.1: 2017 WEL 10 Year Network Development Expenditure Projection

2.2 – MATERIAL CHANGES TO ASSET LIFECYCLE MANAGEMENT

The main changes to our Asset Life Cycle Management are outlined in Table 2.2 below. These items are considered to have had the most impact where either timing and/or cost has been modified thereby affecting the future expenditure profile.

Overall there has been an increase in the renewal expenditure for 2017/18 and 2018/19 compared to the 2016 10yr expenditure profile, with the remaining 8 years tracking at a similar total to 2016 forecasts *(see Figure 2.2 below).*

Table 2.2 Material Changes to the Asset Renewal Expenditure Programme

Year	Cost	Description of changes
2017/18	$596k	Transferred from 2016/17 to 2017/18 for replacement of 16mm copper on Wallace circuit CB5.
2018/19	$1.1M	Increase in protection relays due to issues identified with Claudelands feeder protection circuits.
2018-27	$2.15M	Increase in Ring Main Units (RMU) replacement due to safety issues identified in 2016/17.
2018-27	-$1.2M	Reduction in cross-arm replacement due to Failure Mode, Effects and Criticality Analysis (FMECA).
2018-27	-$2.5M	Decrease in reconductoring budget over 10yr period, due to smarter mitigation on spur lines.
2018-27	$1M	$100k per annum increase in capitalised faults.

2017 WEL 11 Year Asset Renewal Expenditure a Projection

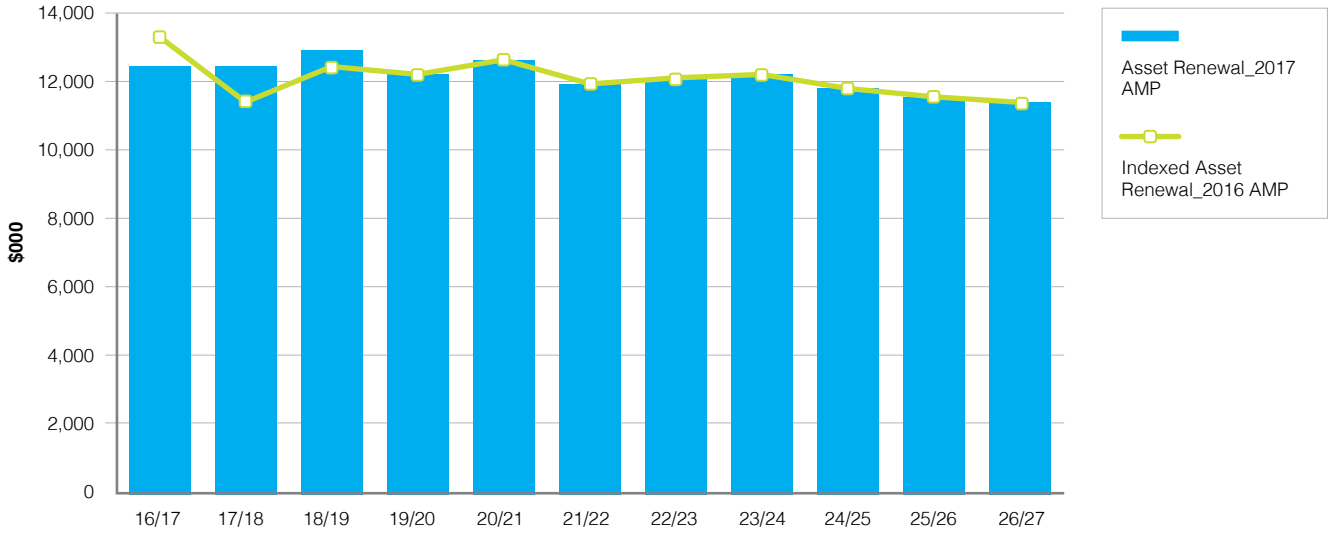

Figure 2.1: 2017 WEL 10 Year Network Development Expenditure Projection

2.3 – MATERIAL CHANGES TO CUSTOMER DRIVEN WORKS

The main change to our Customer Driven Works are outlined in Table 2.3 below. Overall there has been a slight increase in the 10 year expenditure profile compared to 2016 for network development.

See Section 2.4 of this AMP update for further detail.

Table 2.3 Material Changes to the Customer Driven Works

Year	Cost	Description of changes
2017/20	$800k	Increase due to increased connection rate.

2017 WEL 11 Year Customer Driven Expenditure Projection

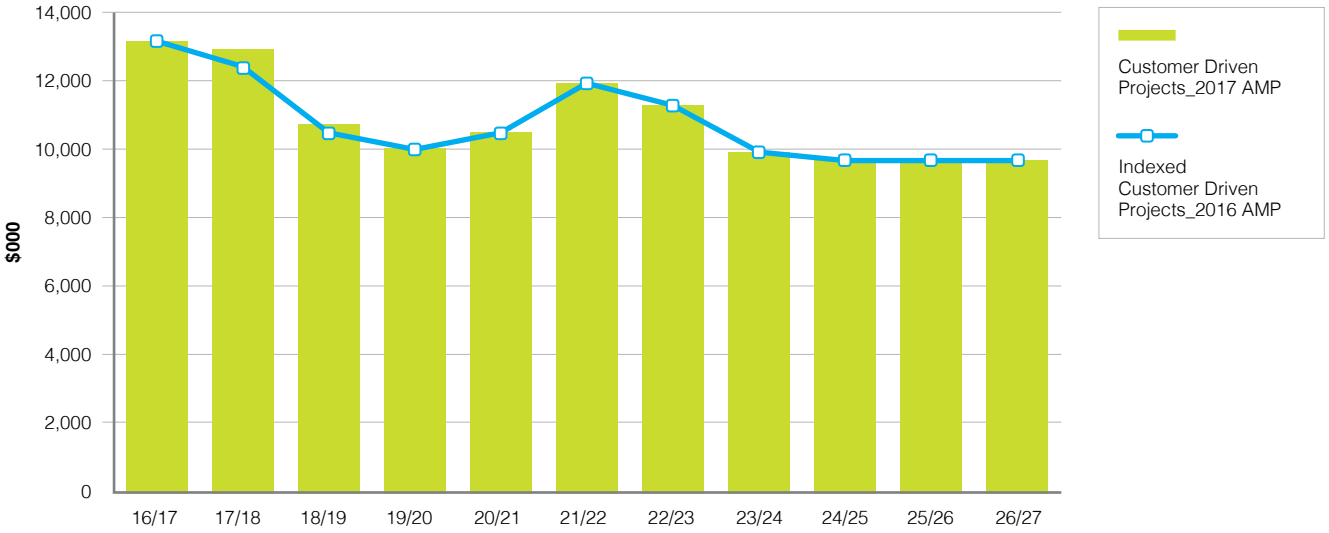

Figure 2.3: 2017 WEL 10 Year Network Development Expenditure Projection

2.4 – MATERIAL CHANGES TO ASSET MANAGEMENT PRACTICES

Our approach to asset management is continuing to evolve. We have identified that we need to continuously improve and build additional capability.

There have been some changes to our asset management practices that underpin the development of this AMP update. In particular, changes to the management of overhead lines and the use of smart meter data analytics as outlined in the following section.

2.4.1 Changes in the Management of Overhead Lines and Ring Main Units

We are changing our use of live line practices to align with the changes proposed by the Electrical Engineers Association and the wider industry. These changes will alter the assessment process that determines whether to undertake an activity with the line energised using live line practices or to de-energise the line and undertake the work in an isolated and earthed state. These changes are likely to result in more work being undertaken de-energised. This will have a detrimental impact on our System Average Interruption Duration Index (SAIDI) performance.

We are increasing the maintenance we undertake on our Ring Main Units (RMU). This is to ensure that the RMUs remain reliable and safe to operate.

This will have a detrimental impact on our SAIDI performance.

The overall impact of these changes is still to be determined, however we have made an allowance for these and will revaluate during the year, as detailed in section 2.5.

2.4.2 Smart Meter Data Analytics

Use of smart meter data analytics has played a lead role in realising many benefits across our network including operational efficiency, improved customer service, savings on capital expenditure as well as potential benefits to health and safety.

Approximately 70% of WEL Networks ICPs (Installation Control Point), have a WEL-owned smart meter installed.

WEL has gained significant expertise in smart meter data analytics, which ensures that accurate information is used as the basis for decision making processes across the network. For any meter WEL can retrieve and log metering information such as power (imported and/or exported), reactive power (imported and/or exported), current, voltage and power factor.

WEL continues to experience many benefits to network management processes and practices using smart meter analytics, including;

- Proactive Voltage Correction,
- Reduction in Response Time,
- Improved Network Flexibility,
- Reduction in Capital Expenditure, and
- Establishing a Centre of Excellence.

These are detailed further below.

Proactive Voltage Correction

Smart meters allow WEL to identify faults and issues with the network, determine the cause of the fault, categorise the expenditure type and prioritise the work. The main advantage of this is improved service to our customers. WEL is also able to poll and log data from the meters remotely at 11 second intervals. This enables us to effectively data log: voltage, current, power and power factor at a customer's premises remotely. Therefore for Low Voltage Complaints (LVC) and other issues which require investigation, this can be achieved without the need to visit the site and install data loggers. It also removes the risk of data logger malfunction and the additional delays this causes.

Reduction in Fault Call Outs

We are able to connect to a smart meter and obtain an instantaneous reading of voltage and current. Customer Service Representatives use this when we receive a call of part or no power to determine if the fault is on the network side of the meter or within the customer's installation. This has significantly reduced the number of faults that our staff need to attend, this reduction is illustrated in Figure 2.4.2. The cost saving to WEL has been approximately $60k per annum.

See Figure 2.4.2

Number of Call-outs Attended Due to Fault Within Customer Installation

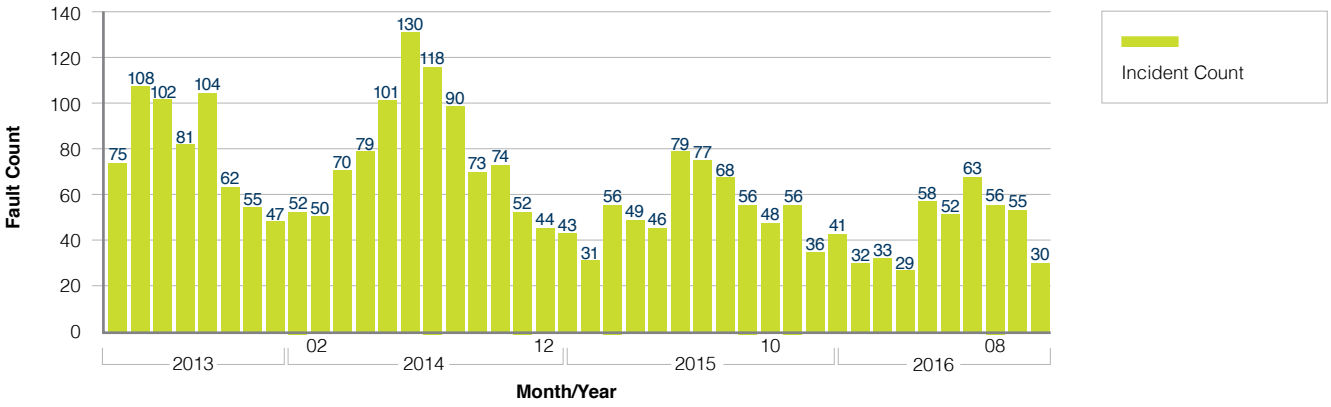

Figure 2.4.2: Number of faults attended by WEL fault staff, which were caused by faults within the customer's installation

Reduction in Response Time

When power is lost to a smart meter it sends out a communication to inform WEL that power has been lost, this is referred to as "last gasp". This signal is fed into our NMS (Network Management System) and simulated as a customer call creating a no power incident. This provides the operator with immediate notification of an outage. This can then be actioned and fault staff dispatched directly to the correct fault site, prior to any fault calls being received from the public. From our experience this has resulted in a 45 minute average reduction in response time and often we have been able to have staff on site prior to any customer notification.

Centre of Excellence

WEL is currently developing the systems to become a centre of excellence for smart meter data analytics.

Improved Network Flexibility

Having the ability to obtain an instantaneous measurement of voltage has improved the flexibility of our network. This can be used to increase the proportion of the network that is back-fed during both planned and unplanned outages.

Reduction in Capital Expenditure

By using smart meter analytics WEL has been able to improve our asset management decision making. This has resulted in WEL reducing capital expenditure over the ten year AMP period by $9.2M. A complete summary of changes to capital expenditure over the 10 year period is shown in Section 2.5 of this AMP update.

2.4.3 Maintenance Systems Review

WEL has identified that there is an opportunity to improve the efficiency and effectiveness of maintenance processes. In 2016, a comprehensive review was carried out alongside a review of the SAP system, the WEL enterprise management tool.

The outcome from this review has been the development of a 2-stage improvement project. The first stage has been approved and a delivery plan is being developed.

Stage 1 includes improving the data structure within SAP and GIS (Geographic Information System), including a backlog review and cleanse, to ensure information can be obtained and structured into reports to inform business decisions. (For example Reliability, Scheduling and Compliance). The proposed timeline for Stage 1 is 6 months.

The main impact to forecasts resulting from this work is on Non-network Operational Expenditure and is summarised under Section 3 of this AMP update.

It is anticipated that this work will provide the foundation for further improvements through more detailed projects, as well as the update of our maintenance strategy, which will be reflected in future editions of our AMP.

2.5 – MATERIAL CHANGES TO EXPENDITURE FORECASTS

While there have been no significant changes to the methodology used to develop our expenditure forecasts, it is worthwhile noting our approach to FMECA (Failure Mode, Effect and Criticality Analysis) methodology for common modes of failure for distribution assets has been revised.

Outcomes from this exercise have been mapped against feeder and asset class 'reliability' (in terms of incurred SAIDI). This has allowed us to more accurately highlight common modes of failure that have caused significant reliability impacts. These have been categorised as 'Condition Related (CR)' and 'Non-Condition Related (NCR)' faults which have provided better understanding on the type of faults.

Schedules 11a and 11b – Forecast Expenditure

Forecast operating expenditure remains consistent with our 2016 AMP. The change in forecast as shown in figure 2.5 is predominantly due to a change in accounting structure during the audited disclosure.

Forecast capital expenditure is tracking above our 2016 AMP along most of the 10 year expenditure profile. The drivers for this have been discussed in the previous sections.

2016 AMP v 2017 AMP

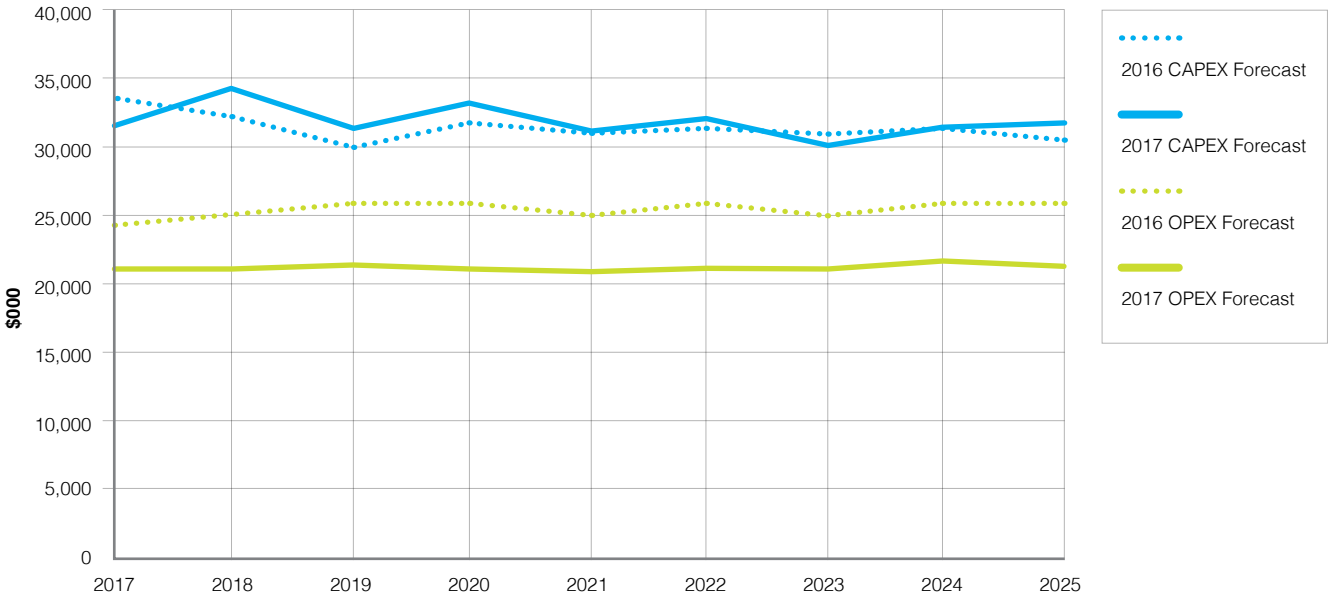

Figure 2.5: Network Forecast Expenditure

Schedule 12a – Asset Condition

A significant review of our Asset Maintenance Practices is currently being undertaken and is detailed in section 2.4.3.

Minor updates in our forecast asset conditions have been provided for in the 2017 Schedules. For a handful of assets, the schedules indicate an increase in the percentage of assets due to be replaced within the next 5 years. These include: voltage regulators (distribution transformers), distribution switchgear Ring Main Units and distribution circuit breakers (pole mounted) reclosers and sectionalisers (compared to 2016 AMP forecasts).

As per our 2016 AMP, data accuracy classifications remain consistent.

Schedule 12b – Forecast Capacity

Forecast network capacity remains consistent with that outlined in our 2016 AMP.

Schedule 12c – Forecast Network Demand

Forecast network demand remains consistent with that outlined in our 2016 AMP.

Some minor adjustments for the current (2017) year include: less business connections, an increase in low voltage connections and a reduced number of medium voltage connections.

Schedule 12d – Forecast Interruptions and Duration

The forecast interruption has increased to allow for the change in the live line work assessment process and the RMU maintenance requirements as discussed section 2.4.1. While the full impact is still to be determined, a 10 minute increase has been forecast to account for the change.

In the past 3 years we have not achieved our unplanned SAIDI target. This is largely due to the target for third party damage being set too low. We have realigned the third party target to the average value for the regulatory reference period 1 April 2004 to 31 March 2014. This is an increase of 5.8 minutes. However to ensure that pressure remains on improving our rural reliability other components within the unplanned SAIDI target have been reduced to limit the overall increase of the unplanned SAIDI target to 1.7 minutes. This gives an unplanned SAIDI target by 2020 of 62.7minutes, which is 5 minutes less than the target value using the regulatory reference period of 1 April 2004 to 31 March 2014.

3 SCHEDULES

SCHEDULE 11A – REPORT IN FORECAST CAPITAL EXPENDITURE

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)

EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).

This information is not part of audited disclosure information.

sch ref

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
	11a(i): Expenditure on Assets Forecast	**$000 (in nominal dollars)**										
	Consumer connection	10,666	10,056	9,757	9,495	9,583	9,882	10,036	10,262	10,469	10,705	10,945
	System growth	973	1,439	2,375	4,843	4,431	6,034	4,375	5,299	6,548	4,926	5,406
	Asset replacement and renewal	12,598	12,622	13,518	12,978	13,728	13,347	13,776	14,192	14,186	14,388	14,679
	Asset relocations	3,451	3,001	1,487	1,220	1,093	1,118	1,143	1,169	1,195	1,222	1,249
	Reliability, safety and environment:											
	Quality of supply	998	1,494	1,688	1,794	1,802	1,755	1,843	1,919	1,984	1,970	2,014
	Legislative and regulatory	11	102	21	251	55	-	-			-	
	Other reliability, safety and environment	558	1,574	1,746	1,090	1,114	1,739	1,165	1,191	1,218	1,245	649
	Total reliability, safety and environment	1,567	3,170	3,455	3,135	2,971	3,494	3,008	3,110	3,202	3,215	2,663
	Expenditure on network assets	29,255	30,288	30,592	31,671	31,806	33,875	32,338	34,032	35,600	34,456	34,942
	Expenditure on non-network assets	2,227	4,488	1,878	2,871	2,459	1,960	2,041	2,128	2,216	2,309	2,405
	Expenditure on assets	31,482	34,776	32,470	34,542	34,265	35,835	34,379	36,160	37,816	36,765	37,347
plus	Cost of financing	773	514	98	98	98	98	98	98	98	98	98
less	Value of capital contributions	6,997	4,757	3,639	3,317	3,535	3,646	3,702	3,785	3,861	3,948	4,037
plus	Value of vested assets											
	Capital expenditure forecast	25,258	30,533	28,929	31,323	30,828	32,287	30,775	32,473	34,053	32,915	33,408
	Assets commissioned	32,617	31,581	30,628	31,680	32,233	33,275	32,727	33,536	35,230	34,991	35,084

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
		$000 (in constant prices)										
	Consumer connection	10,666	9,835	9,331	8,882	8,766	8,841	8,782	8,782	8,761	8,762	8,762
	System growth	973	1,407	2,271	4,530	4,053	5,398	3,828	4,534	5,480	4,032	4,328
	Asset replacement and renewal	12,598	12,345	12,930	12,140	12,559	11,942	12,054	12,145	11,873	11,777	11,751
	Asset relocations	3,451	2,934	1,423	1,141	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Reliability, safety and environment:											
	Quality of supply	998	1,461	1,615	1,679	1,649	1,571	1,612	1,642	1,660	1,612	1,612
	Legislative and regulatory	11	100	20	235	50	-	-	-	-	-	-
	Other reliability, safety and environment	558	1,539	1,669	1,019	1,019	1,556	1,019	1,019	1,019	1,019	519
	Total reliability, safety and environment	1,566	3,100	3,304	2,933	2,718	3,127	2,631	2,661	2,679	2,631	2,131
	Expenditure on network assets	29,255	29,621	29,259	29,626	29,096	30,308	28,295	29,122	29,794	28,202	27,972
	Expenditure on non-network assets	2,227	4,389	2,019	2,816	1,969	1,754	1,786	1,821	1,855	1,890	1,925
	Expenditure on assets	31,482	34,010	31,278	32,442	31,065	32,062	30,081	30,943	31,649	30,092	29,897
	Subcomponents of expenditure on assets (where known)											
	Energy efficiency and demand side management, reduction of energy losses	216	342	342	342	342	342	342	342	341	342	342
	Overhead to underground conversion	9	510	500	500	500	500	500	500	500	500	500
	Research and development											

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
Difference between nominal and constant price forecasts	$000										
Consumer connection	(0)	221	426	613	817	1,041	1,254	1,480	1,707	1,943	2,183
System growth	(0)	32	104	313	378	636	547	765	1,068	894	1,078
Asset replacement and renewal	(0)	277	588	838	1,169	1,405	1,722	2,047	2,313	2,611	2,928
Asset relocations	(0)	67	64	79	93	118	143	169	195	222	249
Reliability, safety and environment:											
Quality of supply	0	33	73	115	153	184	231	277	324	358	402
Legislative and regulatory	0	2	1	16	5	-	-	-	-	-	-
Other reliability, safety and environment	0	35	77	71	95	183	146	172	199	226	130
Total reliability, safety and environment	1	70	151	202	253	367	377	449	523	584	532
Expenditure on network assets	0	667	1,333	2,045	2,710	3,567	4,043	4,910	5,806	6,254	6,970
Expenditure on non-network assets	-	99	(141)	55	490	206	255	307	361	419	480
Expenditure on assets	0	766	1,192	2,100	3,200	3,773	4,298	5,217	6,167	6,673	7,450

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
11a(ii): Consumer Connection						
*Consumer types defined by EDB**	$000 (in constant prices)					
Residential Customers	7,992	7,369	6,638	6,144	6,334	6,414
Business Customers	515	475	462	457	451	446
Large Customers - Low Voltage 400V	2,159	1,991	1,981	1,981	1,981	1,981
Large Customers - Medium Voltage 11kV	-	-	-	-	-	-
Large Customers - High Voltage 33kV	-	-	-	-	-	-
Asset Specific Customers	-	-	250	300	-	-
**include additional rows if needed*						
Consumer connection expenditure	10,666	9,835	9,331	8,882	8,766	8,841
less Capital contributions funding consumer connection	4,618	3,056	2,790	2,600	2,670	2,699
Consumer connection less capital contributions	6,048	6,779	6,541	6,282	6,096	6,142
11a(iii): System Growth						
Subtransmission	-	-	-	-	-	-
Zone substations	415	118	707	2,790	1,801	2,203
Distribution and LV lines	60	-	-	-	331	-
Distribution and LV cables	34	-	500	500	1,000	2,500
Distribution substations and transformers	15	10	10	-	-	-
Distribution switchgear	-	195	225	170	170	160
Other network assets	450	1,084	829	1,070	751	535
System growth expenditure	973	1,407	2,271	4,530	4,053	5,398
less Capital contributions funding system growth						
System growth less capital contributions	973	1,407	2,271	4,530	4,053	5,398

11a(iv): Asset Replacement and Renewal

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
$000 (in constant prices)						
Subtransmission	74	80	77	77	77	77
Zone substations	263	420	400	344	584	217
Distribution and LV lines	7,273	6,789	7,313	7,773	7,773	7,773
Distribution and LV cables	764	1,103	1,188	1,188	1,188	1,167
Distribution substations and transformers	1,473	1,399	837	837	837	837
Distribution switchgear	1,464	1,693	1,562	1,511	1,562	1,583
Other network assets	1,288	861	1,553	410	538	288
Asset replacement and renewal expenditure	12,598	12,345	12,930	12,140	12,559	11,942
less Capital contributions funding asset replacement and renewal	280	190	190	190	190	190
Asset replacement and renewal less capital contributions	12,318	12,155	12,740	11,950	12,369	11,752

11a(v):Asset Relocations

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
*Project or programme**	$000 (in constant prices)					
Relocations	2,119	545	500	500	500	500
Transit Hamilton Bypass	1,004	1,409	423	141	-	-
Longswamp	1	470	-	-	-	-
Undergrounding	9	510	500	500	500	500
Transit Huntly Bypass	319					
**include additional rows if needed*						
All other project or programmes - asset relocations						
Asset relocations expenditure	3,451	2,934	1,423	1,141	1,000	1,000
less Capital contributions funding asset relocations	2,099	1,597	650	467	525	525
Asset relocations less capital contributions	1,352	1,337	773	674	475	475

11a(vi):Quality of Supply

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
*Project or programme**	$000 (in constant prices)					
Distribution Transformer and LV Feeder Upgrade projects identified vis Smart Meters	784	1,205	1,459	1,573	1,543	1,465
Power Quality - Works required to correct customer complaints	203	205	105	55	55	55
Network Work Ugrade Due To DG applications	11	51	51	51	51	51
**include additional rows if needed*						
All other projects or programmes - quality of supply						
Quality of supply expenditure	998	1,461	1,615	1,679	1,649	1,571
less Capital contributions funding quality of supply						
Quality of supply less capital contributions	998	1,461	1,615	1,679	1,649	1,571

11a(vii): Legislative and Regulatory

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
*Project or programme**	$000 (in constant prices)					
AUFLS scheme changes	-	20	135	-	-	
Seismic upgrades of substations	11	100	-	100	50	-
include additional rows if needed						
All other projects or programmes - legislative and regulatory						
Legislative and regulatory expenditure	11	100	20	235	50	-
less Capital contributions funding legislative and regulatory						
Legislative and regulatory less capital contributions	11	100	20	235	50	-

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

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
*Project or programme**	$000 (in constant prices)					
Access & Monitoring - Video IP Camera		62	-	-	-	-
Aircondition for substations	102	100	-	-	-	-
Garden Place Switching Station Refurbishment		165	457	-	-	-
Install ION Meters at Pukete & Windfarm		-	146	-	-	-
mesh critical street light control	6	-	30	-	-	-
Reduce customers on PEACB3by transferring to PEACB6		-	-	-	-	537
Reliability projects (mainly Rural Areas)		1,019	1,019	1,019	1,019	1,019
Substation Site Security Access Project	95	143	17	-	-	-
Weavers Sub via resonant earthing (Ground fault neutralizer)	12	50				
Arc Flash Protection Installation	344					
include additional rows if needed						
All other projects or programmes - other reliability, safety and environment						
Other reliability, safety and environment expenditure	558	1,539	1,669	1,019	1,019	1,556
less Capital contributions funding other reliability, safety and environment						
Other reliability, safety and environment less capital contributions	558	1,539	1,669	1,019	1,019	1,556

11a(ix): Non-Network Assets

for year ended	Current Year CY 31 Mar 17	CY+1 31 Mar 18	CY+2 31 Mar 19	CY+3 31 Mar 20	CY+4 31 Mar 21	CY+5 31 Mar 22
Routine expenditure						
*Project or programme**	$000 (in constant prices)					
Computer Equipment	390	195	500	305	300	407
Computer Software	1,234	1,825	1,098	1,534	905	986
Plant and Equipment	63	583	230	230	230	100
Motor Vehicles	540	1,786	191	747	534	261
include additional rows if needed						
All other projects or programmes - routine expenditure						
Routine expenditure	2,227	4,389	2,019	2,816	1,969	1,754
Atypical expenditure						
*Project or programme**						
include additional rows if needed						
All other projects or programmes - atypical expenditure						
Atypical expenditure	-	-	-	-	-	-
Expenditure on non-network assets	2,227	4,389	2,019	2,816	1,969	1,754

SCHEDULE 11B – REPORT ON OPERATIONAL EXPENDITURE

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

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

sch ref

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
	Operational Expenditure Forecast	**$000 (in nominal dollars)**										
	Service interruptions and emergencies	2,271	2,305	2,339	2,375	2,410	2,446	2,483	2,520	2,558	2,596	2,635
	Vegetation management	1,329	1,349	1,369	1,390	1,049	1,049	733	733	733	733	733
	Routine and corrective maintenance and inspection	1,465	1,487	1,509	1,532	1,555	1,578	1,602	1,626	1,650	1,675	1,700
	Asset replacement and renewal	1,622	1,646	1,671	1,696	1,722	1,747	1,774	1,800	1,827	1,855	1,883
	Network Opex	6,687	6,787	6,888	6,993	6,736	6,820	6,592	6,679	6,768	6,859	6,951
	System operations and network support	3,868	3,926	3,985	4,045	4,105	4,167	4,229	4,293	4,357	4,422	4,489
	Business support	11,079	11,245	11,414	11,585	11,759	11,935	12,114	12,296	12,480	12,668	12,858
	Non-network opex	14,947	15,171	15,399	15,630	15,864	16,102	16,343	16,589	16,837	17,090	17,347
	Operational expenditure	21,634	21,958	22,287	22,623	22,600	22,922	22,935	23,268	23,605	23,949	24,298

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
		$000 (in constant prices)										
	Service interruptions and emergencies	2,271	2,271	2,271	2,271	2,271	2,271	2,271	2,271	2,271	2,271	2,271
	Vegetation management	1,329	1,329	1,329	1,329	1,033	1,033	723	723	723	723	723
	Routine and corrective maintenance and inspection	1,465	1,465	1,465	1,465	1,465	1,465	1,465	1,465	1,465	1,465	1,465
	Asset replacement and renewal	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622
	Network Opex	6,687	6,687	6,687	6,687	6,391	6,391	6,081	6,081	6,081	6,081	6,081
	System operations and network support	3,868	3,868	3,868	3,868	3,868	3,868	3,868	3,868	3,868	3,868	3,868
	Business support	11,079	11,079	11,079	11,079	11,079	11,079	11,079	11,079	11,079	11,079	11,079
	Non-network opex	14,947	14,947	14,947	14,947	14,947	14,947	14,947	14,947	14,947	14,947	14,947
	Operational expenditure	21,634	21,634	21,634	21,634	21,338	21,338	21,028	21,028	21,028	21,028	21,028
	Subcomponents of operational expenditure (where known)											
	Energy efficiency and demand side management, reduction of energy losses	456	816	806	806	806	806	785	785	785	785	785
	Direct billing*	-	-	-	-	-	-	-	-	-	-	-
	Research and Development	996	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
	Insurance	451	453	471	471	471	471	471	471	471	471	471

** Direct billing expenditure by suppliers that direct bill the majority of their consumers*

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
	Difference between nominal and real forecasts	**$000**										
	Service interruptions and emergencies	-	34	68	104	139	175	212	249	287	325	364
	Vegetation management	-	20	40	61	16	16	10	10	10	10	10
	Routine and corrective maintenance and inspection	-	22	44	67	90	113	137	161	185	210	235
	Asset replacement and renewal	-	24	49	74	100	125	152	178	205	233	261
	Network Opex	-	100	201	306	345	429	511	598	687	778	870
	System operations and network support	-	58	117	177	237	299	361	425	489	554	621
	Business support	-	166	335	506	680	856	1,035	1,217	1,401	1,589	1,779
	Non-network opex	-	224	452	683	917	1,155	1,396	1,642	1,890	2,143	2,400
	Operational expenditure	-	324	653	989	1,262	1,584	1,907	2,240	2,577	2,921	3,270

SCHEDULE 12A – REPORT ON ASSET CONDITION

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027

SCHEDULE 12a: REPORT ON ASSET CONDITION

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

sch ref

						Asset condition at start of planning period (percentage of units by grade)						
	Voltage	Asset category	Asset class	Units	Grade 1	Grade 2	Grade 3	Grade 4	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
10	All	Overhead Line	Concrete poles / steel structure	No.	0.32%	3.10%	44.32%	42.26%	10.00%	3	1.87%
11	All	Overhead Line	Wood poles	No.	3.31%	18.10%	41.13%	27.46%	10.00%	3	36.82%
12	All	Overhead Line	Other pole types	No.					-	N/A	-
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	-	-	54.87%	45.13%	-	1	-
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km					-	N/A	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	0.42%	1.04%	11.74%	86.80%	-	1	-
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km					-	N/A	-
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	km					-	N/A	-
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	km	-	0.81%	1.21%	97.98%	-	1	-
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.	0.45%	3.84%	16.98%	78.73%	-	4	-
25	HV	Zone substation Buildings	Zone substations 110kV+	No.					-	N/A	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	-	1.82%	1.82%	96.36%	-	4	-
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	-	1.82%	1.82%	96.36%	-	4	-
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.					-	N/A	-
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.			100.00%		-	4	-
30	HV	Zone substation switchgear	33kV RMU	No.				100.00%	-	4	-
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.					-	N/A	-
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.					-	N/A	-
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.					-	N/A	-
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.					-	N/A	-

					Asset condition at start of planning period (percentage of units by grade)						
	Voltage	Asset category	Asset class	Units	Grade 1	Grade 2	Grade 3	Grade 4	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
39	HV	Zone Substation Transformer	Zone Substation Transformers	No.	-	27.08%	8.33%	64.58%	-	3	-
40	HV	Distribution Line	Distribution OH Open Wire Conductor	km	13.86%	4.03%	18.33%	63.78%	-	2	7.43%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km					-	N/A	-
42	HV	Distribution Line	SWER conductor	km					-	N/A	-
43	HV	Distribution Cable	Distribution UG XLPE or PVC	km	-	10.48%	8.94%	80.59%	-	1	0.25%
44	HV	Distribution Cable	Distribution UG PILC	km	-	10.48%	8.94%	80.59%	-	1	1.04%
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 sectionalisers	No.	0.91%	3.64%	-	95.45%	-	3	59.12%
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (indoor)	No.	1.60%	10.13%	6.67%	81.60%	-	4	7.79%
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	-	35.30%	4.99%	44.72%	15.00%	4	2.44%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.					-	N/A	-
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	2.90%	16.94%	5.97%	74.19%	-	3	11.61%
51	HV	Distribution Transformer	Pole Mounted Transformer	No.	-	0.63%	19.82%	59.55%	20.00%	3	1.88%
52	HV	Distribution Transformer	Ground Mounted Transformer	No.	0.96%	7.10%	28.30%	43.64%	20.00%	3	5.95%
53	HV	Distribution Transformer	Voltage regulators	No.	0.14%	13.13%	29.88%	51.86%	5.00%	3	28.57%
54	HV	Distribution Substations	Ground Mounted Substation Housing	No.					-	N/A	-
55	LV	LV Line	LV OH Conductor	km	11.48%	10.25%	7.61%	70.64%	-	1	0.06%
56	LV	LV Cable	LV UG Cable	km	-	0.24%	29.67%	70.09%	-	1	0.20%
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	-	9.58%	17.85%	72.58%	-	1	0.08%
58	LV	Connections	OH/UG consumer service connections	No.					-	N/A	-
59	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	-	34.54%	7.46%	58.00%	-	3	15.79%
60	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	-	5.88%	-	84.12%	10.00%	3	4.65%
61	All	Capacitor Banks	Capacitors including controls	No.				100.00%	-	4	-
62	All	Load Control	Centralised plant	Lot	1.62%	-	67.55%	20.83%	10.00%	4	-
63	All	Load Control	Relays	No.					-	N/A	-
64	All	Civils	Cable Tunnels	km					-	N/A	-

SCHEDULE 12B – REPORT OF FORECAST CAPACITY

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

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

sch ref

12b(i): System Growth - Zone Substations

Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %	Installed Firm Capacity +5 years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5 years (cause)	Explanation
Avalon Dr	17.5	23	N-1	11.4	76%	23	80%	No constraint within +5 years	Load from AVA transfered to SAN
Borman	14.5	23	N-1	20.6	63%	23	84%	Subtransmission circuit	Limited by the incoming 33kV OH conductor to 20.6MVA Load increase due to natural growth
Bryce St	15.7	23	N-1	23.0	68%	23	64%	No constraint within +5 years	
Chartwell	15.9	23	N-1	15.0	69%	23	73%	No constraint within +5 years	
Claudelands	19.2	23	N-1	23.0	84%	23	90%	No constraint within +5 years	
Cobham	11.8	23	N-1	23.0	51%	23	53%	No constraint within +5 years	
Finlayson Rd	3.7	7.5	N	3.0	49%	7.5	49%	No constraint within +5 years	
Glasgow St	7.6	10	N	8.0	76%	10	80%	No constraint within +5 years	
Gordonton	7.3	10	N	7.0	73%	10	77%	No constraint within +5 years	At present 2x5MVA transformer. Due to bus arrangement, practically regarded as an N-security site to 10MVA capacity.
Hampton Downs	0.9	10	N	2.0	9%	10	17%	No constraint within +5 years	
Horotiu	9.1	18	N-1	18.0	50%	18	62%	No constraint within +5 years	
Kent St	16.4	23	N-1	23.0	71%	23	74%	No constraint within +5 years	
Kimihia	2.1	10	N	2.0	21%	10	21%	No constraint within +5 years	Reduction most likely due to reduced mining load
Latham Court	18.6	23	N-1	14.0	81%	23	83%	No constraint within +5 years	
Hoeka Rd (winter peak will only be available in 2017)	0.0	23	N	8.0	-	23	37%	No constraint within +5 years	Winter peak will be available in 2017
Ngaruawahia	5.4	7.5	N-1	7.5	72%	7.5	71%	No constraint within +5 years	
Peacockes Rd	14.2	23	N-1	12.0	62%	23	67%	No constraint within +5 years	
Pukete - Anchor (major customer)	17.7	30	N-1	-	59%	30	57%	No constraint within +5 years	3-winding TX - share with Contact Energy. With embedded generation.
Pukete - WEL's 11kV	8.2	15	N-1	12.6	54%	15	55%	No constraint within +5 years	3-winding TX - share with Contact Energy
Raglan	4.8	23	N	2.5	21%	23	22%	Subtransmission circuit	Limited by the incoming 33kV OH conductor. Transfer capacity is limited due to voltage regulation issue.
HAM 11 kV GXP	34.6	40	N-1	17.0	87%	40	69%	No constraint within +5 years	Due to change in GXP development plan, consequential change in +5 years firm capacity and % utilisation.
Sandwich Rd	20.2	23	N-1	18.5	88%	23	90%	No constraint within +5 years	
Tasman	18.3	23	N-1	23.0	79%	23	116%	Transformer	Emergency rating at 25.9MVA, and will be upgraded to 30MVA in +5 years timeframe
Te Kauwhata	4.5	10	N-1	5.0	45%	10	49%	No constraint within +5 years	
Te Uku	2.0	10	N	2.0	20%	10	22%	No constraint within +5 years	
Wallace Rd	13.5	23	N-1	15.4	59%	23	60%	Subtransmission circuit	Limited by the incoming 33kV OH conductor to 15.4MVA identified
Weavers	9.7	7.5	N-1	9.0	129%	9.5	127%	No constraint within +5 years	Emergency rating 11.25MVA.
Whatawhata	4.2	23	N	5.0	18%	23	18%	No constraint within +5 years	

* *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*

SCHEDULE 12C – REPORT ON FORECAST NETWORK DEMAND

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027

SCHEDULE 12C: REPORT ON FORECAST NETWORK DEMAND

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

sch ref

12c(i): Consumer Connections

Number of ICPs connected in year by consumer type

Number of connections

for year ended	*Current Year CY* 31 Mar 17	*CY+1* 31 Mar 18	*CY+2* 31 Mar 19	*CY+3* 31 Mar 20	*CY+4* 31 Mar 21	*CY+5* 31 Mar 22
*Consumer types defined by EDB**						
Residential Customers	1,176	1,065	1,095	1,110	1,125	1,140
Business Customers	45	165	165	165	165	165
Large Customers - Low Voltage 400V	34	10	10	10	10	10
Large Customers - Medium Voltage 11kV	4	23	18	13	13	13
Large Customers - High Voltage 33kV						
Asset Specific Customers		(2)				
Unmetered Customers	1	(7)	(4)	(3)	(3)	(3)
Connections total	1,260	1,254	1,284	1,295	1,310	1,325

**include additional rows if needed*

Distributed generation

Number of connections	160	200	250	312	391	488
Capacity of distributed generation installed in year (MVA)	1	1	1	1	2	2

12c(ii) System Demand

for year ended	*Current Year CY* 31 Mar 17	*CY+1* 31 Mar 18	*CY+2* 31 Mar 19	*CY+3* 31 Mar 20	*CY+4* 31 Mar 21	*CY+5* 31 Mar 22
Maximum coincident system demand (MW)						
GXP demand	273	274	276	278	279	281
plus Distributed generation output at HV and above	-	-	-	-	-	-
Maximum coincident system demand	273	274	276	278	279	281
less Net transfers to (from) other EDBs at HV and above						
Demand on system for supply to consumers' connection points	273	274	276	278	279	281
Electricity volumes carried (GWh)						
Electricity supplied from GXPs	922	908	903	896	891	887
less Electricity exports to GXPs	116	116	116	116	116	116
plus Electricity supplied from distributed generation	437	437	437	437	437	437
less Net electricity supplied to (from) other EDBs	(15)	(15)	(15)	(15)	(15)	(15)
Electricity entering system for supply to ICPs	1,258	1,244	1,239	1,232	1,227	1,223
less Total energy delivered to ICPs	1,200	1,186	1,181	1,174	1,169	1,165
Losses	58	58	58	58	58	58
Load factor	53%	52%	51%	51%	50%	50%
Loss ratio	4.6%	4.7%	4.7%	4.7%	4.7%	4.7%

SCHEDULE 12D – REPORT ON FORECAST INTERRUPTIONS AND DURATION

Company Name	WEL Networks
AMP Planning Period	1 April 2017 – 31 March 2027
Network / Sub-network Name	

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

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

sch ref

		for year ended	*Current Year CY* 31 Mar 17	*CY+1* 31 Mar 18	*CY+2* 31 Mar 19	*CY+3* 31 Mar 20	*CY+4* 31 Mar 21	*CY+5* 31 Mar 22
10	**SAIDI**							
11	Class B (planned interruptions on the network)		33.1	42.9	42.9	42.9	42.9	42.9
12	Class C (unplanned interruptions on the network)		67.3	63.4	63.1	62.7	62.7	62.7
13	**SAIFI**							
14	Class B (planned interruptions on the network)		0.23	0.30	0.30	0.30	0.30	0.30
15	Class C (unplanned interruptions on the network)		1.30	1.34	1.34	1.33	1.33	1.33

4

DIRECTOR CERTIFICATION

4 DIRECTOR CERTIFICATION

CERTIFICATE FOR YEAR-BEGINNING DISCLOSURES

Pursuant to clause 2.9.1 of Section 2.9

We, **MARGARET DEVLIN**, and **PAUL MCGILVARY** being directors of WEL Networks Limited certify that, having made all reasonable enquiry, to the best of our knowledge –

a) the following attached information of WEL Networks Limited prepared for the purposes of clause 2.6.1 and 2.6.5(3) of the Electricity Information Disclosure Determination 2012 in all material respects complies with that determination; and

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.

Director
Date: 30 March 2017

Director
Date: 30 March 2017

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