ASSET MANAGEMENT PLAN UPDATE
For Period 1 April 2014 to 31 March 2024

27 MARCH 2014

ASSET MANAGEMENT PLAN UPDATE
WEL NETWORKS LTD

Planning Period:	1 April 2014 to 31 March 2024
Disclosure Date:	31 March 2014

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WEL BOARD OF GOVERNANCE STATEMENT FOR THE 2014-2024 ASSET MANAGEMENT PLAN UPDATE (2014 AMP UPDATE)

The AMP Update has been prepared to satisfy the "Electricity Distribution Information Disclosure Determination 2012 under Part 4 of the Commerce Act for 1986" as follows:

- Identify any material changes to the network development plans disclosed in the 2013 AMP;
- Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the 2013 AMP;
- Provide the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b; and
- Identify any changes to the asset management practices of the EDB that would affect a Schedule 13 Report on Asset Management Maturity disclosure.

This AMP Update was approved at the March 2014 Board Meeting by the WEL Board of Directors. It covers a period of 10 years from the financial year beginning 1 April 2014 until the year ending 31 March 2024.

John Spencer
Chairman

CHIEF EXECUTIVE'S STATEMENT

The primary purpose of WEL Networks Ltd (WEL) is to deliver to customers in the Waikato a safe, reliable and cost effective supply of electricity. Our aim is to be responsive to our customers' needs, and satisfy both their immediate and future requirements. At a high level the following list is an overview of key changes from the 2013 AMP.

1. Completed a Condition Based Risk Management (CBRM) process to prioritise the asset replacement programme for 11kV lines and ring main units (RMUs). The 2014 plan, with a $2.3M increase per annum on average, will ensure this risk remains within an acceptable level at the end of the 10 year planning period. Additionally, we have identified a potential saving of $1M in RMU replacement over 10 years by using this more targeted risk management approach.
2. Reviewed our reliability improvement strategy for rural customers and it is clear that our current rural area performance targets, which are based on customer expectations, are going to be challenging to achieve. However, we believe that the current strategic target of 80% of rural customer having less than or equal to 4 HV outages per year is achievable and that the average number of minutes customers are without power (SAIDI) can be reduced provided that:
    - The proposed asset renewal programme is approved and implemented at an additional cost of $23M over 10 years.
    - The Ground Fault Neutraliser (GFN) initiative is approved and applied to all of the rural substations at an additional cost of $7.4M over 10 years.
    - The network automation initiative is approved for selected switches located in the rural network at an additional one-off cost of $0.58M.
3. Completed a more robust option analysis across the medium to long term network development projects with a particular focus on resilience impacts. A $5.5M saving has been achieved by the further deferral of the Airport and Rotokauri Zone Substations.
4. Included the Arc Flash Project stages III and IV ($1,134k) in the 2015/2016 and 2016/2017 years respectively. This expenditure is part of an ongoing initiative to mitigate safety hazards from switchgear in accordance with IEEE STD 1584-2002 and best industry practice.
5. Identified a potential $3M asset transfer from Transpower. This additional item identified is supported by the current regulatory (financial) incentive for the transfer of Transpower assets and more efficient use of these assets by WEL in the long term.
6. Reviewed the maintenance fault costs using the average of indexed costs from the previous two years plus the most recent forecast for the current year. This results in an increase in costs of $280K per year.
7. Reviewed maintenance strategies and practices. A $1.74M increase in distribution lines expenditure is due to the introduction of diagnostic measurement techniques, an increase in budgets for stolen earth repairs and free customer cable locations.
8. A saving of $2.5M in vegetation management is due to a better quantification and understanding of the extent of our tree growth problem.

We hope you find the plan update informative and we welcome your comments on it. Comments can be emailed to huazhuo.lin@wel.co.nz

David Smith
Acting Chief Executive

WEL NETWORKS ASSET MANAGEMENT PLAN UPDATE

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ASSET MANAGEMENT PLAN UPDATE 2014 - Key changes arising from the 2014 AMP Review

For the period 1 Apr 2014 – 31 Mar 2024

I. Identify any material changes to the network development plans disclosed in the 2013 AMP;

In the development of this year's network development plan we have:

1. Re-categorised the proposed Caro Street Switching Station from customer driven works to safety driven works. This work is to be prioritised to mitigate an identified safety risk at the existing Garden Place Switching Station (which Caro Street will replace). This project will cost $1.4M .We had previously intended to complete this work as part of the customer upgrade requirements at this location, however the customer continues to delay the works and the condition of our underground switching station in Garden Place is very poor.
2. Reviewed our reliability improvement strategy for rural customers and it is clear that our current rural area performance targets, which are based on customer expectations, are going to be challenging to achieve. However, we believe that the current strategic target of 80% of rural customer having less than or equal to four high voltage outages per year is achievable and that the average number of minutes customers are without power (SAIDI) can be reduced provided that:
    a. The proposed asset renewal programme is approved and implemented at an additional cost of $23M over 10 years. Safety of the network clearly requires replacement of aging network assets to manage our overall risk. More detailed information is provided in the lifecycle asset management (maintenance and renewal) plan in Section II.
    b. The Ground Fault Neutraliser (GFN) initiative is approved and applied to all of the rural substations (at an additional cost of $7.4M over 10 years) with benefit / cost ratio of 2:1 for not only reliability gains but also safety / power quality gains.
    c. The network automation initiative is approved for selected switches located in the rural network (at an additional cost of $0.58M) with benefit cost ratio of 6:1.This provides for faster restoration of power i.e. reliability gains, and reduced SAIDI minutes.
3. Reviewed the costs and timing of capacity upgrade plans at Transpower Grid Exit Points (GXPs) and sub-transmission network according to Transpower's updated project timing. Identified a small $47k increase.
4. Completed a more robust option analysis across the medium to long term network development projects with a particular focus on resilience impacts. A $5.6M saving has been achieved by the further deferral of the Airport and Rotokauri Zone Substations as a result of updated load forecasting information.
5. Included the Arc Flash Project stages III and IV ($1,134k) into the 2015/2016 and 2016/2017 years respectively. This expenditure is part of an ongoing initiative to mitigate safety hazards from switchgear in accordance with IEEE STD 1584-2002 and best industry practice.
6. Updated the smart box project timeframe.
7. Reviewed customer driven projects based on updated economic and council information ($7.1M increase).
8. Identified a potential $3M asset transfer from Transpower (Te Kowhai 33kV Switchgear). This additional item identified is supported by the current regulatory (financial) incentive for the transfer of Transpower assets and more efficient use of these assets by WEL in the long term.

II. Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the 2013 AMP;

WEL has recently observed a significant failure increase for 16mm conductor as shown below:

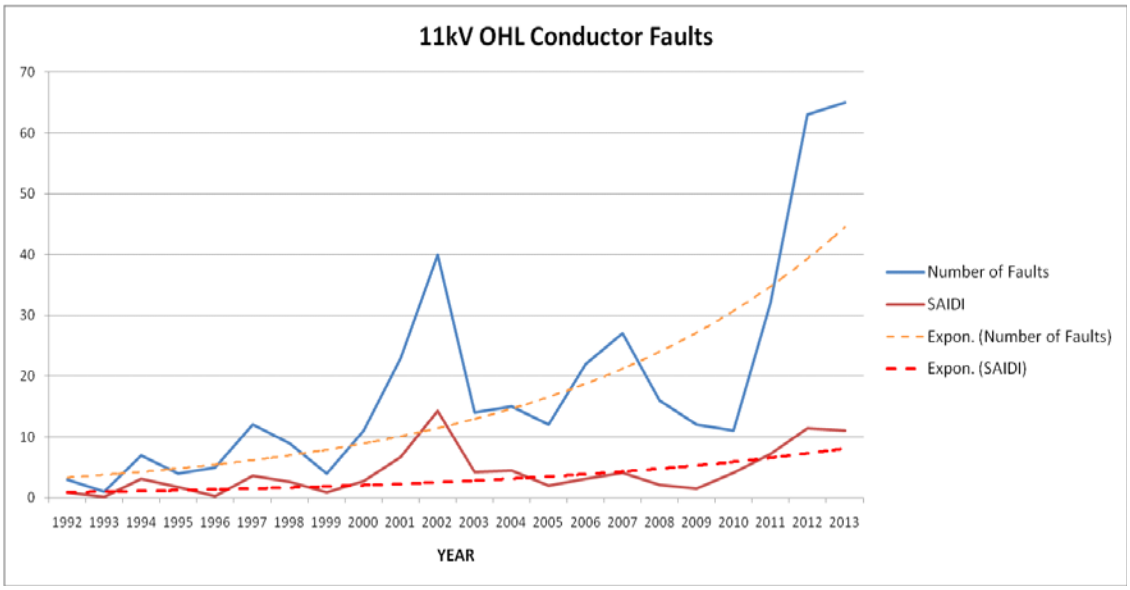

Figure 1. 11kV Overhead Line Conductor Faults History

Evidence has shown that the 16mm copper conductor only lasts about 35 years rather than the standard conductor life of 60 years. There is significant safety risk associated with the failure of a conductor. The original asset replacement spend profile was derived from its age plus an assumption of the condition. WEL considered how best to assess and manage the risks to make sound asset investment decisions. We found that Condition Based Risk Management (CBRM) which was developed by EA Technology in conjunction with Distribution and Transmission Companies worldwide provided a robust method of assessment. This methodology has been adopted by most distribution network operators in the UK and Australia, and also by Orion in New Zealand. The approach has also been accepted by the electricity regulators OFGEM and AER to justify asset replacement CAPEX expenditure. WEL employed EA consultants to complete a CBRM process to prioritise the asset replacement programme for our 11kV overhead lines and ring main unit switchgear (RMUs).

CBRM is a structured process that combines asset information, engineering knowledge and practical experience to define future condition, performance and risk for network assets. CBRM models have provided WEL with the means to define current and future condition of the assets which can be used to quantify current and future performance and risk with different levels of investment. A more detailed description of the CBRM approach is included in Appendix A. Our first application of CBRM to our 11kV overhead lines and RMU assets has highlighted several important insights:

- If we continue at the level of existing asset renewal spend in the 2013 AMP, our overall risk profile will increase to an unacceptable level.
- There is marginal risk reduction to be gained by re-prioritising the existing plan using CBRM, but the overall risk profile will still remain at an unacceptable level.

- The proposed plan with a $2.3M increase per annum on average will keep the risk within an acceptable level at the end of the 10 year planning period.
- We have identified a potential saving of $1M in RMU replacement over 10 years by using this more targeted risk management approach.

Therefore for the asset renewal plan, the key changes are 11kV overhead line assets (e.g. poles, crossarms and conductors) and 11kV ring main units. The modified renewal programmes were determined by CBRM. The corresponding spend profile is shown below. Renewing the 11kV line assets as proposed will assist in improving rural network reliability and, in conjunction with our programmes of new technology applications, will provide considerable customer service benefits. The following graph shows the 11 year asset renewal capital projection:

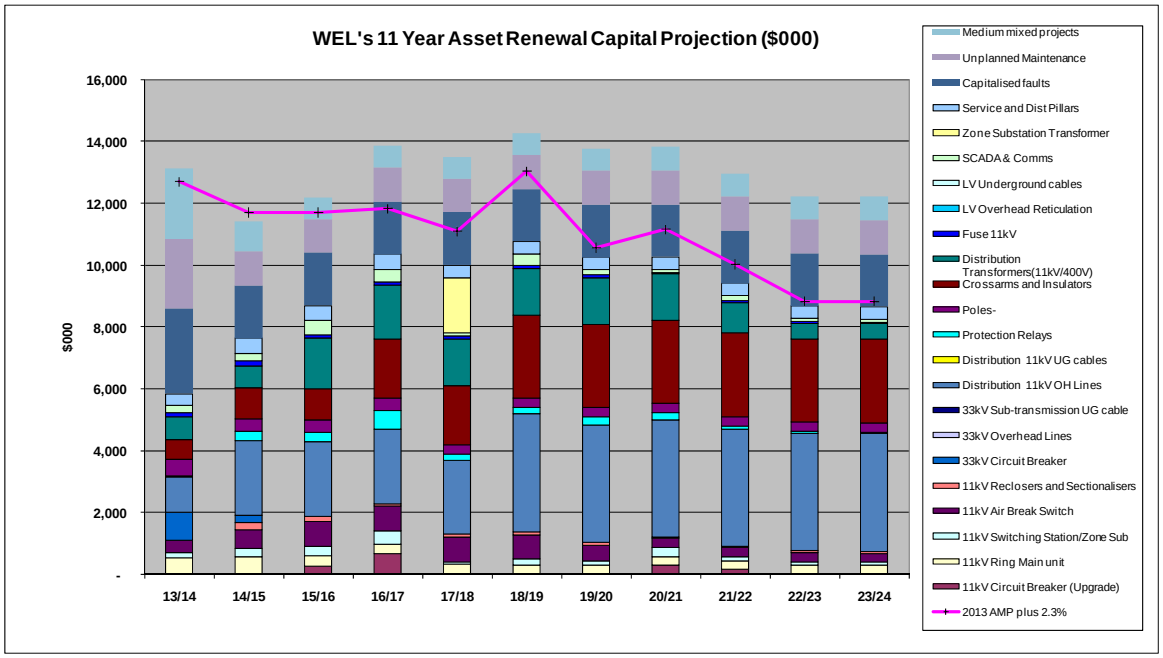

Figure 2. 11 Year Asset Renewal Capital Projection

The above projections include provision for capital asset replacement of faults and urgent replacements based on the likelihood of imminent failure. They also include a category for provision of medium sized projects where a group of assets are replaced at the same time and not necessarily replaced with the same asset type. An example of this would be undergrounding of a cluster of wooden poles around an intersection.

The above projections are generally based on standard replacement costs. One exception is the replacement of wooden poles. These remaining poles are typically in complex or difficult situations so their replacement costs are expected to be significantly higher than a standard situation. Contingency amounts may be requested where there are significant additional costs identified such as difficult access, complex traffic management or when significant temporary generation is required during changeover.

Asset renewal and replacement for critical assets such as circuit breakers and zone transformers was driven by the age profile and condition monitoring regimes, which focus on the asset's reliability (risks).

Major changes from the previous year's projection are due to the use of CBRM on 11kV overhead assets and 11kV ring main units.

Key variances between 2014 AMP and indexed 2013 AMP are shown in the table below ($000)

Total Network Capital Expenditure	**2014 AMP**	**2013 AMP + 2.3% cost increase**	**Variance**	**Comments**
Consumer connection	80,745	76,631	(4,115)	Updated information
System Growth	153,263	154,753	1,490	
Asset Replacement and Renewal	143,246	121,117	(22,129)	$23M increase for 11kV conductor and $1M saving for RMU as a result of CBRM
Asset relocations	29,930	29,199	(731)	Updated information
Reliability, safety and environment	-	-	-	
Quality of supply	6,582	6,622	40	
Legislative and regulatory	1,412	1,172	(240)	
Other reliability, safety and environment	21,687	11,547	(10,140)	• $1.4 M for Caro St Switching Station. • 1.1M for Arc Flash protection • $8.0M for new reliability initiatives
Total reliability, safety and environment	29,903	19,340	(10,563)	
Total Capital Expenditure	**436,864**	**401,039**	**(35,825)**	

Table 1. Key Variances between 2014 AMP and indexed 2013 AMP

A summary of the capital spend envelope is shown in the following graph (the magenta line represents the index adjusted 2013 capital spend profile). The figures from the 2013 AMP have been adjusted by 2.3% using a weighted average of internal labour cost increases and the construction PPI index as at 30 Sep 2013.

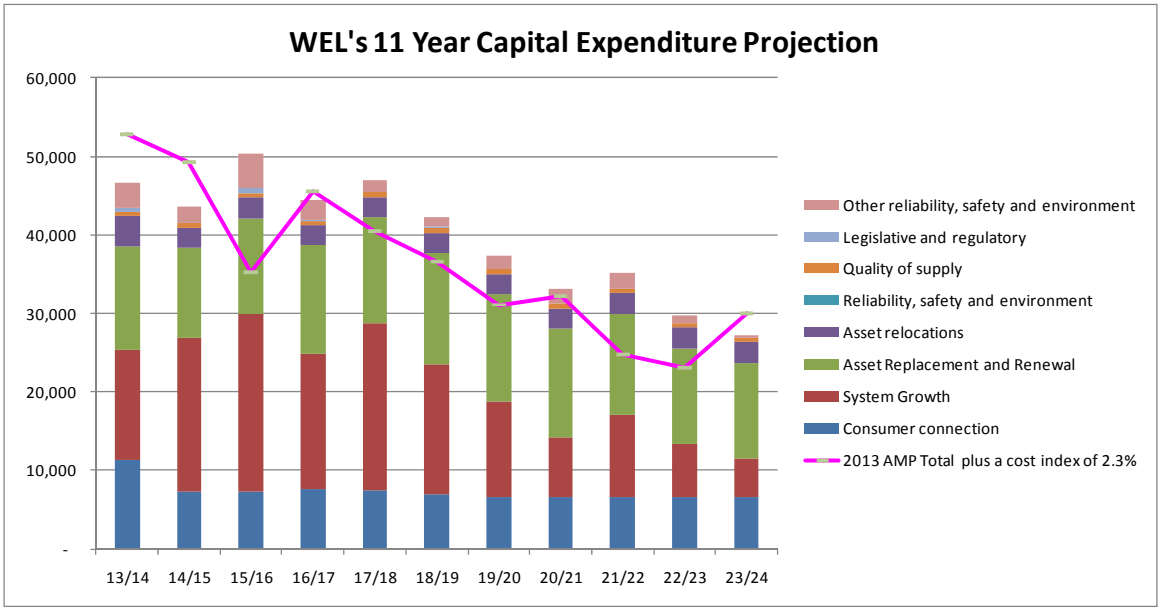

Figure 3. 11 Year Capital Expenditure Projection

Maintenance Expenditure

Our maintenance strategy and its associated plan have been reviewed, including the vegetation management programme. Key changes from the indexed 2013 AMP for the same period are summarised below:

1. A $2.86M increase in faults expenditure over the planning period is expected. The fault costs are made up of approximately 70% low voltage and 30% high voltage faults. The volume of low voltage faults has increased steadily over the last few years due to our focus on high voltage maintenance to improve reliability. Low voltage assets (other than critical or safety related assets) are allowed to continue in operation until they fail, e.g. customer low voltage fuse holders are allowed to fail before being replaced. Also, over this period the average fault costs have increased due to a number of factors including:-
    a. More frequent use of generators to supply customers during outages
    b. Higher traffic management requirements and costs
    c. A large increase in HCC permit costs (CARs)
    d. Increase in safety break costs
2. A $1.71M increase in distribution lines expenditure over eleven years is due to:
    a. Diagnostic measurement techniques added to the current maintenance strategies (i.e. overhead ultrasonic inspections, Corona surveys and re-introducing the scanning of wooden poles in the 17/18 financial year) which will be used as inputs to the CBRM models
    b. An increase in budgets for stolen earth repairs and free customer cable locations
3. A saving of $2.5M in vegetation management is due to a better quantification and understanding of the extent of our tree growth problem. We increased the inspection program to complete a patrol of the entire network in 2013/14 and to build a tree growth priority model.

4. A $0.30M saving in zone substations expenditure is due to an anticipated reduction in corrective work and completion of the protection as-built and firmware upgrade projects.
5. A $0.82M decrease in SCADA expenditure is due to less provision for corrective works based on current spend performance.
6. There are no major variances in fault repairs for external subdivisions, project driven OPEX, wind farm transmission lines and smart meter maintenance.
7. The following graph summarises the maintenance spend profile over the next 11 years. The figures from the 2013 AMP have been adjusted by 2.7% which was our internal labour cost increase.

11 Year Maintenance Spend Comparison Between 2014 AMP and Indexed 2013 AMP			
Maintenance	**2014 AMP**	**2013 AMP plus a cost index of 2.7%**	**Variance**
Faults	29,907	27,048	(2,859)
Distribution Lines	30,430	28,716	(1,714)
Vegetation Management	11,266	13,735	2,469
Zone Substations	8,481	8,778	298
SCADA	1,019	1,840	822
Faults External Subdivision	462	451	(11)
Project Driven Maintenance Expenditure	3,071	3,056	(15)
Wind Farm Maintenance	552	561	9
Smart Meter Maintenance	1,193	1,206	13
Total	**86,381**	**85,392**	**(989)**

Table 2. Key Variances in maintenance expenditure between 2014 AMP and indexed 2013 AMP

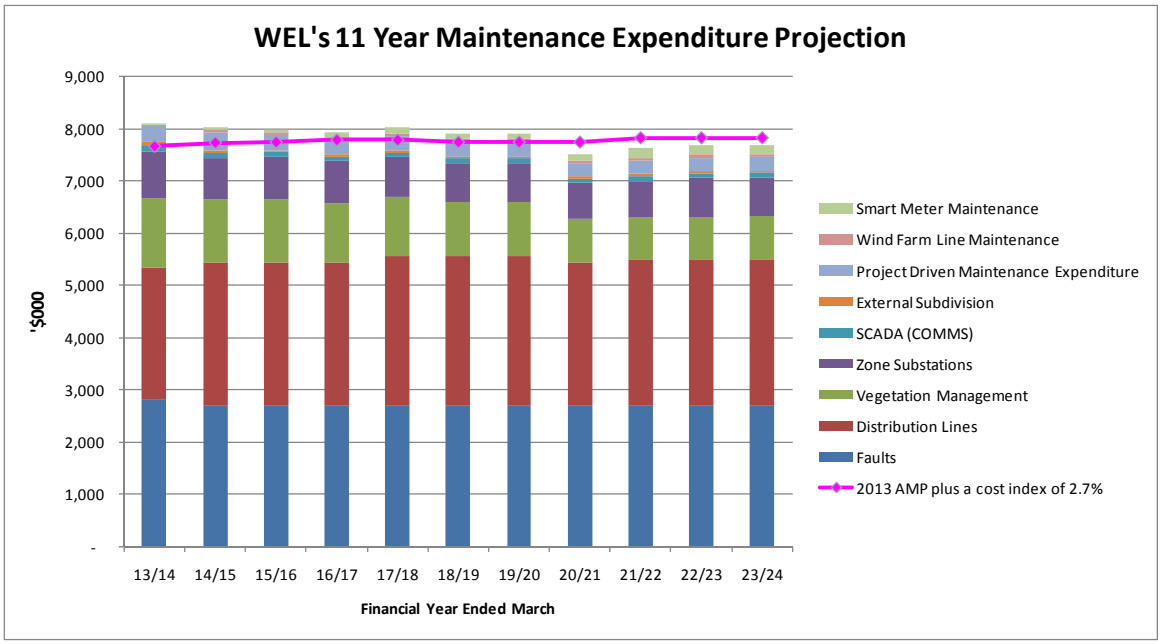

Figure 4. 11 Year Maintenance Expenditure Projection

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

WEL, like many other EDBs, does not have the internal resources needed to develop sophisticated and accurate forecasting models of cost index variations over the AMP planning period. In order to help overcome this problem the Electricity Networks Association (ENA) has issued a methodology to EDBs. The forecasts of network OPEX and CAPEX as well as non-network OPEX and CAPEX inflation forecasts are based on information that is largely publicly available in the Orion CPP determination and Transpower's regulatory submissions with an adjustment for labour cost inflation based on observed differentials in a remuneration consultant's survey versus Statistics New Zealand's LCI. These are combined with the relative weightings for materials and labour. These weightings are verified against actual WEL costs. The forecast horizon is ten years. Through combining the individual indices and the weightings a cost index for each year is calculated. Then the values for each year are averaged over the whole forecast period to give one averaged value for each of the four categories. The values are shown in each of the four sections below.

1. The nominal value of network capital expenditure is calculated using the following formula:

$$N_t = K_t * (1 + i_{ncc})^n$$

Where

N_t = Nominal value in year t

K_t = Constant prices in year t

n = Years from current year

i_{ncc} = Network CAPEX cost index = 3.6%

2. The nominal value of network maintenance expenditure is calculated using the following formula:

   $N_t = K_t * (1 + I_{noc})^n$

   Where

   N_t = Nominal value in year t
   K_t = Constant prices in year t
   n = Years from current year
   I_{noc} = Network maintenance (operational) cost index = 3.6%

3. The nominal value of non-network capital expenditure is calculated using the following formula:

   $N_t = K_t * (1 + I_{cc})^n$

   Where

   N_t = Nominal value in year t
   K_t = Constant prices in year t
   n = Years from current year
   I_{cc} = Non- network maintenance cost index = 1.8%

4. The nominal value of non-network maintenance (operational) expenditure is calculated using the following formula:

   $N_t = K_t * (1 + I_{oc})^n$

   Where

   N_t = Nominal value in year t
   K_t = Constant prices in year t
   n = Years from current year
   I_{oc} = Non-network maintenance cost index = 3.5%

5. We define a material change to be a 10% variation (over or under) of the total expenditure for the period from 1 April 2013 to 31 March 2014. The yearly variance is mainly due to the following reasons:
   a. Transpower changed the timing of capacity upgrades at their Grid Exit Points (GXPs) and sub-transmission network
   b. WEL revised the timing of capital project delivery due to internal constraints in the design function and Field Services resources as well as our contracting strategy, but kept the network risks within acceptable limits. A more detail discussion is found in the next section. It identifies any changes to the asset management practices of the EDB that would affect a Schedule 13 Report on Asset Management Maturity disclosure.

6. The following categories in capital expenditure meet the above definition of material changes. The reasons are summarised below:

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

Category	Variance ($K nominal)	% of variance	Reasons (a negative variance means increase from last year's disclosure)
Consumer connection	(9,475)	-12.3%	• This is mainly due to the updated forecast and different cost index applied, refer to section III.
System growth	(15,893)	-10.3%	• $9.5M is due to the different cost index applied, refer to section III. The rest is mainly due to the delay of the smart box project and potential $3M asset transfer from Transpower.
Asset replacement and renewal	(31,722)	-25.8%	• $22m is due to CBRM, refer to section II. • The rest is due to different cost index applied, refer to section III.
Legislative and regulatory	(288)	-23.6%	Seismic strengthening of Glasgow has been rescheduled to 15/16 to align with future substation upgrade timing and needs
Other reliability, safety and environment	(12,649)	-106.5%	• $1.4 M for Caro St Switching Station. Refer to point 1 in section I • $8.0M for new reliability initiatives. Refer to point 2 in section I. • $1.1M for Arc Flash protection. Refer to point 5 in section I. • The rest is due to different cost index applied, refer to section III.
Non-network assets	(5,204)	-12.5%	• Changes for routine non-network assets relate to reviewing what assets need to be replaced and the cost and timing of those replacements. • Changes in atypical non-network assets relate to deferring expenditure to future periods until requirements become more certain.
Cost of financing	(5,278)	-81.9%	Cost of financing has increased as the planned spend has increased.
Value of commissioned assets	(279,210)	-111.8%	There was an error in last year's figure. This error has been corrected in this year's disclosure.
The following variance is based on five year period between 1 April 2013 to 31 March 2018 in constant price			
11a(ii): Consumer Connection	**Variance ($K constant)**	**% of variance**	**Reasons**
Traditional network non - TOU (time of use)	(3,681)	-15.2%	Updated information regarding customer growth
External embedded networks non-TOU	590	42.6%	It is intended to sell subdivisions
Demand TOU	3,193	100.0%	WEL reviewed the pricing category, and combined demand TOU and 400V TOU.
400V TOU	(5,057)	-155.1%	Refer to above comments, more strong

			growth observed in 13/14 year.
11kV TOU	627	17.3%	One customer dropped off.
11a(iii): System Growth			
Sub transmission	7,076	26.6%	Primarily due to TWH-AVA 3 x 33kV cables and LAT-FST 2x33kV cables subtransmission projects deferred. Ref to point 3 in section I
Distribution and LV lines	3,308	28.4%	This is very difficult to estimate. We applied a generic % split for some project budget provisions. A review of this generic % split has indicated we will spend more on underground cables
Distribution and LV cables	(2,669)	-78.4%	
Distribution substations and transformers	(937)	-96.1%	More distribution transformers need to be upgraded.
Distribution switchgear	(1,060)	-350.1%	This is very difficult to estimate. We applied a generic % split for some project budget provisions. Revised % split especially for CBD & Rural LV Circuits Upgrade
11a(iv): Asset Replacement and Renewal			
Sub transmission	32	100.0%	As a part of Wallace Substation project, work not completed yet.
Zone substations	(1,664)	-30.1%	Increase is due to projects being carried forward into the next 5 years such as WEA 11kV substation upgrade and other protection/communications related projects.
Distribution and LV lines	(4,081)	-11.9%	Changes in the previous plan were the result of CBRM being adopted mainly for OHL 11kV conductors, poles and crossarms.
11a(vi):Quality of Supply			
Voltage upgrade projects due to monitoring	(1,721)	-344.1%	Where WEL's smart boxes are installed on the WEL network, voltage issues are recorded through event reporting, without the need for the customer to complain. WEL utilises this data to understand the voltage issues proactively rather than relying on the Customer LVC process. We have planned to increase voltage upgrade projects through the smart boxe budget and decrease the LVC budget allowance.
Power Quality - Works required to correct customer complaints	1,739	69.6%	
11a(vii): Legislative and Regulatory			
Seismic upgrades of substations	(482)	-96.4%	Seismic strengthening of Glasgow has been rescheduled to 15/16 to align with future substation upgrade timing and needs
Seismic strengthening of Glasgow and Avalon (old) buildings	230	41.0%	
11a(viii): Other Reliability, Safety and Environment			
Ground fault neutralizer installation for rural	(2,108)	-363.8%	Refer to point 2 - b in section I

substations			
DR Site relocation	(176)	-38.3%	The Board approved the additional money required for a scope change in 13/14.
Network Automation	(591)	-63.5%	Refer to point 2 - c in section I
11a(ix): Non-Network Assets			
Computer equipment	(818)	-52.8%	Computer equipment assets have been reviewed for the cost and timing of those replacements.
Computer software	2,837	21.7%	Computer software assets have been reviewed for the cost and timing of those replacements.
Plant and equipment	(718)	-56.4%	Plant and equipment assets have been reviewed for the cost and timing of those replacements.
Motor vehicles	(3,184)	-48.1%	The company has changed its policy for utes and vans from leasing to purchasing.
Office and depot purchase and renovations	1,326	84.1%	Renovation plans cancelled

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

One general reason will apply across the following categories except insurance that different cost index applied last year and this year's AMP, refer to section III.

Category	Variance ($K nominal)	% of variance	Main Reasons
Service interruptions and emergencies	(3,226)	-11.0%	Refer to point 1 of maintenance expenditure under section II
Vegetation management	1,595	11.6%	Refer to point 3 of maintenance expenditure under section II
Routine and corrective maintenance and inspection	(9,947)	-43.1%	Refer to point 2 of maintenance expenditure under section II, WEL to developed more detailed categories to match the disclosure requirements. It results in more routine and corrective maintenance and inspection but less asset replacement and renewal.
Asset replacement and renewal	4,034	21.3%	
System operations and network support	(19,121)	-23.4%	When the AMP was prepared last year the new disclosure rules were not fully understood. Clarity around the new rules has nowchanged how we are applying the rules to the costs. For example last year's AMP included loss on sale which is no longer considered a cost but a revenue item. We now include depreciation recovered in 'System operations and network support' as there is no other place to include this item.
Business support	(3,226)	-11.0%	Costs have increased due to increase in staff costs and increase in IT system costs.
Insurance (in constant prices)	864	14.7%	Last year's AMP considered that Insurance costs would rise due to events such as the earthquake. Our latest insurance renewal has

			seen those costs reduce and is included in the current AMP.

7. Commentary on major changes to schedules 12a to 12d

- S12a. Asset Condition: the overhead line asset condition (row 46) has been updated according to our CBRM health index.
- S12c. Demand Forecast: we have revised our distributed generation forecasts taking in account photovoltaic generation.
- S12d. Reliability Forecast: There are significant changes for the reliability targets compared to last year's disclosure information. The updated reliability targets are based on the following updated information:
    - Planned interruptions on the future works programme particularly due to WEL's in-house instruction on the 26th September 2013 of the following Safety Directive that "Live Line work on 16mm copper conductor lines that involves new or replacement cross-arms or changes in configuration, which may cause extra tension will stop with immediate effect." The impact of this safety initiative for the full 14/15 financial year onwards has been estimated (worst case) as an extra 11.67 SAIDI minutes based on the current works programme. This impact is anticipated to be reduced by the approval of a risk assessment process for live line work sites where 16mm conductor is involved.
    - Clearer understanding of increased faults due to network age and condition from a Condition Based Risk Management Model (CBRM). WEL has just completed CBRM modelling for RMUs and 11kV lines including conductor, poles and crossarms. Further changes might be required after the completion of the remainder of the key assets and any associated target intervention programmes.
    - Improvements made from the proposed network automation projects.
    - Improvements made from the proposed Ground Fault Neutraliser (GFN) projects.
    - Uncontrollable faults rates (e.g. vehicle accidents, cable strikes) are estimated based on the average of the previous two years. The performance under fault response, switching and repair process is assumed to be similar to the current year's performance.

The final targets are shown below:

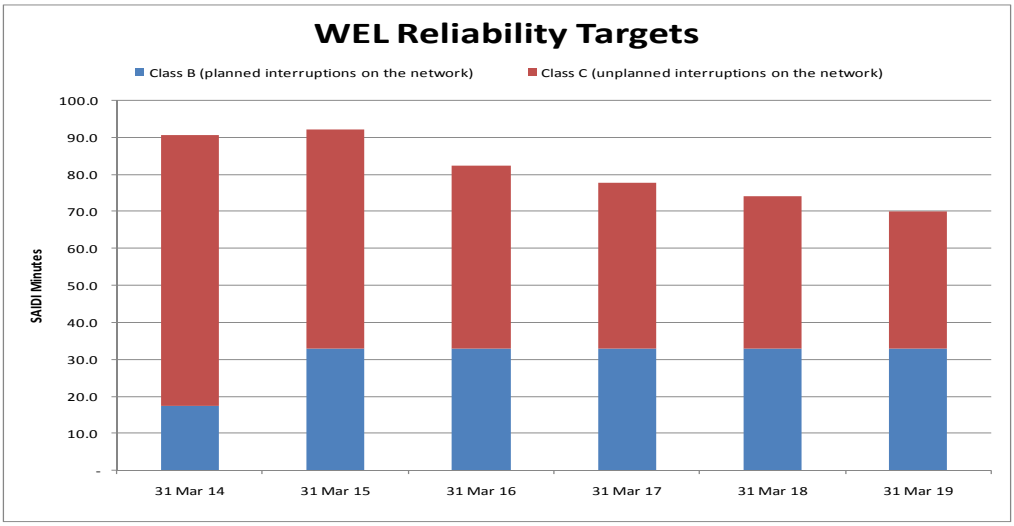

Figure 5. Revised Reliability Targets

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

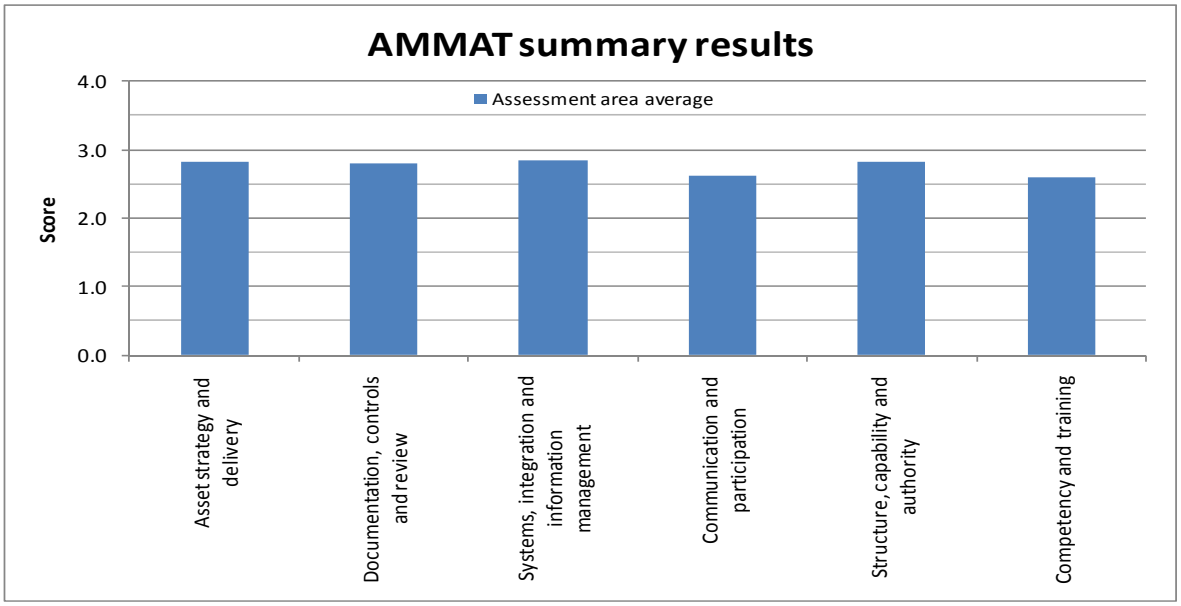

Figure 6. 2013 AMP AMMAT Summary Results

WEL used the AMMAT process as an engagement tool to have a collective view on issues raised, and then developed a corrective action plan for improvement. About twenty key stakeholders were surveyed individually. Then the survey results were presented back to the key stakeholders for discussion and debate. After proper debate, we agreed that WEL meets the requirements for PAS 55 for most of the questions, however, the following key issues and improvement opportunities were identified and responsibilities for actions were assigned as a result of this process.

Question No	Function	Question	Score in 2013	Key issues and improvement opportunities identified in 2013	Changes made in 2014
11	Asset management strategy	In what way does the organization's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organization has stewardship?	2.7	The asset management strategy takes into account the lifecycle of most of its assets, asset types and asset systems and all of their phases. WEL is in the process of developing an asset Condition Based Risk Management model (CBRM). It still needs to be implemented.	Condition Based Risk Management (CBRM) models for 11kV lines and RMUs have been developed and used to prioritise the asset replacement programme for 11kV lines and ring main unit switchgear (RMUs). The Board has approved the CBRM model to be used for the remainder of the asset types. The asset condition grading system has been reviewed and redeveloped as part of the CBRM project.
26	Asset management plan(s)	How does the organization establish and document its asset management plan(s) across the life cycle activities of its assets and asset systems?	2	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. However, as mentioned above, the asset strategy will further be enhanced as a result of the CBRM work.	
69	Risk management process(es)	How has the organization documented process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle?	2	We have some good age profile information, some asset condition assessments, and have undertaken the PSMS risk analysis. We also have a good overall process of company risk assessment and all of these are considered during the preparation of the AMP, but we do not have a good solid understanding of all asset class risks over their full life cycle.	
95	Performance and condition monitoring	How does the organisation measure the performance and condition of its assets?	2	Consistent asset performance monitoring linked to the asset management objectives is in place and universally used including reactive and proactive measures. Data quality management and review processes are also carried out. We still have gaps, mainly in the interpretation of "asset condition".	

Question No	Function	Question	Score in 2013	Key issues and improvement opportunities identified
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)	2.5	Our in-house work force has been developed to undertake faults, routine maintenance, asset replacement works and some capital project works. The in-house workforce is relatively effective and efficient while there is still room for improvement. A number of projects are outsourced using our tendering process. A high level overall resource plan is developed after approval but has not been monitored and updated regularly.
40	Structure, authority and responsibilities	What evidence can the organisation's top management provide to demonstrate that sufficient resources are available for asset management?	2.5	Executive review and approval of the AMP before the Board presentation and final approval of AMP. The AMP forms the basis of the key OPEX and CAPEX budgets. The funding requirements in the AMP are factored into our pricing and funding calculations and used in the decision making process for both short and long term planning. The company's CAPEX and OPEX budgets include funding for materials, equipment, services provided by third parties and personnel (internal and service providers) with appropriate skills, competencies and knowledge.
45	Outsourcing of asset management activities	Where the organisation has outsourced some of its asset management activities, how has it ensured that appropriate controls are in place to ensure the compliant delivery of its organisational strategic plan, and its asset management policy and strategy?	2	There is a contract strategy management process in place to manage different types of contracts such as preferred contractors, tendering process, alliance contractors etc. However, the balance between the in-house workforce and external contractors and the contract strategy is not effective enough. It is under review to enable the short and long term efficiency and effectiveness of AMP delivery.
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)?	2.5	Position descriptions detail outputs, standards and qualification, experience and role specific competencies required. This is used as the basis for the recruitment of suitable staff and subsequent training and development. In terms of resource levels, a shortfall has been identified through an assessment done and will be addressed in the 2013/14 financial year.

The symptom of the above identified issues (question numbers 31, 40, 45 and48) is that WEL has not delivered the works programme in its entirety each year. The Works Programme Manager (WPM) role was primarily established to address this issue. A number of key drivers have been identified on which to focus efforts and are detailed within this project scoping document.
Works programme delivery process qualitative data was gathered through informal discussions and questioning of the current processes and issues with department managers and employees. The emerging issues identified were further validated with quantitative data in the form of the works programme resource requirements on a timeline. The identified issues were grouped into six primary work streams as follows:

- Design Lead – i.e. planning, detailed design
- Programme Management – develop multiple planning tools
- Delivery to Scheduling – i.e. standardised design job pack delivery
- Works Scheduling and Delivery – efficient allocation of labour and material
- Contract Strategy – efficient and effective use of outsourced contractors
- Reporting Functionality – production process visibility

Resource to achieve the detailed analysis and subsequent business recommendations to enable works programme delivery can primarily be completed utilising internal resources. External resource is required to support the Design Lead work stream with support from WEL internal resources. Resource is also required from the likes of Soltius to support Information Services across the various work streams. Project lead will be assigned to the Works Programme Manager.

A project with the above scope has been approved. The implementation is underway and being lead by the Works Programme Manager. This is expected to be completed by 31 October 2014.

Appendix A: Condition Based Risk Management (CBRM) Process

Condition Based Risk Management (CBRM) is a structured process that combines asset information, engineering knowledge and practical experience to define future condition, performance and risk of network assets. The methodology has been progressively developed over a number of years and has been successfully applied many times, helping electricity companies around the world to deliver effective asset related risk management.

An overview of the CBRM process can be summarised by a series of sequential steps as follows:

1. **Define asset condition** – 'Health indices' for individual assets are derived and built for different assets groups. Current health indices are measured on a scale of 0 to 10, where 0 indicates the best condition and 10 the worst.

2. **Link current condition to performance** – Health indices are calibrated against relative probability of failure (PoF). The relationship between health index and PoF for an asset group is used to identify the health index that most closely matches the recent failure rate.

3. **Estimate future condition and performance** – Knowledge of degradation process is used to 'age' health indices. The ageing rate for an individual asset is dependent on its initial health index and operating conditions. Future failure rates can then be calculated from aged health index profiles and the previously defined relationship between health index and PoF.

4. **Evaluate potential interventions in terms of PoF and failure rates** – the effect of potential replacement, refurbishment or changes to maintenance regimes can then be modelled and the future health index profiles and failure rates modified accordingly.

5. **Define and weigh consequences of failure (CoF)** – a consistent framework is defined and populated in order to evaluate consequences in significant categories such as network performance, safety, financial, environment, etc. The consequence categories are weighted to relate them to a common monetary ($) unit.

6. **Build risk model** – For an individual asset, its probability and consequences of failure are combined to quantify risk. The total risk associated with an asset group is then obtained by summing the risk of the individual assets.

7. **Evaluate potential interventions in terms of risk** – the effect of potential replacement, refurbishment or changes to maintenance regimes can be modelled to quantify the potential risk reduction associated with different strategies.

8. **Review and refine information and process** – Building and managing a risk-based process on the basis of asset specific information is not a one-off process. The initial application will deliver results based on available information and, crucially, identify opportunities for ongoing improvement that can be used to progressively build an improved asset information framework.

It is important to emphasize that the process and methodology are flexible, to enable the specific characteristics as well as the operational context for each group of assets to be incorporated. Indeed this is an essential requirement of the CBRM process.

Health Indices

The first stage in the CBRM process is to derive a numeric presentation of the condition of each asset in the form of a 'Health Index' (HI). Essentially, the health index of an asset is a means of combining information that relate to its age, environment and duty, as well as specific condition and performance information to give comparable measure of condition for individual assets in terms of proximity to end of life (EoL) and probability of failure. The concept is illustrated schematically in the Figure below:

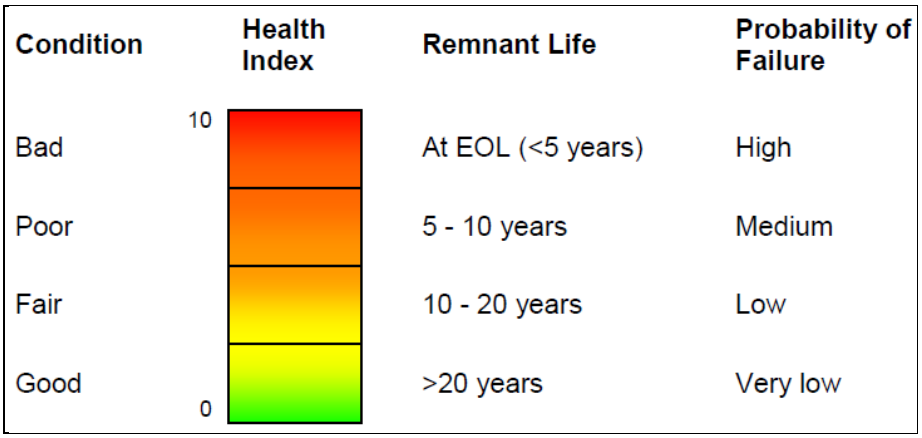

Figure 7. Concept of Health Indices

The health index represents the extent of degradation as follows:

Low values (in the range 0 to 4) represent some observable or detectable deterioration at an early stage. This may be considered as normal ageing, i.e. the difference between a new asset and one that has been in service for some time but is still in good condition. In such a condition, the PoF remains very low and the condition and PoF would not be expected to change significantly for some time.

Medium values of health index, in the range 4 to 7, represent significant deterioration, with degradation processes starting to move from normal ageing to processes that potentially threaten failure. In this condition, the PoF, although still low, is just starting to rise and the rate of further degradation is increasing.

High values of health index (>7) represent serious deterioration; i.e. advanced degradation processes now reaching the point that they actually threaten failure. In this condition the PoF is now significantly raised and the rate of further degradation will be relatively rapid.

The detail of the health index formulation is inevitably different for each asset group, reflecting the different information and the different types of degradation processes. There is, however, an underlying structure for all asset groups as outlined below:

(1) For a specific asset, an initial age related health index is calculated using knowledge and experience of its performance and expected lifetime, taking account factors such as original specification, manufacturer, operational experience and operating conditions (duty, proximity to coast, etc).

(2) Where condition information relating to specific degradation processes can be used to identify potential end of life conditions (i.e. oil test results for transformers), a separate factor is derived for each degradation process, calibrated by linking a defined condition to a specific health index value. This gives rise to a number of multipliers, one for each potential end of life condition. These are then combined to give a 'combined condition factor'.

(3) Additional information that is indicative of condition but cannot be directly related to specific degradation processes is used to create additional 'factors' that modify the basic age related health index described above. Examples include factors relating to dielectric test results, fault / defect history and reliability issues associated with specific equipment types (e.g. different manufacturers).

Condition Related Probability of Failure (PoF)

The second important relationship in CBRM is that between the health index and the condition related probability of failure. This relationship is shown schematically (solid line) in the below Figure.

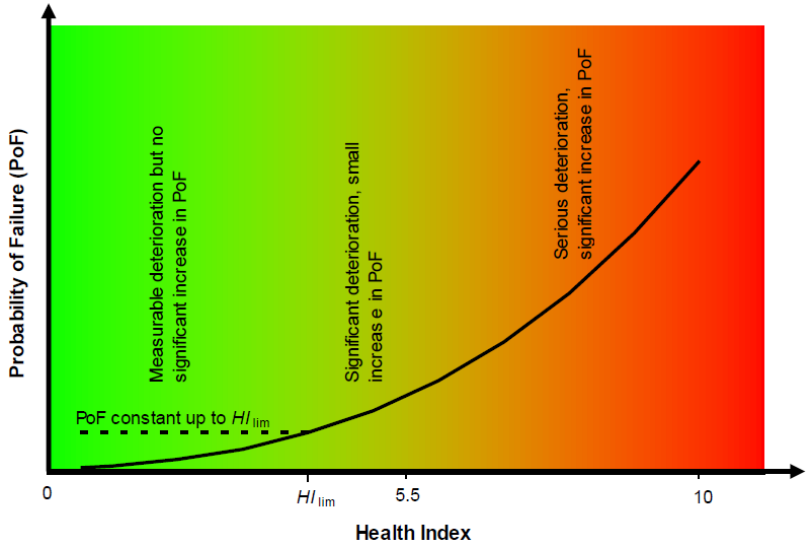

Figure 8. Relationship between Health Index and Probability of Failure

The relationship between the health index (HI) and probability of failure (PoF) is not linear. An asset can accommodate significant degradation with very little effect on the risk of failure. Conversely, once the degradation becomes significant or widespread, the risk of failure rapidly increases.

Asset End of Life (EoL)
Adopting a consistent scale for the initial definition of condition (the HI / PoF relationship) for all asset types provides a basis for calibrating the health index values, an immediate understanding of condition, a ready means to compare condition of individual assets or asset groups and a basis for defining end of life.

In CBRM terminology, end of life can be defined as when the condition related probability of failure becomes unacceptable. It may be difficult to define unacceptable PoF, and indeed it may vary from asset to asset. However, as the importance of the asset increases (either the importance of the asset class or the criticality of the asset within a class), the limit of acceptable PoF will fall. With the sharply rising HI / PoF relationship, it would be expected that EoL will be when the health index reaches a value somewhere between 6 and 10. For WEL, end of life is defined as a health index of 7 or greater.

Consequences
The risk associated with any asset is a function of the probability of failure and the consequences of failure. When attempting to quantify consequences of failure within the CBRM process, there are a number of specific objectives to aim for as follows:

- The final measure of risk must be expressed in terms that can be related to tangible quantities. In other words, the risk value must mean something in real terms.

- The relationship between the measured risk value and the engineering knowledge and experience of the assets used to produce that value must be transparent, such that the reason for a particular level of risk can easily be understood.

- The overall process should enable the risk related to individual assets or groups of assets to be directly compared.

- The process should enable future risks for any replacement or refurbishment programme to be quantified, thus providing the basis for identifying optimum spending to achieve an acceptable level of risk.

- The process must be economically and practically viable; i.e. the information requirements must not be unreasonable.

Consequences Categories

Four categories have previously been identified that capture the key issues affecting distribution businesses, all of which are readily quantifiable. These are listed in Figure 7 together with their units of measurement.

Consequence Category	*Consequence Units*
Network performance	• Potential loss of system availability
Safety	• Number of fatalities • Number of major injuries • Number of minor injuries
Financial (e.g. cost of repairs / replacement)	• Money ($)
Environmental impact	• Volume of oil spilled • Volume of SF_6 lost • Number of fires with significant smoke / pollution • Volume of waste created • Scale of disturbance (traffic / noise)

Figure 9. Consequences Categories and their Units

Criticality

The severity of the consequences associated with an event will vary depending on factors such as the physical location of the asset, the potential load interrupted by the fault, the accessibility of the asset for repair and the cost of replacement. In order to estimate the relative significance of a fault / failure, it is necessary to establish the criticality of an individual asset for each consequence category. This has been achieved for each asset group and consequence category by initially identifying the significant factors that affect the relative criticality, and then defining the factors using a number of levels or bands. Criticality factor values are determined based on the relative weighting of the parameter compared to the average.

Risk

Risk can be described as the possibility of misfortune or loss and is generally defined as the combination of:

- the probability / likelihood of an event occurring; and
- the resulting consequences / impacts if the event occurs.

For WEL CBRM, events are defined as either condition or non-condition related faults or failures, e.g. a pole breaks due to a rotten base (condition) as opposed to vehicle accident damage (non-condition).

Appendix B Required Reports in 2.6.5 of Electricity Distribution Information Disclosure Determination 2012

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

Report on Forecast Capital Expenditure, Schedule 11a

Company Name	**WEL Networks Ltd**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

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

sch ref			Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
		for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
	11a(i): Expenditure on Assets Forecast		**$000 (in nominal dollars)**										
	Consumer connection		11,295	7,564	7,838	8,401	8,532	8,244	8,171	8,467	8,774	9,092	9,421
	System growth		14,055	20,315	24,294	19,183	24,589	19,745	15,014	9,816	13,843	9,336	7,015
	Asset replacement and renewal		13,121	11,835	13,089	15,399	15,559	17,037	17,010	17,717	17,215	16,833	17,414
	Asset relocations		3,930	2,694	2,792	2,893	2,998	3,106	3,219	3,335	3,456	3,582	3,711
	Reliability, safety and environment:												
	Quality of supply		582	622	644	668	692	717	743	770	798	827	856
	Legislative and regulatory		379	104	680	111	115	119	-	-	-	-	-
	Other reliability, safety and environment		3,285	2,109	4,791	2,797	1,621	1,596	2,054	2,321	2,659	1,299	340
	Total reliability, safety and environment		4,246	2,834	6,115	3,576	2,428	2,432	2,797	3,090	3,456	2,125	1,197
	Expenditure on network assets		46,647	45,242	54,128	49,452	54,107	50,564	46,211	42,425	46,744	40,968	38,759
	Non-network assets		3,762	6,054	6,658	4,905	4,174	4,750	3,987	4,541	4,006	4,067	5,655
	Expenditure on assets		50,409	51,297	60,786	54,357	58,281	55,314	50,198	46,966	50,750	45,034	44,414
	plus Cost of financing		184	558	1,092	1,252	1,482	1,666	1,503	1,642	1,813	528	-
	less Value of capital contributions		5,540	3,983	4,127	4,138	4,228	4,319	4,379	4,538	4,703	4,873	5,049
	plus Value of vested assets		-	-	-	-	-	-	-	-	-	-	-
	Capital expenditure forecast		45,053	47,872	57,751	51,472	55,535	52,661	47,322	44,070	47,861	40,690	39,365
	Value of commissioned assets		41,661	52,557	57,436	57,947	57,435	58,752	53,878	50,501	50,404	48,451	45,519

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
	for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
		$000 (in constant prices)										
	Consumer connection	11,295	7,300	7,300	7,550	7,400	6,900	6,600	6,600	6,600	6,600	6,600
	System growth	14,055	19,605	22,625	17,241	21,327	16,527	12,228	7,551	10,300	6,735	4,732
	Asset replacement and renewal	13,121	11,421	12,190	13,840	13,495	14,260	13,740	13,810	12,950	12,220	12,200
	Asset relocations	3,930	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
	Reliability, safety and environment:											
	Quality of supply	582	600	600	600	600	600	600	600	600	600	600
	Legislative and regulatory	379	100	633	100	100	100	-	-	-	-	-
	Other reliability, safety and environment	3,285	2,035	4,461	2,514	1,406	1,336	1,742	1,809	2,000	943	239
	Total reliability, safety and environment	4,246	2,735	5,694	3,214	2,106	2,036	2,342	2,409	2,600	1,543	839
	Expenditure on network assets	46,647	43,661	50,409	44,445	46,928	42,322	37,510	32,970	35,050	29,698	26,971
	Non-network assets	3,762	5,945	6,420	4,644	3,881	4,337	3,574	3,998	3,463	3,452	4,714
	Expenditure on assets	50,409	49,606	56,829	49,089	50,809	46,659	41,084	36,968	38,513	33,150	31,685
	Subcomponents of expenditure on assets (where known)											
	Energy efficiency and demand side management, reduction of energy	7,329	7,441	6,815	337	337	337	337	337	337	337	337
	Overhead to underground conversion	1,722	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	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 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
Difference between nominal and constant price forecasts	$000										
Consumer connection	-	264	538	851	1,132	1,344	1,571	1,867	2,174	2,492	2,821
System growth	-	710	1,669	1,942	3,262	3,218	2,787	2,264	3,543	2,601	2,283
Asset replacement and renewal	-	414	899	1,559	2,064	2,777	3,270	3,907	4,265	4,613	5,214
Asset relocations	-	94	192	293	398	506	619	735	856	982	1,111
Reliability, safety and environment:											
Quality of supply	-	22	44	68	92	117	143	170	198	227	256
Legislative and regulatory	-	4	47	11	15	19	-	-	-	-	-
Other reliability, safety and environment	-	74	329	283	215	260	312	512	659	356	101
Total reliability, safety and environment	-	99	420	362	322	396	455	681	856	582	358
Expenditure on network assets	-	1,582	3,719	5,007	7,179	8,242	8,702	9,455	11,695	11,269	11,788
Non-network assets	-	109	238	261	293	413	413	543	543	615	941
Expenditure on assets	-	1,691	3,957	5,268	7,472	8,655	9,114	9,998	12,238	11,884	12,729

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19

11a(ii): Consumer Connection

*Consumer types defined by EDB**	$000 (in constant prices)					
Traditional network non - TOU (time of use)	6,881	5,300	5,300	5,300	5,100	4,900
External embedded networks non-TOU	793	-	-		-	-
Demand TOU		-	-		-	-
400v TOU	2,475	1,461	1,461	1,461	1,461	1,461
11kV TOU	914	539	539	539	539	539
33kV TOU		-	-		-	-
Asset Specific Customer	231	-	-	250	300	-
-		-	-	-	-	-
*include additional rows if needed						
Consumer connection expenditure	11,295	7,300	7,300	7,550	7,400	6,900
less Capital contributions funding consumer connection	2,957	2,100	2,100	2,100	2,048	1,997
Consumer connection less capital contributions	8,338	5,200	5,200	5,450	5,352	4,903

11a(iii): System Growth

Subtransmission	1,904	2,055	3,710	1,539	10,299	8,492
Zone substations	3,182	7,639	6,635	10,907	6,727	4,645
Distribution and LV lines	940	1,206	2,794	1,700	1,700	1,700
Distribution and LV cables	388	677	1,542	1,831	1,639	727
Distribution substations and transformers	239	526	567	290	290	290
Distribution switchgear	73	57	510	387	335	335
Other network assets	7,329	7,445	6,866	587	337	337
System growth expenditure	14,055	19,605	22,625	17,241	21,327	16,527
less Capital contributions funding system growth	-	-	-	-	-	-
System growth less capital contributions	14,055	19,605	22,625	17,241	21,327	16,527

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19
11a(iv): Asset Replacement and Renewal		$000 (in constant prices)					
Subtransmission		-	-	-	-	-	-
Zone substations		1,185	918	1,088	1,880	2,125	590
Distribution and LV lines		8,726	7,150	6,901	7,801	7,701	9,901
Distribution and LV cables		219	98	77	77	77	77
Distribution substations and transformers		1,075	856	1,776	1,876	1,626	1,626
Distribution switchgear		1,183	1,550	1,475	1,360	1,360	1,320
Other network assets		734	849	874	846	606	746
Asset replacement and renewal expenditure		13,121	11,421	12,190	13,840	13,495	14,260
less Capital contributions funding asset replacement and renewal		-	-	-	-	-	-
Asset replacement and renewal less capital contributions		13,121	11,421	12,190	13,840	13,495	14,260
11a(v):Asset Relocations							
*Project or programme**							
Relocations		2,091	1,181	1,600	1,600	1,600	1,600
SH39a Te Kowhai / Limmer Road Widening		1,130	419	-	-	-	-
Undergrounding		709	1,000	1,000	1,000	1,000	1,000
-		-	-	-	-	-	-
-		-	-	-	-	-	-
*include additional rows if needed							
All other asset relocations projects or programmes		-	-	-	-	-	-
Asset relocations expenditure		3,930	2,600	2,600	2,600	2,600	2,600
less Capital contributions funding asset relocations		2,105	1,300	1,300	1,300	1,300	1,300
Asset relocations less capital contributions		1,825	1,300	1,300	1,300	1,300	1,300
11a(vi):Quality of Supply							
*Project or programme**							
Voltage upgrade projects due to monitoring		221	500	500	500	500	500
complaints		361	100	100	100	100	100
-		-	-	-	-	-	-
-		-	-	-	-	-	-
-		-	-	-	-	-	-
*include additional rows if needed							
All other quality of supply projects or programmes		-	-	-	-	-	-
Quality of supply expenditure		582	600	600	600	600	600
less Capital contributions funding quality of supply		-	-	-	-	-	-
Quality of supply less capital contributions		582	600	600	600	600	600

11a(vii): Legislative and Regulatory

	*Project or programme**						
	Seismic upgrades of substations	49	100	633	100	100	100
	Seismic strengthening of Glasgow and Avalon (old) buildings	330	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	include additional rows if needed						
	All other legislative and regulatory projects or programmes	-	-	-	-	-	-
	Legislative and regulatory expenditure	379	100	633	100	100	100
less	Capital contributions funding legislative and regulatory	-	-	-	-	-	-
	Legislative and regulatory less capital contributions	379	100	633	100	100	100

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

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
	*Project or programme**	**$000 (in constant prices)**					
	Dannemora subdivision remedial works	755	-	-	-	-	-
	substations	773	315	400	600	600	600
	Network Communication upgrades	157	248	880	623	163	390
	DR Site relocation	635	-	-	-	-	-
	Network Automation	256	576	208	242	242	50
	Install Caro Switching Station and de commissioning of Garden Place Switching Station	14	200	1,263	-	-	-
	Arc Flash protection installation	460	126	550	600	-	-
	include additional rows if needed						
	All other reliability, safety and environment projects or programmes	236	571	1,161	450	402	296
	Other reliability, safety and environment expenditure	3,285	2,035	4,461	2,514	1,406	1,336
less	Capital contributions funding other reliability, safety and environm	-	-	-	-	-	-
	Other reliability, safety and environment less capital contributions	3,285	2,035	4,461	2,514	1,406	1,336

11a(ix): Non-Network Assets

	Routine expenditure						
	*Project or programme**						
	Computer Equipment	173	745	450	300	700	400
	Comp Software	1,372	2,826	3,022	2,090	925	2,145
	Plant and Equipment	374	454	536	300	326	300
	Motor Vehicles	1,842	1,670	2,412	1,954	1,930	1,492
	-	-	-	-	-	-	-
	include additional rows if needed						
	All other routine expenditure projects or programmes	-	-	-	-	-	-
	Routine expenditure	3,762	5,695	6,420	4,644	3,881	4,337
	Atypical expenditure						
	*Project or programme**						
	Office and depot purchase and renovations	-	250	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	include additional rows if needed						
	All other atypical projects or programmes						
	Atypical expenditure	-	250	-	-	-	-
	Non-network assets expenditure	3,762	5,945	6,420	4,644	3,881	4,337

Report on Forecast Operational Expenditure, Schedule 11b

Company Name	**WEL Networks Ltd**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

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

sch ref		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
8	for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
9	**Operational Expenditure Forecast**	$000 (in nominal dollars)										
10	Service interruptions and emergencies	2,890	2,847	2,950	3,056	3,167	3,281	3,400	3,523	3,650	3,782	3,918
11	Vegetation management	1,341	1,237	1,281	1,248	1,293	1,218	1,262	1,046	1,084	1,123	1,164
12	Routine and corrective maintenance and inspection	2,763	2,926	3,032	3,141	3,255	3,313	3,432	3,556	3,749	3,874	4,026
13	Asset replacement and renewal	1,138	1,318	1,313	1,383	1,526	1,629	1,687	1,492	1,644	1,797	1,862
14	**Network Opex**	8,132	8,328	8,575	8,829	9,240	9,440	9,781	9,617	10,127	10,576	10,971
15	System operations and network support	5,710	6,078	6,301	6,539	6,791	7,047	7,342	7,504	7,819	8,114	8,327
16	Business support	7,634	8,572	9,069	9,580	9,961	10,375	10,750	11,208	11,639	12,080	12,545
17	**Non-network opex**	13,344	14,650	15,371	16,119	16,752	17,421	18,091	18,713	19,458	20,194	20,872
18	**Operational expenditure**	21,476	22,978	23,946	24,949	25,992	26,862	27,873	28,330	29,585	30,770	31,842

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
20	for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
21		$000 (in constant prices)										
22	Service interruptions and emergencies	2,890	2,748	2,748	2,748	2,748	2,748	2,748	2,748	2,748	2,748	2,748
23	Vegetation management	1,341	1,193	1,193	1,122	1,122	1,020	1,020	816	816	816	816
24	Routine and corrective maintenance and inspection	2,763	2,824	2,824	2,824	2,824	2,774	2,774	2,774	2,822	2,815	2,824
25	Asset replacement and renewal	1,138	1,272	1,223	1,244	1,324	1,364	1,364	1,164	1,238	1,306	1,306
26	**Network Opex**	8,132	8,038	7,988	7,937	8,018	7,906	7,906	7,501	7,624	7,685	7,693
27	System operations and network support	5,710	5,875	5,887	5,905	5,927	5,945	5,987	5,915	5,957	5,975	5,927
28	Business support	7,634	8,285	8,473	8,651	8,695	8,753	8,766	8,835	8,868	8,896	8,930
29	**Non-network opex**	13,344	14,160	14,361	14,557	14,622	14,699	14,754	14,750	14,826	14,872	14,857
30	**Operational expenditure**	21,476	22,198	22,348	22,494	22,640	22,604	22,659	22,252	22,449	22,556	22,551
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and demand side management, reduction of energy losses	881	1,197	1,216	1,248	1,327	1,318	1,327	1,318	1,409	1,400	1,409
34	Direct billing*											
35	Research and Development	119	135	135	135	135	135	135	135	135	135	135
36	Insurance	469	503	503	503	503	503	503	503	503	503	503

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

38

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
40	for year ended	31 Mar 14	31 Mar 15	31 Mar 16	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
41	**Difference between nominal and real forecasts**	$000										
42	Service interruptions and emergencies	-	99	202	309	419	533	652	775	902	1,034	1,171
43	Vegetation management	-	43	88	126	171	198	242	230	268	307	348
44	Routine and corrective maintenance and inspection	-	102	208	317	431	539	658	782	927	1,059	1,203
45	Asset replacement and renewal	-	46	90	140	202	265	324	328	406	491	556
46	**Network Opex**	-	290	588	892	1,223	1,535	1,876	2,115	2,503	2,892	3,277
47	System operations and network support	-	203	414	634	863	1,101	1,354	1,589	1,862	2,138	2,399
48	Business support	-	286	596	929	1,266	1,622	1,983	2,373	2,771	3,184	3,615
49	**Non-network opex**	-	490	1,010	1,563	2,130	2,723	3,338	3,962	4,633	5,322	6,014
50	**Operational expenditure**	-	780	1,598	2,454	3,352	4,258	5,214	6,078	7,136	8,214	9,292

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.	-	7.25%	18.08%	64.68%	10.00%	2	2.17%
11	All	Overhead Line	Wood poles	No.	21.32%	7.28%	60.15%	1.25%	10.00%	2	35.00%
12	All	Overhead Line	Other pole types	No.	-	-	-	-	-	N/A	-
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km						N/A	-
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	-	-	-	-	-	N/A	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km						N/A	-
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						N/A	-
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.	-	2.11%	58.73%	34.16%	5.00%	3	-
25	HV	Zone substation Buildings	Zone substations 110kV+	No.	-	-	-	-	-	N/A	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	0.19%	8.02%	56.42%	30.38%	5.00%	2	20.37%
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	0.19%	8.02%	56.42%	30.38%	5.00%	2	20.37%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.						N/A	-
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	-	-	100.00%	-	-	3	-
30	HV	Zone substation switchgear	33kV RMU	No.	-	-	-	100.00%	-	3	-
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
45	HV	Zone Substation Transformer	Zone Substation Transformers	No.	5.80%	-	49.15%	40.05%	5.00%	3	16.33%
46	HV	Distribution Line	Distribution OH Open Wire Conductor	km	3.32%	19.97%	5.14%	71.57%		2	5.28%
47	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km						N/A	-
48	HV	Distribution Line	SWER conductor	km	-	-	-	-	-	N/A	-
49	HV	Distribution Cable	Distribution UG XLPE or PVC	km						N/A	0.28%
50	HV	Distribution Cable	Distribution UG PILC	km						N/A	1.09%
51	HV	Distribution Cable	Distribution Submarine Cable	km	-	-	-	-	-	N/A	-
52	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	-	-	100.00%	-	-	2	41.67%
53	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.	0.02%	-	67.34%	27.64%	5.00%	3	4.40%
54	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	4.88%	-	16.14%	63.97%	15.00%	4	5.30%
55	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	-	-	-	-	-	N/A	-
56	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	3.03%	3.25%	50.83%	22.88%	20.00%	3	9.53%
57	HV	Distribution Transformer	Pole Mounted Transformer	No.	6.54%	-	7.98%	60.48%	25.00%	3	15.37%
58	HV	Distribution Transformer	Ground Mounted Transformer	No.	10.77%	-	32.26%	36.96%	20.00%	3	15.21%
59	HV	Distribution Transformer	Voltage regulators	No.	3.06%	1.70%	32.35%	57.89%	5.00%	3	8.33%
60	HV	Distribution Substations	Ground Mounted Substation Housing	No.	-	-	-	-	-	N/A	-
61	LV	LV Line	LV OH Conductor	km						N/A	0.06%
62	LV	LV Cable	LV UG Cable	km						N/A	0.22%
63	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km						N/A	0.09%
64	LV	Connections	OH/UG consumer service connections	No.						N/A	-
65	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	23.22%	36.11%	11.91%	18.75%	10.00%	3	32.93%
66	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	19.53%	4.59%	-	65.88%	10.00%	3	16.05%
67	All	Capacitor Banks	Capacitors including controls	No.	-	-	-	100.00%	-	3	-
68	All	Load Control	Centralised plant	Lot	3.25%	-	63.09%	23.66%	10.00%	3	12.50%
69	All	Load Control	Relays	No.						N/A	-
70	All	Civils	Cable Tunnels	km	-	-	-	-	-	N/A	-

Company Name	**WEL Networks Ltd**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

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

sch ref

12b(i): System Growth - Zone Substations

Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %	Installed Firm Capacity +5 years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5 years (cause)	Explanation
Avalon Dr	18	23	N-1	11	80%	23	82%	No constraint within +5 years	
Borman	13	23	N-1	13	54%	23	78%	No constraint within +5 years	
Bryce St	15	23	N-1	15	67%	23	68%	No constraint within +5 years	
Chartwell	19	23	N-1	15	83%	23	88%	No constraint within +5 years	
Claudelands	21	23	N-1	21	90%	23	89%	No constraint within +5 years	
Cobham	14	23	N-1	14	60%	23	77%	No constraint within +5 years	
Finlayson Rd	3	8	N	3	40%	8	49%	No constraint within +5 years	
Glasgow St	6	10	N	6	65%	10	75%	No constraint within +5 years	
Gordonton	7	10	N	7	68%	10	52%	No constraint within +5 years	2x5MVA transformer. Due to bus arrangement, practically an N-security site.
Hampton Downs	1	10	N	1	8%	10	9%	No constraint within +5 years	
Horotiu	11	18	N-1	12	64%	18	73%	No constraint within +5 years	
Kent St	17	23	N-1	17	74%	23	79%	No constraint within +5 years	
Kimihia	4	10	N	2	43%	10	48%	No constraint within +5 years	
Latham Court	18	23	N-1	14	78%	23	91%	No constraint within +5 years	
Hoeka Rd (planned)	-	-	N-1	-	-	23	46%	No constraint within +5 years	Subject to review given the Ruakura development
Ngaruawahia	6	8	N-1	6	76%	8	88%	No constraint within +5 years	
Peacockes Rd	14	10	N-1	12	140%	23	67%	No constraint within +5 years	4-hours emergency rating 15MVA.
Pukete - Anchor (major customer)	18	30	N-1	-	60%	30	60%	No constraint within +5 years	
Pukete - WEL's 11kV	8	15	N-1	8	55%	15	57%	No constraint within +5 years	3-winding tx - share with Contact Energy
Raglan	5	23	N	5	23%	23	28%	Subtransmission circuit	limited by the incoming 33kV OH conductor - suggested by Sriram
Ruakura (Replacing TP HAM 11 kV GXP.)	35	40	N-1	13	88%	46	56%	No constraint within +5 years	Phase shift issue at 11kV.
Sandwich Rd	21	23	N-1	14	93%	23	96%	No constraint within +5 years	
Tasman	19	23	N-1	18	81%	46	74%	No constraint within +5 years	
Te Kauwhata	4	5	N-1	4	81%	10	47%	No constraint within +5 years	
Te Uku	1	10	N	1	11%	10	13%	No constraint within +5 years	
Wallace Rd	14	10	N-1	14	144%	23	55%	No constraint within +5 years	4-hours emergency rating 15MVA.
Weavers	9	8	N-1	9	117%	15	44%	No constraint within +5 years	4-hours emergency rating 11.25MVA.
Whatawhata	3	23	N	3	12%	23	25%	No constraint within +5 years	

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

12b(ii): Transformer Capacity

	(MVA)
Distribution transformer capacity (EDB	807
Distribution transformer capacity (Non-	26
Total distribution transformer capacity	833
Zone substation transformer capacity	740

Company Name	**WEL Networks Ltd**
AMP Planning Period	**1 April 2014 – 31 March 2024**

SCHEDULE 12C: REPORT ON FORECAST NETWORK DEMAND

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

sch ref

12c(i): Consumer Connections

Number of ICPs connected in year by consumer type

Number of connections

	for year ended	*Current Year CY* **31 Mar 14**	*CY+1* **31 Mar 15**	*CY+2* **31 Mar 16**	*CY+3* **31 Mar 17**	*CY+4* **31 Mar 18**	*CY+5* **31 Mar 19**
*Consumer types defined by EDB**							
Residential Customers		70,917	71,435	71,956	72,482	73,011	73,544
Business Customers		11,868	12,100	12,337	12,579	12,826	13,077
Large Customers - Low Voltage 400V		490	510	530	551	573	596
Large Customers - Medium Voltage 11kV		189	189	189	190	190	190
Large Customers - High Voltage 33kV		3	3	3	3	3	3
Asset Specific Customers		7	5	5	5	5	5
Unmetered Customers		264	253	243	234	224	215
External Network Customers		2,300	2,565	2,859	2,928	2,928	2,928
Connections total		86,038	87,060	88,124	88,971	89,760	90,558

**include additional rows if needed*

Distributed generation

Number of connections		100	210	294	406	524	650
Installed connection capacity of distributed generation (MVA)		117	117	118	118	118	118

12c(ii) System Demand

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
Maximum coincident system demand (MW)	for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
GXP demand		255	263	269	275	281	285
plus Distributed generation output at HV and above							
Maximum coincident system demand		255	263	269	275	281	285
less Net transfers to (from) other EDBs at HV and above							
Demand on system for supply to consumers' connection points		255	263	269	275	281	285
Electricity volumes carried (GWh)							
Electricity supplied from GXPs		937	952	962	981	998	1,013
less Electricity exports to GXPs		135	136	139	143	146	146
plus Electricity supplied from distributed generation		461	461	469	469	469	469
less Net electricity supplied to (from) other EDBs		(14)	(15)	(15)	(15)	(16)	(17)
Electricity entering system for supply to ICPs		1,277	1,292	1,307	1,322	1,337	1,353
less Total energy delivered to ICPs		1,213	1,227	1,241	1,256	1,270	1,285
Losses		64	65	66	66	67	68
Load factor		57%	56%	55%	55%	54%	54%
Loss ratio		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

Report on Forecast Interruptions and Duration, Schedule 12d

Company Name	**WEL Networks Ltd**
AMP Planning Period	**1 April 2014 – 31 March 2024**
Network / Sub-network Name	**WEL Networks**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

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

sch ref								
8			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
9		for year ended	**31 Mar 14**	**31 Mar 15**	**31 Mar 16**	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**
10	**SAIDI**							
11	Class B (planned interruptions on the network)		17.5	32.8	32.8	32.8	32.8	32.8
12	Class C (unplanned interruptions on the network)		73.0	59.3	49.5	44.9	41.2	37.3
13	**SAIFI**							
14	Class B (planned interruptions on the network)		0.2	0.4	0.4	0.4	0.4	0.4
15	Class C (unplanned interruptions on the network)		1.2	1.1	1.1	1.0	0.9	0.8

SCHEDULE 17 CERTIFICATION FOR YEAR-BEGINNING DISCLOSURES

Clause 2.9.1 of section 2.9

We, John Lewis Spencer and Margaret Patricia Devlin, 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 2.4.1, clause 2.6.1 and sub clauses 2.6.3(4) and 2.6.5(3) of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

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

John Lewis Spencer
DIRECTOR

Margaret Patricia Devlin
DIRECTOR

27 March 2014