

Scanpower Limited

Asset Management Plan Update

1st April 2014 – 31st March 2024



Period Covered	1 April 2014 – 31 March 2015
Version	Approved for Release
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TABLE OF CONTENTS

1. ASSET MANAGEMENT PLAN UPDATE	3
1.1 <i>Terms of Reference</i>	3
2. REVIEW OF AMP STRATEGIES	4
2.1 <i>The Performance of our Protection and Automation.....</i>	4
2.2 <i>Pole Condition Management.....</i>	4
2.3 <i>Vegetation Management.....</i>	5
3. LIFECYCLE ASSET MANAGEMENT	6
3.1 <i>Asset Expenditure Forecasts</i>	6
3.2 <i>Other Resources</i>	6
3.3 <i>Service Lines.....</i>	7
4. NETWORK DEVELOPMENT PLAN	8
4.1 <i>Recalibration of NDP Forecasts.....</i>	8
4.2 <i>Non-Network Assets</i>	9
4.3 <i>Alternative Solutions</i>	9
5. ASSET MANAGEMENT MATURITY ASSESSMENT TOOL.....	11
5.1 <i>Response to First Disclosure of 2013</i>	11
5.2 <i>Capability Improvements Implemented in 2013.....</i>	11
5.3 <i>Planned Initiatives for 2014.....</i>	13
6. SUMMARY EXPENDITURE FORECASTS.....	14

1. ASSET MANAGEMENT PLAN UPDATE

1.1 TERMS OF REFERENCE

Date Completed and Period Covered

This Asset Management Plan Update relates to the period 1 April 2014 to 31 March 2024. It was completed in March 2014 and approved by Scanpower's Board of Directors on 28 March 2014, prior to public disclosure on 31 March 2014.

This Update is publicly disclosed as an alternative to a full revision of the Asset Management Plan, as permitted under section 2.6.3 (4) of the Electricity Distribution Disclosure Determination 2012.

2. REVIEW OF AMP STRATEGIES

The Network's prime asset management performance indicator is SAIDI. Our objective is to minimise SAIDI which specifically means minimising high voltage ("HV") outages (planned or unplanned) on the core network (SAIDI excludes low voltage ("LV") outages and single customer/service line outages).

Scanpower's asset management strategy targets the three main drivers (described below) of SAIDI on the Network. These drivers have been determined by analysing our outage statistics and the composition of underlying causes. They have been further refined by weighting them according to a set of risk factors on a feeder by feeder basis. The methodology and analysis is fully documented in the Asset Management Plan 2013-2023.

2.1 THE PERFORMANCE OF OUR PROTECTION AND AUTOMATION

A five year programme of installing "Fuse Savers" as sectionalising equipment and defusing the HV network has proven successful for the first year of the programme. This involved the deployment of a "Fuser Saver" scheme on the Weber Feeder (the largest and most remote feeder). Results to date indicate that "Fuse Savers" are operating as intended by clearing transient faults that would have otherwise blown fuses making the outage permanent until they are reset. The entire protection system is being progressively simplified and consequently protection coordination will be improved. The capital expenditure budget therefore assumes that this programme will continue as forecast for the next 4 years. This year's programme (2014-2015) covers the Norsewood and Ormondville areas of the Network.

2.2 POLE CONDITION MANAGEMENT

Pole inspections are carried out using a more robust and repeatable test method involving ultrasonic scanning. This allows Scanpower to target poles in the worst condition more accurately, thereby reducing the frequency of "in service" pole failures and improving the average remaining service life of the poles not requiring urgent replacement.

We expect to find 10% of the poles inspected in a condition that requires their replacement within the current year and we budget to be able to extend the margin to include the worst 20%. The standard deviation on pole failure, once they have reached their nominal 50 year service life, is about 10 years. Fewer customers' minutes are now being lost to HV wooden poles failure.

However, in regard to the LV network, which does not contribute to SAIDI, past management practices have allowed its condition and performance to deteriorate to a more critical level. LV assets are therefore closer to the end of their optimum economic service life and, as such, the cost of keeping them operational is increasing; that is, we are well into the failure phase of their life cycle. It is therefore planned, now that we are on top of HV pole replacements, to shift resources towards pole replacement in the LV network until we have restored the optimum steady state.

From a budgeting perspective, to recognise that we are ahead of the very worst condition poles, we have spread the programme out by another 5 years (from 8 to 13 Years) which reduces the forecast pole quantities and cost of replacement by 25 poles per annum. This may be reviewed again if “in service” pole failures trend up again. The practice of scanning poles will continue for another two years by which time the entire hardwood pole population will have been assessed.

2.3 VEGETATION MANAGEMENT

The cutting of trees that have the potential to impact on main HV lines (and therefore cause the highest level of customer minutes lost) is in hand such that we now incur very few outages, even during storm events. Outages caused by tree issues are now mostly forestry related or on customer service lines. The Network does not have an obligation to manage trees on services lines and they do not affect outage statistics. Accordingly this chargeable work is left to Treesmart (Scanpower’s approved vegetation management contractors) to manage.

Treesmart has a crew dedicated to trimming programmes on the Network. This level of Network funded resource is proving adequate, however trees burning in lines have a heightened safety management obligation that the Network will address via live line emergency cutting by its line crews if necessary. Treesmart’s crews can then follow up with more appropriate arbour care, fitting the work into their programmes more efficiently.

No changes are planned to the annual vegetation management budget. The strategy is to continue shifting Network based work programmes towards chargeable work initiated by tree owners as a matter of routine.

3. LIFECYCLE ASSET MANAGEMENT

3.1 ASSET EXPENDITURE FORECASTS

The asset management strategies adopted have proven effective in 2013/14 and therefore it is intended to continue with budgets as forecast in the Asset Management Plan 2013-2023. These budgets are relatively level over the immediate 5 year timeframe, with the Maintenance Budget at approx. \$470,000 per annum (excluding tree cutting) and the Routine Capital Budget at approx. \$1m per annum. "Routine" refers to sustaining the replacement and upgrade of the existing asset base, not significant new load developments or investments.

The Maintenance Budget for 2014/15 is \$487,000 compared to the 2013/14 figure of \$442,000. The differences are attributed to:

- \$18,000 for a Voltage Regulator overhaul that is a carry-over from the past year.
- Some minor adjustments of unit costs derived from Job Costing outputs.
- Some minor adjustments to unit costs reflecting changes in policy during 2013; for example, it is now Scanpower's policy to replace all 3 phases of service fuse base replacements when one is found faulty.

Capex is approximately \$200,000 lower than last year's budget, reflecting the fact that we are reducing pole replacement numbers slightly this year.

Actual expenditure to date for 2013, relative to budget, reflects that growth has been largely in existing installations not requiring more costly green field builds.

The budget for switchgear replacements has been increased by \$27,000. This has resulted from accelerating the two year replacement plan of Woodlands Rd Bypass structures into 2013 following damage from two direct lightning strikes and substituting in switchgear for Victoria Avenue in 2014 following a decision to develop a new interconnection based on a ground mounted solution.

3.2 OTHER RESOURCES

Two new trainee linemen have been engaged at the start of 2014 to meet succession requirements within the Network Division field crews.

The Network's vehicle fleet has been reviewed and this year's requirements are limited the replacement of one faultman's utility vehicle which will be leased.

3.3 SERVICE LINES

As with the LV network, service lines (those owned by the consumer) are also displaying performance traits that indicate they are approaching or past their economic service life. They are prone to damage during weather events, and responding to such events is now disrupting work programmes on Scanpower's assets; three events during the spring of 2013 resulted in approximately three months of attending to remedial service line work.

It is estimated that 5% of our fault repair work relates to the HV network, 30% to LV network, and 65% to service line and installation issues. We significantly under-recover costs for service line repairs and this work is not contributing to the condition or value of Scanpower's Regulatory Asset Base (RAB). Approximately \$70,000 of costs were incurred last year on non-network asset repairs.

This is also an expensive way of achieving renewal for the consumer; a more systematic replacement approach would better deliver on least cost / high service ideals. Furthermore, Scanpower has some regulatory responsibility with regard the Electricity Safety Regulation and associated Public Safety Management to ensure consumer owned assets connected to our network meet safety and quality compliance.

Scanpower believes it can better deliver on a safe, reliable, low cost power supply for the community by initiating a programme of service line inspections, maintenance, and/or upgrade that operates on a cycle that matches the failure period of these assets (about 10 years for those that meet their forty-five year nominal service life), prioritising privately owned rural LV pole lines. Inspection work will be Network funded (to maintain oversight on quality, safety, and consistency) but the remainder is a chargeable service that will be performed by customers' contractors. Consequently, the AMP does not record this work as it is outside the regulatory business model of an Electricity Lines Business (ELB).

Scanpower is currently averaging two to three service line upgrade issues per week. There are approximately seven hundred LV rural service lines in each decade aged grouping of the asset population, so we expect to see this trend for another five years before it declines to a steady state of seventy connections per annum.

4. NETWORK DEVELOPMENT PLAN

4.1 RECALIBRATION OF NDP FORECASTS

The Network Development Plan (NDP) forecasts load growth to determine when the trigger points will occur for network upgrades necessary to sustain capacity and service standards. It then determines what solutions might be best to deliver a development path that is efficient and sustainable.

Scanpower's network is voltage constrained and therefore our strategy for upgrade involves creating more interconnection/bussing points and voltage correction in preference to increasing conductor size and building new lines. This process is fully documented in the Asset Management Plan 2013-2014.

The NDP is necessarily optimistic about where and when new load will connect in order to demonstrate that there is a planned response for every possibility. The reality however is that some developments may not eventuate, some may not have been captured, and/or the timings may shift, changing the order in which sequential developments are needed. The ten year action plan in the NDP is therefore adjusted annually.

The NDP expenditure forecast has now been adjusted in light of the following:

- A local wool spinning plant (previously one of Scanpower's larger customers) cancelled a planned expansion at Dannevirke in favour of a site purchased in Oamaru. As a consequence the development of a substation at the south end of town has been deferred for 4 years and its assumed scope reduced by a third.
 - Growth on the remaining feeders supplying Dannevirke has been strong, resulting in the addition of three 500kVA distribution substations. These have increased the density and interconnection of the urban LV network, and in turn this growth has aggravated contingent capacity constraints and voltage. It is therefore desirable to bring the development of the Dannevirke North substation forward two years but spreading its full development over a three year period (starting 2014 completion 2016).
 - In a similar design philosophy to the above, the Victoria St rebuild (25 HV/LV poles) has been extended to include the upgrade of an existing transformer, the addition of an intermediate transformer, LV interconnection between these transformers and King St, and replacement of pole mounted HV switchgear and fusing with ground mounted equipment to address the ferro-resonance issues associated with larger transformers and cables.
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The cost of this has been included in the Routine Capital budget as it is essentially a combination of base load growth, age replacement, and an improvement in quality and service capability.

- Further development at Oringi Business Park (a local industrial facility) is now looking more certain and the expected loadings are significant, thereby requiring an upgrade plan for both HV and LV reticulation. The Oringi site has three 2x1MVA distribution substations. These will require various upgrades to adapt to the new loads and to address age/technical obsolescence issues. A 6 year upgrade path has been determined. If growth materialises at a faster pace the programme can be shortened accordingly. Total expenditure over six years at Oringi is estimated at \$925,000 to deliver a 5MW voltage corrected supply with enhanced security. The previous NDP provisioned \$391,000 expenditure at Oringi. While this expenditure is signalled in the NDP, it will not be included in operating budgets until the customers it will service take up lease agreements. At a regulatory level this site is a Network connected consumer and therefore not part of the Regulatory Asset Base (RAB) nor included in Schedule 11.

4.2 NON-NETWORK ASSETS

Total expenditure in the NDP over its remaining nine years is forecast at \$4.1M. This includes expenditure considered non-core and therefore is more discretionary than demand driven network development. It covers

- Further development of Scanpower's radio network.
- Smart grid technologies

Project proposals are not sufficiently advanced at this time to commit to specific solutions. Accordingly forecast figures are only tentative.

4.3 ALTERNATIVE SOLUTIONS

Some expenditure is expected on the following, but more detailed scoping has not yet been completed and formally incorporated into the Corporate Strategic Plan. This work currently sits in the Network Division's brief but should it be implemented with any scale it will potentially shift into a business unit of its own:

- Research & Development – specifically distributed generation technologies, photovoltaic micro-generation and battery storage at distribution scale.

- Uneconomic Lines; Franklin Road has been identified as a pilot site. It has 2 ICPs fed from a line running through 6km of forestry. We are currently in discussion with Chorus about their repeater site located in the vicinity.

5. ASSET MANAGEMENT MATURITY ASSESSMENT TOOL

5.1 RESPONSE TO FIRST DISCLOSURE OF 2013

Schedule 13 of the Information Disclosures requires a self-assessment of the maturity of Scanpower's asset management processes and systems. Such assessment and subsequent continuous improvement programmes are consistent with the ISO55000 best practice standard for Asset Management (PAS55).

2013-2014 was the first year this Information Disclosure requirement was made. Consequently there is variance in the interpretation of assessment guidelines across Electricity Line Businesses (ELBs). This has prompted an industry workshop lead by the Electricity Engineers' Association to better develop guidelines.

Scanpower will not be updating its Schedule 13 AMMAT disclosure until this work is completed. However Scanpower considers its AMMAT disclosure to fair and reasonable having reviewed the draft guideline.

5.2 CAPABILITY IMPROVEMENTS IMPLEMENTED IN 2013

A number of asset management process improvements have been achieved in 2013:

1. In response to Public Safety Management System audit findings, Scanpower employed a Health & Safety Manager in 2013. This has enabled us to progress safety, quality, risk management, performance monitoring and reporting systems.
 2. We deployed "Mango" software which is a cloud resident Safety/Quality Management System onto which we have loaded asset management, risk assessments, defect registers, ESR compliance management, management system and process documentation.
 3. We undertook an external review of Control Room and Field Operating practices. As a result these processes are in the process of significant tightening and development. This will be followed by determining the training framework needed to support operational staff.
 4. We has purchased CATAN- an overhead line structural design tool and trained Network engineering staff in it use.
 5. We have implemented a more formal Works Order process to better manage field staff and the quality of work.
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5.3 PLANNED INITIATIVES FOR 2014

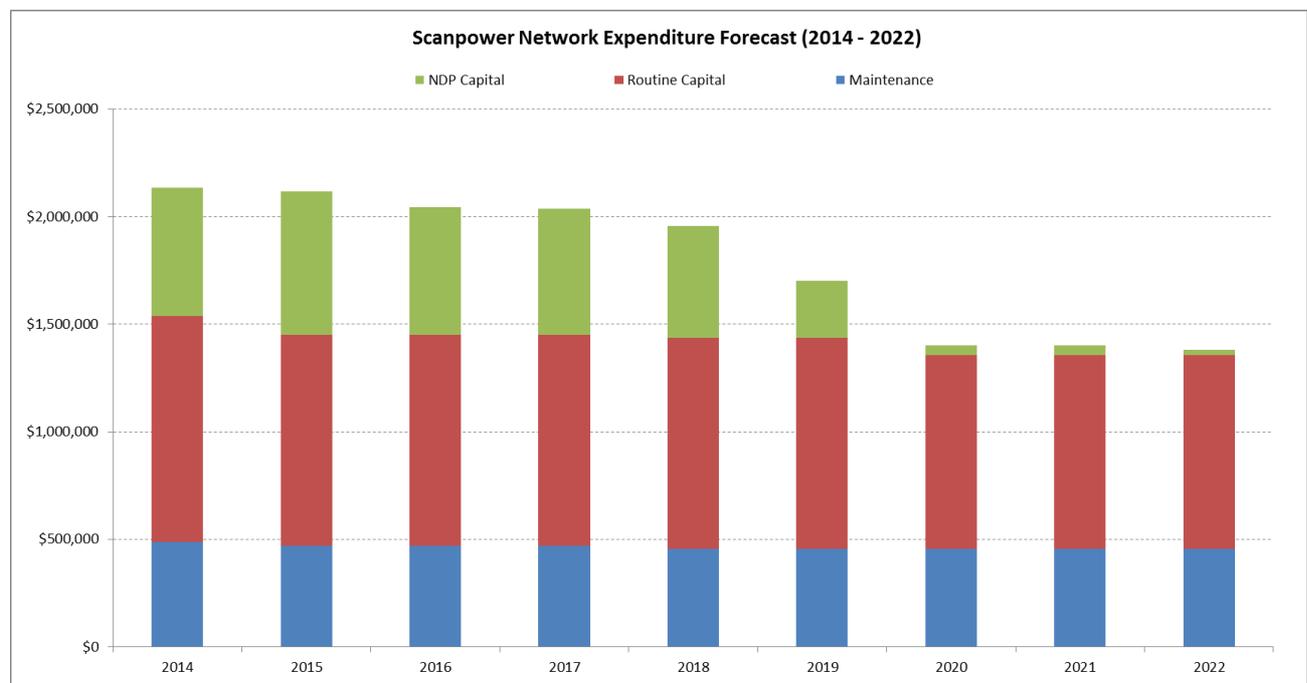
Scanpower will continue to improve its safety management systems; as these are in fact Total Quality systems they overlap with, and drive, good practice in asset management systems such as quality, risk, training, compliance, and continual improvement systems. Specifically in 2014 Scanpower is planning the following initiatives:

1. Introduction of the “Orange Umbrella” safety culture programme.
2. Development of a set standard structures with associated approved parts/assemblies.
3. Capture data with regard to customer service lines to support a campaign of inspection and upgrade of customer assets urgently requiring age related upgrades.
4. Development of earthing and protection coordination standards, assessment and upgrade practices to support an associated campaign on service fusing and earthing upgrades.
5. The acquisition of a power system analysis tool, training, and development of a network electrical model.
6. Assess what further developments are necessary to achieve ISO55000 accreditation.

6. SUMMARY EXPENDITURE FORECASTS

The following table and graphs show the revised forecast expenditure for the remaining nine years of the ten year period described in the Asset Management Plan 2013-2014.

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Maintenance	\$486,580	\$468,580	\$468,580	\$468,580	\$454,880	\$454,880	\$454,880	\$454,880	\$454,880
Routine Capital	\$1,051,423	\$983,423	\$983,423	\$983,423	\$983,423	\$983,423	\$903,423	\$903,423	\$903,423
NDP Capital	\$598,430	\$666,230	\$593,430	\$586,430	\$517,230	\$264,730	\$44,730	\$44,730	\$23,730
Total	\$2,136,433	\$2,118,233	\$2,045,433	\$2,038,433	\$1,955,533	\$1,703,033	\$1,403,033	\$1,403,033	\$1,382,033



Whilst there has been a small increase in the forecast Maintenance Costs of ~4% (due to rising input costs), the over all profile is materially the same as that disclosed in the full Asset Management Plan 2013-2014.

The Routine Capital Expenditure profile has flattened out in comparison to that previously disclosed (i.e. is lower in the first half of the period and higher in the second). This is a result of spreading pole replacement works over a longer period, as described above in Section 2.2.

Forecast Network Development Expenditure has also changed materially in terms of its profile for the reasons outlined in Section 4.1.