

STATEMENT OF JOHN HARDWICK, GROUP EXECUTIVE NETWORK STRATEGY

NETWORKS NSW

I, John Hardwick, Group Executive Network Strategy at Networks NSW, of Level 17, 570 George Street Sydney of the State of New South Wales, affirm:

Position

1. I am the Group Executive Network Strategy at Networks NSW. I have been in this role from October 2012. Although I am employed by Ausgrid, my role is to lead and coordinate the overall asset management strategy for the three distribution network service providers which comprise Networks NSW: Essential Energy, Endeavour Energy and Ausgrid (the **NSW DNSPs**).
2. As the Group Executive Network Strategy, I am responsible for setting and implementing the overall safety and asset management frameworks and strategies. Refer to Attachment 1 – Position Description Group Executive Network Strategy for further details.

Educational background and professional experience in the energy sector

3. My relevant professional experience is as follows:
 - Over 30 years maintenance and construction engineering experience in the NSW Electrical Industry
 - Commenced as an Electrical Technician at Sydney County Council in 1983
 - Appointed to the position of Executive Manager - Maintenance & Replacement Planning with EnergyAustralia in 2004 and spent seven years developing a program to identify and implement world best practice in maintenance requirements analysis and replacement strategies.
 - Appointed to the position of Executive Manager – Operations Lower Hunter & Central Coast in 2012
 - Appointed to my current position of Group Executive – Network Strategy for Networks NSW in 2012 to implement the Government's reform of the NSW electricity distribution industry.
 - Winner of the Maintenance Engineering Society of Australia's 2002 Steve Maxwell Leadership Award
 - Lead for the team winning the Silver Award in the 2009 Australian Asset Management Excellence Awards.
 - Current Chair of the Global Forum on Maintenance and Asset Management (GFMAM) and the immediate past National Chair of the Asset Management Council.



- Co-author of Living Asset Management published by Engineers Media
4. My educational background is as follows:
- Certified Fellow of Asset Management (CFAM) - 2010
 - Masters of Business Administration at the Australian Graduate School of Management - 2004.
 - Certificate IV Human Resources - 1996
 - Associate Diploma in Electrical Engineering - 1992
 - Electrical Trade Certificate (Honours) - 1984
5. My CV is attached as Attachment 2.

Background

6. This statement is made in support of the NSW DNSPs revised regulatory proposals to the Australian Energy Regulator (**AER**). The AER proposed, in its draft determinations dated 27 November 2014, inter alia, real reductions in allowable capital expenditure (**capex**) and operational expenditure over the amounts proposed by the NSW DNSPs in their substantive regulatory proposals
7. The reductions in capex proposed by the AER will result in cancellation of funding for a large number of planned programs and projects, which will have adverse consequences for the safety, reliability and ongoing sustainability of the NSW DNSPs.

The CASH prioritisation process

8. As part of the Networks NSW capital governance and risk management framework, the DNSPs use the Capital Allocation Selection Hierarchy (**CASH**) methodology to assist in selecting the projects for inclusion into the capital expenditure planning process each year which best meet the NSW DNSPs' business objectives. The methodology is used to assess and prioritise projects according to the level of associated risk and present recommendations for the optimal investment portfolio to the board of Networks NSW. The network risk topics considered in the most recent CASH ranking are:
- Network asset condition;
 - Public safety, environmental or regulatory impact;
 - Network initiated fire risk;
 - Network reliability impact;
 - Community impact (Reputation);

- Work health safety – employee risk; and
 - Network capacity implications.
9. Each of the risk categories are weighted equally in assessment. In order to facilitate an effective prioritisation, each program is broken down into pre-prioritised subcomponents of short term need (immediate requirement), medium term need (short-term requirement, but risk-manageable prior to replacement), and long term need (expected future or strategic renewal requirement).

The Portfolio Investment Plan

10. One outcome of the CASH prioritisation process is the document referred to as the Portfolio Investment Plan (**PIP**).
11. The PIP is a risk prioritised list of all network capital projects currently in progress or proposed to be undertaken. The document captures network expenditure only (that is, it excludes non-system capital expenditure, which indirectly support the operation of the network and primarily consists of ICT, Property and Fleet expenditure). The PIP is prepared and approved by the board annually as a key stage in our investment governance process and is also referred to as the 'gate 1' approval.
12. We recognise that the factors driving network investments and risk can change over time – for example due to changes in demand, failure modes, asset deterioration, delivery costs, standards and policies. As a result a formal change control process is in place to provide governance and transparency for any changes to the board approved portfolio and risk position.
13. Below, I refer to PIP for each of the three NSW DNSPs current as at 16 December 2014 (version 4.0) which were used as an input into the revised regulatory proposals. Those documents have been created in the following manner.
14. In late 2013, each of the networks provided to Group Network Strategy their proposed investment portfolio for the 2014-19 regulatory period. Those projects were ranked according to the CASH prioritisation methodology and presented to the board for approval (2013 gate 1 approval).
15. The board considered the risk based portfolio, including a number of projects and programs at selected constraints point, when determining an appropriate investment risk appetite. The board sought visibility and were adequately informed of both the prioritisation process and the risk outcomes resulting from deferring expenditure.
16. The board did not approve the initial risk position proposed by the NSW DNSPs. The board amended the portfolio to reflect the boards informed decision to move to a less conservative risk position through deferring some of the lower risk projects and programs.

17. As a result of the move to a less conservative risk position the network expenditure proposed by each network reduced by the following percentages:
 - (a) Ausgrid: 24%;
 - (b) Endeavour Energy: 15%;
 - (c) Essential Energy: 16%.
18. These decreases resulted in the removal of lower risk projects which could not be accomplished within the revised risk appetite as determined by the board.
19. As part of the 2014 gate 1 approval process each network subsequently submitted revised proposed investment portfolios, prioritised using the CASH methodology, in November 2014. These portfolios adopted as their starting point, the revised risk appetite approved by the board in 2013. The board has not yet approved the revised proposed investment portfolios, pending the outcome of the AER's revenue determination.
20. The PIP for each DNSP referred to below was generated based on data provided by each network in December 2014. That data is essentially the same as that provided by the networks in November 2014, with certain changes in respect of individual projects (for example, due to changed circumstances) noted.
21. On 17 December 2014, in response to the AER's Draft Determination the board instructed the DNSPs to base their Revised Regulatory Proposals on version 4 of the PIP – recognising that the factors driving network investments and risk can change over time and adjusting for these changes within the formal change control process.
22. Accordingly, change controls are in progress to amend the PIP to reflect the expenditure contained in the Revised Regulatory Proposals,. As the change control process has not been completed, version 4 of the PIP has been used as the basis for the individual lists for each entity referred to below. This will not completely align with the final Revised Regulatory Proposals.
23. The PIP contains the following information for each project:
 - (a) Project / Program ID and description.
 - (b) Project / Program Type: denotes whether the planned activity is a program (a program is a large volume of small and similar activities conducted together, for example upgrades of similar technology conducted at sites within a geographic area), a major project (a major project is generally site specific).
 - (c) "Principle driver" of the investment: whether the project or program is a renewal of the network, maintaining or growing capacity of the network; compliance with

regulatory obligations, executing network connections. Note that these are business drivers and will not align with the AER's RIN drivers.

- (d) The amount of direct expenditure (excluding overheads) allocated to the project in each year of the regulatory period.
- (e) The priority ranking resulting from the CASH process.
- (f) "Reg Period \$" refers to the total expenditure on that project or program over the 2014-19 regulatory period in nominal dollars.
- (g) "Reg Period Cumulative" is a running total of expenditure, representing the expenditure of each activity and the higher ranked activities before it on the list;
- (h) "Percent" refers to the cumulative percentage of proposed expenditure constituted by each activity and the activities ranked before it on the list. For example, the last entry in the list is 100%. This means that the last activity on the list and all of the activities preceding it constitutes 100% of the DNPS's proposed expenditure. That is, if the DNPS is allowed 100% of its proposed expenditure it will undertake all of the activities on the PIP Project list.

Impact of reduced expenditure - Ausgrid

- 20. A copy of the PIP for Ausgrid is at Attachment 3 – AG PIP v4.0 – for Revised Proposal on the enclosed DVD.
- 21. The impact of the reduced expenditure in the Ausgrid draft determination is that a number of projects and programs are unfunded. With the draft determination constraining network capital expenditure by 44% there are 237 projects and programs that remain unfunded (from row 324 in Attachment 3).
- 22. For example, the following projects and programs are unfunded:
 - i. **Oil Containment program** (DOC_11.04.01_S and DOC_11.04.01-1_S - rows 456 and 458 of Attachment 3)
 - 1. Lack of adequate oil containment at a number of Ausgrid's substations is a serious environmental compliance issue under the *Environment Protection Act 1997* (NSW). Ausgrid has consulted with the NSW Environment Protection Authority in relation to this issue.
 - 2. This program involves prioritising the risks associated with lack of adequate oil containment at different sites and remedial measures to address those risks, including installation of oil containment equipment.
 - 3. Ausgrid uses the Oil Containment Risk Assessment model to prioritise sites in relation to risks from the use of oil filled equipment. Failures can occur with

transformer bundling, oil separation equipment and pipework. Ausgrid conducts surveys and investigations of the substation sites to develop a risk based list. For example, proximity to water courses and/or environmentally sensitive areas mean high risk installations which need to be addressed.

4. Failures could have (significant) environmental impact resulting in a breach of the *Environment Protection Act 1997* (NSW) and fines.
5. Ausgrid forecasts that 4 sites in sub transmission substations and 60 sites in zone substations will need to be remedied in relation to oil containment issues in the 2014-19 regulatory period.

ii. **Noisy transformer replacement program** (DOC_11.04.03-2_S and DOC_11.04.03_S - rows 518 and 556 of Attachment 3)

1. Noisy transformers are an environmental compliance issue under the *Protection of the Environment Operations Act 1997* (NSW).
2. This program is reactive in nature. It is generally driven by noise complaints by neighbours in proximity to the site. Ausgrid then investigate the noise levels and takes measurement to confirm the noise levels compared to the Australian standard (under 5 decibels above background noise).
3. Ausgrid then assesses the options including constructing acoustic enclosures around the transformers, installing noise barriers on property boundary, modifying configuration to de-energise transformer or replacing transformer with a low noise equivalent.
4. Ausgrid has prepared noise reports in relation to the nine noisy transformers proposed to be remedied in the 2014-19 regulatory period. These noisy transformers are located in:
 - Dulwich Hill, three;
 - Jannali, two; and
 - Concord, four.
5. Similarly, Ausgrid has received 58 complaints regarding distribution substation noise levels between 2000 and 2013. Ausgrid planned to replace three DCs each year in the 2014-19 regulatory period.

iii. **Blackspot program** (DOC_11.03.41_S and DOC_11.03.40_S - rows 482 and 502 of Attachment 3)

1. Ausgrid initiated this program due to the risk of motor vehicle accidents (ie collision with poles). Vehicles collision with poles can cause pole failures and subsequent

danger to general public including the direct consequences of fatalities or serious injury. This program involves rectification and relocation of poles in consultation with Road and Maritime Services (**RMS**). The poles to be rectified or relocated are selected based on historical or assessed fatality data.

2. This program is discretionary but has proven to reduce fatalities caused by collision with power poles. Ausgrid planned to relocate 105 distribution poles and 15 transmission poles over the 2014-19 regulatory period. If the Ausgrid Black Spot Program was to further develop, the contributing effects expected towards reducing collisions would be similar, if not better than those experienced by Endeavour Energy (described below) given the high traffic density of Ausgrid's franchise area.

Impact of reduced expenditure – Endeavour Energy

23. A copy of the PIP for Endeavour Energy is at Attachment 4 – EN PIP v4.0 – for Revised Proposal on the enclosed DVD.

24. The impact of the reduced expenditure in the Endeavour Energy draft determination is that a number of projects and programs are unfunded. With the draft determination constraining network capital expenditure by 43% there are 289 projects and programs that remain unfunded (from row 138 in Attachment 4).

25. For example, the following projects will not be undertaken

- i. **Steel tower below ground rectification work** (TM803 – row 181 of Attachment 4);

Endeavour Energy has undertaken studies of the foundations and soil properties beneath steel towers during which Endeavour Energy identified 123 towers with heightened risk of foundation corrosion. These towers were further prioritised based on soil conditions to assess corrosion rates. As a result, Endeavour Energy listed 32 steel towers as the highest risk which need attention during the 2014-19 regulatory period. This program addresses this risk by reviewing the foundations and depending on the assessment, replacing or refurbishing the footing with concrete encased footings or installing sacrificial anodes.

If the project is cancelled or deferred, the risks of steel power fall-over increase which would have negative impact on the reliability of its network and expose members of the public and also staff of Endeavour Energy to risks including electrical shock.

- ii. **Low Mains Remediation** (DS413 – row 200 of Attachment 4) and **Low Voltage Consac Replacement** (DS006 – rows 394 and 395 of Attachment 4).

Both of these programs are to address areas of the network with known and identified safety risks.

1. Low Mains Remediation

Low mains are conductors that breach the ground safety clearances to Australian Standards. They pose safety hazards to the public which are normally detected during routine inspection processes. Endeavour Energy undertook a re-analysis and re-prioritisation of low mains concerns in 2014 following the fatality of a member of the public in another utilities area. Endeavour Energy is utilising new risk matrix assessment criteria during routine inspections and LiDAR to detect low mains and prioritise their rectification.

It is expected that 540 of these instances exist in the network which will be rectified over the next 3 years with ongoing review and rectification to follow based on defect data.

Deferral or deletion of this program will increase public and vehicle risk of contact with low mains which could result in burns and fatalities to individuals.

2. Low Voltage Consac Replacement

Consac cable is a low voltage (**LV**) conductor which makes up 7% of Endeavour Energy's LV cable network (520km currently installed). The cable is prone to heightened risk of failure which results in potential public shock risks due to possible open circuit neutrals, as well as associated reliability impacts.

Endeavour Energy initiated this replacement program in response to heightened risk of shocks, damage to customer's equipment, interruptions, costly emergency repair works associated with this particular cable. Endeavour Energy planned to replace approximately 50kms of high priority Consac cables during the first three years of the current regulatory period, followed by increased quantities thereafter as the current rate of replacement is inadequate to manage the risks in timely manner.

The main risks of deferral / cancellation of this program are increased risk of electrical shock for Endeavour Energy employees or members of public and repetitive un-planned interruptions to electricity supply to customers.

iii. **Track Blackspot remediation** (DS008 – row 287 of attachment 4).

1. Endeavour Energy initiated this program during last regulatory period due to the risk of motor vehicle accidents (ie collision with poles). This program involves rectification and relocation of poles in consultation with RMS. The locations are selected based on historical or assessed fatality data. While new designs include assessment to reduce the risk of creating 'blackspots', 140 sites currently exist on the network that require remediation. Approximately 9 sites are chosen per year for rectification in consultation with RMS to address the public risk of colliding with Endeavour Energy poles.

2. This program is discretionary but as estimated by Endeavour Energy, has contributed to the reduction of driver fatalities reducing the average rate from 14.9 fatalities per year (in the previous ten year period) to an average of 5 fatalities per year over the last five years within Endeavour's franchise area.
3. Deferral or cessation of this program will result in increased risk of ongoing injuries and fatalities to road users due to 'blackspot' poles.

Impact of reduced expenditure – Essential Energy

26. A copy of the PIP for Essential Energy is at Attachment 5 – ES PIP v4.0 – for Revised Proposal on the enclosed DVD.

27. The impact of the reduced expenditure in the Essential Energy draft determination is that a number of projects and programs are unfunded. With the draft determination constraining network capital expenditure by 30% there are 198 projects and programs that remain unfunded (from row 106 in Attachment 5).

28. For example, the following projects will not be undertaken:

i. **Zone Substation Unplanned Equipment Failure Replacement** (ESS 84 – row 169 of Attachment 5);

1. This is a reactive program to respond to unplanned equipment failures in zone substations.
2. Essential Energy can reasonably estimate the number of future failures due to type faults which are currently unknown and failures of assets which did not reach the year of planned replacement, relying on historical failure data. Essential Energy extrapolates to annually have over the 2012/13-2018/19 period:
 - three circuit breaker failures;
 - four instrument transformer failures;
 - six protection relay failures;
 - twenty surge arrestor failures;
 - two auxiliary transformer failures;
 - two isolator failures; and
 - one battery charger failure.
3. The assets would have functionally failed and must be replaced when Essential Energy replaces them. In other words, the asset replacement cannot be deferred or

cancelled. If the zone substation system spares are reduced or depleted, then this may result in:

- increased restoration times following zone substation equipment failure; and
- the network being placed at risk for a longer time due to loss of contingency.

ii. **Zone Substation Power Transformer Unplanned Failure Replacement** (ESS_72 – row 190 of Attachment 5); and

1. This is a reactive program to respond to unplanned power transformer failures in zone substations. This program allows for expected future expenditure based on forecast failure rate. It enables Essential Energy to deliver a run-to-end-of-economic life strategy by managing the consequences of in-service failures. It seeks to:
 - maintain Essential Energy's strategic spares holding at prudent levels, that allows for timely replacement of transformers from a wide range of ratios and capacity; and
 - maintain current best practice restore times in the event of a transformer failure.
2. The expenditure of this program will only be incurred where failure events occur.
3. The consequences of deferring or cancelling this program are:
 - Spares capacity cannot be adequately managed to respond to transformer failures;
 - Restoration times and costs increases over the regulatory period due to inadequate spares holding; and
 - with significant investment deferral potential for gaps (both ratio and capacity) in spares coverage to exist resulting in failure to manage network risk and meet Schedule 5 of the licence conditions.

iii. **Utility Blackspot** (ESS_2009 – row 168 of Attachment 5).

1. This plan has been developed to address the frequency of vehicles colliding with power poles on sides of roadways. It involves identifying and remedying sites (including for example, relocating certain poles) where crashes with utility poles are more likely to take place. This plan is a collaborative effort with the NSW Centre for Road Safety and the NSW State government to curb the road toll and trauma associated with pole crashes.
2. Over the last three years, the NSW Centre for Road Safety recorded approximately 720 utility pole crashes within the Essential Energy footprint. These resulted in 8 fatalities, 366 injuries, and 354 non-casualties (tow away).
3. The key objectives of this plan / investment case are:

- to reduce the number of fatal pole crashes or those resulting in injury as a result of crashes within the Essential Energy footprint; and
 - to identify high risk sites and review assets located in these locations.
4. The proposed capital investment for priority Blackspot locations represents an investment of \$7.75 million over a 5 year period (2014-19) or approximately 40 sites remedied. Cancelling or deferring this program means that these 40 sites would not be remedied, and collision at those sites may occur which otherwise may be less likely to occur, or leading to less severe consequences, had the site been remedied.

Affirmed Villadulla
New South Wales, this 20 January 2015

at 11:21am J. Hardwick
John Hardwick

Before me:

Maria Mitchell

Signature of witness:

Maria Mitchell JP.

Maria Mitchell
Name of witness:

78 St Vincent St,
Villadulla 2539

JP182714.

Qualification of witness: Justice of the Peace