



> Electricity Network Performance Report 2014/15

Submitted to:
NSW Independent Pricing and Regulatory Tribunal 2015



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1. Profile

1.1 Overview

Essential Energy is a State Owned Corporation (SOC) responsible for building, operating and maintaining Australia's largest electricity network and delivering safe, reliable energy supplies to around 820,000 customers.

Spanning 95 per cent of New South Wales, the company's distribution area covers diverse terrain including humid coastal environments in the north coast, semi-arid desert in the far west, alpine peaks in the south and a grain belt that crosses central NSW from north to south.

Essential Energy is responsible for building and maintaining almost 200,000 kilometres of powerlines, 1.4 million power poles, 138,000 distribution substations and 333 zone substations that span a diverse geographical area.

Essential Water, an operating division of Essential Energy, delivers water services to more than 10,000 customers in Broken Hill, Menindee, Sunset Strip and Silverton and sewerage services to around 9,500 customers in Broken Hill.

Funding of our electricity distribution network is through a five-yearly distribution network revenue determination made by the Australian Energy Regulator in accordance with the *National Electricity Law* and *National Electricity Rules* economic regulatory framework

With around 3,800 employees that were based in depots and offices across four regions, Essential Energy was a significant contributor to regional and rural economies. In early 2015, Essential Energy consolidated its regions from four to three. This will help us meet our ongoing constraints while not adversely affecting our ability to deliver a satisfactory level of service to our customers.

Essential Energy's business purpose is to be of service to our communities by efficiently distributing electricity to our customers in a way that is safe, reliable and sustainable.

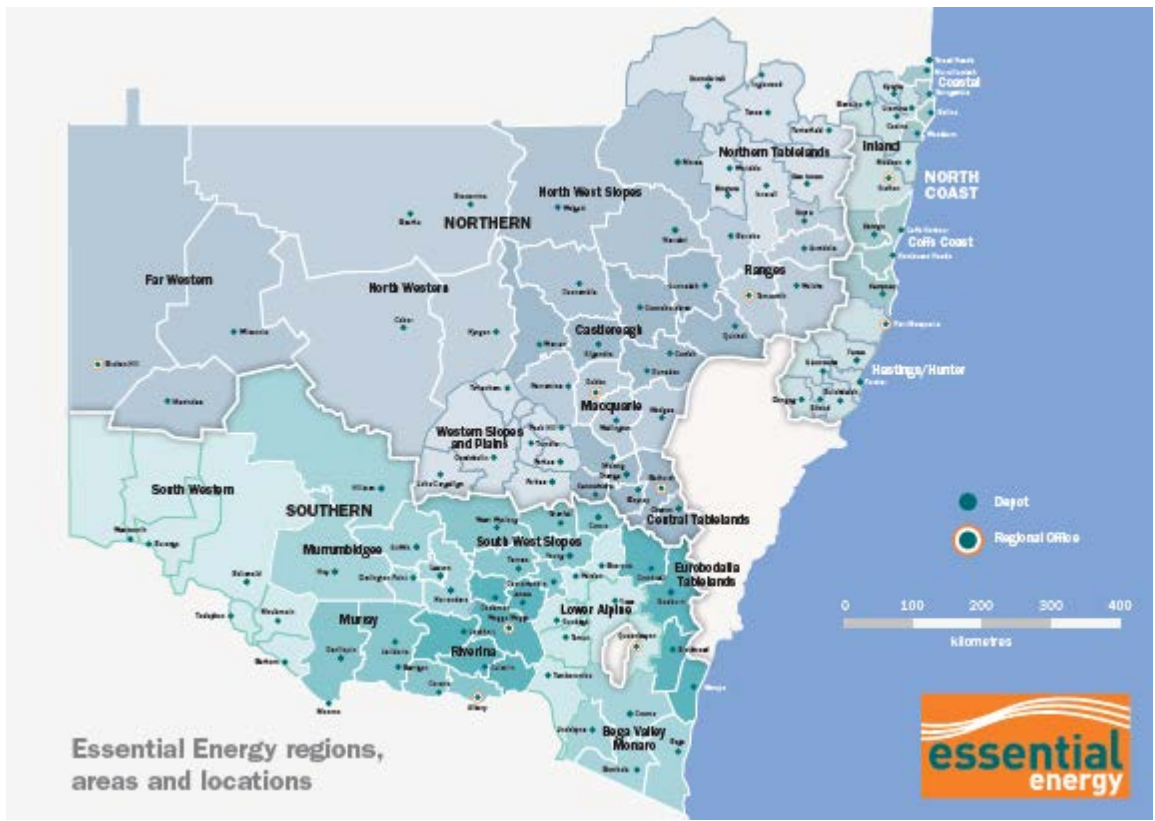


Figure 1 – Essential Energy locations

Table 1.1 Distributor Statistics

	Number at 30/6/14	Number at 30/6/15
Distribution Customer Numbers (Total)	822,413	824,459
Customer Numbers at Year End (Southern)	169,826	168,165
Customer Numbers at Year End (Northern)	170,851	171,317
Customer Numbers at Year End (South Eastern)	177,288	179,635
Customer Numbers at Year End (North Coast)	304,448	305,342
Maximum Demand (MW)	2,202	2,162
Feeder Number CBD	-	-
Feeder Number Urban	294	294
Feeder Number Short Rural	915	915
Feeder Numbers Long Rural	238	244
Energy Received by Dist. Network to Year End GWh	12,799	13,098
Energy Distributed to Year End (Residential) GWh	4,323	4,406
Energy Distributed to Year End (Non-Residential including un-metered supplies) GWh	7,617	7,726
Energy Distributed to Year End (Southern) GWh	3,113	3,155
Energy Distributed to Year End (Northern) GWh	3,125	3,105
Energy Distributed to Year End (South Eastern) GWh	2,918	3,045
Energy Distributed to Year End (Far North Coast) GWh – now North Coast	2,784	2,827
System Loss Factor (%)	6.71	7.38
Transmission System (km)	-	-
Transmission Substation (Number) ¹	20	20
Sub Transmission System (km)	10,745	10,752
Substation - Zone (Number)	330	333
Substation - Distribution (Number)	137,017	137,678
High Voltage Overhead (km)	146,837	146,901
High Voltage Underground (km)	2,333	2,405
Low Voltage Overhead (km)	22,202	20,162 ²
Low Voltage Underground (km)	5,214	6,805 ²
Pole (Number)	1,387,204	1,386,609 ³
Streetlights (Number)	154,811	158,284
Employees (Full Time Equivalent Number)	4,051	3,807
Contractors (Full Time Equivalent Number)	128	81

Notes: Distances for overhead and underground lines are circuit km.

¹Essential Energy assumes any substation that converts to a voltage that is not used for distribution is a Transmission Substation.

² A significant amount of data cleansing occurred during the year to identify overhead & underground Low Voltage services which were captured as Low Voltage mains. This has contributed to the reduction of Low Voltage overhead and increase in Low Voltage underground.

³ Reduction due to Private Poles being re-classified during the 2014-15 reporting period

1.2 Capital Works Program

Essential Energy is planning to deliver the capital works program necessary to meet the objectives outlined in the regulatory determination submission and the Network Asset Management Plan (NAMP).

The capital works program for the 2015 to 2019 regulatory period was submitted to the AER in Essential Energy's Regulatory Proposal and Revised Regulatory Proposal. The capital program over this period has now been revised to align with the AER's final regulatory determination.

Several factors have contributed to a reduction in capital expenditure including a decline in network demand, improved network reliability and compliance to licence conditions and realised efficiencies.

The NAMP is subject to ongoing review to allow for changes due to funding constraints, work delivery scheduling and assessment of network performance and load growth.

Table 1.2 Capital Works Program Trend

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Capital works program (\$M)	701.9	745.1	640.58	564.3	468.84 ⁴

⁴ 2014-15 result is subject to final audit. Final audited results will be published in the 2015/16 ENPR.

2. Network Management

2.1 Overview

Essential Energy's network is unique in terms of the geographic area it covers, the terrain it traverses, the vegetation that surrounds it and the diversity of weather that passes over it. The scale of assets required to ensure the network physically reaches customers in the most far reaching corners of NSW is like no other network in Australia. To ensure our decisions are localised and reflect the needs and concerns of local communities, the network is managed through a regional management structure.

Essential Energy's Electricity Network Management System (ENSMS) Plan was implemented to meet the company's statutory and public responsibilities and to provide a safe, reliable and sustainable electricity supply to our customers.

The *Electricity Supply (Safety and Network Management) Regulation 2014* (the Regulation) came into effect on 1 September 2014. This Regulation requires that an Electricity Network Safety Management System (ENSMS) be implemented for each Network Operator that complies with the Regulation and AS5577 – *Electricity network safety management systems*.

As such, Essential Energy established the Electricity Network Safety Management System Plan (CEOM8047) which 'maps' Essential Energy's Business Management System (BMS) to facilitate the navigation and auditing of the system itself. This Plan is based on a common template applicable to all Network Operators that are overseen by Networks NSW (Ausgrid, Endeavour Energy and Essential Energy). The plan retains three of the former chapters of the previous Network Management Plan, these are:

- > **CEOP8004 Customer Installation Safety Plan** – which ensures the provision of safe electrical installations within Essential Energy's network area and their safe connection to Essential Energy's sub-transmission and distribution system – helping to provide a safe working environment for our employees, service providers, contractors, customers and the general public (see section 6).
- > **CEOP8005 Public Electrical Safety Awareness Plan** – which provides a framework and strategies to warn the public of the hazards associated with electricity, and in particular the hazards associated with overhead powerlines, and to provide simple yet effective ways to minimise their risk exposure (see section 9).
- > **CEOP8022 Bushfire Risk Management Plan** – aims to ensure that Essential Energy's assets are managed in a way that will minimise the risk of bushfires, as well as protect our assets and maintain customer supply reliability at times of bushfire (see section 8).

Essential Energy's commitment to safety management procedures is also evident in its continuous improvements in safety measures (see section 5).

2.2 Network Complaints

Table 2.1 Complaint Performance Data

	Previous Years				Current Year
Year	2010/11	2011/12	2012/13	2013/14	2014/15
Complaints Total	5,301	4,323	4,447	2,781	2,809
Complaints per 1,000 Distribution Customers	6.6	5.4	5.5	3.4	3.4
Complaints regarding Vegetation Management	328	376	432	270	375

During 2014-15, there was a 38 per cent increase in vegetation complaints largely due to an increase in vegetation clearing activity, process changes resulting from the use of Light Detection and Ranging (LiDAR) inspections, and bulk customer notifications used for some of the lump sum contract work.

Essential Energy has implemented tighter controls through Service Level Agreements with contractors and improved customer communication processes to resolve identified issues.

Table 2.2 Network Complaint Investigations Completed Current Year

Summary

Table 2.2 Network Complaint Investigations Completed Current Year	2014/15	
	Number	Valid*
Voltage	501	280
Current	-	-
Other Quality	359	174
Reliability	134	32
Safety	-	-

* A complaint is valid where non-compliance with published service and network standards occurs.

Detailed

Table 2.2 – Network Complaint Investigations Completed		2014/15	
Category	Nature of Complaint	Number	Valid*
Voltage	Sustained over voltage	85	67
	Sustained under voltage	62	40
	Voltage fluctuations	209	94
	Voltage dips	66	38
	Voltage swell	1	-
	Switching transients	-	-
	N-E voltage difference	75	39
	Ground fault voltage	1	-
	Voltage unbalance	2	2
	Mains signalling voltages (Outside defined range)	-	-
	HV injection (HV/LV Intermix)	-	-
Notching	-	-	
Sub-total (Supply Voltage Complaints)		501	280
Current	Direct current	-	-
	Harmonic content	-	-
	Inter Harmonics	-	-
Sub-total (Supply Current Complaints)		-	-
Other Quality	Mains signalling reliability	-	-
	Noise & Interference	81	28
	Level of supply capacity	30	20
	Embedded Generation (Solar)	124	100
	Embedded Generation (Wind)	-	-
	Supply frequency	1	-
	Level of EMF	-	-
Customer Equipment Failure	123	26	
Sub-total (Other Quality of Supply Complaints)		359	174
Sub-total (All Quality of Supply Complaints)		860	454

Table 2.2 – Network Complaint Investigations Completed		2014/15	
Reliability	No. of supply failures	47	16
	Duration of supply failures	-	-
	Outages Miscellaneous	4	4
	No. of <1 min. interruptions	83	12
Sub-total (Reliability of Supply)		134	32
Safety	Overhead line safety	-	-
	Underground safety	-	-
	Electrical station safety	-	-
	Service line safety	-	-
Sub-total (Network Safety)		-	-
Total Completed		994	486
Other	Under Investigation (not validated)	49	
Totals		1,043	486

When compared against the previous financial year, the following observations can be made:

- network complaints reduced by 6.7 per cent
- the number of outstanding jobs not validated and under investigation reduced by 66 per cent
- sustained over voltage and sustained under voltage complaints reduced by 33 and 25 per cent respectively
- N-E voltage difference (shocks investigations) increased by 27 per cent
- Complaint's for number of supply failures and <1min interruption's both decreased by 7 per cent - this may be due to recent network upgrades and relatively mild weather conditions in most areas.

2.3 Customer Service Standards reporting

Table 2.3 Customer Service Standards current year data

	Payments given based on interruption duration (Total Number)	Claims not paid based on interruption duration (Total Number)	Payments given based on interruption frequency (Total Number)	Claims not paid based on interruption frequency (Total Number)
Metropolitan	N/A	N/A	N/A	N/A
Non-Metropolitan	53	17	1	7

Table 2.3 shows a total of 17 claims not paid based on interruption duration, and seven not paid based on interruption frequency.

Claims based on duration were not paid because:

- > seven occurred during severe weather events
- > two claims of sustained interruption were due to issues with the customer's installation
- > eight claims did not meet the criteria of having an interruption last 18 hours or longer in duration.

Claims based on frequency were denied for the following reasons:

- > Seven did not meet the requirement to have four or more eligible interruptions recorded.

While there was a 33 per cent decrease in the number of claims paid for the duration of an interruption when compared to 2013-14, payments were still high due to a single incident occurring in June 2015 that resulted in Essential Energy paying 42 customers who experienced an interruption exceeding 18 hours in duration.

3. Network Planning

3.1 Overview

Essential Energy is committed to providing a safe, secure and reliable supply of energy in a cost effective manner. Essential Energy achieves this by planning its network and making investment decisions in line with its Network Asset Management Plan (CEOM8018).

The NAMP outlines Essential Energy's obligations in relation to network planning, including the need to compile and publish an annual Distribution Annual Planning Report (DAPR). The NAMP has been prepared in accordance with the compliance obligations of network management legislation, regulations and related codes of practice. It reflects recognised industry best practice and standards relating to the management of electricity infrastructure assets. It is designed to conform with the NSW Government policy and planning guidelines on total asset management, which addresses strategic planning relating to capital investments, renewal and maintenance.

Essential Energy's network development is undertaken in accordance with the *Electricity Supply Act*, the *National Electricity Code*, the *NSW Code of Practice - Demand Management for Electricity Distributors* and our policy Sub-transmission and Distribution Network Planning Criteria and Guidelines (CEOP8003).

In general, Essential Energy plans the development of its network to ensure:

- > network capacity is adequate to meet power transfer requirements
- > electrical and thermal design ratings (normal and overload) of equipment are not exceeded
- > supply reliability is in accordance with published standards, or as negotiated to meet the special requirements of individual major network customers
- > quality of supply meets published standards and system voltage levels are maintained within acceptable standard limits
- > safety standards are maintained or exceeded
- > environmental constraints are satisfied, and
- > the above requirements are met in a cost effective manner.

3.2 Demand Management

Essential Energy internal demand management procedures for 2014-15 complied with the requirements of the *National Electricity Rules*.

The process for 2014-15 provided for:

- > the Distribution Annual Planning Report
- > maintenance of a Register of Interested Parties
- > review of emerging constraints with a network augmentation in excess of \$5 million
- > screening of all projects with an augmentation component in excess of \$250,000
- > publication of consultation papers where appropriate
- > notification to Interested Parties of Demand Management opportunities.
- > use of non-network service providers to investigate and advise on demand management options.
- > consultation with prospective Demand Management Service Providers.
- > collaborative agreements with leading academic institutions
- > participation in related industry working groups
- > pooling of demand management knowledge and resources with other NSW distributors under Networks NSW guidance.

There were five zone substation capacitor bank installations completed in 2014-15, resulting in reduced demand across the sub-transmission and transmission networks of approximately 6MVA.

Essential Energy continues to invest in upgraded load control functionality.

Table 3.5 Demand Management Projects Implemented During Current Year

	Description of Demand Management Project Implemented	Peak Demand Reduction (kVA)	PV of Costs of Demand Management Project (000's)	PV of Total of Capital Expenditure Deferral plus Op Ex Savings (000's)
Individual large projects				
1	ZS Raglan 66- Installation of 6MVAR Capacitor Bank	663	\$ 888	\$ 1,532
2	ZS Cootamundra- Installation of 3MVAR Capacitor Bank	973	\$ 1,178	\$ 2,248
3	ZS Hammond Avenue- Installation of 6MVAR Capacitor Bank	1,440	\$ 727	\$ 3,328
4	ZS Hanwood- Installation of 4.5MVAR Capacitor Bank	1,760	\$ 799	\$ 4,067
5	ZS Yenda- Installation of 3MVAR Capacitor Bank	740	\$ 862	\$ 1,710
Consolidated projects				
	Nil			
Totals		5,576	\$4,454	\$12,885

Table 3.6 Demand Management Investigations in Current Year Found Non-Viable

	Description of Potential Demand Management Project Investigated and Reason for Non-viability	PV of Costs of Investigations
	Nil	

Non-network alternative options are constantly evaluated as part of Essential Energy's internal processes and in compliance with the *National Electricity Rules*.

There were no demand management investigations requiring external consultation for major network augmentations undertaken in 2014-15 due to the network demand levels and growth rates.

One detailed internal demand management investigation for network augmentation was undertaken in 2014-15, which is ongoing.

4. Asset Management

4.1 Overview

Asset management is a critical component of Essential Energy's overall network management strategy and has an important role in determining the outcomes for the business and our customers.

The NAMP provides a framework for the strategic management of our physical system assets to best support network service delivery. It includes our asset management strategies, policies, processes, resources, and our planned capital investments, asset maintenance and demand management. The NAMP is closely related to annual budgets and forecasts for capital, operating and maintenance expenditure planning.

The NAMP's primary objectives include:

- > establishing priorities in line with organisational objectives and statutory obligations, namely safety, reliability and sustainability
- > planning and controlling financing and expenditure in accordance with these priorities, and
- > ensuring resources are used as effectively and efficiently as possible in order to deliver value for money services to the NSW Government and the communities in which we operate.

These objectives cover the three major elements of asset management outlined in the NAMP:

- > capital investment strategic planning
- > asset renewal and replacement strategic planning, and
- > asset maintenance strategic planning.

The NAMP is designed to comply with the State Government's policy on Total Asset Management (TAM). It includes a five year forecast and reviews capital investment, refurbishment and asset maintenance strategies that take a long-term, system wide and whole of life management view.

These strategies support the delivery of a secure, high quality, reliable and safe electricity network service that meets the needs and expectations of customers, community, shareholders, and other stakeholders - at the lowest possible price - and complies with related statutory and regulatory requirements.

Essential Energy reviews this plan annually.

4.2 Technical Service Standards

The Electricity Supply Standards adopted by Essential Energy are set out in the document Electricity Supply Standard (CEOP8026), in accordance with the *Code of Practice – Electricity Service Standards*.

The main areas addressed include:

- > voltage fluctuations managed in accordance with *Australian Standards AS/NZS 61000.3.3:2012, 61000.3.5:1998 and 61000.3.7:2012*
- > switching transients (voltage waveform distortion) limited where possible to less than two times normal supply voltage
- > frequency variation and Essential Energy's role in notifying the Australian Energy Market Operator (AEMO) of any sustained fluctuations
- > voltage dips managed through best practice network improvement and augmentation
- > steady state voltage differences between neutral and earth limited to less than 10 volts at the customer's point of supply
- > lightning strikes limited in their impact on supply, where possible, by adherence to industry best practice system design and maintenance principles

- > limitation of 'step and touch' voltage differentials managed in accordance with industry standards, namely *ENA Earthing Guide AS/NZS 7000*
- > limiting of voltage imbalance to a six per cent difference on the LV network using 10 min average values between the highest and lowest phase to neutral or phase to phase steady state voltages (this may be exceeded on occasions in rural areas)
- > harmonic content of voltage and current waveforms managed in accordance with *Australian Standards AS 61000.3.6:2012*
- > Mains signalling reliability set at a target of 99.5 per cent failsafe to ensure correct switching and metering functions.

A copy of Electricity Supply Standard (CEOP8026) can be downloaded from essentialenergy.com.au.

This Policy (CEOP8026) also outlines Essential Energy's adoption of the *Australian Standard AS 60038 – 2000 Standard Voltages*.

4.3 Quality of Supply

4.3.1 Overview

Essential Energy actively participates in the Long Term National Power Quality Survey (LTNPQS), a national power quality survey conducted by the University of Wollongong and a number of other distributors throughout Australia. This survey studies parameters such as steady state voltage, voltage total harmonic distortion (THD), voltage sags and voltage unbalance on three phase sites.

4.3.2 Performance Data

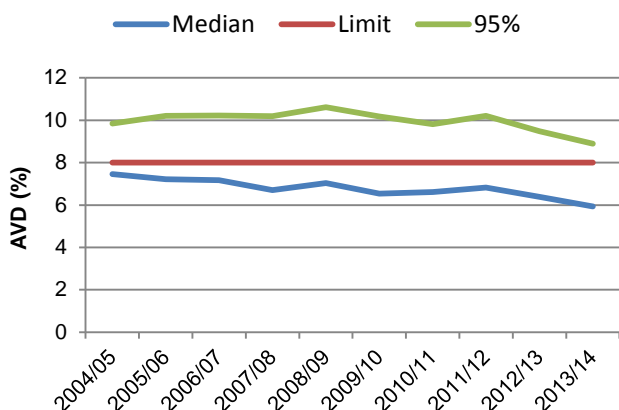
Trend of primary indices

Low Voltage Sites

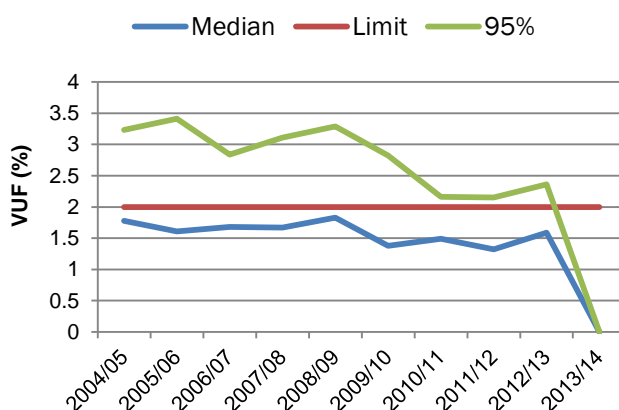
Disturbance	Voltage		Unbalance		Harmonics		Sags	
	Index	% of limit	Index	% of limit	Index	% of limit	Index	% of limit
Limit	8%		2%		7.30%		25*	
2004/05	7.46	93	1.78	89	2.73	37	0.8	3
2005/06	7.22	90	1.61	80	2.64	36	0.51	2
2006/07	7.17	90	1.68	84	2.93	40	0.33	1
2007/08	6.7	84	1.67	83	2.82	39	0.02	0
2008/09	7.04	88	1.83	92	2.81	38	0.16	1
2009/10	6.54	82	1.38	69	2.7	37	0.04	0
2010/11	6.61	83	1.49	74	2.65	36	0.1	0
2011/12	6.83	85	1.32	66	2.55	35	0	0
2012/13	6.39	80	1.59	79	2.43	33	0.01	0
2013/14	5.93	74	*	*	2.47	34	0	0

* No LV unbalance data is included in this report as calculated unbalance is only included from strong sites. Without site classification data, it is impossible to determine if the sites provided are strong or weak. As such, unbalance has not been calculated.

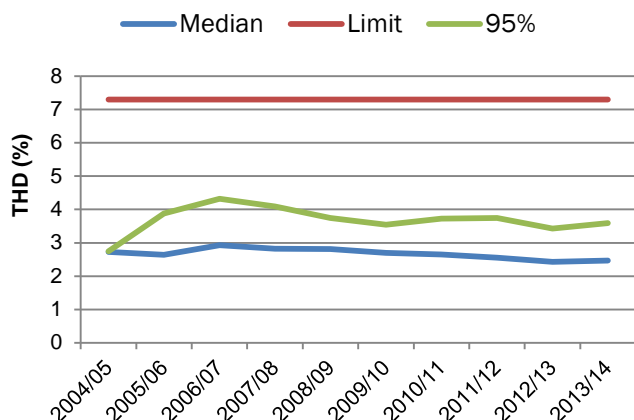
Voltage (AVD)



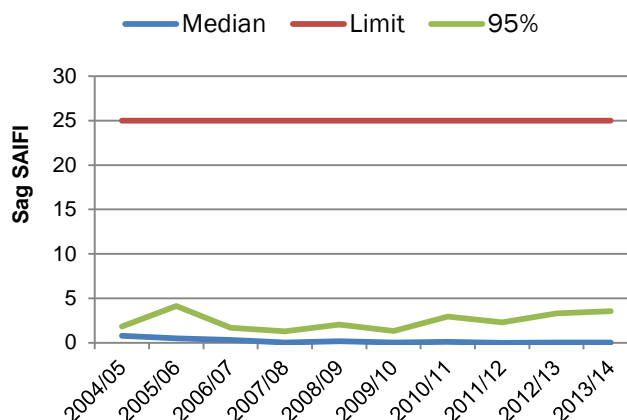
Unbalance (VUF)



Harmonics (THD)

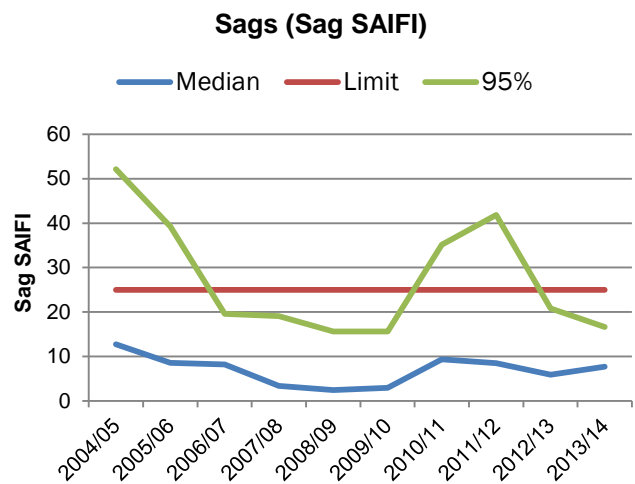
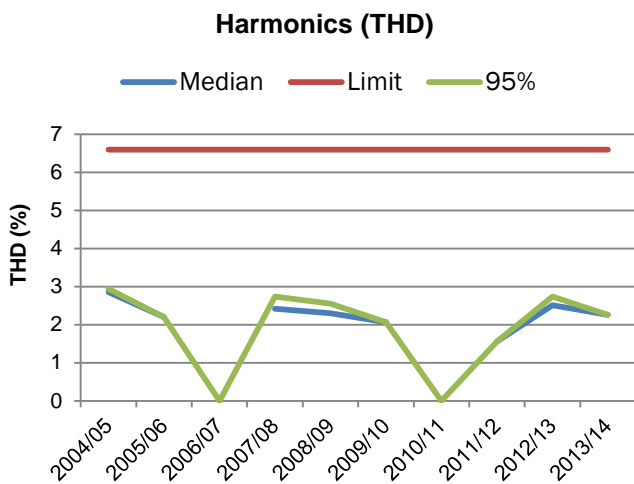
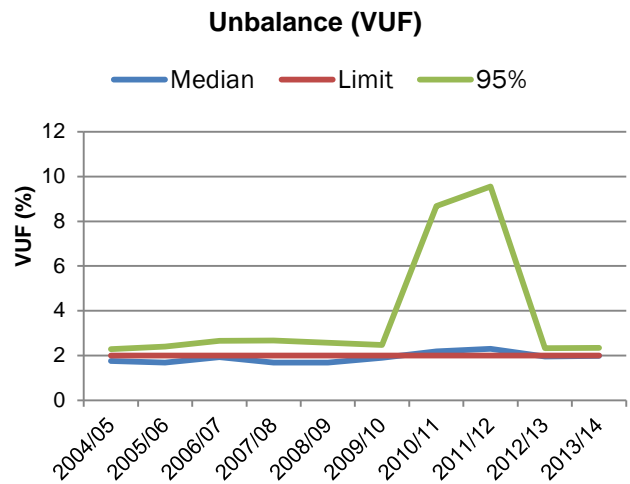
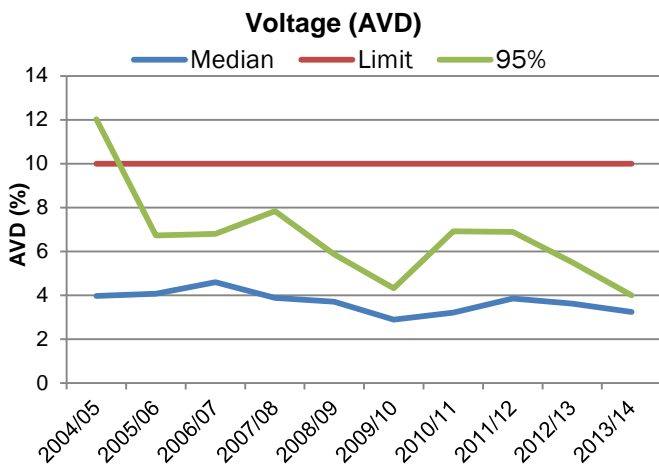


Sags (Sag SAIFI)



Medium Voltage Sites

Disturbance	Voltage		Unbalance		Harmonics		Sags	
	Index	% of limit	Index	% of limit	Index	% of limit	Index	% of limit
Limit		10%		2%		6.60%		25*
2004/05	3.96	40	1.75	87	2.86	43	12.75	51
2005/06	4.06	41	1.69	84	2.2	33	8.55	34
2006/07	4.6	46	1.92	96		0	8.23	33
2007/08	3.88	39	1.68	84	2.42	37	3.38	14
2008/09	3.7	37	1.68	84	2.3	35	2.43	10
2009/10	2.89	29	1.9	95	2.07	31	2.94	12
2010/11	3.2	32	2.18	109		0	9.35	37
2011/12	3.85	38	2.3	115	1.56	24	8.46	34
2012/13	3.61	36	1.95	98	2.251	38	5.86	23
2013/14	3.24	32	1.98	99	2.26	34	7.69	31



Summary

Low Voltage Sites

Voltage and harmonics continue downward trends compared to recent years. Unbalance levels have increased this year. The trend of median values for sags remains steady, however the 95th percentile value is trending upward.

Medium Voltage Sites

Voltage is trending downward. The 95th percentile value of unbalance has decreased significantly this year. Harmonic levels have increased this year. Sag levels have decreased this year after a long term upward trend.

4.4 Distribution Reliability

4.4.1 Overview

Essential Energy conducts its reliability reporting in accordance with the *NSW Reliability and Performance Licence Conditions for Distribution Network Service Providers* (Licence Conditions).

As of July 2015, Essential Energy is subject to the Service Target Performance Incentive Scheme (STPIS) with reliability targets set based on the average performance for the years 2009 to 2014.

Essential Energy's distribution network consists of 294 Urban Feeders, 915 Short Rural Feeders and 244 Long Rural Feeders. Over 60 per cent of our customers are supplied via Short Rural Feeders and the average length of these feeders is approximately 55 kilometres.

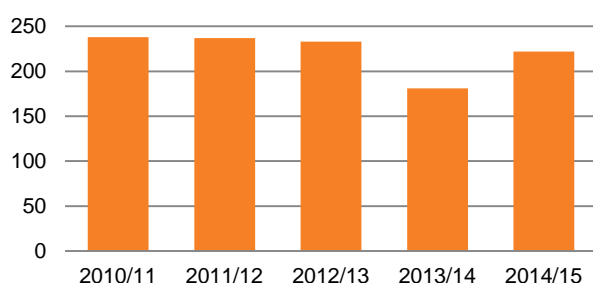
4.4.2 Organisational Performance (normalised) Trend

Reliability data for SAIDI and SAIFI (normalised) is reported in Table 4.1 -the graphs show the organisational trends over five years.

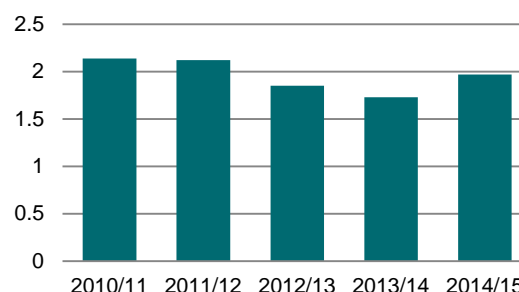
Table 4.1 Organisational Performance Trends (Normalised)

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
SAIDI	238	237	233	181	222
SAIFI	2.14	2.12	1.85	1.73	1.97

SAIDI Organisational Performance Trends (Normalised)



SAIFI Organisational Performance Trends (Normalised)



Comment on Performance

Essential Energy's network performance during the year is better than mandated in the licence conditions and a testament to the network improvement strategies that Essential Energy has implemented. The SAIDI performance in 2014-15 is higher than that of the previous year, but on average when compared to the previous four years. However, the STPIS targets were set based on the average performance of the years 2009 to 2014 resulting in a considerably lower target value of 212.4 minutes.

4.4.3 Organisational Detailed Performance Current Year

Reliability data sets for SAIDI and SAIFI are reported for the whole organisation and feeder categories in Table 4.2.

Table 4.2 Organisational Detailed Performance Current Year

Sustained Interruption Data Sets		Whole Organisation and Feeder Category				
Category		ORG*	CBD	Urban	Short Rural	Long Rural
Customer Numbers		861,745	N/A	191,444	534,896	135,405
SAIDI	Overall	470	N/A	189	474	848
	Planned	176	N/A	94	177	286
	Unplanned	282	N/A	92	290	524
	Normalised	222	N/A	72	207	489
SAIFI	Overall	2,856	N/A	1,443	2,892	4,709
	Planned	0.677	N/A	0.381	0.667	1.133
	Unplanned	2.094	N/A	1.017	2.149	3.400
	Normalised	1.968	N/A	0.969	1.995	3.277

* Refers to the average performance of the organisation overall.

Note: Normalised data represents unplanned outages with 'excluded interruptions' subtracted e.g. those defined as being outside the control of the distributor.

4.4.4 Reliability Report against Standards

Table 4.3 CBD Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2010/11	2011/12	2012/13	2013/14	2014/15
SAIDI	Actual	N/A	N/A	N/A	N/A	N/A
	Target	N/A	N/A	N/A	N/A	N/A
SAIFI	Actual	N/A	N/A	N/A	N/A	N/A
	Target	N/A	N/A	N/A	N/A	N/A

Table 4.4 Urban Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2010/11	2011/12	2012/13	2013/14	2014/15
SAIDI	Actual	68	80	73	63	72.2
	Target	125	125	125	125	74
SAIFI	Actual	0.76	1.16	0.86	0.78	0.969
	Target	1.8	1.8	1.8	1.8	1.8

Table 4.5 Rural Short Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2010/11	2011/12	2012/13	2013/14	2014/15
SAIDI	Actual	239	238	237	180	207
	Target	300	300	300	300	238
SAIFI	Actual	2.1	2.21	1.94	1.83	1.995
	Target	3.00	3.00	3.00	3.00	3.00

Table 4.6 Rural Long-Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year		2010/11	2011/12	2012/13	2013/14	2014/15
SAIDI	Actual	494	478	450	357	489
	Target	700	700	700	700	700
SAIFI	Actual	3.19	3.28	2.94	2.69	3.277
	Target	4.50	4.50	4.50	4.50	4.50

Comment on Performance

It can be seen from Tables 4.3 to 4.6 that Essential Energy has consistently out-performed its target across all feeder categories.

Excluded Events

Table 4.7 Excluded Interruptions for Current Year

Date of Event	Description of Event	Number of Customers Interrupted	Maximum Duration of Interruption (minutes)	Effect of Event on SAIDI Figure (minutes)	Basis for Exclusion
5/11/2014	Storm activity in the Northern region	30,758	2,911	6.3	Major Event Day
11/12/2014	Storm activity an outage where six 66kV poles failed near Tamworth.	33,536	2,032	9.6	Major Event Day
18/12/2014	Storm activity near Mallanganee-Bonalbo-Urbenville areas.	28,954	7,214	6.9	Major Event Day
16/02/2015	Storm activity - mainly in the Griffith area.	11,397	1,543	6.3	Major Event Day
21/04/2015	Storm activity - mainly in the Dungog/Tea Gardens area	28,349	13,036	31.8	Major Event Day

Major Event Day TMED

The value of TMED for 2014-15 was 4.99 minutes.

4.4.5 Performance against Individual Feeder Standards

The performance objectives for organisational average performances for each feeder category are not sufficient to identify when customers on a particular feeder experience unsatisfactory reliability performance. For this reason, SAIDI and SAIFI criteria (after 'excluded interruptions' are disregarded) act as a trigger for investigation and exception reporting purposes. The figures contained in the Licence Conditions are shown in Table 4.8.

Table 4.8 Individual Feeder Standards for Exception Reporting Specified in the Licence Conditions Applicable to Essential Energy

Category	Feeder Categories			
	CBD	Urban	Short Rural	Long Rural
SAIDI	N/A	400	1,000	1,400
SAIFI	N/A	6	8	10

Performance outside this range results in the following actions:

- > immediate investigation of the causes for each feeder exceeding the individual feeder standards
- > by the end of the quarter following the quarter in which the feeder first exceeded the individual feeder standard, complete an investigation report identifying the causes and action required to improve the performance
- > complete any operational actions identified in the investigation report by the end of the third quarter following the quarter in which the feeder first exceeded the standard, and
- > where the investigation report identifies actions, other than operational actions, required to improve the performance of each feeder to the individual feeder standards, develop a project plan, including implementation timetable, and commence its implementation by the end of the second quarter following the quarter in which the feeder first exceeded the individual feeder standards.

Summarised performance against the above licence conditions is shown in Table 4.9.

Table 4.9 Individual Feeder Performance against the Standard Summary

	Feeder Type			
	CBD	Urban	Short Rural	Long Rural
Feeders (Total Number each Type)	N/A	294	915	244
Feeders that Exceeded the Standard During the Year (Total Number)	N/A	10	63	30
Feeders Not Immediately Investigated (Total Number)	N/A	-	-	-
Feeders Not Subject to a Completed Investigation Report by Due Date (Total Number)	N/A	2	15	13
Feeders Not Having Identified Operational Actions Completed by Due Date (Total Number)	N/A	1	5	4
Feeders Not Having a Project Plan Completed by Due Date (Total Number)	N/A	1	2	6

Comment on Performance

Following periods of high network activity, an increased number of feeders require investigation. In all cases, the investigation commenced on time and interim remedial actions taken where appropriate, even though the report may not have been completed in the required timeframe.

4.5 Transmission Reliability

Essential Energy is not required to provide this information.

5. Network Safety

5.1 Overview

Essential Energy's number one priority is safety and is the responsibility of every employee. Our goal is to keep our workers safe and healthy; our overarching safety objective is to continue to build a committed safety culture with strong safety leaders and a workplace where no-one knowingly participates in an unsafe act.

Essential Energy's Health, Safety and Environment (HSE) Strategic Plan seeks to develop a HSE framework that enables the exercise and application of due diligence to:

- manage our risk profile by eliminating health, safety and environmental risks so far as is reasonably practicable, supported by an evidence and risk based approach to decision making, responsible management and good governance and assurance
- eliminate the potential for fatalities and permanent disabilities, while systematically reducing high frequency low consequence injuries
- establish better practice HSE Management Systems that are compliant with legislation, regulation and relevant codes of practice and that define minimum requirements for controlling the risks associated with our business operations
- build resilient HSE leadership capability across the business, with a focus on developing the skills, knowledge, competency and positive safety behaviours at all levels - in particular, of those who hold safety critical roles
- build a fair and just culture to embed and support cultural and behavioural change to personal and workplace safety.

Essential Energy publishes a Public Electrical Safety Awareness Plan (PESAP) annually to educate the general public, industry workers and emergency services on the hazards associated with electricity in relation to its transmission and distribution system. The PESAP outlines Essential Energy's commitment to safety and our responsibilities under the *Electricity Supply (Safety and Network Management) Regulation 2014*. The key objectives of the PESAP are to:

- raise the awareness of the general public about electrical safety hazards associated with the electrical distribution network
- raise the awareness of the general public about elevated hazards associated with emergency events that may impact on the electrical distribution network (e.g. storms, floods and accidents)
- identify and target at risk groups through a number of strategies designed to increase awareness of electrical hazards associated with the electrical distribution network
- further develop relationships with industry and community associations to assist in the education and development of safe electrical work practices and strategies.

5.2 Public Injuries

Essential Energy's PESAP provides strategies to raise public awareness of the numerous hazards that may result from contact with electricity network assets, and provide systematic ways to minimise identified risks.

The strategies included in the PESAP are developed using a risk based approach and analysis of historical, industry-related incidents. Targeting at risk groups and developing tailored strategies key to reducing the number of public safety incidents.

Much has been done to raise awareness throughout the community and at risk groups about identified hazards, this includes targeted print media and radio campaigns, electronic distribution of safety information and Electrical Hazard Awareness presentations to industry groups.

The at risk areas identified in the 2014-15 PESAP include road transport (truck wire strikes - high loads), agriculture (agricultural wire strikes), aircraft wire strikes, construction and trades (including local councils and authorities), construction equipment wire strikes (tippers, excavators, bulldozers, etc.), vegetation contractors and the community (shocks and tingles, vehicle pole impacts, vegetation and life support customers).

The details of the Public Injuries are detailed beneath Table 5.1.

Table 5.1 Public Injuries

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Non-Fatal	4	14	25	7	15
Fatal	1	-	1	2	1
Total	5	14	26	9	16

Fatal incident

- An aircraft contacted overhead High Voltage mains, which caused the aircraft to crash and resulted in the pilot suffering fatal injuries.

Non-Fatal incidents

- A property owner felled a bamboo plant across overhead High Voltage mains and attempted to remove it by hand, which resulted in him receiving a minor electric shock.
- A lighting tower was elevated into overhead Low Voltage mains electric shock.
- A property owner received a shock when fencing due to faulty wiring at the nearby transformer where the Low Voltage active came into contact with the earthing system
- A member of the public received an electric shock after coming into contact with a streetlight pole that was supplied by underground Low Voltage mains where the insulation had broken down because of vermin
- A member of the public received an electric shock when a tree branch fell onto High Voltage mains and clashed with overhead Low Voltage mains. The person was working nearby and made contact with energised leaves which resulted in an electric shock
- A person received an electric shock due to damaged overhead High Voltage powerlines that had fallen onto a tree
- A member of the public received an electronic shock when coming into contact with fallen overhead High Voltage mains
- A member of the public received an electric shock at a premise after Essential Energy completed network work
- A member of the public received an electric shock after making contact with a Low Voltage streetlight pole
- A member of the public received electric an shock due to fallen service mains lying on a metal gate
- An trip truck operator received an electronic shock after his truck made contact with High Voltage overhead mains
- Two people received electric shocks via earthing systems after their separate premises and fences became energised due to a damaged overhead Low Voltage service main came into contact with an earthed pole mounted transformer
- A driver received an electric shock when he exited his vehicle after it had ran over a pillar box and come to rest on the pillar and damaged conductors.
- A member of the public received an electric shock while performing repairs on a television aerial stay wire due to a network fault in which the active Low Voltage service mains came into contact with a colour bond roof
- A construction worker received facial and hair burns and was taken to hospital after the jack hammer his was using to remove concrete from a pylon contacted energised underground High Voltage mains. Construction worker received, burns to the face and hair, taken to hospital.

Preventative actions for all incidents have been implemented in accordance with the PESAP. Where applicable, public electrical hazard awareness collateral was provided and offers made to conduct Electrical Hazard Awareness presentations.

5.3 Worker Injuries

Three incidents resulted in injuries to workers over the 2014-15 financial year. Investigations were undertaken to determine the causal factors that contributed to the incidents and preventative actions were implemented as part of Essential Energy's incident and investigation management processes. Table 5.2 (below) provides a summary of worker injuries.

Table 5.2 Worker Injuries

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Workers	6	7	9	5	3
Contractors	-	6	2	1	-
ASPs	-	1	1	-	-

- a worker received an electric shock when a Low Voltage streetlight conductor came into contact with overhead bonded conductors under access permit conditions.
- a worker received an electric shock due to damaged insulation on an underground streetlight supply.
- a worker felt a tingling in his hand while closing a meter box lid due to a faulty neutral connection at the pole. The worker tested the box with a test-a-pen before opening which did not sound or display any warning.

In all three incidents, the workers attended hospital, underwent ECG's and were released from hospital the same day.

5.4 Major Incident Reports

Essential Energy reported one major safety incident (as per Department of Trade and Investment, Resources and Energy reporting guidelines for Significant Electricity Network Incidents). Table 5.3 (below) outlines a summary of this incident.

Table 5.3 Summary of Major Incident Reports

Date	Incident Description	Locality
20/7/2014	An aircraft contacted overhead High Voltage mains which caused the aircraft to crash and resulted in the pilot suffering fatal injuries.	Burrumbuttock

6. Customer Installations

Monitoring of installations is carried out in accordance with regulations and industry codes of practice. In addition to the *Electricity Supply (Safety and Network Management) Regulation 2014*, installations must be consistent with the *Electrical Safety (Electrical Installations) Regulation 1998*, the *Code of Practice for Installation Safety Management*, and the *Code of Practice for Contestable Works Accreditation*.

Essential Energy's Customer Installation Safety Plan (CEOP8004) outlines the approach taken to managing all aspects of customer installation work. The plan defines our approach with respect to the roles of both contractors and Essential Energy employees.

Installation and inspection data is managed within Essential Energy's Web Form Manager which enables the management of Certificate of Compliance for Electrical Work (CCEW) and Notification of Service Work (NOSW) information. The auditing of individual contractors to ensure adherence to CEOP8004 is monitored via a spreadsheet.

6.1 Reports against Customer Installation Safety Plans

Table 6.1 Installation Inspections Trend

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Number of Notifications (CCEW)	54,152	31,085	32,025	29,843	33,884
Number of Inspections	25,706	12,634	11,940	14,857	13,116
Installation Inspection Rate (%)	47	40	37	50	39
Major Safety Defect Rate (%)	2.1	1.6	0.66	0.78	0.68
Safety Breach Notices Issued (%)	4.47	3.93	1.77	1.58	1.75
Number of Warnings Issued	1,148	496	211	235	230
Reports to Fair Trading (No.)	3	6	2	5	3
Number of Audits by Distributor	212	247	223	356	233

6.2 Customer Installation Shock Reports

Table 6.2 Customer Installation Shock Reports Trend

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Shocks on Customer's Premises (Number Reported)	654	666	613	540	562

Table 6.3 Customer Installation Safety- Categories of Shocks Analysed

Category	Number		% of Total
	Fatal	Non-Fatal	
Cause Category Installation Related			
Contact with Consumer's Mains – Faulty Mains	-	3	1
Contact with Consumer's Mains – Human error	-	4	1
Contact with Live Parts at Switchboard – Faulty Switchboard	-	1	-
Contact with Live Parts at Switchboard – Human Error	-	4	1
Faulty Mains Box	-	65	12
Faulty underground Consumer Mains	-	1	-
Faulty underground Consumer Mains Joint	-	7	1
Induced Voltage	-	18	3
Long Low Voltage Run (Customer responsibility)	-	2	-
Poor Earthing	-	6	1
Unsafe Installation Work by Licensed Contractor	-	3	1
Failure of Part of Installation (not water related)	-	13	2
Defective or Unsuitable Appliance	-	17	3
Working on or Interference with Installation	-	-	-
Working on or Interference with Appliance	-	1	-
Water Damage or Ingress	-	12	2
Static Electricity	-	7	1
No Cause Found	-	25	4
Other (Installation Related)	1	62	11
Sub Total	1	251	45
Cause Category Network Related			
Contact with Network Mains - Faulty mains	-	-	-
Contact with Network Mains - Human error	-	-	-
Contact with overhead Service Mains - Faulty mains	-	1	-
Contact with overhead Service Mains - Human error	-	-	-
Faulty overhead Mains Joint	-	52	9
Faulty overhead Service Joint	-	73	13
Faulty overhead Network Splice	-	7	1
Faulty overhead Open Service	-	4	1
Faulty overhead Twisted Service	-	18	3
Faulty underground Distribution Mains Joint	-	7	1
Faulty underground Service	-	3	1
Faulty underground Service Joint	-	22	4
Faulty underground Mains	-	-	-
Long Low Voltage Run (Network responsibility)	-	13	2
Low Voltage Leakage (salt/dust)	-	7	1
High Voltage Leakage	-	1	-
Nuisance Tingles <10 volts	-	52	9
Incorrect Polarity	-	1	-
Other (Network Related)	-	21	4
Sub total	-	282	50

Other Cause Categories			
Lightning/Storm	-	21	4
N/A	-	2	-
Undefined (under investigation)	-	5	1
Subtotal	-	28	5
TOTAL			
	1	561	100
Total per 1,000 customers			
		0.703	

The overall total of 562 reported shocks for the 2014-15 financial year was a slight increase of 4 per cent when compared to the 2013-14 total of 540. This reverses the decreasing trend over the past five years, however is still lower than the 5 year average of 607 incidents per year.

Customer Installation related shocks slightly reduced by 4 per cent, while Network Related Shocks increased by 10 per cent. The largest increase in this category was Faulty Overhead Service Joints which accounted for 13 per cent of the total jobs reported. Within this category, Line Taps accounted for 41 per cent of the connection failures, while House Service Connectors attributed a further 16 per cent of Failed Service Joint Connectors.

Faulty Mains Boxes were the second highest cause overall and the highest Customer Installation issue with a total of 65, or 12 per cent of the overall total. The Other Cause Category, which includes Lightning and Storm, increased by 5 per cent overall.

7. Contestable Works Scheme

Essential Energy monitors Level 2 works in our Web Form Manager (WFM) system, Level 1 and Level 3 information is collected regionally by the Quality Control Coordinators in the Contestable Works Database, and internal inspection information is collected in CRM Redback.

The 2014-15 financial year has seen the following trends:

- > **Level 1** – internal project notifications and inspection rates remain steady with the number of initially non-conforming projects more than half that of the previous year
- > **Level 2** – notifications have increased from the previous year due to the volume of work from the Bulk Meter Replacement program. The decrease in inspections is a result of prioritisation of work tasks and resource levels
- > **Level 3** – design submissions from Level 3 Accredited Service Providers (ASP) have increased slightly due to increases in economic activity.

Table 7.1 Contestable Works Trend

	Previous Years								Current Year	
	2010/11		2011/12		2012/13		2013/14		2014/15	
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Int	Ext
Network Work (Level 1)										
Project Notifications	153	1,830	54	1,266	26	1,587	14	1,690	15	1,515
Initial Inspections of Completed Projects	391	1,026	4	1,654	6	1,303	-	1,098	-	1,138
Of Projects Inspected, Number Initially Nonconforming	87	228	-	294	4	319	-	353	-	166
Customer Connection Work (Level 2)										
Notifications (NOSW)	2,653	49,163	723	32,193	573	34,376	408	33,915	327	44,305
Inspections by Network Operator	1,891	31,554	359	16,783	358	13,945	182	21,903	77	15,460
Major Defects	2	379	-	477	-	123	2	275	-	242
Network Design Work (Level 3)										
Designs Certified	158	1,825	46	1,410	26	1,440	14	1,429	15	1,650

Note

Int = contestable work done by the distributor's ASP entity.

Ext = is work done by independent ASPs.

8. Bushfire Risk Management

Table 8.1 Bushfire Risk Management

Year	Previous Years				Current Year
	2010/11	2011/12	2012/13	2013/14	2014/15
Assets in bushfire prone areas checked by pre-summer inspection %	100	100	100	100	100
Private lines in bushfire prone areas checked by pre-summer inspection %	100 ⁵	100	100	100	100
Fire ignitions by network assets (Number) ⁶	111	183 ⁷	338 ⁶	351 ⁶	253
Complaints from the public regarding preparation for the bushfire season (Number)	37	22	18	19	39 ⁸

Essential Energy's Bushfire Risk Management Plan (CEOP8022) was reviewed and updated during the 2014-15 reporting period. This is part of the standard annual review cycle adopted for this plan.

Inspections

Inspections of the network take several forms including ground line inspections of assets, aerial inspections of overhead lines, and vegetation specific surveys.

Essential Energy has increased the inspections undertaken with the inclusion of Aerial Patrol and Analysis using High Definition photography and Radio Imagery (LiDAR) which has led to improved risk visibility and mitigation management.

Results of the 2014-15 Asset Inspection Program are shown in Table 8.2 below.

Table 8.2 Asset Inspection Program

Poles Inspected	Target Pole Population	Inspection Completion Rate %	Poles for replacement or reinforcement	Condemn Rate %
343,671	347,392	98.93	7,544	2.2

⁵ This reflects completion of the scheduled inspection of assets based on the routine 4 year inspection cycle.

⁶ Fire ignitions from network assets are those fires where the network was the ignition source regardless of causes. This includes network ignitions caused by 3rd parties e.g. machinery contacting lines and excludes fire damage to assets by non-network ignition sources e.g. bushfires, grassfires, uncontrolled burn-offs.

⁷ Corrections have been made to previous years after data validation.

⁸ The increased number of complaints is due to extra aerial surveys of the network for capture of HD photographs of all pole structures and Lidar survey of lines.

Annual Bushfire Patrol

Urgent risk defects highlighted through the annual pre-summer bushfire patrols for the 2015 calendar year are shown in table 8.3 below.

Table 8.3 Annual Patrol Defects Identified

Annual Bushfire Patrol Defects Identified in Rural Areas			
Defect Category	Assets	Vegetation	Total Urgent Risk Defects
Urgent risk task identified as at 21/09/2015	1,694	637	2,331
Urgent Risk tasks completed as at 21/09/2015	1,694	618	2,312

It is expected that all urgent risk defects identified by annual bushfire patrols will be completed before the Rural Fire Service (RFS) fire danger declaration period. These are given high priority in the work programs and typically actioned within a short time period (1 month). Less urgent defects are prioritised based on their risk and locality and scheduled for rectification.

Audit of Activities

Essential Energy carries out a number of audits on key activities associated with bushfire mitigation. These include activities relating to;

- > Ground-line pole and powerline inspections
- > Vegetation inspections
- > Annual bushfire patrols in rural areas.

Auditing allows us to ensure that activities are carried out in accordance with Essential Energy's policies and procedures. During the 2014-15 financial year, an internal audit of the Bushfire Risk Management Plan was undertaken and all subsequent improvement opportunities were addressed.

Community Awareness

Essential Energy has developed bushfire risk and safety information materials for the public which are available on our website and through various other channels each year. The Vegetation Management Plan and Bushfire Risk Management Plans are available to the public for comment.

Bushfire related electrical safety topics include:

- > bushfire and storm safety tips
- > dangers of trees near powerlines
- > electrical safety for emergency services personnel
- > advice on safety when burning off near electrical network assets
- > safe operation of farm equipment such as grain augers, harvesters and irrigation systems, and advice on electrical safety for heavy plant operators.

Essential Energy remains an active member of the local Bushfire Management Committees with employee representatives on 45 committees across the state.

Bushfire Mitigation Initiatives

Essential Energy has implemented, and is currently implementing, various bushfire mitigation initiatives including the following.

> Private Lines Policy

Following the introduction of the *NSW Bushfire Hazard Reduction Bill*, Essential Energy has started introducing improvements to the management of fire risk associated with private lines. This provides distributors with powers under the *Electricity Supply Act* to enter properties and rectify defects on customer overhead installations that represent a fire risk, at the owner's expense.

> Network Operation Initiatives

A review of vegetation management standards and vegetation contracting models was undertaken in 2014-15 which, when finalised, will result in an improved risk management position. In 2015 aerial radar imagery (LiDAR) was deployed in the Northern region providing improved levels of risk management through more accurate measurement of vegetation clearances to powerlines.

> Research & Technology Opportunities

- There is a continuing use and review of aerial inspection methods such as high definition photography and radar imagery technology (through LiDAR) to better understand the condition of pole top components and vegetation growth and clearances near powerlines
- The Failure Mode Effects and Criticality Analysis (FMECA) project uses a rigorous analytical process to assess asset failures and determine optimal maintenance and inspection practices
- The adoption of fire risk modelling using science based tools such as "Phoenix Rapid Fire". During 2014-15, Essential Energy initiated stage two of the project and is continuing toward full implementation. Implementation has been conducted in collaboration with other state agencies such as the NSW RFS, Ausgrid, Endeavour Energy and the University of Melbourne. Such collaboration provides an appreciation of the consequence of fires associated with infrastructure location
- Essential Energy is conducting ongoing research into alternatives to Expulsion Dropout Fuses for high fire risk areas, including new technologies such as sealed fuse units and fuse saver devices
- Essential Energy is reviewing some of its very long spans in high fire risk areas to ascertain if these spans pose an increased risk of fire start, and what actions can be taken to mitigate any identified risk. This is an ongoing project.

> Monitoring

Essential Energy conducts aerial inspections to identify storm related damage or necessary repairs before the start of the fire season each year.

9. Public Electrical Safety Awareness

The number of reportable Public Safety incidents decreased from 261 in 2013-14 to 221 during the 2014-15 reporting period. This decrease is due a decline in the number of incidents for the following categories: trucks and excavators, construction and demolition equipment, tractors and implements, and aircraft. Figure 1 below illustrates the historical reportable public safety incidents including the 2014-15 reporting period.

Figure 1 Reportable Public Safety Incidents



Figure 2 two represents the objects involved in powerline strikes historically from 2010/11 to 2014/15.

Figure 2 Objects involved in Public Safety Incidents (2010 – 2015)

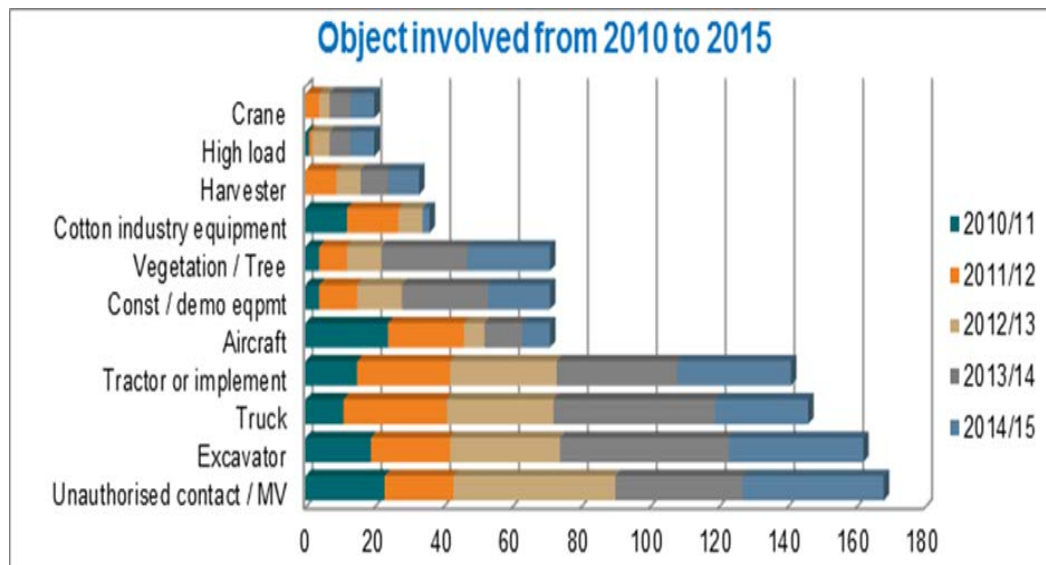
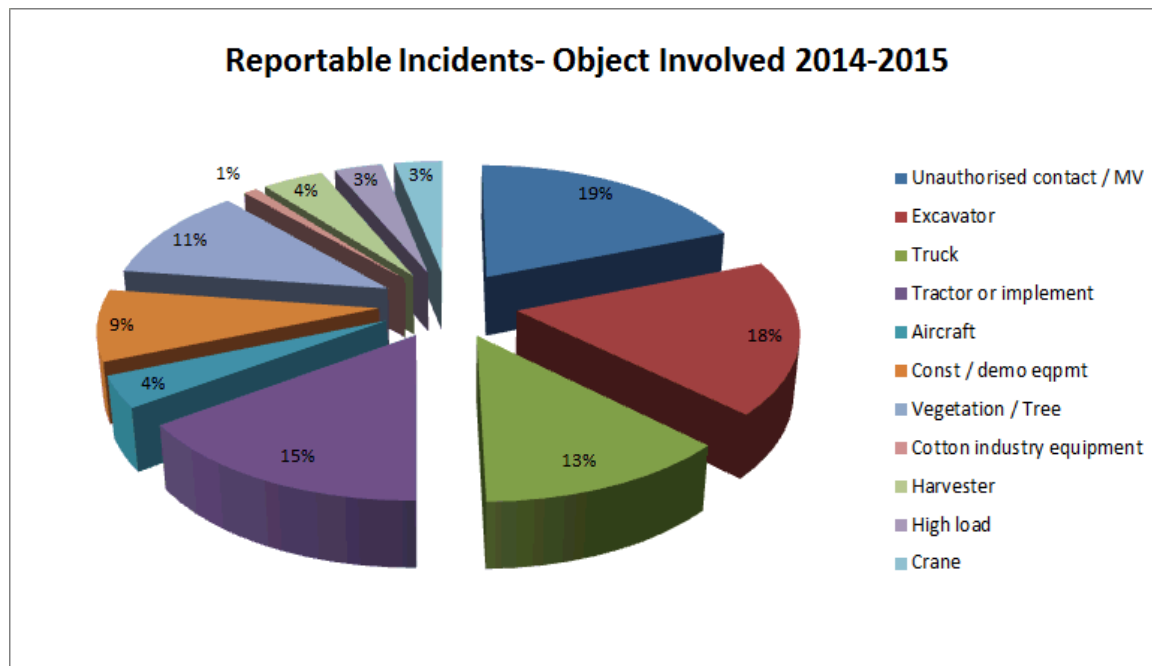


Figure three (below) depicts the reportable public safety incidents by 'object involved' in powerline strikes during the 2014-15 reporting period. Construction related strikes on our network (trucks, excavators and general construction equipment) will continue to be a focus for our 2015-16 strategy.

Excluded from the diagram below, are incidents such as people receiving electric shocks or injury from fallen or faulty electrical distribution infrastructure and apparatus, infrastructure damage caused by stubble burn off, and emergency service workers encroaching safe approach distances to fallen powerlines.

Figure 3 Reportable Public safety Incidents by Object Involved in Contact - 2014/15



Public Safety Initiatives:

Essential Energy’s Network Risk Management Plan has identified a number of at risk / public safety target groups for the 2014-15 financial year. These include; road transport (truck wire strikes - high loads), agriculture (agricultural wire strikes), aircraft wire strikes, construction and trades (including local councils and authorities), construction equipment wire strikes (tippers, excavators, bulldozers, etc.), vegetation contractors and the community (shocks and tingles, vehicle pole impacts, vegetation and life support customers).

This section includes details on each of the programs established for the individual at risk groups.

Transport Trucks Wire Strikes

Program Objectives To communicate Electrical Hazard Awareness (EHA) safety information and educate workers of the clearances required when working near electricity infrastructure in order to reduce the risks, outline emergency response actions and define reporting obligations.

- Target Safety Communications**
- Social media updates (Facebook and Twitter)
 - Website information – access to fact sheets and electrical safety awareness information
 - High Loads DVD – a shared initiative with Ausgrid and Endeavour Energy
 - Provision of fact sheets and brochures.

Agricultural Wire Strikes

Program Objectives	To communicate Electrical Hazard Awareness (EHA) safety information to the operators of agricultural businesses to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing risk, outline emergency response actions and define reporting obligations.
Target Safety Communications	<ul style="list-style-type: none">• Electrical safety awareness video message for the agricultural sector (on our website and YouTube)• Industry Safety DVD – including rural chapter• Grain harvest video message (on our website and YouTube)• Radio advertising – safety messages during harvest times• Media releases on topics including cotton harvest safety, grain harvest safety and sugar cane harvest safety, high machinery safety and general workplace safety messaging• Social media updates (Facebook and Twitter)• Provision of fact sheets and brochures• Direct mail to all NSW rural landholders with information pack including safety letter, stickers and news article with electrical safety key messages.

Aircraft Wire Strikes

Program Objectives	To communicate Electrical Hazard Awareness (EHA) safety information to the operators of aircraft to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing risk, outline emergency response actions and define reporting obligations.
Target Safety Communications	<ul style="list-style-type: none">• Aviation safety press advertisement (Recreational Aviation – Australia desk calendar)• 30 second aerial safety radio advertisement• Aviation safety fact sheet.

Construction Machinery Wire Strikes

Program Objectives	To communicate Electrical Hazard Awareness (EHA) safety information to the construction industry to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing risk, outline emergency response actions and define reporting obligations.
Target Safety Communications	<ul style="list-style-type: none">• Media releases on topics including electricity and scaffolding, electricity and your worksite, working near overhead powerlines, are you being safe? and high loads• Radio safety advertising• Provision of DVD – Industry Safety (Construction chapter)

- Social media updates (Facebook and Twitter)
- Website information – fact sheets and electrical safety awareness information
- Provision of EHA poster and safety stickers (six stickers).

Community

Program Objectives

- Shocks and Tingles - to communicate Electrical Hazard Awareness (EHA) safety information to the public to ensure they are aware of the electrical hazards associated with domestic installations
- Vehicle Pole Impact - to ensure that new construction work aligns with current design standards for pole placement and set back zones
- Vegetation Wire Strike Public Involvement - to communicate electrical Hazard Awareness (EHA) safety information to the public to ensure they are aware of the hazards associated with vegetation works around the electrical network
- Life Support Customers - to communicate awareness that interruptions to electricity supply may occur for a number of reasons including storm activity.

The Public Safety awareness strategies aligned with Agribusiness has continued to see positive results with a general reduction of incidents within this sector.

Targeted campaigns included:

- Grain Harvest October 2014: Advertising of key messages across press, radio, and farm guide online, electronic direct mail to 2,000 recipients as well as targeted social media posts (across the grain belt).
- Storm season – reactive and proactive campaign
 - The 2014-15 storm season, was one of the worst for a number of years with the declaration of five major event days. Social media was used to remind customers to keep at least eight metres away from fallen powerlines and provide updates on unplanned power outages
 - Following the outages, press and radio advertisements were used to thank communities who experienced long outages as a result of the extensive network damage
 - The proactive campaign ran throughout February across the network area with press, radio, geo-targeted digital and in app advertising, social media and local media release.
- Cotton Harvest
 - Advertising of key messages through press, radio, social media and digital geo-targeted advertising.
- L.A.N.D. Safety Message

In September 2014, Essential Energy launched a new agribusiness campaign featuring the L.A.N.D safety message - building on the success of past campaigns such as 'Look Up and Live'. Around 130,000 landowners received an information pack explaining the new L.A.N.D message and providing them with safety stickers to place up at their property. Radio advertising and regional media releases were utilised to support the campaign and reinforce the key messages.

- Look up and live
- Always be aware
- Need to know

- Don't disembark.

Essential Energy included an article from The Land newspaper where a farmer's life was potentially saved by knowing what to do when machinery comes into contact with powerlines.

Grain Harvest Campaign Analysis

Essential Energy identified a need to send important public safety information directly to landowners - a high risk group leading into the busy grain harvest season. A direct mail campaign was implemented and supported by radio, online, electronic direct mail, media releases and social media.. Project development began in May 2014 and was completed on 4 December 2014.

The objective of the campaign was to communicate important safety messages and raise awareness of the availability of overhead electrical network maps.

The campaign increased visits to the overhead electrical networks maps page on Essential Energy's website by 274 per cent, increased overhead electrical network map requests by 739 per cent, increased visits to the agribusiness safety page by 720 per cent, and 109,600 landowners now have important safety information and safety stickers in their home.

The below outlines further statistics for the period 18 September to 25 November 2014:

- 1,778 visits to overhead maps web page (previous 6 weeks = 476 visits) which is a 274 per cent increase
- 490 visits to overhead electrical network map online request form (online form was developed specifically for the campaign. Previously a printed pdf was the request mechanism)
- 193 actual form submissions requesting maps compared to 23 request from the previous two months (739 per cent increase)
- dates of noticeable spikes in traffic to the overhead electrical network page - 21 Oct (107 visits), 27 Oct (95 visits) and 29 Oct (121 visits) and visits to the agribusiness pages spiked on 30 October (330 visits), the day the electronic direct mail was released
- There were also 1,337 visits to the agribusiness page (compared to the previous two months of 163 visits which is a 720 per cent increase)
- 2,139,496 impressions (ads) were served with a click-through-rate of 0.11 per cent (over the 0.09 per cent benchmark)
- a total of 1,778 people were directed to the overhead electrical network maps page, and of those 583 clicked on the link to the map order form during the campaign timings. A further 1,034 clicked on the link to the map order form after the display campaign had finished
- 74 per cent of all conversions were achieved on Desktop
- the highest conversions were achieved within the entertainment audience accounting for 19 per cent of all conversions indicating that consumers are more likely to download the map during leisure time
- 72 per cent of all conversions were the result of retargeting activity off the website
- across NSW, the highest conversions came from the eastern parts of the state, with Lismore downloading the highest volume of maps at 7.31 per cent.

Learnings

- A 'Data Manager' for the project should be identified and tasked with supplying Corporate Affairs with the final data for use in the campaign.
- To generate more online conversions within a given time period, retargeting pixels should be placed on the website as early as possible to allow enough time to gather data, to in order to further target specific audiences and locations as well as increase conversions.
- The combination of Desktop, Mobile and Facebook activity worked well for this campaign and it is recommended to continue the mix for future campaigns.
- Use customer mailing addresses instead of premises address to reduce returned mail and complaints.

10. Powerline Crossings of Navigable Waterways

Existing crossing numbers

Essential Energy currently has a total of 1,343 crossings that were identified for risk assessments in consultation with NSW Transport, Roads and Maritime Services.

These sites are part of an ongoing inspection and risk assessment program. Table 10.1 below provides the number of sites and works carried out in the 2014-15 reporting period.

Table 10.1 Powerline Crossings of Navigable Waterways Summary

	Existing (Number)	New (Number)	Incidents (Number)	Crossings Reconstructed (Number)	Crossings Identified as Requiring Conversion to Submarine Crossings (Number)
Overhead Crossings	1,283	-	-	21	-
Submarine Crossings	60	-	-	-	-

Crossings Incidents

Essential Energy had no reportable incidents for the 2014-15 reporting period

Crossings Reconstructed

Fifteen overhead crossings were reconstructed and six overhead crossings were removed in 2014-15.

Activities to comply with the NSW Transport, Roads and Maritime Services (previously NSW Maritime)

Crossings of Navigable Waters: Electricity Industry Code (the Code)

1. Essential Energy Navigable Waterways Risk Assessment Program

Essential Energy's crossing inspection and risk assessment program was completed during the year and identified 149 crossings where the risk level is not as low as reasonably practicable.

These crossings have been issued to the network planning department for risk reduction activity, and works are prioritised according to their relative risk.

2. Signage Replacement Program

A staged signage program is scheduled to start in the second quarter of 2015-16. All signs will be progressively upgraded in accordance with *AS6947 Crossings of waterways by electricity infrastructure*.

A total of 178 boat ramps were identified for the installation of crossing awareness signs, with 82 of these sites having crossing awareness signs installed during 2014-15.

11. Deputy Chief Executive Officer Declaration

Essential Energy

ELECTRICITY NETWORK PERFORMANCE REPORT 2014/15

Declaration by Deputy Chief Executive Officer

In submitting this Electricity Network Performance Report (the Report), I declare that the Report:

1. Complies with reporting requirements prescribed under the *Electricity Supply (Safety and Network Management) Regulation 2014*, and the "Distribution Network Service Provider Annual Report Outline" (the Outline), as provided by DTIRIS.
2. Has been checked in accordance with recognised quality procedures; and in my opinion, there are reasonable grounds to believe the data, and notes in respect of data contained in this Report, give a true and fair view of the organisation's performance in respect of the matters contained in the Outline.



Gary Humphreys

Deputy Chief Executive Officer

Date: 30 November 2015