Service Standard Performance Report

Year ending 30 June 2014

westernpower

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Document information

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1 Executive Summary

Western Power publishes the Service Standard Performance Report annually to detail its performance against the 17 Service Standard Benchmarks (**SSB**) defined in Western Power's current approved Access Arrangement (AA3).

This information is published in accordance with the *Electricity Networks Access Code 2004* (**Access Code**) and the requirements of Western Power's electricity transmission and distribution licences.

This report covers the year ending 30 June 2014.

Introduction

Western Power's purpose is to connect people with electricity safely, reliably and affordably.

As a regulated business, it is required to comply with a broad range of obligations covering many facets of its activity. Western Power recognises that compliance programs are critical to providing stakeholders with a transparent view of its performance in key areas.

This report contributes to this transparency by presenting information on Western Power's reliability performance against levels agreed for its third Access Arrangement (AA3) ending 30 June 2017.

Reliability of supply

Reliability of supply reflects the service Western Power provides to its customers by measuring the performance of its transmission and distribution networks.

As part of the AA3 Further Final Determination, Western Power is required to:

- Maintain service at levels consistent with historical averages of the three years to 30 June 2012.
- Improve service levels only where this is of value to the customer and can be done efficiently.

The minimum levels of service required of Western Power are defined by 17 SSBs covering distribution and transmission reliability and security of supply, call centre and streetlight performance.

Western Power's obligations under its transmission and distribution licences require it to:

- Meet the service levels defined by the SSBs.
- Publish the Service Standard Performance Report (**Report**) annually on SSB performance.

The impact of investment on service level performance

Western Power's AA3 network investment program has a number of fundamental drivers, such as safety, growth, security of supply, asset condition and reliability.

Reliability service standards performance is influenced by all of these investment drivers, particularly those activities associated with network asset maintenance and replacement.

It is important to note that there can be a lag of up to 12 months before service levels begin to reflect the benefits of these works. This is particularly true for long feeders, due to the number of assets involved.

Performance summary

- Average service levels were maintained in many areas of the network, due largely to increased investment in the maintenance and replacement of overhead assets, particularly wood poles.
- Performance surpassed required levels in 16 of the 17 defined SSBs. The benchmark not met was "Rural Long System Average Interruption Frequency Index (SAIFI)", which applies to the distribution network. (See “Pole top fire activity” and “Environmental factors and weather events” below for additional information on the reasons for not meeting the benchmark). As a result of the Rural Long SAIFI being below the required performance level, Western Power was non-compliant with clause 11.1 of the Access Code.
- Performance exceeded target for 9 of the 14 SSBs subject to the Service Standard Adjustment Mechanism.
- Rural Short reliability and call centre performance improved.
- Streetlight response and repair times within metropolitan and rural areas improved partly due to proactive fault management and bundling with other priority works programs.

Pole top fire activity

There was a significant increase in pole top fire activity compared to the previous four years, resulting in more interruptions to supply and affecting reliability in rural areas and was a major factor for failing to meet Rural Long SAIFI SSB.

Environmental factors and weather events

Environmental factors can influence network reliability levels significantly in rural areas.

Approximately 80% of Western Power’s licence area is supplied by long rural feeders. These are frequently subject to varying environmental conditions and impacts that are predominantly beyond Western Power’s control. Although the service standard benchmarks recognise exclusions of major events, many other weather-related events affect the performance of the network, particularly in more remote regions of the Western Power Network.

For example, localised weather conditions (compared to the previous four years) resulted in more interruptions to supply and were a major factor for failing to meet the Rural Long SAIFI SSB.

Overhead asset failures

The frequency of overhead asset and equipment failures remained consistent with levels reported over the previous four years.

2 Background

In accordance with its electricity transmission licence (ELT2)[1] and electricity distribution licence (ELD1)[2] and the Access Code[3], Section 11.1, Western Power[4] must provide *reference services* at a service standard, at least equivalent to the service standard benchmarks set out in the access arrangement.

The Access Code, Section 11.2, requires the Economic Regulation Authority (**Authority**)[5] to publish Western Power's actual service standards performance against the service standard benchmarks.

Accordingly, with respect to the Access Code, Section 11.4 a request[6] has been received from the Authority for Western Power to provide, by 23 September 2014, Western Power's Report, in the format prescribed within the request.

The purpose of the Report is to provide relevant information on the actual service standards performance against the SSBs contained in Western Power's third Access Arrangement (AA3)[7], for the 12 month reporting period, 1 July 2013 to 30 June 2014 (2013/14 period).

This Report is the second year of reporting service standards performance for AA3.

The Western Power Network is defined by the Access Code as the portion of the South West Interconnected Network (**SWIN**) that is owned by the Electricity Network Corporation (Western Power). For the purposes of this report and in referencing the Access Code, EDL1, ETL2 and AA3, the terms distribution network and transmission network are used throughout this report.

The Western Power Network covers a geographic area from Kalbarri down to Albany, and from Perth through to Kalgoorlie (Figure 1) of 255,064 square kilometres, much of which is isolated and unpopulated. It has a diverse asset base which includes more than 800,000 poles and almost 100,000 circuit kilometres of power lines.

The distribution network consists of over 800 feeders, connected to the transmission network at 156 terminal and zone substations, with approximately 66,000 distribution substations providing an electricity supply to over one million customers and over 245,000 streetlights.

[1] Electricity Industry Act 2004, Electricity Transmission Licence, Electricity Networks Corporation (t/a Western Power) ELT2, Version 6, 19 September 2012

[2] Electricity Industry Act 2004, Electricity Distribution Licence, Electricity Networks Corporation (t/a Western Power) ELD1, Version 7, 1 January 2012

[3] Electricity Industry Act 2004, Electricity Networks Access Code 2004 published by Western Australian Government

[4] Electricity Networks Corporation (t/a Western Power) ABN 18540492861

[5] Economic Regulation Authority established by the Economic Regulation Authority Act 2003

[6] Letter dated 14 July 2014 (Authority Reference D1125593) with attached Service Standard Performance Report Template

[7] Western Power's current approved Access Arrangement (AA3) for 1 July 2013 to 30 June 2017

Figure 1: Western Power Network licence area

3 How to read this report

In accordance with the Authority's Service Standard Performance Report Template:

Section 4 outlines and describes the *reference services* provided by Western Power relevant to the Access Code, Section 11.1, within the AA3 period;

Section 5 outlines and describes the service standard benchmarks relevant for the AA3 period;

Section 6 outlines and describes the actual performance against the AA3 service standard benchmarks for the second year of AA3, namely 1 July 2013 to 30 June 2014 (2013/14 period);

Section 7 outlines and describes the recognised exclusions defined for the AA3 service standard benchmarks;

Section 8 outlines and describes the recognised events known as Momentary Interruptions, which are excluded from the AA3 service standard benchmarks;

Section 9 outlines and describes the Service Standards Adjustment Mechanism (SSAM) relevant for AA3;

Appendix A provides charts for each of the AA3 service standard benchmarks and targets with the trend of historical performance for the preceding five year period;

Appendix B provides charts over the past 5 years up to June 2014, by key causes of interruptions which contribute to those measures that did not meet the SSBs for the 2013/14 period.

Appendix C provides charts show the trends over the past 5 years up to June 2014, by key causes of interruptions (overhead equipment failure, unknown fault causes, lightning and fauna) which contribute to the distribution performance of the Western Power Network.

4 Reference Services

Under AA3 and in accordance with the Access Code Sections 5.1 and 11.1, Western Power provides reference services for entry, exit and bi-directional services.

There are:

- 11 *reference services* at *network exit points* for users (exit services);
- 2 *reference services* at *network entry points* for users (entry services); and
- 4 bi-directional *reference services* at *network entry/exit points (bi-directional services).*

4.1 Reference Services for network entry points

An *entry service* is a *covered service* provided by Western Power at an *entry point* under which the *user* may transfer electricity into the network at the *entry point*.

An *entry point* is a point on a *covered network* identified as such in an *access contract* at which, subject to the *access contract*, electricity is more likely to be transferred into the network than transferred out of the network.

The following table lists the *entry point reference services*.

Table 1: Network *entry point reference services*

Reference Service		*Reference Service* Description
B1	Distribution *Entry Service*	An *entry service* combined with a connection service and a standard metering service at an *entry point* on the distribution system.
B2	Transmission *Entry Service*	An *entry service* combined with a connection service and a standard metering service at an *entry point* on the transmission system.

4.2 Reference Services for network exit points

An *exit service* is a *covered service* provided by Western Power at an *exit point* under which the *user* may transfer electricity out of the network at the *exit point*.

An *exit point* is a point on a *covered network* identified as such in an *access contract* at which, subject to the *access contract*, electricity is more likely to be transferred out of the network than transferred into the network.

The following table lists the *exit point reference services*.

Table 2: Network *exit point reference services*

Reference Service		*Reference Service* Description
A1	Anytime Energy (Residential) *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A2	Anytime Energy (Business) *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A3	Time of Use Energy (Residential) *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A4	Time of Use Energy (Business) *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A5	High Voltage Metered Demand *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the high voltage (6.6 kV or higher) distribution system.
A6	Low Voltage Metered Demand *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A7	High Voltage Contract Maximum Demand *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the high voltage (6.6 kV or higher) distribution system
A8	Low Voltage Contract Maximum Demand *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the low voltage (415 volts or less) distribution system.
A9	Street lighting *Exit Service*	An *exit service* combined with a connection service at an *exit point* on the low voltage (415 volts or less) distribution system for the purpose of public street lighting, plus the service of the provision and maintenance of the streetlight.
A10	Un-Metered Supplies *Exit Service*	An *exit service* combined with a connection service at an *exit point* on the low voltage (415 volts or less) distribution system.
A11	Transmission *Exit Service*	An *exit service* combined with a connection service and a standard metering service at an *exit point* on the transmission system.

4.3 Reference services for bi-directional network entry and exit points

A bi-directional service is a *covered service* provided by Western Power at a bidirectional point under which the *user* may transfer electricity into and out of the network.

A bi-directional point is a point on a *covered network* identified as such in an *access contract* at which, subject to the *access contract*, electricity is both transferred into the network and transferred out of the network.

The following table lists the bi-directional point *reference services*.

Table 1: Network bi-directional *reference services*

Reference Service		*Reference Service* Description
C1	Anytime energy (residential) bi-directional service	A bi-directional service combined with a connection service and a standard meter service at a bi-directional point on the low voltage (415 volts or less) distribution system.
C2	Anytime energy (business) bi-directional service	A bi-directional service combined with a connection service and a standard meter service at a bi-directional point on the low voltage (415 volts or less) distribution system.
C3	Anytime energy (business) bi-directional service	A bi-directional service combined with a connection service and a standard meter service at a bi-directional point on the low voltage (415 volts or less) distribution system.
C4	Time of use (business) bi-directional service	A bi-directional service combined with a connection service and a standard meter service at a bi-directional point on the low voltage (415 volts or less) distribution system.

5 Service standard benchmarks

Under AA3 and in accordance with the Access Code Section 11.2, there are 17 *service standard benchmarks* which Western Power is required to monitor and meet. These measures, similar to those used throughout Australia, are set at minimum service levels, representing the service that will be achieved most of the time.

The *service standard benchmarks* (SSBs) and *service standard targets* (SSTs) were agreed with the Authority and set in November 2012, as part of the AA3 Final Determination, after the commencement of the AA3 period.

The Service Standards Adjustment Mechanism (SSAM) financial incentive scheme considers 14 of the 17 SSBs and provides rewards or penalties for performance against the SSTs.

The SSBs and SSTs were set on the basis of maintaining the levels of service performance throughout the AA3 period consistent with average service performance experienced by customers over the past 5 years (except for SAIDI and SAIFI measures, which were based on 3 years).

5.1 Distribution network service standards

For the *reference services* A1 to A10, B1 and C1 to C4, the *service standard benchmarks* are expressed in terms of:

- System Average Interruption Duration Index (SAIDI);
- System Average Interruption Frequency Index (SAIFI); and
- Call centre performance: – percentage of fault calls responded to in 30 seconds or less (after exclusions).

The SAIDI and SAIFI metrics are defined in accordance with the National Regulatory Reporting Requirements[8] (NRRR) and can be described as:

- SAIDI –Total number of minutes, on average, that a customer on a distribution network is without electricity in a year; and
- SAIFI – The average number of times a customer's electricity supply is interrupted per year

5.1.1 SAIDI

SAIDI, measured over a 12 month period, by NRRR definition is the sum of the duration of each customer interruption (customer minutes interrupted) - lasting more than one minute attributable solely to the distribution network (after exclusions), divided by the average of the total number of connected customers at the beginning and end of the reporting period.

The unit of measure is minutes per year.

The lower the minutes per year, the higher the level of service performance.

[8] National Regulatory Reporting for electricity distribution and retail businesses, Utility Regulators Forum discussion paper, March 2002 c Commonwealth of Australia

The following exclusions apply to SAIDI:

- a Major Event Day (MED) in accordance with IEEE1366-2003 definitions;
- interruptions shown to be caused by a fault or other event on the transmission network or a third party system (for instance, without limitation interruptions caused by an intertrip signal, generator unavailability or a customer installation);
- planned interruptions; and
- force majeure events.

The SSBs and SSTs expressed in terms of SAIDI for each year of the AA3 period are shown in Table 2.

Table 2: SAIDI SSBs and SSTs for each year ending 30 June

SAIDI	Minutes per year	
	SSB	SST
CBD	39.9	20.3
Urban	183.0	136.6
Rural Short	227.8	207.8
Rural Long	724.8	582.2

5.1.2 SAIFI

SAIFI, measured over a 12 month period, by NRRR definition is the total number of customer interruptions, lasting more than one minute, attributable solely to the distribution network (after exclusions), divided by the average of the total number of connected customers at the beginning and end of the reporting period.

The unit of measure is interruptions per year.

The lower the number of interruptions per year, the higher the level of service performance.

The exclusions for SAIDI discussed above, also apply to SAIFI.

The SSBs and SSTs expressed in terms of SAIFI for each year of the AA3 period are shown in Table 3.

Table 3: SAIFI SSBs and SSTs for each year ending 30 June

SAIFI	Interruptions per year	
	SSB	SST
CBD	0.26	0.14
Urban	2.12	1.36
Rural Short	2.61	2.27
Rural Long	4.51	4.06

5.1.3 Distribution network feeder classifications

The feeder classification, consistent with the NRRR, applied to Western Power's distribution network and used to report service standards performance in accordance with AA3 include: CBD; Urban; Rural Short; and Rural Long.

Definitions are provided in Table 4.

Table 4: Feeder classifications

Feeder Category	Description
CBD	A feeder supplying predominantly commercial, high-rise buildings, supplied by a predominantly underground distribution network containing significant interconnection and redundancy when compared to urban areas
Urban	A feeder, which is not a CBD feeder, with actual maximum demand over the reporting period per total feeder route length greater than 0.3 MVA/km.
Rural Short	A feeder which is not a CBD or urban feeder with a total feeder route length less than 200 km
Rural Long	A feeder which is not a CBD or urban feeder with a total feeder route length greater than 200 km

5.1.4 Call centre performance

Call centre performance, measured over a 12 month period, is the number of fault calls responded to in 30 seconds or less (after exclusions), divided by the total number of fault calls.

The unit of measure is percentage of calls per year.

The higher the percentage of calls per year, the higher the level of service performance.

The following exclusions apply to call centre performance:

- calls abandoned by a caller in 4 seconds or less of their postcode being automatically determined or when a valid postcode is entered by the caller;
- all telephone calls received on a MED which is excluded from SAIDI and SAIFI; and
- a fact or circumstance beyond the control of Western Power affecting the ability to receive calls to the extent that Western Power could not contract on reasonable terms to provide for the continuity of service.

The SSB and SST expressed in terms of call centre performance for each year of the AA3 period are shown in Table 5.

Table 5: Call centre performance SSB and SST for each year ending 30 June

Call centre performance	Percentage of calls per year	
	SSB	SST
	77.5%	87.6%

5.2 Transmission network service standards

In respect of the *reference services* A11 and B2 available to users directly connected to the transmission network, the service standard benchmarks are described below.

5.2.1 Circuit Availability

Circuit Availability is the availability of the transmission network and is measured by the actual number of hours the transmission network circuits are available, divided by the total possible hours available (after exclusions).

The unit of measure is percentage of hours per year.

The higher the percentage of hours per year, the higher the level of service performance.

The following exclusions apply to circuit availability:

- interruptions on non-transmission primary equipment (primary equipment operating at voltages less than 66 kV, including zone substation power transformers);
- unregulated transmission network assets;
- supply interruptions shown to be caused by a fault or other event on a '3rd party system' e.g. inter-trip signal, generator outage, customer installation;
- force majeure events; and
- duration of planned interruptions for major construction work, including periods where availability is temporarily restored, is to be capped at 14 days in calculating transmission line availability.

The SSBs and SSTs expressed in terms of Circuit Availability for each year of the AA3 period are shown in Table 6.

Table 6: Circuit Availability SSB and SST for each year ending 30 June

Circuit Availability	Percentage of hours per year	
	SSB	SST
	97.7%	98.1%

5.2.2 System Minutes Interrupted

System Minutes Interrupted is the summation of Mega Watt (MW) minutes of unserved energy at substations which are connected to the transmission network (meshed or radial) divided by the system peak MW.

The unit of measure is minutes per year.

The lower the minutes per year, the higher the level of service performance.

The following exclusions apply to System Minutes Interrupted:

- unregulated transmission network assets;
- supply interruptions shown to be caused by a fault or other event on a '3rd party system' e.g. inter-trip signal, generator outage, customer installation; and
- force majeure events.

The SSBs and SSTs expressed in terms of System Minutes Interrupted for each year of the AA3 period are shown in Table 7. Note there are no SSTs for system minutes interrupted for the Meshed network.

Table 7: System Minutes Interrupted SSBs and SSTs for each year ending 30 June

System Minutes Interrupted	Minutes per year	
	SSB	SST
Meshed	12.5	N/A
Radial	5.0	1.9

5.2.3 Loss of supply event frequency

Loss of supply event frequency is the frequency of unplanned customer interruption events where the loss of supply:

- exceeds 0.1 system minutes interrupted; and
- exceeds 1.0 system minutes interrupted.

The unit of measure is number of events per year.

The lower the number of events per year, the higher the level of service performance.

The exclusions applied to system minutes interrupted also apply to Loss of Supply Event Frequency. In addition, planned interruptions and interruptions with a duration lasting less than one minute are excluded.

The SSBs and SSTs expressed in terms of Loss of Supply Event Frequency for each year of the AA3 period are shown in Table 8.

Table 8: Loss of Supply Event Frequency SSBs and SSTs for each year ending 30 June

Loss of Supply Event Frequency	Number of events per year	
	SSB	SST
> 0.1 system minutes interrupted	33	24
> 1 system minutes interrupted	4	2

5.2.4 Average Outage Duration

Average Outage Duration is total number of minutes duration of all unplanned interruptions on the transmission network divided by the number of unplanned interruption events (after exclusions).

The unit of measure is minutes per year.

The lower the minutes per year, the higher the level of service performance.

The exclusions that apply to Loss of Supply Event Frequency also apply to Average Outage Duration. In addition, any event contribution to Average Outage Duration is capped at 14 days.

The SSBs and SSTs expressed in terms of Average Outage Duration for each year of the AA3 period are shown in Table 9.

Table 9: Average outage duration SSB and SST for each year ending 30 June

Average Outage Duration	Minutes per year	
	SSB	SST
	886	698

5.3 Street lighting repair time

For the *reference service* A9, the SSBs are expressed in terms of street lighting repair time.

Street lighting repair time is the average number of business days to repair a faulty streetlight.

The unit of measure is average number of business days.

The lower the average number of business days, the higher the level of service performance.

The SSBs expressed in terms of street lighting repair time for each year of the AA3 period are shown in Table 10. Note there are no SSTs for this reference service.

Table 10: Street lighting repair time SSBs for each year ending 30 June

Street lighting repair time	SSB – average number of business days
Metropolitan area	5
Regional area	9

The following exclusions apply to street lighting repair time:

- force majeure events; and
- streetlights for which Western Power is not responsible for streetlight maintenance.

5.3.1 Areas

The areas defined for street lighting repair times are defined as follows:

Metropolitan area

The areas of the State defined in Part 1.5 of the *Code of Conduct for the Supply of Electricity to Small Use Customers 2012*.

Regional area

All areas in the Western Power Network other than the metropolitan area.

6 Actual service standard performance

6.1 Summary of service standards performance

Western Power met 16 out of 17 SSBs for the 2013/14 period.

The SSB which Western Power did not meet was Rural Long SAIFI and therefore was non-compliant with clause 11.1 of the Access Code.

6.1.1 Distribution network

Overall, the reliability performance of the distribution network improved during the 2013/14 period compared to the 2012/13 period.

Factors primarily contributing to this overall improvement include a reduction in the impact of:

- Inclement weather, namely significant wind and storm events;
- lightning activity across rural areas of the state during the past year (Appendix B, Figure 24)
- Conductor failures; and
- Faults of unknown cause or where the actual cause could not be found.

Rural Long SAIFI increased during the 2013/14 period compared to the 2012/13 reporting period primarily due to an increase in the number of interruptions resulting from:

- Pole top fire activity, predominantly in the Mid-West region during January to March 2014 (Appendix B, Figure 21);
- Fauna (birds and other animals contacting overhead assets, Appendix B, Figure 22); and
- Inclement weather (but not significant storms), predominantly in the lower west of the Rural Long network (Appendix B, Figure 23).

The overhead asset associated maintenance work programs, such as the pole replacement and associated asset maintenance work programs, completed during the 2013/14 period have contributed to the overall improvement in performance of the distribution network.

CBD SAIDI and SAIFI, and Urban SAIDI performed well within their prescribed benchmarks, however underground cable failures were the primary contributor to the lower performance during the 2013/14 financial year.

6.1.2 Trends in interruption causes

The trend of overhead asset/equipment failure over the past 12 months remains consistent with the past 4 years, with similar volumes and types of assets causing supply interruptions (Appendix C, Figure 25). Reducing overhead asset / equipment failures is expected to be achieved through the implementation of the applicable asset strategies via approved asset maintenance and replacement programs.

The trend of faults where the cause is unknown has been steadily declining over the past 5 years (Appendix C, Figure 26). As the business becomes more customer-focused oriented, greater emphasis is being placed on identifying the root cause of outages affecting customers.

It is therefore encouraging to note the reduction in fault causes allocated to the "unknown" category.

Although lighting activity had a detrimental impact on the distribution network in the 2012/13 period, the impact declined sharply over the past 12 months (Appendix C, Figure 27).

The trend in the number of incidents involving of birds and animals (fauna) contacting overhead assets and causing an interruption has been relatively constant for the past 4 years with a slight upward trend over the past 12 months (Appendix C, Figure 28). This contrasts with a slight downward trend during the 2012/13 period. Continuation of the regular reviews of the fauna strategy and overall management and implementation plans is expected to reduce the impact of fauna on the distribution network in the medium term, leading to a reduction in incidents.

6.1.3 Areas of focus – Reliability of Rural Long feeders

Periodic annual reviews of all the reliability metrics identify areas where more detailed analysis and investigation activities are required. The outcomes of the analysis and investigative work provide a greater understanding of what investment and activities are required in the network, with a focus on the worst performing areas across the network. Ongoing monthly assessments provide visibility of potential emerging issues in areas not identified through the annual review process.

To date, the majority of these areas are on rural long feeders.

The completion of the work programs during the 2013/14 period contributed to the overall improvement of reliability. The continuation of these programs for the coming 2014/15 period, as well as the approach to focus on the worst performing areas is expected to improve the performance of the Rural Long SAIFI. However, this is not expected to be sufficient to bring this measure back into compliance during AA3.

Further investigation will be undertaken in 2014/15 to determine the additional investment that would be required to meet the prescribed Rural Long SAIFI SSB during the AA3 period. The additional investment is expected to be substantial and will need to be considered against other priorities of the business, in particular public safety activities, before part or all of the funds can be committed to this work. We expect to have a position on the level of investment required in the first quarter of next year.

Sections 6.2, 6.3 and 6.4 provide explanatory details of Western Power's service standard performance against the service standard benchmark, while Appendix A shows the recent 5 year trends of distribution network performance.

6.1.4 Service Standard Performance Summary

Western Power met 16 out of 17 SSBs for the 2013/14 period. The SSB which Western Power did not meet was Rural Long SAIFI and therefore was non-compliant with clause 11.1 of the Access Code.

Western Power's performance against each benchmark is shown in Table 11 below.

Table 11: Service Standard performance summary

			SSB	SST	2012/13 actual	2013/14	
						Actual	Benchmark met?
Distribution	SAIDI	CBD	39.9	20.3	7.6	18.3	√
		Urban	183	136.6	102.7	107.3	√
		Rural Short	227.8	207.8	181.4	171.1	√
		Rural Long	724.8	582.2	685.4	672.7	√
	SAIFI	CBD	0.26	0.14	0.03	0.20	√
		Urban	2.12	1.36	1.16	1.13	√
		Rural Short	2.61	2.27	2.17	1.83	√
		Rural Long	4.51	4.06	4.91	4.98	×
	Call Centre Performance		77.50%	87.60%	90.60%	92.80%	√
Transmission	Circuit Availability		97.70%	98.10%	98.40%	98.04%	√
	System Minutes Interrupted	Meshed Network	12.5	N/A	4.5	4.8	√
		Radial Network	5	1.9	2.3	3.7	√
	Loss of Supply Events	>0.1 system minute interrupted	33	24	13	20	√
		>1 system minute interrupted	4	2	2	1	√
	Average Outage Duration		886	698	866	795	√
Street lighting repair time	Metropolitan area		5 days	N/A	1.23	1.14	√
	Regional area		9 days	N/A	2.01	1.07	√

6.2 Distribution

Refer to Section 6.1.1 for Major Event Days (MEDs) which were excluded from the figures in Table 12.

Table 12: Distribution performance commentary for the 2013/14 period

Service Standard	2013/14			Comments
	SSB	SST	Actual	
CBD SAIDI	39.9	20.3	18.3	Performance was better than the AA3 benchmark and worse than the 2012/13 period (7.6 minutes per year). The primary contributor to the worsening performance when compared to the 2012/13 period was an increase in the impact of cable failures. Cable failures are the predominant contributor to the actual performance of the CBD network. Note: The CBD SAIDI performance is volatile over short periods of time due to the combined effects of fewer connection numbers and the relatively long repair times for faults in an underground CBD network.
Urban SAIDI	183.0	136.6	107.3	Performance was better than the AA3 benchmark and worse than the 2012/13 period (102.7 minutes per year). The primary contributors to the worsening performance when compared to the 2012/13 period were the increase in the impact of cable failures and the number of emergency outages due to hazards conditions. The primary contributors to the actual performance were overhead and underground equipment failures. The same works, vegetation and associated programs which were completed during the 2013/14 period, are expected to result in Urban SAIDI performance meeting the benchmark for the 2014/15 period, noting there is approximately a 12 month lag in the SAIDI impact of investment.
Rural Short SAIDI	227.8	207.8	171.1	Performance was better than the AA3 benchmark and better than the 2012/13 period (181.4 minutes per year). The primary contributors to an improvement in performance over the 2013/14 period were a reduction in in the impact of equipment failures and fauna. The primary contributors to the actual performance were overhead and underground equipment failures and interruptions where the fault cause is unknown. The same works, vegetation and associated programs which were completed during the 2013/14 period, are expected to result in Rural Short SAIDI performance meeting the benchmark for the 2014/15 period, noting there is approximately a 12 month lag in the SAIDI impact of investment.

Service Standard	2013/14			Comments
	SSB	SST	Actual	
Rural Long SAIDI	724.8	582.2	672.7	Performance was better than the AA3 benchmark and better than the 2012/13 period (685.4 minutes per year). The primary contributors to an improvement in performance over the 2013/14 period were a reduction in the impact of lighting activity and equipment failures. The primary contributors to the actual performance were overhead equipment failures and wind borne vegetation. The same works, vegetation and associated programs which were completed during the 2013/14 period, are expected to result in Rural Long SAIDI performance meeting the benchmark for the 2014/15 period, noting there is approximately a 12 month lag in the SAIDI impact of investment.
CBD SAIFI	0.26	0.14	0.20	Performance was better than the AA3 benchmark however worse than the 2012/13 period (0.03 interruptions per year). The primary contributor to the worsening in performance when compared to the 2012/13 period was an increase in the impact of cable failures. The primary contributor to the actual performance was cable failures. Note: The CBD SAIFI performance is volatile over short periods of time due to the combined effects of fewer connection numbers and the relatively long repair times for faults in an underground CBD network.
Urban SAIFI	2.12	1.36	1.13	Performance was better than the AA3 benchmark and better than the 2012/13 period (1.16 interruptions per year). The primary contributors to an improvement in performance over the 2013/14 period were reductions in the impact of lightning related interruptions and equipment failures. The primary contributors to the actual performance were overhead equipment failures, interruptions where the cause is unknown and fauna. The same works, vegetation and associated programs which were completed during the 2013/14 period, are expected to result in Urban SAIFI performance meeting the benchmark for the 2014/15 period, noting there is approximately a 12 month lag in the SAIFI impact of investment.
Rural Short SAIFI	2.61	2.27	1.83	Performance was better than the AA3 benchmark and better than the 2012/13 period (2.17 interruptions per year). The primary contributors to an improvement in performance over the 2013/14 period were a reduction in in the impact of interruptions where the fault cause is unknown, fauna and equipment failures. The primary contributors to the actual performance were overhead and underground equipment failures and interruptions where the cause is unknown. The same works, vegetation and associated programs which were completed during the 2013/14 period, are expected to result in Rural Short SAIFI performance meeting the benchmark for the 2014/15 period, noting there is approximately a 12 month lag in the SAIFI impact of investment

Service Standard	2013/14			Comments
	SSB	SST	Actual	
Rural Long SAIFI	4.51	4.06	4.98	Performance was worse than the AA3 benchmark and worse than the 2012/13 period (4.91 interruptions per year). The primary contributors to the worsening performance over the 2013/14 period were pole top fires, fauna and localised inclement weather. Specific analysis, field investigations and detailed overhead line patrols targeting those poor performing areas of the Rural Long network has resulted in remedial maintenance activities being undertaken in specific locations. Forecasted performance, recognising: - the AA3 investment works programs - the past three years average performance levels - the applicable work programs completed during the 2013/14 period, - the continuation of those same work programs; and - focusing on the worst performing focus areas, indicates that Rural Long SAIFI is unlikely to meet the benchmark until after the 2014/15 period, noting there is approximately a 12 month lag in the SAIFI impact of investment.
Call centre performance	77.5%	87.6%	92.80%	Performance was better than the AA3 benchmark and better than the 2012/13 period (90.60%), despite an approximately 4% increase in fault call volumes. Over the past year Western Power has undertaken media campaigns including “Be storm ready” and “Make the Safe call” which have increase community awareness for reporting faults. Western Power continues to provide choice to improve access for customers, with better capability to access information in a way that is convenient for them. The Mobile Phone Interruption web page is one example of providing fault information (interruptions in their area and estimated restoration time) normally done over the telephone.

6.3 Transmission

Table 13: Transmission performance commentary for the 2013/14 period

Service Standard	2013/14			Comments
	SSB	SST	Actual	
Circuit availability	97.7%	98.1%	98.0%	Performance was better than the AA3 benchmark and worse than the 2012/13 period (98.4%). While the majority of circuit unavailability was due to planned work on the transmission network, primary transmission asset equipment failure contributed 0.5% to the circuit unavailability. Continued improved maintenance coordination and planning contributed to circuit availability performance being better than benchmark. Performance is expected to meet the prescribed benchmark for the 2014/15 period. The performance excludes extended planned interruptions for major construction work greater than 14 circuit unavailability days (refer to Section 7.3.2 for details)
System Minutes Interrupted Meshed Network	12.5	N/A	4.8	Performance was better than the AA3 benchmark and worse than the 2012/13 period (4.5 minutes per year). The primary contributors to worsening performance over the 2012/13 period were: • Storm activity in south west region between 22 to 24 September 2013 • Increased supply interruptions attributed to environmental factors and equipment failures. However, better supply restoration utilising the network control Distribution Management System to restore customers via the distribution system assisted in maintaining this measure at a low level. Performance is expected to meet the prescribed benchmark for the 2014/15 period.

Service Standard	2013/14			Comments
	SSB	SST	Actual	
System Minutes Interrupted Radial Network	5.0	1.9	3.7	Performance was better than AA3 benchmark and worse than 2012/13 period (2.30 minutes per year). Although few plant upgrades and targeted maintenance on radial circuits have taken place in the 2012/13 period, asset failures continue to affect those radial circuits that do not have the capability to temporarily restore customer supply through distribution system. Some circuits in the radial network are highly susceptible to environmental events, which may affect performance until maintenance activities and full plant upgrades are completed. The impacts of the Edna May Mine have been removed from this measure for the 2013/14 period, as it was categorised as receiving a non-reference service. Upon completion of all upgrade works and enhancement to radial networks distribution transfer capability, performance is expected to continue to meet the prescribed benchmark for the 2014/15 period.
Loss of supply events >0.1 system minutes interrupted	33	24	20	Performance was better than the AA3 benchmark and worse than the 2012/13 period (13 events per year). Performance was maintained at a low level by the implementing of improved supply restoration processes through utilising the network control Distribution Management system. Performance is expected to continue to meet the benchmark for the 2014/15 period.
Loss of supply events >1 system minutes interrupted	4	2	1	Performance was better than the AA3 benchmark and better than the 2012/13 period (2 events per year). The loss of supply event that exceeded 1 system minutes interrupted was due to an interruption on a radial circuit caused by an equipment failure. Performance is expected to continue to meet the benchmark for the 2014/15 period.
Average Outage Duration	886	698	795	Performance was better than the AA3 benchmark and better than the 2012/13 period (866 minutes per year). The primary contributor to the performance was due to a second failure of major plant at the Muja Terminal Substation, which resulted in the 14 day cap being reached. Throughout the incident period, alternative systems and operational arrangement were put in place to minimize or remove the reliability impacts to customers. The improvement in performance over the 2013/14 period is attributed to a lower number of events, with shorter outage duration minutes. Average outage duration performance is volatile and cannot be directly compared between different time periods. Performance is expected to continue to meet the benchmark for the 2014/15 period.

6.4 Street lighting repair time

Table 14: Street lighting repair time performance commentary for the 2013/14 period

	Service Standard	2013/14 Benchmark	2013/14 Actual	Comments
Street lighting repair time	Metropolitan area	≤ 5 days	1.14	Performance was better than the AA3 benchmark and better than the 2012/13 period (1.23 average business days). The improvement in performance was assisted by a high volume of work in the metropolitan area and proactive fault management in the field. The practice of proactively managing faults in the field is expected to continue to ensure street lighting repair time meets the benchmark for the year ending June 2015
Street lighting repair time	Regional area	≤ 9 days	1.07	Performance was better than the AA3 benchmark and better than the 2012/13 period (2.01 average business days). Performance exceeded the benchmark over the 2012/13 period due to reduced volumes and proactive management where faults were bundled with a works program undertaken in regional areas. The practice was only applicable for the 2013/14 period and will not continue due to the completion of the maintenance program. Street lighting repair times in regional areas are expected to increase for the 2014/15 period but still be within the benchmark.

6.5 Western Power Network performance

Western Power does not have SSB measures for the total Network. However as shown in Table 15, the reliability performance of the Network for the 2013/14 period was comparable to the previous year.

Table 15: Overall reliability performance of the Network

		2012/13	2013/14
Distribution	SAIDI[9]	175	171
	SAIFI	1.75	1.62
Transmission - System Minutes Interrupted[10]		6.82	8.56

For the distribution network, SAIDI improved by 2 per cent and SAIFI improved by 7 per cent. System minutes interrupted for the transmission network worsened by 26 per cent. Overall, customers received a supply from the network 99.93[11] per cent of the time during 2013/14, the same as the 2012/13 period.

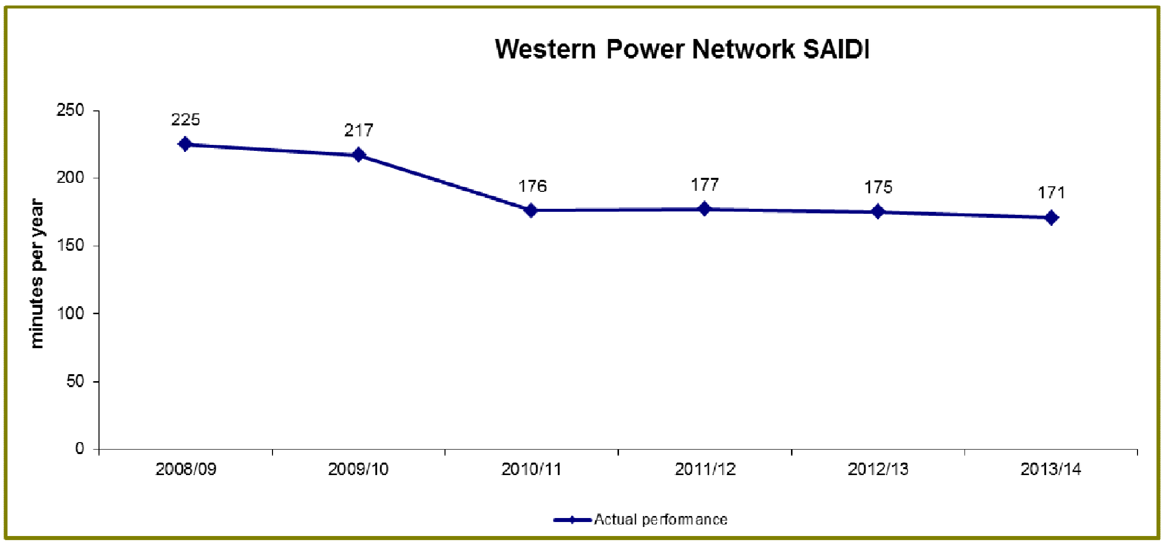

Figure 2: Network SAIDI (5 year history)

[9] The SAIDI figures here are based on the same rules as defined in AA3, it is not comparable to other published SAIDI figures – namely Western Power's State of the Infrastructure and Corporate Annual Reports.

[10] System Minutes Interrupted for the whole transmission network has never been a reporting measure in either the current or any previous Access Arrangement.

[11] Includes transmission and distribution performance and does not factor in any exclusions

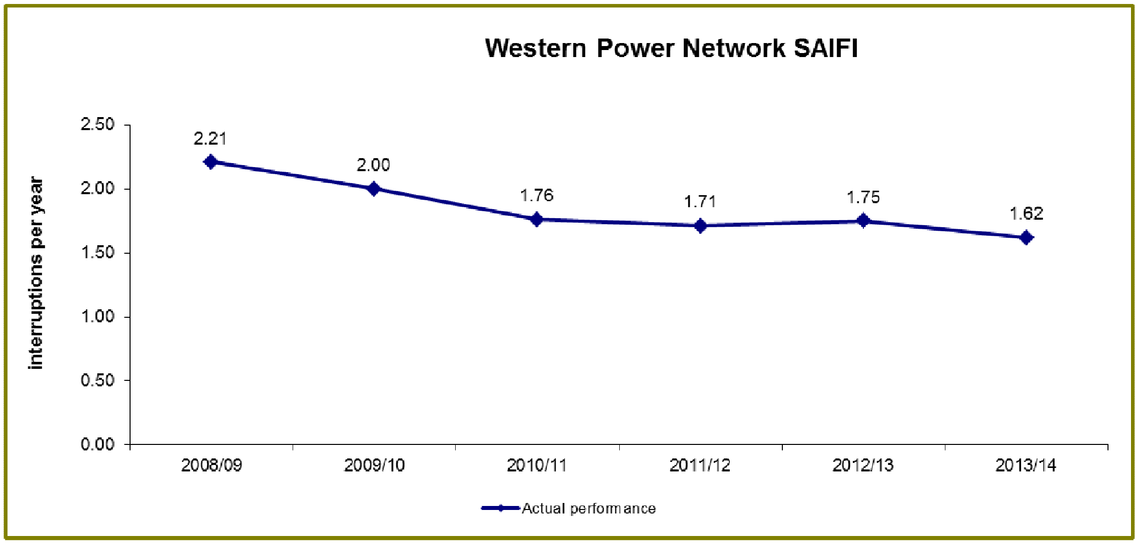

Figure 3: Western Power Network SAIFI (5 year history)

7 Exclusions from SSB performance

As outlined in section 5, the service standards and the service standard adjustment mechanism (SSAM) financial incentive scheme provide for certain events to be excluded from the distribution and transmission reference service performance.

7.1 Distribution performance – SAIDI, SAIFI

Based on the exclusions described in section 5.1, for the 2013/14 period, the distribution performance service standards in terms of SAIDI and SAIFI exclude the interruptions described below.

7.1.1 Major Event Days

The exclusion of MEDs classified in accordance with IEEE 1366-2003 applies to SAIDI and SAIFI performance for each feeder classification and call centre performance.

There were 5 days during the 12 months to 30 June 2014 that exceeded the daily MED threshold of 5.62 minutes. Table 16 shows

- SAIDI (minutes per year) and SAIFI (interruptions per year), which have been excluded from the 2013/14 period due to these 5 MEDs; and
- Call centre performance (percentage call per year), which is the percentage number of fault calls responded to in 30 seconds or less against the total number of fault calls during these 5 MEDs.

Table 16: SAIDI, SAIFI and call centre performance exclusions due to MEDs

		2012/13	2013/14
SAIDI	CBD	1	0
	Urban	54	25
	Rural Short	73	74
	Rural Long	117	401
SAIFI	CBD	0.04	0.00
	Urban	0.21	0.13
	Rural Short	0.28	0.21
	Rural Long	0.50	0.61
Call centre performance		78.60	92.8

The 5 days that exceeded the MED SAIDI threshold are detailed below, showing the SAIDI and SAIFI for these days and Call centre performance across the Network over the period of each storm or MED event.

7.1.1.1 16 July 2013

(SAIDI = 12.07 minutes, SAIFI = 0.057 interruptions, Call centre performance = 69.03%)

A strong cold front passed through the lower south west of Western Australia, bringing severe winds and thunderstorms across parts of the Western Power Network, resulting in damage to overhead network assets and more than 49,000 customers with supply interruptions, peaking at over 26,000 customers around 22:00 hours.

Most customers impacted were in the Perth Metropolitan area, with customers also impacted in the South West and Wheatbelt regions. Outages lasted on average for 3 hours and 30 minutes.

7.1.1.2 22 September and 23 September 2013

(22 September: SAIDI = 20.12 minutes, SAIFI = 0.040 interruptions, Call centre performance = 94.44%)

(23 September: SAIDI = 19.91 minutes, SAIFI = 0.030 interruptions, Call centre performance = 93.52%)

Two strong cold fronts passed through the south west of Western Australia on the 22 and 23 September respectively, bringing damaging wind gusts (at times over 100 km/h) and showers across areas supplied by the Western Power Network. These two storms caused damage to the overhead network assets, affecting more than 63,000 customers during the two day period. The number of customers experiencing a supply interruption peaked at over 20,173 around 05:45 on the 23 September.

These storm fronts caused further damage to the network and subsequently resulting in additional supply interruptions to customers as well as exacerbating delays in supply restoration customers affected from the previous days.

The majority of the 63,000 customers affected were in the Great Southern, South West and Perth Metropolitan predominately in City of Albany, Shire of Augusta-Margaret River and City of Gosnells respectively.

7.1.1.3 12 January 2014

(SAIDI = 9.90 minutes, SAIFI = 0.021 interruptions, Call centre performance = 87.83%)

There was a bushfire in Parkerville, damaging property and Western Power infrastructure. This resulted in loss of supply to over 2,300 customers in the Shire of Mundaring and the City of Swan. Most customers were restored during that night, with all remaining customers whose property was not damaged restored 5 days later. 163 poles and approximately 9km of conductor needed to be replaced.

In total there were over 20,000 customers interrupted on the 12 January, with the majority in the Perth Metropolitan, Wheatbelt and Great Southern regions

7.1.1.4 21 March 2014

(SAIDI = 8.46 minutes, SAIFI = 0.052 interruptions, Call centre performance = 94.53%)

Pole top fire activity coupled with rain and wind gusts affected the network. This resulted in loss of supply to over 43,000 customers throughout the Western Power Network, with the majority in the Perth Metropolitan and Wheatbelt regions

7.1.2 Transmission network interruptions

The SAIDI (minutes per year) and SAIFI (interruptions per year) that were excluded due to supply interruptions caused by the transmission network are outlined in Table 17.

Table 17: SAIDI and SAIFI exclusions due to transmission network interruptions

		2012/13	2013/14
SAIDI	CBD	4	0
	Urban	4	10
	Rural Short	7	12
	Rural Long	29	14
SAIFI	CBD	0.18	0.00
	Urban	0.16	0.20
	Rural Short	0.13	0.25
	Rural Long	0.34	0.32

7.1.3 Other third party network interruptions

The SAIDI (minutes per year) and SAIFI (interruptions per year) that were excluded due to supply interruptions caused by generator unavailability or customer equipment are outlined in Table 18.

Table 18: SAIDI and SAIFI exclusions due to other third party network interruptions

		2012/13	2013/14
SAIDI	CBD	2	3
	Urban	5	2
	Rural Short	5	4
	Rural Long	7	9
SAIFI	CBD	0.01	0.02
	Urban	0.09	0.03
	Rural Short	0.08	0.08
	Rural Long	0.11	0.13

These third party network supply interruptions include:

- a generator failure on the 11 April 2014, resulting in the automatic de-energisation of circuits to stabilise the frequency on the transmission network; and
- over 4,000 faults attributed to customer installations or other third party equipment.

7.1.4 Planned interruptions

The SAIDI (minutes per year) and SAIFI (interruptions per year) that were excluded due to planned supply interruptions required to undertake safe work activities on the distribution network and mitigate the risk of unplanned interruptions, are outlined in Table 19.

Table 19: SAIDI and SAIFI exclusions due to planned interruptions

		2012/13	2013/14
SAIDI	CBD	24	19
	Urban	67	70
	Rural Short	144	259
	Rural Long	206	328
SAIFI	CBD	0.18	0.03
	Urban	0.21	0.23
	Rural Short	0.47	0.77
	Rural Long	0.68	0.93

7.1.5 Force Majeure

There were no events on the distribution network that were classified as *force majeure*.

7.2 Distribution performance – Call centre performance

Based on the exclusions described in section 5.1, for the 2013/14 period, the distribution performance service standards in terms of call centre performance exclude the fault call non compliances as indicated below:

7.2.1 Abandoned calls – 4 seconds or less

These calls are currently not captured or recorded within our systems.

7.2.2 Major Event Days

See 7.1.1 for the details of the MEDs for the 2013/14 period.

7.2.3 Extra ordinary events

There were no extraordinary events on the distribution network affecting the call centre performance.

7.3 Transmission performance

Based on the exclusions described in section 5.2, the transmission performance for the AA3 period excludes the interruptions described below.

7.3.1 Force majeure

There were no events on the distribution network that were classified as *force majeure*.

7.3.2 Planned interruptions - major construction work exceeding 14 days

In calculating circuit availability, planned interruptions for major construction work are capped at 14 days.

Table 20 shows the number of planned supply interruptions for major construction work that exceeded the 14 day cap in each financial year of the AA3 period.

Table 20: Planned interruptions for major construction work exceeding 14 days

	2012/13	2012/13
Number of planned interruptions	14	22

8 Momentary interruptions

8.1 Background

Momentary interruptions are interruptions that last one minute or less and are subsequently excluded from the AA3 SSBs.

As part of the AA3 decision process[12], the Authority required that Western Power begin recording data for momentary interruptions. This year's report will be the first time this data has been released.

Data will be collected for the remainder of the AA3 period so that Western Power will be in a stronger position to consider its inclusion as an SSB in its fourth Access Arrangement.

8.2 2013/14 data

During the 2013/14 period, there were approximately 2,500 momentary interruptions recorded on the Western Power Network, affecting on average 786 customers per interruption. Most of these interruptions occurred on the Rural Long network.

Table 21 shows the average number of momentary interruptions per customer for the 2013/14 period for each of the distribution feeder classifications. This data is inclusive off all momentary interruptions on the distribution network.

Table 21: Momentary interruptions per customer for the 2013/14 period

		Momentary interruptions per customer
SAIDI	CBD	0.09
	Urban	0.81
	Rural Short	2.61
	Rural Long	8.71

[12] The Authority's Final Decision - September 2012, paragraphs 1957- 1961, http://www.erawa.com.au/cproot/10737/2/20120905%20-%20D94955%20-%20Final%20Decision%20on%20Proposed%20Revisions%20to%20the%20Access%20Arrangement%20for%20the%20Western%20Power%20Network%20-%20Published%20Version.pdf

9 Service Standard Adjustment Mechanism

9.1 Overview

The Authority applies a financial reward or penalty to Western Power in relation to the actual performance for 14 SSBs through the SSAM.

The SSAM applies to the SSBs for SAIDI, SAIFI, Circuit Availability, call centre performance, System Minutes Interrupted - radial, Loss of Supply Event Frequency and Average Outage Duration.

A reward or penalty is calculated based on the difference between the actual performance and the SST and capped at the SSB, as outlined in Western Power's approved Access Arrangement 3 (AA3).

9.2 Actual performance

Western Power has met or exceeded the expected level of performance[13] for the SSAM target for 8 out of the 14 SSB measures subject to this financial incentive scheme.

Improvements were achieved for call centre performance through redistribution of staff within the call centre and increased provision of self-service information for customers.

Table 22 shows the results of the SSAM for the performance for the 2013/14 period.

All values are expressed in real dollars as at 30 June 2012.

[13] The SSAM target was set at a 50% probability of achieving for the AA3 period

Table 22: Service Standard Adjustment Mechanism results for 2013/14 period

	Service Standard (SS)		Incentive Rate $ unit rate	Incentive Rate Reward	Incentive Rate Penalty	SSB	SST	SS Actuals (SSA)	SS Difference (SSD)	Penalty (-) or Reward (+)
Distribution	SAIDI	CBD	per SAIDI minute	$67,817	$67,817	39.9	20.3	18.3	2	$135,634
		Urban		$529,816	$529,816	183	136.6	107.3	29.3	$15,523,609
		Rural Short		$223,472	$223,472	227.8	207.8	171.1	36.7	$8,201,422
		Rural Long		$65,219	$65,219	724.8	582.2	672.7	-90.5	-$5,902,320
	SAIFI	CBD	per 0.01 SAIFI event	$87,081	$87,081	0.26	0.14	0.20	-0.06	-$522,486
		Urban		$548,988	$548,988	2.12	1.36	1.13	0.23	$12,626,724
		Rural Short		$222,511	$222,511	2.61	2.27	1.83	0.44	$9,790,484
		Rural Long		$101,725	$101,725	4.51	4.06	4.98	-0.45	-$4,577,625
	Call centre performance		per 0.1%	-$41,495	-$41,084	77.5%	87.6%	92.8%	-5.2%	$2,157,740
Total distribution penalty/reward										**$37,433,183**
Transmission	Circuit Availability		per 0.1%	-$817,186	-$408,593	97.7%	98.1%	98.0%	0.1%	-$408,593
	System Minutes Interrupted -radial		per system minute	$105,443	$172,039	5.0	1.9	3.7	-1.8	-$309,670
	Loss of Supply Event Frequency	>0.1 system minutes interrupted	per loss of supply event	$36,319	$27,240	33	24	20	4	$145,276
		>1 system minutes interrupted		$163,437	$163,437	4	2	1	1	$163,437
	Average Outage Duration		per duration minute	$3,477	$2,495	886	698	795	-97	-$242,015
Total transmission penalty/reward										**-$651,565**
Total penalty/reward for 2013/14										**$36,781,618**

Appendix A. Service standard performance graphs – 2008/09 to 2016/17

The following graphs show the actual performance of the service standards for the five financial years up to 2012/13, and the SSBs and SSTs (if applicable) during the AA3 period. Included within these graphs are the AA2 SSBs (where relevant) for the purpose of understanding trends. Details and further information regarding AA2 performance has been provided in previous service standard performance reports throughout the AA2 period.

A.1 Distribution Performance

Figure 4 to Figure 11 show the SAIDI and SAIFI of the CBD, Urban, Rural Short and Rural Long networks.

Figure 12 shows the call centre performance.

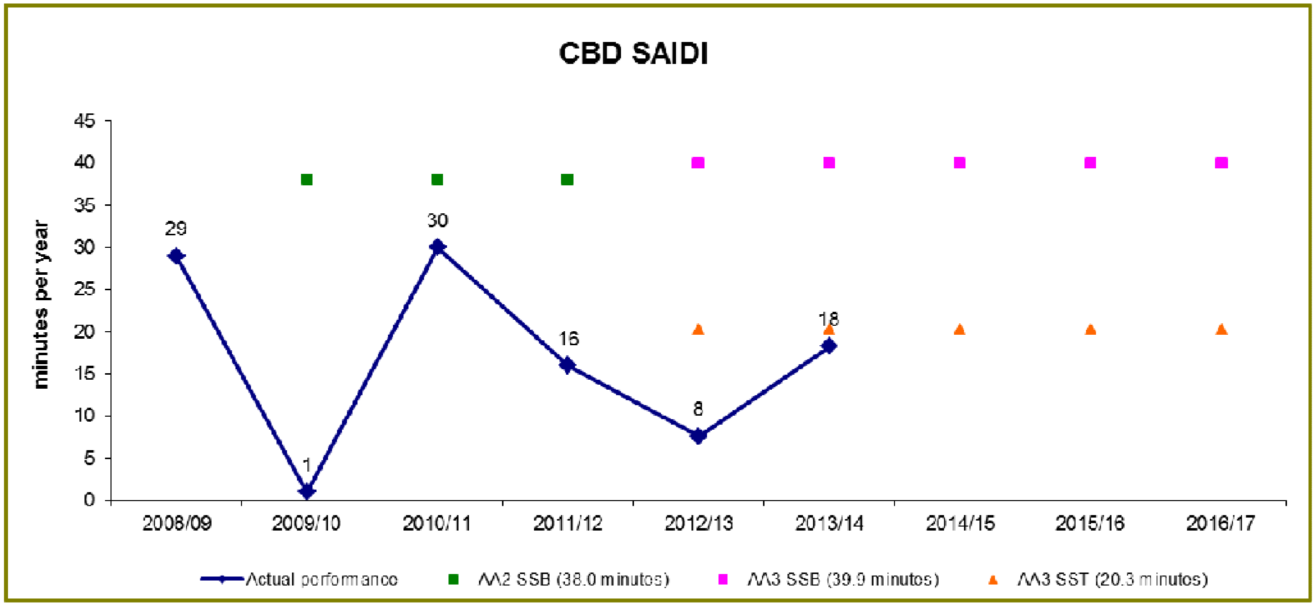

Figure 4: CBD SAIDI

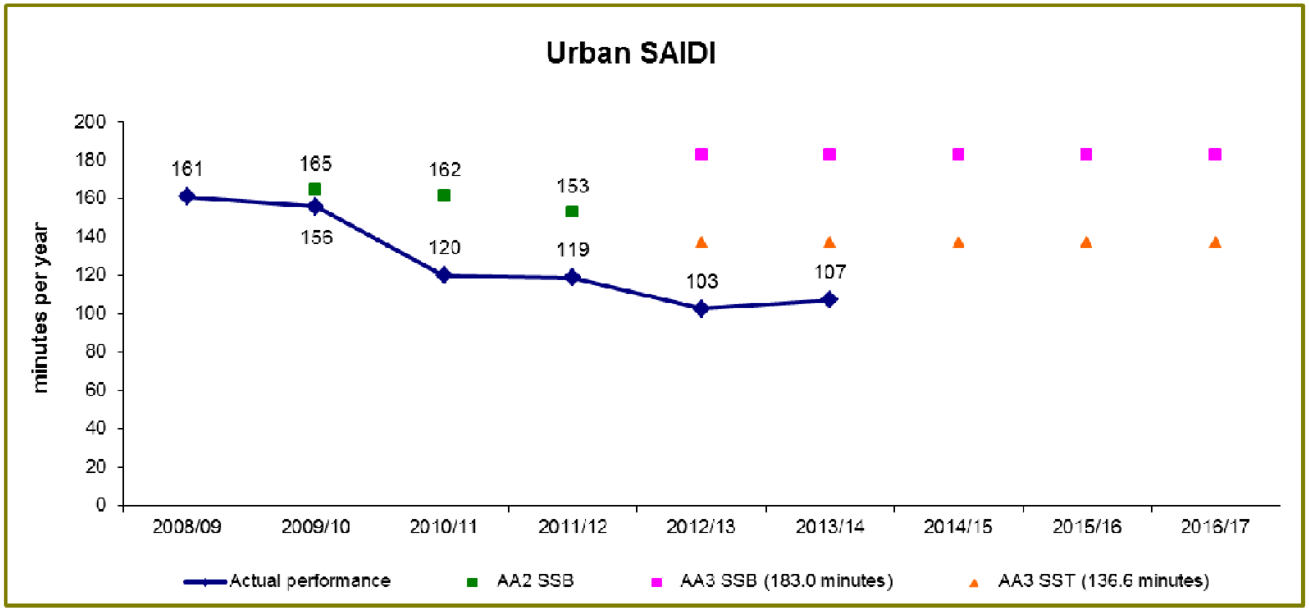

Figure 5: Urban SAIDI

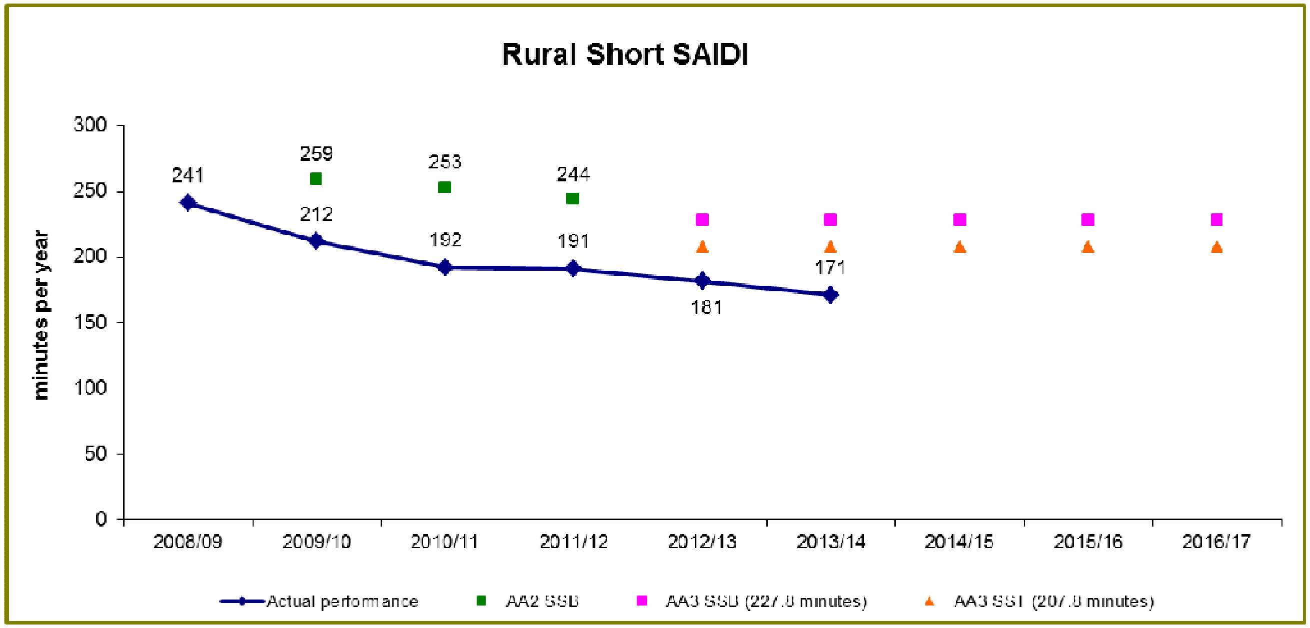

Figure 6: Rural Short SAIDI

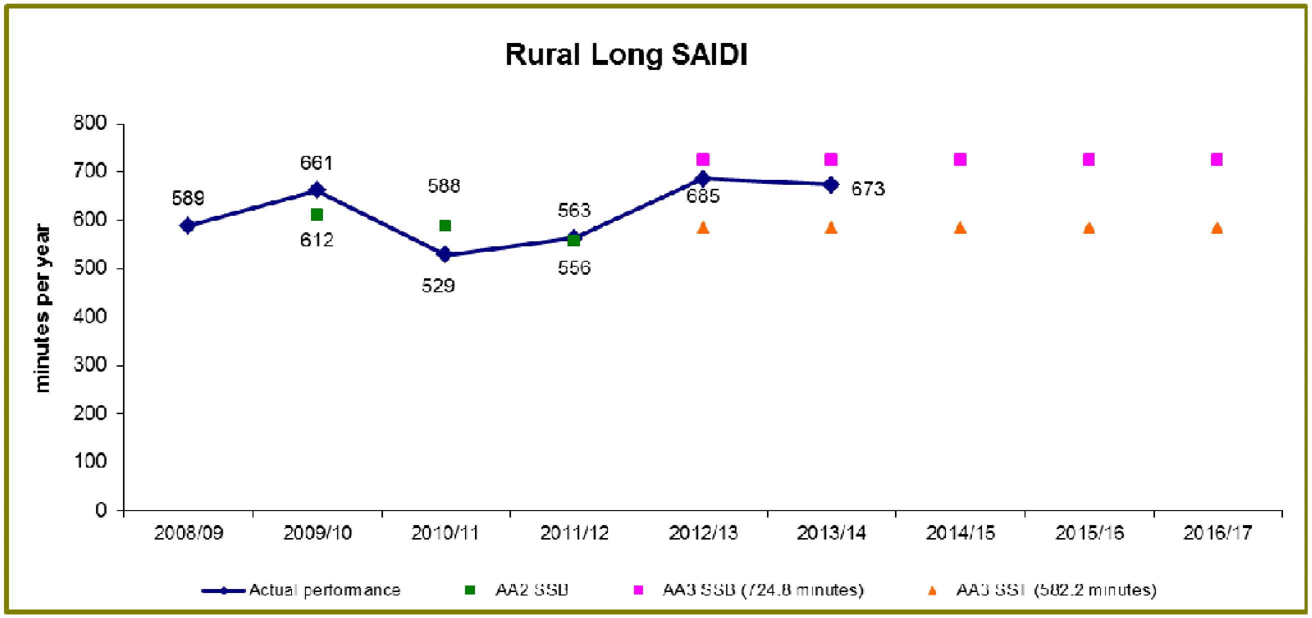

Figure 7: Rural Long SAIDI

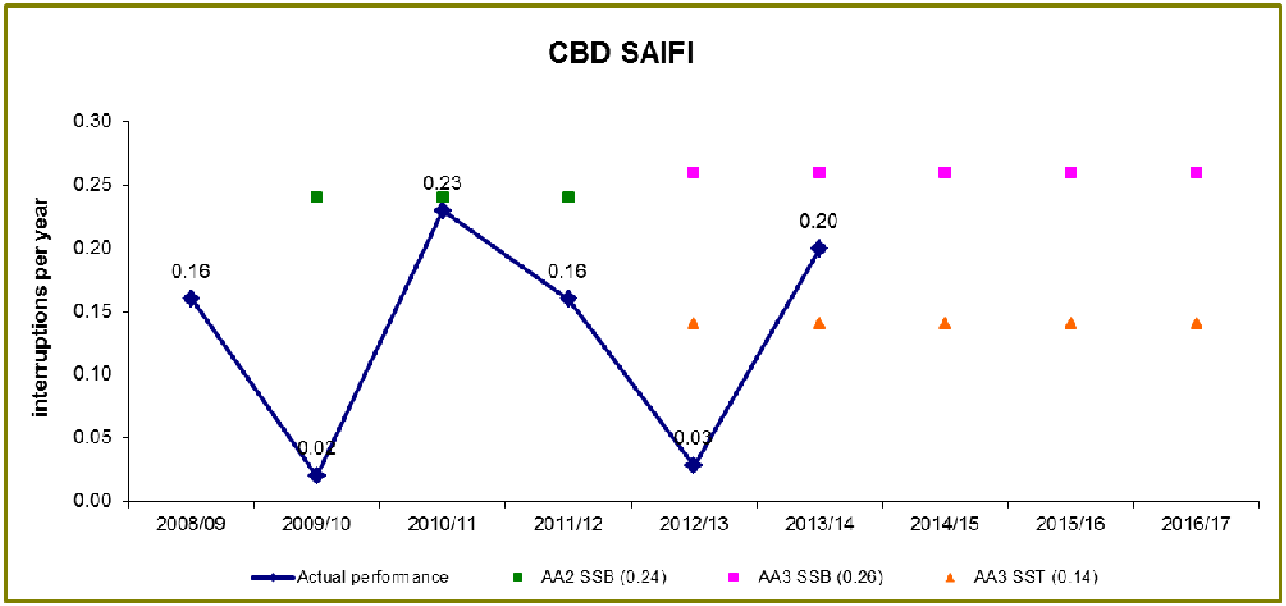

Figure 8: CBD SAIFI

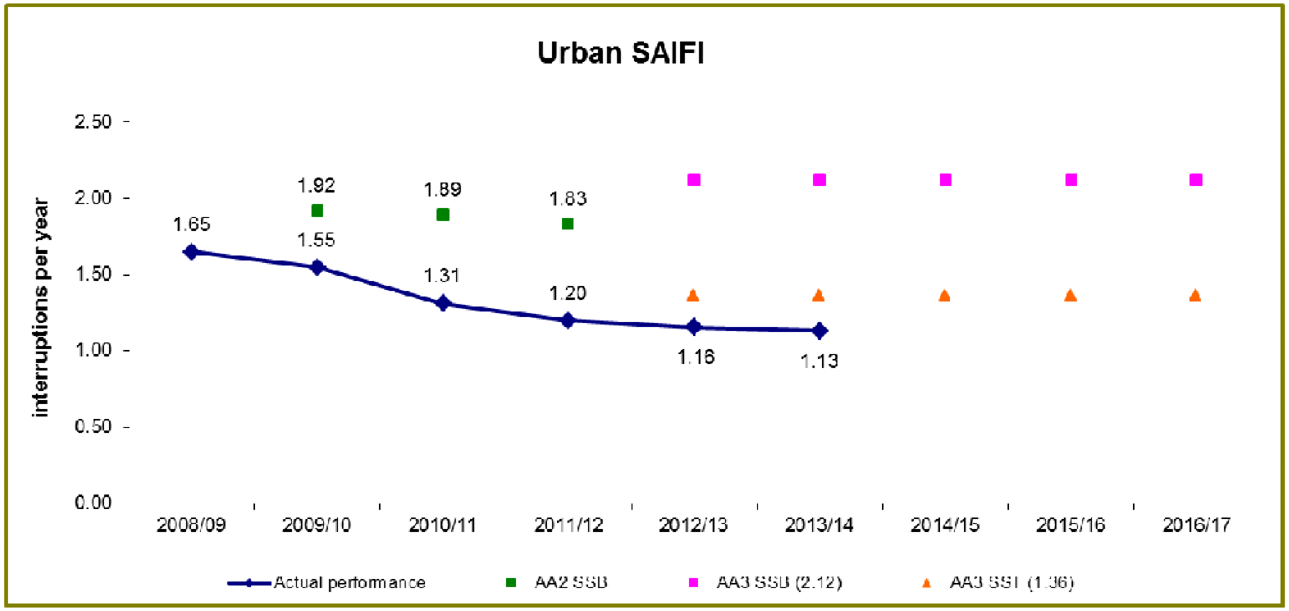

Figure 9: Urban SAIFI

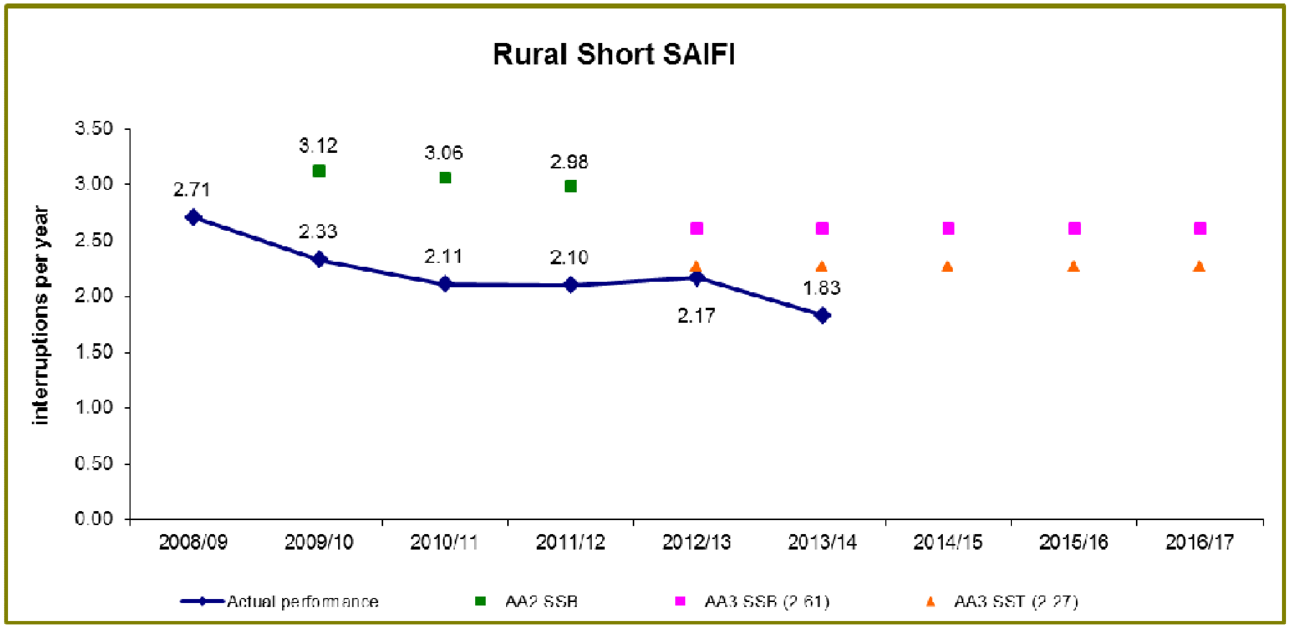

Figure 10: Rural Short SAIFI

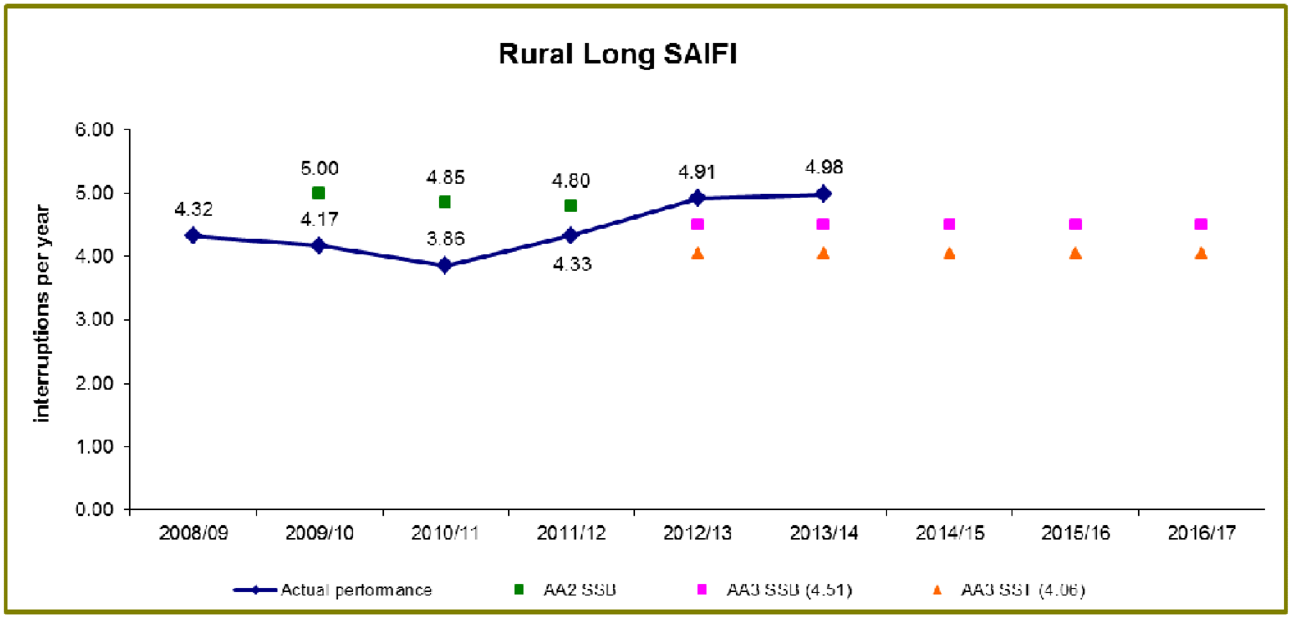

Figure 11: Rural Long SAIFI

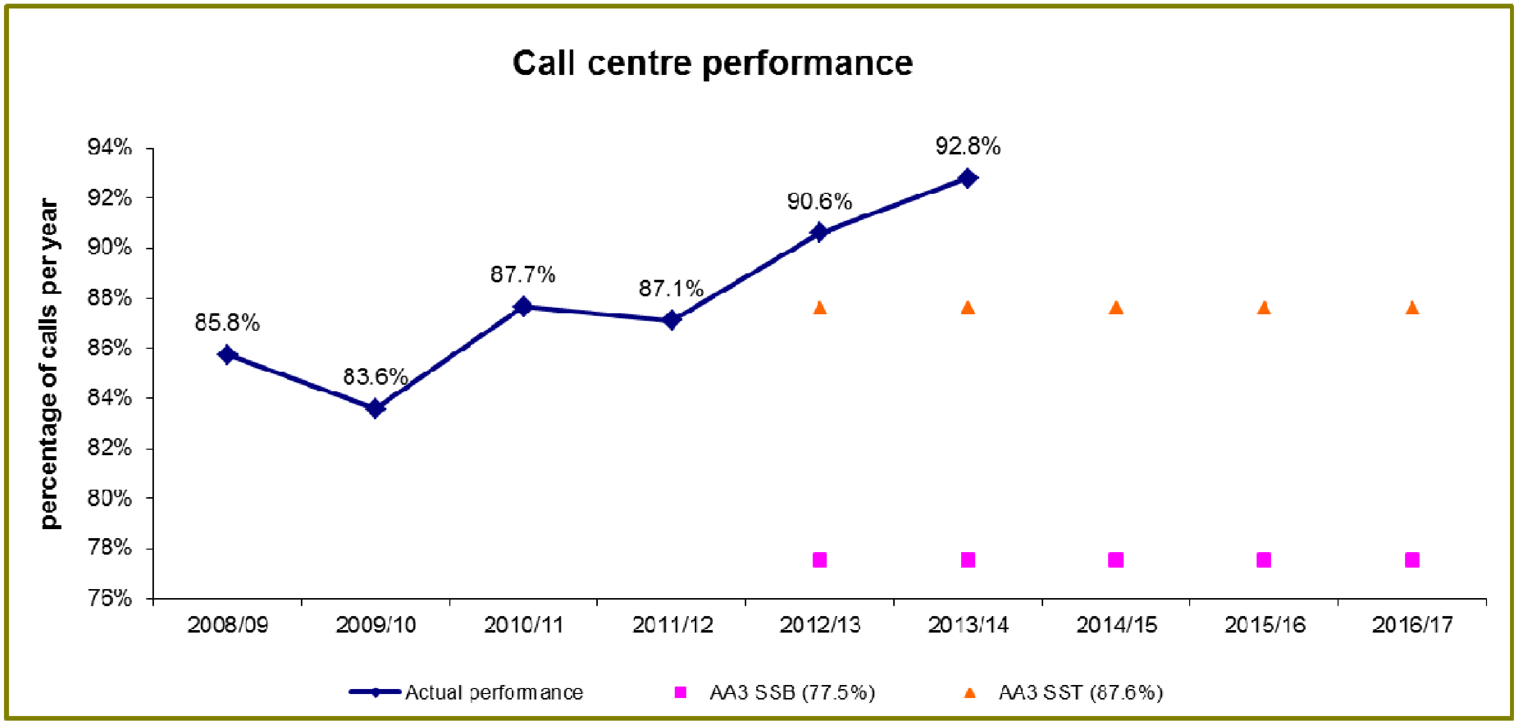

Figure 12: Call centre performance

Note:
There were no applicable service standard benchmarks for call centre performance during the AA2 period.

A.2 Transmission performance

Figure 13 shows the circuit availability

Figure 14 and Figure 15 show the system minutes interrupted for the meshed and radial networks

Figure 16 and Figure 17 show the loss of supply event frequency for > 0.1 and > 1 system minutes

Figure 18 show the average interruption duration

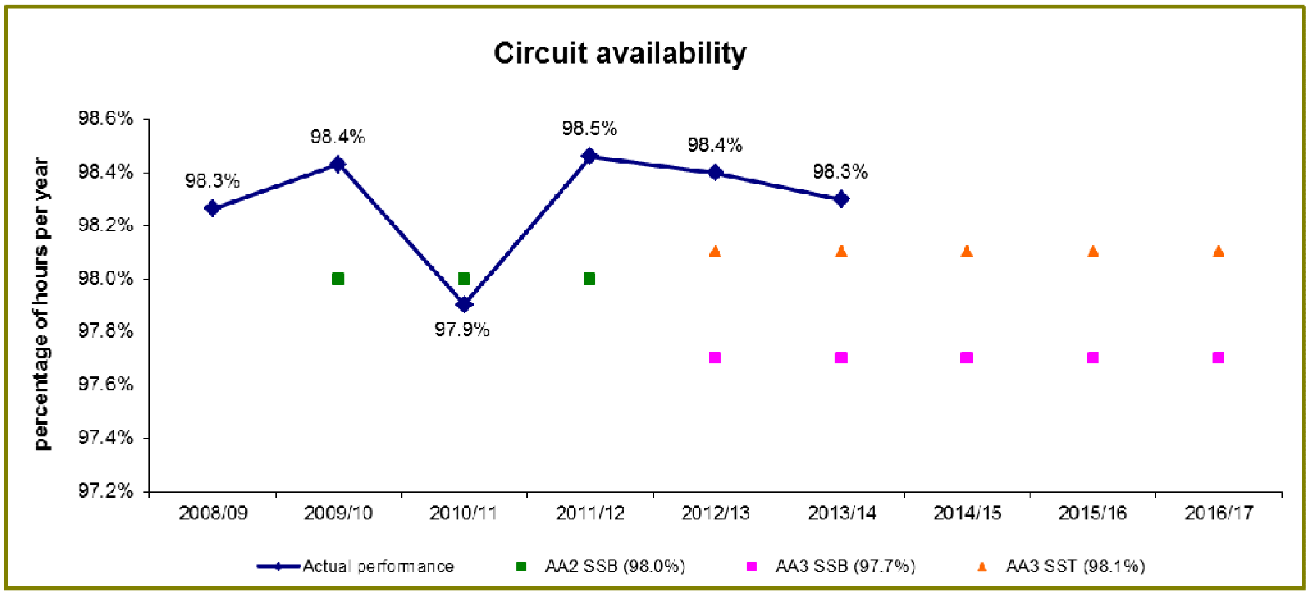

Figure 13: Circuit availability

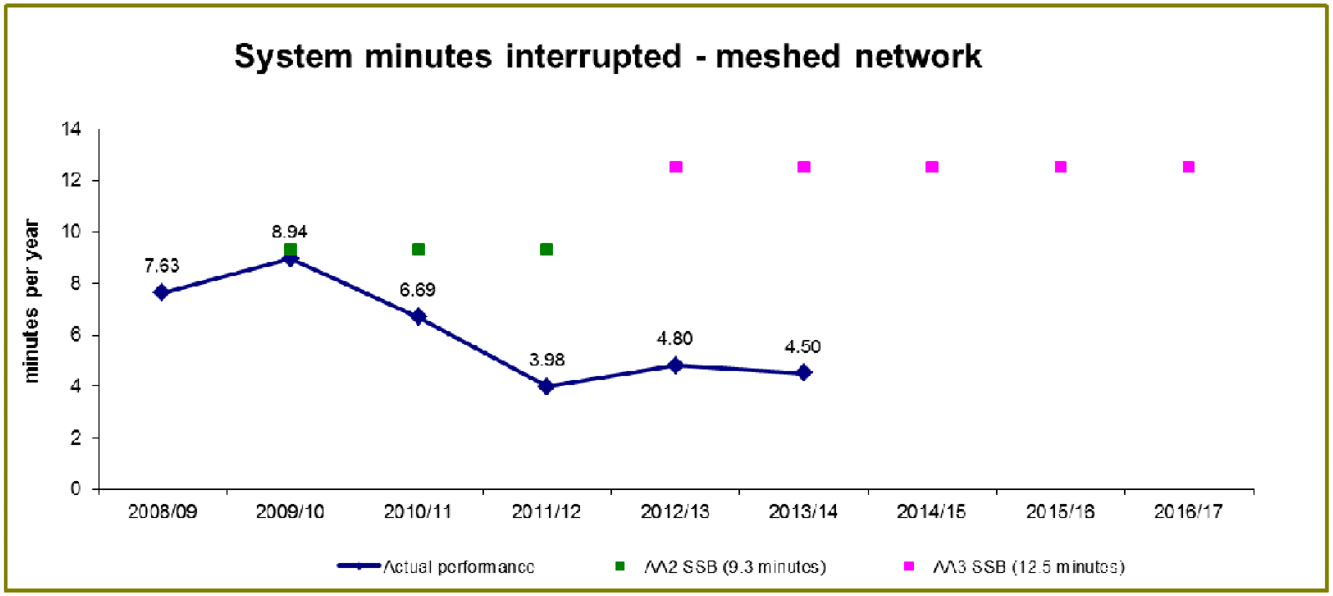

Figure 14: System minutes interrupted – meshed network

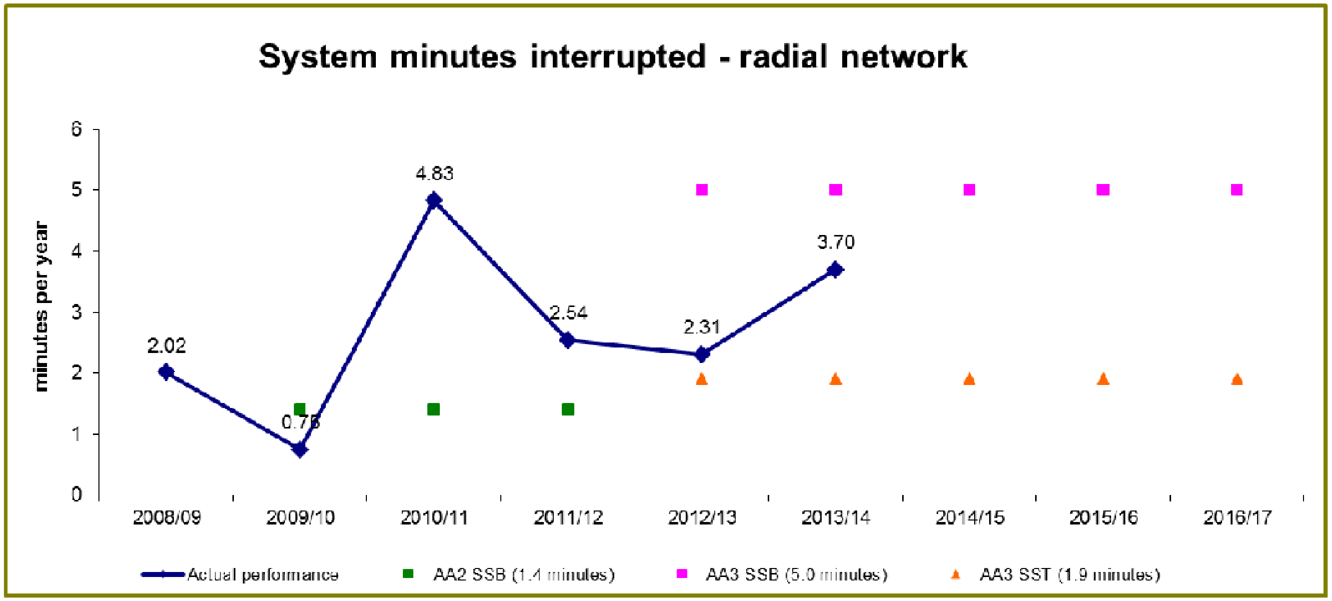

Figure 15: System minutes interrupted – radial network

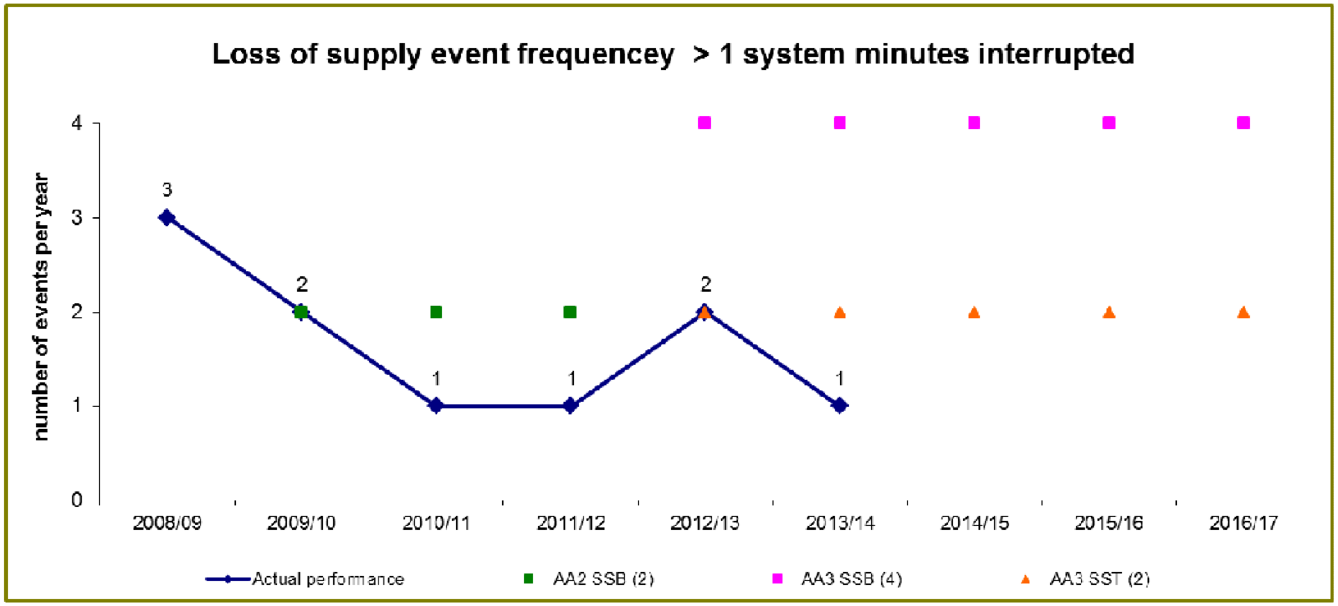

Figure 16: Loss of supply event frequency > 1 system minutes interrupted

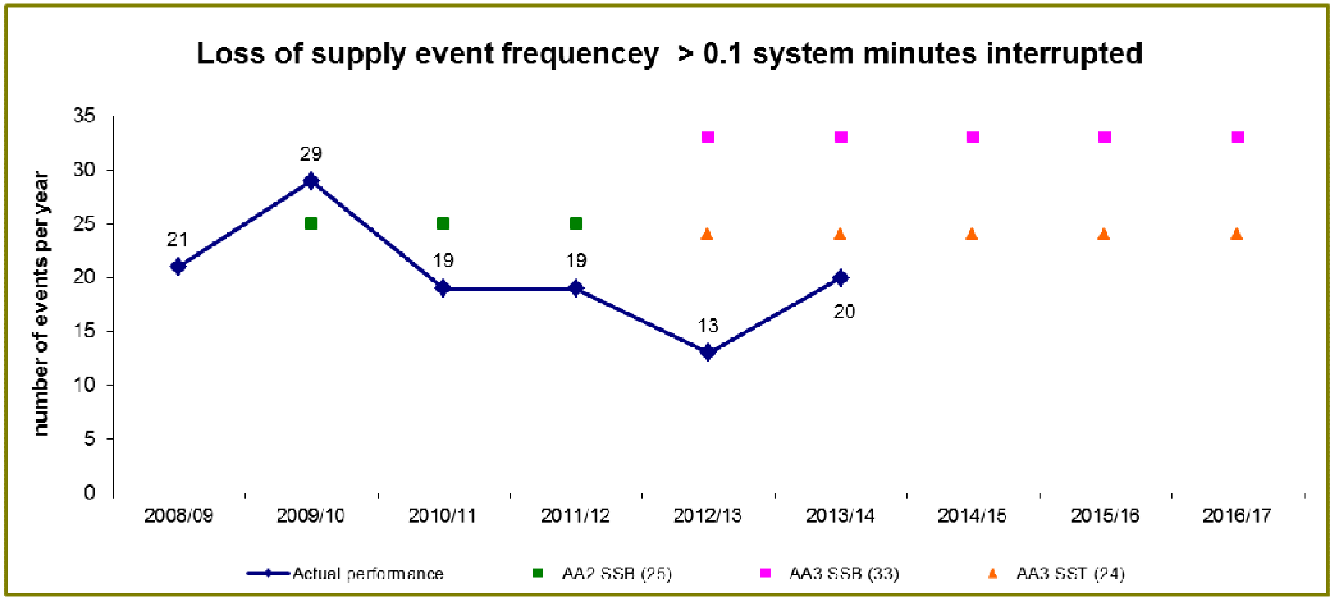

Figure 17: Loss of supply event frequency > 0.1 system minutes interrupted

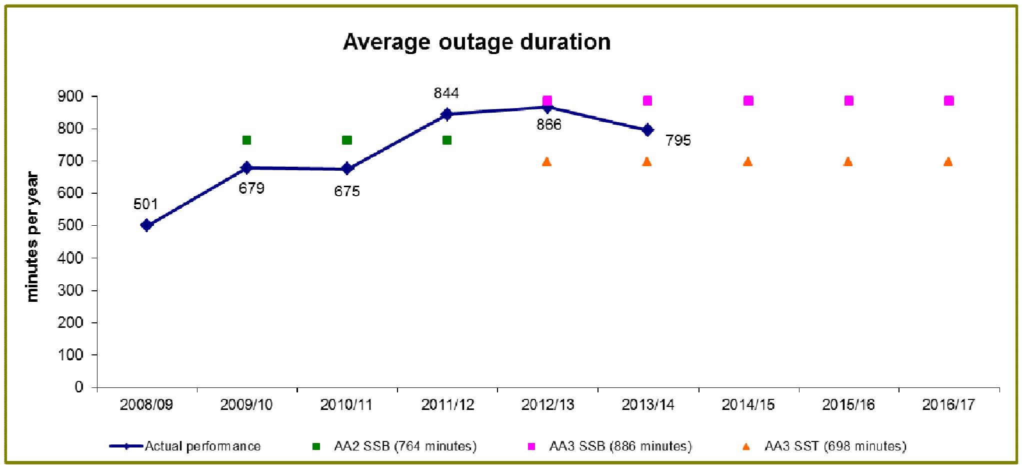

Figure 18: Average outage duration

A.3 Street lighting repair time

Figure 19 and Figure 20 show the street lighting repair time for the metropolitan and regional areas

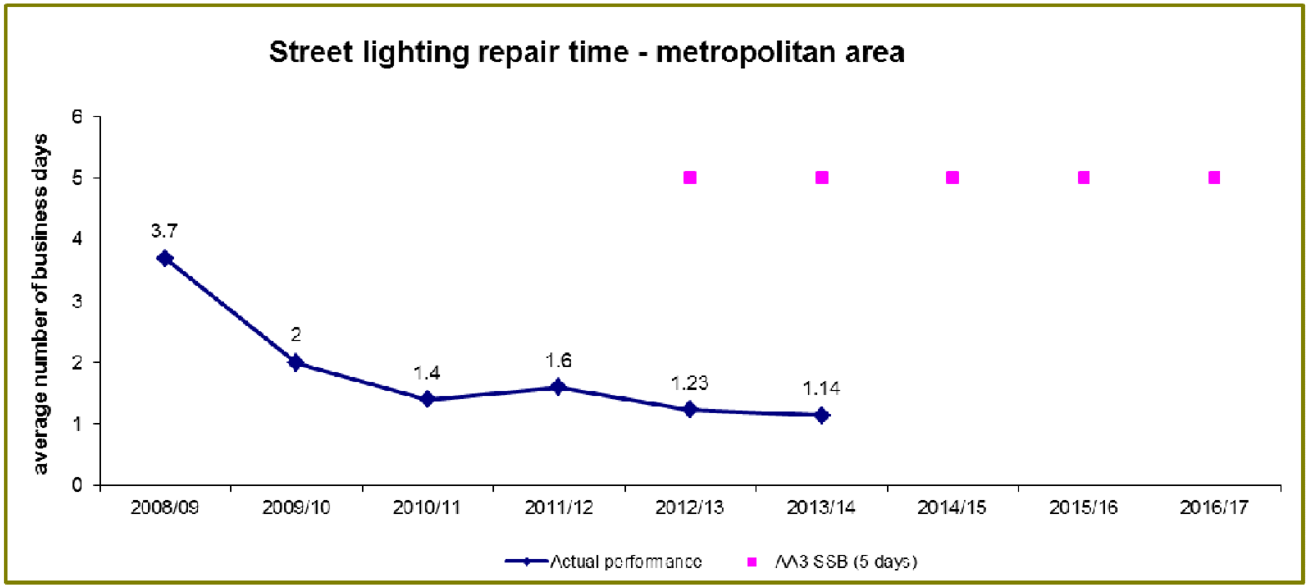

Figure 19: street lighting repair time – Metropolitan area

Note:
The street lighting repair time service standard benchmark was defined using different regions in the AA2 period.
The actual performance values shown in Figure 19 reflect a retrospective calculated value to match the AA3 period benchmarks.

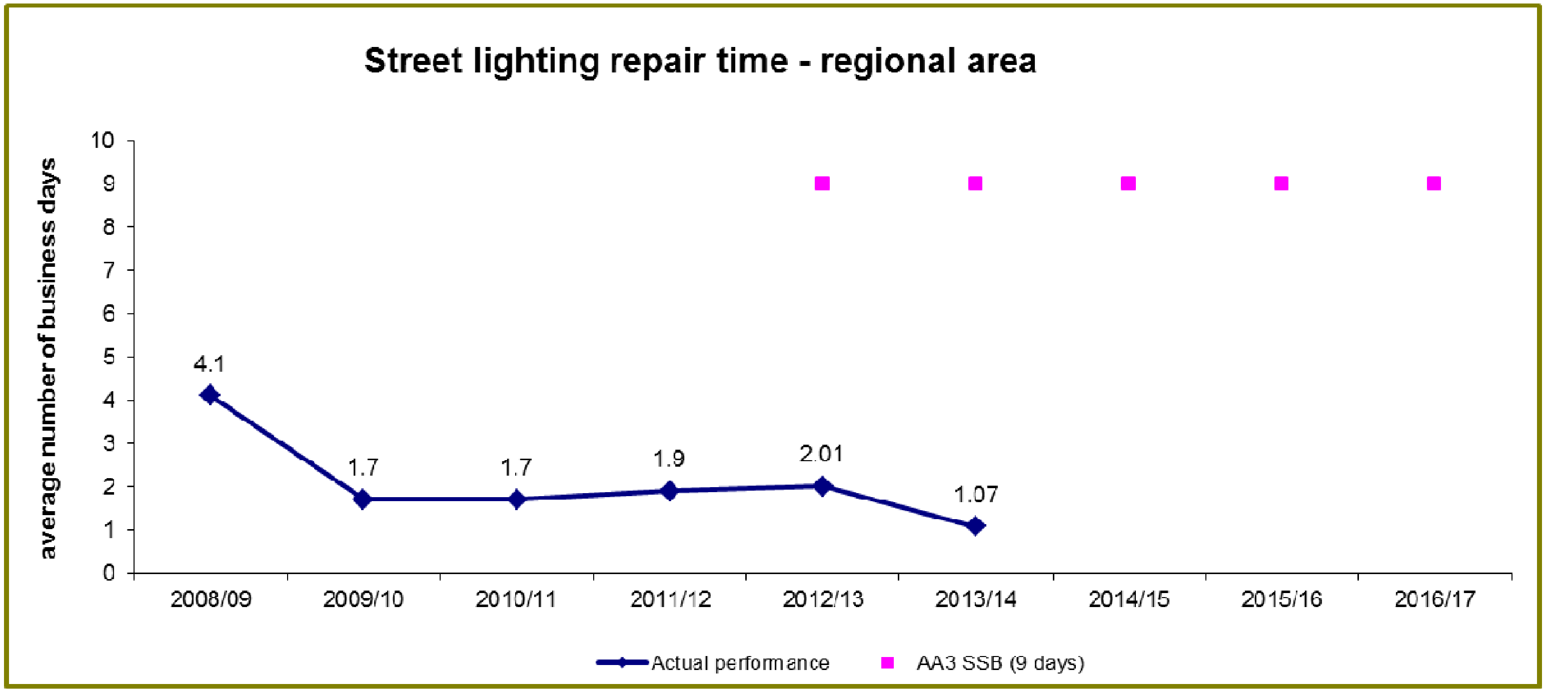

Figure 20: Street lighting repair time – Regional area

Note:
The street lighting repair time service standard benchmark was defined using different regions in the AA2 period.
The actual performance values shown in Figure 20 reflect a retrospective calculated value to match the AA3 period benchmarks.

Appendix B. Trends of fault causes for Rural Long SAIFI

The following graphs show the trends, over the past 5 years up to June 2014, by key causes of interruptions (pole top fires, fauna and wind) which contribute to SAIFI within the Rural Long networks.

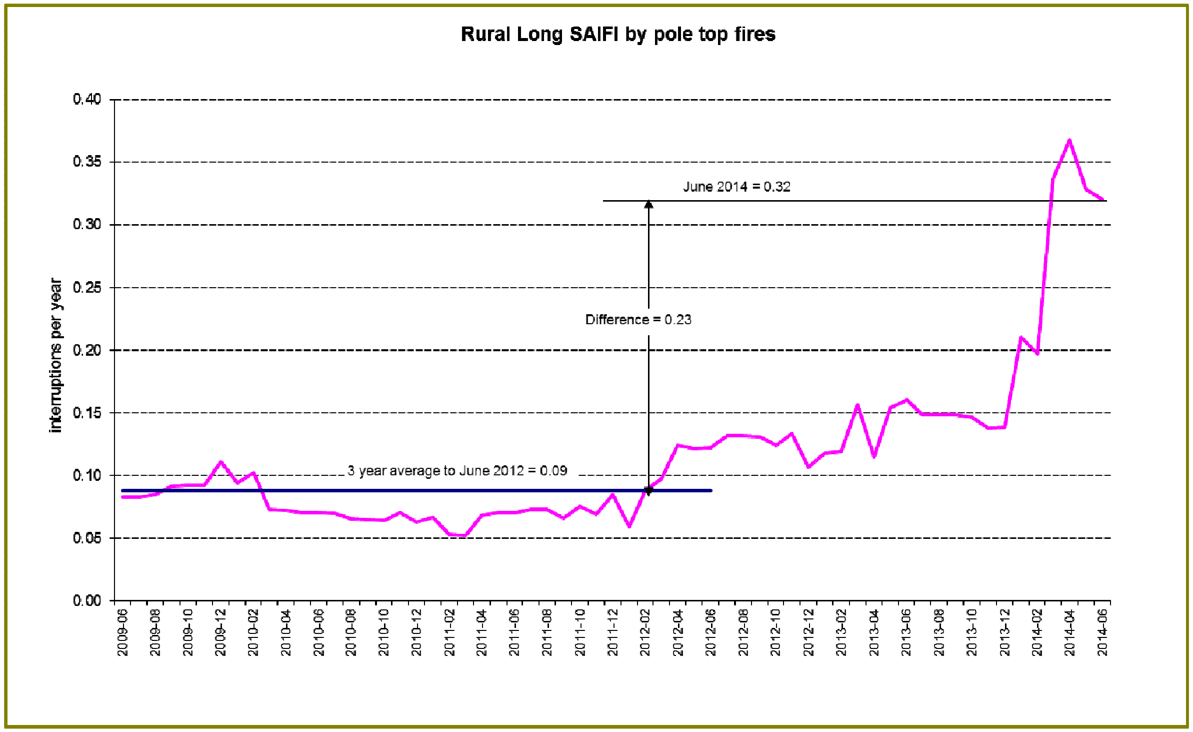

Figure 21: Rural Long SAIFI – pole top fire cause trend

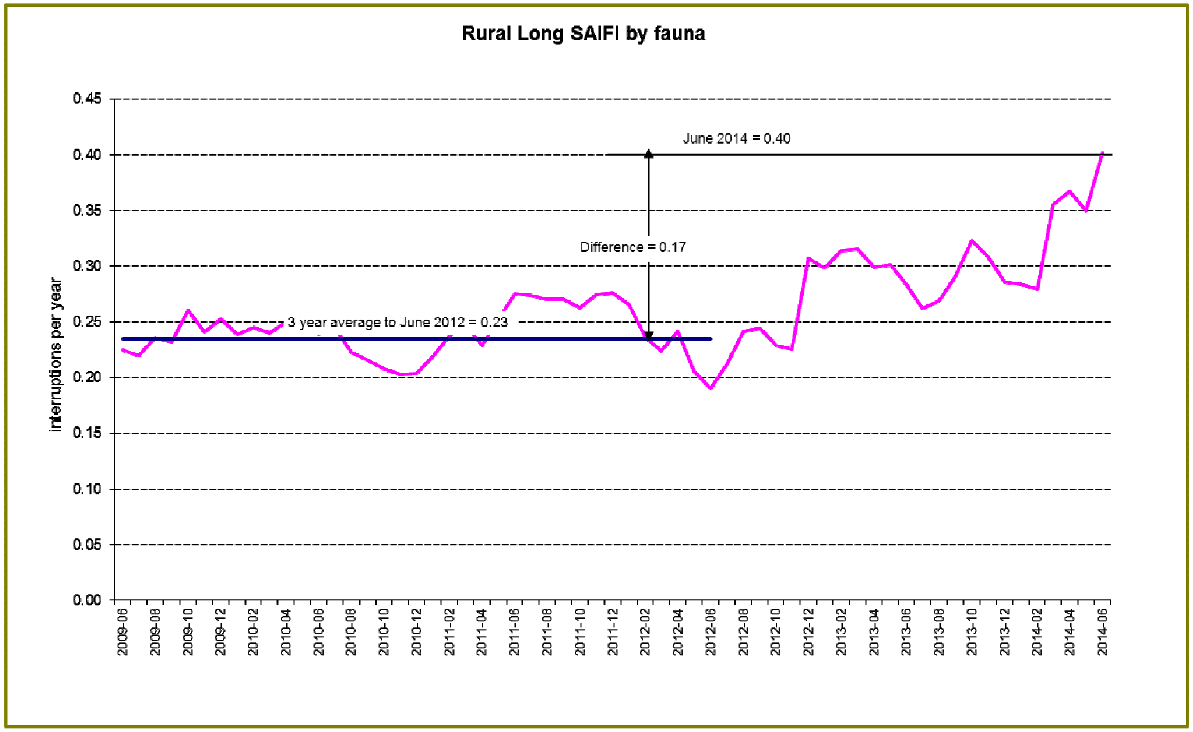

Figure 22: Rural Long SAIFI – fauna cause trend

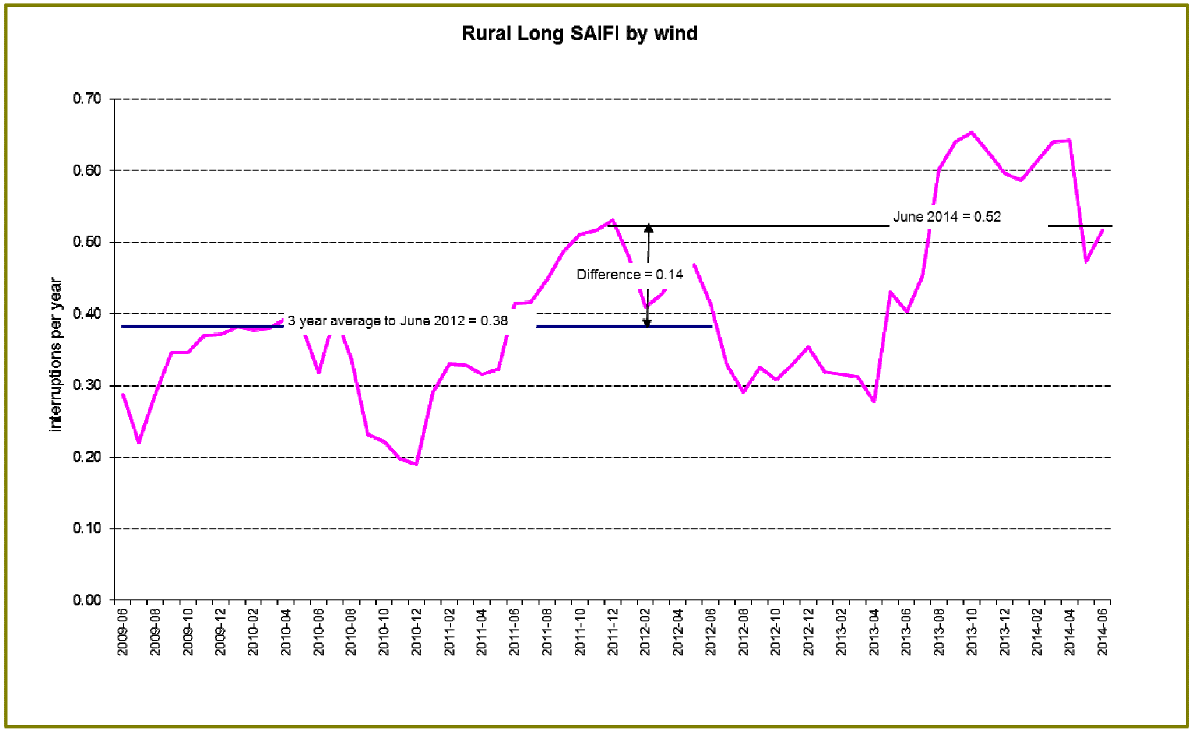

Figure 23: Rural Long SAIFI – wind cause trend

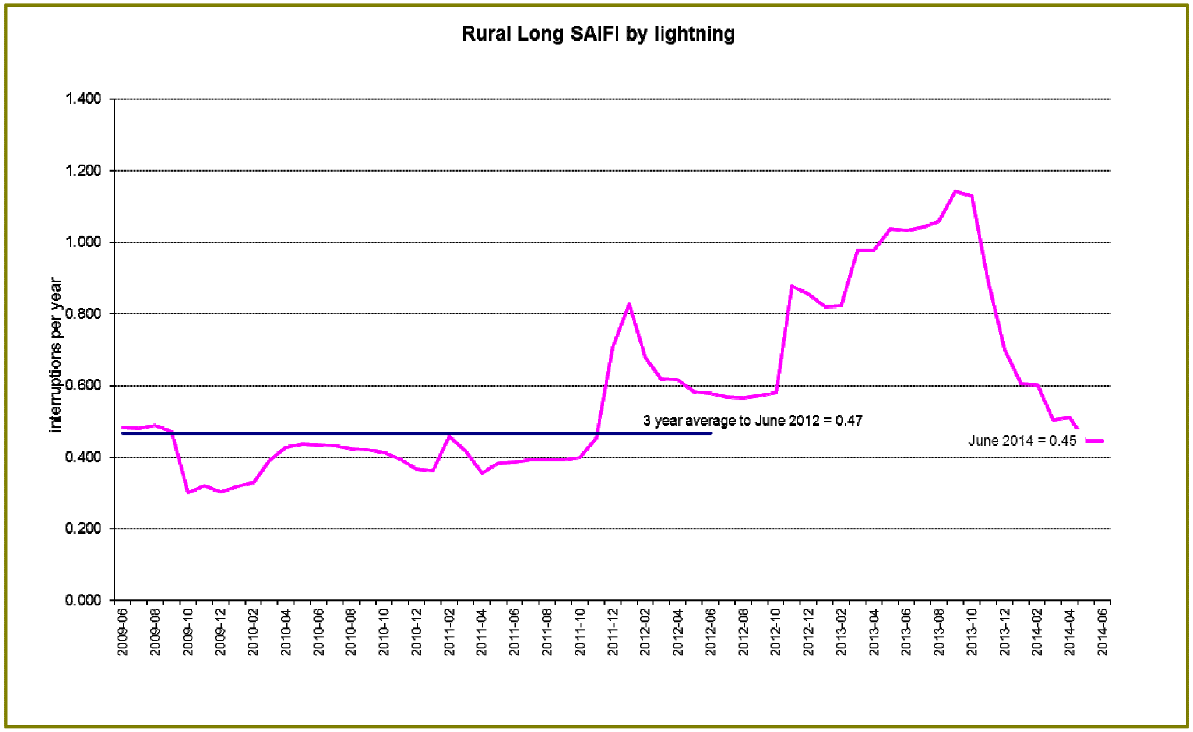

Figure 24: Rural Long SAIFI – lightning cause trend

Appendix C. Trends of fault causes for Network SAIFI

The following graphs show the trends, over the past 5 years up to June 2014, by key causes of interruptions (overhead equipment failure, unknown fault causes, lightning and fauna) which contribute to the Network SAIFI.

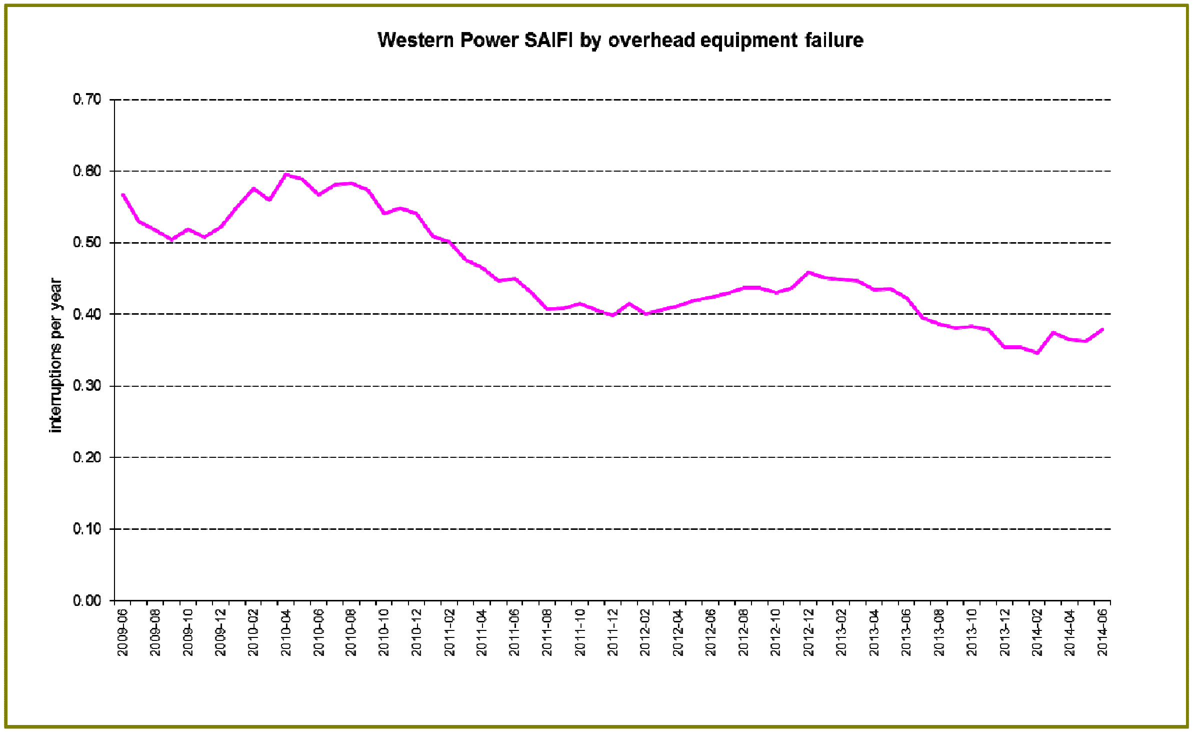

Figure 25: Network SAIFI – overhead equipment failure cause trend

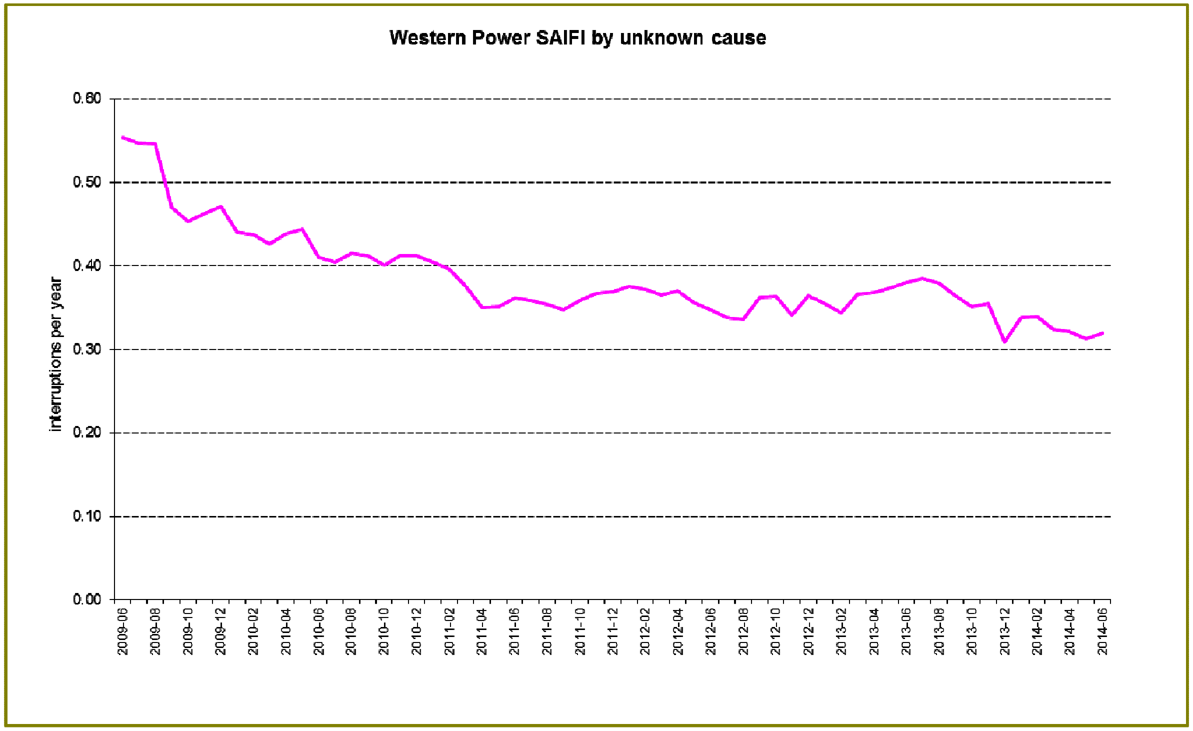

Figure 26: Network SAIFI – unknown cause trend

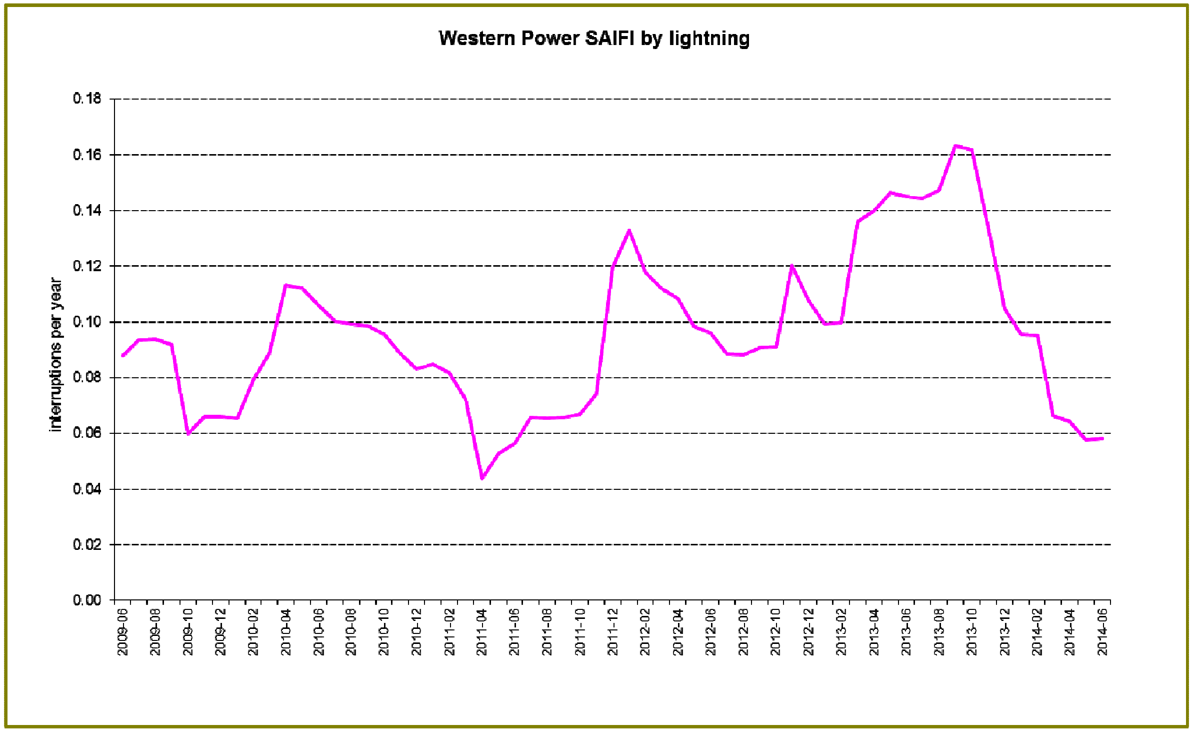

Figure 27: Network SAIFI – lightning cause trend

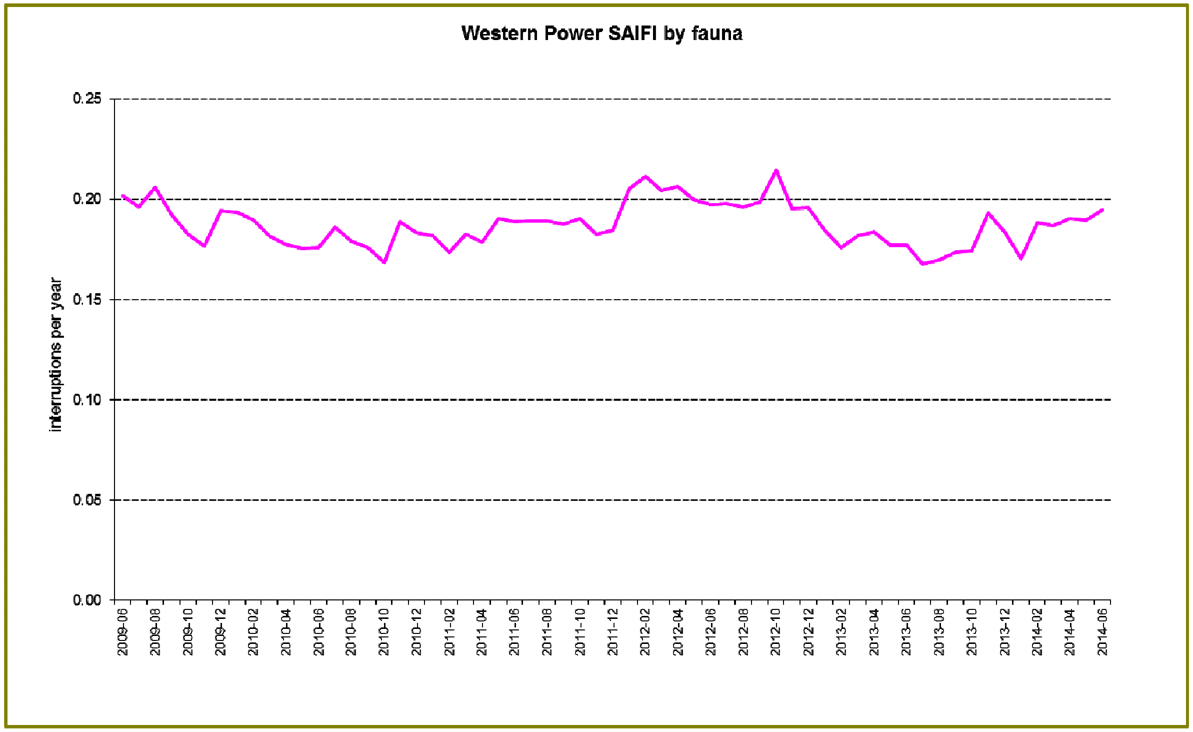

Figure 28: Network SAIFI – fauna cause trend