ACT Government
Chief Minister, Treasury and Economic Development

Utility Licence Annual Technical Report 2016-17

This compliance report is required to be completed by ActewAGL Distribution and approved by the General Manager Networks or the Chief Executive Officer of ActewAGL Distribution

The completed report shall be returned to:

Manager Utilities Technical Regulation
Access Canberra
Chief Minister, Treasury and Economic Development

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Utility Licence Annual Technical Report 2016-17

Electricity Distribution

ActewAGL

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Utility Licence Annual Technical Report 2016-17

Approval

Item No.	Item Description	Response
1	ActewAGL Corporate Approval (Y/N)	
2	Authorising Officer Name	Robert Walker
3	Authorising Officer Title/Position	Senior Regulatory Officer
4	Authorising Officer Signature	Shown below

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About the annual report

Under section 78 of the Utilities (Technical Regulation) Act 2014, the technical regulator's function is to monitor compliance with technical codes by regulated utilities. Including the performance of their services and functions and their compliance with licence conditions. Reports are on a financial year basis and must be submitted to the the Technical Regulator within three months of the end of that year (i.e. by 1 October). The reported information forms the basis for the Technical Regulator's annual compliance report for licensed utility service providers.

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Section 1 Electricity Distribution Supply Standards Code

1.1 Voltage

1.1.1 Nominal Voltage

Item	Reporting requirement	Response
1	Specify the Standard System Nominal Voltage: *[1]	ActewAGL Distributions standard system nominal voltage is 230/400V.
2	When deciding if voltage complies with ActewAGL's Standard System Voltage, what criteria are employed?	ActewAGL Distribution's criteria for standard system voltages is based on a 230/400V supply +10%, -6%.
3	From where is the criteria derived? What is the basis of the criteria?	ActewAGL Distribution's criteria for standard system voltages is as described in AS 60038 Standard Voltages, AS 61000.3.100 Electromagnetic compatibility (EMC) Part 3.100: Limits-Steady state voltage limits in public electricity systems. Electricity Distribution Supply Standards Code.

[1] If the Standard System Voltage does not comply with the Electricity Distribution Supply Standards Code, attach explanatory statement.

Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote. The utility may also provide supplementary information to elaborate on any response given in this section. Items of supplementary information should be in numbered Annexes and the Annex numbers should be provided in the space with the main response.

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Section 1 Electricity Distribution Supply Standards Code
1.1 Voltage
1.1.2 Measures to ensure Quality of Supply

Item	Reporting requirement	Response
1	Supply quality rectification in case of third party induced adverse effects.*[1]	ActewAGL Service and Installation Rules SM11144 'Limitations on Connection and Operation of Equipment' cover this issue; additionally customers' compliance obligations are also detailed in the ActewAGL Deemed Standard Connection contract.
2	Limiting voltage dips.	The defined Voltage Dips (<1 second), may occur due to faults on the distribution network as a result of equipment failure or damage caused to ActewAGL equipment from falling tree branches, vehicle impact, bird/animal contact, adverse atmospheric conditions, and people digging and boring into underground cables. ActewAGL has in place the following measures to limit voltage dips on the network: - Use of fast current limiting fuses and sensitive protection relays, as well as fault current limiting neutral earthing transformers; - A proactive routine preventative maintenance philosophy (as opposed to a breakdown maintenance response), including vegetation management to avoid tree interference with power lines; and - Use advanced mobile power quality analysers that adhere to AS 61000.4.30 and are classified as "Class A" measurement devices to capture voltage dips in the network.
3	Limiting switching transients.	ActewAGL limits switching transients through the following measures: - Use of switching equipment that has small chopping current characteristics; - Implementing routine maintenance programs to avoid excessive switch contact arcing; - Avoiding the use of network capacitors; - Investigate the feasibility of "point on wave" switching in the ActewAGL network; and - Use advanced mobile power quality analysers capable of capturing switching transients.
4	Limiting voltage differences between earth and neutral.	In order to minimise voltage difference between the neutral and earth, ActewAGL observes the substation earthing requirements set out in AS/NZS7000, AS3835.1:2006, AS/NZS4853:2012 and requires customers to use the MEN method of earthing as prescribed in AS 3000 and ActewAGL Service and Installations Rules SM11144 (see Clauses 3.2 and 5.4). ActewAGL also measures all substation-earthing systems for compliance during substation commissioning and as part of regular programmed maintenance activities.

5	Complying with step and touch voltage requirements.	ActewAGL complies with the earth potential rise requirements by basing its network designs on the stated reference publications e.g. The Electricity Association of NSW EC5 – Guide to Protective Earthing and ESAA C (b) 1 – Guidelines for Design and Maintenance of Overhead Distribution and Transmission Lines. ActewAGL also: - Provides training on conducting soil resistivity, EPR, fault loop impedance and neutral integrity testing to all electrical substation fitters; - Plans to implement a five-yearly program to visually inspect earth connections as part of the distribution substation inspection regime; - Procures advanced mobile power quality analysers that adhere to AS 61000.4.30 and are classified as “Class A” devices to record the Earth Potential Rise as part of the updated proactive and reactive QoS survey processes; - Will continue to undertake earthing assessments where earth resistance measurements are performed on selected assets to ensure that step and touch voltages remain within the allowable limits; and - Will continue to develop a network-wide soil resistivity map.
6	Limiting voltage unbalance.	Network voltage unbalance can arise from unbalanced network impedances or unbalanced loads. Balanced network impedances are achieved through design by ensuring that the same conductors are used in each phase and that they are appropriately configured, and by procuring transformers with ganged three phase tap changers. ActewAGL Service and Installation Rules [SM11144], Clause 3.11 also states that customers have a responsibility to ensure voltage balance through balanced load connection. ActewAGL also: - Use advanced mobile power quality analysers that adhere to AS 61000.4.30 and are classified as “Class A” devices to capture voltage unbalance as part of the updated proactive and reactive QoS survey processes; - Only procure and install transformers only with ganged three phase tap changers; - Identify sites, from existing three-phase EDMI and EM5400 smart meters in the network, where voltage unbalance is outside the specified limits.
7	Limiting direct current.	ActewAGL does not distribute DC supply, and requires customer inverters connected to its network to comply with the appropriate Australian Standards (e.g. AS4777) and regulatory requirements as identified in the ActewAGL Service and Installation Rules SM11144. Small quantities of direct current may occur from some lighting equipment and domestic appliances; however AS3100 limits the direct current contribution from these sources.
8	Promoting customer awareness of lightning protection measures.	ActewAGL has published on its website some 'Electrical Safety Tips' that advise customers of factors, including lightning, that may cause malfunctions to electrical equipment and measures customers can take to avoid these problems. ActewAGL has also published on its website the ENA: Customer Guide to Electricity Supply. This guide contains detailed information about the electricity supply, including identifying and dealing with problems caused by lightning.

9	Limiting electromagnetic fields.	ActewAGL is represented on the ENA Management Committee. Through this association ActewAGL has access to the proceedings of the EMF Advisory Committee to become updated on the issues and practices to reduce EMF levels. To satisfy the ARPANSA limits, ActewAGL observes a prudent avoidance practice as recommended by ENA, and is reflected as a consideration in identifying design reservation and easement requirements in ActewAGL's Data Manual SM1183 and Chamber Substation design principles SM11117. EMF complaints/concerns are investigated by ActewAGL on a case-by-case basis.
10	Limiting inductive interference.	ActewAGL has routine maintenance programs in place to ensure equipment is in good working condition, as identified in quoted reference standard AS2344, ActewAGL's network can be expected to satisfy Inductive Interference limits. ActewAGL would investigate complaints of interference due to this phenomenon, if necessary in conjunction with the Australian Communications Authority. ActewAGL also address potential inductive interference at zone substations as part of its Earth Grid refurbishment program.

1 Attach a statement indicating measures taken by the utility to achieve the objective stated in the item. Where these measures include the use of quality procedures:
(a) Identify the procedures by their document numbers
(b) State how many non-conformance reports were raised against these procedures during the report year
(c) State whether any independent audits of these procedures were conducted during the report year; and, if so
(d) State whether the audits raised any non-conformances or established any negative conclusions.

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Section 1 Electricity Distribution Supply Standards Code

1.1 Voltage

1.1.3 Quality of Supply Performance

Item	Reporting requirement	Notifications or complaints received		Valid notifications and compliants[1]		Other customer installation responsible and identified (% of valid)
		Total	**/1000 customers**	**Total**	**/1000 customers**	
1	Rapid fluctuations in supply voltage:	0	0	0	0	0
2	Harmonic content:	0	0	0	0	0
3	Voltage level (urban) Dips to <30% of nominal voltage :	0	0	0	0	0
4	Voltage level (rural) Dips to <30% of nominal voltage:	0	0	0	0	0
5	Switching transients:	0	0	0	0	0
6	Neutral to earth voltage difference:	0	0	0	0	0
7	Voltage unbalance LV Network:	0	0	0	0	0
8	Voltage unbalance HV Network:	0	0	0	0	0
9	DC voltage exceeds +/-10V between neutral & earth at point of supply.	0	0	0	0	0
10	Supply quality problem other than listed above	27	0.13	23	0.11	0

11	Please advise circumstances of each complaint and indicate action taken.	23 complaints were for over voltage. 1 complaint was for low voltage. 1 advice for EMF levels. 2 supply faults		22 high voltage complaints were identified as valid. One high voltage issue was identified while investigating a supply fault. All high voltage complaints have been identified as caused by overvoltage at local substations. Work orders have been issued to recommission the substations to a lower position in accordance with PR1115 Standard Supply Voltages for LV Systems.		No customer installations were found to cause issues impacting the network.

1 That is, where circumstances indicated supply quality was outside specified limits and was not, where applicable, associated with events in the Transmission Network or in generation, or (except in the cases of rapid voltage fluctuations and harmonic content) with equipment in an Electrical Installation.

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Section 1 Electricity Distribution Supply Standards Code

1.1 Voltage

1.1.4 Earth Potential Rises

Item	Reporting requirement	Notifications of complaints received		Valid notifications or compliants (% of valid)
		Total	**/1000 customers**	
1	Step and touch voltage	0	0	0
2	Inductive interference	0	0	0

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Section 1 Electricity Distribution Supply Standards Code

1.2 Lightning

Item	Reporting requirement	Response
1	Number of cases of lightning damage to the network:	20

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Section 1 Electricity Distribution Supply Standards Code

1.3 Supply Reliability

1.3.1 Performance Indicators

Item	Reporting requirement		Feeder category			Overall network
			CBD[4]	Urban	Rural Short	
1	SAIDI[1]	Number of Feeders		217	19	
2		Overall		83.91	82.44	83.74
3		Distribution network—planned		44.80	39.70	44.21
4		Distribution network—unplanned		68.90	75.30	69.63
5		Normalised distribution network—unplanned		39.11	42.74	39.53
6	SAIFI[2]	Overall		0.88	1.04	0.90
7		Distribution network—planned		0.215	0.190	0.212
8		Distribution network—unplanned		0.845	0.977	0.860
9		Normalised distribution network—unplanned		0.669	0.852	0.690
10	CAIDI[3]	Overall		267.12	259.28	265.99
11		Distribution network—planned		208.63	209.10	208.68
12		Distribution network—unplanned		81.57	77.05	80.98
13		Normalised distribution network—unplanned		58.49	50.18	57.31

14			CAIDI	SAIFI	SAIDI	Overall network
15		Minimum Reliability Targets		30.32	46.86	
16		Current Year Reliability Targets		0.59	0.90	

Item	Description	Response
17		
18		
19	Number of feeders recording repeated interruptions for the year (more than 4) - Planned - Unplanned	Planned: 1 (Homann) Unplanned: 1 (Curtin North)
20	Number of feeders whose SAIDI exceed the reported SAIDI average	Average = 39.53 / 236 = 0.1675 Number of feeders exceeding above SAIDI: 60
21	For the top 12 most unreliable feeders for the year (based on SAIDI - unplanned outage), provide a summary report for each feeder outlining: • Feeder Name • Zone Substation source • Dates & Times for all interruptions • Restoration times for each interruption • Total time that the feeder was off supply for each interruption • Total number of customers affected by each interruption • Comments as to what had caused each interruption • Any comments as to actions taken to restore supply	Chuculba Meacham-Bean Daplyn Curtin North Florey Anthony Rolfe Ebden Copland, Belconnen Way North Lander Black Mtn Riley Please refer to sheet 1.3.1.1 for incident list
22		
23		

Item	Description	Response
24	For the top 12 most unreliable feeders for the year (based on SAIFI - unplanned outage), provide a summary report for each feeder outlining: • Feeder Name • Zone Substation source • Dates & Times for all interruptions • Restoration times for each interruption • Total time that the feeder was off supply for each interruption • Total number of customers affected by each interruption • Comments as to what had caused each interruption • Any comments as to actions taken to restore supply	Florey Chuculba Ebden Birrigai Belconnen Way North Curtin North Daplyn Meacham-Bean Copland Strzelecki Anthony Rolfe Wilson Please refer to sheet 1.3.1.2 for incident list
25		

1 SAIDI: total number of minutes, on average, that a customer on a distribution network is without electricity in a year.

2 SAIFI: Average number of times a customer's supply is interrupted per year.

3 CAIDI: Average duration of each interruption

4 CBD feeders – Feeders predominately supplying the following Town Centre's are to be accounted for under this category. CIVIC, FYSHWICK, WODEN / PHILLIP, BELCONNEN, TUGGERANONG and GUNGAHLIN

incident ID	Date of event (DD/MM/YYYY)	Time of interruption (HH:MM)	Asset ID (eg. feeder ID)	Zone Substation	Reason for interruption	Detailed reason for interruption	Number of customers affected by the interruption	Customer Minutes Off Supply	Average duration of sustained customer interruption (minutes)
INC 162002222	04/07/2016	05:29 PM	Ebden	CITY EAST	Asset failure	LV	1	152	152
INC 162002290	06/07/2016	09:51 PM	Black Mtn	CIVIC	Asset failure	LV	55	4,400	80
INC 162002304	07/07/2016	10:40 AM	Belconnen Way North	CIVIC	Asset failure	HV	1,191	29,040	24
INC 162002391	10/07/2016	12:45 PM	Florey	LATHAM	Unknown	Unknown	2,562	121,550	47
INC 162002696	14/07/2016	08:10 AM	Copland	LATHAM	Asset failure	LV	1	44	44
INC 162002747	15/07/2016	10:03 AM	Curtin North	WODEN	Unknown	Unknown	14	3,430	245
INC 162002769	15/07/2016	02:08 PM	Curtin North	WODEN	Asset failure	LV	6	954	159
INC 162002746	15/07/2016	09:56 AM	Florey	LATHAM	Asset failure	LV	1	593	593
INC 162002802	16/07/2016	02:09 PM	Black Mtn	CIVIC	Asset failure	LV	43	2,279	53
INC 162002821	17/07/2016	04:48 PM	Belconnen Way North	CIVIC	Asset failure	LV	31	3,977	128
INC 162002846	18/07/2016	01:20 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	446	446
INC 162002914	19/07/2016	01:09 PM	Black Mtn	CIVIC	Asset failure	LV	1	165	165
INC 162002897	19/07/2016	09:27 AM	Ebden	CITY EAST	Asset failure	LV	1	61	61
INC 162003033	22/07/2016	08:17 PM	Florey	LATHAM	Unknown	Unknown	0	0	0
INC 162003035	22/07/2016	08:38 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	2,562	52,128	20
INC 162003120	24/07/2016	09:50 AM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	0	0	0
INC 162003180	25/07/2016	06:12 PM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	901	60,744	67
INC 162003193	26/07/2016	05:58 AM	Black Mtn	CIVIC	Weather		6	2,340	390
INC 162003234	26/07/2016	05:05 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	157	157
INC 161005889	02/08/2016	06:28 PM	Chuculba	BELCONNEN	Asset failure	LV	1	137	137
INC 161005931	04/08/2016	08:23 AM	Ebden	CITY EAST	Asset failure	LV	1	162	162
INC 161005963	05/08/2016	10:59 AM	Daplyn	WODEN	Asset failure	LV	1	125	125
INC 161006018	08/08/2016	10:14 AM	Florey	LATHAM	Asset failure	LV	1	72	72
INC 161006037	08/08/2016	02:57 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	46	8,004	174
INC 161006062	09/08/2016	02:43 PM	Ebden	CITY EAST	Asset failure	LV	26	1,166	45
INC 161006069	09/08/2016	07:29 PM	Florey	LATHAM	Asset failure	LV	1	120	120
INC 161006085	10/08/2016	01:17 PM	Ebden	CITY EAST	Asset failure	LV	1	334	334
INC 161006195	15/08/2016	02:27 PM	Daplyn	WODEN	Asset failure	LV	1	61	61
INC 161006282	17/08/2016	09:46 PM	Meacham-Bean	BELCONNEN	Asset failure	HV	3,251	167,704	52
INC 161006345	19/08/2016	08:33 PM	Florey	LATHAM	Asset failure	LV	1	34	34
INC 161006442	24/08/2016	08:44 PM	Lander	GOLD CREEK	Asset failure	HV	2,200	189,853	86
INC 161006547	28/08/2016	10:48 PM	Ebden	CITY EAST	Asset failure	HV	0	0	0
INC 161006565	29/08/2016	03:37 PM	Daplyn	WODEN	Asset failure	LV	1	1,058	1,058
INC 161006678	03/09/2016	09:19 PM	Anthony Rolfe	GOLD CREEK	Other	Corrosion	1	99	99
INC 161006713	05/09/2016	04:22 PM	Ebden	CITY EAST	Asset failure	LV	0	0	0

INC 162003390	08/09/2016	01:22 PM	Black Mtn	CIVIC	Vegetation	Grow-in - Other responsible party	43	2,623	61
INC 162003441	10/09/2016	03:39 PM	Lander	GOLD CREEK	Asset failure	LV	1	53	53
INC 162003696	23/09/2016	01:36 PM	Florey	LATHAM	Asset failure	LV	1	57	57
INC 162003712	24/09/2016	11:13 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	221	221
INC 162003778	29/09/2016	05:43 PM	Belconnen Way North	CIVIC	Unknown	Unknown	1,193	61,791	52
INC 161006788	03/10/2016	04:29 PM	Ebden	CITY EAST	Asset failure	HV	1,808	61,472	34
INC 161006861	04/10/2016	06:13 PM	Belconnen Way North	CIVIC	Unknown	Unknown	42	4,536	108
INC 161006803	04/10/2016	04:35 AM	Black Mtn	CIVIC	Unknown	Unknown	0	0	0
INC 161006900	04/10/2016	11:44 PM	Black Mtn	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	731	98,026	134
INC 161006842	04/10/2016	05:42 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	1,799	103,512	58
INC 161006865	04/10/2016	06:42 PM	Ebden	CITY EAST	Asset failure	LV	1	91	91
INC 161006855	04/10/2016	05:42 PM	Florey	LATHAM	Weather		0	0	0
INC 161006889	04/10/2016	08:33 PM	Meacham-Bean	BELCONNEN	Weather		25	4,475	179
INC 161006923	05/10/2016	09:27 AM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	2	234	117
INC 161006932	05/10/2016	01:14 PM	Copland	LATHAM	Weather		1	46	46
INC 161006909	05/10/2016	08:00 AM	Ebden	CITY EAST	Network business	Switching and protection error	1	1,050	1,050
INC 161006952	05/10/2016	06:31 PM	Meacham-Bean	BELCONNEN	Vegetation	Blow-in/Fall-in - Other responsible party	46	920	20
INC 161006977	06/10/2016	03:00 PM	Copland	LATHAM	Asset failure	LV	0	0	0
INC 161006980	06/10/2016	04:15 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	160	160
INC 161007030	08/10/2016	09:45 AM	Florey	LATHAM	Asset failure	LV	38	4,104	108
INC 161007026	08/10/2016	02:09 AM	Lander	GOLD CREEK	Asset failure	LV	1	85	85
INC 161007186	14/10/2016	04:47 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	211	211
INC 161007198	15/10/2016	10:37 AM	Chuculba	BELCONNEN	Asset failure	LV	1	336	336
INC 161007208	15/10/2016	05:30 PM	Curtin North	WODEN	Asset failure	LV	82	30,662	374
INC 161007203	15/10/2016	02:39 PM	Florey	LATHAM	Vegetation	Grow-in - Other responsible party	24	443	18
INC 161007261	18/10/2016	03:27 AM	Belconnen Way North	CIVIC	Animal	Other	1	74	74
INC 161007262	18/10/2016	03:29 AM	Belconnen Way North	CIVIC	Animal	Other	1	70	70
INC 161007343	20/10/2016	07:50 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	38	38
INC 161007604	31/10/2016	04:10 PM	Ebden	CITY EAST	Asset failure	LV	25	950	38
INC 161007759	05/11/2016	11:51 PM	Daplyn	WODEN	Asset failure	LV	1	133	133
INC 161007804	08/11/2016	01:47 AM	Copland	LATHAM	Animal	Other	0	0	0
INC 161007875	10/11/2016	05:59 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	71	71
INC 161007957	12/11/2016	05:02 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1,762	42,676	24
INC 161007953	12/11/2016	02:01 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	255	255
INC 161008191	21/11/2016	10:28 AM	Belconnen Way North	CIVIC	Asset failure	LV	1	69	69
INC 161008238	22/11/2016	04:11 PM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	1	210	210
INC 161008255	23/11/2016	09:55 AM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	27	2,970	110
INC 161008263	23/11/2016	12:58 PM	Curtin North	WODEN	Asset failure	HV	748	32,517	43
INC 161008510	02/12/2016	09:23 PM	Copland	LATHAM	Unknown	Unknown	0	0	0

INC 161008527	04/12/2016	02:35 PM	Belconnen Way North	CIVIC	Asset failure	HV	1,203	33,860	28
INC 161008553	05/12/2016	06:55 PM	Black Mtn	CIVIC	Asset failure	LV	1	86	86
INC 161008544	05/12/2016	10:32 AM	Copland	LATHAM	Asset failure	LV	17	799	47
INC 161008545	05/12/2016	10:33 AM	Copland	LATHAM	Asset failure	LV	32	1,504	47
INC 161008572	06/12/2016	09:49 AM	Belconnen Way North	CIVIC	Asset failure	LV	47	1,833	39
INC 161008631	07/12/2016	10:54 AM	Lander	GOLD CREEK	Third party	Vehicle impact	1	11	11
INC 161008659	08/12/2016	02:09 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	1,411	52,437	37
INC 2125000057	09/12/2016	03:39 AM	Meacham-Bean	BELCONNEN	Asset failure	HV	226	69,129	306
INC 161008705	09/12/2016	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	67	34,840	520
INC 161008725	09/12/2016	03:29 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	246	246
INC 161008746	10/12/2016	10:53 AM	Chuculba	BELCONNEN	Asset failure	LV	1	218	218
INC 161008779	12/12/2016	10:27 AM	Florey	LATHAM	Asset failure	LV	0	0	0
INC 161008838	13/12/2016	05:01 PM	Anthony Rolfe	GOLD CREEK	Third party	Other	1	266	266
INC 161008822	13/12/2016	11:58 AM	Riley	GOLD CREEK	Asset failure	LV	1	91	91
INC 161009101	23/12/2016	05:26 PM	Curtin North	WODEN	Asset failure	HV	1,774	69,088	39
INC 161009121	24/12/2016	05:22 PM	Chuculba	BELCONNEN	Vegetation	Blow-in/Fall-in - Other responsible party	1	305	305
INC 161009119	24/12/2016	05:05 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	273	273
INC 161009136	25/12/2016	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	36	1,044	29
INC 161009193	30/12/2016	12:41 AM	Ebden	CITY EAST	Asset failure	HV	1,807	30	0
INC 161009231	01/01/2017	07:50 PM	Chuculba	BELCONNEN	Overloads		1	27	27
INC 161009237	02/01/2017	02:24 PM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	54	54
INC 161009373	10/01/2017	11:16 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	44	44
INC 161009456	12/01/2017	07:59 PM	Ebden	CITY EAST	Asset failure	LV	1	213	213
INC 161009781	14/01/2017	06:28 AM	Daplyn	WODEN	Weather		1	2,399	2,399
INC 161009930	15/01/2017	10:53 AM	Belconnen Way North	CIVIC	Weather		1	63	63
INC 161009936	15/01/2017	12:20 PM	Black Mtn	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	0	0	0
INC 161010018	16/01/2017	09:27 PM	Belconnen Way North	CIVIC	Weather		0	0	0
INC 161010071	17/01/2017	10:51 PM	Chuculba	BELCONNEN	Asset failure	HV	1,050	91,098	87
INC 161010072	17/01/2017	10:51 PM	Chuculba	BELCONNEN	Asset failure	HV	4,855	227,040	47
INC 161010053	17/01/2017	04:41 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	55	3,685	67
INC 161010109	18/01/2017	02:10 PM	Copland	LATHAM	Asset failure	LV	0	0	0
INC 161010075	18/01/2017	02:23 AM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	1,046	97,969	94
INC 161010123	18/01/2017	08:44 PM	Florey	LATHAM	Asset failure	LV	1	77	77
INC 161010393	27/01/2017	08:08 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	4	4
INC 161010353	27/01/2017	06:39 AM	Ebden	CITY EAST	Vegetation	Grow-in - Other responsible party	26	2,886	111
INC 161010404	28/01/2017	04:15 PM	Black Mtn	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	1	119	119
INC 161010403	28/01/2017	12:21 PM	Copland	LATHAM	Asset failure	LV	1	190	190
INC 161010416	30/01/2017	02:30 AM	Curtin North	WODEN	Asset failure	HV	1,226	115,939	95
INC 161010466	30/01/2017	06:11 PM	Curtin North	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	17	5,005	294

INC 161010448	30/01/2017	04:23 PM	Meacham-Bean	BELCONNEN	Third party	Other	1	879	879
INC 161010506	31/01/2017	01:56 PM	Black Mtn	CIVIC	Weather		0	0	0
INC 161010512	31/01/2017	03:59 PM	Daplyn	WODEN	Asset failure	LV	1	293	293
INC 161010522	01/02/2017	12:01 AM	Curtin North	WODEN	Asset failure	LV	1	87	87
INC 161010624	03/02/2017	07:21 PM	Curtin North	WODEN	Asset failure	LV	1	172	172
INC 161010702	07/02/2017	11:28 AM	Ebden	CITY EAST	Asset failure	LV	54	4,987	92
INC 161010781	09/02/2017	11:24 PM	Florey	LATHAM	Asset failure	LV	1	218	218
INC 161010848	11/02/2017	01:30 PM	Anthony Rolfe	GOLD CREEK	Asset failure	HV	103	2,163	21
INC 161010853	11/02/2017	03:22 PM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	21	588	28
INC 161010836	11/02/2017	06:11 AM	Florey	LATHAM	Asset failure	HV	1,041	78,769	76
INC 161010888	12/02/2017	01:07 PM	Daplyn	WODEN	Asset failure	HV	1,046	84,726	81
INC 161010880	12/02/2017	06:59 AM	Ebden	CITY EAST	Vegetation	Grow-in - Other responsible party	1	703	703
INC 161011007	15/02/2017	07:50 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	102	102
INC 161011168	21/02/2017	03:50 PM	Ebden	CITY EAST	Asset failure	LV	1	404	404
INC 161011337	27/02/2017	03:49 PM	Black Mtn	CIVIC	Asset failure	HV	16	2,788	174
INC 162003888	03/03/2017	12:32 PM	Meacham-Bean	BELCONNEN	Other	Corrosion	1	147	147
INC 162003899	04/03/2017	05:56 AM	Copland	LATHAM	Asset failure	HV	968	86,243	89
INC 162004099	11/03/2017	01:16 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	125	125
INC 162004140	13/03/2017	04:40 PM	Daplyn	WODEN	Asset failure	LV	1	697	697
INC 162004123	13/03/2017	08:04 AM	Ebden	CITY EAST	Asset failure	LV	1	247	247
INC 162004265	18/03/2017	04:10 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	82	82
INC 162004312	20/03/2017	05:55 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	237	237
INC 162004316	20/03/2017	06:10 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	940	940
INC 162004366	21/03/2017	05:29 PM	Black Mtn	CIVIC	Asset failure	LV	1	227	227
INC 162004343	21/03/2017	08:00 AM	Black Mtn	CIVIC	Weather		23	7,612	331
INC 162004350	21/03/2017	10:50 AM	Lander	GOLD CREEK	Weather		1	17	17
INC 162004395	22/03/2017	12:58 PM	Curtin North	WODEN	Third party	Dig-in	23	1,946	85
INC 162004440	23/03/2017	07:05 PM	Ebden	CITY EAST	Asset failure	LV	1	143	143
INC 162004433	23/03/2017	04:14 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	456	456
INC 162004473	24/03/2017	07:09 PM	Chuculba	BELCONNEN	Animal	Other	30	1,440	48
INC 162004492	27/03/2017	12:06 AM	Black Mtn	CIVIC	Unknown	Unknown	1,645	71,994	44
INC 162004644	31/03/2017	04:02 PM	Riley	GOLD CREEK	Asset failure	LV	39	2,329	60
INC 162004665	01/04/2017	11:37 AM	Ebden	CITY EAST	Asset failure	LV	1	92	92
INC 2125000069	09/04/2017	03:14 PM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	1,669	84,333	51
INC 162004826	10/04/2017	01:07 AM	Copland	LATHAM	Unknown	Unknown	0	0	0
INC 162004850	10/04/2017	04:38 PM	Florey	LATHAM	Asset failure	LV	1	108	108
INC 162004944	14/04/2017	12:51 PM	Curtin North	WODEN	Asset failure	LV	0	0	0
INC 162004954	15/04/2017	12:17 PM	Curtin North	WODEN	Asset failure	LV	1	132	132
INC 162004967	16/04/2017	06:49 PM	Chuculba	BELCONNEN	Asset failure	LV	1	108	108

INC 162004974	18/04/2017	01:04 AM	Black Mtn	CIVIC	Unknown	Unknown	0	0	0
INC 162005008	19/04/2017	07:40 AM	Curtin North	WODEN	Asset failure	LV	1	217	217
INC 162005134	25/04/2017	02:31 PM	Daplyn	WODEN	Asset failure	LV	1	268	268
INC 162005311	02/05/2017	07:37 AM	Ebden	CITY EAST	Asset failure	LV	1	320	320
INC 162005357	03/05/2017	05:37 PM	Florey	LATHAM	Asset failure	LV	1	289	289
INC 162005432	06/05/2017	03:13 PM	Ebden	CITY EAST	Asset failure	LV	1	73	73
INC 162005473	08/05/2017	05:14 PM	Chuculba	BELCONNEN	Third party	Dig-in	1	119	119
INC 162005456	08/05/2017	09:51 AM	Ebden	CITY EAST	Asset failure	LV	1	362	362
INC 162005487	09/05/2017	12:17 PM	Curtin North	WODEN	Asset failure	HV	14	983	70
INC 162005517	10/05/2017	09:15 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	22	2,666	121
INC 162005605	13/05/2017	03:35 AM	Lander	GOLD CREEK	Asset failure	LV	14	3,639	260
INC 162005642	14/05/2017	06:14 PM	Copland	LATHAM	Asset failure	LV	1	79	79
INC 162005647	15/05/2017	08:18 AM	Curtin North	WODEN	Asset failure	LV	1	47	47
INC 162005663	15/05/2017	06:29 PM	Riley	GOLD CREEK	Unknown	Unknown	132	4,752	36
INC 162005714	17/05/2017	10:21 PM	Riley	GOLD CREEK	Third party	Other	6	600	100
INC 162005779	20/05/2017	07:14 AM	Chuculba	BELCONNEN	Asset failure	LV	0	0	0
INC 162005799	21/05/2017	09:28 AM	Chuculba	BELCONNEN	Asset failure	LV	1	104	104
INC 162005874	24/05/2017	08:36 AM	Meacham-Bean	BELCONNEN	Weather		1,895	600	0
INC 162005892	24/05/2017	06:09 PM	Riley	GOLD CREEK	Other	Corrosion	2,323	180,100	78
INC 162005933	25/05/2017	10:14 PM	Meacham-Bean	BELCONNEN	Animal	Other	25	250	10
INC 162005934	26/05/2017	02:32 AM	Copland	LATHAM	Asset failure	HV	968	73,911	76
INC 162005973	27/05/2017	01:31 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	29	1,740	60
INC 162006037	30/05/2017	02:51 PM	Lander	GOLD CREEK	Network business	Switching and protection error	2	47	24
INC 162006091	31/05/2017	09:04 PM	Belconnen Way North	CIVIC	Asset failure	LV	46	553	12
INC 161011394	02/06/2017	07:34 AM	Anthony Rolfe	GOLD CREEK	Asset failure	HV	2,826	235,532	83
INC 161011463	05/06/2017	08:35 AM	Ebden	CITY EAST	Asset failure	LV	1	330	330
INC 162006189	10/06/2017	09:38 PM	Copland	LATHAM	Asset failure	LV	1	27	27
INC 162006186	10/06/2017	05:55 PM	Florey	LATHAM	Asset failure	LV	1	66	66
INC 162006241	13/06/2017	07:22 PM	Copland	LATHAM	Asset failure	LV	1	49	49
INC 162006228	13/06/2017	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	155	155
INC 162006332	16/06/2017	11:07 AM	Copland	LATHAM	Asset failure	LV	1	258	258
INC 162006718	30/06/2017	10:42 AM	Belconnen Way North	CIVIC	Asset failure	LV	0	0	0

incident ID	Date of event (DD/MM/YYYY)	Time of interruption (HH:MM)	Asset ID (eg. feeder ID)	Zone Substation	Reason for interruption	Detailed reason for interruption	Number of customers affected by the interruption	Customer Minutes Off Supply	Average duration of sustained customer interruption (minutes)
INC 162002222	4/07/2016	5:29 PM	Ebden	CITY EAST	Asset failure	LV	1	152	152
INC 162002304	7/07/2016	10:40 AM	Belconnen Way North	CIVIC	Asset failure	HV	1,191	29,040	24
INC 162002391	10/07/2016	12:45 PM	Florey	LATHAM	Unknown	Unknown	2,562	121,550	47
INC 162002696	14/07/2016	8:10 AM	Copland	LATHAM	Asset failure	LV	1	44	44
INC 162002747	15/07/2016	10:03 AM	Curtin North	WODEN	Unknown	Unknown	14	3,430	245
INC 162002769	15/07/2016	2:08 PM	Curtin North	WODEN	Asset failure	LV	6	954	159
INC 162002746	15/07/2016	9:56 AM	Florey	LATHAM	Asset failure	LV	1	593	593
INC 162002821	17/07/2016	4:48 PM	Belconnen Way North	CIVIC	Asset failure	LV	31	3,977	128
INC 162002846	18/07/2016	1:20 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	446	446
INC 162002897	19/07/2016	9:27 AM	Ebden	CITY EAST	Asset failure	LV	1	61	61
INC 162003033	22/07/2016	8:17 PM	Florey	LATHAM	Unknown	Unknown	0	0	0
INC 162003035	22/07/2016	8:38 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	2,562	52,128	20
INC 162003120	24/07/2016	9:50 AM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	0	0	0
INC 162003180	25/07/2016	6:12 PM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	901	60,744	67
INC 162003234	26/07/2016	5:05 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	157	157
INC 161005835	30/07/2016	9:57 PM	Wilson	WODEN	Asset failure	LV	1	104	104
INC 161005889	2/08/2016	6:28 PM	Chuculba	BELCONNEN	Asset failure	LV	1	137	137
INC 161005931	4/08/2016	8:23 AM	Ebden	CITY EAST	Asset failure	LV	1	162	162
INC 161005948	4/08/2016	4:41 PM	Wilson	WODEN	Asset failure	LV	1	190	190
INC 161005963	5/08/2016	10:59 AM	Daplyn	WODEN	Asset failure	LV	1	125	125
INC 161006018	8/08/2016	10:14 AM	Florey	LATHAM	Asset failure	LV	1	72	72
INC 161006037	8/08/2016	2:57 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	46	8,004	174
INC 161006062	9/08/2016	2:43 PM	Ebden	CITY EAST	Asset failure	LV	26	1,166	45
INC 161006069	9/08/2016	7:29 PM	Florey	LATHAM	Asset failure	LV	1	120	120
INC 161006085	10/08/2016	1:17 PM	Ebden	CITY EAST	Asset failure	LV	1	334	334
INC 161006152	13/08/2016	8:28 AM	Wilson	WODEN	Asset failure	LV	1	136	136
INC 161006195	15/08/2016	2:27 PM	Daplyn	WODEN	Asset failure	LV	1	61	61
INC 161006282	17/08/2016	9:46 PM	Meacham-Bean	BELCONNEN	Asset failure	HV	3,251	167,704	52
INC 161006345	19/08/2016	8:33 PM	Florey	LATHAM	Asset failure	LV	1	34	34
INC 161006547	28/08/2016	10:48 PM	Ebden	CITY EAST	Asset failure	HV	0	0	0
INC 161006565	29/08/2016	3:37 PM	Daplyn	WODEN	Asset failure	LV	1	1,058	1,058
INC 161006614	31/08/2016	3:04 PM	Birrigai	GOLD CREEK	Asset failure	LV	1	259	259
INC 161006678	3/09/2016	9:19 PM	Anthony Rolfe	GOLD CREEK	Other	Corrosion	1	99	99
INC 161006713	5/09/2016	4:22 PM	Ebden	CITY EAST	Asset failure	LV	0	0	0
INC 162003696	23/09/2016	1:36 PM	Florey	LATHAM	Asset failure	LV	1	57	57
INC 162003712	24/09/2016	11:13 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	221	221
INC 162003778	29/09/2016	5:43 PM	Belconnen Way North	CIVIC	Unknown	Unknown	1,193	61,791	52
INC 161006788	3/10/2016	4:29 PM	Ebden	CITY EAST	Asset failure	HV	1,808	61,472	34
INC 161006861	4/10/2016	6:13 PM	Belconnen Way North	CIVIC	Unknown	Unknown	42	4,536	108

INC 161006842	4/10/2016	5:42 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	1,799	103,512	58
INC 161006865	4/10/2016	6:42 PM	Ebden	CITY EAST	Asset failure	LV	1	91	91
INC 161006855	4/10/2016	5:42 PM	Florey	LATHAM	Weather		0	0	0
INC 161006889	4/10/2016	8:33 PM	Meacham-Bean	BELCONNEN	Weather		25	4,475	179
INC 161006923	5/10/2016	9:27 AM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	2	234	117
INC 161006932	5/10/2016	1:14 PM	Copland	LATHAM	Weather		1	46	46
INC 161006909	5/10/2016	8:00 AM	Ebden	CITY EAST	Network business	Switching and protection error	1	1,050	1,050
INC 161006952	5/10/2016	6:31 PM	Meacham-Bean	BELCONNEN	Vegetation	Blow-in/Fall-in - Other responsible party	46	920	20
INC 161006977	6/10/2016	3:00 PM	Copland	LATHAM	Asset failure	LV	0	0	0
INC 161006980	6/10/2016	4:15 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	160	160
INC 161007030	8/10/2016	9:45 AM	Florey	LATHAM	Asset failure	LV	38	4,104	108
INC 161007043	9/10/2016	1:29 PM	Wilson	WODEN	Third party	Other	23	1,022	44
INC 161007118	12/10/2016	11:35 AM	Wilson	WODEN	Asset failure	LV	1	239	239
INC 161007186	14/10/2016	4:47 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	211	211
INC 161007198	15/10/2016	10:37 AM	Chuculba	BELCONNEN	Asset failure	LV	1	336	336
INC 161007208	15/10/2016	5:30 PM	Curtin North	WODEN	Asset failure	LV	82	30,662	374
INC 161007203	15/10/2016	2:39 PM	Florey	LATHAM	Vegetation	Grow-in - Other responsible party	24	443	18
INC 161007261	18/10/2016	3:27 AM	Belconnen Way North	CIVIC	Animal	Other	1	74	74
INC 161007262	18/10/2016	3:29 AM	Belconnen Way North	CIVIC	Animal	Other	1	70	70
INC 161007343	20/10/2016	7:50 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	38	38
INC 161007357	21/10/2016	12:47 PM	Birrigai	GOLD CREEK	Third party	Other	2	450	225
INC 161007365	21/10/2016	4:36 PM	Birrigai	GOLD CREEK	Third party	Vehicle impact	25	3,200	128
INC 161007604	31/10/2016	4:10 PM	Ebden	CITY EAST	Asset failure	LV	25	950	38
INC 161007641	1/11/2016	4:46 PM	Birrigai	GOLD CREEK	Third party	Dig-in	3	315	105
INC 161007759	5/11/2016	11:51 PM	Daplyn	WODEN	Asset failure	LV	1	133	133
INC 161007804	8/11/2016	1:47 AM	Copland	LATHAM	Animal	Other	0	0	0
INC 161007819	8/11/2016	3:15 PM	Strzelecki	TELOPEA PARK	Asset failure	LV	51	7,344	144
INC 161007875	10/11/2016	5:59 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	71	71
INC 161007929	11/11/2016	4:11 PM	Birrigai	GOLD CREEK	Third party	Other	3	354	118
INC 161007957	12/11/2016	5:02 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1,762	42,676	24
INC 161007953	12/11/2016	2:01 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	255	255
INC 161007983	13/11/2016	1:20 PM	Strzelecki	TELOPEA PARK	Asset failure	HV	3,291	48,279	15
INC 161008191	21/11/2016	10:28 AM	Belconnen Way North	CIVIC	Asset failure	LV	1	69	69
INC 161008238	22/11/2016	4:11 PM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	1	210	210
INC 161008227	22/11/2016	9:45 AM	Wilson	WODEN	Asset failure	LV	1	43	43
INC 161008255	23/11/2016	9:55 AM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party	27	2,970	110
INC 161008263	23/11/2016	12:58 PM	Curtin North	WODEN	Asset failure	HV	748	32,517	43
INC 161008319	25/11/2016	2:06 PM	Wilson	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	36	2,033	56
INC 161008510	2/12/2016	9:23 PM	Copland	LATHAM	Unknown	Unknown	0	0	0
INC 161008527	4/12/2016	2:35 PM	Belconnen Way North	CIVIC	Asset failure	HV	1,203	33,860	28
INC 161008544	5/12/2016	10:32 AM	Copland	LATHAM	Asset failure	LV	17	799	47
INC 161008545	5/12/2016	10:33 AM	Copland	LATHAM	Asset failure	LV	32	1,504	47
INC 161008572	6/12/2016	9:49 AM	Belconnen Way North	CIVIC	Asset failure	LV	47	1,833	39

INC 161008659	8/12/2016	2:09 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	1,411	52,437	37
INC 2125000057	9/12/2016	3:39 AM	Meacham-Bean	BELCONNEN	Asset failure	HV	226	69,129	306
INC 161008705	9/12/2016	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	67	34,840	520
INC 161008725	9/12/2016	3:29 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	246	246
INC 161008746	10/12/2016	10:53 AM	Chuculba	BELCONNEN	Asset failure	LV	1	218	218
INC 161008779	12/12/2016	10:27 AM	Florey	LATHAM	Asset failure	LV	0	0	0
INC 161008838	13/12/2016	5:01 PM	Anthony Rolfe	GOLD CREEK	Third party	Other	1	266	266
INC 161009101	23/12/2016	5:26 PM	Curtin North	WODEN	Asset failure	HV	1,774	69,088	39
INC 161009121	24/12/2016	5:22 PM	Chuculba	BELCONNEN	Vegetation	Blow-in/Fall-in - Other responsible party	1	305	305
INC 161009119	24/12/2016	5:05 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party	1	273	273
INC 161009136	25/12/2016	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	36	1,044	29
INC 161009193	30/12/2016	12:41 AM	Ebden	CITY EAST	Asset failure	HV	1,807	30	0
INC 161009201	30/12/2016	4:14 PM	Wilson	WODEN	Unknown	Unknown	0	0	0
INC 161009231	1/01/2017	7:50 PM	Chuculba	BELCONNEN	Overloads		1	27	27
INC 161009237	2/01/2017	2:24 PM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	54	54
INC 161009373	10/01/2017	11:16 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	1	44	44
INC 161009456	12/01/2017	7:59 PM	Ebden	CITY EAST	Asset failure	LV	1	213	213
INC 161009781	14/01/2017	6:28 AM	Daplyn	WODEN	Weather		1	2,399	2,399
INC 161009930	15/01/2017	10:53 AM	Belconnen Way North	CIVIC	Weather		1	63	63
INC 161010018	16/01/2017	9:27 PM	Belconnen Way North	CIVIC	Weather		0	0	0
INC 161009973	16/01/2017	10:07 AM	Wilson	WODEN	Weather		0	0	0
INC 161010071	17/01/2017	10:51 PM	Chuculba	BELCONNEN	Asset failure	HV	1,050	91,098	87
INC 161010072	17/01/2017	10:51 PM	Chuculba	BELCONNEN	Asset failure	HV	4,855	227,040	47
INC 161010053	17/01/2017	4:41 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party	55	3,685	67
INC 161010109	18/01/2017	2:10 PM	Copland	LATHAM	Asset failure	LV	0	0	0
INC 161010075	18/01/2017	2:23 AM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	1,046	97,969	94
INC 161010123	18/01/2017	8:44 PM	Florey	LATHAM	Asset failure	LV	1	77	77
INC 161010185	20/01/2017	2:02 PM	Wilson	WODEN	Weather		0	0	0
INC 161010393	27/01/2017	8:08 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	4	4
INC 161010353	27/01/2017	6:39 AM	Ebden	CITY EAST	Vegetation	Grow-in - Other responsible party	26	2,886	111
INC 161010392	27/01/2017	6:04 PM	Wilson	WODEN	Asset failure	HV	1,262	20,192	16
INC 161010403	28/01/2017	12:21 PM	Copland	LATHAM	Asset failure	LV	1	190	190
INC 161010416	30/01/2017	2:30 AM	Curtin North	WODEN	Asset failure	HV	1,226	115,939	95
INC 161010466	30/01/2017	6:11 PM	Curtin North	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	17	5,005	294
INC 161010448	30/01/2017	4:23 PM	Meacham-Bean	BELCONNEN	Third party	Other	1	879	879
INC 161010512	31/01/2017	3:59 PM	Daplyn	WODEN	Asset failure	LV	1	293	293
INC 161010522	1/02/2017	12:01 AM	Curtin North	WODEN	Asset failure	LV	1	87	87
INC 161010624	3/02/2017	7:21 PM	Curtin North	WODEN	Asset failure	LV	1	172	172
INC 161010702	7/02/2017	11:28 AM	Ebden	CITY EAST	Asset failure	LV	54	4,987	92
INC 161010781	9/02/2017	11:24 PM	Florey	LATHAM	Asset failure	LV	1	218	218
INC 161010848	11/02/2017	1:30 PM	Anthony Rolfe	GOLD CREEK	Asset failure	HV	103	2,163	21
INC 161010853	11/02/2017	3:22 PM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	21	588	28
INC 161010836	11/02/2017	6:11 AM	Florey	LATHAM	Asset failure	HV	1,041	78,769	76

INC 161010888	12/02/2017	1:07 PM	Daplyn	WODEN	Asset failure	HV	1,046	84,726	81
INC 161010880	12/02/2017	6:59 AM	Ebden	CITY EAST	Vegetation	Grow-in - Other responsible party	1	703	703
INC 161011007	15/02/2017	7:50 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	102	102
INC 161011055	17/02/2017	11:22 AM	Strzelecki	TELOPEA PARK	Third party	Dig-in	1	1,721	1,721
INC 161011168	21/02/2017	3:50 PM	Ebden	CITY EAST	Asset failure	LV	1	404	404
INC 162003888	3/03/2017	12:32 PM	Meacham-Bean	BELCONNEN	Other	Corrosion	1	147	147
INC 162003899	4/03/2017	5:56 AM	Copland	LATHAM	Asset failure	HV	968	86,243	89
INC 162004023	8/03/2017	2:44 PM	Birrigai	GOLD CREEK	Other	Corrosion	2,601	7,803	3
INC 162004064	10/03/2017	10:25 AM	Wilson	WODEN	Asset failure	HV	1,284	104,004	81
INC 162004099	11/03/2017	1:16 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	125	125
INC 162004140	13/03/2017	4:40 PM	Daplyn	WODEN	Asset failure	LV	1	697	697
INC 162004123	13/03/2017	8:04 AM	Ebden	CITY EAST	Asset failure	LV	1	247	247
INC 162004220	16/03/2017	11:11 PM	Wilson	WODEN	Unknown	Unknown	1	111	111
INC 162004265	18/03/2017	4:10 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	82	82
INC 162004312	20/03/2017	5:55 PM	Belconnen Way North	CIVIC	Asset failure	LV	1	237	237
INC 162004316	20/03/2017	6:10 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	940	940
INC 162004309	20/03/2017	5:52 PM	Wilson	WODEN	Unknown	Unknown	1	57	57
INC 162004395	22/03/2017	12:58 PM	Curtin North	WODEN	Third party	Dig-in	23	1,946	85
INC 162004372	22/03/2017	12:22 AM	Wilson	WODEN	Asset failure	LV	66	1,771	27
INC 162004440	23/03/2017	7:05 PM	Ebden	CITY EAST	Asset failure	LV	1	143	143
INC 162004433	23/03/2017	4:14 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	456	456
INC 162004473	24/03/2017	7:09 PM	Chuculba	BELCONNEN	Animal	Other	30	1,440	48
INC 162004665	1/04/2017	11:37 AM	Ebden	CITY EAST	Asset failure	LV	1	92	92
INC 162004800	7/04/2017	6:58 PM	Wilson	WODEN	Asset failure	LV	1	1,033	1,033
INC 2125000069	9/04/2017	3:14 PM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party	1,669	84,333	51
INC 162004826	10/04/2017	1:07 AM	Copland	LATHAM	Unknown	Unknown	0	0	0
INC 162004850	10/04/2017	4:38 PM	Florey	LATHAM	Asset failure	LV	1	108	108
INC 162004831	10/04/2017	9:00 AM	Wilson	WODEN	Overloads		1	138	138
INC 162004944	14/04/2017	12:51 PM	Curtin North	WODEN	Asset failure	LV	0	0	0
INC 162004954	15/04/2017	12:17 PM	Curtin North	WODEN	Asset failure	LV	1	132	132
INC 162004967	16/04/2017	6:49 PM	Chuculba	BELCONNEN	Asset failure	LV	1	108	108
INC 162004995	18/04/2017	2:32 PM	Birrigai	GOLD CREEK	Asset failure	LV	14	495	35
INC 162005004	18/04/2017	8:21 PM	Wilson	WODEN	Asset failure	LV	1	101	101
INC 162005008	19/04/2017	7:40 AM	Curtin North	WODEN	Asset failure	LV	1	217	217
INC 162005134	25/04/2017	2:31 PM	Daplyn	WODEN	Asset failure	LV	1	268	268
INC 162005174	27/04/2017	7:56 AM	Wilson	WODEN	Unknown	Unknown	1	138	138
INC 162005231	28/04/2017	3:18 PM	Birrigai	GOLD CREEK	Asset failure	LV	3	44	15
INC 162005207	28/04/2017	7:33 AM	Wilson	WODEN	Asset failure	LV	52	3,432	66
INC 162005311	2/05/2017	7:37 AM	Ebden	CITY EAST	Asset failure	LV	1	320	320
INC 162005357	3/05/2017	5:37 PM	Florey	LATHAM	Asset failure	LV	1	289	289
INC 162005432	6/05/2017	3:13 PM	Ebden	CITY EAST	Asset failure	LV	1	73	73
INC 162005423	6/05/2017	8:28 AM	Wilson	WODEN	Asset failure	LV	1	293	293
INC 162005475	8/05/2017	8:22 PM	Birrigai	GOLD CREEK	Asset failure	HV	2,192	146,236	67

INC 162005473	8/05/2017	5:14 PM	Chuculba	BELCONNEN	Third party	Dig-in	1	119	119
INC 162005456	8/05/2017	9:51 AM	Ebden	CITY EAST	Asset failure	LV	1	362	362
INC 162005487	9/05/2017	12:17 PM	Curtin North	WODEN	Asset failure	HV	14	983	70
INC 162005517	10/05/2017	9:15 AM	Anthony Rolfe	GOLD CREEK	Asset failure	LV	22	2,666	121
INC 162005569	12/05/2017	8:18 AM	Wilson	WODEN	Asset failure	LV	43	5,074	118
INC 162005642	14/05/2017	6:14 PM	Copland	LATHAM	Asset failure	LV	1	79	79
INC 162005647	15/05/2017	8:18 AM	Curtin North	WODEN	Asset failure	LV	1	47	47
INC 162005779	20/05/2017	7:14 AM	Chuculba	BELCONNEN	Asset failure	LV	0	0	0
INC 162005799	21/05/2017	9:28 AM	Chuculba	BELCONNEN	Asset failure	LV	1	104	104
INC 162005874	24/05/2017	8:36 AM	Meacham-Bean	BELCONNEN	Weather		1,895	600	0
INC 162005933	25/05/2017	10:14 PM	Meacham-Bean	BELCONNEN	Animal	Other	25	250	10
INC 162005934	26/05/2017	2:32 AM	Copland	LATHAM	Asset failure	HV	968	73,911	76
INC 162005973	27/05/2017	1:31 PM	Meacham-Bean	BELCONNEN	Asset failure	LV	29	1,740	60
INC 162006091	31/05/2017	9:04 PM	Belconnen Way North	CIVIC	Asset failure	LV	46	553	12
INC 161011394	2/06/2017	7:34 AM	Anthony Rolfe	GOLD CREEK	Asset failure	HV	2,826	235,532	83
INC 161011463	5/06/2017	8:35 AM	Ebden	CITY EAST	Asset failure	LV	1	330	330
INC 162006189	10/06/2017	9:38 PM	Copland	LATHAM	Asset failure	LV	1	27	27
INC 162006186	10/06/2017	5:55 PM	Florey	LATHAM	Asset failure	LV	1	66	66
INC 162006241	13/06/2017	7:22 PM	Copland	LATHAM	Asset failure	LV	1	49	49
INC 162006228	13/06/2017	11:46 AM	Meacham-Bean	BELCONNEN	Asset failure	LV	1	155	155
INC 162006332	16/06/2017	11:07 AM	Copland	LATHAM	Asset failure	LV	1	258	258
INC 162006641	28/06/2017	8:17 AM	Wilson	WODEN	Asset failure	LV	1	227	227
INC 162006696	29/06/2017	5:10 PM	Wilson	WODEN	Asset failure	LV	1	313	313
INC 162006718	30/06/2017	10:42 AM	Belconnen Way North	CIVIC	Asset failure	LV	0	0	0

ACT Government
Chief Minister, Treasury and Economic Development

Contents

Section 1 Electricity Distribution Supply Standards Code
1.3 Supply Reliability
1.3.2 132kV and 66kV sub-transmission line performance

Item	Reporting requirement	Response
1	132kV sub-transmission lines in service - Number - Total Length	189km
2	66kV sub-transmission lines in service - Number - Total Length	7km
3	132kV Underground Cables in Service - Number - Total Length	6km
4	Number of 132kV or 66kV sub-transmission line and cable unplanned Interruptions experienced for the year	0
5	For all interruptions above, provide the following details: • Sub-transmission Line Identification Name • Voltage Level • Dates & Times of all interruptions • Restoration times for each interruption • Total time that the line or section of the line was off supply for each interruption • What caused each interruption? • Action taken to restore supply	N/A

Item	Reporting requirement	Response
6	Provide details of any Line enhancements, additions, and any lines decommissioned during the reporting year.	N/A
7	Provide Geographic Schematic of the 132kVand 66kV network and highlight additions for the reporting period and also highlight any proposed changes that have been identified in planning reports.	N/A
8	Provide Single line schematics of all 132kVand 66kV Substations and Switching stations and highlight additions for the reporting period and also highlight any proposed changes that have been identified in planning reports.	N/A

List all Zone Substations / Switching Stations	Incoming network voltage/ Outgoing Feeder Voltages (132kV/11kV)	Substation maximum supply capacity MVA	Number of 132kV or 66kV yard incidents or interruptions due to defects within station recorded for the year*[1]	Number of 11kV / 22kV / 33kV switchgear incidents due to defects within station recorded for the year*1	Total number of feeder trips due to feeder faults for the year	Total number of feeders supplied by the Zone S/S
Angle Crossing	132kV/11kV	15				1
Belconnen	132kV/11kV	55+55		1 (Chuculba)	9	19
Bruce	132kV	Nil				0
Causeway	132kV	Nil				0
City East	132kV/11kV	57+55+57			6	28
Civic	132kV/11kV	55+55+55			10	16
East Lake	132kV/11kV	55			1	5
Fyshwick	66kV/11kV	20+25+25			3	9
Gilmore	132kV/11kV	45+45			4	15
Gold Creek	132kV/11kV	57+57			8	17
Latham	132kV/11kV	50+50+50			25	21
Telopea Park	132kV/11kV	50+50+50		1 (Throsby)	11	35
Theodore	132kV/11kV	45+45			1	11
Wanniassa	132kV/11kV	50+50+50			16	25
Woden	132kV/11kV	50+50+50			19	30
	132kV/11kV	15				4

Provide details of any substation enhancements, additions, and any substations decommissioned during the reporting year.	Please refer to sheet 1.3.3.1 for details of the incident list

1 For all incidents, provide full details associated with each matter (these are to be all incidents or matters emanating from or caused by operations within the Zone or Switching Station).
This should include:

- Zone , Switching Station
- Date and time of incident.
- Description of the incident,
- Impact on the Zone / Switching Station and impact on the electricity supply from that Zone or Switching Station
- Total number of customers affected by any interruption to supply,
- Time period that customers were off supply
- Cause of the incident
- Actions taken to rectify the incident
- Actions taken or to be taken to prevent or minimise the risk of any repeat of the incident.

Zone	Feeder	Received Date	Received Time	Comments (including the cause of the incident)	Duration Customers Off Supply (mins)	No. of Consumers Affected	

Incident ID	Date of event	Time of interruption	Asset ID (eg. feeder ID)	Zone Substation	Reason for interruption	Detailed reason for interruption		Number of customers affected by the interruption	Customer Minutes Off Supply	Average duration of sustained customer interruption (minutes)
INC 162002304	07/07/2016	10:40 AM	Belconnen Way North	CIVIC	Asset failure	HV		1,191	29,040	24
INC 162002391	10/07/2016	12:45 PM	Florey	LATHAM	Unknown	Unknown		2,562	121,550	47
INC 162002498	12/07/2016	09:14 PM	Whyalla-Pialligo	FYSHWICK	Vegetation	Blow-in/Fall-in - Other responsible party		159	35,662	224
INC 162002499	12/07/2016	09:15 PM	Elkington	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,569	82,750	53
INC 162002515	12/07/2016	10:06 PM	Latham	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,061	104,088	98
INC 162002548	12/07/2016	11:49 PM	Paterick	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,241	140,233	113
INC 162002512	12/07/2016	09:56 PM	Powers	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,270	185,551	146
INC 162002479	12/07/2016	07:40 PM	Langdon	WANNIASSA	Vegetation	Blow-in/Fall-in - Other responsible party		1,205	42,151	35
INC 162002524	12/07/2016	10:45 PM	Marconi	WANNIASSA	Weather		0	1,459	409,961	281
INC 162002546	12/07/2016	11:37 PM	Bunbury	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party		1,279	115,738	90
INC 162002477	12/07/2016	07:23 PM	McInnes	WODEN	Weather		0	1,104	84,825	77
INC 162002687	13/07/2016	08:28 PM	Nona	GOLD CREEK	Asset failure	HV		2,586	114,208	44
INC 162002890	19/07/2016	05:48 AM	Lambrigg	WANNIASSA	Vegetation	Blow-in/Fall-in - Other responsible party		1,288	47,656	37
INC 162003035	22/07/2016	08:38 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		2,562	52,128	20
INC 162003041	23/07/2016	12:14 AM	Homann	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,354	81,431	60
INC 162003084	23/07/2016	12:53 PM	Brookman	WANNIASSA	Vegetation	Blow-in/Fall-in - Other responsible party		1,470	8,820	6
INC 162003180	25/07/2016	06:12 PM	Belconnen Way North	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party		901	60,744	67
INC 161006045	09/08/2016	12:55 AM	Follingsby	WODEN	Asset failure	HV		1,096	83,819	76
INC 161006171	14/08/2016	05:25 PM	Shannon	BELCONNEN	Asset failure	HV		1,295	103,437	80
INC 161006282	17/08/2016	09:46 PM	Meacham-Bean	BELCONNEN	Asset failure	HV		3,251	167,704	52
INC 162003357	19/08/2016	03:37 PM	Tennant	FYSHWICK	Unknown	Unknown		345	10,695	31
INC 161006342	19/08/2016	08:11 PM	Tillyard	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,365	27,300	20
INC 161006442	24/08/2016	08:44 PM	Lander	GOLD CREEK	Asset failure	HV		2,200	189,853	86
INC 161006624	31/08/2016	09:04 PM	Sternberg	WANNIASSA	Asset failure	HV		222	5,694	26
INC 162003778	29/09/2016	05:43 PM	Belconnen Way North	CIVIC	Unknown	Unknown		1,193	61,791	52
INC 161006788	03/10/2016	04:29 PM	Ebden	CITY EAST	Asset failure	HV		1,808	61,472	34
INC 161006842	04/10/2016	05:42 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party		1,799	103,512	58
INC 161006900	04/10/2016	11:44 PM	Black Mtn	CIVIC	Vegetation	Blow-in/Fall-in - Other responsible party		731	98,026	134
INC 161007040	09/10/2016	01:54 AM	Symers	WANNIASSA	Animal	Other		1	3,505	3,505
INC 161007191	14/10/2016	07:05 PM	Macrossan	LATHAM	Asset failure	HV		2,555	49,358	19
INC 161007214	16/10/2016	12:32 AM	Broughton	TELOPEA PARK	Asset failure	HV		30	1,650	55
INC 161007909	11/11/2016	12:06 AM	Melba	LATHAM	Unknown	Unknown		4	36,166	9,042
INC 161007957	12/11/2016	05:02 PM	Copland	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,762	42,676	24
INC 161007984	13/11/2016	01:20 PM	Throsby	TELOPEA PARK	Asset failure	HV		1,367	20,505	15
INC 161008162	19/11/2016	11:30 PM	Duffy	CITY EAST	Asset failure	HV		1,371	54,318	40
INC 161008263	23/11/2016	12:58 PM	Curtin North	WODEN	Asset failure	HV		748	32,517	43

INC 161008493	02/12/2016	12:05 PM	Verbrugghen	LATHAM	Third party	Vehicle impact		885	36,160	41
INC 161008527	04/12/2016	02:35 PM	Belconnen Way North	CIVIC	Asset failure	HV		1,203	33,860	28
INC 161008641	07/12/2016	05:18 PM	Sainsbury	WANNIASSA	Asset failure	HV		1,342	135,546	101
INC 161008659	08/12/2016	02:09 PM	Ebden	CITY EAST	Vegetation	Blow-in/Fall-in - Other responsible party		1,411	52,437	37
INC 161008669	08/12/2016	04:00 PM	Yarralumla	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party		648	25,017	39
INC 161008964	17/12/2016	05:44 PM	Giles	TELOPEA PARK	Vegetation	Blow-in/Fall-in - Other responsible party		1,283	46,816	36
INC 161009091	22/12/2016	09:18 PM	Fairley	THEODORE	Asset failure	HV		1,145	74,499	65
INC 161009101	23/12/2016	05:26 PM	Curtin North	WODEN	Asset failure	HV		1,774	69,088	39
INC 161009152	26/12/2016	11:26 PM	Cowper	CITY EAST	Asset failure	HV		1,691	113,691	67
INC 161009219	31/12/2016	03:28 PM	Sternberg	WANNIASSA	Asset failure	HV		222	5,902	27
INC 161009364	10/01/2017	10:17 AM	Chan	BELCONNEN	Asset failure	HV		382	22,142	58
INC 161009417	11/01/2017	06:06 PM	Beggs	GILMORE	Asset failure	HV		499	22,165	44
INC 161009449	12/01/2017	06:05 PM	O-Loghlen	LATHAM	Asset failure	HV		1,177	39,933	34
INC 161009513	13/01/2017	04:00 PM	Belconnen Way North	CIVIC	Weather		0	1,207	211,927	176
INC 161009514	13/01/2017	04:00 PM	Black Mtn	CIVIC	Weather		0	725	57,526	79
INC 161009502	13/01/2017	03:56 PM	Florey	LATHAM	Vegetation	Blow-in/Fall-in - Other responsible party		1,041	199,235	191
INC 161009508	13/01/2017	03:57 PM	Homann	LATHAM	Weather		0	884	239,179	271
INC 161009507	13/01/2017	03:57 PM	Latham	LATHAM	Weather		0	1,062	232,063	219
INC 161009509	13/01/2017	03:57 PM	Markell	LATHAM	Weather		0	1,452	284,289	196
INC 161009503	13/01/2017	03:56 PM	Paterick	LATHAM	Weather		0	1,234	170,375	138
INC 161009506	13/01/2017	03:58 PM	Weir	LATHAM	Weather		0	1,227	309,736	252
INC 161009517	13/01/2017	04:02 PM	Matthews	WANNIASSA	Weather		0	1,761	429,304	244
INC 161009516	13/01/2017	04:02 PM	Theodore	WODEN	Weather		0	1,374	234,043	170
INC 161009788	14/01/2017	07:12 AM	Symers	WANNIASSA	Weather		0	617	38,730	63
INC 161009946	15/01/2017	05:34 PM	Matthews	WANNIASSA	Animal	Other		808	24,240	30
INC 161010008	16/01/2017	05:36 PM	ANU Backup-Belmore	TELOPEA PARK	Asset failure	HV		1,015	44,508	44
INC 161010074	17/01/2017	10:51 PM	Baldwin-Joy Cummins	BELCONNEN	Asset failure	HV		1,521	13,689	9
INC 161010071	17/01/2017	10:51 PM	Chuculba	BELCONNEN	Asset failure	HV		1,050	91,098	87
INC 161010079	18/01/2017	07:29 AM	Cameron South	BELCONNEN	Asset failure	HV		1,070	60,437	56
INC 161010075	18/01/2017	02:23 AM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party		1,046	97,969	94
INC 161010298	24/01/2017	05:05 PM	ANU Backup-Belmore	TELOPEA PARK	Asset failure	HV		880	39,270	45
INC 161010392	27/01/2017	06:04 PM	Wilson	WODEN	Asset failure	HV		1,262	20,192	16
INC 161010416	30/01/2017	02:30 AM	Curtin North	WODEN	Asset failure	HV		1,226	115,939	95
INC 161010511	31/01/2017	02:39 PM	Mundaring-Russell No 3	TELOPEA PARK	Asset failure	HV		695	23,119	33
INC 161010591	03/02/2017	03:55 AM	Magenta-Boulevard North	GOLD CREEK	Asset failure	HV		141	12,207	87
INC 161010648	06/02/2017	12:45 AM	Reid	WANNIASSA	Asset failure	HV		1,049	49,507	47
INC 161010673	06/02/2017	04:24 PM	King	WODEN	Asset failure	HV		340	10,797	32
INC 161010729	08/02/2017	12:25 PM	Haydon	BELCONNEN	Asset failure	HV		1,143	44,445	39
INC 161010721	08/02/2017	08:08 AM	Swinden-Lampard	BELCONNEN	Asset failure	HV		1,014	2,501	2
INC 161010819	10/02/2017	07:43 PM	Nona	GOLD CREEK	Asset failure	HV		2,727	277,485	102
INC 161010808	10/02/2017	04:45 PM	Verbrugghen	LATHAM	Asset failure	HV		882	88,157	100

INC 161010836	11/02/2017	06:11 AM	Florey	LATHAM	Asset failure	HV		1,041	78,769	76
INC 161010888	12/02/2017	01:07 PM	Daplyn	WODEN	Asset failure	HV		1,046	84,726	81
INC 161010930	13/02/2017	03:16 PM	ANU Backup-Belmore	TELOPEA PARK	Asset failure	HV		879	68,151	78
INC 161011096	18/02/2017	12:20 PM	Matthews	WANNIASSA	Vegetation	Grow-in - Other responsible party		138	434	3
INC 161011298	24/02/2017	07:14 PM	Miller	CIVIC	Vegetation	Grow-in - Other responsible party		1,039	43,026	41
INC 161011284	24/02/2017	02:44 PM	Erindale	WANNIASSA	Asset failure	HV		141	1,692	12
INC 162003823	01/03/2017	02:10 PM	Follingsby	WODEN	Asset failure	HV		328	39,521	120
INC 162003830	01/03/2017	03:06 PM	McInnes	WODEN	Asset failure	HV		1,083	19,494	18
INC 162003899	04/03/2017	05:56 AM	Copland	LATHAM	Asset failure	HV		968	86,243	89
INC 162004064	10/03/2017	10:25 AM	Wilson	WODEN	Asset failure	HV		1,284	104,004	81
INC 162004189	16/03/2017	08:15 AM	Willoughby	GILMORE	Asset failure	HV		349	2,443	7
INC 162004239	17/03/2017	03:42 PM	Ferdinand	CITY EAST	Asset failure	HV		2,007	5,641	3
INC 162004253	17/03/2017	10:02 PM	Verbrugghen	LATHAM	Asset failure	HV		950	32,537	34
INC 162004282	19/03/2017	08:02 PM	Monash	TELOPEA PARK	Asset failure	HV		198	14,162	72
INC 162004462	24/03/2017	10:43 AM	Grimshaw	WANNIASSA	Asset failure	HV		2,071	26,423	13
INC 162004492	27/03/2017	12:06 AM	Black Mtn	CIVIC	Unknown	Unknown		1,645	71,994	44
INC 162004507	27/03/2017	02:19 PM	Airport	FYSHWICK	Asset failure	HV		69	4,058	59
INC 162004514	27/03/2017	08:08 PM	Tillyard	LATHAM	Weather		0	1,366	82,896	61
INC 162004529	28/03/2017	07:41 AM	Isa	EAST LAKE	Animal	Other		294	14,881	51
INC 162004623	31/03/2017	02:54 AM	Throsby	TELOPEA PARK	Vegetation	Blow-in/Fall-in - Other responsible party		1,310	81,475	62
INC 2125000069	09/04/2017	03:14 PM	Daplyn	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party		1,669	84,333	51
INC 162004874	11/04/2017	02:33 PM	Empire	TELOPEA PARK	Asset failure	HV		1,214	55,654	46
INC 162005391	04/05/2017	06:31 PM	Langdon	WANNIASSA	Asset failure	HV		2,071	155,565	75
INC 162005475	08/05/2017	08:22 PM	Birrigai	GOLD CREEK	Asset failure	HV		2,192	146,236	67
INC 162005493	09/05/2017	01:54 PM	Tidbinbilla 22kV	WODEN	Unknown	Unknown		15	592	39
INC 162005635	14/05/2017	01:26 PM	Monash	TELOPEA PARK	Asset failure	HV		13	788	61
INC 162005663	15/05/2017	06:29 PM	Riley	GOLD CREEK	Unknown	Unknown		132	4,752	36
INC 162005812	22/05/2017	06:53 AM	Tralee	GILMORE	Asset failure	HV		217	15,131	70
INC 162005892	24/05/2017	06:09 PM	Riley	GOLD CREEK	Other	Corrosion		2,323	180,100	78
INC 162005934	26/05/2017	02:32 AM	Copland	LATHAM	Asset failure	HV		968	73,911	76
INC 162006080	31/05/2017	02:33 PM	William Slim	BELCONNEN	Asset failure	HV		1,532	15,320	10
INC 161011394	02/06/2017	07:34 AM	Anthony Rolfe	GOLD CREEK	Asset failure	HV		2,826	235,532	83
INC 161011521	07/06/2017	04:14 AM	Theodore	WODEN	Vegetation	Blow-in/Fall-in - Other responsible party		1,553	106,981	69
INC 162006207	12/06/2017	05:55 AM	Lyons West	WODEN	Animal	Other		1,854	154,913	84
INC 162006689	29/06/2017	04:04 PM	Belconnen Way South	CIVIC	Asset failure	HV		1,627	89,574	55
INC 162006702	30/06/2017	01:33 AM	Monaro	GILMORE	Asset failure	HV		6	218	36

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Section 1 Electricity Distribution Supply Standards Code

1.3 Supply Reliability

1.3.4 Distribution substations / switching stations performance

Note: Wherever there is a * symbol, the Utility may be required to provide supplementary information as detailed in the relevant footnote. The Utility may also provide supplementary information to elaborate on any response given in this section. Items of supplementary information should be in numbered Annexes and the Annex numbers should be provided in the space with the main response.

Item	Reporting requirement	Total Number in Service	Number added/deleted during year	Number recorded interruptions of supply to customers due to station equipment defects	Number recording interruptions of supply to customers due to LV circuit defects	Number recording repeated interruptions of supply to customers, more than 1*[1]	Number recording more than 4 interruptions of supply to customers*[1 & 2]
1	Distribution Substations	4652	65	106	1267	1	0
2	Distribution Switching Stations	354	9	0	0	0	0

1 Interruptions to be accounted for are those affecting the s/s only. HV feeder outages affecting the s/s should not be included.

2 For all these s/s provide a listing for each affected s/s, detailing:

- s/s number
- Cause and reason for interruption.
- Zone Substation source
- Dates & Times for all interruptions
- Restoration times for each interruption
- Total time that the s/s or that supply from the s/s was off supply for each interruption
- Total Number of Customers affected by each interruption

Zone	Feeder	Received Date	Received Time	Comments (including the cause of the incident)	Duration Customers Off Supply (mins)	No. of Consumers Affected	Repetition Prevention

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Section 1 Electricity Distribution Supply Standards Code
1.4 Monitoring Quality of Supply

Ref	Reporting requirement	Response
1	How many tariff smart meters which measure voltage have been installed since the last report?	0
1a	Please indicate results obtained for voltage limit non-compliance.	NA
2	How many complaints of low voltage NOT associated with planned or unplanned outages were received?	0
3	How many such complaints were substantiated?	0
4	What were the lowest voltages measured in the substantiated complaints? Please specify locations.	0
5	Please list the action that was taken to remedy the above specific low voltage problems.	N/A
6	How many substantiated low voltage problems remain unresolved after 3 months?	0
7	How many complaints of high voltage NOT associated with planned outages or faults were received?	0
8	How many such complaints were substantiated?	0
8a	Please specify locations.	N/A
9	What were the highest voltages measured?	N/A
10	Please list the action that was taken to remedy the above specific high voltage problems.	N/A
11	How many substantiated high voltage problems remained unresolved after 3 months?	N/A
12	As rural customers are often located at the extremities of the networks, what measures (other than customer feedback and network studies) were in place to ensure that these customers experience voltage levels within statutory limits throughout the year?	ActewAGL has re-focussed its proactive load survey towards a program which monitors at a specific site that has been randomly selected from the total population of sites. To achieve a random sample, each member of the population needs to have an equal chance of being selected into the sample. The aim is to have eventually monitored all feeders irrespective of whether the supply is located in / classified as urban or rural.
13	Please list all random rural voltage surveys that were carried out in the reporting year together with the times and dates of the tests, the addresses of the customers surveyed, the resultant voltage levels and the point of measurement eg. At customer's terminals.	See Proactive load survey 2016/2017 (worksheet 1.4.1)

Ref	Reporting requirement	Response
14	Please list all random urban voltage surveys that were carried out in the reporting year together with the times and dates of the tests, the addresses of the customers surveyed, the resultant voltage levels and the point of measurement eg. At customer's terminals.	See Proactive load survey 2016/2017 (worksheet 1.4.1)
15	What measurements were taken in the reporting year to enable network studies (relating to LV levels on existing networks) to be carried out. Please list the times, dates, places and results of all such measurements.	See Proactive load survey 2016/2017 and reactive logging 2016/2017 (worksheet 1.4.1)
16	What actual measurements were taken at consumers' terminals?	See Proactive load survey 2016/2017 and reactive logging 2016/2017 (worksheet 1.4.1)
17	How many incidents involving broken or high resistance neutral occurred during the year?	28
18	Resultant number of customers with damaged equipment.	0
19	Value of customers' equipment damaged.	NA
20	How many incidents involving “brown outs” occurred during the year?	
	- Due to Burnt off HV tails	3
	- Due to Burnt off LV or nuetral tails	226
	- Due to blown HV fuse	8
	- Due to blown LV fuse	234
	- Other (Please detail)	0

Proactive load survey 2016/2017											
Sub #	District	Feeder	VA 99%	VA1%	VB99%	VB1%	VC99%	VC1%	Require tap down?	Solar penetration to HV?	Comments
1 Quist Pl	Nicholls	GOLDCR_8HB_LEXCEN	249.9	242.5	251.9	244.8	251.0	245.5			
14 Fellows St	Latham	LATHAM_8JB_MACROSSAN	248.9	243.5	248.0	241.7	248.7	243.2			
15 Black st	Yarralumla	TELOPK_8+HB_FORSTER	253.2	247.6	254.7	249.2	254.0	248.9	Y		
15 Getting Cre	Campbell	CITYEA_8FB_WOLSELEY	244.7	240.2	245.4	239.4	244.6	240.4			
18 Vogelsang	flynn	LATHAM_8DB_HOMANN	248.6	241.6	247.5	239.1	248.6	240.1			
19 Findlayson	Gimlore	GILMRE_8+RB_FINDLYSN	249.2	242.6	246.5	241.5	247.4	242.2			
2 tweed pl	Kaleen	BELCON_8UB_SHANNON	247.1	239.5	246.3	238.2	246.4	241.1			
20 pasmore cl	Kaleen	BELCON_8RB_CHUCULBA	254.2	248.4	253.2	247.6	253.6	245.4	Y		
25 crofts Cres	Spence	LATHAM_8+FB_CONLEY	254.6	240.7	254.2	242.3	259.3	250.8	Y		
29 Cloncurry S	Kaleen	BELCON_8PB_BLDWNJOYC	255.1	248.5	255.2	246.9	254.2	246.0	Y		
36 Barrington	Amaroo	GOLDCR_8+UB_BARRNGTN	257.2	247.8	255.0	247.8	256.1	246.6	Y		
4 Clarnette	Flynn	LATHAM_8QB_SEAL	248.2	239.3	247.6	242.0	248.2	242.2			
5 Smorgon st	Forde	GOLDCR_8+UB_BARRNGTN	247.0	239.3	243.9	237.7	246.1	238.0			
6/45 Goldner	Melba	LATHAM_8+FB_CONLEY	250.7	244.3	251.9	246.9	252.4	246.8			
71 Dobbin CCt	Nicholls	GOLDCR_8HB_LEXCEN	254.2	244.8	254.4	244.9	254.2	245.7	Y		
8 Foskett st	Fraser	LATHAM_8UB_MELBA	249.0	240.7	246.9	241.0	248.1	242.3			
LP 1115109	Calwell	THEDRE_8+SB_CHPPNDL	254.9	248.0	253.7	246.2	255.0	246.8	Y		
LP 1118367	Theodore	THEDRE_8+SB_CHPPNDL	250.8	242.7	251.9	243.5	253.4	245.2	Y		
LP 2145861	Parks	TELOPK_8+RB_GALLERY	250.1	245.7	250.7	245.5	250.2	245.9			
POE 2141776	O'connor	CIVIC_8+MB_MILLER	248.9	243.2	249.7	243.3	250.2	238.2			
Sub 139	Red Hill	WODEN_8LB_DEAKINNO2	251.8	246.4	251.8	246.6	252.1	247.1			
Sub 1528	Latham	LATHAM_8JB_MACROSSAN	248.7	244.0	248.2	242.6	249.0	244.7		2%	
Sub 1845	flynn	LATHAM_8DB_HOMANN	247.8	242.5	248.1	242.6	248.2	243.5		12%	
sub 1932	Spence	LATHAM_8+FB_CONLEY	255.2	250.1	254.0	248.3	255.4	248.9	Y	9%	
Sub 2068	Yarralumla	TELOPK_8+HB_FORSTER	254.5	250.7	254.3	250.1	254.8	250.7	Y	1%	
Sub 2173	Fraser	LATHAM_8QB_SEAL	247.0	242.1	248.3	242.3	247.8	243.2		4%	
Sub 2584	Kaleen	BELCON_8PB_BLDWNJOYC	255.1	249.8	255.2	249.8	254.9	249.9	Y	5%	
sub 2592	Kaleen	BELCON_8UB_SHANNON	246.3	242.7	246.5	242.4	246.3	243.1		14%	
Sub 3214	Latham	LATHAM_8QB_SEAL	247.3	242.6	248.0	242.5	247.9	243.4		5%	
Sub 3540	Richardson	WANNIA_8QB_HEMMINGS	253.2	249.1	252.6	248.2	252.7	248.2	Y	2%	
Sub 3751	Hall	LATHAM_8DB_HOMANN	253.2	247.6	253.4	247.3	253.0	248.3	Y		
Sub 3789	Yarralumla	TELOPK_8+HB_FORSTER	247.8	243.7	247.4	243.0	247.5	243.5		0%	
sub 4097	braddon	CITYEA_8KB_CHISHOLM	228.9	224.5	256.0	250.6	254.0	249.2	Y		
Sub 4253	Gilmore	GILMRE_8+RB_FINDLYSN	247.8	242.9	246.9	242.2	247.4	242.5		7%	
Sub 4565	Kaleen	BELCON_8RB_CHUCULBA	250.6	245.4	250.1	244.9	250.4	245.5			
Sub 4768	Calwell	THEDRE_8+SB_CHPPNDL	255.0	248.2	253.9	247.0	254.4	247.5	Y	3%	
Sub 4889	Theodore	THEDRE_8+SB_CHPPNDL	252.8	245.8	251.5	244.7	253.3	245.8	Y	1%	
sub 5165	Melba	LATHAM_8+FB_CONLEY	251.0	246.0	252.1	247.4	252.2	247.6		4%	
Sub 5402	Nicholls	GOLDCR_8HB_LEXCEN	250.9	246.9	250.8	246.4	250.9	241.6		6%	
Sub 6249	Amaroo	GOLDCR_8+UB_BARRNGTN	255.8	250.8	254.5	249.6	256.2	250.1	Y	54%	
Sub 6629	braddon	CITYEA_8+LB_HAIG	252.3	248.4	252.6	248.3	252.4	248.6	Y	2%	
Sub 6910	Mitchell	BELCON_8PB_BLDWNJOYC	253.6	246.0	252.0	245.2	252.6	246.0	Y		
Sub 7673	Acton	TELOPK_8+RB_GALLERY	248.5	243.9	247.7	243.6	249.1	244.3			
sub 825	Uriarra crossing	LATHAM_8JB_MACROSSAN	251.3	243.1							Single phase sub
Sub 8521	O'connor	CIVIC_8+LB_WATTLE	252.5	248.6	252.4	248.4	252.9	249.1			
Sub 864	Parkes	TELOPK_8+RB_GALLERY	250.9	246.1	251.2	246.7	251.6	247.2			
Sub 8712	Nicholls	GOLDCR_8HB_LEXCEN	250.9	247.4	251.1	246.9	251.2	247.3		7%	
Sub 8747	Barton	TELOPK_8UB_NSW	253.9	249.5	254.1	249.0	254.9	250.1	Y	18%	
Sub 9130	City	CIVIC_8UB_HOBARTSHRT	248.8	244.1	248.5	243.9	248.3	243.6			
Sub 9231	Dickson	CIVIC_8+LB_WATTLE	249.5	243.2	249.8	243.7	250.0	243.5			
Sub 9454	Acton	CIVIC_8XB_CSIRO	244.4	239.7	244.9	240.4	244.7	240.2			
Sub 9548	Forde	GOLDCR_8+UB_BARRNGTN	245.9	241.6	244.6	240.6	246.1	241.9		11%	
Sub 9928	Parkwood	LATHAM_8JB_MACROSSAN	250.3	242.1	249.9	240.7	251.3	244.3			

2 tweed pl	Kaleen	BELCON_8UB_SHANNON	247.1	239.5	246.3	238.2	246.4	241.1			
Sub 9960	Campbell	CITYEA_8FB_WOLSELEY	244.6	240.6	245.4	240.2	245.0	241.1		1%	

Reactive logging 2016/2017

Date	Suburb	Address	Reporting Category	Date Completed		Comments
24/06/2016	Chisholm	33 Norris Street	Supply Fault	18/07/2016		High volts identified. Substation voltage to be lowered.
14/07/2016	Weeterangera	24 Shumack Street	High volts	9/08/2016		High volts identified. Substation voltage to be lowered.
14/07/2016	MacGregor	30 Barret Street	High volts	22/07/2017		High volts identified. Substation voltage to be lowered.
14/07/2016	Coombs	Sub 11050 Woodbury Crescent	High volts	20/05/2017		High volts identified. Substation voltage to be lowered.
15/07/2016	Griffith	Sub 2177 Stuart Ave	High volts	22/07/2016		High volts identified. Substation voltage to be lowered.
18/07/2016	Waramanga	21 Adinda Street	High volts	10/08/2016		High volts identified. Substation voltage to be lowered.
22/07/2016	Farrer	54 Hawksbury Cres	High volts	10/08/2016		Low Volts identified. Due to back feeding.
2/03/2017	Ngunnawal	46 Yerradhang Street	High volts	10/03/2017		High volts identified. Substation voltage to be lowered.
30/07/2016	Deakin	Sub 3855	High volts	6/07/2016		No issue identified. Results passed to the consumer.
10/08/2016	Stirling	51 Freemantle Drive	High volts	6/09/2017		High volts identified. Substation voltage to be lowered.
13/06/2017	Narrabundah	95 Stuart Street	High volts	21/06/2017		Sub tapped down.

2 tweed pl	Kaleen	BELCON_8UB_SHANNON	247.1	239.5	246.3	238.2	246.4	241.1			
2/12/2016	Macgregor	5 Crago Place			High volts		9/12/2016		TX 1768 tapped down. Logging afterwards to confirm supply.		
2/12/2016	Red Hill	83 Endeavour Crescent			High volts		16/11/2016		TX 903 tapped down		
2/12/2016	Higgins	92 Pennefather St			High volts		9/12/2016		TX tapped Down		
9/12/2016	Campbell	1 Coby Place			High volts		19/12/2016		TX tapped Down		
9/12/2016	Ngunnawal	8 Beela Place			High volts		19/12/2016		TX tapped Down		
9/12/2016	Chapman	8 Emery Street			High volts		19/12/2016		TX tapped Down		
19/01/2017	Moncrieff	6 Ruby Hunter Rise			High volts		31/01/2017		High volts identified. Substation voltage to be lowered.		
21/02/2017	Griffith	10 Evans Street			Supply Fault		2/03/2017		No fault detected. No action taken.		

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.2 Notifiable Incidents

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item	Item Description	Number of incidents attributable to aerial lines, underground lines, substations, equipment, metering and earthing and protection systems (or related faults)*[1]	Number Reported In Writing to the Technical Regulator *[2]
1	The death of a person	1	1
2	Serious damage to property	0	0
3	Serious damage to the environment	0	0
Notifiable incidents can be further categorised as **dangerous incidents**			
4	Dangerous incidents (total number)	59	59
5	Dangerous incidents involving fire	16	16
6	Dangerous incidents involving electric shock	43	43
TOTAL (no input required)		**60**	**60**

1 For all Notifiable Incidents as defined in Part 4 of the Utilities (Technical Regulation) Act 2014 (including electric shock reports) which occurred on the Electricity Network or in the distribution area. Summarise the incidents; indicate whether the victims or people at risk (if any) were employees, contractors or members of the public; analyse the causes and contributory causes of the incidents; and indicate measures taken to prevent similar incidents in the future.

2 If not reported to the Technical Regulator, explain why not.

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.1 Maintenance of High Voltage Switchgear in Distribution Substations

Item	Within ground mounted distribution substations 11kV & 22kV network NOT including Zone Substations	No. in service	Number of units planned for maintenance.	Number actually maintained	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
1	OCB		71	55	OCBs are mainly located in chamber substations and have associated protection relays. Substations housing protection relays are inspected and maintained on a 5-year cycle (when verifying relay settings per the RTI database). Substations are also visually inspected while conducting network operations.
2	VCB				
3	Gas CB				
4	Oil Switch isolatable		0 [see note 1]	0 [see note 1]	
5	RMU i.e. 2 oil switches & Sw Fuse	1120	0	1	Due to very robust design and no serviceable parts and installation in weatherproof enclosures, manufacturer advises operational check and Inspection for oil leaks or damage is required at 7 year intervals. Operational staff inspect prior to switching and report defects as/when identified. Mechanical defects and oil leaks are repaired promptly.
6	RMU Epoxy	1110	14	146	Inspected and maintained at 4,6 and 8 year intervals. Includes operation, disassembly of links, cleaning of dust/ corrosion, cable termination inspection for tracking and top up of oil filled cable terminations where installed.
7	RMU SF6	1204	0	2	Generally maintenance free with no serviceable parts subject to 5 yearly inspections. Sw/gr reported with low gas is monitored.
8	11kV Switching Stations 3 way	271	56	56	56 switching stations with Hazemeyer RMUs were maintained.
9	11kV Switching Stations 4 way	53			
10	J&P Switchgear	59	0	0	(19) Maintenance activities are as per OCBS and oil switches in items 1 & 4. A variety of combinations of CB and oil switch configurations exist in chamber and kiosk substations.

Item	Within ground mounted distribution substations 11kV & 22kV network NOT including Zone Substations	No. in service	Number of units planned for maintenance.	Number actually maintained	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
11	GEC Switchgear	131	0	0	26
12	Long & Crawford s/gear	16	0	0	4
13	Isolatable YSE s/gear		0	0	Combination CB and oil switch configurations exist at 3 sites. CB feeds TX only, – (not used for manual feeder fault switching). However Caution note on SCADA at System Control regarding CB contact cluster retaining spring. Equipment replacement is identified for 2 of these sites are subject to imminent re-development.
14	YSE isolating contacts	88	0	0	
15	Aged Switchgear; number				
	- greater than 50 years	3091	0	0	J&P, Southwales, Yorkshire and Long & Crawford (134 Circuit Breakers+ 2916 Switches+ 41 Fuses)
	- greater than 60 years	1370	0	0	Yorkshire and Long & Crawford (8 CBs+1352 Switches+ 10 Fuses)
16	List all s/gear with operational restrictions and outline restrictions in place	55	N/A	N/A	
17	Are there any plans for replacement of 10 to 16 above?	Yes, Substations having L&C , J&P and Yorkshire switchgear have been prioritized for planned replacement.			
18	List all s/gear that leaked SF6 gas and remedial action undertaken	N/A	N/A	2	1. ABB SafeLink RMU at S9083 failed while operating. Internal arc fault caused SF6 to vent out. RMU was replaced. 2. 11kV cable termination on ABB SafeLink at S9969 failed causing loss of SF6. RMU was replaced.

Notes

1. These Inspections typically arise from initial inspections that have raised a defect report. Initial inspections relate to switching operations, Fire Extinguisher inspection, Battery/

Item	Within ground mounted distribution substations 11kV & 22kV network NOT including Zone Substations	No. in service	Number of units planned for maintenance.	Number actually maintained	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
Chargers maintenance, Thermo vision inspections and other targeted activity (data verification, load /quality of supply measurement, customer isolations etc). *2. There is also 1 two-way 11kV switching station.* ***For OCBs the following is undertaken:*** *Lowering the main oil vessel, exploring the main contacts* *Examination of main & arcing contacts, arc control pots and bushings on CB truck for damage/wear* *Oil level/top up or replace all oil (if excessively dirty due to high fault clearing duty)* *Oil sample (taken if oil not changed for PCB testing and recording)* *Check tank lining and confirm gaskets ok* *Clean and lubricate mechanism bearings and linkages* *Manually undertake a slow close operation to confirm linkages and contacts move as required* *Examine aux contacts operate in unison with primary contacts* *Examine secondary connection contacts for pitting and damage on both truck and cubicle* *Manual trip and close resets* *Electrical operation trip and close (includes protection function)* *Examination of all mechanical components (shutters and linkages, interlocks and earth connections)* ***For VCB's*** *As for OCBs but exclude oil-related activities and add HV withstand test across the vacuum bottle.* ***For GCB's*** *As for OCBs but exclude oil-related activities*					

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.2 Maintenance of Low Voltage Switchgear in Distribution Substations

Item	Low Voltage equipment	No. in service	Number of planned inspections carried out	Number of units planned for maintenance	Number Actually maintained	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
1	Low voltage switchgear	94440	83	135	83	1190 Circuit Breakers+70482 Fuses+ 22768 Switches
2	Number of Capstan nut isolators replaced during the reporting year?	Unknown	There is no inspection program for capstan link (nut) isolators.	None	None	Capstan nut isolators are present in 27 Chamber substations (data source Field Survey 2016) and 16 Kiosk and Padmont substations (data source WASP)
3	Proposed date of replacement of remaining capstan nut isolators.	N/A	N/A	N/A	N/A	Being very old switchboards it is neither practicable nor cost effective to replace only the capstan nut isolators. Therefore, the whole LV switchboard is replaced. Due to budgetary and other resource constraints, it is planned to replace 5 old switchboards every year, so that the capstan links will be eliminated from the network gradually.
4	Aged Switchgear; number & type					
	- greater than 50 years	7113	See Comment 1	See Comment 1	See Comment 1	Manufactured in 1967 or earlier (34 Circuit Breakers+2979 Switches+4100 Fuses)
	- greater than 60 years	3197	See Comment 1	See Comment 1	See Comment 1	Manufactured in 1957 or earlier (11 CBs+1871 Switches+1315 Fuses)
5	List all s/gear with defects and/or operational restrictions and provide details.	159	0	0	0	
6	Are there any plans for replacement of 11 & 12 above? Give details.	Yes	N/A	N/A	N/A	There is no 11 & 12 above. Assuming it is 4 & 5, the Asset Specific Plan spells out the strategy for replacement. Due to budgetory and other resource constraints, it is planned to replace 2-3 old switchboards every year, so that the old LV switchboards will be eliminated from the network

Comment 1 - ActewAGL's current database does not support extraction of this information

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.3 Maintenance of Distribution Transformers

Item	Transformer Type	No. in service	PCB tests (as per the utility's maintenance plan)	How many PCB tests proved positive?	Maintenance Frequency	Number of units planned for maintenance	Number of units actually maintained	Comments (Please indicate if the equipment is tested/inspected/maintained in accordance with the utility's maintenance plan and if not, why this is so)
1	Ground Mounted in Enclosure (padmount or Kiosk)	2765	0	0	See notes.		66	
2	Inside Chamber	965						
3	Pole Mounted	1405					24	Repair defects-6 + Replace Surge Diverter-10+Replace drop out fuse-6+Replace post insulator-1+Test tx-1 (s1159)
4	In stockade	16					0	

Notes

1. The maintenance plan requires no routine maintenance of transformers other than visual inspection for oil leaks/ bushing damage. PCB samples are taken on opportunity basis prior to any transformer movement or work on the unit. All recovered

2. Transformers on pole substations are not tested for PCBs while in-situ primarily because of work safety reasons. These transformers are tested for PCBs when there is some other reason to remove them from the substation.

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.4 Programmed Inspection & Maintenance of Distribution Substations

Item	Type of Substation	No. in service	Inspection Frequency	Number of planned Inspections carried out	Number actually Inspected	Maintenance Frequency	Number of units planned for maintenance	Number actually maintained	Comments
1	Padmount	2498	5 yearly	850	850	Maintenance of transformers stem from inspections and failures. Maintenance of circuit breakers and the protection relays are based on the Relay Test Instructions and are generally on a five yearly cycle.		268	
2	Kiosk	387	5 yearly						
3	Chamber	475	5 yearly						
4	Pole	1405	5 yearly (Urban) Yearly in BFM	1817	1817			74	

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.5 Maintenance of Zone Substaion Transformers

Item	Transformer size	No. in service	Maintenance Frequency	Number planned for maintenance	Number Actually maintained	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
1	0 to 25 MVA	5	Annual	5	5	Power Transformers ≤ 25 MVA are considered under this category to meet reporting requirements. Maintenance includes annual oil sampling and analysis; and four yearly bushing DLA testing activities as no other planned maintenance performed on the power transformers.
2	25MVA to 100MVA	27	Annual	27	27	Power Transformers > 25 MVA are considered under this category to meet reporting requirements. Maintenance includes annual oil sampling and analysis; and four yearly bushing DLA testing activities as no other planned maintenance performed on the power transformers.
3	What significant issues exist with zone substation transformers? Provide details of defects and planned corrective action.	N/A	N/A	N/A	N/A	No significant issues reported during FY2016/17

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.6 Maintenance of Zone Substaion Tap Changers

Note: Please list all units.

	What significant issues exist with zone substation tapchangers? Provide details of defects and planned corrective action.								
1	ABB	External UBBRN 350/150	1	100,000 operations or 7 years whichever comes first	1	1	No	Yes	MoSS Tx#1 OLTC refurbished as per OEM recommendations.
2	ABB	External UZEDN 380/500	7	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
3	ABB	External UZEDN 380/600	1	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
4	ABB	External UZFDN 380/500	2	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
5	ABB	External UZFDN 380/600	1	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
6	ABB	External UZFRT 380/300	2	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
7	ABB	External UZFRN 380/150	1	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
8	Reinhausen	External VV II 250D-76-12 23 3G	1	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
9	Reinhausen	Internal BCDIII200D	0	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for maintenance. System Spare unit.
10	Reinhausen	Internal BCIII200D	0	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for maintenance. System Spare unit.
11	Reinhausen	Internal DIIIY400-150/60	4	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
12	Reinhausen	Internal DIIIY400-60/110	4	100,000 operations or 7 years whichever comes first	0	0	N/A	N/A	Not due for refurbishment.To be refurbished as per tapchanger OEM recommendations when due.
13	Reinhausen	Internal MIIIY500/60C	8	100,000 operations or 7 years whichever comes first	1	1	Yes	Yes	Latham ZS Tx#1 OLTC refurbished as per OEM recommendations.

1	What significant issues exist with zone substation tapchangers? Provide details of defects and planned corrective action.	No significant issues encountered/exist on any of the zone power transformer tap changers.							

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.7 Maintenance of 11kV/22kV/33kV Switchgear in Zone Substations - Switchgear Listing

Note: Please list all units.

Item	Manufacturer (e.g., Reyrolle)	Code (e.g., LMT)	Type (e.g., OCB)	Voltage	Number in service	Year of manufacture of oldest unit	Manfacturer's recommended freq. of maintenance (e.g., 5 years)	Comments (include zone s/s the switchgear is located within) (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
	Aged Switchgear; number							
1	- greater than 50 years	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	- greater than 60 years	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	List all s/gear with defects and/or operational restrictions and provide details.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	Are there any plans for replacement of above aged & operationally restricted units? Provide details.	No. Maintained as per manufacturers instructions	N/A	N/A	N/A	N/A	N/A	N/A

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.8 Maintenance of 11kV/22kV/33kV Switchgear in Zone Substations - Switchgear Details by Type

Note: Please list all units.

Item	Type	Number in service	Maintenance Frequency	Planned maintenance number to be maintained	Actual maintenance number	Post Fault maintenance number maintained	Comments (Also please indicate the number of fault operations prior to Post Fault Maintenance) (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
1	OCB	125	6 faults/4 years	11	11	5	Maintained as per circuit breaker manufactureR recommendations. Maintenance cycle determined using Failure Mode Effect Analysis (FMEA) study.
2	VCB	231	10 faults/8 years	71	36	3	As stated above
3	Gas CB	0	N/A	N/A	N/A	N/A	No units in network
4	Other	0	N/A	N/A	N/A	N/A	No units in network

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.9 Maintenance of 66kV & 132kV Switchgear in Zone Substations

Note: Please list all units.

Item	Manufacturer	Code	Type	Number in service	Year of manufacture of oldest unit	Planned number to be maintained	Actual maintenance number	Manufacturer's recommended freq. of maintenance	Comments (Please indicate if the equipment is maintained in accordance with Manufacturers' recommendations and if not, why)
	Aged Switchgear; number								
1	- greater than 50 years	66kV Isolator - ALM	ISOL	5	1959	5	5	2	Equipment maintained as per OEM recommendations.
2	- greater than 60 years	N/A	N/A	0	N/A	0	0	N/A	
3	List all s/gear with defects and/or operational restrictions and provide details.	N/A	N/A	0	N/A	0	0	N/A	
4	Are there any plans for replacement of above aged & operationally restricted units? Give details.	66kV Isolator - ALM	ISOL	5	1959				No asset replacements planned at this stage however proposed to be decommissioned within next 5 years.

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.10 General Maintenance

Item	Item Description	Response
1	Please list any defect notices that have been received during the past five years.	ABB Safelink update Midlands LOBAC (LVABC) 95mm2
2	Is the utility confident that all such notices for equipment currently in service have been implemented?	Work practices are inspected on a routine basis and there has been no evidence of non-compliance with the alerts posted.
3	Number of cable joint failures:	N/A
	- HV cables	39
	- LV cables	22
	- Service cables	Unknown. Number of service cable joint failures are not recorded
	- Other eg. Pilot cables	
4	Number and type of HV switchgear termination problems eg. Ferroresonance	Number of Ferroresonance failures are not recorded
5	Number of overhead line connection failures	
	- mains eg. Airbreak switch tails:	77
	- service lines	304
6	Number of broken or high resistance neutral connections.	28
7	How many HV switchgear failures/operational problems:	17
8	Number of HV cast iron potheads in service: - outdoor / indoor. As these present a high safety risk, please outline replacement plans.	26 substations have cast iron pothead 11kV terminations. Actual number of potheads not available. A number of high risk ones have been replaced over the years. Most of the remaining ones pose a moderate to low risk. No planned replacement program has been scheduled.
9	How many security breaches have occurred in substations and switching stations.	
10	What preventative action has been taken to address these security breaches.	
11	How many items of SF6 switchgear currently leak or require re-filling?	None for Zone substation switchgear.
12	What remedial action is being taken eg. Switchgear replacement	One leaking 132kV CB (2AB) pole has been replaced at Latham Zone.
13	How much SF6 gas has been lost to the environment, and what preventative action is being taken to prevent further loss?	None for zone substation.
14	What ENA SF6 gas management tier is being achieved?	Tier 2: Mass Balance Accounting
15	State the type of diagnostic tests carried out on instrument transformers in zone and chamber substations	Oil sampling analysis performed every four years for zone instrument transformers.
16	How many such instrument transformers are currently suspect?	None for zone substation
17	Protection relays:	
	- How many failures/mal-operations	11
	- Please outline number & type of relay currently in service with poor reliability record (problems >10% for any one type).	AAD have identified NILSEN NILSTAT and SPAJ140C that are beyond their useful life and poor condition assessment is evident by maintenance assessments and failure history. There are 84 NILSTAT and 85 SPAJ relays currently in service.
	- How many & type of known defective units currently in service (eg.Siemens 7SL)	Calibration issues have been corrected with H type, RAZFE, 7SL24 and RAZOG distance protection relays during maintenance.
	- how many protection mal-grading events occurred during reporting year?	AAD is proposing an asset replacement program covering these relay types in the 2019-24 regulatory submission.

Item	Item Description	Response
18	Batteries - Zone substations:	There are no known defective relays in service. Defective relays are always replaced when they fail. The Calibration of the Siemens 7SL is known to drift and these relays have now been replaced at Bruce Switching Station. The remaining Siemens 7SL at Causeway Switching Station have recently been maintained and remain in service.
	- age of oldest 10% of each battery type	0
	- how often is battery discharge testing conducted?	Every six months
	- What is the criteria for determining battery replacement?	Failure in-service or failure at discharge testing.
19	Batteries - Distribution substations:	
	- age of oldest 10% of each battery type	Ni-Cad batteries-33 years
	- how often is battery discharge testing conducted?	Discharge Test performed every 6 months
	- What is the criteria for determining battery replacement?	Battery Capacity Test results fall bellow 80% of battery rated capacity.
20	Number of tariff meters replaced due to age reasons	720
21	Number of tariff meters replaced due to accuracy problems	7
22	Number of tariff meters that failed, or exceeded accuracy limits?	102
23	Total number of meters planned for replacement	2050
24	Total number of meters actually replaced	1500

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.11 Pole inspection and Maintenance - General

Item No.	Item Description	Timber L.V and 11/22kV	Concrete L.V and 11/22kV	Steel L.V and 11/22kV	Other L.V and 11/22kV
1	How many poles L.V and 11/22kV are owned by the utility	28446	10820	5885	3695
2	How many poles were inspected during the year?	7368	2712	837	1028
3	How many poles were condemned during the year?	746	3	23	1
4	How many poles were “nailed” during the year?	658	0	0	0
5	How many poles were replaced during the year?	485	15	3	1
6	What percentage of the timber pole population is now nailed?	47%	N/A	N/A	N/A
7	What is the required remediation time for condemned poles?	12 months	12 months	12 months	12 months
8	How many condemed poles were not remediated within this period?	73	0	62	0
9	How many condemed poles were not remediated within the target period but were remediated within 3 months of the expiration of their target remedial time?	27	0	11	0
10	How many condemed poles were not remediated within the target period but were remediated within 6 months of the expiration of their target remedial time?	41	0	5	0

Item No.	Item Description	Timber L.V and 11/22kV	Concrete L.V and 11/22kV	Steel L.V and 11/22kV	Other L.V and 11/22kV
11	How many condemned poles have not been remediated and are more than 6 months overdue for remedial action	5	0	46	0
12	How many dangerous poles (those requiring immediate/urgent remedial action) were identified during the year?	3	0	0	0
13	How many poles failed during the year? Please provide details.	0	0	0	0

	132kV and 66kV	Timber	Concrete	Steel	Other
14	How many poles / towers are owned by the utility	433	839	201	0
15	How many poles / towers were inspected during the year?	324	232	20	0
16	How many poles were condemned during the year?	61	0	0	0
17	How many poles were replaced during the year?	1	0	0	0
18	What is the required remediation time for condemned poles?	> 24 months including ACT Government approval, NCA approval, heritage and ecological assessment when track work is required.	0	0	0
19	How many condemed poles were not remediated within this period?	0	0	0	0
20	How many dangerous poles (those requiring immediate/urgent remedial action) were identified during the year?	1	0	0	0
21	How many poles failed during the year? Please provide details.	0	0	0	0

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.3.12 Pole inspection and Maintenance - Inspections and Vegetation

Item No.	Item Description	Response
Pole / Lines Inspections		
1	What is your pole / line inspection cycle for LV and HV poles in Urban locations	5 yearly in the urban; All high voltage poles are also aerially inspected every three years in the urban.
2	What is your pole / line inspection cycle for LV and HV poles in Bushfire designated locations	4 yearly in the BFM; Remaining BFM poles are visually inspected by either the ground or aerial every year.
3	How many overdue for inspection by more than 6 months (includes all inspections).	120
4	Which suburbs scheduled for inspection above, were not inspected.	Dickson, Gilmore, & Gowrie. Parts of Bonython, Fadden, & Chisholm
5	Which Bushfire designated areas scheduled for inspection, above, were not inspected.	None, all inspected
6	What is your pole / line inspection cycle for your 132kV and 66kV sub-transmission lines?	4 yearly full ground inspection. Aerial inspection every year.
7	Were any 132kV / 66kV line inspections completed this reporting period?	Yes
8	• Number of structures inspected	576 inspected via ground. 1472 aerial inspections.
9	• Number remaining to be inspected.	None. All inspected by end of March 2017.
10	• These are scheduled for inspection by (date):	NA
11	How many overdue for inspection by more than 6 months.	None.
12	Were all identified bushfire risk issues mitigated/actioned prior to commencement of the bushfire season? If not, why not. Provide details.	Yes.
Vegetation Management		
13	What is your vegetation inspection cycle for LV and HV lines in Urban locations	3 yearly
14	What is your vegetation inspection cycle for LV and HV lines located in Bushfire designated areas?	Yearly
15	Which suburbs scheduled for inspection above, were not inspected.	None. All inspected.
16	Which Bushfire designated areas were scheduled for vegetation inspections this reporting period?	All.

Item No.	Item Description	Response
17	Which Bushfire designated areas scheduled for inspection, above, were not inspected.	None. All inspected.
18	What is your vegetation inspection cycle for your 132kV and 66kV sub-transmission lines?	Yearly
19	Were any 132kV / 66kV line inspections completed this reporting period?	Yes
20	• Number of lines inspected	All.
21	• Number remaining to be inspected.	0
22	• These are scheduled for inspection by (date):	N/A
23	High risk areas not cleared due to circumstances beyond the Utility's control.eg. Heritage areas, National parks	None.
24	Were all identified bushfire risk issues mitigated/actioned prior to commencement of the bushfire season? If not, why not. Provide details.	Yes.

Private Power Poles / Lines

25	Were any private power poles / lines inspected for this reporting cycle	Yes
26	Number of poles inspected	528
27	Number of poles condemned or requiring replacement within 12 months	14

Please provide a listing of all such poles:

28	Number of private poles replaced?	0 (10 Reinforced)
29	Number of poles identified as requiring maintenance or repairs to the structure.	7

Please provide a listing of all such poles

30	Number of private poles repaired or maintained?	0 (7 to be corrected by ACT government street light maintenance contractor)

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.5.1 Required Operational Documents

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item No.	Item Description	Did the utility have compliant[1] documents or procedures? (Yes/No*[2])	Document Reference Number	How many non-conformance reports were raised against these documents or procedures during the report year?	Were any independent audits of these documents or procedures conducted during the report year? (Yes/No)	If so, did the audits raise any non-conformances or establish any negative conclusions? (Yes*[3]/No)
1	Risk assessment for determining electrical service conditions and physical environment:	Yes	PR4625	0	No	No
1a	Provide copy of current risk assessment and register of both network & operations.	Yes	PR4675; Risk register maintained within a computer program (Guardian)	0	Yes	No
2	Management of design, construction, maintenance and operation records necessary for safety:	Yes	PR1178	0	Yes	No
3	Electricity network maintenance plan:	Yes	SM1192	0	No	No
4	Employee safety training program:	Yes	7.5 P3 EHQS training, SM4605 L&D training program	0	Yes	No
5	Hazard identification & risk assessment for electrical apparatus work:	Yes	PR4625	0	Yes	No
6	Energisation and re-energisation:	Yes	PR3204	0	Yes	No
7	Working in confined spaces:	Yes	PR4609	0	Yes	No
8	Switching (including earthing):	Yes	PR1313 PR1315 PR1203 WF13105	0	Yes	No
9	Work on or near LV electrical apparatus, (whether live or de-energised):	Yes	PR4625 SM4605 SM4615	0	Yes	No
10	Work on or near HV electrical apparatus, (whether live or de-energised):	Yes	SM4605	0	Yes	No

Item No.	Item Description	Did the utility have compliant[1] documents or procedures? (Yes/No*[2])	Document Reference Number	How many non-conformance reports were raised against these documents or procedures during the report year?	Were any independent audits of these documents or procedures conducted during the report year? (Yes/No)	If so, did the audits raise any non-conformances or establish any negative conclusions? (Yes*[3]/No)
11	Work on or near underground cables:	Yes	SM4605 WF13123 WF13124	0	Yes	No
12a.	Work in substations:	Yes	SM4605 WF13130 WF13127	0	Yes	No
12b.	Register of all Network Underground and Aerial Lines (other than aerial services) showing locations, cable types and sizes:	No	All assets are mapped and available for viewing by the public upon request.	0	No	No
13	Procedures and time frame for reporting Serious Electrical Accidents to:					
	- Utilities Technical Regulator	Yes	PR4608	0	No	No
	- ACT WorkSafe	Yes	PR4608 PR1210	0	No	No
	- Other Persons	Yes	PR4608 PR1210	0	No	No
14	Safety Plan to AS 5577:	Yes	SM4601	0	No	No
15	Quality Management Systems to ISO 9001	Yes	ISO 9001 - 2008 Quality Certification	0	Yes	Yes
16	Risk Management Systems to ISO 31000	Yes	PR4660 PO4930 PR4612	0	No	No (see notes)

1 “compliant” here means that on the last day of the report year the document or procedure was up-to-date, fully compliant with requirements (if any) and, where applicable, also approved.

2 If “No”, attach explanatory statement indicating when this item was last up-dated and detailing remedial action including actual or proposed resourcing and completion date.

3 If “Yes”, attach explanatory statement analysing the predominant causes (examining, in particular, the possibility of any systemic weaknesses) and outlining preventive measures and actual or target implementation dates.

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.5.2 Training

Item	Network worker employee classifications (expand table to suit number of classifications)	Total number of employees in each classification in employment during any part of the report year	Number of employees in each classification who have received training appropriate for their type of work and been approved by the employer after the training was satisfactorily completed	Number of employees in each classification who have demonstrated competency in the relevant work procedures and safety instructions	Number of employees in each classification who, during the report year, received appropriate instruction and demonstrated competency in rescue and resuscitation procedures relevant to the nature of their work

Item	Description	Response
21	What safeguards has the utility employed to ensure that all In-House and CONTRACT workers are appropriately trained and have demonstrated competency for their type of work?	Internal audit schedules, data management, contract accrediation sheme and certification, appointment of dedicated roles to manage these processes.
22	Number of Contractors / contracted personnel employed and accredited to work upon ActewAGL's network	92
24	What safeguards are in place to ensure telecommunication workers accessing their assets on ActewAGL network assets are competent, trained and aware of ActewAGL's requirements for pre-pole climbing and safety electrical clearance distances, and familiar with pole markings and climbing restrictions?	ActewAGL has an Electrical Industry Safety Rule book. The books contents and how to interrupt it and comply with the rules is delivered in nationally accreditted training. This training is offered to all contractors that work or near ActewAGL Distributions network assets. Compliance to this requirement is managed through audit and accreditation programs

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.5.3 Exposure to 50Hz Electric and Magnetic Fields

Item	Item Description	Response
1	What protective measures does the utility take against the potentially adverse effects of exposure of its workers, particularly those with implanted cardiac pacemakers, to 50Hz electric and magnetic fields?	Issues related to pacemakers are covered in ActewAGL Electrical Safety Rules,section 4.14. ActewAGL follows a policy of prudent avoidance which recommends avoiding unnecessary exposure to EMF whenever it can be achieved without undue inconvenience or at a modest expense. Workers with metal implants or medical implantable devices including cardiac pacemakers should consult their doctors and their supervisor for information on possible interferences with these devices prior to entering areas of strong electric and magnetic fields. Workers who have concerns or require further information should consult their supervisor and/or safety coordinator. Measurements of 50Hz electric and magnetic fields conducted to date indicate that occupational exposure levels are not exceeded in electrical network areas that are under normal access and work conditions. field levels exceed the specified limits, a measurement of EMF may be conducted.
2	What protective measures does the utility take against the potentially adverse effects of exposure of the public to 50Hz electric and magnetic fields?	ActewAGL conducts field surveys around network plant and equipment at zone substations and in close proximity to energised 11kV lines and 132 kV sub transmission lines. Surveys are also taken of office areas, in the field near assets and upon customer request.
3	What level of occupational exposure to electric fields does the utility consider acceptable over the:	
	a) short-term?	30kV/m
	b) long-term?	10kV/m

Item	Item Description	Response
4	What level of occupational exposure to magnetic fields does the utility consider acceptable over the:	
	a) short-term?	5 mT (50,000mG)
	b) long-term?	0.5 mT (5,000mG)
5	What level of public exposure to electric fields does the utility consider acceptable over the:	
	a) short-term?	10 kV/m
	b) long-term?	5 kV/m
6	What level of public exposure to magnetic fields does the utility consider acceptable over the:	
	a) short-term?	1 mT (10,000 mG)
	b) long-term?	0.1 mT (1,000 mG)
7	What measurements are taken to ensure compliance with these levels?	ActewAGL conducts field surveys around network plant and equipment at zone substations and in close proximity to energised 11kV lines and 132 kV sub transmission lines. Surveys are also taken of office areas, in the field near assets and at times upon customer premises.

Item	Item Description	Response
8	Please indicate the field strength measurements at various locations and where they were taken.	Distribution Substations - Magnetic fields ranged between 4 mG to 1600 mG (0.0004 mT to 0.16 mT) the upper reading is in close proximity to LV mains cables. Electric fields ranged between 01 kV/m to 0.9 kV/m 132 kV Zone Substations - Magnetic fields ranged between 1 mG to 897 mG (0.0001 mT and 0.0897 mT). Electric fields ranged between 0 kV/m and 5.04 kV/m. 11kV Distribution (Overhead) Lines - Magnetic fields ranged between 2 mG to 1000 mG (0.0002 mT and 0.1 mT) near energised 11kV lines (the upper figure was for live line work). Electric Fields ranged between 0.1 kV/m to 1.5 kV/m (Upper figure was taken at 0.400 mm from energised line). 132 kV Transmission Lines - Magnetic fields ranged between 5 mG to 12 mG (0.0005 mT to 0.0012 mT). Electric fields ranged from 0.1 kV/m to 0.3 kV/m (at the edge of the easements pertaining to energised 132kV lines). Within Offices - Magnetic fields were generally below 10mG (0.0010 mT) otherwise VDU's would start to blur and flicker. The electric field meter does not record any measurable values for LV installations.
9	How many notifications about possible high levels of magnetic and electric fields were made by the public in the past year?	0
10	Please state how many such concerns were justified and what action was taken to alleviate any problem and the public concerns.	N/A

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Section 2 Electricity Network Assets Management Code
2.1 Duty of an Electricity Distributor
2.1.5.4 Minimisation of Environmental Damage

Item	Item Description	Response
1	Approximately how much contaminated oil was disposed of during the year?	**56 Litres**
2	How is contaminated oil disposed of?	ActewAGL has an agreement with Transformer Maintenance Service Australia Pty Ltd (TMS), an authorised oil recovery contractor, for the disposal of all waste oils. The waste oil is collected from site or the Greenway depot by TMS who then transport the waste interstate for disposal in accordance with relevant State and National legislation. Oil to be disposed of is tested for polychlorinated biphenyls (PCB). • Oil with PCB concentration less than (• Oil with PCB concentration greater than (>) 2ppm is considered contaminated and is collected by TMS for transport to an interstate licenced facility for processing and destruction. TMS complete all paperwork required under NEPM legislation. Once destroyed, TMS provide ActewAGL with a destruction certificate.
3	How are capacitors with possible PCB contamination disposed of?	Capacitors for disposal are stored in drums/bins located at the Greenway depot. Collection of the waste by an approved contractor (Chemsal Pty Ltd) is arranged when the drums are approximately three-quarters full. The drums are then transported as controlled waste.

4	What other hazardous waste has to be managed by the utility?	Electricity networks do not produce hazardous materials. However, ActewAGL is required to identify the location of hazardous materials and, on occasion, dispose of waste that is surplus to operational requirements (such as NiCd batteries which are returned to the manufacturer). Asbestos Containing Material (ACM) is double-bagged and placed in a designated bin. Handling and disposal is in accordance with the relevant Asbestos Management Plan, which complies with ACT legislation. ACM waste is then removed and disposed of by ACT licenced asbestos removalists. Copper Chrome Arsenate (CCA) waste is handled and disposed of in accordance with the CCA Management Plan. Herbicides: The handling and use of herbicides is performed under the supervision of the ACT Environment Protection Authority (EPA). SF6 gas insulated switchgear is returned to an authorised recycler for gas recovery, cleaning and tank disposal.
5	How is this (if any) disposed of?	A destruction certificate is sought from the service organisation licensed to dispose of the hazardous material
6	How many environmental incidents occurred this year	0
7	Has the Utilitiy received complaints of environmental damage this reporting period? If so provide details	0

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Section 2 Electricity Network Assets Management Code
2.2 Network Safety Management System
2.2.1 Electricity Network Safety Management System and Electricity Safety Plan

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item No.	Item Description	Response
1	Where and how can the Register of Network Underground and Aerial Lines be accessed by the public during business hours?	The preferred method is through the Dial Before You Dig service (Telephone 1100 or DBYD website). For large areas and/or for design purposes where electronic (CADD) format is required or more practical (typically design consultants / developers) through the ActewAGL Electricity Network Data Application Form and Agreement
2	Outline measures adopted for bushfire mitigation.	The Bushfire Risk Mitigation [PO4605], Bushfire Management Strategy [SM4609] & Preparedness Index detail the ActewAGL measures used in bushfire mitigation. Measures include: Index measuring preparedness, fault mitigation based on bushfire risk, ongoing network resiliance measures installed, ongoing
3	Has network maintenance been carried out in accordance with the maintenance plan?*[1]	Yes
4	Does the organisation have a current Electricity Safety Plan compliant to Section 6.1 of the Electricity Network Assets Management Code 2013.	Yes
5	Did any circumstances arise to necessitate a modification to the then current Safety Plan?*[2]	No

Item No.	Item Description	Response
6	Number of non-compliances with the Safety Plan during the report year*[3]	0
7	Provide details of actions taken (with dates) to raise public safety awareness of electrical safety in general (including incident reporting, notification of electric shocks etc.)	Refer to the table below.
	Provide a copy of the Bushfire Mitigation Plan.	See the Bushfire Management Strategy - SM4609 provided to UTR in November 2015.
	Provide a copy of the Bushfire Preparedness Report	The 2016/176 BPR was provided to UTR.
	Provide a copy of the Electricity Safety Plan.	The 2016/17 ESP was provided to UTR in August 2016.
	Provide a copy of the Public Safety Awareness Plan	The Electricity Network Assets Management Code does not require a Public Safety Awareness Plan to be provided to the Technical Regulator.
	Provide a copy of the Asset Management Plan	ActewAGL Distribution includes asset specific plans in its Annual Planning Report which is published on the ActewAGL website and a copy has been provided to UTR.
	Provide chart of annual LTI performance against 3 year rolling LTI average	See Attachment - ActewAGL 3 year rolling LTIFR

1. Provide details of major work items and a summary for other actions not carried out to the extent required by the plan and indicate the expected impacts.
2. If so, attach an explanatory statement outlining the circumstances, the required Safety Plan changes and when those changes became (or are targeted to become) effective.
3. Append the Safety Plan compliance report.

Item No.	Item Description	Response
Episode	**Focus area**	**Dates**
Episode 1 – Vegetation management *TVC, radio, media release, press advertising and digital advertising*	Vegetation management & Storm safety	24 October to 20 November 2016
Episode 2 – Bushfire preparedness *Digital advertising and media release*	Public safety	31 October to 27 November
Episode 3 – Christmas light safety *Digital advertising and media release*	Electrical safety	5 to 25 December 2016
Episode 4 – Reporting shocks and tingles *TVC, radio, media release, press advertising and digital advertising*	Electrical safety	23 January to 12 February 2017 and 13 March to 2 April 2017

Item No.	Item Description	Response
Episode 5 – Helicopter patrols *Digital advertising and media release*	Public safety/vegetation management	3 February to 26 February 2017
Episode 6 – Natural gas safety *Digital advertising and media release*	Gas safety	17 April to 14 May 2017
Episode 7 – Clearances around assets/DBYD (Co-Branded with Icon *TVC, radio, media release, press advertising and digital advertising*	Public safety and Dial Before You Dig	22 May to 18 June 2017
Episode 8 – Winter electrical safety *Digital advertising and media release*	Electrical safety	15 May to 4 June 2017 and 19 June to 2 July 2017

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Section 2 Electricity Network Assets Management Code
2.3 Electrical Safety Rules

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item No.	Item Description	Response
1	Does the organisation have a current set of Electrical Safety Rules	Yes
2	When were the safety rules most recently amended	30/06/2017
3	Does the organisation have a record of all persons trained in the Electrical Safety Rules	Yes. This is a National Unit of Competency and staff are trained and assessed against this requirement; results are captured in the ActewAGL Learning Management System; and results reported to management. Skills Passports are stamped for individuals.
4	What mechanisms are in place to ensure that refresher training is provided to ensure training accreditation does not lapse	Data is stored in ActewAGL's Learning Management System Aurion. This data feeds into a SQL reporting data base to manage core compliance of exposure (i.e. expired training). A 3 year training program is also published and managed by the ActewAGL Learning and Development Team.

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Section 3 Electricity Service & Installation Rules Code

3.1 Electricity Service & Installation Rules

3.1.1 Required Operational Documents

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item	Item Description	Did the utility have compliant[1] documents or procedures? (Yes/No*[2])	Document Reference Number	How many non-conformance reports were raised against these documents or procedures during the report year?	Were any independent audits of these documents or procedures conducted during the report year? (Yes/No)	If so, did the audits raise any non-conformances or establish any negative conclusions? (Yes*[3]/No)
1	Service and Installation Rules	Yes	SM11144	0	No	

1 “compliant” here means that on the last day of the report year the document or procedure was up-to-date, fully compliant with requirements (if any) and, where applicable, also approved.

2 If “No”, attach explanatory statement indicating when this item was last up-dated and detailing remedial action including actual or proposed resourcing and completion date.

3 If “Yes”, attach explanatory statement analysing the predominant causes (examining, in particular, the possibility of any systemic weaknesses) and outlining preventive measures and actual or target implementation dates.

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Section 3 Electricity Service & Installation Rules Code
3.2 Embedded Generation
3.2.1 Photovoltaic inverters connected to the network

Note: Please state the number of photo voltaic inverters connected to the network.

	16/17	15/16	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	Before 06/07	Total
Number of PV systems connected each year.	1188	1,274	1,240	2,062	1,723	4,823	3,537	1,881	445	226	35	52	18,486
kVA connected each year.	7463	5,537	4,755	8,818	7,193	12,123	9,093	3,708	845	452	63	122	60,172

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Section 3 Electricity Service & Installation Rules Code
3.2 Embedded Generation
3.2.2 Photovoltaic inverters rated output

Note: Please indicate the rated output of all photo voltaic inverters connected to the network.

	0-1kVA	1-2kVA	2-3kVA	3-4kVA	4-5kVA	5-10kVA	>10kVA
Number	115	6,143	3,845	3,151	1,362	3,563	306
Photovoltaic rating	90	9,190	9,250	10,110	5,812	13,434	12,259
Other							

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Section 3 Electricity Service & Installation Rules Code
3.2 Embedded Generation
3.2.3 Inverter Testing

Item No.	Item Description	Response
1	Please state the number of letters sent to customers within the reporting period with PV installations over 5 years old .	1632
2	Please state the number of test reports received by ActewAGL within the reporting period for equipment over 5 years old.	864
3	Please indicate the number of PV Installations disconnected within the reporting period due to non-compliance with S&I Rules.	0
4	Please advise the process for remediating a site with a PV installation that has not provided test reports within the time frame required	1) Customers are issued a reminder letter stipulating they must complete a PV Inverter Test. Timeframe provided = 21 business days 2) Upon timeframe expiry of Reminder letter. Customers are issued a warning letter stipulating they must complete a PV Inverter Test or AAD will disconnect their PV Solar from the Network. Timeframe provided = 10 business days 3) Upon timeframe expiry of disconnection warning letter. If no PV Test results were returned AAD will schedule a site visit and the customers PV Solar will be disconnected from the Network.

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Section 3 Electricity Service & Installation Rules Code
3.2 Embedded Generation
3.2.4 Preventing faulty systems feeding into a de-energised network

Item No.	Item Description	Response
1	How is this possibility covered by the Safety Rules?	Clauses 8.6.1 and 9.5.3 of the Electrical Safety Rules - all sources of electrical supply including renewable energy sources are isolated. If the work site have bonders applied the renewable energy sources inside the bonded area only are isolated.
2	Are all such installations indicated on network drawings?	Yes
3	What action is taken by the permit or sanction issuer to ensure worker safety?	The above information are recorded in the access permit and the permit issuer will ensure all isolations have taken place before issuing the permit to the workers.

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Section 3 Electricity Service & Installation Rules Code
3.2 Embedded Generation
3.2.5 Medium to Large Generation Plant

Item No.	Item Description	Response
1	Number of other types of generation (>10kVA per phase) inter-connected to ActewAGL's HV or LV network. Please provide details of all such generators	See the table below
2	Location (i.e., suburb, block, section)	See the table below
3	Type of generation, manufacturer and output	See the table below
4	Network connection point	
5	Total rated output of medium to large (>10kVA per phase) generation that is connected to ActewAGL's network.	**KVA**
6	A faulty system could continue to feed into the network after supplies have been disconnected—how is this possibility covered by the Safety Rules?	Clauses 8.6.1 (HV) and 9.5.3 (LV) of the Electrical Safety Rules - all sources of electrical supply including renewable energy sources are isolated. If the work site has bonders applied, the renewable energy sources inside the bonded area only are isolated.
7	Are all such installations indicated on network drawings?	Yes
8	What action is taken by the permit or sanction issuer to ensure worker safety?	The above information is recorded in the access permit and the permit issuer will ensure all isolations have taken place before issuing the permit to the workers.

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Section 4 Emergency Planning Code
4.1 Procedures
4.1.1 Required Operational Documents

Note: Wherever there is a '*', the utility may be required to provide supplementary information as detailed in the relevant footnote.

Item No.	Item Description	Did the utility have compliant[1] documents or procedures? (Yes/No*[2])	Document Reference Number	How many non-conformance reports were raised against these documents or procedures during the report year?	Were any independent audits of these documents or procedures conducted during the report year? (Yes/No)	If so, did the audits raise any non-conformances or establish any negative conclusions? (Yes*[3]/No)
1	Emergency Plan	Yes	SM4610	None	No	N/A
2	Procedure(s) to identify and provide training to staff responsible for management and coordination during an Emergency Event	Yes	PR4679 & PR4678	None	No	N/A
3	Emergency management records	Yes	PR4679	None	No	N/A
3a.	Were any simulation / testing exercises conducted during the year of the emergency plan	?	?	None	No	N/A

Item No.	Item Description	Did the utility have compliant[1] documents or procedures? (Yes/No*[2])	Document Reference Number	How many non-conformance reports were raised against these documents or procedures during the report year?	Were any independent audits of these documents or procedures conducted during the report year? (Yes/No)	If so, did the audits raise any non-conformances or establish any negative conclusions? (Yes*[3]/No)
3b.	Provide a brief outline of the scenario's tested	*Refer notes table below*				
4a.	Were there any instances where emergency management procedure were invoked (excluding drills and simulations)	N/A	N/A	None	N/A	N/A
4b.	Provide a summary of the event and response required	N/A	N/A	None	N/A	N/A

1 "compliant" here means that on the last day of the report year the document or procedure was up-to-date, fully compliant with requirements (if any) and, where applicable, also approved.

2 If "No", attach explanatory statement indicating when this item was last up-dated and detailing remedial action including actual or proposed resourcing and completion date.

3 If "Yes", attach explanatory statement analysing the predominant causes (examining, in particular, the possibility of any systemic weaknesses) and outlining preventive measures and actual or target implementation dates.

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Section 5 Customer Liaison

		Reporting requirement		
1	Customer contact	What is AAD's customer engagement strategy (other than billing or formal notices) for consulting with each group of customers? The groups are:	AAD has a documented Customer Engagement Strategy. First established in 2014 the organisation is now within Phase II of the strategy, which commenced in December 2016.	
		1. Residential (single unit, apartments, townhouses)	ActewAGL has undertaken a range of community engagements within the last 12 months including attendance at community council events along with holding residential workshops as part of the regulatory submission process and other matters relating to Energy Networks operations. Residential customers are also represented on the ECRC (as per below description)	✓
		2. Commercial (high gas users - high rise offices, businesses, cafes, restaurants etc)	ActewAGL has undertaken a range of engagements within the last 12 months including holding workshops as part of the regulatory submission process and other matters relating to Energy Networks operations. Eg Power pf Choice. Commercial customers are also represented on the ECRC (as per below description)	✓
		3. Industrial (high gas users - manufacturing, large complexes etc)	ActewAGL undertakes a range of engagements with industrial customers including ongoing engagements by Account Managers and holding workshops as part of the regulatory submission process and other matters relating to Energy Networks operations. Industrial customers are also represented on the ECRC (as per below description)	✓
		Please provide details of customer engagement strategy with each group.	Refer to attached Customer Engagement Strategy Phase II along wih the 2017/2018 planned customer engagements calendar.	✓
2	Customer engagement issues	What are the specific issues (other than billing and formal notices) on which AAD engages with its customers?	Price, tariff structure, engagement preferences, vegetation management in bushfire abatement zone, Power of Choice and customer initiated works.	✓
3	Customer engagement frequency	What is the frequency of customer engagement for each group of customers for specific issues?	ActewAGL's Energy Consumer Reference Council (ECRC) was established in 2014. Independantly chaired, the ECRC meets every two months and includes a wide variety of customer segment stakeholder groups including the Council of the Aging (COTA), Engineers Australia, Property Council of Australia, Canberra Business Council, ACT Council of Social Services, SEE-Change, Community groups.	✓
4	Customer engagement estimation	Please provide an estimation of customers who are contacted and engaged on specific issues?	Examples of particpation in customer engagement activities are provided below: 10 customer segements are represented on the ECRC 100 industry representatives continue to participate in the Power of Choice presentations The EN 2019 -2024 regulatory submission attracted 30 participants in workshops and 400 responses to the online Power Panel survey.	✓
5	Customer engagement into business plan	Does AAD's Business Plan reflect AAD's engagement with customers to understand their priorities, needs and requirements?	AAD continues down a path of reflecting customers needs, priorities and requirements within our Business Plans and strategies as demonstrated by recent development of the Customer Relationship Management roadmap and the Customer Engagement Strategy.	✓
6	Customer engagement outcome	Please provide a short summary of the outcome of the customer engagement program for 2016-17	Please find attached a copy of the Consumer Engagement Strategy Report Stage 1	✓
7	Customer satisfaction	How does AAD assess customer satisfcation?	ActewAGL undertakes an annual customer survey which measures the level of customer satisfaction Annual health check is undertaken with the ECRC annually to measure their satisfaction with the customer engagement activities All customer engagement forums feature an exit survey to assess effectiveness of engagement forums.	✓