



# Network Quality and Reliability of Supply Code

2017/18 Performance Report

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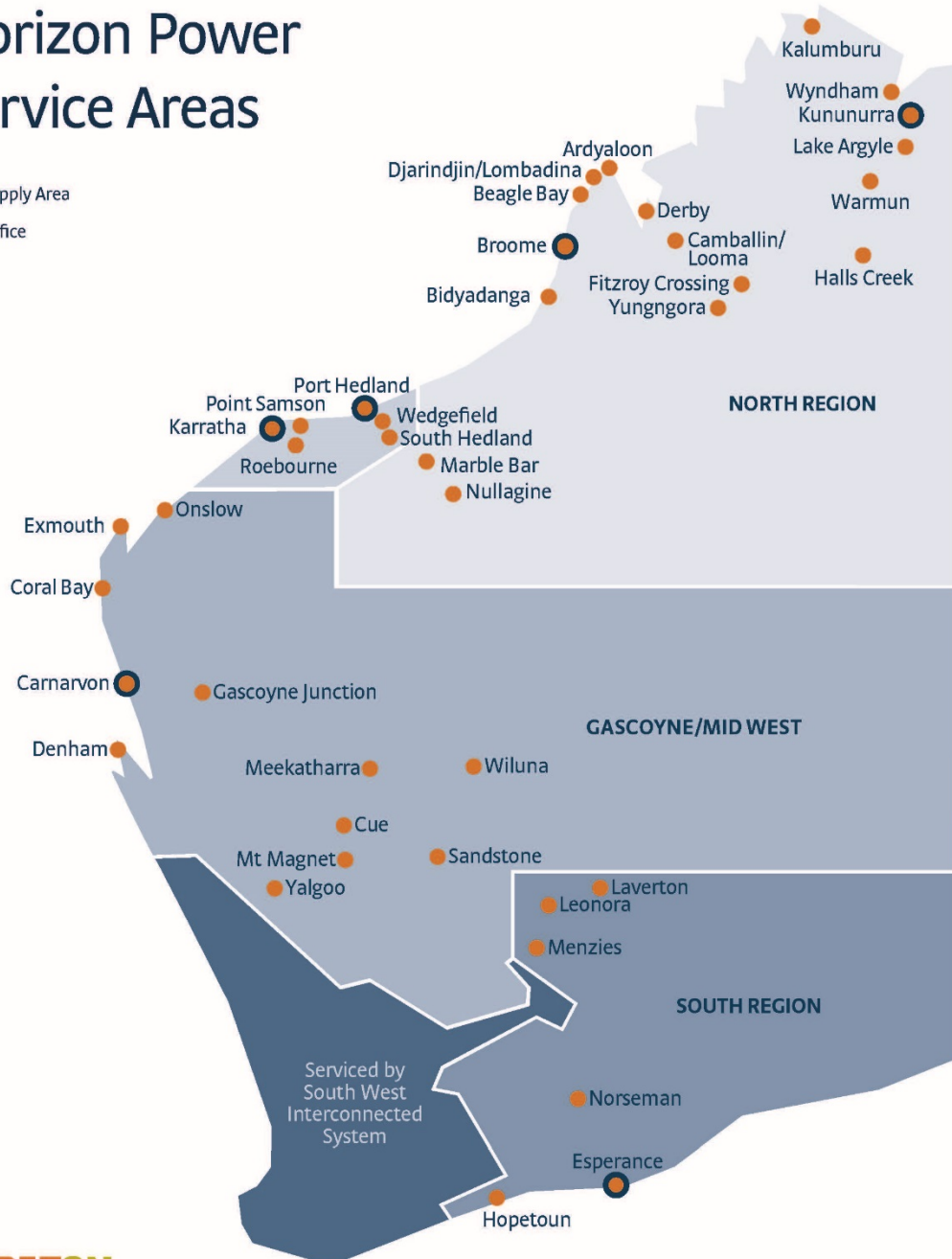
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## Contents

1.	INTRODUCTION	5
2.	AUDIT REQUIREMENTS	5
3.	SCHEDULE 1 - INFORMATION TO BE PUBLISHED:	6
	Clause 4 and 10	6
	Clause 5 - Significant interruptions to small use customers.	7
	Clause 7 and 10 - Number of customer complaints in each discrete area:	12
	Clause 8 and 10 - Total amount spent addressing complaints.	13
	Clause 9 and 10 - Payments to customers for failure to meet certain standards	13
	Clause 11(a), 12 and 13 - Average Length of Interruption of Supply to Customer Premises in Minutes	14
	Clause 11(b), 12 and 13 - Average Number of Interruptions of Supply to Customer Premises	15
	Clause 11(c), 12 and 13 - Average Percentage Of Time That Electricity Has Been Supplied To Customer Premises.	16
	Clause 11(d), 12 and 13 - Average Total Length of All Interruptions of Supply to Customer Premises in Minutes	17
	Clause 14(a) - Horizon Power - Average Length of Interruption - Frequency Distribution	18
	Clause 15 – Average Length of Interruption - Frequency Graph.	18
	Clause 14(b) - Horizon Power - Number of Interruptions - Frequency Distribution	19
	Clause 15 – Number of Interruptions - Frequency Graph.	19
	Clause 14(c) - Horizon Power - Total Length of all Interruptions - Frequency Distribution	20
	Clause 15 – Total Length of all Interruptions - Frequency Graph	20
4.	MAJOR EVENT DAYS	21
5.	APPENDIX	22
	Major Event Days	22
	Major Event Day Classification	22
	Normalised Data Sets - Unplanned	22

# Horizon Power Service Areas

- Supply Area
- Office



## **1. INTRODUCTION**

This report has been produced to meet the requirements of the Electricity Industry (Network Quality and Reliability of Supply) Code 2005, Schedule 1 – Information to be published.

To assist in meeting reporting requirements the Economic Regulation Authority Western Australia (ERA WA) publishes the Electricity Distribution Licence Performance Reporting Handbook which specifies measures to be reported. The report is prepared in accordance with Schedule 1 of the Code, however as Horizon Power is a vertically integrated business (responsible for generation, transmission and distribution) reliability data includes generation and transmission outages.

## **2. AUDIT REQUIREMENTS**

Division 3 of the Electricity Industry (Network Quality and Reliability of Supply) Code 2005 requires that Horizon Power arrange for an independent expert to audit, and report on the operation of the systems that Horizon Power has in place for monitoring its compliance with the code.

In 2017, the Minister for Energy removed the requirement for licence holders, such as Horizon Power, to annually engage an independent expert to audit and report on the operation of the systems in place for monitoring compliance with legislated electricity quality and reliability standards. The audit period was extended to three yearly.

**3. SCHEDULE 1 - INFORMATION TO BE PUBLISHED:**

**Clause 4 and 10 – Voltage Fluctuations and Harmonics**

***Clause 4(a) Number of breaches of each provision of the Code:***

Quality of Supply	2016/17	2017/18
Voltage fluctuations	0	0
Harmonics	0	0

***Clause 4(b) Remedial action taken for each provision:***

Voltage Fluctuations

Location	Action Taken
N/A	N/A

Harmonics

Location	Action Taken
N/A	N/A

*N/A = Not Applicable.*

Continuous monitoring of voltage and frequency fluctuations is done at the substation busbar. Temporary power quality monitoring equipment is installed on the network for specific problem monitoring in response to a customer power quality complaint.

**Clause 5 - Significant interruptions to small use customers.**

Clause Description	2016/17	2017/18
Clause 5(a) Number of premises that experienced interruptions greater than 12 hours continuous	1663	742
Clause 5(b) Number of premises that experienced more than 16 interruptions.	101	79

Detailed analysis of interruptions where duration is greater than 12 hours for 17/18

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Bidyadanga	1030	76	27/12/2017	Wind or Wind Bourne Debris	Feeder Trip
Bidyadanga	3260	1	1/02/2018	Equipment Failure	Potential Neutral Problem - AMI
Bidyadanga	6210	1	2/02/2018	Equipment Failure	Potential Neutral Problem - AMI
Bidyadanga	2976	1	3/02/2018	Equipment Failure	Potential Neutral Problem - AMI
Broome	28651	1	25/07/2017	Vegetation	Debris On Service Wire
Broome	842	1	2/08/2017	Equipment Failure	No Power
Broome	1440	1	2/08/2017	Equipment Failure	No Power
Broome	1737	1	10/12/2017	Bat	Intermittent Power
Broome	1261	1	10/12/2017	Bat	Intermittent Power
Broome	3984	1	27/12/2017	Emergency Outage For Hazard	Miscellaneous Hazard
Broome	3970	1	27/12/2017	Emergency Outage For Hazard	Arcing Street Wire
Broome	2494	1	27/12/2017	Wind or Wind Bourne Debris	Pole Down
Broome	3951	1	27/12/2017	Emergency Outage For Hazard	Transformer On A Pole Damaged
Broome	3935	1	27/12/2017	Wind or Wind Bourne Debris	Debris On Service Wire
Broome	3930	1	27/12/2017	Wind or Wind Bourne Debris	Debris On Service Wire
Broome	3918	1	27/12/2017	Wind or Wind Bourne Debris	Low Hanging Service Wire Across Road
Broome	3883	1	27/12/2017	Wind or Wind Bourne Debris	Arcing Street Wire
Broome	1441	1	27/12/2017	Wind or Wind Bourne Debris	Service Wire Down
Broome	1081	1	27/12/2017	Wind or Wind Bourne Debris	Debris On Street Wire
Broome	3858	1	27/12/2017	Wind or Wind Bourne Debris	Service Wire Down
Broome	1801	1	27/12/2017	Wind or Wind Bourne Debris	Pole Broken/Damaged
Broome	3706	1	27/12/2017	Wind or Wind Bourne Debris	Service Wire Down
Broome	3889	1	27/12/2017	Wind or Wind Bourne Debris	Service Wire Down
Broome	2424	1	27/12/2017	Wind or Wind Bourne Debris	Low Hanging Service Wire Across Road
Broome	4061	1	27/12/2017	Wind or Wind Bourne Debris	Intermittent Power
Broome	1211	72	27/12/2017	Vegetation	LV Fuse Trip

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Broome	3776	1	27/12/2017	Wind or Wind Bourne Debris	No Power
Broome	944	61	27/12/2017	Vegetation	LV Fuse Trip
Broome	1884	1	28/12/2017	Wind or Wind Bourne Debris	Service Wire Down
Broome	1534	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1388	1	28/12/2017	Wind or Wind Bourne Debris	No Power
Broome	1326	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	878	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1495	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1536	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1470	1	28/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1611	1	28/12/2017	Wind or Wind Bourne Debris	No Power
Broome	8295	1	28/12/2017	Wind or Wind Bourne Debris	No Power
Broome	1643	1	29/12/2017	Wind or Wind Bourne Debris	No Power
Broome	1463	1	29/12/2017	Wind or Wind Bourne Debris	Part Power
Broome	1251	1	29/01/2018	Vegetation	Underground Dome Damaged
Broome	1285	1	29/01/2018	Water Infiltration or Flooded Equipment	No Power
Broome	1501	2	29/01/2018	Vegetation	Feeder Trip
Broome	1408	1	30/01/2018	Vegetation	Service Wire Down
Broome	1744	1	30/01/2018	Wind or Wind Bourne Debris	Debris On Service Wire
Broome	1775	1	30/01/2018	Wind or Wind Bourne Debris	Debris On Service Wire
Broome	1719	1	30/01/2018	Vegetation	Debris On Service Wire
Broome	1626	1	30/01/2018	Vegetation	Debris On Service Wire
Broome	1329	1	30/01/2018	Equipment Failure	Part Power
Broome	27066	1	1/02/2018	Wind or Wind Bourne Debris	Tight Service Wire
Broome	3028	1	18/02/2018	Equipment Failure	Part Power
Broome	1668	1	1/03/2018	Equipment Failure	Part Power
Broome	33020	1	6/03/2018	Human Error	No Power
Broome	1440	1	22/03/2018	Water Infiltration or Flooded Equipment	Miscellaneous Hazard
Carnarvon	7609	4	2/03/2018	Equipment Failure	Recloser Trip
Carnarvon	2894	1	3/05/2018	Wind or Wind Bourne Debris	Miscellaneous Hazard
Carnarvon	2893	1	3/05/2018	Wind or Wind Bourne Debris	Pole Broken/Damaged
Carnarvon	2824	1	3/05/2018	Unknown	Miscellaneous Hazard
Carnarvon	2769	1	3/05/2018	Wind or Wind Bourne Debris	Miscellaneous Non Hazard
Carnarvon	2598	1	3/05/2018	Wind or Wind Bourne Debris	Miscellaneous Non Hazard
Carnarvon	1502	1	4/05/2018	Wind or Wind Bourne Debris	Pole Broken/Damaged



System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Carnarvon	2840	1	4/05/2018	Wind or Wind Bourne Debris	Miscellaneous Non Hazard
Carnarvon	7054	1	16/05/2018	Equipment Failure	Miscellaneous Non Hazard
Carnarvon	1528	1	21/05/2018	Equipment Failure	Miscellaneous Non Hazard
Carnarvon	1532	1	21/05/2018	Equipment Failure	Miscellaneous Non Hazard
Carnarvon	1273	1	21/05/2018	Equipment Failure	Miscellaneous Non Hazard
Carnarvon	804	1	23/05/2018	Unknown	Part Power
Carnarvon	9971	1	30/05/2018	Equipment Failure	Reconnection
Cue	819	1	11/02/2018	Lightning	Part Power
Denham	1619	1	29/07/2017	Equipment Failure	Part Power
Denham	1478	1	17/08/2017	Equipment Failure	Part Power
Denham	1601	1	20/11/2017	Equipment Failure	Part Power
Derby	5219	1	3/07/2017	Unknown	SFW PQI Voltage Fluctuation
Derby	810	1	19/02/2018	Equipment Failure	Part Power
Esperance	1063	14	26/07/2017	Unknown	Sectionaliser Trip
Esperance	1810	6	5/08/2017	Equipment Failure	Drop Out Fuse Trip
Esperance	879	1	22/09/2017	Unknown	No Power
Esperance	3629	9	17/11/2017	Lightning	Recloser Trip
Esperance	8458	1	17/11/2017	Equipment Failure	Part Power
Esperance	821	20	23/11/2017	Bird	Drop Out Fuse Trip
Esperance	810	1	27/11/2017	Insect	No Power
Esperance	1608	1	6/12/2017	PQI - Default Code	SFW PQI High Volts
Esperance	1070	2	11/12/2017	Equipment Failure	Switch Isolation
Esperance	1539	10	21/01/2018	Pollution	Recloser Trip
Esperance	10433	1	25/01/2018	Equipment Failure	Intermittent Power
Esperance	1035	1	12/02/2018	Equipment Failure	No Power
Esperance	893	1	18/02/2018	Lightning	No Power
Esperance	893	1	18/02/2018	Lightning	No Power
Esperance	4957	19	19/02/2018	Equipment Failure	Recloser Trip
Esperance	2642	1	21/02/2018	Equipment Failure	Sectionaliser Trip
Esperance	847	1	26/02/2018	Vegetation	Debris On Street Wire
Esperance	2565	20	26/02/2018	Equipment Failure	Recloser Trip
Esperance	1205	1	26/02/2018	Emergency Outage For Hazard	Disconnect For Fault
Esperance	1829	32	27/02/2018	Equipment Failure	Drop Out Fuse Trip
Esperance	1307	1	2/04/2018	Vehicle	Service Wire Down
Esperance	1290	13	2/04/2018	Vehicle	Drop Out Fuse Trip
Esperance	3541	11	3/04/2018	Bird	Recloser Trip
Esperance	815	3	21/04/2018	Lightning	Drop Out Fuse Trip
Esperance	1238	1	3/05/2018	Equipment Failure	Part Power
Esperance	1440	1	8/05/2018	Vegetation	Miscellaneous Non Hazard
Esperance	1939	1	8/05/2018	Plan Outage or Disconnection	Planned HVN Incident
Esperance	1169	33	30/05/2018	Bird	Drop Out Fuse Trip
Esperance	1500	1	31/05/2018	Emergency Outage For Hazard	No Power

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Esperance	935	1	5/06/2018	Pole Top Fire	Pole Fire
Esperance	871	129	5/06/2018	Pole Top Fire	Switch Isolation
Esperance	813	1	14/06/2018	Equipment Failure	No Power
Exmouth	17738	1	23/08/2017	PQI - Default Code	SFW PQI High Volts
Exmouth	1208	1	17/10/2017	Equipment Failure	Pole Arcing
Exmouth	1182	1	5/01/2018	Equipment Failure	Pole Broken/Damaged
Exmouth	1448	1	12/01/2018	Water Infiltration or Flooded Equipment	Underground Dome Damaged
Exmouth	1826	1	8/03/2018	PQI - Default Code	SFW PQI High Volts
Exmouth	1539	1	13/06/2018	Equipment Failure	Miscellaneous Non Hazard
Exmouth	1594	1	14/06/2018	Equipment Failure	Miscellaneous Non Hazard
Fitzroy Crossing	2331	1	19/12/2017	Equipment Failure	No Power
Fitzroy Crossing	1071	1	12/02/2018	Vandalism or Willful Damage	No Power
Fitzroy Crossing	1203	1	2/05/2018	Vandalism or Willful Damage	No Power
Fitzroy Crossing	1535	1	7/05/2018	Equipment Failure	Miscellaneous Non Hazard
Hopetoun	1467	1	9/11/2017	Plan Outage or Disconnection	Recloser Trip
Hopetoun	1052	1	14/11/2017	Vehicle	Part Power
Hopetoun	784	1	9/01/2018	Pollution	No Power
Hopetoun	893	1	16/03/2018	Equipment Failure	SFW PQI Low Volts
Hopetoun	1280	1	18/06/2018	Wind or Wind Bourne Debris	No Power
Kalumburu	2846	1	8/05/2018	Vandalism or Willful Damage	No Power
Karratha	5028	1	1/07/2017	Equipment Failure	Pole Broken/Damaged
Karratha	2006	1	14/08/2017	Fire (Not Pole Top Fire)	House / Building Fire
Karratha	1019	1	15/08/2017	Human Error	Miscellaneous Non Hazard
Karratha	2190	3	11/09/2017	Pollution	Feeder Trip
Karratha	2324	1	26/09/2017	Equipment Failure	Part Power
Karratha	1247	60	20/11/2017	Plan Outage or Disconnection	Feeder Trip
Karratha	1464	1	24/05/2018	Unknown	Underground Dome Damaged
Karratha	985	1	6/06/2018	Equipment Failure	Miscellaneous Non Hazard
Karratha	1350	1	6/06/2018	Equipment Failure	Underground Dome Damaged
Karratha	5725	1	24/06/2018	Equipment Failure	Part Power
Karratha	1346	1	28/06/2018	Vandalism or Willful Damage	No Power
Kununurra	2867	1	29/07/2017	Vehicle	Underground Dome Damaged
Kununurra	1032	1	17/10/2017	Human Error	Miscellaneous Hazard
Kununurra	1215	1	3/01/2018	Equipment Failure	Recloser Trip
Kununurra	1522	1	23/05/2018	Equipment Failure	Electric Shock
Kununurra	1575	1	30/05/2018	Vandalism or Willful Damage	Meter Box Damaged
Laverton	999	1	23/10/2017	Equipment Failure	No Power
Laverton	1150	1	26/10/2017	System Generated	No Power
Laverton	1716	1	1/11/2017	Equipment Failure	Part Power

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Leonora	2691	1	9/01/2018	Emergency Outage For Hazard	Planned HVN Incident
Leonora	1012	1	26/05/2018	Vehicle	Street Wire Down
Looma	18816	1	30/01/2018	Vegetation	Low Hanging Service Wire Across Road
Marble Bar	1259	1	20/11/2017	Unknown	Part Power
Marble Bar	801	1	7/12/2017	Equipment Failure	Low Hanging Street Wire
Meekatharra	2226	8	10/02/2018	Equipment Failure	Recloser Trip
Nullagine	2727	1	12/02/2018	Vandalism or Willful Damage	No Power
Port Hedland	998	1	20/07/2017	Plan Outage or Disconnection	Planned HVN Incident
Port Hedland	4352	1	25/07/2017	Vehicle	Pole Broken/Damaged
Port Hedland	9961	1	24/10/2017	Human Error	Electric Shock
Port Hedland	1404	1	7/11/2017	Equipment Failure	No Power
Port Hedland	765	1	22/11/2017	Insect	Potential Neutral Problem - AMI
Port Hedland	1655	1	21/01/2018	Lightning	No Power
Sandstone	1382	1	15/05/2018	Equipment Failure	Miscellaneous Hazard
Wiluna	1146	1	30/04/2018	Vehicle	Underground Dome Damaged
		<b>742</b>	<b>Number of Interruptions = 157</b>		

Customer interruptions greater than 12 hours that were due to significant events (cyclones, severe storms, fire & floods) that Horizon Power systems experienced in 2017/18.

Power System	Significant Event Dates	Event
Bidyadanga	27 - 28 December 2017	Cyclone Hilda
Broome	27 - 28 December 2017	Cyclone Hilda

**Clause 6 and 10 - Total number of Quality of Supply complaints received**

2016/17	2017/18
41	27

**Clause 7 and 10 - Number of customer complaints in each discrete area:**

Discrete Area	2016/17	2017/18
NWIS	8	4
Ardyaloon		
Beagle Bay		
Bidyadanga		
Broome	3	4
Carnarvon	2	2
Coral Bay		
Cue		
Denham	1	1
Derby		
Djarindjin		
Esperance	8	5
Exmouth	5	4
Fitzroy Crossing		
Gascoyne Junction		
Halls Creek	1	2
Hopetoun	6	3
Kalumburu		
Kununurra	4	1
Lake Argyle		
Laverton		
Leonora		
Looma		
Marble Bar		
Meekatharra		
Menzies	1	
Mount Magnet	1	
Norseman	1	
Nullagine		
Onslow		
Sandstone		
Warmun		1
Wiluna		
Wyndham		
Yalgoo		
Yungngora		
<b>Horizon Power Total</b>	<b>41</b>	<b>27</b>

**Clause 8 and 10 - Total amount spent addressing Power Quality and Reliability complaints.**

2016/17	2017/18
\$1,647,756	\$292,616

Note: The 2016/17 figure was overstated due to inaccuracies in work tracking and reporting practices. In 2017/18, there was a concerted effort to rectify these inaccuracies.

**Clause 9 and 10 - Payments to customers for failure to meet certain standards**

The number and total payments made to customers (who applied) for failure to give required notice of planned interruption.

2016/17		2017/18	
Number	Cost	Number	Cost
1	\$20	0	\$0

The number and total payments made to customers (who applied) for supply interruptions exceeding 12 hours.

2016/17		2017/18	
Number	Cost	Number	Cost
346	\$27,680	10	\$800

Note:

- 1 payment due to a cyclone
- 9 payments due to extended planned and unplanned outages

**Clause 11(a), 12 and 13 - Average Length of Interruption of Supply to Customer Premises in Minutes<sup>2</sup>**

System	2014/15	2015/16	2016/17	2017/18	Average
NWIS <sup>1</sup>	62.99	64.89	91.22	53.65	68.19
Ardyaloon	74.94	38.54	18.98	9.75	35.55
Beagle Bay	20.38	85.60	217.17	142.52	116.42
Bidyadanga	24.54	261.48	183.69	144.01	153.43
Broome	146.23	68.69	56.60	116.09	96.90
Carnarvon	287.83	85.07	101.75	110.63	146.32
Coral Bay	3.30	438.14	67.00	37.25	136.42
Cue	83.28	85.15	109.19	744.85	255.62
Denham	96.58	44.38	137.26	27.55	76.44
Derby	83.10	70.05	77.37	92.75	80.82
Djarindjin	74.34	113.91	0.00	145.32	83.39
Esperance	69.07	106.90	74.56	138.38	97.23
Exmouth	1423.22	115.84	72.64	136.49	437.05
Fitzroy Crossing	200.78	30.54	805.04	166.14	300.63
Gascoyne Junction	29.51	18.60	35.40	81.26	41.19
Halls Creek	248.83	102.02	121.59	73.70	136.53
Hopetoun	104.72	140.62	232.25	116.70	148.57
Kalumburu	55.85	180.50	101.76	12.68	87.70
Kununurra	46.39	53.28	60.83	43.19	50.92
Lake Argyle	0.00	97.50	201.80	215.13	128.61
Laverton	73.90	168.28	149.89	116.39	127.12
Leonora	35.50	82.20	92.67	148.31	89.67
Looma	63.86	129.97	134.64	272.34	150.20
Marble Bar	84.38	15.35	40.80	32.50	43.26
Meekatharra	127.61	27.59	162.09	274.63	147.98
Menzies	0.00	53.00	176.86	39.92	67.45
Mount Magnet	19.56	9.95	52.03	50.18	32.93
Norseman	160.57	63.46	142.71	149.47	129.05
Nullagine	189.95	0.00	0.00	152.12	85.52
Onslow	97.08	77.20	93.05	82.99	87.58
Sandstone	27.22	0.00	178.64	203.00	102.22
Warmun	93.61	5.78	238.24	134.28	117.98
Wiluna	129.45	4.53	313.13	36.22	120.83
Wyndham	122.41	122.36	23.46	35.53	75.94
Yalgoo	17.41	80.21	2.00	2.42	25.51
Yungngora	22.73	58.34	1564.05	41.66	421.69
<b>Horizon Power Total</b>	<b>161.00</b>	<b>79.83</b>	<b>90.94</b>	<b>101.22</b>	<b>108.24</b>

<sup>1</sup>NWIS – North West Interconnected System as per Clause 1 – Schedule 1

<sup>2</sup>Corresponds to Customer Average Interruption Duration Index (CAIDI)

**Clause 11(b), 12 and 13 - Average Number of Interruptions of Supply to Customer Premises<sup>3</sup>**

System	2014/15	2015/16	2016/17	2017/18	Average
NWIS <sup>1</sup>	1.20	0.83	0.74	0.74	0.88
Ardyaloon	2.49	3.17	1.40	1.81	2.22
Beagle Bay	1.39	1.26	0.05	1.37	1.02
Bidyadanga	2.41	2.07	3.93	5.24	3.41
Broome	0.29	5.29	0.80	1.22	1.90
Carnarvon	11.15	2.56	4.64	1.58	4.98
Coral Bay	1.00	1.75	0.10	3.60	1.61
Cue	6.01	2.25	3.11	0.87	3.06
Denham	10.91	7.10	2.28	4.63	6.23
Derby	4.37	2.91	1.65	1.05	2.50
Djarindjin	2.88	0.95	0.00	1.51	1.33
Esperance	4.03	6.65	4.40	2.60	4.42
Exmouth	3.44	2.08	4.60	1.92	3.01
Fitzroy Crossing	0.42	2.37	1.29	0.27	1.09
Gascoyne Junction	0.88	1.21	1.63	1.47	1.30
Halls Creek	1.17	1.62	1.37	0.96	1.28
Hopetoun	2.58	2.08	0.64	1.53	1.71
Kalumburu	5.19	3.19	5.60	0.88	3.71
Kununurra	10.75	11.33	10.57	2.08	8.68
Lake Argyle	0.00	1.88	2.80	0.94	1.40
Laverton	0.44	1.69	4.36	4.25	2.69
Leonora	5.93	3.76	3.79	2.99	4.12
Looma	4.32	1.37	0.40	0.41	1.63
Marble Bar	0.95	8.27	3.68	1.09	3.50
Meekatharra	1.71	1.46	0.02	0.73	0.98
Menzies	0.00	0.39	1.24	0.34	0.49
Mount Magnet	1.87	2.88	7.76	4.02	4.13
Norseman	4.13	2.88	1.37	3.17	2.89
Nullagine	0.44	0.00	0.00	1.28	0.43
Onslow	4.71	7.32	8.66	0.67	5.34
Sandstone	1.08	0.00	1.35	0.06	0.62
Warmun	2.75	0.96	0.67	1.80	1.54
Wiluna	1.25	0.84	1.51	3.21	1.70
Wyndham	0.29	3.86	3.91	3.26	2.83
Yalgoo	0.95	1.15	0.35	0.61	0.77
Yungngora	3.99	4.53	6.65	2.88	4.51
<b>Horizon Power Total</b>	<b>3.11</b>	<b>3.55</b>	<b>2.58</b>	<b>1.50</b>	<b>2.69</b>

<sup>1</sup>NWIS – North West Interconnected System as per Clause 1 – Schedule 1

<sup>3</sup> Corresponds to System Average Interruption Frequency Index (SAIFI)

**Clause 11(c), 12 and 13 - Average Percentage Of Time That Electricity Has Been Supplied To Customer Premises.**

<b>System %</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Average</b>
NWIS <sup>1</sup>	99.97	99.99	99.98	99.99	99.98
Ardyaloon	99.98	99.99	100.00	100.00	99.99
Beagle Bay	99.99	99.98	99.96	99.97	99.98
Bidyadanga	99.99	99.95	99.97	99.97	99.97
Broome	99.99	99.99	99.99	99.98	99.99
Carnarvon	99.99	99.98	99.98	99.98	99.98
Coral Bay	100.00	99.92	99.99	99.99	99.97
Cue	99.99	99.98	99.98	99.86	99.95
Denham	99.99	99.99	99.97	99.99	99.99
Derby	99.99	99.99	99.99	99.98	99.99
Djarindjin	100.00	99.98	100.00	99.97	99.99
Esperance	99.98	99.98	99.99	99.97	99.98
Exmouth	99.99	99.98	99.99	99.97	99.98
Fitzroy Crossing	99.99	99.99	99.85	99.97	99.95
Gascoyne Junction	99.98	100.00	99.99	99.98	99.99
Halls Creek	99.99	99.98	99.98	99.99	99.98
Hopetoun	99.98	99.97	99.96	99.98	99.97
Kalumburu	99.98	99.97	99.98	100.00	99.98
Kununurra	99.99	99.99	99.99	99.99	99.99
Lake Argyle	99.98	99.98	99.96	99.96	99.97
Laverton	99.97	99.97	99.97	99.98	99.97
Leonora	99.99	99.98	99.98	99.97	99.98
Looma	99.97	99.98	99.97	99.95	99.97
Marble Bar	99.98	100.00	99.99	99.99	99.99
Meekatharra	99.98	99.99	99.97	99.95	99.97
Menzies	99.99	99.99	99.97	99.99	99.98
Mount Magnet	100.00	100.00	99.99	99.99	99.99
Norseman	99.98	99.99	99.97	99.97	99.98
Nullagine	99.98	100.00	100.00	99.97	99.99
Onslow	99.99	99.99	99.98	99.98	99.99
Sandstone	100.00	100.00	99.97	99.96	99.98
Warmun	99.99	100.00	99.95	99.97	99.98
Wiluna	99.98	100.00	99.94	99.99	99.98
Wyndham	99.99	99.98	100.00	99.99	99.99
Yalgoo	99.95	99.98	100.00	100.00	99.98
Yungngora	99.99	99.99	99.70	99.99	99.92
<b>Horizon Power Total</b>	<b>99.98</b>	<b>99.98</b>	<b>99.98</b>	<b>99.98</b>	<b>99.98</b>

<sup>1</sup>NWIS – North West Interconnected System as per Clause 1 – Schedule 1



**Clause 11(d), 12 and 13 - Average Total Length of All Interruptions of Supply to Customer Premises in Minutes<sup>4</sup>**

System	2014/15	2015/16	2016/17	2017/18	Average
NWIS <sup>1</sup>	76	54	68	40	59
Ardyaloon	186	122	27	18	88
Beagle Bay	28	108	10	196	85
Bidyadanga	59	540	721	754	519
Broome	43	364	45	142	148
Carnarvon	3209	217	472	175	1018
Coral Bay	3	767	6	134	228
Cue	500	192	339	645	419
Denham	1054	315	313	128	452
Derby	363	204	127	98	198
Djarindjin	214	109	0	219	135
Esperance	278	711	328	360	419
Exmouth	4903	241	334	262	1435
Fitzroy Crossing	85	72	1038	45	310
Gascoyne Junction	26	23	58	119	56
Halls Creek	292	166	166	71	174
Hopetoun	270	292	148	179	222
Kalumburu	290	576	569	11	362
Kununurra	499	603	643	90	459
Lake Argyle	0	183	565	202	237
Laverton	33	284	653	495	366
Leonora	211	309	351	444	329
Looma	276	178	54	113	155
Marble Bar	80	127	150	36	98
Meekatharra	218	40	4	200	116
Menzies	0	21	219	14	63
Mount Magnet	37	29	404	202	168
Norseman	663	182	195	474	379
Nullagine	84	0	0	194	69
Onslow	457	565	806	56	471
Sandstone	29	0	242	12	71
Warmun	257	6	160	242	166
Wiluna	162	4	474	116	189
Wyndham	35	472	92	116	179
Yalgoo	17	92	1	1	28
Yungngora	91	265	10403	120	2720
<b>Horizon Power Total</b>	<b>501</b>	<b>284</b>	<b>234</b>	<b>152</b>	<b>293</b>

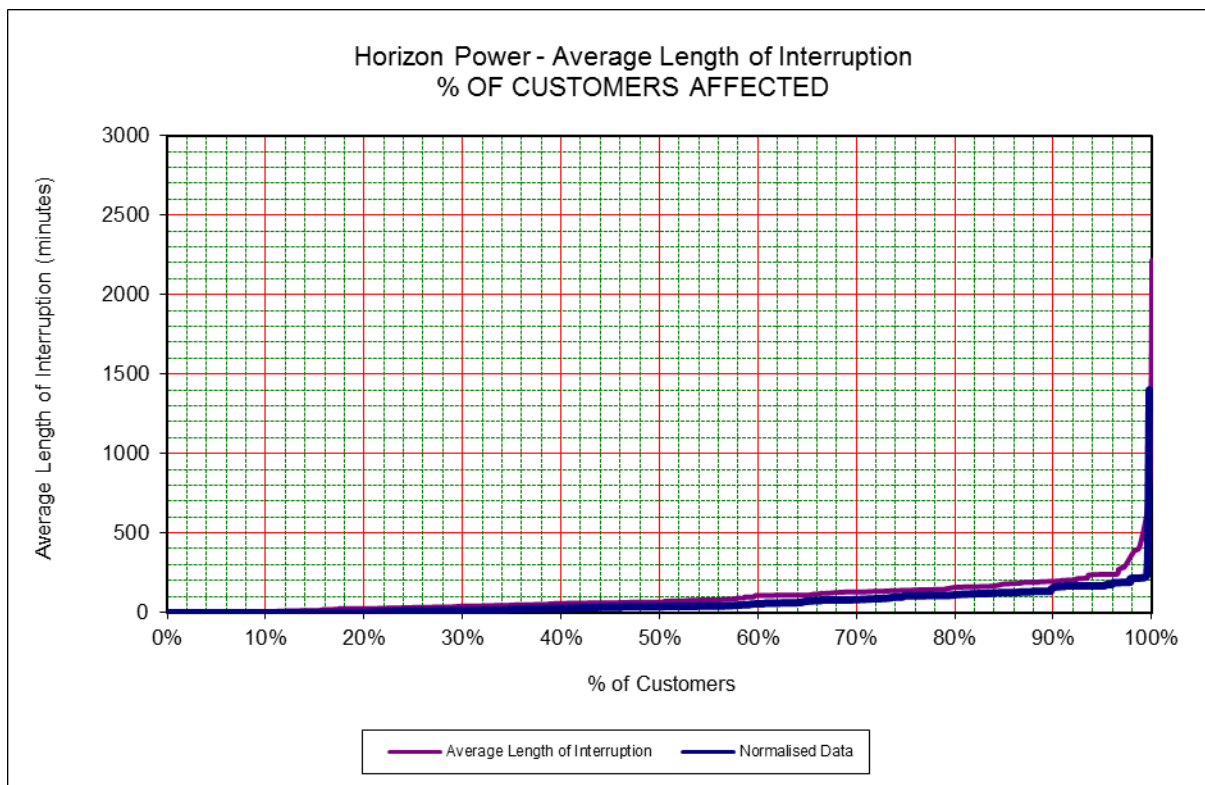
<sup>1</sup>NWIS – North West Interconnected System as per Clause 1 - Schedule 1

<sup>4</sup>Corresponds to System Average Interruption Duration Index (SAIDI)

**Clause 14(a) - Horizon Power - Average Length of Interruption - Frequency Distribution**

Percentile	Minutes
25 <sup>th</sup>	33.94
50 <sup>th</sup>	66.71
75 <sup>th</sup>	141.60
90 <sup>th</sup>	199.22
95 <sup>th</sup>	242.43
98 <sup>th</sup>	368.70
100 <sup>th</sup>	2214.34

**Clause 15 – Average Length of Interruption - Frequency Graph.**

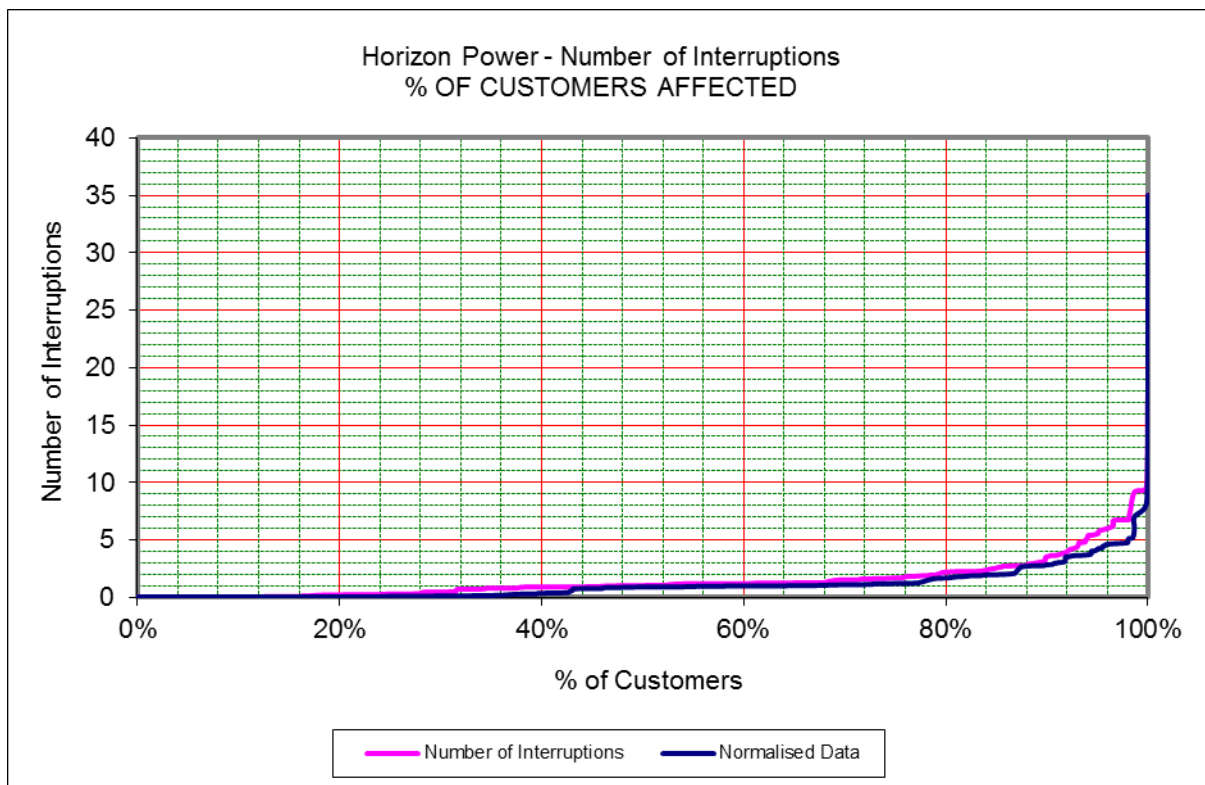


During the period 01/07/2017 to 30/06/2018 of those customers who experienced an interruption, 40% had an interruption of less than 60 minutes.

**Clause 14(b) - Horizon Power - Number of Interruptions - Frequency Distribution**

Percentile	Interruptions
25 <sup>th</sup>	0.27
50 <sup>th</sup>	1.00
75 <sup>th</sup>	1.66
90 <sup>th</sup>	3.51
95 <sup>th</sup>	5.53
98 <sup>th</sup>	6.74
100 <sup>th</sup>	35.00

**Clause 15 – Number of Interruptions - Frequency Graph**

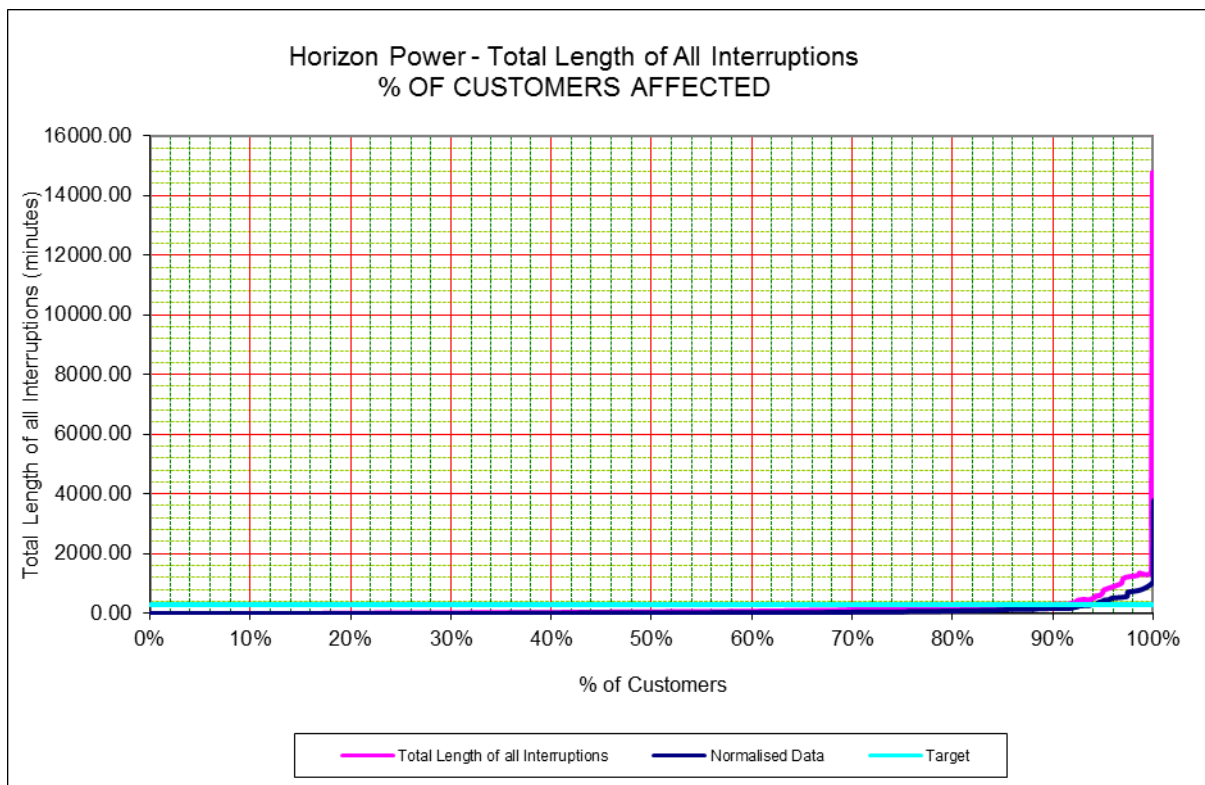


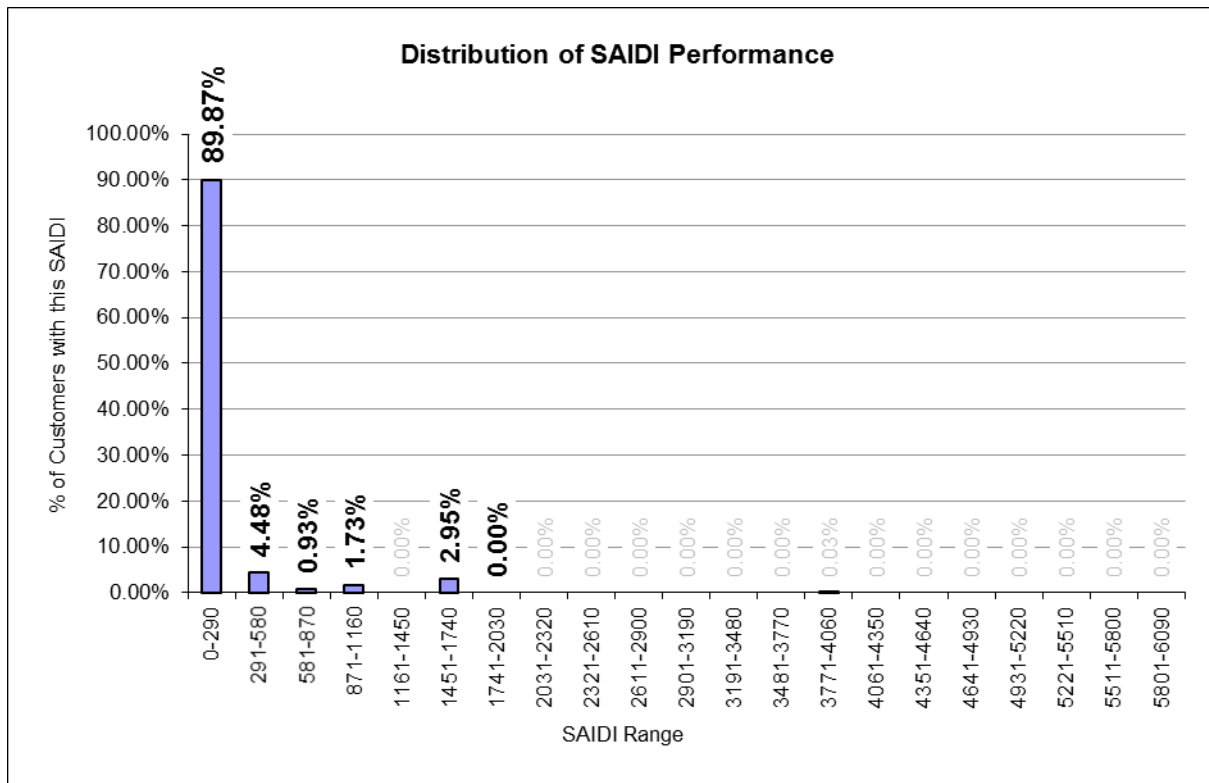
During the period 01/07/2017 to 30/06/2018, 99.97% of customers experienced an average of less than 16 outages or less.

**Clause 14(c) - Horizon Power - Total Length of all Interruptions - Frequency Distribution**

Percentile	Minutes
25 <sup>th</sup>	24.99
50 <sup>th</sup>	61.29
75 <sup>th</sup>	159.34
90 <sup>th</sup>	312.42
95 <sup>th</sup>	703.94
98 <sup>th</sup>	1251.82
100 <sup>th</sup>	14786.66

**Clause 15 – Total Length of all Interruptions - Frequency Graph**





During the period 01/07/2017 to 30/06/2018, 90% of customers experienced outages with durations of less than 290 minutes.

#### 4. MAJOR EVENT DAYS

In the period 01/07/2017 to 30/06/2018 there were 3 systems impacted by 1 significant event for which Major Event Days were recorded.

Power System	Major Event Day Dates	Event
Bidyadanga	27 - 28 December 2017	Cyclone Hilda
Broome	27 - 28 December 2017	Cyclone Hilda
Djarindjin	27 - 28 December 2017	Cyclone Hilda

## 5. APPENDIX

### Major Event Days

Major event days are days in which interruptions affect the delivery of supply in a system and are not reasonably practicable to control such as extreme weather events (cyclones, fires and floods). These days are excluded from Sustained Interruptions used for reliability measurement and reporting.

This report makes reference to the impact of major event days where they have had a significant impact on the statistics.

### Major Event Day Classification

The classification of Major Event Days is to allow major events to be studied separately from daily operation, and in the process, to better reveal trends in daily operation that would be hidden by the large statistical effect of major events.

A Major Event Day is a day in which interruptions affect the delivery of supply in a system that is not reasonably practicable to control. All indices are calculated based on removal of the identified Major Event Days.

Interruptions that span multiple days are accrued to the day on which the interruption begins.

### Normalised Data Set - Unplanned

Horizon Power uses Normalised data set to measure the management of incidents that are within the business' control.

Sustained Interruptions in Horizon Powers systems are those interruptions that result in a loss of electricity to customers for more than one minute in duration.

Horizon Power's Normalised Data excludes interruptions where the interruption is not reasonably practicable to control such as:

- Customer installations/ appliances
- Planned outages/ disconnections
- Vehicle, machine or tool damage
- Wilful damage
- Damage due to events that Horizon Power cannot, so far as is reasonably practicable, control such as cyclones, fires and floods.

As Horizon Power is a vertically integrated business (responsible for generation, transmission and distribution) reliability data includes generation and transmission outages.