Network Quality and Reliability of Supply Code

2019/20 Performance Report

Prepared by: Asset Services

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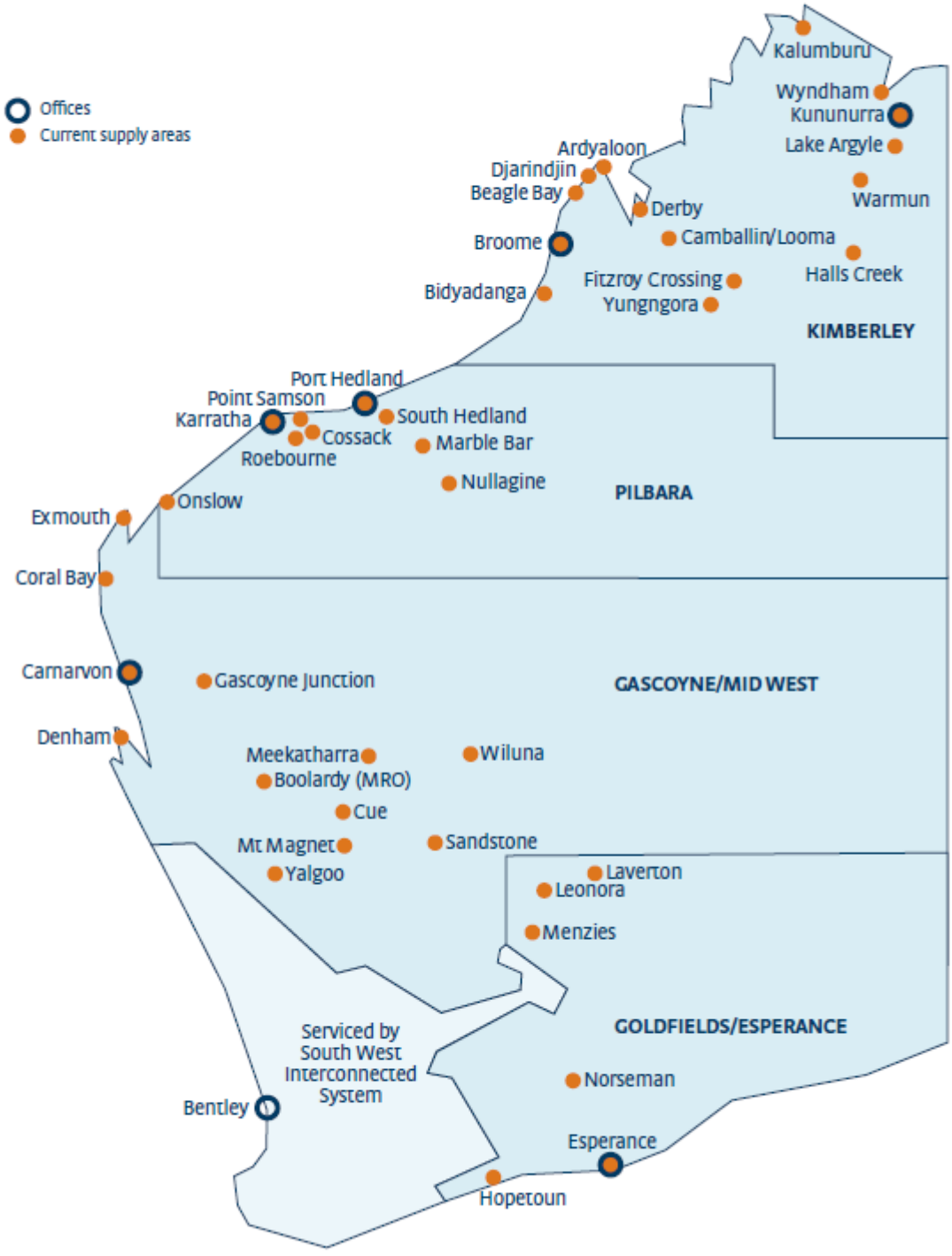


1. INTRODUCTION

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, with the next audit due in 2020.

In 2020, Horizon Power has appointed Qualeng to perform the audit of its systems for compliance with the code. Qualeng is a locally based engineering consulting group with over 20 years engineering, regulatory and quality assurance expertise throughout various industries. Qualeng has a long and successful trading history and comprises a team of highly experienced consultants with recent, relevant and international expertise in the energy sector.

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	2018/19	2019/20
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 Available.

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	2018/19	2019/20
Clause 5(a) Number of premises that experienced interruptions greater than 12 hours continuous	1380	1333
Clause 5(b) Number of premises that experienced more than 16 interruptions.	120	61

Detailed analysis of interruptions where duration is greater than 12 hours (720 minutes) continuously for 2019/20

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Broome	2635	1	22/07/2019	Equipment Failure	Part Power
Broome	2879	1	22/07/2019	Bat	Miscellaneous Non Hazard
Broome	57521.16	1	17/10/2019	Equipment Failure	No Power
Broome	5745.2	1	20/12/2019	Wind or Wind Bourne Debris	SFW Tree Fouling Street Wire
Broome	1489.26	1	23/12/2019	Lightning	No Power
Broome	8751	1	7/01/2020	Water Infiltration or Flooded Equipment	No Power
Broome	5762.88	1	30/01/2020	External Owner Equipment	Miscellaneous Hazard
Broome	1444	1	6/02/2020	Vegetation	Service Wire Down
Broome	6627	1	7/02/2020	Equipment Failure	Potential Neutral Problem - AMI
Broome	843	1	1/03/2020	Equipment Failure	No Power
Carnarvon	4512	1	16/08/2019	Unknown	Reconnection
Carnarvon	4507	1	21/08/2019	Vehicle	Underground Dome Damaged
Carnarvon	4109.18	1	17/10/2019	Unknown	Part Power
Carnarvon	176312.6	1	4/11/2019	Vandalism or Willful Damage	Pole Fire
Carnarvon	1186	1	6/03/2020	Equipment Failure	Part Power
Carnarvon	2503	1	11/03/2020	Unknown	No Power
Carnarvon	1270	1	24/05/2020	Wind or Wind Bourne Debris	Debris On Service Wire
Carnarvon	1383.73	3	24/05/2020	Unknown	Switch Isolation
Carnarvon	1506	1	11/06/2020	Equipment Failure	Part Power
Cue	1048.66	1	13/02/2020	Equipment Failure	Warm Meter Fuse
Denham	1040	1	12/07/2019	Vehicle	Meter Box Damaged
Denham	4109	1	15/11/2019	Equipment Failure	Low Hanging Service Wire
Denham	15789.26	1	14/05/2020	Water Infiltration or Flooded Equipment	Miscellaneous Hazard
Derby	916	1	6/11/2019	Vandalism or Willful Damage	Debris On Street Wire
Derby	1040.36	1	26/11/2019	Equipment Failure	Low Hanging Street Wire
Derby	4656.05	1	24/12/2019	Lightning	No Power
Derby	2456.78	1	25/12/2019	Lightning	No Power
Derby	2459.5	1	6/01/2020	Lightning	Switch Isolation
Derby	8191	78	6/01/2020	Lightning	Switch Isolation
Djarindjin	1649	1	21/08/2019	Vandalism or Willful Damage	No Power
Esperance	762.65	4	10/07/2019	Equipment Failure	Drop Out Fuse Trip
Esperance	1007.16	1	7/08/2019	Equipment Failure	Miscellaneous Hazard
Esperance	2417	4	10/08/2019	Wind or Wind Bourne Debris	Drop Out Fuse Trip

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Esperance	731	1	13/08/2019	Equipment Failure	No Power
Esperance	796.13	18	21/08/2019	Equipment Failure	Recloser Trip
Esperance	1465.2	1	28/08/2019	Equipment Failure	No Power
Esperance	1291.79	2	1/09/2019	Equipment Failure	Recloser Trip
Esperance	2993.69	1	14/11/2019	Equipment Failure	Switch Isolation
Esperance	1016	1	5/12/2019	Vehicle	Service Wire Down
Esperance	895	8	25/12/2019	Lightning	Sectionaliser Trip
Esperance	5457.21	11	25/12/2019	Equipment Failure	Recloser Trip
Esperance	765	1	26/12/2019	Lightning	Miscellaneous Non Hazard
Esperance	861	12	26/12/2019	Lightning	Drop Out Fuse Trip
Esperance	1145	1	26/12/2019	Lightning	No Power
Esperance	3338.53	1	26/12/2019	Lightning	Drop Out Fuse Trip
Esperance	3999.83	10	26/12/2019	Lightning	Switch Isolation
Esperance	11496	1	26/12/2019	Lightning	Drop Out Fuse Trip
Esperance	996.53	1	27/12/2019	Emergency Outage For Hazard	Switch Isolation
Esperance	1016	8	27/12/2019	Wind or Wind Bourne Debris	Drop Out Fuse Trip
Esperance	1049	1	27/12/2019	Lightning	No Power
Esperance	1352.51	1	27/12/2019	Emergency Outage For Hazard	Switch Isolation
Esperance	1440	1	27/12/2019	Lightning	Reconnection
Esperance	1861	1	27/12/2019	Lightning	No Power
Esperance	1005.48	1	16/02/2020	Lightning	No Power
Esperance	1225.95	1	28/02/2020	Equipment Failure	Miscellaneous Non Hazard
Esperance	762	1	1/03/2020	Equipment Failure	No Power
Esperance	2750	1	4/03/2020	Lightning	Meter Box Damaged
Esperance	807.96	9	6/05/2020	Equipment Failure	Recloser Trip
Esperance	1324	1	6/05/2020	Lightning	No Power
Esperance	2826.13	1	6/05/2020	Wind or Wind Bourne Debris	Recloser Trip
Esperance	923.7	1	12/05/2020	Unknown	No Power
Esperance	4382.48	176	24/05/2020	System Generated	Recloser Trip
Esperance	2679	1	25/05/2020	Wind or Wind Bourne Debris	Low Hanging Street Wire
Esperance	4194	1	26/05/2020	PQI - Default Code	Electric Shock
Esperance	1181	1	27/05/2020	Equipment Failure	Part Power
Esperance	907	1	13/06/2020	Unknown	No Power
Esperance	1839.9	43	28/06/2020	Lightning	Drop Out Fuse Trip
Exmouth	2121	1	6/08/2019	Vehicle	Pole Broken/Damaged
Exmouth	1478	1	10/12/2019	Vehicle	Underground Dome Damaged
Exmouth	2677.1	1	6/04/2020	PQI - Default Code	SFW PQI High Volts
Fitzroy Crossing	1212	1	23/09/2019	Equipment Failure	Meter Box Damaged
Fitzroy Crossing	730	1	27/12/2019	Equipment Failure	No Power
Fitzroy Crossing	988	1	31/12/2019	Vandalism or Willful Damage	No Power
Fitzroy Crossing	7364.73	1	8/01/2020	Bird	Part Power
Fitzroy Crossing	4323	1	3/03/2020	PQI - Default Code	Potential Neutral Problem - AMI
Fitzroy Crossing	7751	1	3/03/2020	Equipment Failure	No Power

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
Halls Creek	1875.61	1	29/12/2019	Lightning	No Power
Halls Creek	740.2	23	31/01/2020	Equipment Failure	Switch Isolation
Hopetoun	1757	1	10/12/2019	Vehicle	Underground Dome Damaged
Hopetoun	964	1	18/12/2019	Bird	No Power
Hopetoun	2411	1	31/01/2020	Bird	No Power
Hopetoun	1090	1	15/02/2020	Lightning	No Power
Hopetoun	1418	1	16/03/2020	Lightning	Part Power
Hopetoun	1575	1	29/04/2020	Equipment Failure	Part Power
Kununurra	850	1	15/12/2019	Wind or Wind Bourne Debris	Street Wire Down
Kununurra	1038	1	15/12/2019	Vegetation	Service Wire Down
Kununurra	1179	1	15/12/2019	Wind or Wind Bourne Debris	Reconnection
Kununurra	1313.76	1	23/12/2019	PQI - Default Code	SFW PQI High Volts
Kununurra	8436.96	1	31/12/2019	Lightning	Part Power
Kununurra	11896.98	1	26/01/2020	Bat	No Power
Kununurra	3013.26	21	27/01/2020	Equipment Failure	Feeder Trip
Laverton	1006.63	1	16/09/2019	Equipment Failure	SFW PQI Voltage Fluctuation
Leonora	1567	1	16/12/2019	Vegetation	Disconnect For Fault
Looma	1285	1	13/03/2020	Equipment Failure	No Power
Marble Bar	1003	1	12/07/2019	Equipment Failure	Part Power
Marble Bar	1985	1	18/07/2019	Equipment Failure	Part Power
Marble Bar	4761	1	28/12/2019	Lightning	Part Power
Meekatharra	1246.11	3	14/11/2019	Emergency Outage For Hazard	Feeder Trip
Meekatharra	1465	1	14/11/2019	Equipment Failure	Pole Broken/Damaged
Meekatharra	4544	1	1/05/2020	Equipment Failure	Miscellaneous Hazard
Menzies	3307.03	2	25/05/2020	Plan Outage or Disconnection	Planned HVN Incident
Mount Magnet	1083	1	28/02/2020	Wind or Wind Bourne Debris	Service Wire Down
Norseman	2196.88	6	15/03/2020	Wind or Wind Bourne Debris	Feeder Trip
NWIS	1039	9	11/11/2019	Vegetation	LV Fuse Trip
NWIS	4424	1	6/12/2019	Emergency Outage For Hazard	Disconnect For Fault
NWIS	151682	1	17/12/2019	Emergency Outage For Hazard	Miscellaneous Hazard
NWIS	1074	1	20/12/2019	External Owner Equipment	Reconnection
NWIS	4687	1	21/01/2020	PQI - Default Code	SFW PQI High Volts
NWIS	823.55	16	8/02/2020	Wind or Wind Bourne Debris	Transmission Trip
NWIS	1600	9	8/02/2020	Wind or Wind Bourne Debris	Feeder Trip
NWIS	1600	161	8/02/2020	Wind or Wind Bourne Debris	Feeder Trip
NWIS	1600	209	8/02/2020	Wind or Wind Bourne Debris	Feeder Trip
NWIS	2594	1	8/02/2020	Unknown	Underground Dome Damaged
NWIS	2613	1	8/02/2020	Wind or Wind Bourne Debris	Meter Box Damaged
NWIS	2720	1	8/02/2020	Wind or Wind Bourne Debris	Miscellaneous Hazard
NWIS	4119.86	143	8/02/2020	Wind or Wind Bourne Debris	Transmission Trip
NWIS	15991.28	2	8/02/2020	Wind or Wind Bourne Debris	Feeder Trip

System	Duration (Minutes)	Premises	Start Date	Cause Description	Incident Category
NWIS	18840.29	27	8/02/2020	Wind or Wind Bourne Debris	Feeder Trip
NWIS	23480.56	11	8/02/2020	Wind or Wind Bourne Debris	Recloser Trip
NWIS	1564.91	2	9/02/2020	Wind or Wind Bourne Debris	Planned HVN Incident
NWIS	1600	1	9/02/2020	Vegetation	Underground Dome Damaged
NWIS	4762	1	9/02/2020	Equipment Failure	Street Wire Down
NWIS	5829	1	9/02/2020	Wind or Wind Bourne Debris	Underground Kiosk Damaged
NWIS	13239	1	9/02/2020	Wind or Wind Bourne Debris	Service Wire Down
NWIS	86078.43	16	9/02/2020	Wind or Wind Bourne Debris	Switch Isolation
NWIS	4028	1	10/02/2020	Wind or Wind Bourne Debris	No Power
NWIS	4230	1	10/02/2020	Wind or Wind Bourne Debris	No Power
NWIS	9994	1	10/02/2020	Wind or Wind Bourne Debris	No Power
NWIS	12203	1	10/02/2020	Wind or Wind Bourne Debris	Service Wire Down
NWIS	86767	1	17/02/2020	Wind or Wind Bourne Debris	Pole Down
NWIS	5464	1	9/03/2020	Vehicle	Underground Dome Damaged
NWIS	2823	1	29/03/2020	Equipment Failure	Miscellaneous Non Hazard
NWIS	1449	1	30/04/2020	Equipment Failure	No Power
NWIS	778.15	142	24/05/2020	Equipment Failure	Feeder Trip
NWIS	952	1	24/05/2020	Equipment Failure	Pole Fire
NWIS	6399.04	1	10/06/2020	Plan Outage or Disconnection	Planned HVN Incident
Onslow	3098	34	26/05/2020	Plan Outage or Disconnection	Planned HVN Incident
Wiluna	2588	1	9/11/2019	Equipment Failure	No Power
Wiluna	1119.68	1	22/02/2020	Equipment Failure	Low Hanging Service Wire
Wiluna	1721.8	1	7/06/2020	Equipment Failure	No Power
Wyndham	1364	1	16/12/2019	External Owner Equipment	Disconnect For Fault
Wyndham	5663.65	1	16/01/2020	Emergency Outage For Hazard	Miscellaneous Hazard
Wyndham	1784	1	16/03/2020	Unknown	No Power
		1,333	**Number of Interruptions* = 143**		

*Interruptions listed are beyond the control of the customer.

Customer interruptions greater than 12 hours continuously that were due to significant events (cyclones, severe storms, fire & floods) that Horizon Power systems experienced in 2019/20.

Power System	Significant Event Dates	Event
Derby	23 December 2019	Abnormally high number of lightning strikes
NWIS	8-9 February 2020	Cyclone Damien

Clause 6 and 10 - Total number of complaints received

2018/19	2019/20
76	56

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

Discrete Area	2018/19	2019/20
NWIS	7	6
Ardyaloon		
Beagle Bay		
Bidyadanga		
Broome	3	1
Carnarvon	1	2
Coral Bay		
Cue		
Denham		
Derby		2
Djarindjin		
Esperance	9	17
Exmouth		
Fitzroy Crossing		1
Gascoyne Junction		
Halls Creek	15	16
Hopetoun	2	1
Kalumburu		
Kununurra		4
Lake Argyle		
Laverton	3	1
Leonora	6	1
Looma	4	
Marble Bar		
Meekatharra		2
Menzies		2
Mount Magnet		
Norseman		
Nullagine	1	
Onslow		
Sandstone		
Warmun		
Wiluna		
Wyndham		
Yalgoo		
Yungngora	25	
Horizon Power Total	**76**	**56**

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

2018/19	2019/20
$374,500	$541,710

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.

2018/19		2019/20	
Number	**Cost**	**Number**	**Cost**
15	$900	3	$60

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

2018/19		2019/20	
Number	**Cost**	**Number**	**Cost**
52	$4,160	47	$3,760

Clause 11(a), 12 and 13 - Average Length of Interruption of Supply to Customer Premises in Minutes[2]

System	2016/17	2017/18	2018/19	2019/20	Average
NWIS[1]	91.22	53.65	159.53	251.60	139.00
Ardyaloon	18.98	9.75	0.00	0.00	7.18
Beagle Bay	217.17	142.52	173.30	66.46	149.86
Bidyadanga	183.69	144.01	139.78	53.10	130.14
Broome	56.60	116.09	191.07	35.95	99.93
Carnarvon	101.75	110.63	51.25	64.55	82.05
Coral Bay	67.00	37.25	14.08	70.68	47.25
Cue	109.19	744.85	83.69	47.27	246.25
Denham	137.26	27.55	36.24	11.93	53.25
Derby	77.37	92.75	153.68	233.35	139.29
Djarindjin	0.00	145.32	119.75	25.29	72.59
Esperance	74.56	138.38	114.39	77.84	101.29
Exmouth	72.64	136.49	192.95	159.72	140.45
Fitzroy Crossing	805.04	166.14	190.43	104.30	316.48
Gascoyne Junction	35.40	81.26	207.64	84.60	102.23
Halls Creek	121.59	73.70	233.86	201.36	157.63
Hopetoun	232.25	116.70	136.26	57.31	135.63
Kalumburu	101.76	12.68	27.51	48.22	47.54
Kununurra	60.83	43.19	52.91	48.36	51.32
Lake Argyle	201.80	215.13	106.65	84.00	151.90
Laverton	149.89	116.39	159.62	154.39	145.07
Leonora	92.67	148.31	212.97	199.09	163.26
Looma	134.64	272.34	427.66	168.91	250.89
Marble Bar	40.80	32.50	113.38	0.00	46.67
Meekatharra	162.09	274.63	113.60	94.30	161.16
Menzies	176.86	39.92	106.43	327.93	162.79
Mount Magnet	52.03	50.18	67.84	156.64	81.67
Norseman	142.71	149.47	84.88	307.57	171.16
Nullagine	0.00	152.12	476.27	61.04	172.36
Onslow	93.05	82.99	32.82	116.77	81.41
Sandstone	178.64	203.00	172.33	32.75	146.68
Warmun	238.24	134.28	0.00	1.08	93.40
Wiluna	313.13	36.22	41.14	94.83	121.33
Wyndham	23.46	35.53	45.90	21.03	31.48
Yalgoo	2.00	2.42	69.42	19.41	23.31
Yungngora	1564.05	41.66	269.49	16.83	473.01
Horizon Power Total	**90.94**	**101.22**	**120.50**	**123.73**	**109.10**

[1]NWIS – North West Interconnected System as per Clause 1 – Schedule 1
[2] Corresponds to Customer Average Interruption Duration Index (CAIDI)

Clause 11(b), 12 and 13 - Average Number of Interruptions of Supply to Customer Premises[3]

System	2016/17	2017/18	2018/19	2019/20	Average
NWIS[1]	0.74	0.74	0.68	1.55	0.93
Ardyaloon	1.40	1.81	0.00	0.00	0.80
Beagle Bay	0.05	1.37	3.37	1.60	1.60
Bidyadanga	3.93	5.24	0.34	2.83	3.09
Broome	0.80	1.22	1.58	0.61	1.05
Carnarvon	4.64	1.58	4.71	5.36	4.07
Coral Bay	0.10	3.60	5.82	3.33	3.21
Cue	3.11	0.87	1.12	2.13	1.81
Denham	2.28	4.63	3.55	2.64	3.28
Derby	1.65	1.05	2.29	2.72	1.93
Djarindjin	0.00	1.51	2.05	1.11	1.17
Esperance	4.40	2.60	2.91	4.65	3.64
Exmouth	4.60	1.92	1.45	0.69	2.16
Fitzroy Crossing	1.29	0.27	1.53	1.94	1.26
Gascoyne Junction	1.63	1.47	0.84	5.86	2.45
Halls Creek	1.37	0.96	0.82	0.69	0.96
Hopetoun	0.64	1.53	3.64	3.11	2.23
Kalumburu	5.60	0.88	2.63	0.90	2.50
Kununurra	10.57	2.08	3.10	5.74	5.37
Lake Argyle	2.80	0.94	6.44	0.94	2.78
Laverton	4.36	4.25	3.47	4.08	4.04
Leonora	3.79	2.99	7.44	9.62	5.96
Looma	0.40	0.41	3.28	1.02	1.28
Marble Bar	3.68	1.09	1.40	0.00	1.55
Meekatharra	0.02	0.73	1.16	1.88	0.95
Menzies	1.24	0.34	4.65	1.08	1.83
Mount Magnet	7.76	4.02	3.21	4.24	4.81
Norseman	1.37	3.17	4.14	2.76	2.86
Nullagine	0.00	1.28	0.63	0.58	0.62
Onslow	8.66	0.67	2.64	2.10	3.52
Sandstone	1.35	0.06	0.17	3.15	1.18
Warmun	0.67	1.80	0.00	0.30	0.69
Wiluna	1.51	3.21	7.71	4.48	4.23
Wyndham	3.91	3.26	1.51	2.16	2.71
Yalgoo	0.35	0.61	1.80	1.84	1.15
Yungngora	6.65	2.88	2.41	1.80	3.43
Horizon Power Total	**2.58**	**1.50**	**1.94**	**2.54**	**2.14**

[1]NWIS – North West Interconnected System as per Clause 1 – Schedule 1
[3] 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

System %	2016/17	2017/18	2018/19	2019/20	Average
NWIS[1]	99.98	99.99	99.97	99.95	99.97
Ardyaloon	100.00	100.00	100.00	100.00	100.00
Beagle Bay	99.96	99.97	99.97	99.99	99.97
Bidyadanga	99.97	99.97	99.97	99.99	99.98
Broome	99.99	99.98	99.96	99.99	99.98
Carnarvon	99.98	99.98	99.99	99.99	99.98
Coral Bay	99.99	99.99	100.00	99.99	99.99
Cue	99.98	99.86	99.98	99.99	99.95
Denham	99.97	99.99	99.99	100.00	99.99
Derby	99.99	99.98	99.97	99.96	99.97
Djarindjin	100.00	99.97	99.98	100.00	99.99
Esperance	99.99	99.97	99.98	99.99	99.98
Exmouth	99.99	99.97	99.96	99.97	99.97
Fitzroy Crossing	99.85	99.97	99.96	99.98	99.94
Gascoyne Junction	99.99	99.98	99.96	99.98	99.98
Halls Creek	99.98	99.99	99.96	99.96	99.97
Hopetoun	99.96	99.98	99.97	99.99	99.97
Kalumburu	99.98	100.00	99.99	99.99	99.99
Kununurra	99.99	99.99	99.99	99.99	99.99
Lake Argyle	99.96	99.96	99.98	99.98	99.97
Laverton	99.97	99.98	99.97	99.97	99.97
Leonora	99.98	99.97	99.96	99.96	99.97
Looma	99.97	99.95	99.92	99.97	99.95
Marble Bar	99.99	99.99	99.98	100.00	99.99
Meekatharra	99.97	99.95	99.98	99.98	99.97
Menzies	99.97	99.99	99.98	99.94	99.97
Mount Magnet	99.99	99.99	99.99	99.97	99.98
Norseman	99.97	99.97	99.98	99.94	99.97
Nullagine	100.00	99.97	99.91	99.99	99.97
Onslow	99.98	99.98	99.99	99.98	99.98
Sandstone	99.97	99.96	99.97	99.99	99.97
Warmun	99.95	99.97	100.00	100.00	99.98
Wiluna	99.94	99.99	99.99	99.98	99.98
Wyndham	100.00	99.99	99.99	100.00	99.99
Yalgoo	100.00	100.00	99.99	100.00	100.00
Yungngora	99.70	99.99	99.95	100.00	99.91
Horizon Power Total	**99.98**	**99.98**	**99.98**	**99.98**	**99.98**

[1]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[4]

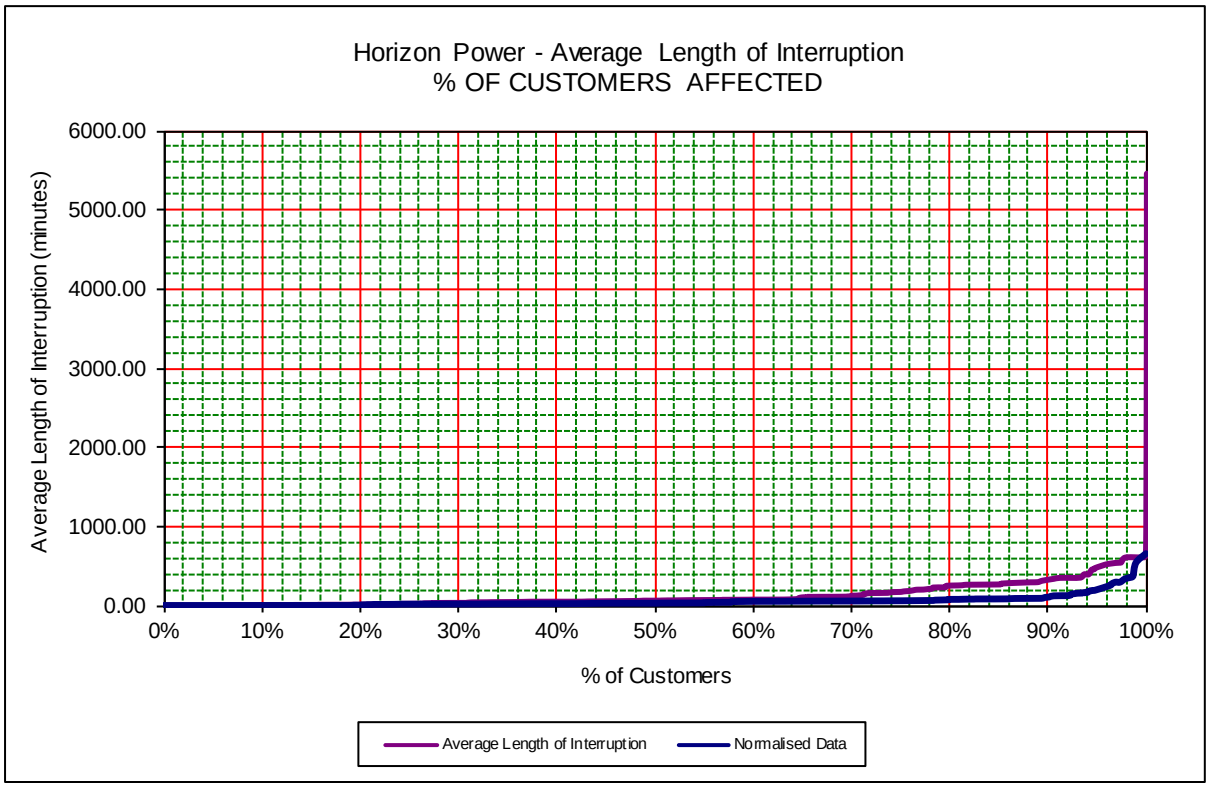
System	2016/17	2017/18	2018/19	2019/20	Average
NWIS[1]	68	40	108	391	152
Ardyaloon	27	18	0	0	11
Beagle Bay	10	196	583	106	224
Bidyadanga	721	754	48	150	419
Broome	45	142	302	22	128
Carnarvon	472	175	241	346	309
Coral Bay	6	134	82	236	115
Cue	339	645	93	101	295
Denham	313	128	129	32	150
Derby	127	98	352	635	303
Djarindjin	0	219	245	28	123
Esperance	328	360	333	362	346
Exmouth	334	262	280	110	246
Fitzroy Crossing	1038	45	290	203	394
Gascoyne Junction	58	119	174	496	212
Halls Creek	166	71	191	139	142
Hopetoun	148	179	496	178	250
Kalumburu	569	11	72	43	174
Kununurra	643	90	164	277	294
Lake Argyle	565	202	687	79	383
Laverton	653	495	554	630	583
Leonora	351	444	1586	1916	1074
Looma	54	113	1404	172	436
Marble Bar	150	36	159	0	86
Meekatharra	4	200	132	178	128
Menzies	219	14	494	356	271
Mount Magnet	404	202	218	664	372
Norseman	195	474	351	848	467
Nullagine	0	194	298	35	132
Onslow	806	56	87	245	298
Sandstone	242	12	30	103	97
Warmun	160	242	0	0	101
Wiluna	474	116	317	424	333
Wyndham	92	116	69	45	81
Yalgoo	1	1	125	36	41
Yungngora	10403	120	650	30	2801
Horizon Power Total	**234**	**152**	**234**	**315**	**234**

[1]NWIS – North West Interconnected System as per Clause 1 - Schedule 1
[4] Corresponds to System Average Interruption Duration Index (SAIDI)

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

Percentile	Minutes
25th	< 33.88
50th	< 73.19
75th	< 184.70
90th	< 337.73
95th	< 494.53
98th	< 616.38
100th	< 5452.61

Clause 15 – Average Length of Interruption - Frequency Graph

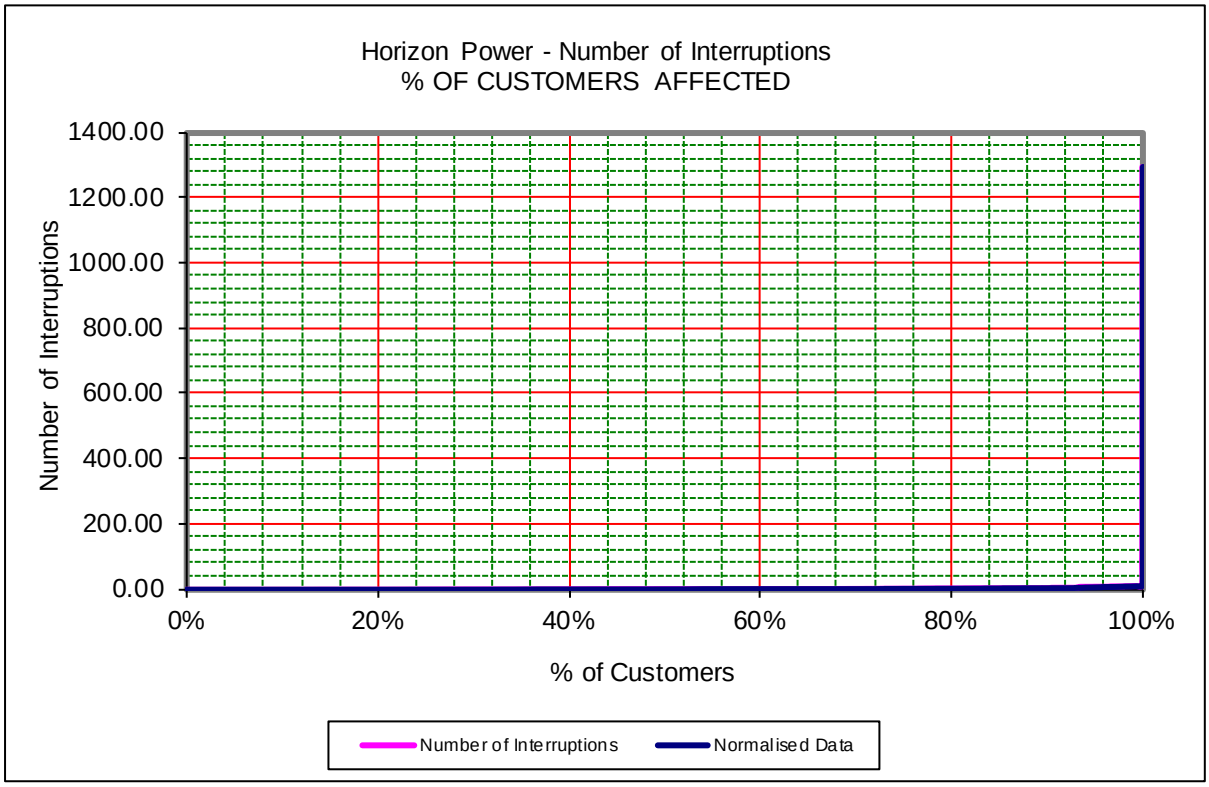


During the period 01/07/2019 to 30/06/2020 of those customers who experienced an interruption, 38% had an interruption of less than 60 minutes.

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

Percentile	Interruptions
25th	< 0.64
50th	< 1.90
75th	< 3.31
90th	< 5.10
95th	< 9.25
98th	< 10.24
100th	< 1290.00

Clause 15 – Number of Interruptions - Frequency Graph

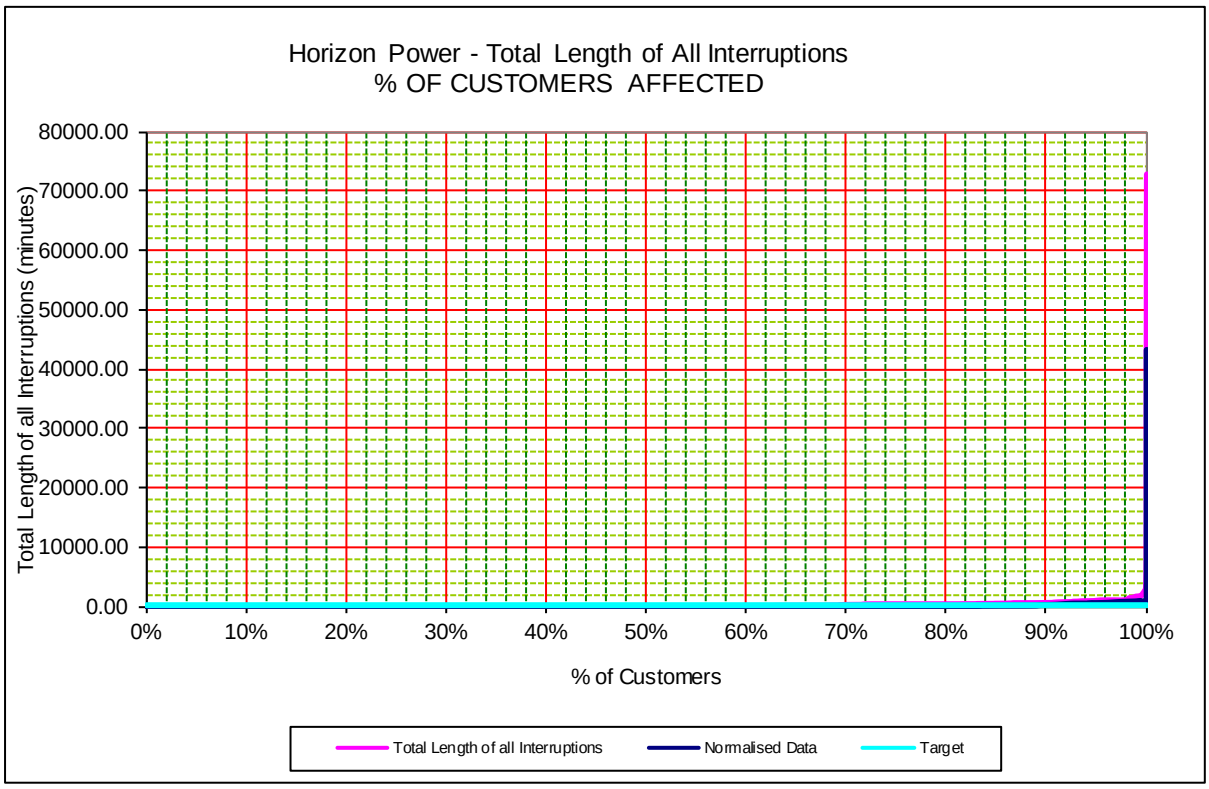


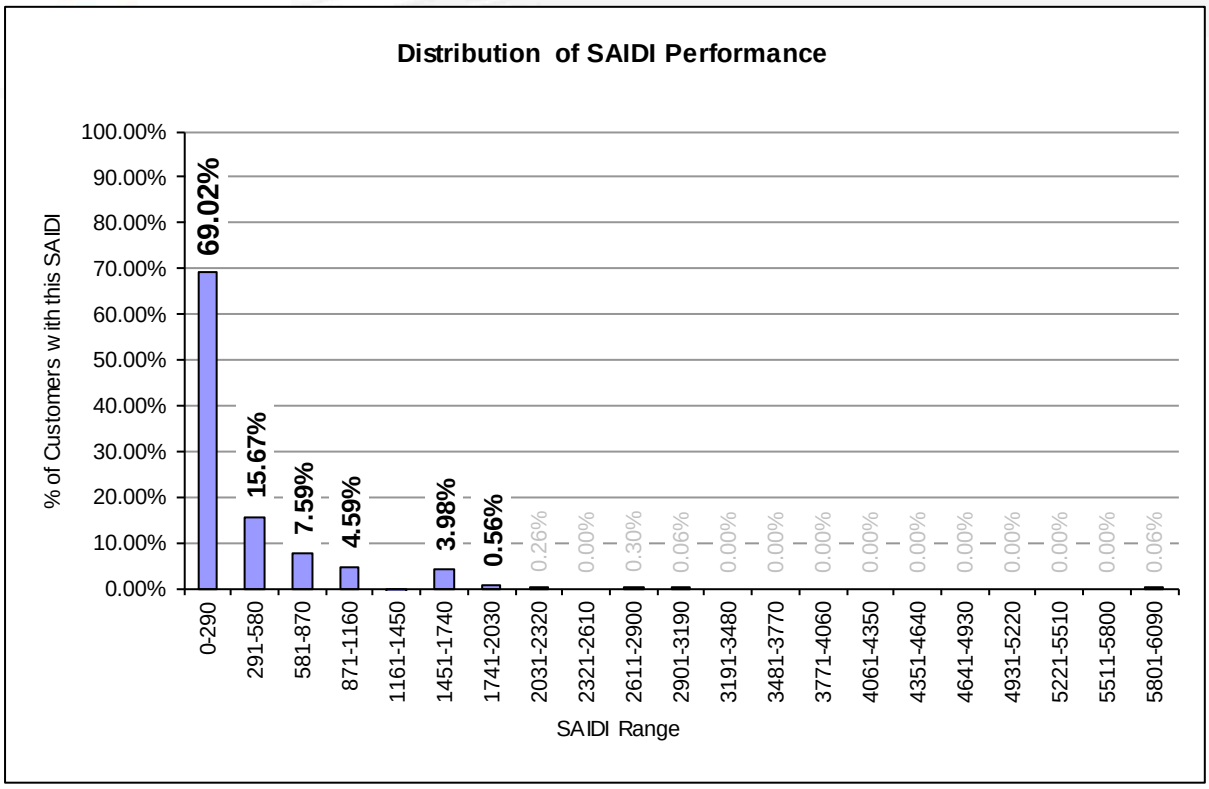
During the period 01/07/2019 to 30/06/2020, 99.96% of customers experienced an average of less than 16 outages or less.

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

Percentile	Minutes
25th	< 35.73
50th	< 137.88
75th	< 493.94
90th	< 718.04
95th	< 1087.48
98th	< 1306.52
100th	< 72,806.22

Clause 15 – Total Length of all Interruptions - Frequency Graph





During the period 01/07/2019 to 30/06/2020, 69% of customers experienced outages with durations of less than 290 minutes.

4. MAJOR EVENT DAYS

In the period 01/07/2019 to 30/06/2020 there were 2 systems impacted by 2 significant events for which Major Event Days were recorded.

System	Major Event Days	Event
Derby	23 December 2019	Abnormally high number of lightning strikes
NWIS	8-9 February 2020	Cyclone Damien

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.