Electricity Distribution Services

2022 Annual Compliance Statement

For the assessment period
1 April 2021 - 31 March 2022

By 31 August 2022

Pursuant to:

Electricity Distribution Services Default Price-Quality Path Determination 2020 (20 May 2020)

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1. INTRODUCTION

1.1 Background

Vector Limited ("Vector") owns and operates the electricity distribution network in the greater Auckland region. Vector manages more than 19,000 kms of overhead lines and underground cables, delivering power to over 600,000 homes and businesses throughout the wider Auckland region from Wellsford to Papakura.

Vector is subject to price-quality regulation under Part 4 of the Commerce Act 1986. The Commerce Commission (the Commission) has set a new Default Price-Quality Path (DPP) which applies to Vector from 1 April 2020.

The assessment period 2022 is therefore the second assessment period of the Electricity Distribution Services Default Price-Quality Path Determination 2020 ("the Determination")[1] and covers the 12 months to 31 March 2022.

1.2 Statement of compliance

Vector's annual compliance statement ("the Statement") is prepared in accordance with the requirements of clause 11.4 of the Determination.

As required by clause 11.5(a) of the Determination, the Statement provides Vector's wash-up amount and quality incentive adjustment calculation in respect of clause 8.6 and Schedule 4 of the Determination, and also confirms Vector's compliance with the quality standards in clause 9 of the Determination for the assessment period 2022.

As required by clause 11.5(c) of the Determination, the Statement confirms that Vector has not entered into any agreement with another Electricity Distribution Business ("EDB") or Transpower for an amalgamation, merger, major transaction or transfer in the assessment period 2022.

The Statement has been approved for issue on 25 August 2022 and published by 31 August 2022. In the Statement, references to Vector relate only to Vector's electricity distribution business.

1.3 Disclaimer

The pricing information contained in the Statement is accurate at the time of preparation, 5 May 2022.

The information contained in the Statement has been prepared for the express purpose of complying with the requirements of clause 11.4 of the Determination. The Statement has not been prepared for

[1] Available at Electricity-distribution-services-default-price-quality-path-determination-2020-consolidated-20-May-2020-20-May-2020.pdf.

any other purpose. Vector expressly disclaims any liability to any party who may rely on the Statement for any other purpose.

For presentation purposes, some numbers in the Statement have been rounded. In most cases calculations are based on more detailed numbers. This may cause small discrepancies or rounding inconsistencies when aggregating some of the information presented in the Statement. These discrepancies do not affect the overall compliance calculations which are based on the more detailed information.

2. WASH-UP AMOUNT

2.1 Wash-up amount calculation

As required by clauses 11.4 and 8.6 of the Determination, Vector must calculate the wash-up amount for each assessment period using the methodology specified in Schedule 1.6 of the Determination. For the assessment period 2022 the wash-up amount is $26.5m, its calculation is detailed below in Table 1 and the different components of the calculation are further detailed in sections 2.2 to 2.4.

Table 1: Wash-up amount (WAU) 2022		
Formula: $WAU_{2022} = AAR_{2022} - AR_{2022} - RV_{2022}$		
Component	**Description**	**Value ($000)**
AAR_{2022}	Actual allowable revenue 2022 [2]	613,454
$- AR_{2022}$	Actual revenue 2022 [3]	(586,960)
$- RV_{2022}$	Revenue foregone 2022 [4]	-
WUA_{2022}	**Wash-up amount 2022**	**26,494**

2.2 Actual allowable revenue

Vector's actual allowable revenue for the second assessment period (detailed below in Table 2) has been determined in line with the formula from paragraph 2 (b) of Schedule 1.6 of the Determination.

Table 2: Actual allowable revenue (AAR) 2022		
Formula: $AAR_{2022} = ANAR_{2022} + APRC_{2022}$		
Component	**Description**	**Value ($000)**
$ANAR_{2022}$	Actual net allowable revenue 2022 [5]	409,301
$APRC_{2022}$	Actual pass-through costs and recoverable costs 2022 [6]	204,153
AAR_{2022}	**Actual allowable revenue 2022**	**613,454**

[2] Details of actual allowable revenue 2022 is set out in section 2.2.
[3] Details of actual revenue 2022 is set out in section 2.3.
[4] Details of forgone revenue 2022 is set out in section 2.4.
[5] Details of actual net allowable revenue 2022 is set out in section 2.2.1.
[6] Details of actual pass-through costs and recoverable costs 2022 are included in section 2.2.2.

2.2.1 Actual net allowable revenue

To present how the actual net allowable revenue is derived we have provided the calculation of its different elements in Table 3.

Table 3: Actual net allowable revenue (ANAR) 2022		
Formula: $ANAR_{2022} = ANAR_{2021} \times (1 + \Delta CPI_{2022}) \times (1 - X)$		
Component	**Description**	**Value ($000)**
$ANAR_{2021}$	Actual net allowable revenue 2021 [7]	388,707
ΔCPI_{2022}	Inflated by consumer price index 2022 (ΔCPI_{2022} = 5.30%) [8]	20,594
X	Annual rate of change (X = 0%) [9]	-
$ANAR_{2022}$	**Actual net allowable revenue 2022**	**409,301**

One of the key items of the calculation of the actual net allowable revenue is the derived change in CPI for the assessment period 2022. We have provided the details of this calculation in Table 4 below.

Table 4: Consumer price index (CPI) 2022			
Formula: $\Delta CPI_{2022} = \left(\frac{CPI_{Jun,2021} + CPI_{Sep,2021} + CPI_{Dec,2021} + CPI_{Mar,2022}}{CPI_{Jun,2020} + CPI_{Sep,2020} + CPI_{Dec,2020} + CPI_{Mar,2021}} \right) - 1$			
Component	**Value**	**Component**	**Value**
$CPI_{Jun,2021}$	1,082	$CPI_{Jun,2020}$	1,047
$CPI_{Sep,2021}$	1,106	$CPI_{Sep,2020}$	1,054
$CPI_{Dec,2021}$	1,122	$CPI_{Dec,2020}$	1,059
$CPI_{Mar,2022}$	1,142	$CPI_{Mar,2021}$	1,068
Total	**4,452**	**Total**	**4,228**
ΔCPI_{2022}	(4,452 / 4,228) - 1		**0.0530**

[7] Actual net allowable revenue for the assessment period 2021 is set out in schedule 1.1 of the Determination.
[8] Details of ΔCPI_{2022} are included in Table 4.
[9] The annual rate of change generally applicable to all non-exempt EDBs for the DPP regulatory period is 0% as per Schedule 1.2 of the Determination.

2.2.2 Actual pass-through and recoverable costs

Actual allowable revenue includes actual pass-through and recoverable costs excluding any recoverable cost that is a revenue wash-up draw down amount.[10] The pass-through and recoverable costs have been determined in accordance with the Electricity Distribution Services Input Methodologies Determination 2012, ("Input Methodologies").[11] Table 5 summarises the pass-through and recoverable costs used to set prices for the assessment period 2022, all other pass-through and recoverable costs not included are not applicable to Vector.

Table 5: Actual pass-through costs and recoverable costs (APRC) 2022

Cost type	Description	Value ($000)
Pass-through costs	Local Authority rates	16,233
	Commerce Act levy	1,869
	Electricity Authority levy	1,688
	Utility Disputes levy	363
	Total pass-through costs	**20,153**
Recoverable costs	Incremental rolling incentive scheme incentive adjustment [12]	6,759
	Transpower electricity lines service charges	171,904
	Transpower new investment charges	7,881
	Distributed generation allowance	1,033
	Quality incentive adjustment [13]	(4,448)
	Capex wash-up adjustment[14]	346
	Fire and Emergency New Zealand levy [15]	525
	Total recoverable costs	**184,000**
Actual pass-through costs and recoverable costs excluding revenue wash-up drawn down amount 2022		**204,153**

[10] The revenue wash-up drawn down amount is the opening wash-up account balance which is nil for the first and second assessment periods, as set out schedule 1.7 of the Determination.

[11] Current version when preparing the Statement was consolidated 20 May 2020, available at https://comcom.govt.nz/regulated-industries/input-methodologies/electricity-distribution-ims, Appendix part 4, clauses 3.1.2 and 3.1.3.

[12] The incremental rolling incentive (IRIS) adjustment is specified in Schedule 2.2 of the Determination. Given that Vector has received guidance from the Commission on the treatment of sale and lease back transactions under the Input Methodologies, Vector has removed the impact of the sale and lease back transactions disclosed in RY20's information disclosure from the IRIS calculation. More explanations see Vector's RY22 information disclosure.

[13] The quality incentive adjustment is the amount calculated in Vector's 2020 Electricity Compliance Statement which can be found here on Vector's website https://blob-static.vector.co.nz/blob/vector/media/documents/vector-s-2020-epq-compliance-statement.pdf

[14] The capex wash-up adjustment is specified in clause 3.1.3 of the Input Methodologies. Consistent with Note 12 above Vector has removed the impact of the sale and lease back transactions disclosed in RY20's information disclosure from the capex wash up adjustment calculation. More explanations see Vector's RY22 information disclosure.

[15] The Fire and Emergency New Zealand levy is any levy payable to Fire and Emergency New Zealand under the Fire and Emergency New Zealand Act 2017.

2.3 Actual revenue

The actual revenue for the assessment period 2022 has been calculated in line with the definition within the Determination and is provided in Table 6 below.

Table 6: Actual revenue 2022		
Formula: $AR_{2022} = ARFP_{2022} + ORI_{2022}$		
Component	**Description**	**Value ($000)**
$ARFP_{2022}$	Actual revenue from prices 2022 [16]	597,752
ORI_{2022}	Other regulated income 2022 [17]	(10,792)
AR_{2022}	**Actual revenue 2022**	586,960

2.4 Revenue foregone

The revenue foregone for the assessment period 2022 is the actual net allowable revenue multiplied by the revenue reduction percentage less 20%. As specified in the Determination if the revenue reduction percentage is not greater than 20%, then the revenue foregone is nil. Table 7 below discloses Vector's revenue reduction percentage is 0.87%, which is less than 20%, therefore Vector's revenue foregone is nil for the assessment period 2022.

Table 7: Revenue reduction percentage			
Formula: $RRP_{2022} = 1 - ARFP_{2022}/FRFP_{2022}$			
Component	**Description**	**Value ($000)**	**Result**
$ARFP_{2022}$	Actual revenue from prices 2022	597,752	
$FRFP_{2022}$	Forecast revenue from prices 2022 [18]	602,980	
RRP_{2022}	Revenue reduction percentage 2022		0.87%
Revenue reduction percentage > 20%?			**No**
Revenue forgone (RV_{2022})		**-**	

2.5 2021 wash-up amount recalculation

The wash-up amount for the 2021 assessment period has been recalculated for the additional information available at the end of the 2022 assessment period, predominantly being quantity data, Qi,2021. This follows a similar approach to the recalculation of the pass-through balance under

[16] Details of actual revenue from prices 2022, calculated as $\sum P_{i,2022}\ Q_{i,2022}$ (prices 2022 x actual quantities 2022) is included in Appendix 1, tables 25 to 28.

[17] Other regulated income has the meaning given in the Input Methodologies, "forecast income associated with the supply of electricity distribution services, including gains and losses on disposed assets but excluding income through prices; investment-related income; capital contributions; or vested assets". The only other regulated income for the 2022 assessment period is the loss on asset disposals, which is from the Electricity Information Disclosure 2022, available at https://www.vector.co.nz/about-us/regulatory/disclosures-electricity/financial-and-network-information.

[18] Forecast revenue from prices is from the 2022 Price Setting Compliance Statement, available at https://blob-static.vector.co.nz/blob/vector/media/vector2021/electricity-distribution-price-setting-compliance-statement-2022.pdf.

clause 8.6(a) of the Electricity Distribution Services Default Price-Quality Path Determination 2015[19] Its calculation is detailed below in Tables 8-10.

Table 8: Wash-up amount (WAU) 2021			
Formula: $WAU_{2021} = AAR_{2021} - AR_{2021} - RV_{2021}$			
Component	**Description**	**2021 Value ($000)**	**2022 Value ($000)**
AAR_{2021}	Actual allowable revenue 2021 [20]	568,394	568,394
- AR_{2021}	Actual revenue 2021 [21]	(550,355)	(550,574)
- RV_{2021}	Revenue foregone 2021 [22]	-	-
WUA_{2021}	**Wash-up amount 2021**	**18,039**	**17,820**

Therefore, the wash-up amount for the assessment period 2021 is recalculated to be $17.82m.

Table 9: Actual revenue 2021			
Formula: $AR_{2021} = ARFP_{2021} + ORI_{2021}$			
Component	**Description**	**2021 Value ($000)**	**2022 Value ($000)**
$ARFP_{2021}$	Actual revenue from prices 2021 [23]	562,306	562,525
ORI_{2021}	Other regulated income 2021 [24]	(11,951)	(11,951)
AR_{2021}	**Actual revenue 2021**	**550,355**	**550,574**

Table 10: Revenue reduction percentage 2021					
Formula: $RRP_{2021} = 1 - ARFP_{2021}/FRFP_{2021}$					
Component	**Description**	**2021 Value ($000)**	**2021 Result**	**2022 Value ($000)**	**2022 Result**
$ARFP_{2021}$	Actual revenue from prices 2021	562,306		562,525	
$FRFP_{2021}$	Forecast revenue from prices 2021 [25]	565,552		565,552	
RRP_{2021}	Revenue reduction percentage 2021		0.57%		0.54%
Revenue reduction percentage > 20%?			**No**		**No**
Revenue forgone (RV_{2021})		**-**		**-**	

[19] Available at https://comcom.govt.nz/__data/assets/pdf_file/0025/62728/Electricity-Distribution-Services-DPPDetermination-2015-consolidating-all-amendments-as-of-9-July-2015.pdf.
[20] Actual allowable revenue 2021 is from the 2021 Annual Compliance Statement.
[21] Details of 2022 value for actual revenue 2021 is set out in Table 9. The 2021 value for actual revenue 2021 is from the 2021 Annual Compliance Statement.
[22] Details of forgone revenue is set out in Table 10.
[23] Details of actual revenue from prices 2021, calculated as $\sum P_{i,2021}\ Q_{i,2021}$ (prices 2021 x actual quantities 2021) is included in Appendix 1, tables 25 to 28.
[24] Details of other regulated income 2021 is from the 2021 Annual Compliance Statement, available at https://blob-static.vector.co.nz/blob/vector/media/vector2021/vector-epq21-annual-compliance-statement.pdf.
[25] Forecast revenue from prices is from the 2021 Price Setting Compliance Statement, available at https://blob-static.vector.co.nz/blob/vector/media/vector/electricity-distribution-price-setting-compliance-statement-2021.pdf.

3. QUALITY STANDARDS

3.1 Quality standards - planned interruptions

As required by clause 9.1 of the Determination, to demonstrate compliance with the quality standards, the sum of Vector's planned SAIDI (SAIFI) assessed values for all five assessment periods of the DPP regulatory period[26] must not exceed the planned accumulated SAIDI (SAIFI) limit set out in the Determination at the end of the fifth assessment period of the DPP regulatory period.

Planned SAIDI assessment:

The assessment period 2022 is the second assessment period of the Determination, therefore for the purpose of the Statement, Vector has compared its planned SAIDI assessed value against both the planned accumulated SAIDI five-year limit for the DPP regulatory period and the average annual planned SAIDI limit.

Vector has complied with clause 9.1 of the Determination because:

- The sum of its planned SAIDI assessed values for the assessment periods 2021 and 2022 was below the planned accumulated SAIDI limit for the DPP; and
- Its planned SAIDI assessed value for the assessment period 2022 was below the average annual planned SAIDI limit

Both statements are reflected in Table 11 below.

Table 11: Planned SAIDI standard

Type	2022 SAIDI assessed value	2021 SAIDI assessed value[27]	Accumulated limit[28] (5-year)	Average annual limit[29]	Compliance *(Clause 9.1)*
Planned interruptions	40.48	46.54	585.38	117.08	Compliant

[26] For the regulatory period 1 April 2020 to 31 March 2025.

[27] Details of 2021 SAIDI assessed value is from the 2021 Annual Compliance Statement, available at https://blob-static.vector.co.nz/blob/vector/media/vector2021/vector-epq21-annual-compliance-statement.pdf.

[28] The planned accumulated SAIDI limit for the DPP regulatory period is set out in the table 3.1.1 of Schedule 3.1 of the determination.

[29] The average annual planned SAIDI limit is the planned accumulated SAIDI limit divided by five.

Table 12 specifies how Vector has derived the planned SAIDI assessed value for the assessment period 2022.

Table 12: Planned SAIDI assessed value		
Formula: $SAIDI_{planned,assessed} = SAIDI_B + \frac{SAIDI_N}{2}$		
Component	**Description**	**Value**
$SAIDI_B$	Sum of SAIDI values: (a) Class B interruptions excluding the Class B notified interruptions + (b) Class B notified interruptions occurred partially or wholly outside of their specified notified interruption window or alternate day	5.62
$SAIDI_N$	(a) the SAIDI values of any Class B notified interruptions where the SAIDI value is the greater of that calculated based on: (i) the duration of minutes accumulated for each ICP that the Class B notified interruption occurred for; and (ii) the period of the notified interruption window minus two hours;	66.09
	(b) the 'intended SAIDI values' of any intended interruption cancelled without notice is the greater of that calculated based on: (i) the duration of minutes accumulated for each ICP that the intended interruption occurred for, which will be nil; and (ii) the period of the notified interruption window minus two hours; and	3.62
	(c) the 'intended SAIDI values' of any intended interruption cancelled with notice, where the 'intended SAIDI value' for each of those intended interruptions cancelled with notice is nil.	0.00
	Total	69.71
$\frac{SAIDI_N}{2}$		34.86
$SAIDI_{planned,assessed}$		**40.48**

Planned SAIFI assessment:

The assessment period 2022 is the second assessment period of the Determination; therefore, for the purpose of the Statement, Vector has compared its planned SAIFI assessed value against both the planned accumulated SAIFI five-year limit and the average annual planned SAIFI limit.

Vector has complied with clause 9.1 of the Determination because:

- The sum of its planned SAIFI assessed values for the assessment periods 2021 and 2022 was below the planned accumulated SAIFI limit for the DPP; and

- Its planned SAIFI assessed value for the assessment period 2022 was below the average annual planned SAIFI limit

Both statements are reflected in Table 13 below.

Table 13: Planned SAIFI standard					
Type	**2022 SAIFI assessed value**	**2021 SAIFI assessed value[30]**	**Accumulated limit[31] (5-year)**	**Average annual limit[32]**	**Compliance** *(Clause 9.1)*
Planned interruptions	0.269	0.342	2.878	0.576	Compliant

Vector is not required to provide the 'planned interruptions reporting' specified by clause 12.1 of the Determination as Vector has not exceeded the planned SAIDI and SAIFI limits and therefore has complied with clauses 9.2(a) and 9.2(b) of the Determination.

3.2 Quality standards - unplanned interruptions

As required by clause 9.7 of the Determination, to demonstrate compliance with the quality standards in respect of each assessment period, Vector must comply with the unplanned interruptions reliability assessment specified in clause 9.8 for that assessment period.

Unplanned SAIDI assessment:

Vector's annual unplanned SAIDI limit and boundary data are set by the Commission and disclosed in Schedule 3.2 of the Determination.

As detailed below in Table 14, Vector's unplanned SAIDI assessed value did not exceed the unplanned SAIDI limit for the assessment period 2022.

Table 14: Unplanned SAIDI standard				
Type	**Annual SAIDI assessed value**	**Annual SAIDI limit**	**SAIDI Boundary**	**Compliance** *(Clause 9.7)*
Unplanned interruptions	92.42	104.83	4.83	Compliant

The methodology for deriving the unplanned SAIDI assessed value for the assessment period 2022 is detailed below in Table 15 and the supporting data which informed the replacing of SAIDI values during Vector's SAIDI major event have been included in Appendix 4a.

[30] Details of 2021 SAIFI assessed value is from the 2021 Annual Compliance Statement, available at https://blob-static.vector.co.nz/blob/vector/media/vector2021/vector-epq21-annual-compliance-statement.pdf.
[31] The planned accumulated SAIFI limit for the DPP regulatory period is set out in the table 3.1.1 of Schedule 3.1 of the determination.
[32] The average planned SAIFI limit is the planned accumulated SAIFI limit divided by five.

Table 15: Unplanned SAIDI assessment		
Component	**Description**	**Value**
$SAIDI_{unplanned,assessed}$	Sum of the SAIDI values for Class C interruptions commencing within the assessment period, where the SAIDI value for each 30 minute period that starts on the hour or half past the hour within a SAIDI major event that exceeds 1/48th of the SAIDI unplanned boundary value for that assessment period is replaced with 1/48th of the SAIDI unplanned boundary value for that assessment period	92.42

Unplanned SAIFI assessment:

Vector's annual unplanned SAIFI limit and boundary data are set by the Commission and disclosed in Schedule 3.2 of the Determination.

As detailed below in Table 16, Vector's unplanned SAIFI assessed value did not exceed the unplanned SAIFI limit for the assessment period 2022.

Table 16: Unplanned SAIFI standard				
Type	**Annual SAIFI assessed value**	**Annual SAIFI limit**	**SAIFI Boundary**	**Compliance** *(Clause 9.7)*
Unplanned interruptions	1.048	1.337	0.037	Compliant

The methodology for deriving the unplanned SAIFI assessed value for the assessment period 2022 is detailed below in Table 17 and the supporting data which informed the replacing of SAIFI values during Vector's SAIFI major event have been included in Appendix 4b.

Table 17: Unplanned SAIFI assessed values		
Component	**Description**	**Value**
$SAIFI_{unplanned,assessed}$	Sum of the SAIFI values for Class C interruptions commencing within the assessment period, where the SAIFI value for each 30 minute period that starts on the hour or half past the hour within a SAIFI major event that exceeds 1/48th of the SAIFI unplanned boundary value for that assessment period is replaced with 1/48th of the SAIFI unplanned boundary value for that assessment period.	1.048

Vector is not required to provide the 'unplanned interruptions reporting' specified by clause 12.3 of the Determination as Vector has not exceeded the unplanned SAIDI and SAIFI limits and therefore has complied with clauses 9.7 and 9.8 of the Determination.

3.3 Quality incentive adjustment

Vector's target, collar and cap for SAIDI planned and unplanned and Vector's Incentive rate for the DPP regulatory period are set out in the Determination respectively. We have brought them together in Table 18 below.

Table 18: Vector's SAIDI quality measures

Measure	Incentive rate (IR)	Target	Collar	Cap
Unplanned	$84,519	89.28	-	104.83
Planned		39.03	-	117.08

The quality incentive adjustment must be calculated by Vector within 5 months after the expiration of the assessment period in accordance with Schedule 4 of the Determination and is a recoverable cost in the assessment period following that in which it was calculated. The Statement includes the calculation for the quality incentive adjustment for the assessment period 2024 in Appendix 2, in accordance with clause 11.6 in the Determination.

3.4 Major events within the assessment period

A SAIDI/SAIFI major event is defined in clause 4.2 of the Determination as any period of 24 hours that starts on the hour or half past the hour where the sum of SAIDI/SAIFI values over that period for unplanned interruptions exceeds the applicable SAIDI/SAIFI unplanned boundary value.

Vector had three extended SAIDI major events and three extended major SAIFI events during the assessment period 2022. We have defined each of these events as an 'extended major event' as major events can last longer than 24 hours as long as the major event criteria is met, in accordance with the Commission's final decision in the Determination's reasons paper[33].

The three SAIDI major events (ME) cover the following periods:

- ME1: 2nd August 2021 4:00am to 4th August 2021 3:00am (a total of 47.5 hours with just under 39,000 ICPs affected)
- ME2: 12th February 2022 2:00am to 14th February 12.30pm (a total of 59 hours with just over 93,000 ICPs affected)

[33] Section K69-K72 p391 - https://comcom.govt.nz/__data/assets/pdf_file/0020/191810/Default-price-quality-paths-for-electricity-distribution-businesses-from-1-April-2020-Final-decision-Reasons-paper-27-November-2019.PDF

- ME3: 20th March 2022 17:00 to 21st March 2022 at 18:30 (a total of 26 hours with just under 48,000 ICPs affected)

Tables 19 to 21 below include details relating to the extended major SAIDI events in accordance with clause 11.6(g) of the Determination. All the supporting information in relation to the half-hourly normalised SAIDI during the major event which have informed Vector's unplanned SAIDI assessed value has been disclosed in Appendix 4a.

Table 19: SAIDI Major Event 1 (ME1)					
Start time & date		**End time & date**		**SAIDI Value before normalisation (see Appendix 4a)**	**SAIDI Value after normalisation (see Appendix 4a)**
2nd August 2021	4:00am	4th August 2021	3:00am	11.438	1.630
Cause		1. Vegetation – 45 events 2. Overhead equipment – 27 events			
Main location(s)		Largely affecting Western and Northern areas of Auckland. Most affected areas include Laingholm, Swanson, Waiuku, Coatesville, Waiheke, Helensville, Te Atatu, Kaukapakapa, Pt Chevalier, Henderson Valley, Maraetai.			
Main equipment involved		Overhead lines			
How Vector responded		Storm response activated			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

Table 20: SAIDI Major Event (ME2)					
Start time & date		**End time & date**		**SAIDI Value before normalisation (see Appendix 4a)**	**SAIDI Value after normalisation (see Appendix 4a)**
12th February 2022	2:00am	14th February 2022	12:30pm	51.122	4.189
Cause		1. Vegetation – 119 events 2. Overhead equipment – 55 events			
Main location(s)		Primarily affecting Northern and Western areas of Auckland and some isolated areas South and East of Auckland. Most affected areas include Takanini, Warkworth, Helensville, Waiheke, Coatesville, Waimauku, Swanson, Kaukapakapa, Wellsford, Orewa, Riverhead.			
Main equipment involved		Overhead lines			
How Vector responded		Storm Response activated			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

Table 21: SAIDI Major Event (ME3)					
Start time & date		**End time & date**		**SAIFI Value before normalisation (see Appendix 4b)**	**SAIFI Value after normalisation (see Appendix 4b)**
20th March 2022	17:00	21st March 2022	18.30	4.864	1.889
Cause		1. Lightning – 30 events 2. Vegetation – 26 events 3. Overhead equipment – 24 events			
Main location(s)		Primarily affecting Northern areas of Auckland and some isolated areas West and South of Auckland. Most affected areas include Wellsford, Warkworth, Spur Road, Orewa, Clevedon, Swanson, Takanini.			
Main equipment involved		Overhead lines			
How Vector responded		Continuous monitoring of weather, frequent updates requested from MetService. Additional field crews rostered on along with additional crews on standby.			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

The three SAIFI major events (ME) cover the following periods:

- ME4: 2nd August 2021 4:00am to 4th August 2021 3:00am (a total of 47.5 hours with just under 39,000 ICPs affected)
- ME5: 12th February 2022 7:00am to 14th February 2022 10.30am (a total of 52 hours with just over 93,000 ICPs affected)
- ME6: 20th March 2022 11:00am to 22nd March 2022 at 10:30am (a total of 48 hours with just under 48,000 ICPs affected)

Tables 22 to 24 below include details relating to the extended major SAIFI events in accordance with clause 11.6(h) of the Determination. All the supporting information in relation to the half-hourly normalised SAIFI during the major event which have informed Vector's unplanned SAIFI assessed value has been disclosed in Appendix 4b.

Table 22: SAIFI Major Event (ME4)					
Start time & date		**End time & date**		**SAIFI Value before any normalisation (see Appendix 4b)**	**SAIFI Value after any normalisation (see Appendix 4b)**
2nd August 2021	4:00am	4th August 2021	3:00am	0.065	0.012
Cause		1. Vegetation – 45 events 2. Overhead equipment – 27 events			
Main location(s)		Largely affecting Western and Northern areas of Auckland. Most affected areas include Laingholm, Swanson, Waiuku, Coatesville, Waiheke, Helensville, Te Atatu, Kaukapakapa, Pt Chevalier, Henderson Valley, Maraetai.			
Main equipment involved		Overhead lines			
How Vector responded		Storm response activated			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

Table 23: SAIFI Major Event (ME5)					
Start time & date		**End time & date**		**SAIFI Value before any normalisation (see Appendix 4b)**	**SAIFI Value after any normalisation (see Appendix 4b)**
12th February 2022	7:00am	14th February 2022	10:30am	0.156	0.027
Cause		1. Vegetation – 119 events 2. Overhead equipment – 55 events			
Main location(s)		Primarily affecting Northern and Western areas of Auckland and some isolated areas South and East of Auckland. Most affected areas include Takanini, Warkworth, Helensville, Waiheke, Coatesville, Waimauku, Swanson, Kaukapakapa, Wellsford, Orewa, Riverhead.			
Main equipment involved		Overhead lines			
How Vector responded		Storm Response activated			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

Table 24: SAIFI Major Event (ME6)					
Start time & date		**End time & date**		**SAIFI Value before any normalisation (see Appendix 4b)**	**SAIFI Value after any normalisation (see Appendix 4b)**
20th March 2022	11:00am	22nd March 2022	10.30am	0.081	0.016
Cause		1. Lightning – 30 events 2. Vegetation – 26 events 3. Overhead equipment – 24 events			
Main location(s)		Primarily affecting Northern areas of Auckland and some isolated areas West and South of Auckland. Most affected areas include Wellsford, Warkworth, Spur Road, Orewa, Clevedon, Swanson, Takanini.			
Main equipment involved		Overhead lines			
How Vector responded		Continuous monitoring of weather, frequent updates requested from MetService. Additional field crews rostered on along with additional crews on standby.			
Prevention and future improvements		As part of our strategy to prevent future outages, we review every individual high SAIDI event (above 0.1 minutes) with structured criteria. These events are reported on a fortnightly basis at the Strategic Reliability Management Meeting with any learnings/findings/outcomes that should be addressed.			

3.5 Extreme events within the assessment period

For the purpose of clause 9.9 of the Determination, to comply with the extreme event standard, Vector must not have an extreme event in the assessment period.

An extreme event is defined in Schedule 3.3 of the Determination as any period of 24 hours that starts on the hour or half past the hour where either:

1. **SAIDI value of 120 minutes**: The SAIDI value of all unplanned interruptions that start during that 24-hour period, in aggregate, is above 120 minutes; or
2. **Total of six million customer interruption minutes**: The total duration of customer interruption minutes resulting from all unplanned interruptions that start during that 24-hour period, in aggregate, is more than six million customer interruption minutes.

As defined in Schedule 3.3 (2) of the Determination, any unplanned interruption caused by 'major external factors' is not an extreme event. The Determination defines major external factors as natural disaster, third party interference, a fire that does not originate on the EDB's network, or wildfire. The Determination defines a natural disaster as floods, severe weather events, including severe lightning, severe storms (including solar storms), severe wind and severe rain etc.

Vector has excluded two unplanned interruptions which, although resulted in excess of six million customer interruption minutes, were caused by severe winds. In Appendix 5, Vector demonstrates

these two event periods were caused by severe winds and accordingly are natural disasters for the purpose of Schedule 3.3 (2) of the Determination.

During the assessment period 2022, Vector did not have an extreme event and therefore complies with clause 9.9 of the Determination.

3.6 Policies and procedures for recording SAIDI and SAIFI

Vector's Electricity Operations Centre ("EOC") is responsible for operating the electricity network. Resolution of planned and unplanned events is under direction of the duty Electricity Operations Controller. The EOC also operates the network in accordance with two internal company standards These standards define the end-to-end process for capturing and reporting reliability performance data in accordance with the Determination.

Recording interruptions

Most medium voltage and high voltage interruptions are monitored and controlled in real-time by the EOC through Vector's SCADA system. Where equipment is involved that is not SCADA enabled, it is operated by Vector's service providers, with communication to the EOC by radio.

All planned and unplanned records are captured by the Electricity Operations Controller both in hard copy (electricity fault switching log) and electronically (HVSPEC database described below).

All interruptions are also logged and tracked separately in Vector's Customer Management System by Vector's customer services team.

Vector maintains a bespoke system for recording interruptions, HVSPEC. HVSPEC holds all the data in relation to customer numbers for each part of the HV network. The EOC controllers record details of all network interruptions, in accordance with the Determination for unplanned interruptions and for planned interruptions.

Vector has made the relevant changes to its policies and procedures in accordance with the Determination for the new DPP regulatory period (from 2020–2025), including the separate assessment of planned and unplanned interruptions and the way that SAIDI is calculated for planned outages.

For each interruption, the event type, location, duration and number of customers affected is identified. Appendix 3 illustrates both the HVSPEC planned and unplanned data capture processes and the quality assurance carried out on outage information.

SAIDI and SAIFI calculating

SAIDI and SAIFI are calculated in HVSPEC for each interruption, and the data is retained in a database for reporting and analysis. At the end of each year the period's average network customer base is calculated using the Gentrack billing and revenue system (averaging customers at the start and end of the year). The following reliability metrics are extracted from the HVSPEC database for disclosure reporting:

- Interruption frequency and duration by class;
- Interruption frequency and duration by cause;
- Interruption frequency and duration by main equipment involved; and
- SAIDI/SAIFI (calculated using average customer count).

Explanations for non-compliance

For the assessment period 2022, Vector did not exceed its reliability limits and is compliant with the Determination and therefore has no obligation under clause 12 to explain reasons for non-compliance and actions to mitigate future non-compliance.

3.7 Transactions

In order to comply with clause 11.6(i) Vector confirms that it has not entered into an agreement with another EDB or Transpower for an amalgamation, merger, major transaction or transfer during the assessment period 2022; and therefore no further information was provided to the Commission as specified in clause 10.1 of the Determination.

Appendix 1: PY21 & PY22 total line charge revenues

Table 25: Summary of PY21 & PY22 total line charge revenues

	Auckland		Northern		Total	
Consumer group	*$P_{i,2022} \times Q_{i,2022}$*	*$P_{i,2021} \times Q_{i,2021}$*	*$P_{i,2022} \times Q_{i,2022}$*	*$P_{i,2021} \times Q_{i,2021}$*	*$P_{i,2022} \times Q_{i,2022}$*	*$P_{i,2021} \times Q_{i,2021}$*
Residential	$ 197,156,047	$ 184,574,472	$ 148,940,804	$ 137,412,467	$ 346,096,852	$ 321,986,939
General	$ 52,412,538	$ 50,908,903	$ 30,109,593	$ 28,839,620	$ 82,522,131	$ 79,748,524
Low voltage	$ 47,645,404	$ 45,283,882	$ 13,573,923	$ 12,779,522	$ 61,219,327	$ 58,063,404
Transformer	$ 54,347,591	$ 50,559,012	$ 15,582,421	$ 14,436,341	$ 69,930,012	$ 64,995,353
High voltage	$ 17,565,443	$ 15,865,577	$ 3,279,467	$ 3,117,863	$ 20,844,910	$ 18,983,440
Non-standard	$ 15,995,079	$ 17,617,023	$ 1,143,641	$ 1,130,173	$ 17,138,719	$ 18,747,196
Total	**$ 385,122,102**	**$ 364,808,868**	**$ 212,629,849**	**$ 197,715,986**	**$ 597,751,950**	**$ 562,524,855**

Table 26: Non-standard consumers' PY21 & PY22 total line charge revenues

	Anonymised Code		*$Q_{i,2021}$, & $Q_{i,2022}$*	*$P_{i,2022}$*	*$P_{i,2021}$*	*$P_{i,2022} \times Q_{i,2022}$*	*$P_{i,2021} \times Q_{i,2021}$*
Auckland	AN22-1	AN21-1	1	-	-	$ -	$ -
	AN22-2	AN21-2	1	1,168,616	1,221,332	$ 1,168,616	$ 1,221,332
	AN22-3	AN21-3	1	2,181,786	2,431,878	$ 2,181,786	$ 2,431,878
	AN22-4	AN21-4	1	-	-	$ -	$ -
	AN22-5	AN21-5	1	1,210,856	1,132,130	$ 1,210,856	$ 1,132,130
	AN22-6	AN21-6	1	873,625	866,187	$ 873,625	$ 866,187
		AN21-7	1	-	91,519	$ -	$ 91,519
	AN22-7	AN21-8	1	674,834	610,086	$ 674,834	$ 610,086
	AN22-8	AN21-9	1	1,022,804	1,673,390	$ 1,022,804	$ 1,673,390
	AN22-9	AN21-10	1	383,268	354,550	$ 383,268	$ 354,550
	AN22-10	AN21-11	1	798,030	1,164,212	$ 798,030	$ 1,164,212
	AN22-11	AN21-12	1	1,391,354	1,273,454	$ 1,391,354	$ 1,273,454
	AN22-12	AN21-13	1	38,597	478,979	$ 38,597	$ 478,979
	AN22-13	AN21-14	1	488,896	503,482	$ 488,896	$ 503,482
	AN22-14	AN21-15	1	806,519	788,488	$ 806,519	$ 788,488
	AN22-15	AN21-16	1	1,392,028	1,282,530	$ 1,392,028	$ 1,282,530
	AN22-16	AN21-17	1	748,846	852,130	$ 748,846	$ 852,130
	AN22-17	AN21-18	1	453,672	570,963	$ 453,672	$ 570,963
	AN22-18	AN21-19	1	74,024	73,036	$ 74,024	$ 73,036
	AN22-19	AN21-20	1	737,549	770,780	$ 737,549	$ 770,780
		AN21-21	1	-	175,128	$ -	$ 175,128
		AN21-22	1	-	374,806	$ -	$ 374,806
	AN22-22	AN21-23	1	66,467	65,094	$ 66,467	$ 65,094
	AN22-23	AN21-24	1	-	-	$ -	$ -
	AN22-24	AN21-25	1	-	-	$ -	$ -
	AN22-25	AN21-26	1	-	-	$ -	$ -
	AN22-26	AN21-27	1	700,738	526,972	$ 700,738	$ 526,972
	AN22-27	AN21-28	1	358,514	335,901	$ 358,514	$ 335,901
	AN22-28		1	177,027	-	$ 177,027	$ -
	AN22-29		1	247,030	-	$ 247,030	$ -
Northern	WN22-1	WN21-1	1	497,785	478,705	$ 497,785	$ 478,705
	WN22-2	WN21-2	1	645,855	651,468	$ 645,855	$ 651,468
	WN22-3	WN21-3	1	-	-	$ -	$ -

Table 27: Residential and general consumers' PY21 & PY22 total line charge revenues

Consumer group, price category & code			$P_{i,2022}$	$P_{i,2021}$	Auckland $Q_{i,2022}$	Auckland $Q_{i,2021}$	Auckland $P_{i,2022} \times Q_{i,2022}$	Auckland $P_{i,2021} \times Q_{i,2021}$	Northern $Q_{i,2022}$	Northern $Q_{i,2021}$	Northern $P_{i,2022} \times Q_{i,2022}$	Northern $P_{i,2021} \times Q_{i,2021}$
Residential	ARUL WRUL	...-FIXD	0.1500	0.1500	4,674,527	4,340,155	$ 701,179	$ 651,023	2,770,879	2,463,369	$ 415,632	$ 369,505
		...-24UC	0.0963	0.0925	48,298,406	42,657,702	$ 4,651,136	$ 3,945,837	39,593,715	34,266,593	$ 3,812,875	$ 3,169,660
		...-INJT	-	-	253,608	224,317	$ -	$ -	677,064	608,980	$ -	$ -
	ARCL WRCL	...-FIXD	0.1500	0.1500	16,199,073	17,464,427	$ 2,429,861	$ 2,619,664	11,864,737	12,472,626	$ 1,779,711	$ 1,870,894
		...-AICO	0.0901	0.0863	247,124,936	263,017,327	$ 22,265,957	$ 22,698,395	185,530,269	190,582,306	$ 16,716,277	$ 16,447,253
		...-INJT	-	-	832,321	729,641	$ -	$ -	1,244,190	1,170,346	$ -	$ -
	ARHL WRHL	...-FIXD	0.1500	0.1500	7,675,112	6,606,667	$ 1,151,267	$ 991,000	5,470,451	4,886,279	$ 820,568	$ 732,942
		...-OFPK	0.0658	0.0621	60,139,081	50,944,991	$ 3,957,152	$ 3,163,684	53,612,421	46,165,182	$ 3,527,697	$ 2,866,858
		...-PEAK	0.1647	0.1542	25,710,372	22,109,341	$ 4,234,498	$ 3,409,260	23,450,740	20,619,729	$ 3,862,337	$ 3,179,562
		...-INJT	-	-	467,633	297,476	$ -	$ -	533,119	373,495	$ -	$ -
	ARHLC WRHLC	...-FIXD	0.1500	0.1500	42,873,717	42,010,984	$ 6,431,058	$ 6,301,648	26,227,849	25,932,091	$ 3,934,177	$ 3,889,814
		...-OFPK	0.0658	0.0621	425,161,993	414,587,974	$ 27,975,659	$ 25,745,913	270,226,145	262,234,542	$ 17,780,880	$ 16,284,765
		...-PEAK	0.1446	0.1354	184,499,930	183,722,742	$ 26,678,690	$ 24,876,059	118,870,368	117,343,325	$ 17,188,655	$ 15,888,286
		...-INJT	-	-	1,570,076	1,243,704	$ -	$ -	1,071,452	911,804	$ -	$ -
	ARUS WRUS	...-FIXD	1.0900	1.0100	4,581,487	3,641,922	$ 4,993,821	$ 3,678,341	3,830,678	3,023,948	$ 4,175,439	$ 3,054,187
		...-24UC	0.0535	0.0533	67,092,327	52,905,507	$ 3,589,440	$ 2,819,864	76,199,160	61,142,700	$ 4,076,655	$ 3,258,906
		...-INJT	-	-	305,789	211,905	$ -	$ -	742,256	596,322	$ -	$ -
	ARCS WRCS	...-FIXD	1.0900	1.0100	11,836,645	11,986,783	$ 12,901,943	$ 12,106,651	9,799,427	9,856,826	$ 10,681,375	$ 9,955,394
		...-AICO	0.0473	0.0471	301,881,481	314,001,776	$ 14,278,994	$ 14,789,484	265,364,697	264,822,442	$ 12,551,750	$ 12,473,137
		...-INJT	-	-	661,196	561,839	$ -	$ -	835,852	721,213	$ -	$ -
	ARHS WRHS	...-FIXD	1.0900	1.0100	2,858,252	2,965,137	$ 3,115,495	$ 2,994,788	3,207,021	3,182,200	$ 3,495,653	$ 3,214,022
		...-OFPK	0.0230	0.0229	51,624,736	48,068,349	$ 1,187,369	$ 1,100,765	65,875,704	60,080,681	$ 1,515,141	$ 1,375,848
		...-PEAK	0.1219	0.1150	21,570,633	20,444,028	$ 2,629,460	$ 2,351,063	28,294,673	26,382,488	$ 3,449,121	$ 3,033,986
		...-INJT	-	-	353,706	231,117	$ -	$ -	383,471	345,793	$ -	$ -
	ARHSC WRHSC	...-FIXD	1.0900	1.0100	21,708,181	21,733,876	$ 23,661,917	$ 21,951,215	15,700,976	15,531,527	$ 17,114,064	$ 15,686,842
		...-OFPK	0.0230	0.0229	458,778,832	440,516,433	$ 10,551,913	$ 10,087,826	330,601,768	318,767,434	$ 7,603,841	$ 7,299,774
		...-PEAK	0.1018	0.0962	194,196,851	190,145,428	$ 19,769,239	$ 18,291,990	141,836,508	138,885,982	$ 14,438,956	$ 13,360,831
		...-INJT	-	-	902,291	687,451	$ -	$ -	679,543	737,342	$ -	$ -
General	ABSU WBSU	...-FIXD	0.0800	0.0800	26,379,567	26,079,419	$ 2,110,365	$ 2,086,354	16,988,928	16,432,623	$ 1,359,114	$ 1,314,610
		...-24UC	0.0257	0.0257	17,187,104	26,022,797	$ 441,709	$ 668,786	10,454,366	15,751,769	$ 268,677	$ 404,820
	ABSN WBSN	...-FIXD	1.0900	1.0100	10,507,741	10,447,189	$ 11,453,438	$ 10,551,661	5,538,429	5,409,151	$ 6,036,888	$ 5,463,243
		...-24UC	0.0535	0.0533	491,057,905	495,144,502	$ 26,271,598	$ 26,391,202	230,066,075	231,020,287	$ 12,308,535	$ 12,313,381
		...-INJT	-	-	491,009	449,916	$ -	$ -	530,329	365,775	$ -	$ -
	ABSH WBSH	...-FIXD	1.0900	1.0100	3,034,983	2,936,894	$ 3,308,131	$ 2,966,263	2,927,725	2,858,785	$ 3,191,220	$ 2,887,373
		...-OFPK	0.0230	0.0229	123,578,216	118,893,236	$ 2,842,299	$ 2,722,655	96,351,076	91,882,221	$ 2,216,075	$ 2,104,103
		...-PEAK	0.1219	0.1150	49,097,603	48,017,244	$ 5,984,998	$ 5,521,983	38,794,782	37,844,265	$ 4,729,084	$ 4,352,090
		...-INJT	-	-	69,517	81,519	$ -	$ -	67,797	58,554	$ -	$ -

Table 28: Commercial consumers' PY21 & PY22 total line charge revenues

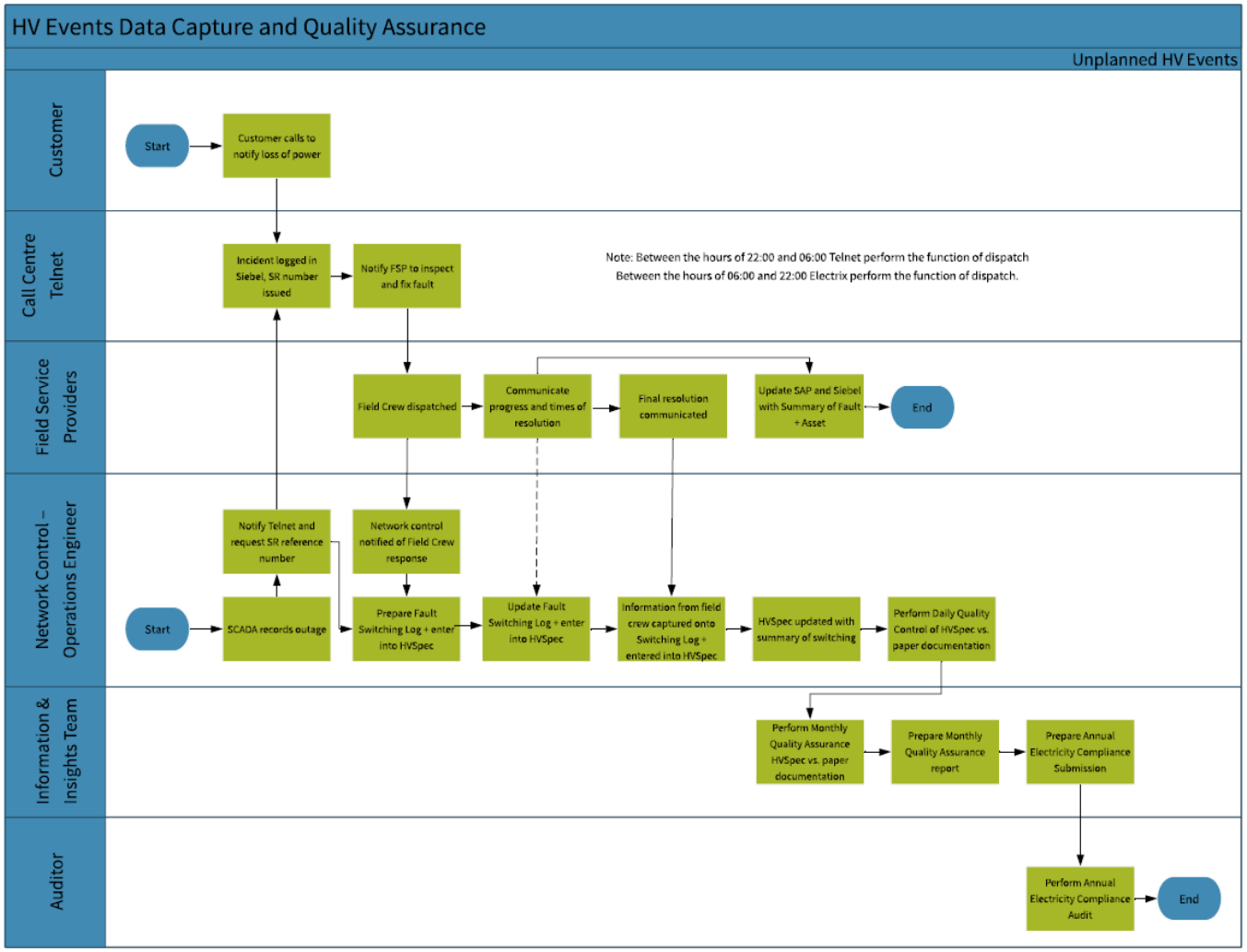
Consumer group, price category & code			Auckland						Northern					
			Pi,2022	*Pi,2021*	*Qi,2022*	*Qi,2021*	*Pi,2022 × Qi,2022*	*Pi,2021 × Qi,2021*	*Pi,2022*	*Pi,2021*	*Qi,2022*	*Qi,2021*	*Pi,2022 × Qi,2022*	*Pi,2021 × Qi,2021*
Low voltage	ALVN WLVN	...-FIXD	1.87	1.78	877,507	848,370	$ 1,640,938	$ 1,510,099	6.04	5.74	343,315	330,995	$ 2,073,623	$ 1,899,911
		...-24UC	0.0568	0.0541	239,499,196	230,209,757	$ 13,603,554	$ 12,454,348	0.0351	0.0335	118,829,191	115,577,827	$ 4,170,905	$ 3,871,857
		...-CAPY	0.0441	0.0421	131,621,414	126,549,202	$ 5,804,504	$ 5,327,721	0.0356	0.0339	50,821,558	48,813,403	$ 1,809,247	$ 1,654,774
		...-PWRF	0.2917	0.2917	315,395	321,743	$ 92,001	$ 93,852	0.2917	0.2917	262,005	284,441	$ 76,427	$ 82,971
		...-INJT	-	-	752,786	273,696	$ -	$ -	-	-	140,955	126,224	$ -	$ -
	ALVT WLVH	...-FIXD	-	-	-	-	$ -	$ -	11.3700	10.8200	92,622	94,104	$ 1,053,112	$ 1,018,205
		...-24UC	0.0126	0.0120	508,345,752	517,147,103	$ 6,405,156	$ 6,205,765	0.0054	0.0050	123,230,579	124,822,434	$ 665,445	$ 624,112
		...-CAPY	0.0441	0.0421	136,434,067	138,488,712	$ 6,016,742	$ 5,830,375	0.0356	0.0339	25,031,073	24,963,217	$ 891,106	$ 846,253
		...-DAMD	0.3063	0.2917	42,653,134	43,818,241	$ 13,064,655	$ 12,781,781	0.2759	0.2628	9,585,436	9,812,850	$ 2,644,622	$ 2,578,817
		...-PWRF	0.2917	0.2917	3,489,382	3,702,230	$ 1,017,853	$ 1,079,940	0.2917	0.2917	649,420	694,621	$ 189,436	$ 202,621
		...-INJT	-	-	171,755	197,981	$ -	$ -	-	-	1,256	2,203	$ -	$ -
Transformer	ATXN WTXN	...-FIXD	1.83	1.74	62,297	59,331	$ 114,004	$ 103,236	5.92	5.63	49,352	48,299	$ 292,164	$ 271,923
		...-24UC	0.0557	0.0530	22,068,727	20,535,864	$ 1,229,228	$ 1,088,401	0.0344	0.0328	33,742,131	33,533,255	$ 1,160,729	$ 1,099,891
		...-CAPY	0.0432	0.0412	14,224,125	13,448,708	$ 614,482	$ 554,087	0.0349	0.0332	12,190,942	11,780,426	$ 425,464	$ 391,110
		...-PWRF	0.2917	0.2917	13,927	15,564	$ 4,062	$ 4,540	0.2917	0.2917	166,330	160,187	$ 48,519	$ 46,726
		...-INJT	-	-	12,555	27,902	$ -	$ -	-	-	1,431	628	$ -	$ -
	ATXT WTXH	...-FIXD	-	-	-	-	$ -	$ -	11.1500	10.6100	107,039	102,060	$ 1,193,485	$ 1,082,857
		...-24UC	0.0123	0.0117	1,109,600,878	1,079,422,683	$ 13,648,091	$ 12,629,245	0.0053	0.0049	349,795,893	342,738,903	$ 1,853,918	$ 1,679,421
		...-CAPY	0.0432	0.0412	261,974,141	251,833,280	$ 11,317,283	$ 10,375,531	0.0349	0.0332	80,213,228	76,509,280	$ 2,799,442	$ 2,540,108
		...-DAMD	0.3001	0.2858	87,865,978	86,362,996	$ 26,368,580	$ 24,682,544	0.2704	0.2575	27,611,037	27,105,732	$ 7,466,024	$ 6,979,726
		...-PWRF	0.2917	0.2917	3,605,969	3,844,456	$ 1,051,861	$ 1,121,428	0.2917	0.2917	1,174,756	1,181,277	$ 342,676	$ 344,579
		...-INJT	-	-	56,212	51,269	$ -	$ -	-	-	953,894	1,020,668	$ -	$ -
High voltage	AHVN WHVN	...-FIXD	1.77	1.68	2,555	2,555	$ 4,522	$ 4,292	5.74	5.46	-	-	$ -	$ -
		...-24UC	0.0540	0.0514	561,257	571,877	$ 30,308	$ 29,394	0.0334	0.0318	-	-	$ -	$ -
		...-CAPY	0.0419	0.0399	517,935	517,935	$ 21,701	$ 20,666	0.0339	0.0322	-	-	$ -	$ -
		...-PWRF	0.2917	0.2917	3,722	6,377	$ 1,086	$ 1,860	0.2917	0.2917	-	-	$ -	$ -
		...-INJT	-	-	-	-	$ -	$ -	-	-	-	-	$ -	$ -
	AHVT WHVH	...-FIXD	-	-	-	-	$ -	$ -	10.8200	10.3000	9,125	8,964	$ 98,733	$ 92,329
		...-24UC	0.0119	0.0113	420,180,162	402,724,110	$ 5,000,144	$ 4,550,782	0.0051	0.0048	112,396,670	112,723,255	$ 573,223	$ 541,072
		...-CAPY	0.0419	0.0399	68,769,615	62,334,920	$ 2,881,447	$ 2,487,163	0.0339	0.0322	15,646,050	14,953,890	$ 530,401	$ 481,515
		...-DAMD	0.2910	0.2772	31,553,221	30,181,134	$ 9,181,987	$ 8,366,210	0.2623	0.2498	7,733,019	7,782,042	$ 2,028,371	$ 1,943,954
		...-DEXA	0.9218	0.8778	47,860	36,468	$ 44,117	$ 32,012	0.7458	0.7084	4,594	13,706	$ 3,426	$ 9,709
		...-PWRF	0.2917	0.2917	1,371,716	1,279,383	$ 400,130	$ 373,196	0.2917	0.2917	155,343	168,953	$ 45,314	$ 49,284
		...-INJT	-	-	2,404,220	2,756,843	$ -	$ -	-	-	-	-	$ -	$ -

Appendix 2: Quality incentive adjustment

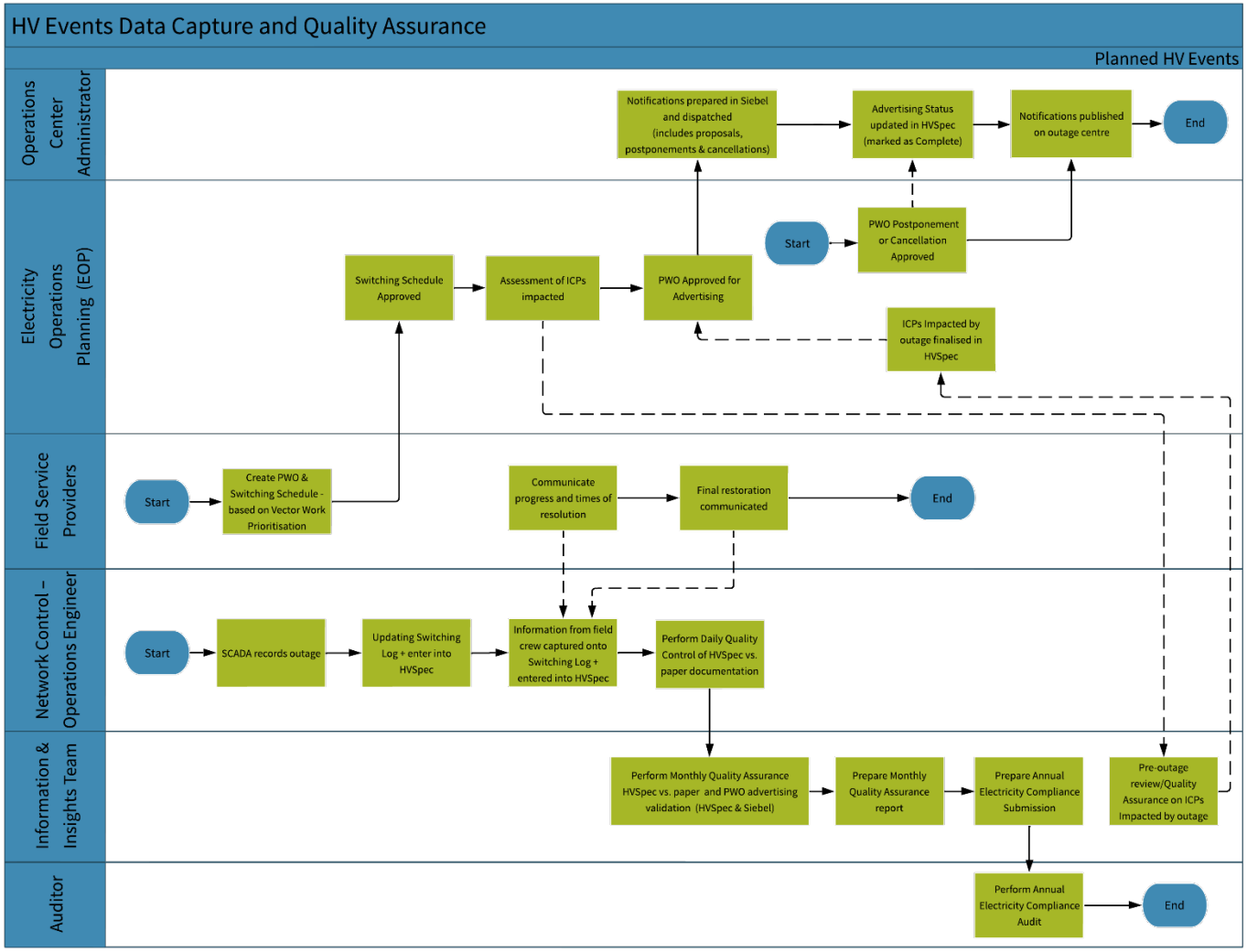
Table 29: Quality Incentive Adjustment				
Formula: $REV_{RISK} = 0.02 \times ANAR_{2022}$				
$ANAR_{2022}$	$409,300,748			
REV_{RISK}	$8,186,015			
Formulae:	$A = (SAIDI_{unplanned.target} - SAIDI_{unplanned.assessed}) * IR$;		$B = (SAIDI_{planned.target} - SAIDI_{planned.assessed}) * 0.5 * IR$	
Component	**A ($SAIDI_{unplanned}$)**		**B ($SAIDI_{planned}$)**	
cap [34]	104.83		117.08	
target - assess	89.28 - 92.42	-3.14	39.03 – 40.48	-1.45
Multiplier	1	-3.14	0.5	-0.725
Incentive rate (IR)	84,519	**A = ($265,390)**	84,519	**B = ($61,276)**
Formula: Quality incentive adjustment = min (REV_{RISK} or A + B) × (1 + 67th percentile estimate of post-tax WACC)^2				
min (REV_{RISK} or A + B)	min ($8,186,015 or (-$265,390 -$61,276)		min ($8,186,015 or -$326,666)	($326,666)
Time value of money (WACC = 4.23%)	($28,220)			
Quality Incentive Adjustment for the assessment period 2024	**($354,886)**			

[34] Where $SAIDI_{unplanned/planned, assessed}$ is greater than the SAIDI unplanned/planned interruption cap specified for the non-exempt EDB for the assessment period set out in Tables 4.1 and 4.2 of Schedule 4 of the Determination, $SAIDI_{unplanned/planned, assessed}$ equals the SAIDI unplanned/planned interruption cap.

Appendix 3a: HVSPEC data capture and quality assurance – unplanned



Appendix 3b: HVSPEC data capture and quality assurance – planned



Appendix 4a: Major SAIDI events

Table 30: SAIDI Major Event (ME1) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
2/08/2021 4:00	0	0	7.3401	Yes	4.83	0	No	0.1006
2/08/2021 4:30	0	0	9.1657	Yes	4.83	0	No	0.1006
2/08/2021 5:00	0	0	9.1657	Yes	4.83	0	No	0.1006
2/08/2021 5:30	0	0	9.9610	Yes	4.83	0	No	0.1006
2/08/2021 6:00	0	0	10.0252	Yes	4.83	0	No	0.1006
2/08/2021 6:30	0	0	10.4801	Yes	4.83	0	No	0.1006
2/08/2021 7:00	0	0	10.4801	Yes	4.83	0	No	0.1006
2/08/2021 7:30	0	0	10.4834	Yes	4.83	0	No	0.1006
2/08/2021 8:00	0	0	10.4869	Yes	4.83	0	No	0.1006
2/08/2021 8:30	0.0185	0.0185	10.5118	Yes	4.83	0.0185	No	0.1006
2/08/2021 9:00	0	0.0185	10.6522	Yes	4.83	0	No	0.1006
2/08/2021 9:30	0	0.0185	10.6546	Yes	4.83	0	No	0.1006
2/08/2021 10:00	0.0068	0.0253	10.6546	Yes	4.83	0.0068	No	0.1006
2/08/2021 10:30	0	0.0253	10.6546	Yes	4.83	0	No	0.1006
2/08/2021 11:00	0	0.0253	10.7154	Yes	4.83	0	No	0.1006
2/08/2021 11:30	0	0.0253	10.7154	Yes	4.83	0	No	0.1006
2/08/2021 12:00	0	0.0253	10.7612	Yes	4.83	0	No	0.1006
2/08/2021 12:30	0	0.0253	10.7612	Yes	4.83	0	No	0.1006
2/08/2021 13:00	0	0.0253	10.8374	Yes	4.83	0	No	0.1006
2/08/2021 13:30	0	0.0253	11.1973	Yes	4.83	0	No	0.1006
2/08/2021 14:00	0	0.0253	11.2350	Yes	4.83	0	No	0.1006
2/08/2021 14:30	0.0039	0.0291	11.2350	Yes	4.83	0.0039	No	0.1006
2/08/2021 15:00	0	0.0291	11.2350	Yes	4.83	0	No	0.1006

Table 30: SAIDI Major Event (ME1) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
2/08/2021 15:30	0	0.0291	11.2350	Yes	4.83	0	No	0.1006
2/08/2021 16:00	0	0.0291	11.2350	Yes	4.83	0	No	0.1006
2/08/2021 16:30	0.0022	0.0314	11.3169	Yes	4.83	0.0022	No	0.1006
2/08/2021 17:00	0	0.0314	11.3169	Yes	4.83	0	No	0.1006
2/08/2021 17:30	0	0.0314	11.3169	Yes	4.83	0	No	0.1006
2/08/2021 18:00	0	0.0314	11.3518	Yes	4.83	0	No	0.1006
2/08/2021 18:30	0.0002	0.0316	11.3518	Yes	4.83	0.0002	No	0.1006
2/08/2021 19:00	0	0.0316	11.3941	Yes	4.83	0	No	0.1006
2/08/2021 19:30	0	0.0316	11.4005	Yes	4.83	0	No	0.1006
2/08/2021 20:00	0	0.0316	11.4021	Yes	4.83	0	No	0.1006
2/08/2021 20:30	0	0.0316	11.4021	Yes	4.83	0	No	0.1006
2/08/2021 21:00	0	0.0316	11.4060	Yes	4.83	0	No	0.1006
2/08/2021 21:30	0	0.0316	11.4060	Yes	4.83	0	No	0.1006
2/08/2021 22:00	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
2/08/2021 22:30	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
2/08/2021 23:00	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
2/08/2021 23:30	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 0:00	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 0:30	0	0.0316	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 1:00	0.2493	0.2809	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 1:30	0.0882	0.3691	11.4068	Yes	4.83	0.0882	No	0.1006
3/08/2021 2:00	0.1194	0.4886	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 2:30	0.8184	1.3069	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 3:00	1.5236	2.8306	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 3:30	4.5095	7.3401	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 4:00	1.8256	9.1657	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 4:30	0	9.1657	11.4068	Yes	4.83	0	No	0.1006

Table 30: SAIDI Major Event (ME1) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
3/08/2021 5:00	0.7952	9.9610	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 5:30	0.0643	10.0252	11.4068	Yes	4.83	0.0643	No	0.1006
3/08/2021 6:00	0.4549	10.4801	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 6:30	0	10.4801	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 7:00	0.0033	10.4834	11.4068	Yes	4.83	0.0033	No	0.1006
3/08/2021 7:30	0.0034	10.4869	11.4068	Yes	4.83	0.0034	No	0.1006
3/08/2021 8:00	0.0250	10.5118	11.4068	Yes	4.83	0.0250	No	0.1006
3/08/2021 8:30	0.1588	10.6522	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 9:00	0.0024	10.6546	11.4068	Yes	4.83	0.0024	No	0.1006
3/08/2021 9:30	0	10.6546	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 10:00	0.0010	10.6488	11.4068	Yes	4.83	0.0010	No	0.1006
3/08/2021 10:30	0.0666	10.7154	11.4068	Yes	4.83	0.0666	No	0.1006
3/08/2021 11:00	0	10.7154	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 11:30	0.0458	10.7612	11.4068	Yes	4.83	0.0458	No	0.1006
3/08/2021 12:00	0	10.7612	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 12:30	0.0762	10.8374	11.4068	Yes	4.83	0.0762	No	0.1006
3/08/2021 13:00	0.3599	11.1973	11.4068	Yes	4.83	0.1006	Yes	0.1006
3/08/2021 13:30	0.0377	11.2350	11.4068	Yes	4.83	0.0377	No	0.1006
3/08/2021 14:00	0	11.2350	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 14:30	0	11.2311	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 15:00	0	11.2311	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 15:30	0	11.2311	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 16:00	0.0857	11.3169	11.4068	Yes	4.83	0.0857	No	0.1006
3/08/2021 16:30	0	11.3146	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 17:00	0.0019	11.3165	11.4068	Yes	4.83	0.0019	No	0.1006
3/08/2021 17:30	0.0353	11.3518	11.4068	Yes	4.83	0.0353	No	0.1006
3/08/2021 18:00	0	11.3518	11.4068	Yes	4.83	0	No	0.1006

Table 30: SAIDI Major Event (ME1) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
3/08/2021 18:30	0.0425	11.3941	11.4068	Yes	4.83	0.0425	No	0.1006
3/08/2021 19:00	0.0064	11.4005	11.4068	Yes	4.83	0.0064	No	0.1006
3/08/2021 19:30	0.0016	11.4021	11.4068	Yes	4.83	0.0016	Yes	0.1006
3/08/2021 20:00	0	11.4021	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 20:30	0.0039	11.4060	11.4068	Yes	4.83	0.0039	No	0.1006
3/08/2021 21:00	0	11.4060	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 21:30	0.0007	11.4068	11.4068	Yes	4.83	0.0007	No	0.1006
3/08/2021 22:00	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 22:30	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 23:00	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
3/08/2021 23:30	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
4/08/2021 0:00	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
4/08/2021 0:30	0	11.4068	11.4068	Yes	4.83	0	No	0.1006
4/08/2021 1:00	0	11.1574	11.1574	Yes	4.83	0	No	0.1006
4/08/2021 1:30	0	11.0692	11.0692	Yes	4.83	0	No	0.1006
4/08/2021 2:00	0	10.9498	10.9498	Yes	4.83	0	No	0.1006
4/08/2021 2:30	0	10.1314	10.1314	Yes	4.83	0	No	0.1006
4/08/2021 3:00	0	8.6078	8.6078	Yes	4.83	0	No	0.1006
SAIDI value before and after normalisation	**11.438**					**1.630**		

Table 31: SAIDI Major Event (ME2) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
12/02/2022 2:00	0	0.0118	5.0223	Yes	4.83	0	No	0.1006
12/02/2022 2:30	0	0.0118	5.0223	Yes	4.83	0	No	0.1006
12/02/2022 3:00	0	0.0118	5.1183	Yes	4.83	0	No	0.1006
12/02/2022 3:30	0	0.0118	5.7087	Yes	4.83	0	No	0.1006
12/02/2022 4:00	0	0.0118	6.4992	Yes	4.83	0	No	0.1006
12/02/2022 4:30	0	0.0118	7.6634	Yes	4.83	0	No	0.1006
12/02/2022 5:00	0	0.0118	8.0421	Yes	4.83	0	No	0.1006
12/02/2022 5:30	0.0658	0.0775	8.9485	Yes	4.83	0.0658	No	0.1006
12/02/2022 6:00	0	0.0775	9.1576	Yes	4.83	0	No	0.1006
12/02/2022 6:30	0	0.0775	9.1576	Yes	4.83	0	No	0.1006
12/02/2022 7:00	0	0.0773	11.6803	Yes	4.83	0	No	0.1006
12/02/2022 7:30	0	0.0773	12.3952	Yes	4.83	0	No	0.1006
12/02/2022 8:00	0	0.0773	20.8344	Yes	4.83	0	No	0.1006
12/02/2022 8:30	0.1771	0.2544	21.5682	Yes	4.83	0.1006	Yes	0.1006
12/02/2022 9:00	0	0.2544	25.6403	Yes	4.83	0	No	0.1006
12/02/2022 9:30	0	0.2544	26.6678	Yes	4.83	0	No	0.1006
12/02/2022 10:00	0	0.2544	28.8692	Yes	4.83	0	No	0.1006
12/02/2022 10:30	0	0.2544	34.0373	Yes	4.83	0	No	0.1006
12/02/2022 11:00	0	0.2544	39.4908	Yes	4.83	0	No	0.1006
12/02/2022 11:30	0	0.2544	42.5123	Yes	4.83	0	No	0.1006
12/02/2022 12:00	0	0.2544	43.2854	Yes	4.83	0	No	0.1006
12/02/2022 12:30	0	0.2544	45.1794	Yes	4.83	0	No	0.1006
12/02/2022 13:00	0	0.2544	45.3666	Yes	4.83	0	No	0.1006
12/02/2022 13:30	0	0.2544	46.6209	Yes	4.83	0	No	0.1006
12/02/2022 14:00	0.0849	0.3394	46.6209	Yes	4.83	0.0849	No	0.1006
12/02/2022 14:30	0	0.3394	47.2030	Yes	4.83	0	No	0.1006
12/02/2022 15:00	0	0.3394	47.2030	Yes	4.83	0	No	0.1006

Table 31: SAIDI Major Event (ME2) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
12/02/2022 15:30	0	0.3394	47.2030	Yes	4.83	0	No	0.1006
12/02/2022 16:00	0	0.3394	47.3204	Yes	4.83	0	No	0.1006
12/02/2022 16:30	0	0.3394	47.3204	Yes	4.83	0	No	0.1006
12/02/2022 17:00	0	0.3394	47.3204	Yes	4.83	0	No	0.1006
12/02/2022 17:30	0	0.3394	47.3204	Yes	4.83	0	No	0.1006
12/02/2022 18:00	0	0.3285	47.3357	Yes	4.83	0	No	0.1006
12/02/2022 18:30	0.1647	0.4931	47.6406	Yes	4.83	0.1006	Yes	0.1006
12/02/2022 19:00	0	0.4931	47.6406	Yes	4.83	0	No	0.1006
12/02/2022 19:30	0	0.4931	47.6406	Yes	4.83	0	No	0.1006
12/02/2022 20:00	0.0119	0.5051	47.6406	Yes	4.83	0.0119	No	0.1006
12/02/2022 20:30	0	0.5051	49.2944	Yes	4.83	0	No	0.1006
12/02/2022 21:00	0	0.5051	49.4598	Yes	4.83	0	No	0.1006
12/02/2022 21:30	0.0130	0.5181	49.4598	Yes	4.83	0.0130	No	0.1006
12/02/2022 22:00	0.1158	0.6339	50.0315	Yes	4.83	0.1006	Yes	0.1006
12/02/2022 22:30	0.0194	0.6533	50.0315	Yes	4.83	0.0194	No	0.1006
12/02/2022 23:00	0.1050	0.7583	50.0315	Yes	4.83	0.1006	Yes	0.1006
12/02/2022 23:30	0	0.7583	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 0:00	3.6242	4.3826	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 0:30	0	4.3819	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 1:00	0.1620	4.5440	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 1:30	0.4783	5.0223	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 2:00	0	5.0223	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 2:30	0.0961	5.1183	50.0315	Yes	4.83	0.0961	No	0.1006
13/02/2022 3:00	0.5904	5.7087	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 3:30	0.7905	6.4992	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 4:00	1.1642	7.6634	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 4:30	0.3787	8.0421	50.0315	Yes	4.83	0.1006	Yes	0.1006

Table 31: SAIDI Major Event (ME2) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
13/02/2022 5:00	0.9064	8.9485	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 5:30	0.2749	9.1576	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 6:00	0	9.1576	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 6:30	2.5227	11.6803	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 7:00	0.7149	12.3952	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 7:30	8.4392	20.8344	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 8:00	0.7338	21.5682	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 8:30	4.2493	25.6403	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 9:00	1.0274	26.6678	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 9:30	2.2014	28.8692	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 10:00	5.1682	34.0373	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 10:30	5.4534	39.4908	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 11:00	3.0216	42.5123	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 11:30	0.7731	43.2854	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 12:00	1.8940	45.1794	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 12:30	0.1873	45.3666	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 13:00	1.2543	46.6209	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 13:30	0	46.6209	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 14:00	0.6670	47.2030	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 14:30	0.0000	47.2030	50.0315	Yes	4.83	0.0000	No	0.1006
13/02/2022 15:00	0	47.2030	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 15:30	0.1173	47.3204	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 16:00	0	47.3204	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 16:30	0	47.3204	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 17:00	0	47.3204	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 17:30	0.0153	47.3357	50.0315	Yes	4.83	0.0153	No	0.1006
13/02/2022 18:00	0.3049	47.6406	50.0315	Yes	4.83	0.1006	Yes	0.1006

Table 31: SAIDI Major Event (ME2) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
13/02/2022 18:30	0	47.4759	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 19:00	0.0226	47.4985	50.0315	Yes	4.83	0.0226	No	0.1006
13/02/2022 19:30	0	47.4985	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 20:00	1.8079	49.2944	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 20:30	0.1654	49.4598	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 21:00	0	49.4598	50.0315	Yes	4.83	0	No	0.1006
13/02/2022 21:30	0.5847	50.0315	50.0315	Yes	4.83	0.1006	Yes	0.1006
13/02/2022 22:00	0	49.9157	49.9157	Yes	4.83	0	No	0.1006
13/02/2022 22:30	0	49.8963	49.8963	Yes	4.83	0	No	0.1006
13/02/2022 23:00	0	49.7913	49.7913	Yes	4.83	0	No	0.1006
13/02/2022 23:30	0	49.7913	49.7913	Yes	4.83	0	No	0.1006
14/02/2022 0:00	0	46.1670	46.1670	Yes	4.83	0	No	0.1006
14/02/2022 0:30	0	46.1670	46.1670	Yes	4.83	0	No	0.1006
14/02/2022 1:00	0	46.0050	46.0050	Yes	4.83	0	No	0.1006
14/02/2022 1:30	0	45.5267	45.5267	Yes	4.83	0	No	0.1006
14/02/2022 2:00	0	45.5267	45.5267	Yes	4.83	0	No	0.1006
14/02/2022 2:30	0	45.4306	45.4306	Yes	4.83	0	No	0.1006
14/02/2022 3:00	0	44.8402	44.8402	Yes	4.83	0	No	0.1006
14/02/2022 3:30	0	44.0497	44.0497	Yes	4.83	0	No	0.1006
14/02/2022 4:00	0	42.8855	42.8855	Yes	4.83	0	No	0.1006
14/02/2022 4:30	0	42.5068	42.5068	Yes	4.83	0	No	0.1006
14/02/2022 5:00	0.1217	41.7221	41.7221	Yes	4.83	0.1006	Yes	0.1006
14/02/2022 5:30	0.0816	41.5288	41.5754	Yes	4.83	0.0816	No	0.1006
14/02/2022 6:00	0.0466	41.5754	41.5754	Yes	4.83	0.0466	No	0.1006
14/02/2022 6:30	0.0006	39.0534	39.0534	Yes	4.83	0.0006	No	0.1006
14/02/2022 7:00	0	38.3385	38.3385	Yes	4.83	0	No	0.1006
14/02/2022 7:30	0.0014	29.9007	29.9007	Yes	4.83	0.0014	No	0.1006

Table 31: SAIDI Major Event (ME2) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
14/02/2022 8:00	0.0164	29.1834	29.1834	Yes	4.83	0.0164	No	0.1006
14/02/2022 8:30	0.0100	24.9441	24.9441	Yes	4.83	0.0100	No	0.1006
14/02/2022 9:00	0.0971	24.0137	24.0137	Yes	4.83	0.0971	No	0.1006
14/02/2022 9:30	0	21.8123	21.8123	Yes	4.83	0	No	0.1006
14/02/2022 10:00	0	16.6441	16.6441	Yes	4.83	0	No	0.1006
14/02/2022 10:30	0.1127	11.3034	11.3034	Yes	4.83	0.1006	Yes	0.1006
14/02/2022 11:00	0.0100	8.2919	8.2919	Yes	4.83	0.0100	No	0.1006
14/02/2022 11:30	0.0463	7.5650	7.5650	Yes	4.83	0.0463	No	0.1006
14/02/2022 12:00	0.0282	5.6992	5.6992	Yes	4.83	0.0282	No	0.1006
14/02/2022 12:30	0	5.5120	5.5120	Yes	4.83	0	No	0.1006
SAIDI value before and after normalisation	**51.122**					**4.189**		

Table 32: SAIDI Major Event (ME3) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
20/03/2022 17:00	0	1.2678	4.8476	Yes	4.83	0	No	0.1006
20/03/2022 17:30	0	1.2678	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 18:00	0.00792	1.2618	4.8566	Yes	4.83	0.007918	No	0.1006
20/03/2022 18:30	0.00506	1.2669	4.8566	Yes	4.83	0.005065	No	0.1006
20/03/2022 19:00	0.02725	1.2941	4.8566	Yes	4.83	0.027251	No	0.1006
20/03/2022 19:30	0.00116	1.2953	4.8566	Yes	4.83	0.001158	No	0.1006
20/03/2022 20:00	0	1.2953	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 20:30	0.03092	1.3262	4.8566	Yes	4.83	0.030923	No	0.1006
20/03/2022 21:00	0.00702	1.3332	4.8566	Yes	4.83	0.007023	No	0.1006
20/03/2022 21:30	0	1.3332	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 22:00	0	1.3332	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 22:30	0	1.3332	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 23:00	0	1.3332	4.8566	Yes	4.83	0	No	0.1006
20/03/2022 23:30	0	1.3332	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 0:00	0.20028	1.5281	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 0:30	0.13333	1.6615	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 1:00	0.21449	1.8759	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 1:30	0.11330	1.9892	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 2:00	0.12425	2.1128	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 2:30	0.38868	2.5015	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 3:00	0.20079	2.7023	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 3:30	0	2.7023	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 4:00	0	2.6857	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 4:30	0	2.6857	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 5:00	0	2.6857	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 5:30	0.05088	2.7366	4.8566	Yes	4.83	0.050877	No	0.1006
21/03/2022 6:00	0.00617	2.5422	4.8566	Yes	4.83	0.006174	No	0.1006

Table 32: SAIDI Major Event (ME3) details								
Date and time (half-hour commencing)	SAIDI (half-hour)	SAIDI (previous 24-hour)	SAIDI (max rolling 24-hour)	Major SAIDI Event	Boundary Value	Normalised SAIDI	Normalised or not	1/48th Boundary Value
21/03/2022 6:30	0.00830	2.5505	4.8566	Yes	4.83	0.008303	No	0.1006
21/03/2022 7:00	0.03569	2.5862	4.8566	Yes	4.83	0.035688	No	0.1006
21/03/2022 7:30	0.10277	2.6890	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 8:00	1.31830	4.0073	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 8:30	0.02332	4.0306	4.8566	Yes	4.83	0.023324	No	0.1006
21/03/2022 9:00	0.23570	4.1768	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 9:30	0.28711	4.4639	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 10:00	0.02044	4.4843	4.8566	Yes	4.83	0.020437	No	0.1006
21/03/2022 10:30	0.20999	4.5124	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 11:00	0.23233	4.6706	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 11:30	0.01832	4.3312	4.8566	Yes	4.83	0.018324	No	0.1006
21/03/2022 12:00	0	4.1352	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 12:30	0.20301	4.3289	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 13:00	0.00134	4.3303	4.8566	Yes	4.83	0.001337	No	0.1006
21/03/2022 13:30	0.43451	4.7525	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 14:00	0.00672	4.6848	4.8566	Yes	4.83	0.006722	No	0.1006
21/03/2022 14:30	0	4.6794	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 15:00	0	4.6794	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 15:30	0	4.6493	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 16:00	0.01218	4.6615	4.8566	Yes	4.83	0.012175	No	0.1006
21/03/2022 16:30	0.18605	4.8476	4.8566	Yes	4.83	0.100625	Yes	0.1006
21/03/2022 17:00	0.00903	4.8566	4.8566	Yes	4.83	0.009028	No	0.1006
21/03/2022 17:30	0	4.8566	4.8566	Yes	4.83	0	No	0.1006
21/03/2022 18:00	0.00007	4.8488	4.8505	Yes	4.83	0.000066	No	0.1006
21/03/2022 18:30	0.00684	4.8505	4.8505	Yes	4.83	0.006842	No	0.1006
SAIDI value before and after normalisation	**4.864**					**1.889**		

Appendix 4b: Major SAIFI events

Table 33: SAIFI Major Event (ME4) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
2/08/2021 4:00	0	0	0.047680	Yes	0.0371	0	No	0.000773
2/08/2021 4:30	0	0	0.056207	Yes	0.0371	0	No	0.000773
2/08/2021 5:00	0	0	0.056207	Yes	0.0371	0	No	0.000773
2/08/2021 5:30	0	0	0.059730	Yes	0.0371	0	No	0.000773
2/08/2021 6:00	0	0	0.059856	Yes	0.0371	0	No	0.000773
2/08/2021 6:30	0	0	0.061114	Yes	0.0371	0	No	0.000773
2/08/2021 7:00	0	0	0.061114	Yes	0.0371	0	No	0.000773
2/08/2021 7:30	0	0	0.061121	Yes	0.0371	0	No	0.000773
2/08/2021 8:00	0	0	0.061128	Yes	0.0371	0	No	0.000773
2/08/2021 8:30	0.001850	0.001850	0.061192	Yes	0.0371	0.000773	Yes	0.000773
2/08/2021 9:00	0	0.001850	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 9:30	0	0.001850	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 10:00	0.000029	0.001879	0.061192	Yes	0.0371	0.000029	No	0.000773
2/08/2021 10:30	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 11:00	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 11:30	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 12:00	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 12:30	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 13:00	0	0.001879	0.061192	Yes	0.0371	0	No	0.000773
2/08/2021 13:30	0	0.001879	0.062081	Yes	0.0371	0	No	0.000773
2/08/2021 14:00	0	0.001879	0.062412	Yes	0.0371	0	No	0.000773
2/08/2021 14:30	0.000046	0.001925	0.062412	Yes	0.0371	0.000046	No	0.000773
2/08/2021 15:00	0	0.001925	0.062412	Yes	0.0371	0	No	0.000773
2/08/2021 15:30	0	0.001925	0.062412	Yes	0.0371	0	No	0.000773
2/08/2021 16:00	0	0.001925	0.062412	Yes	0.0371	0	No	0.000773

Table 33: SAIFI Major Event (ME4) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
2/08/2021 16:30	0.000005	0.001930	0.062564	Yes	0.0371	0.000005	No	0.000773
2/08/2021 17:00	0	0.001930	0.062564	Yes	0.0371	0	No	0.000773
2/08/2021 17:30	0	0.001930	0.062613	Yes	0.0371	0	No	0.000773
2/08/2021 18:00	0	0.001930	0.063192	Yes	0.0371	0	No	0.000773
2/08/2021 18:30	0.000002	0.001931	0.063192	Yes	0.0371	0.000002	No	0.000773
2/08/2021 19:00	0	0.001931	0.063483	Yes	0.0371	0	No	0.000773
2/08/2021 19:30	0	0.001931	0.063488	Yes	0.0371	0	No	0.000773
2/08/2021 20:00	0	0.001931	0.063489	Yes	0.0371	0	No	0.000773
2/08/2021 20:30	0	0.001931	0.063489	Yes	0.0371	0	No	0.000773
2/08/2021 21:00	0	0.001931	0.063493	Yes	0.0371	0	No	0.000773
2/08/2021 21:30	0	0.001931	0.063493	Yes	0.0371	0	No	0.000773
2/08/2021 22:00	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
2/08/2021 22:30	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
2/08/2021 23:00	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
2/08/2021 23:30	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 0:00	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 0:30	0	0.001931	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 1:00	0.001849	0.003780	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 1:30	0.000339	0.004119	0.063500	Yes	0.0371	0.000339	No	0.000773
3/08/2021 2:00	0.002487	0.006606	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 2:30	0.000903	0.007509	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 3:00	0.005237	0.012746	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 3:30	0.034934	0.047680	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 4:00	0.008527	0.056207	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 4:30	0	0.056207	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 5:00	0.003523	0.059730	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 5:30	0.000127	0.059856	0.063500	Yes	0.0371	0.000127	No	0.000773

Table 33: SAIFI Major Event (ME4) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
3/08/2021 6:00	0.001258	0.061114	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 6:30	0	0.061114	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 7:00	0.000007	0.061121	0.063500	Yes	0.0371	0.000007	No	0.000773
3/08/2021 7:30	0.000007	0.061128	0.063500	Yes	0.0371	0.000007	No	0.000773
3/08/2021 8:00	0.000064	0.061192	0.063500	Yes	0.0371	0.000064	No	0.000773
3/08/2021 8:30	0.000799	0.060140	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 9:00	0.000002	0.060142	0.063500	Yes	0.0371	0.000002	No	0.000773
3/08/2021 9:30	0	0.060142	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 10:00	0.000002	0.060115	0.063500	Yes	0.0371	0.000002	No	0.000773
3/08/2021 10:30	0.000225	0.060339	0.063500	Yes	0.0371	0.000225	No	0.000773
3/08/2021 11:00	0	0.060339	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 11:30	0.000208	0.060547	0.063500	Yes	0.0371	0.000208	No	0.000773
3/08/2021 12:00	0	0.060547	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 12:30	0.000540	0.061087	0.063500	Yes	0.0371	0.000540	No	0.000773
3/08/2021 13:00	0.000994	0.062081	0.063500	Yes	0.0371	0.000773	Yes	0.000773
3/08/2021 13:30	0.000331	0.062412	0.063500	Yes	0.0371	0.000331	No	0.000773
3/08/2021 14:00	0	0.062412	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 14:30	0	0.062367	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 15:00	0	0.062367	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 15:30	0	0.062367	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 16:00	0.000198	0.062564	0.063500	Yes	0.0371	0.000198	No	0.000773
3/08/2021 16:30	0	0.062559	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 17:00	0.000054	0.062613	0.063500	Yes	0.0371	0.000054	No	0.000773
3/08/2021 17:30	0.000579	0.063192	0.063500	Yes	0.0371	0.000579	No	0.000773
3/08/2021 18:00	0	0.063192	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 18:30	0.000292	0.063483	0.063500	Yes	0.0371	0.000292	No	0.000773
3/08/2021 19:00	0.000005	0.063488	0.063500	Yes	0.0371	0.000005	No	0.000773

Table 33: SAIFI Major Event (ME4) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
3/08/2021 19:30	0.000002	0.063489	0.063500	Yes	0.0371	0.000002	No	0.000773
3/08/2021 20:00	0	0.063489	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 20:30	0.000003	0.063493	0.063500	Yes	0.0371	0.000003	No	0.000773
3/08/2021 21:00	0	0.063493	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 21:30	0.000007	0.063500	0.063500	Yes	0.0371	0.000007	No	0.000773
3/08/2021 22:00	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 22:30	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 23:00	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
3/08/2021 23:30	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
4/08/2021 0:00	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
4/08/2021 0:30	0	0.063500	0.063500	Yes	0.0371	0	No	0.000773
4/08/2021 1:00	0	0.061651	0.061651	Yes	0.0371	0	No	0.000773
4/08/2021 1:30	0	0.061312	0.061312	Yes	0.0371	0	No	0.000773
4/08/2021 2:00	0	0.058825	0.058825	Yes	0.0371	0	No	0.000773
4/08/2021 2:30	0	0.057922	0.057922	Yes	0.0371	0	No	0.000773
4/08/2021 3:00	0	0.052685	0.052685	Yes	0.0371	0	No	0.000773
SAIFI value before and after normalisation	**0.065**					**0.012**		

Table 34: SAIFI Major Event (ME5) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
12/02/2022 7:00	0	0.000876	0.038376	Yes	0.0371	0	No	0.000773
12/02/2022 7:30	0	0.000876	0.040945	Yes	0.0371	0	No	0.000773
12/02/2022 8:00	0	0.000876	0.060452	Yes	0.0371	0	No	0.000773
12/02/2022 8:30	0.00300	0.003881	0.064636	Yes	0.0371	0.000773	Yes	0.000773
12/02/2022 9:00	0	0.003881	0.072472	Yes	0.0371	0	No	0.000773
12/02/2022 9:30	0	0.003881	0.083265	Yes	0.0371	0	No	0.000773
12/02/2022 10:00	0	0.003881	0.084550	Yes	0.0371	0	No	0.000773
12/02/2022 10:30	0	0.003881	0.103599	Yes	0.0371	0	No	0.000773
12/02/2022 11:00	0	0.003881	0.115408	Yes	0.0371	0	No	0.000773
12/02/2022 11:30	0	0.003881	0.123160	Yes	0.0371	0	No	0.000773
12/02/2022 12:00	0	0.003881	0.132249	Yes	0.0371	0	No	0.000773
12/02/2022 12:30	0	0.003881	0.138989	Yes	0.0371	0	No	0.000773
12/02/2022 13:00	0	0.003881	0.139375	Yes	0.0371	0	No	0.000773
12/02/2022 13:30	0	0.003881	0.143320	Yes	0.0371	0	No	0.000773
12/02/2022 14:00	0.00035	0.004231	0.143320	Yes	0.0371	0.00035	No	0.000773
12/02/2022 14:30	0	0.004231	0.145714	Yes	0.0371	0	No	0.000773
12/02/2022 15:00	0	0.004231	0.145714	Yes	0.0371	0	No	0.000773
12/02/2022 15:30	0	0.004231	0.145714	Yes	0.0371	0	No	0.000773
12/02/2022 16:00	0	0.004231	0.147274	Yes	0.0371	0	No	0.000773
12/02/2022 16:30	0	0.004231	0.147274	Yes	0.0371	0	No	0.000773
12/02/2022 17:00	0	0.004231	0.147274	Yes	0.0371	0	No	0.000773
12/02/2022 17:30	0	0.004231	0.147274	Yes	0.0371	0	No	0.000773
12/02/2022 18:00	0	0.004220	0.147323	Yes	0.0371	0	No	0.000773
12/02/2022 18:30	0.00021	0.004428	0.148390	Yes	0.0371	0.00021	No	0.000773
12/02/2022 19:00	0	0.004428	0.148390	Yes	0.0371	0	No	0.000773
12/02/2022 19:30	0	0.004428	0.148390	Yes	0.0371	0	No	0.000773

Table 34: SAIFI Major Event (ME5) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
12/02/2022 20:00	0.00007	0.004494	0.148390	Yes	0.0371	0.00007	No	0.000773
12/02/2022 20:30	0	0.004494	0.149886	Yes	0.0371	0	No	0.000773
12/02/2022 21:00	0	0.004494	0.150222	Yes	0.0371	0	No	0.000773
12/02/2022 21:30	0.00026	0.004754	0.150222	Yes	0.0371	0.00026	No	0.000773
12/02/2022 22:00	0.00221	0.006960	0.150625	Yes	0.0371	0.000773	Yes	0.000773
12/02/2022 22:30	0.00026	0.007222	0.150625	Yes	0.0371	0.00026	No	0.000773
12/02/2022 23:00	0.00214	0.009364	0.150625	Yes	0.0371	0.000773	Yes	0.000773
12/02/2022 23:30	0	0.009364	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 0:00	0.00473	0.014090	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 0:30	0	0.014078	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 1:00	0.00045	0.014527	0.150625	Yes	0.0371	0.00045	No	0.000773
13/02/2022 1:30	0.00206	0.016586	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 2:00	0	0.016586	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 2:30	0.00093	0.017513	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 3:00	0.00145	0.018963	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 3:30	0.00572	0.024685	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 4:00	0.00266	0.027344	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 4:30	0.00163	0.028973	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 5:00	0.00170	0.030671	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 5:30	0.00121	0.031027	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 6:00	0	0.031027	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 6:30	0.00735	0.038376	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 7:00	0.002569	0.040945	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 7:30	0.019507	0.060452	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 8:00	0.004183	0.064636	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 8:30	0.010842	0.072472	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 9:00	0.010793	0.083265	0.150625	Yes	0.0371	0.000773	Yes	0.000773

Table 34: SAIFI Major Event (ME5) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
13/02/2022 9:30	0.001285	0.084550	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 10:00	0.019050	0.103599	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 10:30	0.011809	0.115408	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 11:00	0.007752	0.123160	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 11:30	0.009089	0.132249	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 12:00	0.006739	0.138989	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 12:30	0.000387	0.139375	0.150625	Yes	0.0371	0.000387	No	0.000773
13/02/2022 13:00	0.003945	0.143320	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 13:30	0	0.143320	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 14:00	0.002743	0.145714	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 14:30	0.000000	0.145714	0.150625	Yes	0.0371	0.000000	No	0.000773
13/02/2022 15:00	0	0.145714	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 15:30	0.001560	0.147274	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 16:00	0	0.147274	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 16:30	0	0.147274	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 17:00	0	0.147274	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 17:30	0.000049	0.147323	0.150625	Yes	0.0371	0.000049	No	0.000773
13/02/2022 18:00	0.001067	0.148390	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 18:30	0	0.148182	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 19:00	0.000019	0.148201	0.150625	Yes	0.0371	0.000019	No	0.000773
13/02/2022 19:30	0	0.148201	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 20:00	0.001751	0.149886	0.150625	Yes	0.0371	0.000773	Yes	0.000773
13/02/2022 20:30	0.000336	0.150222	0.150625	Yes	0.0371	0.000336	No	0.000773
13/02/2022 21:00	0	0.150222	0.150625	Yes	0.0371	0	No	0.000773
13/02/2022 21:30	0.000663	0.150625	0.150625	Yes	0.0371	0.000663	No	0.000773
13/02/2022 22:00	0	0.148419	0.148419	Yes	0.0371	0	No	0.000773
13/02/2022 22:30	0	0.148157	0.148157	Yes	0.0371	0	No	0.000773

Table 34: SAIFI Major Event (ME5) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
13/02/2022 23:00	0	0.146015	0.146015	Yes	0.0371	0	No	0.000773
13/02/2022 23:30	0	0.146015	0.146015	Yes	0.0371	0	No	0.000773
14/02/2022 0:00	0	0.141290	0.141290	Yes	0.0371	0	No	0.000773
14/02/2022 0:30	0	0.141290	0.141290	Yes	0.0371	0	No	0.000773
14/02/2022 1:00	0	0.140840	0.140840	Yes	0.0371	0	No	0.000773
14/02/2022 1:30	0	0.138781	0.138781	Yes	0.0371	0	No	0.000773
14/02/2022 2:00	0	0.138781	0.138781	Yes	0.0371	0	No	0.000773
14/02/2022 2:30	0	0.137854	0.137854	Yes	0.0371	0	No	0.000773
14/02/2022 3:00	0	0.136404	0.136404	Yes	0.0371	0	No	0.000773
14/02/2022 3:30	0	0.130683	0.130683	Yes	0.0371	0	No	0.000773
14/02/2022 4:00	0	0.128024	0.128024	Yes	0.0371	0	No	0.000773
14/02/2022 4:30	0	0.126395	0.126395	Yes	0.0371	0	No	0.000773
14/02/2022 5:00	0.000292	0.124988	0.124988	Yes	0.0371	0.000292	No	0.000773
14/02/2022 5:30	0.000223	0.124001	0.124126	Yes	0.0371	0.000223	No	0.000773
14/02/2022 6:00	0.000125	0.124126	0.124126	Yes	0.0371	0.000125	No	0.000773
14/02/2022 6:30	0.000002	0.116779	0.116779	Yes	0.0371	0.000002	No	0.000773
14/02/2022 7:00	0	0.114209	0.114209	Yes	0.0371	0	No	0.000773
14/02/2022 7:30	0.000003	0.094706	0.094706	Yes	0.0371	0.000003	No	0.000773
14/02/2022 8:00	0.000041	0.090563	0.090563	Yes	0.0371	0.000041	No	0.000773
14/02/2022 8:30	0.000010	0.079731	0.079731	Yes	0.0371	0.000010	No	0.000773
14/02/2022 9:00	0.000049	0.068988	0.068988	Yes	0.0371	0.000049	No	0.000773
14/02/2022 9:30	0	0.067703	0.067703	Yes	0.0371	0	No	0.000773
14/02/2022 10:00	0	0.048654	0.048654	Yes	0.0371	0	No	0.000773
14/02/2022 10:30	0.000434	0.037279	0.037279	Yes	0.0371	0.000434	No	0.000773
SAIFI value before and after normalisation	**0.156**					**0.027**		

Table 35: SAIFI Major Event (ME6) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
20/03/2022 11:00	0.000231	0.004548	0.040849	Yes	0.0371	0.000231	No	0.000773
20/03/2022 11:30	0.00102	0.005564	0.060339	Yes	0.0371	0.000773	Yes	0.000773
20/03/2022 12:00	0.000130	0.005694	0.060339	Yes	0.0371	0.000130	No	0.000773
20/03/2022 12:30	0.000017	0.005711	0.060339	Yes	0.0371	0.000017	No	0.000773
20/03/2022 13:00	0.000000	0.005711	0.060928	Yes	0.0371	0.000000	No	0.000773
20/03/2022 13:30	0.000032	0.005743	0.060939	Yes	0.0371	0.000032	No	0.000773
20/03/2022 14:00	0.000400	0.006143	0.075972	Yes	0.0371	0.000400	No	0.000773
20/03/2022 14:30	0.000010	0.006153	0.075972	Yes	0.0371	0.000010	No	0.000773
20/03/2022 15:00	0	0.006153	0.075972	Yes	0.0371	0	No	0.000773
20/03/2022 15:30	0.0002887	0.006442	0.075972	Yes	0.0371	0.0002887	No	0.000773
20/03/2022 16:00	0	0.006442	0.075972	Yes	0.0371	0	No	0.000773
20/03/2022 16:30	0	0.006442	0.075972	Yes	0.0371	0	No	0.000773
20/03/2022 17:00	0	0.006440	0.078072	Yes	0.0371	0	No	0.000773
20/03/2022 17:30	0	0.006440	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 18:00	0.000226	0.006582	0.078119	Yes	0.0371	0.000226	No	0.000773
20/03/2022 18:30	0.000084	0.006667	0.078119	Yes	0.0371	0.000084	No	0.000773
20/03/2022 19:00	0.000024	0.006690	0.078119	Yes	0.0371	0.000024	No	0.000773
20/03/2022 19:30	0.000003	0.006694	0.078119	Yes	0.0371	0.000003	No	0.000773
20/03/2022 20:00	0	0.006694	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 20:30	0.00149	0.008186	0.078119	Yes	0.0371	0.000773	Yes	0.000773
20/03/2022 21:00	0.000044	0.008230	0.078119	Yes	0.0371	0.000044	No	0.000773
20/03/2022 21:30	0	0.008230	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 22:00	0	0.008230	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 22:30	0	0.008230	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 23:00	0	0.008230	0.078119	Yes	0.0371	0	No	0.000773
20/03/2022 23:30	0	0.008230	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 0:00	0.00307	0.011213	0.078119	Yes	0.0371	0.000773	Yes	0.000773

Table 35: SAIFI Major Event (ME6) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
21/03/2022 0:30	0.00284	0.014056	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 1:00	0.00300	0.017059	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 1:30	0.000444	0.017503	0.078119	Yes	0.0371	0.000444	No	0.000773
21/03/2022 2:00	0.00194	0.019443	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 2:30	0.00121	0.020648	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 3:00	0.00095	0.021594	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 3:30	0	0.021594	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 4:00	0	0.021523	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 4:30	0	0.021523	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 5:00	0	0.021523	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 5:30	0.000164	0.021686	0.078119	Yes	0.0371	0.000164	No	0.000773
21/03/2022 6:00	0.000268	0.021433	0.078119	Yes	0.0371	0.000268	No	0.000773
21/03/2022 6:30	0.000059	0.021492	0.078119	Yes	0.0371	0.000059	No	0.000773
21/03/2022 7:00	0.000032	0.021524	0.078119	Yes	0.0371	0.000032	No	0.000773
21/03/2022 7:30	0.000191	0.021715	0.078119	Yes	0.0371	0.000191	No	0.000773
21/03/2022 8:00	0.01049	0.032201	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 8:30	0.000051	0.032251	0.078119	Yes	0.0371	0.000051	No	0.000773
21/03/2022 9:00	0.00143	0.033007	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 9:30	0.000177	0.033185	0.078119	Yes	0.0371	0.000177	No	0.000773
21/03/2022 10:00	0.000034	0.033218	0.078119	Yes	0.0371	0.000034	No	0.000773
21/03/2022 10:30	0.01051	0.040849	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 11:00	0.019721	0.060339	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 11:30	0.000115	0.059438	0.078119	Yes	0.0371	0.000115	No	0.000773
21/03/2022 12:00	0	0.059308	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 12:30	0.001638	0.060928	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 13:00	0.000010	0.060939	0.078119	Yes	0.0371	0.000010	No	0.000773
21/03/2022 13:30	0.015065	0.075972	0.078119	Yes	0.0371	0.000773	Yes	0.000773

Table 35: SAIFI Major Event (ME6) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
21/03/2022 14:00	0.000012	0.075584	0.078119	Yes	0.0371	0.000012	No	0.000773
21/03/2022 14:30	0	0.075573	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 15:00	0	0.075573	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 15:30	0	0.075285	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 16:00	0.000186	0.075470	0.078119	Yes	0.0371	0.000186	No	0.000773
21/03/2022 16:30	0.002601	0.078072	0.078119	Yes	0.0371	0.000773	Yes	0.000773
21/03/2022 17:00	0.000047	0.078119	0.078119	Yes	0.0371	0.000047	No	0.000773
21/03/2022 17:30	0	0.078119	0.078119	Yes	0.0371	0	No	0.000773
21/03/2022 18:00	0.000002	0.077895	0.077895	Yes	0.0371	0.000002	No	0.000773
21/03/2022 18:30	0.000005	0.077815	0.077815	Yes	0.0371	0.000005	No	0.000773
21/03/2022 19:00	0	0.077792	0.077793	Yes	0.0371	0	No	0.000773
21/03/2022 19:30	0	0.077788	0.077793	Yes	0.0371	0	No	0.000773
21/03/2022 20:00	0.000005	0.077793	0.077793	Yes	0.0371	0.000005	No	0.000773
21/03/2022 20:30	0.000066	0.076367	0.076492	Yes	0.0371	0.000066	No	0.000773
21/03/2022 21:00	0.000159	0.076482	0.076492	Yes	0.0371	0.000159	No	0.000773
21/03/2022 21:30	0	0.076482	0.076492	Yes	0.0371	0	No	0.000773
21/03/2022 22:00	0.000010	0.076492	0.076492	Yes	0.0371	0.000010	No	0.000773
21/03/2022 22:30	0	0.076492	0.076492	Yes	0.0371	0	No	0.000773
21/03/2022 23:00	0	0.076492	0.076492	Yes	0.0371	0	No	0.000773
21/03/2022 23:30	0	0.076492	0.076492	Yes	0.0371	0	No	0.000773
22/03/2022 0:00	0.000002	0.073426	0.073426	Yes	0.0371	0.000002	No	0.000773
22/03/2022 0:30	0	0.070583	0.070583	Yes	0.0371	0	No	0.000773
22/03/2022 1:00	0.000255	0.067835	0.067835	Yes	0.0371	0.000255	No	0.000773
22/03/2022 1:30	0	0.067391	0.067391	Yes	0.0371	0	No	0.000773
22/03/2022 2:00	0.000054	0.065503	0.065503	Yes	0.0371	0.000054	No	0.000773
22/03/2022 2:30	0	0.064298	0.064298	Yes	0.0371	0	No	0.000773
22/03/2022 3:00	0	0.063353	0.063353	Yes	0.0371	0	No	0.000773

Table 35: SAIFI Major Event (ME6) details								
Date and time (half-hour commencing)	SAIFI (half-hour)	SAIFI (previous 24-hour)	SAIFI (max rolling 24-hour)	Major SAIFI Event	Boundary Value	Normalised SAIFI	Normalised or not	1/48th Boundary Value
22/03/2022 3:30	0	0.063353	0.063353	Yes	0.0371	0	No	0.000773
22/03/2022 4:00	0	0.063353	0.063353	Yes	0.0371	0	No	0.000773
22/03/2022 4:30	0	0.063353	0.063353	Yes	0.0371	0	No	0.000773
22/03/2022 5:00	0	0.063353	0.063353	Yes	0.0371	0	No	0.000773
22/03/2022 5:30	0.000010	0.063199	0.063199	Yes	0.0371	0.000010	No	0.000773
22/03/2022 6:00	0	0.062931	0.062931	Yes	0.0371	0	No	0.000773
22/03/2022 6:30	0	0.062872	0.062872	Yes	0.0371	0	No	0.000773
22/03/2022 7:00	0	0.062839	0.062839	Yes	0.0371	0	No	0.000773
22/03/2022 7:30	0.000005	0.062654	0.062654	Yes	0.0371	0.000005	No	0.000773
22/03/2022 8:00	0	0.052168	0.052168	Yes	0.0371	0	No	0.000773
22/03/2022 8:30	0.000010	0.052128	0.052128	Yes	0.0371	0.000010	No	0.000773
22/03/2022 9:00	0	0.050700	0.050700	Yes	0.0371	0	No	0.000773
22/03/2022 9:30	0.000022	0.050544	0.050544	Yes	0.0371	0.000022	No	0.000773
22/03/2022 10:00	0.000005	0.050516	0.050516	Yes	0.0371	0.000005	No	0.000773
22/03/2022 10:30	0.000150	0.040155	0.040155	Yes	0.0371	0.000150	No	0.000773
SAIFI value before and after normalisation	**0.081**					**0.016**		

Appendix 5: Two events caused by major external factors

3 August 2021 storm event

The Metservice issued Vector with a Severe Gale warning at 02/08/2021 10:30 am. In summary,

- The warning raises attention to Severe Weather Watch for strong wind in force for Auckland between 3am and 4pm, 3 August 2021.
- A front is expected to cross Auckland around midnight 2 August 2021, with a brief spell of heavy rain unlikely to reach severe weather thresholds.
- Exposed places i.e. the west coast, Woodhill, Waitakere Ranges, are likely to see gusts to 110km/h between midnight, 2 August 2021 and 2pm, 3 August 2021.
- Gusts may reach 100-110km/h widely with isolated gusts to 120km/h, mainly on the west coast and over high ground between 3am and 6am.
- Gusts may reach 100-110km/h widely and 120km/h in exposure between midday and 1pm.

Of note the meteorological term “Gale” Force Winds describes kph wind speeds between 62-88 kph, the meteorological term “Storm” Force Winds between 89-117 kph.

The observed “Storm” Force winds associated during the period above resulted in severe damage to Vector’s electricity network. Sustained wind, with speeds exceeding storm force strength, struck the network early on Tuesday morning (3 August), during the peak of the storm 22 circuits faulted coincidentally affected causing ~ 24,000 customers to be without power.

The supporting internal and external data are aligned in confirming this event period to be a Severe Wind instance, as such should be excluded from ‘extreme event’ defined in Determination on the grounds of a “natural disaster”.

Figure 1 shows the progression of the severe wind event through time and the impact this had in generating a very high number of coincident yet

geographically diverse customer impacting outage events. Figure 2 demonstrates the resulting event impact on the incurred customer minutes, the coincidence and magnitude directly aligned with the observed high wind magnitudes.

Figure 1 Number of Faults in the context of Wind Speeds Observed

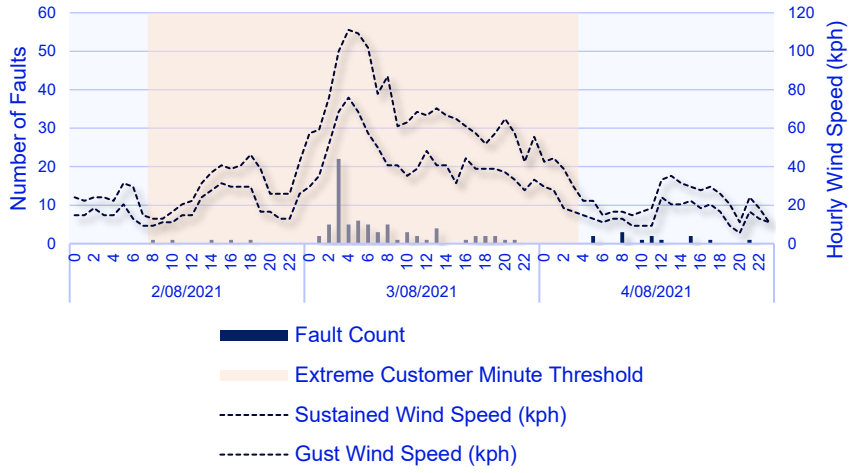
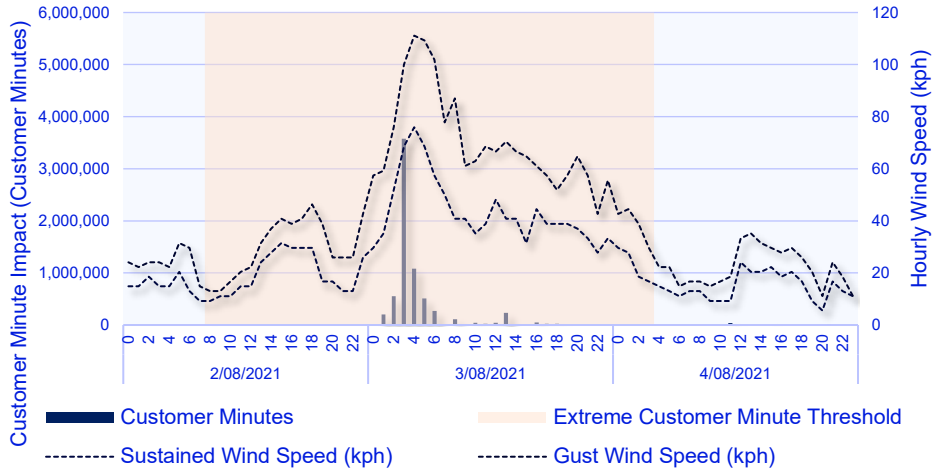


Figure 2 Customer Minute Impact in the context of Wind Speeds Observed



As demonstrated in both Figure 1 and Figure 2, sustained wind and gust wind speeds observed exceeded “Gale” force for a long period, with gusts observed to have exceeded “Storm” force also for long periods, in fact the gust speeds exceeding the Metservice definition of “Violent Storm” beyond 103 kph.

The impact of these gale and storm force wind speeds on network performance is clear, with the network suffering severe overhead asset damage, the majority of which due to vegetation causes, debris blown through lines, and falling trees bringing lines down.

Considering the broader event period, 39,000 customers affected, 72 unique fault events, 45 unique events corresponding to vegetation fault events, 27 associated with overhead equipment faults, all coincident with severe wind speeds.

13 February 2022 storm event

The Metservice issued Vector with a Tropical Cyclone (TC) Dovi Severe Gale warning at 12/02/2022 11:20 am. In summary,

- TC Dovi intensifies into a Category 4 system briefly on 12 February 2022 and is analysed as a Category 3 system at dawn on 13 February 2022. (Metservice refers to Hurricane Category numbers in describing a wind related weather event this means scales greater than 118 kph)
- The main impact for Auckland is Severe Gales, with the mainland and Great Barrier on wind warning (peak gusts 120-130km/hr).
- Northerly gales start to push into the Auckland region from 10pm, 12 February 2022 and then build to a gusty NW on 13 February. However, the most impactful winds occur once the westerly winds kick in –expect a rapid increase in both mean speeds and gustiness from about 10am/11am 13 February 2022.
- It may well be a relatively short 2-3 hours in extreme gustiness (frequent and widespread gusts 120 km/hr through western, central and southern Auckland, as well as Hauraki Gulf and Great Barrier island, with a risk of gusts 130-140 km/hr possible for our western coastline and Awhitu Peninsula, and high ground.

Of note the meteorological term,

- “Hurricane Cat 1” Force Winds between 118-153 kph.
- “Hurricane Cat 2” Force Winds between 154-177 kph.
- “Hurricane Cat 3” Force Winds between 178-209 kph.

The observed “Hurricane Category 1” Force winds associated during the period above resulted in severe damage to Vector’s electricity network. Sustained wind and gusts with speeds exceeding gale force strength, started to impact network performance late Saturday evening (12 February), the main weather front hitting its most intense period from early Sunday morning (13 February) as forecast.

The supporting internal and external data are aligned in confirming this event period to be a Severe Wind instance, as such should be excluded from the Commerce Commission extreme event determination on the grounds of a “natural disaster”.

Figure 3 Number of Faults in the context of Wind Speeds Observed

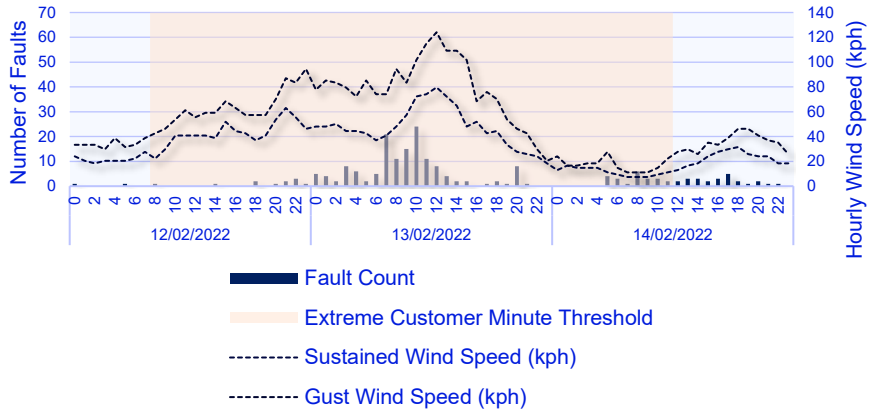


Figure 4 Customer Minute Impact in the context of Wind Speeds Observed

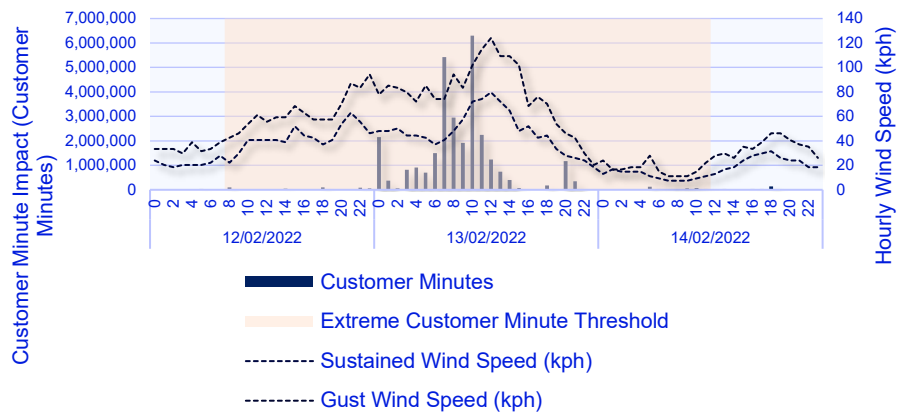


Figure 3 shows the impact of the severe wind strength through time and the resulting high number of coincident yet geographically diverse customer impacting outage events. Figure 4 demonstrates the resulting event impact on the incurred customer minutes, the coincidence and magnitude directly aligned with the observed high wind magnitudes. The multiple wind fronts and outage impact are evident.

As demonstrated in both Figure 3 and Figure 4, sustained wind and gust wind speeds observed exceeded “Gale” and “Storm” force levels for multiple extended periods, gusts briefly exceeded “Hurricane” force as expected from forecast advice.

The impact of these gale and storm force wind speeds on network performance is clear, with the network suffering severe overhead asset damage, the majority of which due to vegetation causes, debris blown through lines, and falling trees bringing lines down.

Considering the broader event period, 93,000 customers affected, 174 unique fault events, 119 unique events corresponding to vegetation fault events, 55 associated with overhead equipment faults, all coincident with severe wind speeds.