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VECTOR LIMITED

**REVIEW OF VECTOR'S  
HSE SAIDI AND SAIFI  
ADJUSTMENT  
METHODOLOGY**

wsp

MARCH 2019  
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## Review of Vector's HSE SAIDI and SAIFI adjustment methodology

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	NAME	DATE	SIGNATURE
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# 1 PROJECT BACKGROUND

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## 1.1 CONTEXT

Vector has changed their work practices for operational staff to reflect safety considerations principally, in response to the introduction of the Health and Safety at Work Act 2015. Because of these changes, Vector incurred more frequent and longer outages that were not previously experienced. Consequently, this resulted in higher levels of SAIDI and SAIFI values which had not been factored into the thresholds set by the regulator.

Vector identified four scenarios to which increased SAIDI and SAIFI were incurred:

- Do Not Operate Live (DNOL) – assets identified as not being able to be operated live and therefore requiring an outage to undertake work on the asset.
- Isolation For Safety (IFS) – isolating a section of line as soon as a call has been received that identifies a network issue. Previously a crew would be dispatched to site to make an assessment prior to isolation and therefore increasing the duration of outages if an outage was needed.
- Live Line Practices (LLP) – change in practices that stopped live line work and therefore resulting in increased outages.
- Non Visible Breaks (NVB) – the need to install external earthing at all locations where there is a non-visible break (e.g. gas switch) and therefore resulting in longer outages.

Vector has written the SAIDI and SAIFI HSE Adjustment Methodology (the Methodology) to describe their approach to assessing these four scenarios and calculating the incremental additional SAIDI and SAIFI that has been incurred compared to operating and maintenance practices used prior the introduction of the Health and Safety at Work Act 2015.

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## 1.2 PROJECT SCOPE

The scope of the review was to assess:

- whether the methodology would justifiably result in a reasonable quantification of the incremental change in the SAIDI and SAIFI incurred as a result of changes to Vector's work practices due to the introduction of the Health and Safety at Work Act 2015,
- whether the assumptions and inputs used for each of the four scenarios were reasonable, and
- if the approach taken by Vector was accurately articulated in the methodology document.

The scope of works excluded:

- an assessment of whether each of the changes adopted by Vector to protect the health and safety of its operational staff and contractors had valid health and safety reasons that were triggered by the change to the Health and Safety at Work Act 2015.
- an assessment of the validity of each of the scenarios discussed in the methodology to be excluded from the disclosed SAIDI and SAIFI, only that if it is appropriate to exclude the scenario, the methodology to calculate the SAIDI and SAIFI adjustment was reasonable.
- review or audit of SAIDI or SAIFI data or that the calculation of the proposed adjustments to the data set for health and safety changes. Vector noted that its SAIDI and SAIFI information is expected to be audited and certified by an independent auditor and this process will also audit the quantification of health and safety information.

- validation of the quantities or values made as assumptions or inputs, but considered whether the underlying reason for the assumption was reasonable.

The following sections of this report set out the approach taken by WSP to review the methodology and supporting documentation, our key findings and conclusion.

# 2 OUR REVIEW

## 2.1 APPROACH

To provide an opinion on the Methodology, WSP reviewed the Vector SAIDI and SAIFI Health and Safety Adjustment Methodology, example calculations and supporting documentation.

WSP undertook the following tasks as part of the assessment:

- review of the Methodology to assess:
  - how well the approach was likely to capture the incremental change in SAIDI and SAIFI caused by the change in practice for each scenario.
  - whether definitions were correctly applied.
  - the purpose of any assumptions made and whether the basis of those assumptions was reflective of the change in practice for each scenario.
- review of example calculations for the purpose of understanding and assessing the methodology.
- review of how the information was captured in the supporting spreadsheets for the purpose of ensuring the calculations were correctly explained in the methodology.
- discussion with Vector staff to test the accuracy of the methodology and to clarify any issues identified during the review.
- requests for further information as required.

Our review was undertaken through several iterations of the Vector SAIDI and SAIFI Adjustment Methodology during which we identified opportunities for the explanation of the methodology to be improved for clarity and avoid any misinterpretation of the steps undertaken for calculations to be made.

## 2.2 INFORMATION REVIEWED

We consider the material provided by Vector was sufficient information from which to provide an opinion on the matters discussed in the project scope.

As part of the review, WSP reviewed the documents set out in Table 2.1.

Table 2.1 Documents reviewed

DOCUMENT TYPE	DOCUMENT NUMBER
Methodology document	Vector SAIDI HSE Methodology DRAFT V1.0.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V3.0.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V3.0 updated.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V4.0.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V5.0.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V7.0.docx
Methodology document	Vector SAIDI HSE Methodology DRAFT V7.0 comments removed.docx

DOCUMENT TYPE	DOCUMENT NUMBER
Spreadsheet	Copy of RY17_Data_Consolidated.xlsx
Spreadsheet	Copy of RY18_Data_Consolidated.xlsx
Spreadsheet	Examples RY17 & RY18 - Log details.xlsx (includes event #: 2984, 3533, 3233, 6087, 6671, 4334, 5845, 4213)
Spreadsheet	Examples with additional details.xlsx (includes event #: 6087, 6561, 4334, 6271, 3503, 5845, 4213, 6452)
Spreadsheet	RY16-19 SAIDI Assessment Worked Examples.xlsx (includes event #: 7984, 8013, 9868, 8412, 1293, 9810)

## 2.3 KEY FINDINGS

Our review was undertaken through several iterations of the methodology document. During this process we identified areas where the clarity and completeness of the Methodology could be improved. Based on the final version of the Methodology reviewed, WSP found that:

- the approach taken to review the outages and to determine the adjustment to SAIDI and SAIFI were reasonable based on the information provided.
- the assumptions and inputs to the Methodology for calculating the SAIDI and SAIFI adjustments were reasonable and are accurately explained.
- appropriately experienced and skilled staff were utilised by Vector to undertake the assessment of individual outages.
- the Methodology faithfully reflected the process implemented in the example calculations provided.
- the appropriate definitions have been used for planned and unplanned SAIDI and SAIFI, including normalisations.
- the appropriate exclusions for each of the scenarios considered reflected historical practices have been applied for identifying eligible outages.
- an appropriate quality assurance process was established for validating each of the documented adjustments.
- a selection of examples that were initially provided did not comply with the Methodology exclusion criteria as they related to live line outages at night. These were discussed with Vector and were clarified to be for demonstration purposes only and were not included in the SAIDI/SAIFI adjustment calculations.

We consider that this review was based on sufficient information, including additional information that was requested to provide clarification or evidence.

# 3 CONCLUSION

Based on the procedures performed and the evidence provided during our review, WSP concludes that:

- the Methodology results in a reasonable quantification of the incremental change in the SAIDI and SAIFI incurred as a result of changes to Vector’s work practices due to the introduction of the Health and Safety at Work Act 2015,
- the assumptions and inputs used for each of the four scenarios were reasonable, and
- the approach taken by Vector was accurately articulated in the Methodology document.

WSP considers that the Methodology applied is reasonable and fit for purpose.



## 4 LIMITATIONS

The scope of this review excluded any review or audit of the data or calculations of the proposed adjustments. Vector noted that its SAIDI and SAIFI information is expected to be audited and certified by an independent auditor and this process will also audit the quantification of adjustments due to the health and safety regulation changes.

WSP did not assess whether it was valid for each of the four scenarios discussed in the Methodology to be excluded from the disclosed SAIDI and SAIFI, only that if it is appropriate to exclude the scenario, the Methodology to calculate the SAIDI and SAIFI adjustment was reasonable.

In preparing this report, WSP has relied upon documents, data, reports and other information provided by third parties. Except as otherwise stated in the report, WSP has not verified the accuracy or completeness of the information. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in this report are based in whole or part on the information, those conclusions are contingent upon the accuracy and completeness of the information provided. WSP will not be liable in relation to incorrect conclusions should any information be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP. The assessment and conclusions are indicative of the situation at the time of preparing the report. Within the limitations imposed by the scope of services and the assessment of the data, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable consultants under similar circumstances. No other warranty, expressed or implied, is made.