

ESV Validation Report

AusNet Services 2017-2018
Fire Start Report

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Introduction

Background

The Victorian Governor in Council made the Order In Council for the F-Factor Scheme Order 2016 under section 16C of the *National Electricity (Victoria) Act 2005*. This was gazetted on 22 December 2016.

The F-factor scheme is managed by the Australian Energy Regulator (AER). Section 7 of the Order In Council identifies that the AER may request Energy Safe Victoria (ESV) to validate the fire start reports submitted to the AER by the Distribution Network Service Providers. Each fire start report will have an individual validation report.

The Order In Council stipulates that each Distribution Network Service Provider (DNSP) will provide a fire start report to the AER by 30 September each year. The Order In Council also stipulates that, if requested by the AER, ESV will provide a validation report to the AER by 30 November each year.

The Order In Council also identifies that the AER may refer any submissions regarding the validation reports to ESV in order to provide a revised validation that responds to the submissions by 15 February in the following year.

Request from the AER

On 27 September 2018, the AER provided ESV with the AusNet Services 2017-2018 fire start report for validation. This comprised the following documents:

- | | |
|--|-------------------|
| • SOP 30-05 F Factor Regulatory Reporting | PDF document |
| • Statutory Declaration | PDF document |
| • Attachment 1 - FY18 Ffactor RIN AusNet Services (final) post audit | Excel spreadsheet |
| • Attachment 2 - WSP - F-factor Audit Report - Final - Watermark Removed | PDF document |

These documents consider the AusNet Services distribution system separately from other systems managed by the service provider.

The AER advised ESV that, where necessary for the purposes of validation, ESV should seek additional information directly from the DNSPs. This is in line with clause 7(4) of the Order In Council. Where additional information was sought, ESV ensured that the AER was copied into any correspondence.

Validation process

While the scope of the fire start report and the validation process are detailed in the Order In Council (as outlined below), the approach to be undertaken in assessing the accuracy of information provided is not specified. This section describes the process that ESV applied to the validation assessment; the results are provided later in this report.

Scope

In reviewing the information provided in a DNSP's fire start report, clause 7(3) of the Order In Council stipulates that ESV's validation report:

- (b) must include an assessment of the accuracy of the information provided in the fire start report pursuant to clauses 6(3)(d)-(f) and (h), specifically;
- (c) must verify the estimate of the ignition risk unit (IRU) amount for the financial year provided under clause 6(3)(g).

These specific items are detailed in clause 6(3) of the Order In Council, which states that a DNSP's fire start report must, among other things:

- (d) if the Distribution Network Service Provider is the service provider in relation to more than one distribution system, distinguish between distribution systems;
- (e) list all fire starts for a financial year, stating in each case and where known;
 - (i) what kind of fire start it was;
 - (ii) the date, time and latitude and longitude for each fire;
 - (iii) the unique identification number of the pole and polyphase electric line nearest to the fire start;
 - (iv) the voltage of the electric line in which the ignition occurred;
 - (v) the estimated value of the fire start expressed in IRUs, calculated in accordance with this Order;
- (f) state whether the fire was reported to a relevant entity;
- (g) calculate the total IRU amount for the financial year on the basis of the information contained in the fire start report, in accordance with this Order;
- (h) include such other information as the AER may from time to time specify;

Clause 6(3) of the Order In Council also requires that the DNSP's fire start report:

- (i) include an independent audit of the fire start report undertaken by an external auditor;
 - (i) stating, in the auditor's opinion, whether the information contained in the fire start report is accurate and reliable; and
 - (ii) which is acceptable to the AER.

Methodology applied

For its validation assessment, ESV broke these items into the two categories:

- IRU-specific factors

These comprise those factors within the fire start report that are directly relevant to the calculation of the IRUs for the incident. Specifically these are the date, time and latitude and longitude for the fire and the distribution business' estimate of the IRUs for the fire [items (e)(ii) and (e)(v) in the Order In Council].

- Non-IRU factors

These comprise all other information reported in the fire start report [items (e)(i), (e)(iii) and (e)(iv)].

A more detailed analysis was undertaken of the IRU-specific factors than of the non-IRU factors.

ESV validated the DNSP fire start reports as follows:

- *Preliminary review*

The purpose of the preliminary review was to determine that the information provided to ESV was complete and in a satisfactory form for ESV to undertake its validation analysis.

ESV started by reviewing the documentation provided by the AER to ensure that all relevant information was provided and readable.

The DNSP's fire start spreadsheet was then subject to a preliminary, high-level review to ascertain whether there were any obvious issues with the information contained therein. If the preliminary review identified any issues, ESV would contact the DNSP so that the DNSP could provide an updated spreadsheet.

- *Completeness assessment*

The purpose of the completeness assessment was to determine whether:

- all fires in the DNSP's fire start report are listed as fires in OSIRIS¹
- all network-related fires listed in OSIRIS are included in the DNSP's fire start report.

Where there were differences identified, ESV contacted the DNSP to confirm the reasons for the difference.

The DNSP then provided a rationale for the differences and, where there was a change to the information in the fire start spreadsheet, the DNSP provided an updated spreadsheet reflecting any changes and, in some instances, additional supporting information.

We reviewed the rationale and information subsequently provided by the DNSP to confirm we were satisfied with the reasons for the inclusion or exclusion of specific incidents.

- *Comparative analysis — IRU-specific factors*

The purpose of the comparative analysis of IRU-specific factors was to identify any material differences between the information reported by the DNSP in its fire start report and through OSIRIS. In determining materiality, ESV considered whether:

- any differences in the location were sufficient to result in a change to the location multiplier being applied to the fire start
- any differences in the location were sufficient to result in an incorrect CFA region being used for determining the applicable Fire Danger Rating for the fire start
- any differences in the date and time were sufficient to result in an incorrect Fire Danger Rating being applied to the fire start.

Where potentially material differences were identified, ESV contacted the DNSP to confirm the reasons for the differences.

The DNSP then provided a rationale for the differences and, where there was a change to the information in the fire start spreadsheet, the DNSP provided an updated spreadsheet reflecting any changes and, in some instances, additional supporting information.

We reviewed the rationale and information subsequently provided by the DNSP to confirm we were satisfied with the rationale and information provided.

¹ OSIRIS is ESV's incident reporting portal for the major electricity companies to report details of any serious electrical incidents to ESV. These incidents include a range of events that include fires involving network assets.

- *Comparative analysis — non-IRU factors*

The purpose of the comparative analysis of non-IRU factors was to identify any differences between the information reported by the DNSP in its fire start report and through OSIRIS.

Where differences were identified, ESV identified these in this validation report. The DNSP was able to comment on these differences in its response to the draft validation report.

Following the validation process, ESV then used the final data to calculate an IRU amount for each fire start. We then compared these against the IRU amounts provided by the DNSP, and a total IRU amount was calculated.

Caveats

The following caveats apply to the validation process and the contents and findings of this report:

- *Accuracy of the fire start data*

The validation process involves the comparison of two data sets — the DNSP's fire start report and incident data reported by the DNSP via ESV's OSIRIS. Where there are differences between the data reported in these two data sets, ESV has not sought to ascertain which data set provide the true and accurate record of each fire start for the purposes of this report beyond a desktop assessment.

ESV can only attest that the data provided in the fire start report is appropriate for the purposes of calculating the total IRU amount. The information provided in the DNSP's fire start report should not be used for other purposes without further analysis of the data to verify it is fit for such purposes.

- *Validation against third-party sources*

ESV has not sought to validate or verify the data in the DNSP's fire start report in its entirety against third-party sources such as the Country Fire Authority (CFA) and Melbourne Metropolitan Fire Brigade (MFB).

This is not deemed to be a significant limitation on the validation process as any fires involving network assets should be reported by the CFA/MFB to the DNSP and these are, in turn, reportable to ESV.

Individual records may have been subject to confirmation with the CFA and/or MFB on a case-by-case basis. If this has occurred, it is noted within the report.

- *Independent verification of fire starts*

ESV does not have the resources available to routinely undertake independent assessments of the DNSP's electricity network in order to ascertain whether the DNSP identifies all incidents, including fires. As such, the fire starts may be under-reported; however, we are confident that the number of such incidents is small and that no significant fires could have gone unreported.

Similarly ESV has not undertaken an independent audit of the DNSP's records to ensure their accuracy. In this regard, we have relied on this being undertaken as part of the independent audit commissioned by the DNSP, the details of which were submitted as part of the fire start report.

Accuracy of information provided

ESV undertook an assessment of the accuracy of the information provided in the AusNet Services fire start report in accordance with clause 7(3)(b) of the Order In Council. The following sections outline the findings of the assessment.

Further details regarding the specific incidents reported in the fire start report are available upon request.

Preliminary review

Upon receipt of AusNet Services' documentation, we undertook a preliminary review to ensure that all the required documents had been provided to ESV and that the fire reporting spreadsheet had no obvious issues with regard to incomplete or incorrect data.

No high-level issues were identified with the documentation provided by AusNet Services.

Completeness assessment

We compared the records provided in the AusNet Services fire start spreadsheet with those available from ESV's OSIRIS incident reporting portal. This comparison was undertaken to assess the completeness of the fire start report, with specific attention paid to identifying any records missing from either data set or classified differently between the data sets.

The analysis identified four incidents where there were differences between the AusNet Services fire start report and ESV's OSIRIS records. Details are provided in Table 1.

ESV wrote to AusNet Services on 23 October seeking clarification regarding these differences.

Later that day, AusNet Services provided a response to each of the incidents. One incident involved the wrong OSIRIS incident number being used in the fire start report, which arose from the incident being reported twice in OSIRIS and confusion between ESV and AusNet Services as to which version had been deleted. AusNet Services reviewed the current OSIRIS incident report to ensure all details were correct as part of its response. The other three were initially reported in OSIRIS as possible fires but were found, on further investigation, to not have involved more than overheating only.

AusNet Services did not provide an updated fire start spreadsheet at this time. The single change was incorporated into the fire start report issued subsequent to the comparative analysis of IRU-specific factors (see below). In the interim, ESV amended its copy of the fire start report to note the correct OSIRIS incident number.

Table 1: Variations between the fire start report and OSIRIS

OSIRIS report	Included in report	Listed as fire in OSIRIS	Comment
20170713SPN_02	No	Yes	<p>This incident was listed in OSIRIS as fire, but not included in fire start report.</p> <p>Two separate OSIRIS reports had been lodged for the same incident (20170713SPN_02 and 20171025SPN_01), This had been identified by AusNet Services at the time and it had requested that 20171025SPN_01 be deleted as a duplicate. Due to confusion in communications, AusNet Services had been led to believe that 20170713SPN_02 had been deleted instead of 20171025SPN_01.</p> <p>Neither incident report had noted a fire had occurred, but the incident involved a candled fuse and this event would have involved a flame being present. Internal review by AusNet Services had identified that this was an f-factor reportable event, and included 20171025SPN_01 in its fire start report.</p> <p>The OSIRIS report was re-opened for AusNet Services to update. The fire start report was subsequently updated to reflect the change in OSIRIS incident number.</p>
20180215SPN_04 20180226SPN_07 20180626SPN_02	No	Yes	<p>Incidents were listed in OSIRIS as possible fires. Upon further investigation by AusNet Services, fires were found not to be present as part of these incidents.</p> <p>The OSIRIS reports were re-opened for AusNet Services to update.</p>

Comparative analysis — IRU-specific factors

We compared the location (latitude and longitude) and timing (date and time) of each record in the fire start report with the record of the same incident in OSIRIS.

As we recognised that errors may be introduced into the location data due to rounding errors and other system-induced errors, we rounded all latitudes and longitudes to five decimal places to reduce the impact of such errors on the analysis.

We then checked the location area (used to determine the location multiplier) and the CFA fire district (used to determine the danger multiplier) using and DNSP and OSIRIS location data to ascertain whether these differed from the fire start report. As such, we only consider those differences in location that were material to the calculation of the IRU amount.

In undertaking its analysis, ESV focused on those records where the differences could materially affect the IRU calculated for the fire start.

ESV applied the following tests to determine if the differences between the data sets could be material:

- **Test 1** : Is the difference in coordinates sufficient that a change in location may result in a change to the location multiplier?

The location area for each fire start was determined based on the coordinates in the fire start report and OSIRIS. This was done by identifying the location areas in which the coordinates were sited. If these differed from the location areas listed in the fire start report, the incident was investigated in more detail to identify the cause of the difference. Where necessary, the incident was referred back to the DNSP for further clarification.

- **Test 2** : Does the Fire Danger Rating applicable at the location and time for a record differ when based on the information specified in the fire start report and in OSIRIS?

The Fire Danger Rating is dependent on the location of the fire (which CFA region the fire occurred in) and the time of the fire (what was the applicable Bureau of Meteorology Fire Danger Rating at the time of the fire).

The CFA region for each fire start was determined based on the coordinates in the fire start report and OSIRIS. This was used to look up the Fire Danger Rating for that region in the spreadsheet of ratings available from the EM-COP website at the listed date and time of the fire.

The Fire Danger Rating was determined based on the coordinates and times in the fire start report and OSIRIS. If these differed from the ratings listed in the fire start report, the incident was investigated in more detail to identify the cause of the difference. Where necessary, the incident was referred back to the DNSP for further clarification.

Using these two tests, we identified 11 incidents where the differences in information have the potential to materially affect the IRU for the incident. All were associated with the location data; none was associated with the date and time data. ESV then reviewed each of these 11 incidents in detail. In six instances, ESV's investigation concurred with the location data provided by AusNet Services.

ESV wrote to AusNet Services on 21 November seeking clarification of the remaining five items. AusNet Services provided an initial response to ESV on 23 November 2018. Table 2 provides details of the items raised, AusNet Services' response and ESV's conclusion. These conclusions were communicated to AusNet Services on 23 November 2018, and AusNet Services provided a finalised fire start report on 26 November 2018.

Table 2: Material differences the fire start report

OSIRIS report	Amend OSIRIS	Amend fire start report	ESV and AusNet Services commentary
20171219SPN_03	Yes	No	<p>There is a significant difference in the locations listed in the fire start report and OSIRIS. The two locations are approx. 4 km apart.</p> <p>AusNet Services advised that the coordinates in the fire start report were correct and that OSIRIS would be updated accordingly.</p> <p>ESV's review of aerial photography for the area would concur with AusNet's conclusion.</p>
20180417SPN_01	Yes	Yes	<p>The address provided was "1415 LOCH-WONTHAGGI ROAD, GLEN ALVIE VIC 3979" but the coordinates are for "950 GLEN ALVIE ROAD, GLEN ALVIE VIC 3979".</p> <p>There is an understandable error as GoogleMaps lists this location as being on the Loch-Wonthaggi Road despite being located well away from that road.</p> <p>AusNet Services has amended the OSIRIS records to reflect the correct address.</p>
20180319SPN_01	Yes	Yes	<p>The address for this fire is in Healesville yet the coordinates in the fire start report are situated in Warburton.</p> <p>AusNet Services advised that the error arose in the transposition of numbers in the asset identification numbers, and this carried through to the incorrect coordinates being listed. The fire start report was amended to reflect the correct asset identification number and coordinates.</p>
20180319SPN_08	No	Yes	<p>The location provided appears to be in a <i>HBRA only</i> zone rather than the higher risk zone listed in the fire start report. ESV sought advice from AusNet Services as to how they had determined the location area.</p> <p>AusNet Services advised that, upon review, it determined that the location area had been incorrectly determined. The location area in the fire start report was amended to <i>HBRA only</i>.</p>
20180628SPN_01	No	Yes	<p>The location provided appears to be in an <i>LBRA only</i> zone rather than the higher risk zone listed in the fire start report based on the fire start report coordinates (Figure 1). The OSIRIS coordinates would place the fire in the higher risk zone; however, these are located at the nearest property and not at the asset. ESV sought advice from AusNet Services as to where the asset is located and how they had determined the location area.</p> <p>AusNet Services provides a map showing the asset location relative to the Electric Line Construction Areas zones (Figure 1). AusNet Services also advised that it used these zones for F-factor purposes, but that there may be anomalies where there are areas currently classified as LBRA by the CFA.</p>

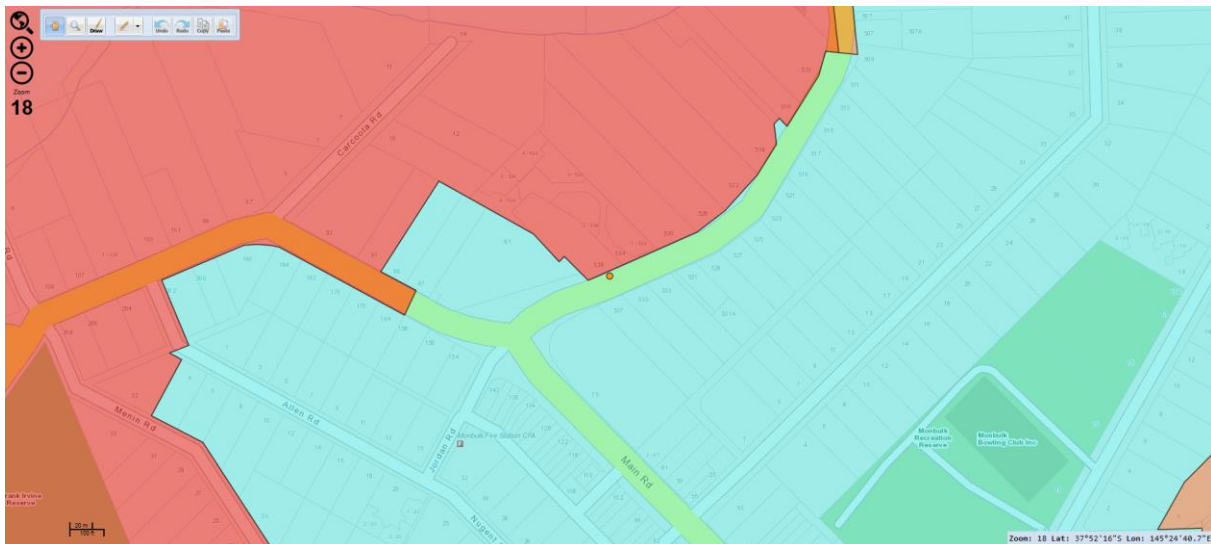


Figure 1: Incident location relative to the F-factor boundaries

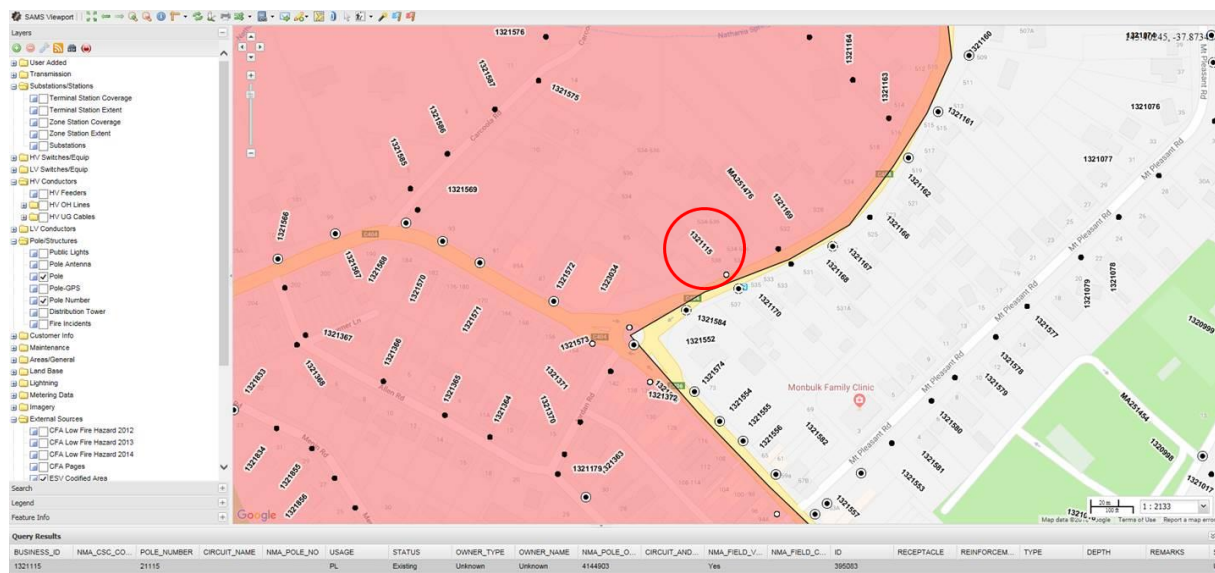


Figure 2: Location of the asset as shown in the AusNet Services GIS system

In its response to 26 November 2018, AusNet Services noted that it had applied the location area based on the electric line clearance areas (ELCA) and that that its understanding was that, when initially designed, the ELCA would subdivide the HBRA across the state. In its final form, there are areas of overlap of LBRA with the ELCA; however, AusNet Services has chosen to report the location area based on the ELCA and only report a location as being within LBRA if it does not sit within the ELCA.

ESV's position is that, under clause 11.1(b)(i) of the F-factor Order In Council, the first consideration is whether the "fire occurred in an area that is not a hazardous bushfire risk area" (that is, LBRA) and only then consider the ELCA zone in which the fire is located. In the case of 20180628SPN_01, ESV would classify the location as being within LBRA rather than "in an area delineated on plan LEGL/16-354" in the Central Plan Office.

Before conclusively determining that this incident is in an LBRA area, it would be prudent to undertake further analysis on the maps used by AusNet Services and ESV to confirm:

- the sources of the datasets
- the currency of the datasets
- their accuracy against the maps held in the Central Plan Office.

It would also be useful to have the AER provide advice on their interpretation of the F-factor Order-In-Council to ensure that ESV has applied the Order-In-Council appropriately. An advisory note could then be issued to all DNSPs clarifying how the Order In Council should be interpreted.

Comparative analysis — non-IRU factors

ESV undertook a comparison of the data in the AusNet Services fire start report and OSIRIS related to:

- the pole and polyphase electric line identification numbers
- the voltage of the electric line
- the kind of fire start.

A direct comparison was made of the details of the pole and line identification numbers and line voltage in the fire start report and OSIRIS. This did not require any subjective assessment. The comparison identified six incidents with differences between the fire start report and OSIRIS. Of these, five related to typographic errors in either data set and one where the data was different between the data sets. Table 3 provides a breakdown of these findings.

Details from OSIRIS were used to determine whether the kind of fire start had been correctly identified. This involved a subjective assessment of the information.

The assessment of the kind of fire identified 90 fire starts where ESV would have classified the fire differently to AusNet Services. This included 86 incidents where AusNet Services classified the incidents as “otherwise started by a distribution system” and ESV classified these as “started in or originated from a distribution system”. The classifications are essentially interchangeable and ESV’s accepts the classifications applied by AusNet Services.

These remaining four incidents were:

- Incident 20170904SPN_02

AusNet Services classified this incident as “otherwise started by a distribution system”, but ESV’s review identified that this incident was “started by any person, bird, reptile or other animal coming into contact with a distribution system”. AusNet Services has been conservative in attributing this to the failure of a fuse in the absence of definitive proof that the dead cockatoo found at the site was responsible. ESV is willing to accept the probability that interference from the cockatoo was the cause of the fuse fire.

- Incident 20180214SPN_04

AusNet Services classified this incident as “otherwise started by a distribution system”, but ESV’s review identified that this incident was “started by lightning striking a distribution system or a part of a distribution system”. In reporting this incident in OSIRIS, AusNet Services noted the cause as a candled fuse; however, the description of the incident noted that the faults crew believed that lightning had struck this location in the previous week.

- Incident 20180219SPN_01

AusNet Services classified this incident as “otherwise started by a distribution system”, but ESV’s review identified that this incident was “started by lightning striking a distribution system or a part of a distribution system”. In reporting this incident in OSIRIS, AusNet Services noted the cause as a candled fuse; however, the description of the incident indicated that a lightning strike had caused the lightning arrester to fail and this cause mal-operation and candling of the fuse.

- Incident 20180319SPN_03

AusNet Services classified this incident as “otherwise started by a distribution system”, but ESV’s review identified that this incident was “started by lightning striking a distribution system or a part of a distribution system”. In reporting this incident in OSIRIS, AusNet Services noted that lightning had struck the pole causing the pole to split and the crossarm and wires to become dislodged.

None of the differences in pole and line identification numbers, voltages or classification of kind of fire start had a material impact on the total IRU calculation.

No consultation was held with AusNet Services regarding these differences.

Table 3: Variations in pole id, line id and voltage

OSIRIS report	Cause of the variation		
	typographic error	different data	data not in OSIRIS
20170830SPN_01		line id	
20171020SPN_01	line id		
20171114SPN_03	line id		
20171129SPN_02	line id		
20180215SPN_01	line id		
20180319SPN_01	pole id		

Verification of the IRU amount

Following the validation of individual records, ESV compiled any changes to the fire start records and assigned the corresponding location and danger multipliers. The individual and total IRU amounts were then calculated.

We then compared our location and danger multipliers with those of AusNet Services to determine whether AusNet Services had correctly assigned the multipliers for each fire start. There were no differences in the multipliers or IRU amount except for one incident. Table 4 shows the changes to the multipliers and IRU amounts.

As part of the validation process, ESV identified differences in the fire start report that had a material impact on the total IRU amount and that required AusNet to issue an amended fire start report. The total IRU amount of 268.60 reported in the initial fire start report (*Attachment 1 - FY18 Ffactor RIN AusNet Services (final) post audit.xlsx*) needed to be amended as a result.

The final AusNet Services fire start report (*FY18 Ffactor RIN AusNet Services Resubmission 20181126.xlsx*) reports a total IRU amount of 227.60. Applying the further changes identified in Table 4 and discussed on page 13, ESV recommends that the total IRU amount should be further amended from 227.60 to 226.62.

Table 4: Amendments to multipliers and IRU amounts

cells in orange show where the differences were found

Fire start no.	OSIRIS report	DNSP fire start report			OSIRIS data		
		danger multiplier	location multiplier	IRU amount	danger multiplier	location multiplier	IRU amount
148	20180628SPN_01	0.1	19.8	1.0	0.1	0.2	0.02

Conclusion

As noted earlier, the Order In Council stipulates that this validation report:

- (b) must include an assessment of the accuracy of the information provided in the fire start report pursuant to clauses 6(3)(d)-(f) and (h), specifically:
- (c) must verify the estimate of the ignition risk unit (IRU) amount for the financial year provided under clause 6(3)(g).

Table 7 identifies where these items have been assessed within this report and summarises the key findings of the validation assessment.

Table 7: Summary of findings

Statistic	Relevant report section	Key findings
Clause 6(3)(d)	Request from AER	The fire start report addressed the AusNet Services distribution system separately from other systems managed by the service provider.
Clause 6(3)(e)(i)	Comparative analysis — non-IRU factors	There were 90 differences between the assessment of the fire type made by AusNet Services and that made by ESV. Of these, 86 related to the application of similar classifications and four were due to differences in the classification of events. These differences were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(ii)	Comparative analysis — IRU-specific factors	There were no material differences in the date and time of incidents in the AusNet Services fire report. There were eleven differences that were potentially material to the calculation of the total IRU amount. Further investigation reduced this four incidents — three required amendment by AusNet Services and one is still under discussion. In the latter case, the concern is not the location of the incident but the appropriate location rating that should be applied in calculating the IRU amount. AusNet Services has erred on the side of conservatism in the rating has applied. This is the reason for the proposed change in total IRU amount below.
Clause 6(3)(e)(iii)	Comparative analysis — non-IRU factors	There was one difference between the fire start report and OSIRIS in relation to pole identification number. There were five differences between the fire start report and OSIRIS in relation to polyphase electric line identification number. These differences were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(iv)	Comparative analysis — non-IRU factors	There were no differences between the fire start report and OSIRIS in relation to voltage of the line involved in the fire.
Clause 6(3)(e)(v)	Verification of IRU amount	The total IRU amount provided in the fire start report (<i>FY18 Ffactor RIN AusNet Services Resubmission 20181126.xlsx</i>) needs to be amended from 227.60 to 226.62.
Clause 6(3)(f)	Completeness assessment	AusNet Services had reported all fires to ESV as the relevant entity.