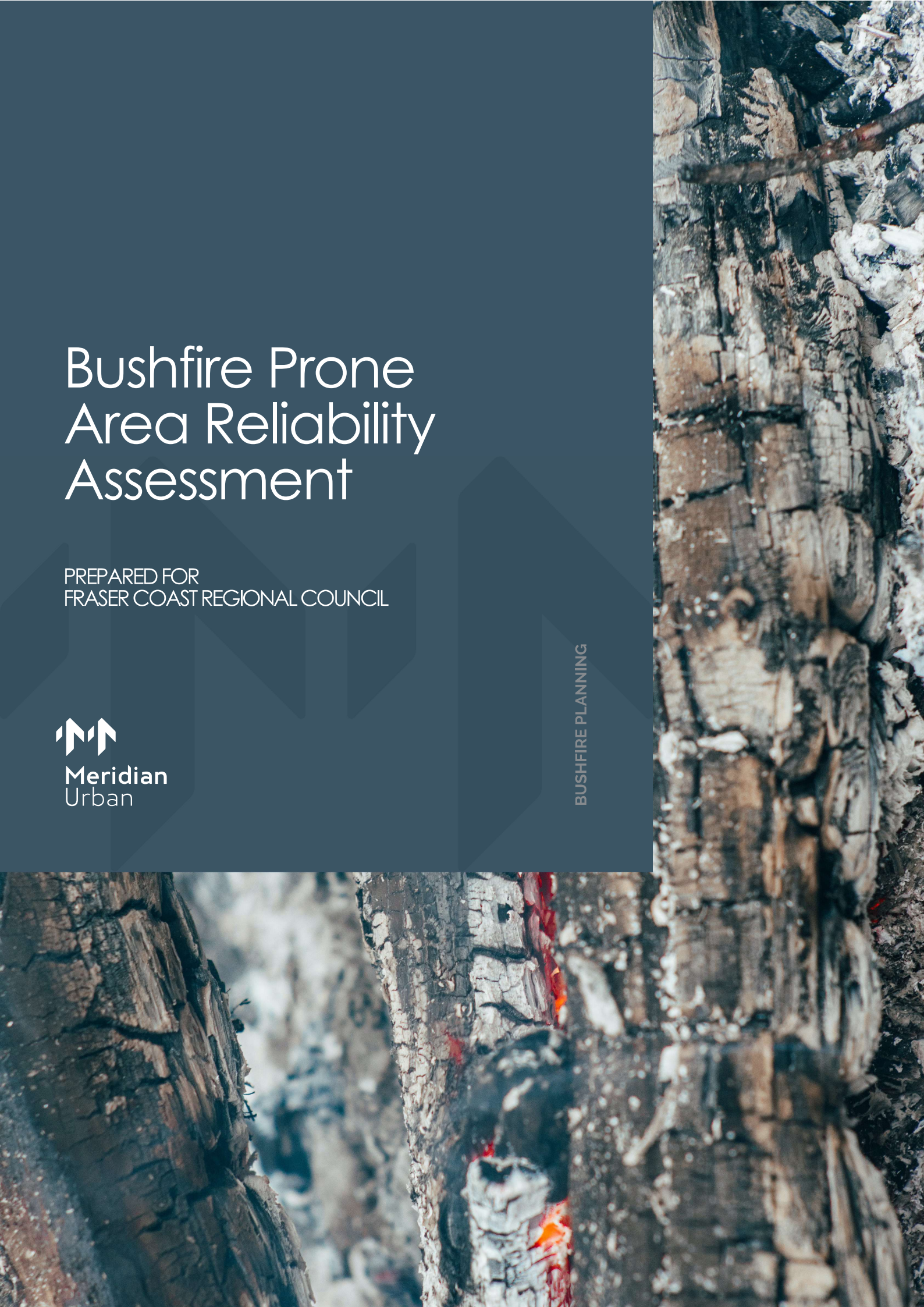
Bushfire Prone Area Reliability Assessment

PREPARED FOR
FRASER COAST REGIONAL COUNCIL

Meridian Urban

BUSHFIRE PLANNING



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The Client agrees that the Consultant shall have no liability in respect of any damage or loss incurred as a result of bushfire.

Fraser Coast Regional Council

Bushfire Prone Area Reliability Assessment

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1 Introduction

Meridian Urban have been engaged by Fraser Coast Regional Council to prepare this Bushfire Prone Area Reliability Assessment (herein referred to as the 'Reliability Assessment').

The intent of the assessment is to ascertain the reliability of the state-wide Bushfire Prone Area (BPA) mapping within the Fraser Coast Regional Council area as per the requirements of State Interest Policy 1 of the Natural hazards, risk and resilience State Interest as it relates to bushfire hazard. The state-wide BPA mapping was prepared for the Wide Bay Burnett Queensland Region in July 2014.

The Reliability Assessment has been undertaken in accordance with the approved methodology established at Part 4 of the *Bushfire Resilient Communities* technical reference guide prepared by Queensland Fire and Emergency Services (QFES) which forms part of the State Planning Policy guidance materials.

2 Background

2.1 Policy Setting

The State Planning Policy identifies natural hazards (including bushfire) as a state interest and seeks to 'ensure natural hazards are properly considered in all levels of the planning system'. State Interest Policy 1 (under the natural hazards, risk and resilience State interest) requires that bushfire prone areas be identified in planning and development outcomes.

In 2014 the CSIRO in conjunction with QFES, released the 'New Methodology for State-wide Mapping of Bushfire Prone Areas in Queensland'. An addendum to this was released in 2017, 'Estimating the Potential Bushfire Hazard of Vegetation Patches and Corridors: An enhancement of Queensland's methodology for State-wide mapping of bushfire prone areas'. This methodology underpins the fire science which is incorporated into current state-wide BPA mapping. This mapping is also regularly updated, including a soon to be released 2017 version for the Wide Bay Burnett region.

The state-wide mapping methodology has been subject to peer review processes and has been found to be highly accurate, yielding an estimated 85 per cent level of accuracy. The methodology maps and categorises bushfire prone areas based upon potential fireline intensity (kW/m). To determine the potential-fire line intensity, the Potential Fuel Load (PFL) (derived from the Vegetation Hazard Class (VHC)), landscape slope and MacArthur Mk 5 Forest Fire Danger Meter (FFDI) are used as inputs (refer to Figure 2-1).

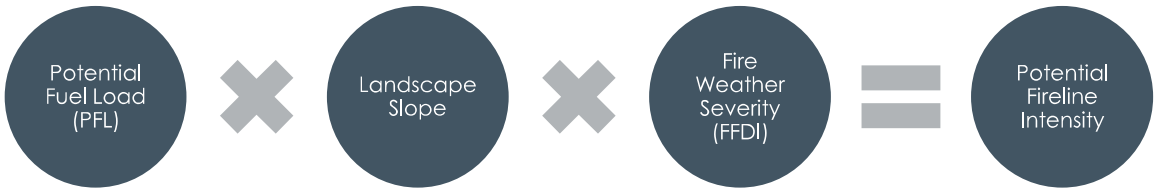


Figure 2-1: Mapped inputs required to determine potential fireline intensity (Source: adapted from Leonard et al., 2014)

The mapping has categorised bushfire prone areas into three hazard classes: medium, high and very high potential bushfire intensity based on their potential fireline intensity (Table 2-1). In addition, a 100 metre 'potential impact buffer area' is included around all land mapped as medium, high or very high potential impact buffer. This 100m buffer replicates the approach under AS3959:2018 – Construction of Buildings in Bushfire Prone Areas as being the zone in which ember attack and radiant heat remain most relevant, adjacent to the actual hazard.

Table 2-1: Potential bushfire intensity classes and corresponding potential fireline intensity ranges (Source: Leonard et al., 2014)

Potential Bushfire Intensity Class	Potential Fireline Intensity
Very high (potential intensity)	>40,000kW/m
High (potential intensity)	20,000 – 40,000kW/m
Medium (potential intensity)	4,000 – 20,000kW/m

In order to satisfy the requirements of State Interest Policy 1 of the Natural hazards, risk and resilience State interest, this Reliability Assessment seeks to verify the suitability of the state-wide BPA mapping for the Fraser Coast Regional Council area. The Reliability Assessment will consider the above identified inputs when determining the reliability of the existing mapping.

2.2 IGEM Queensland Bushfire Reviews

In response to the November and December 2018 bushfires, on 6 December 2018 the Honourable Craig Crawford MP, Minister for Fire and Emergency Services requested the independent Inspector General of Emergency Management (IGEM) review the effectiveness of the Queensland disaster management system in its preparation and response to the bushfires and the associated heatwave.

The 2018 Queensland Bushfires Review was released in July 2019 and found that the firefighting response to Queensland's unprecedented bushfires was exceptional. However, concluded that there is scope for improvements identifying the need:

- to work together to manage the risk of intense fires;
- to convey the risk, and the best information about it, to the community; and
- for the disaster management system to adapt when the hazard needs the technical capability of a large hazard-specific agency to respond to the disaster.

(Inspector-General Emergency Management, 2019)

The 2018 Queensland Bushfires Review incorporates 23 recommendations to guide future actions with a focus on heatwave arrangements, science and risk, mitigation and compliance, intelligence and technology, public information and warnings and agency coordination.

Whilst none of the 23 recommendations are strictly relevant for bushfire prone area mapping, the review did acknowledge that leading up to the bushfires experienced during the 2018 to 2019 bushfire season, Queensland experienced sustained drought conditions, with below average rainfall and above average temperatures which led to far below normal soil moisture values. This was coupled with a large pool of hot air which formed in the southwest of Queensland prior to November 2018, which was carried through to the central coast. During this time, a number of maximum temperature records were broken, with the number of records set in November over multiple days and areas being unprecedented.

While heatwave conditions do not in themselves define extreme fire weather, they do provide several of the ingredients that contribute to it, and there is some indication that the frequency of heatwaves has increased in recent decades. With one or two exceptions, most of the bushfire events were preceded by drought and occurred during heatwaves.

The 2018 Queensland Bushfire Review notes that the science behind these extreme fire weather conditions and understanding the lessons from bushfire events improves the understanding of bushfire risk. Further to this is utilising current intelligence and technology capabilities and outputs (i.e. predictive scenario modelling, traffic evacuation modelling, etc.). Therefore, through the land use planning lens this means for example, there should be a consideration of the science that leads to catastrophic fire weather conditions and the risk, including the use of current intelligence and technology, to identify bushfire prone areas and the respective risk to life, property and infrastructure from the bushfire prone areas (Inspector-General Emergency Management, 2019).

The K'gari (Fraser Island) Bushfire Review was released in 2021 with a focus on the preparedness and response to the K'gari bushfire event, noting its significant impact and duration. The review identified the need to better understand fuel loads on K'gari, noting the different approaches and ways of classifying vegetation that exist among different agencies and bodies. In this regard, it was identified the need to improve collaboration between agencies with regard to fuel load and vegetation mapping. The opportunity to utilise capabilities that exist within the Rural Fire Service and Queensland Parks and Wildlife Service to inform fit-for-purpose data was also identified.

3 Methodology

Section 4.3 of *Bushfire Resilient Communities* provides guidance for undertaking a review of the bushfire prone area mapping. This Reliability Assessment has been undertaken in accordance with that guidance. The following section provides an overview of the methodology used to undertake the assessment.

3.1 Reliability Assessment

Step 1 – Selection of 'cells of interest'

A total of 45 1 kilometre x 1 kilometre 'cells of interest' were selected across the local government area. The cells of interest were randomly and subjectively selected to form the following two sample sets:

- Sample set (a) – randomly selected cells to confirm the reliability of mapping across the local government area (35 cells of interest in total)
- Sample set (b) – subjectively selected (non-random) cells in the following 'focus areas' (10 cells of interest in total):
    - Tinana
    - Maryborough
    - Booral
    - Dundowran
    - Takura
    - Burrum Heads
    - Wondunna
    - Maaroom
    - Tuan Forest
    - Fraser Island

4 x 200 metre diameter circular assessment areas were identified within each 'cell of interest'. Through the selection process, it was ensured that all bushfire prone area sub-categories formed part of the assessment as well as areas outside of the identified bushfire prone area. Accordingly, the following areas comprised the assessment:

- Very high potential bushfire intensity
- High potential bushfire intensity
- Medium potential bushfire intensity
- Potential impact buffer
- Outside mapped bushfire prone area

Step 2 – Assess and record the reliability of the bushfire prone area and VHC mapping

The reliability of the BPA mapping was assessed within each circular assessment area by a desktop assessment. The desktop assessment considered the comparison of mapped inputs and verified inputs. For the purposes of this assessment, mapped inputs refers to original data inputs that were utilised to develop the state-wide BPA mapping and verified inputs refers to datasets that have been updated since the development of the state-wide BPA mapping.

The table below provides a summary of data inputs and sources utilised as part of the Reliability Assessment.

Table 3-1: Reliability Assessment data inputs and sources

Data Input	Source
Mapped Vegetation Hazard Class (VHC)	QSpatial catalogue "Bushfire prone area – Wide Bay Burnett".

Data Input	Source
Locally Verified Regional Ecosystem Mapping	Provided directly from Fraser Coast Regional Council. This layer included Regional Ecosystem classes which were converted to an applicable VHC utilising a manual conversion method based of the Remnant Regional Ecosystem (version 12.1) dataset.
Mapped and verified Potential Fuel Load (PFL)	Calculated based off the VHC and by referring to 'Vegetation hazard class descriptions and 80th percentile potential fuel load' within Section 6 of the *Bushfire Resilient Communities* technical reference guide.
Maximum Landscape Slope (MLS)	QSpatial catalogue "Bushfire hazard area – Bushfire prone area – inputs – Queensland".
Fire weather severity (FFDI)	QSpatial catalogue "Bushfire hazard area – Bushfire prone area – inputs – Queensland".
Mapped and verified fireline intensity	Calculated utilising the Potential Bushfire Intensity Calculator provided by QFES.
Mapped Bushfire Prone Area (BPA)	QSpatial catalogue "Bushfire prone area – Wide Bay Burnett".
2017 Bushfire Prone Area (BPA)	Provided directly from QFES in draft format and based off 2017 methodology update.
Fraser Coast Area Fire Management Group Bushfire Risk Mitigation Plan	Fraser Coast Regional Council

To determine the reliability of the mapped BPA, the assessment considered the accuracy of the mapped inputs against the verified inputs as well as the resulting fireline intensity which was calculated for each assessment area.

Furthermore, the spatial accuracy of the BPA and VHC mapping was also reviewed by utilising aerial photography obtained from Queensland Globe to determine the extent to which mapped boundaries coincided with the extent of vegetation and land uses. Where vegetation was identified in recent aerial imagery as being cleared, this was identified as leading to a non-satisfactory result.

In order to record the reliability of the mapping, each assessment area was assessed as either being satisfactory (S) or not satisfactory (N). This assessment was based on the following criteria:

- Satisfactory (S):
    - Mapped boundaries coincide with the extent of vegetation or land use boundaries evident on aerial photography to within 25 metres (and occasionally 50 metres); and
    - The quantified fireline intensity (based on the spatial information) matched the mapped fireline intensity.
- Not satisfactory (N):

- Mapped boundaries differ from current vegetation and land use boundaries by greater than 50 metres; and
- The quantified fireline intensity (based on the spatial information) does not match the mapped fireline intensity.

It should be noted that as the BPA mapping is completed at the 'landscape' scale it should be expected that a level of 'smoothing' of the data would occur to account for local/discreet variances. As the reliability assessment is conducted within 200 metre diameter areas it may not necessarily account for this 'smoothing' and therefore differences in the resultant fireline intensity may occur. Accordingly, further assessment was undertaken to consider such matters where differences occurred and this was taken in to account when determining the reliability of the BPA mapping.

QFES undertook draft BPA mapping within the Wide Bay Burnett region in 2017 based off updated mapping inputs and the updated methodology to account for patch and corridor filtering. This mapping has not been adopted and is not publicly available however, has been provided by QFES for the purposes of this project. The 2017 mapping was utilised as a point of comparison however, the reliability assessment has been conducted off the 2014 BPA mapping which is provided on the State-wide Integrated Mapping System (IMS).

Step 3 – Tally of reliability results

Based off the above assessment, the reliability of the mapping was tallied. This is provided in Section 4 of this report.

Step 4 – Suitability of mapping

In order to determine the suitability of the bushfire prone area mapping, *Bushfire Resilient Communities* provides guidance that, generally, a reliability of 90 per cent or greater is considered suitable. The suitability of the mapping is considered in Section 3 of this report.

3.2 Engagement

Engagement was undertaken with the following bodies throughout this project:

- Fraser Coast Regional Council
- Queensland Fire and Emergency Services (QFES)

3.3 Limitations and Assumptions

The following assumptions and limitations apply to this Reliability Assessment:

- The Reliability Assessment has been conducted using a desktop assessment only. No field assessment was undertaken.
- The assessment is largely based off spatial information that has been obtained from the Queensland Spatial Catalogue and the Queensland Fire and Emergency Service (QFES). A detailed list of data sources is provided at Table 3-1 above. As this assessment has been completed as a desktop assessment only, the outcomes of the assessment rely upon the reliability of the spatial information made available at the time of completing the assessment.
- The Reliability Assessment utilises static Fire Weather Severity (Forest Fire Danger Index (FFDI)) data. It is noted that locations within the local government area may experience days of higher fire weather severity than that utilised in the assessment.
- The 2017 BPA provided by QFES are in draft format. This implies that the dataset can be subject to future alternations before public release.

4 Reliability Assessment

The Reliability Assessment considered a total of 45 1 kilometre x 1 kilometre 'cells of interest', comprising 35 randomly selected (sample set (a)) and 10 subjectively selected (sample set (b)) cells. The total number of cells selected meets the requirements as specified under the *Bushfire Resilient Communities* and is considered appropriate having regard to the local landscape within Fraser Coast Regional Council.

Within each cell four 200 metre diameter circular assessment areas were identified resulting in a total of 180 assessment areas being considered as part of this assessment. A detailed copy of the reliability assessment is provided at **Appendix B**. Mapping, identifying the location of the 'cells of interest' is provided at **Appendix C**.

4.1 Sample set (a)

Sample set (a) comprised 35 randomly selected cells with a total of 140 assessment areas (four assessment areas within each cell). The cells were randomly selected across the extent of the local government area.

The 140 assessment areas spanned all categories of the BPA, including the potential impact buffer. As the assessment areas were fixed within each cell of interest, the assessment also included a small number of areas that were outside of the mapped BPA. It is considered that the proportion of BPA categories encapsulated by the assessment (as represented in Figure 4-1 below) is indicative of the nature of the BPA mapping within Fraser Coast region.

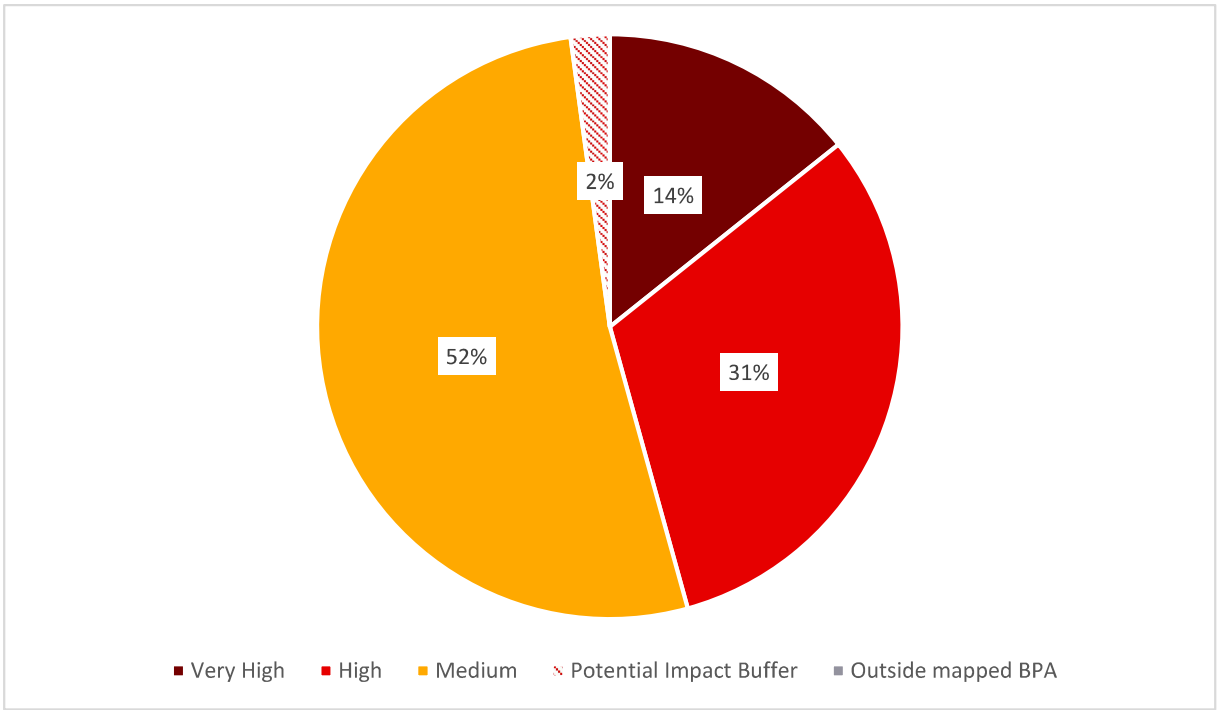


Figure 4-1: Breakdown of categories of BPA mapping which assessment areas included in sample set (a)

A summary of the mapped boundaries assessment completed as part of the broader reliability assessment is provided in Table 4-1 below and discussed in further detail following.

Table 4-1: Mapped boundaries assessment results for sample set (a)

	Mapped Boundaries Assessment
Total Samples	140
Satisfactory	123
Not Satisfactory	17
Score	87.9%

A comparison of the mapped boundaries of the BPA mapping to recent and available aerial imagery was undertaken. This assessment identified that on 17 of 140 occasions (12.1 per cent) the mapped boundaries of the BPA mapping did not align with underlying vegetation as shown in aerial imagery.

It is acknowledged that due to the static nature of the BPA mapping, there may be some instances where a not satisfactory result is determined due to land being cleared following the development of the mapping. This is particularly prevalent within plantation areas which are subject to regular clearing. Mapped boundary irregularities within plantations accounted for 14 of 17 not satisfactory scores. However, it is noted that due to the unique circumstances associated with plantations, it is not considered that irregularities in mapped boundaries in these locations should result in a not satisfactory reliability estimate where the vegetation will return to the underlying VHC.

Overall, the reliability of the BPA mapping in terms of its alignment with aerial imagery was assessed at 87.9 per cent. When plantations are excluded, the mapped boundaries assessment is recorded at 97.9 per cent.

In terms of the reliability of the BPA mapping itself, of the 140 assessment areas assessed as part of sample set (a), 9 were determined to be not satisfactory (6.4 per cent). As demonstrated in Table 4-2 below, **the overall reliability of sample set (a) was assessed as 93.6 per cent**. Further discussion regarding the reliability assessment findings is provided in the following section.

Table 4-2: BPA reliability assessment results for sample set (a)

BPA Reliability Assessment	
Total Samples	140
Satisfactory	131
Not Satisfactory	9
Reliability Score	93.6%

4.2 Sample set (b)

Sample set (b) comprised 10 subjectively selected cells with a total of 40 assessment areas (four assessment areas within each cell). The cells were selected with consideration to areas of interest for Council, including development growth areas and isolated communities. Council has also undertaken verification of Regional Ecosystem mapping in certain areas across the region. Cells were selected within these areas also where the Regional Ecosystem mapping was converted to VHC's (using the QFES manual conversion methodology) to verify the BPA mapping.

Sample set (b) spanned most categories of the BPA, including the potential impact buffer. It is noted that there were no cells within the very high potential bushfire intensity area. This is considered to be a factor of the subjective selection of the cells being within predominately peri-urban areas. The breakdown of categories of BPA mapping considered in sample set (b) is included in the below figure.

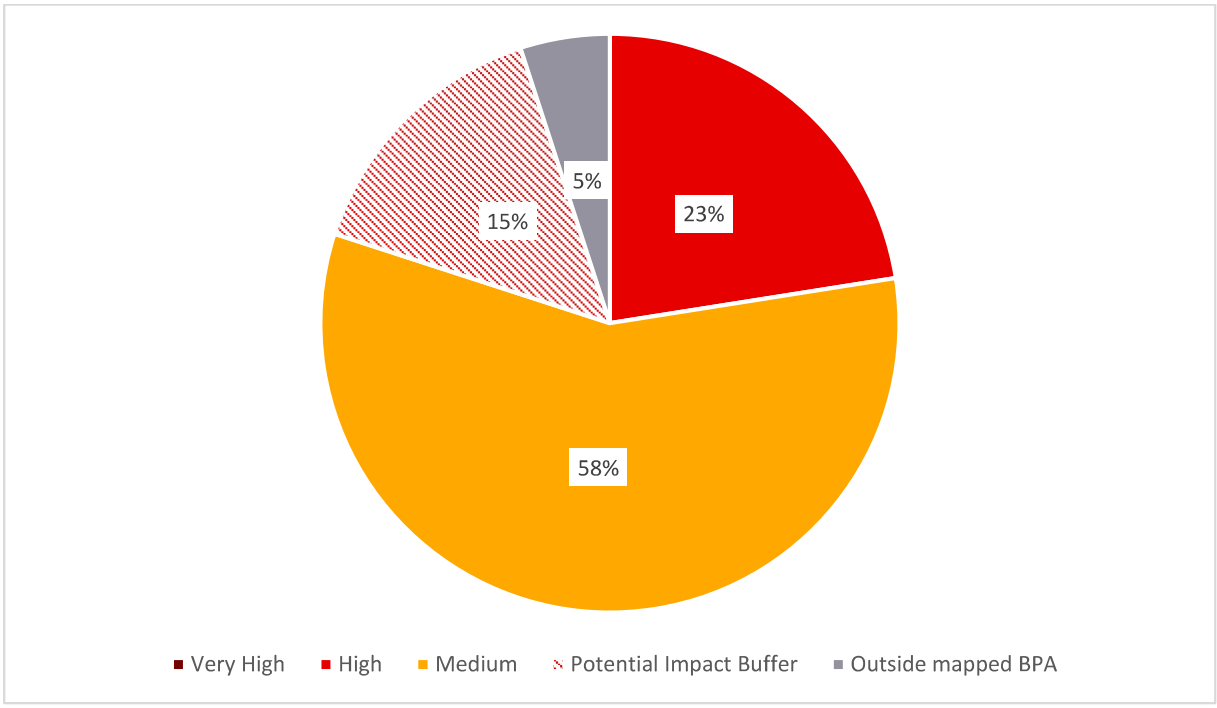


Figure 4-2: Breakdown of categories of BPA mapping which assessment areas included in sample set (b)

A summary of the VHC and mapped boundaries assessment completed as part of the broader reliability assessment for sample set (b) is provided in Table 4-3 below and discussed in further detail following.

Table 4-3: VHC and mapped boundaries assessment results for sample set (b)

	VHC Reliability Assessment	Mapped Boundaries Assessment
Total Samples	22	40
Satisfactory	16	31
Not Satisfactory	6	9
Score	72.7%	77.5%

An assessment of VHC's was able to be undertaken in certain areas based off Council's verified Regional Ecosystem mapping. Where a verified VHC was able to be ascertained, a different VHC was observed within 6 of the 22 assessment areas (27.3 per cent). Where a different VHC was observed, this resulted in a lower potential fuel load and subsequent downgrade in fireline intensity in 5 of 6 (83.33 per cent) occasions. However, on no occasion did the altered fireline intensity altered the mapped BPA hazard class. Table 4-4 provides a summary of changes in VHC observed through the reliability assessment. Overall, the reliability of the VHC mapping for sample set (b) was assessed at 72.7 per cent.

Table 4-4: Changes in VHC observed through reliability assessment for sample set (b)

Mapped VHC (PFL)		Verified VHC (PFL)	
9.1	Moist to dry eucalypt open forests on coastal lowlands and ranges (24.2 t/ha)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges (17.2 t/ha)
10.1	Spotted gum dominated open forests (20.8 t/ha)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges (17.2 t/ha)
16.1	Eucalyptus dominated forest on drainage lines and alluvial plains (16.0 t/ha)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges (17.2 t/ha)
22.1	Melaleuca open forests on seasonally inundated lowland coastal swamps (28.4 t/ha)	29.2	Woodlands associated with heathlands, scrubs and shrublands (24.3 t/ha)

A comparison of the mapped boundaries of the BPA mapping to recent and available aerial imagery was undertaken. This assessment identified that on 9 of 40 occasions (22.5 per cent), the mapped boundaries of the BPA mapping did not align with underlying vegetation as shown in the aerial imagery.

Overall, the reliability of the BPA mapping in terms of its alignment with aerial imagery was assessed at 77.5 per cent.

In terms of the reliability of the BPA mapping itself, of the 40 assessment areas assessed as part of sample set (b), 9 were determined to be not satisfactory (22.5 per cent). As demonstrated in Table 4-5 below, **the overall reliability of sample set (b) was assessed as 77.5 per cent**. Further discussion regarding the reliability assessment findings is provided in the following section.

Table 4-5: BPA reliability assessment results for sample set (b)

BPA Reliability Assessment	
Total Samples	40
Satisfactory	31
Not Satisfactory	9
Reliability Score	77.5%

4.3 Overall assessment

Across both sample set (a) and sample set (b), a total of 45 cells of interest were assessed. These 45 cells comprised a total of 180 assessment areas. In terms of the reliability of the BPA mapping, of the 180 assessment areas, 18 were determined to be not satisfactory (10.6 per cent) and 162 were determined to be satisfactory (90 per cent). As demonstrated in the table below, **the combined BPA reliability was assessed as 90.0 per cent**.

Table 4-6: Combined BPA reliability assessment results

BPA Reliability Assessment	
Total Samples	180
Satisfactory	162
Not Satisfactory	18
Reliability Score	90.0%

5 Qualitative Assessment

As identified in the previous section, there were a total of 18 not satisfactory assessment areas which comprised 10 per cent of the assessment. In order to determine the drivers of the BPA mapping challenges, a qualitative assessment of the not satisfactory assessment areas has been undertaken.

5.1 Mapping challenges observed

The BPA mapping challenges can be broken down into the following topics which are discussed in further detail in this section:

- Mapped boundary – hazard areas missed
- Mapped boundary – incorrectly mapping areas as hazard
- Overestimation of hazard

5.1.1 Mapped boundary – hazard areas missed

Mapping boundary challenges, whereby the mapped bushfire prone area does not identify the full extent of potentially hazardous vegetation were observed on 11 occasions (61.11 per cent of all not satisfactory cells).

Mapping boundary challenges where the mapped bushfire prone area misses potentially hazardous vegetation were primarily identified in fragmented landscapes within rural residential or peri-urban settings. Namely, these challenges were identified in the following locations:

- Tin Can Bay
- Tuan Forest
- Tinana
- Booral
- Dundowran
- Burrum Heads
- Maaroom

When comparing the 2014 BPA mapping to the 2017 draft BPA mapping, it was identified that the 2017 draft mapping corrected the mapped boundary challenge and would have been considered satisfactory on 5 of the 11 occasions. The assessment also identified that locally verified regional ecosystem mapping improved the accuracy of vegetation mapping in peri-urban settings.

Where potential bushfire hazard is not identified within BPA mapping, an opportunity to regulate development to ensure it is designed and constructed in a bushfire resilient manner is potentially missed.

5.1.2 Mapped boundary – incorrectly mapping areas as hazard

There were 3 instances (16.67 per cent of all not satisfactory cells) where the BPA mapping identified an area as potential hazard however, the underlying vegetation had been cleared since the development of the BPA mapping and therefore removing the bushfire hazard from the area.

Due to the static nature of the BPA mapping, a degree of mapping boundary challenges whereby the underlying vegetation has been cleared should be expected. Such mapping

currency challenges can also be difficult to properly account for as it can sometimes be unclear whether the land is intended to be returned to a vegetated state or will remain managed / cleared into the future.

Such mapped boundary challenges were identified in the following locations:

- Boompa
- Booral
- Dundowran

When comparing the 2014 BPA mapping to the 2017 draft BPA mapping, it was identified that the 2017 draft mapping corrected the mapped boundary challenge and would have been considered satisfactory on 1 of the 3 occasions.

5.1.3 Overestimation of hazard

There were 4 instances where the verified fireline intensity resulted in a hazard classification that was lower than that represented by the BPA mapping. This resulted in an overestimation of hazard in these locations. In 2 of these instances, the 2017 draft BPA mapping would have been considered satisfactory as it correctly identified the appropriate hazard classification.

5.2 Other observations

5.2.1 Plantation challenges

The Fraser Coast region includes a number of areas that are utilised for plantations. Due to the evolving nature of plantations, hazard mapping should consider these areas at their highest fuel load. It is noted this is the same approach as is required when assessing vegetation as part of a Bushfire Management Plan.

There were 14 instances where BPA mapping was identified to not align with the current extents of vegetation in plantation areas due to recent clearing. For the purposes of this BPA reliability assessment, where this was observed, a satisfactory result was still recorded as it was considered appropriate for the area to be mapped within the BPA as the vegetation will eventually regrow.

5.2.2 Verified Regional Ecosystem mapping

VHC reliability estimates were able to be carried out on 22 cells due to the availability of the locally verified Regional Ecosystem mapping undertaken by Council in specific locations across the region. Utilising the manual conversion methodology calculator provided by QFES, the reliability of the input VHC data for the 2014 BPA mapping was assessed at 72.7 per cent.

While the verified RE mapping did alter fireline intensity on 6 occasions, in none of these instances was it significant enough to affect the BPA reliability estimate. However, it is noted that the verified RE mapping provided greater accuracy in terms of aligning with the boundaries of on-ground vegetation. There were 6 instances where the verified RE mapping would have corrected mapped boundary challenges.

5.2.3 Great Sandy Strait communities

The BPA reliability assessment included a number of cells within the isolated Great Sandy Strait communities including Maaroom and Tuan. The reliability assessment identified potentially significant challenges with the accuracy of the bushfire prone area mapping in these locations. Specifically, large areas of continuous vegetation have not been identified as bushfire prone.

The issue appears to arise from the VHC input which results in a fireline intensity that is likely too low for the nature of the vegetation class in this location. This results in a number of potentially significant fire runs being excluded from the BPA mapping.

Figure 5-1 below shows the 2014 bushfire prone area mapping in the areas surrounding Maaroom. As is demonstrated, there are large areas of continuous vegetation that are not identified within the bushfire prone area mapping. This presents as a strategic level issue of the BPA mapping.

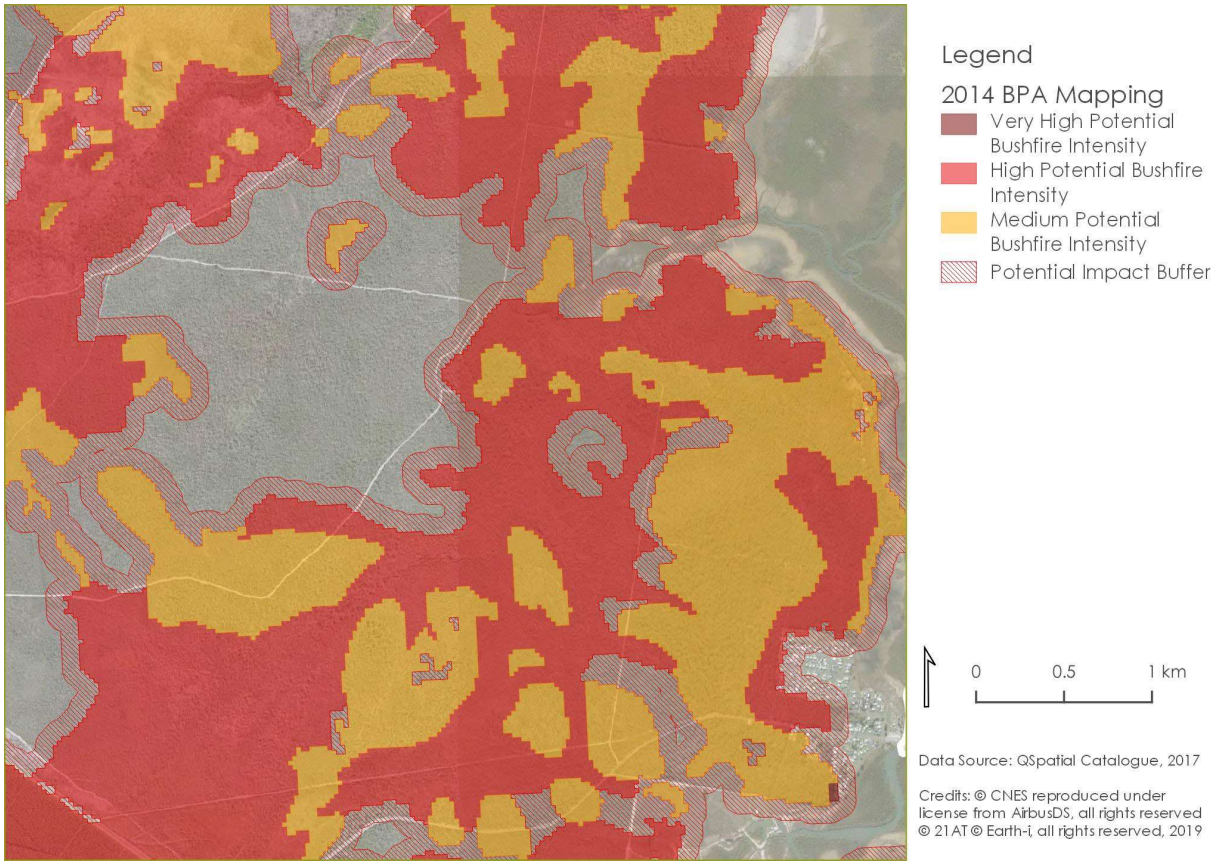


Figure 5-1: 2014 mapped bushfire prone area around Maaroom

As identified in the figure below, it is noted that while the 2017 draft BPA mapping differs from the 2014 mapping, it does not resolve the issue in this location.

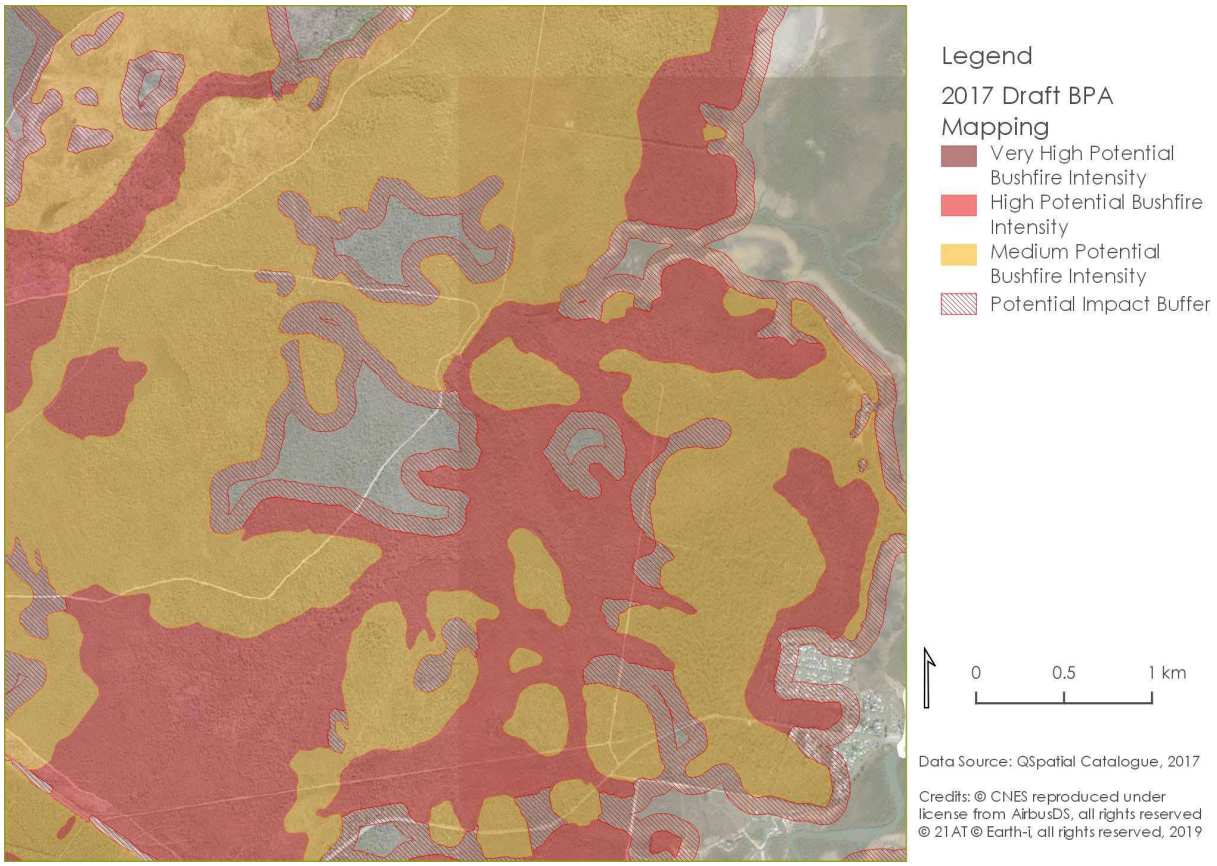


Figure 5-2: 2017 draft BPA mapping around Maaroom

6 Suitability Assessment and Considerations

6.1 Assessment of suitability

This Bushfire Prone Area Reliability Assessment has been undertaken for the purposes of determining the suitability of the state-wide BPA mapping for land use planning purposes within the Fraser Coast region. As per the methodology for undertaking local government review of the state-wide BPA mapping as outlined by *Bushfire Resilient Communities* technical reference guide, the reliability of sample set (a) is utilised for considering the suitability of the mapping.

As identified within this report, the sample set (a) assessment recorded a reliability of 93.6 per cent. With reference to the guidance provided in the *Bushfire Resilient Communities* technical reference guide, where a reliability of 90 per cent or greater returned, the Bushfire Prone Area mapping is considered suitable for the preparation of local government planning schemes and other strategic planning decisions.

Accordingly, based on the Reliability Assessment and with reference to the *Bushfire Resilient Communities* technical reference guide, the **state-wide Bushfire Prone Area mapping is considered suitable without local refinement**.

6.2 Considerations for local refinement and further assessment

While the bushfire prone area mapping is considered suitable for land use planning purposes, Council may wish to consider local refinement of BPA mapping and further assessment of bushfire risk in certain locations.

The use of the state-wide BPA mapping should be considered within the following contexts:

- The level of reliability needed for the purposes of incorporation in a planning scheme as an overlay
- The level of reliability to inform a fit-for-purpose risk assessment.

Council may wish to consider utilising the verified Regional Ecosystem mapping to locally refine the BPA mapping in locations where this has been undertaken. While the verified Regional Ecosystem mapping did not alter the hazard classification, the mapped boundaries were identified to represent on-ground vegetation more closely.

It is noted that a number of mapping boundary challenges were identified within areas where RE verification had been undertaken. As such, by using the verified Regional Ecosystem mapping as an input to locally refine BPA mapping in specific locations, it is likely to improve the accuracy of the mapping.

In addition to the above, the BPA reliability assessment identified potentially significant shortcomings of the BPA mapping within the Great Sandy Strait communities. It is considered that these communities may be subject to high bushfire risk. Council may consider undertaking a fit-for-purpose risk assessment to fully consider the risk to these communities from bushfire.

7 Conclusion

This Bushfire Prone Area Reliability Assessment has been undertaken to determine the suitability of the state-wide Bushfire Prone Area mapping for land use planning purposes in accordance with the requirements of State Interest Policy 1 of the Natural hazards, risk and resilience State Interest as it relates to bushfire hazard.

The Reliability Assessment was undertaken in accordance with the approved methodology established at Part 4 of the Bushfire Resilient Communities technical reference guide. The Reliability Assessment determined that the state-wide BPA mapping has a reliability of 93.6 per cent and is therefore considered suitable for the preparation of local government planning schemes and other strategic planning decisions.

This assessment also included a qualitative assessment of not satisfactory assessment areas and observed that challenges exist for BPA mapping in peri-urban and fragmented landscapes. The assessment also identified potentially significant shortcomings with BPA mapping in the Great Sandy Strait communities.

APPENDICES

Meridian Urban

Appendix A - Reliability Assessment

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Dunmora	1	1	A	High	Yes	1	49	36.1	N/A	N/A	26.0	N/A	22,004	22,004	High	High	S	
Dunmora	1	2	A	High	Yes	1	49	36.1	N/A	N/A	26.0	N/A	22,004	22,004	High	High	S	A small area of medium potential bushfire hazard is located within this cell in the 2014 version however, aerial imagery does not indicate any change in vegetation type that would warrant such a change. It occurs where a trail cross the land however the balance of the trail is not subject to same reduced hazard mapping. More areas of the trail are reduced hazard in the 2017 version, likely due to the patch and corridor filtering process however, the width of the trail is not sufficiently wide to warrant changes in the mapping. Notwithstanding, it is not considered that the changes in BPA classification would affect the functionality of the mapping or have a significant impact on its accuracy in this location.
Dunmora	1	3	A	High	Yes	0	49	36.1	N/A	N/A	26.0	N/A	20,537	20,537	High	High	S	
Dunmora	1	4	A	High	Yes	2	49	36.1	N/A	N/A	26.0	N/A	23,573	23,573	High	High	S	
Tuan Forest	2	1	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	
Tuan Forest	2	2	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	
Tuan Forest	2	3	A	High	Yes	3	47	36.1	N/A	N/A	26.0	N/A	24,229	24,229	High	High	S	
Tuan Forest	2	4	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	
Burgowan	3	1	A	Medium	Yes	1	49	9.2	N/A	N/A	17.2	N/A	9,630	9,630	Medium	Medium	S	
Burgowan	3	2	A	Medium	Yes	2	49	9.2	N/A	N/A	17.2	N/A	10,318	10,318	Medium	Medium	S	
Burgowan	3	3	A	Medium	Yes	0	49	16.1	N/A	N/A	16.0	N/A	7,777	7,777	Medium	Medium	S	
Burgowan	3	4	A	Medium	Yes	1	49	9.2	N/A	N/A	17.2	N/A	9,630	9,630	Medium	Medium	S	
Duckinwilla	4	1	A	Medium	Yes	3	49	9.2	N/A	N/A	17.2	N/A	11,055	11,055	Medium	Medium	S	
Duckinwilla	4	2	A	Medium	Yes	1	49	9.2	N/A	N/A	17.2	N/A	9,630	9,630	Medium	Medium	S	Cell is mostly in FFDI 49. Partly in FFDI 50.
Duckinwilla	4	3	A	Medium	Yes	3	50	9.2	N/A	N/A	17.2	N/A	11,280	11,280	Medium	Medium	S	Cell includes a small portion of VHC 16.1 in north-eastern portion. Majority of cell is 9.2. No change in BPA based on different VHC.
Duckinwilla	4	4	A	Medium	Yes	3	49	9.2	N/A	N/A	17.2	N/A	11,055	11,055	Medium	Medium	S	
Gootchie	5	1	A	Medium	Yes	3	47	13.2	N/A	N/A	14.4	N/A	7,432	7,432	Medium	Medium	S	
Gootchie	5	2	A	Potential Impact Buffer	Yes	3	47	40.4	N/A	N/A	5.0	N/A	836	836	High	Potential Impact Buffer	S	Whilst the fireline intensity of the 2014 version appears appropriate and therefore satisfactory, the verification against the 2017 version is unsatisfactory. This area appears to be used for grazing having regard to 2022 aerial imagery however, the 2017 BPA transitions this area from potential impact buffer (2014 BPA) to High potential bushfire hazard. The grasslands are mapped as a higher hazard than the vegetated forest that adjoins. The justification for this change is unclear. This area requires further consideration by Council and QFES.
Gootchie	5	3	A	Medium	Yes	2	47	13.2	N/A	N/A	14.4	N/A	6,937	6,937	Medium	Medium	S	
Gootchie	5	4	A	Potential Impact Buffer	Yes	5	47	40.4	N/A	N/A	5.0	N/A	1,029	1,029	High	Potential Impact Buffer	S	Whilst the fireline intensity of the 2014 version appears appropriate and therefore satisfactory, the verification against the 2017 version is unsatisfactory. This area appears to be used for grazing having regard to 2022 aerial imagery however, the 2017 BPA transitions this area from potential impact buffer (2014 BPA) to High potential bushfire hazard. The grasslands are mapped as a higher hazard than the vegetated forest that adjoins. The justification for this change is unclear. This area requires further consideration by Council and QFES.
Boompa	6	1	A	Very High	Yes	25	50	9.2	N/A	N/A	17.2	N/A	51,473	51,473	High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation. The 2017 mapping lowers the fireline intensity in this cell, likely a function of slope.
Boompa	6	2	A	Very High	Yes	35	50	9.2	N/A	N/A	17.2	N/A	102,622	102,622	Very High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Boompa	6	3	A	Very High	Yes	30	50	9.2	N/A	N/A	17.2	N/A	72,679	72,679	Very High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Boompa	6	4	A	Very High	Yes	30	50	9.2	N/A	N/A	17.2	N/A	72,679	72,679	Very High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Fraser Island	7	1	A	Very High	Yes	8	46	8.1	N/A	N/A	35.0	N/A	60,676	60,676	Very High	Very High	S	
Fraser Island	7	2	A	Very High	Yes	5	46	8.1	N/A	N/A	35.0	N/A	49,331	49,331	Very High	Very High	S	

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Fraser Island	7	3	A	Very High	Yes	3	46	8.1	N/A	N/A	35.0	N/A	42,972	42,972	High	Very High	S	The 2017 BPA maps this cell as High hazard however, fireline intensity calculations maintain a Very High potential bushfire hazard which is consistent with the 2014 BPA mapping.
Fraser Island	7	4	A	Very High	Yes	13	46	36.1	N/A	N/A	26.0	N/A	47,278	47,278	Very High	Very High	S	VHC appears incorrect, this area is not a plantation. This has little influence on the mapped outcome however the input data is inaccurate.
Tiaro	8	1	A	Medium	Yes	3	48	12.2	N/A	N/A	17.4	N/A	11,082	11,082	Medium	Medium	S	
Tiaro	8	2	A	Medium	Yes	4	48	12.2	N/A	N/A	17.4	N/A	11,874	11,874	Medium	Medium	S	
Tiaro	8	3	A	Medium	Yes	3	48	12.2	N/A	N/A	17.4	N/A	11,082	11,082	Medium	Medium	S	
Tiaro	8	4	A	Medium	Yes	3	48	12.2	N/A	N/A	17.4	N/A	11,082	11,082	Medium	Medium	S	
Burgowan	9	1	A	Medium	Yes	1	48	16.1	N/A	N/A	16.0	N/A	8,163	8,163	Medium	Medium	S	
Burgowan	9	2	A	Medium	Yes	0	48	9.2	N/A	N/A	17.2	N/A	8,804	8,804	Medium	Medium	S	
Burgowan	9	3	A	Medium	Yes	1	48	9.2	N/A	N/A	17.2	N/A	9,433	9,433	Medium	Medium	S	
Burgowan	9	4	A	Medium	Yes	1	48	9.2	N/A	N/A	17.2	N/A	9,433	9,433	Medium	Medium	S	
Aramara	10	1	A	Medium	Yes	5	49	10.1	N/A	N/A	20.8	N/A	18,559	18,559	Medium	Medium	S	
Aramara	10	2	A	Medium	Yes	4	49	10.1	N/A	N/A	20.8	N/A	17,321	17,321	Medium	Medium	S	
Aramara	10	3	A	High	Yes	6	49	10.1	N/A	N/A	20.8	N/A	19,884	19,884	Medium	Medium	S	The verified BPA hazard classification is 'Medium' which is lower than the 2014 BPA mapping which is 'High'. Spatial smoothing in BPA mapping is likely to account for hazard intensity class, straddling the threshold between Medium and High. The 2017 version is more consistent with the fireline intensity calculations.
Aramara	10	4	A	High	Yes	6	49	10.1	N/A	N/A	20.8	N/A	19,884	19,884	Medium	Medium	S	The verified BPA hazard classification is 'Medium' which is lower than the 2014 BPA mapping which is 'High'. Spatial smoothing in BPA mapping is likely to account for hazard intensity class, straddling the threshold between Medium and High. The 2017 version is more consistent with the fireline intensity calculations.
Bauple Forest	11	1	A	Medium	Yes	9	47	9.2	N/A	N/A	17.2	N/A	16,041	16,041	Medium	Medium	S	
Bauple Forest	11	2	A	Medium	Yes	4	47	9.2	N/A	N/A	17.2	N/A	11,361	11,361	Medium	Medium	S	
Bauple Forest	11	3	A	Medium	Yes	5	47	9.2	N/A	N/A	17.2	N/A	12,172	12,172	Medium	Medium	S	
Bauple Forest	11	4	A	Medium	Yes	5	47	9.2	N/A	N/A	17.2	N/A	12,172	12,172	Medium	Medium	S	
Tuan Forest	12	1	A	High	Yes	1	47	22.1	N/A	N/A	28.4	N/A	25,182	25,182	High	High	S	
Tuan Forest	12	2	A	High	Yes	1	47	22.1	N/A	N/A	28.4	N/A	25,182	25,182	High	High	S	
Tuan Forest	12	3	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	
Tuan Forest	12	4	A	High	Yes	1	47	36.1	N/A	N/A	26.0	N/A	21,107	21,107	High	High	S	
Tin Can Bay	13	1	A	Medium	Yes	0	46	29.2	N/A	N/A	24.3	N/A	16,841	16,841	Medium	Medium	S	
Tin Can Bay	13	2	A	Medium	No	0	46	29.2	N/A	N/A	24.3	N/A	16,841	16,841	Medium	Medium	N	Mapped boundary challenge - hazard area missed. Small area of 2014 BPA omits hazard from the mapping. This is corrected in the 2017 BPA.
Tin Can Bay	13	3	A	Medium	Yes	0	46	29.2	N/A	N/A	24.3	N/A	16,841	16,841	Medium	Medium	S	
Tin Can Bay	13	4	A	Medium	No	0	46	29.3	N/A	N/A	20.1	N/A	11,522	11,522	Medium	Medium	N	Mapped boundary challenge - hazard area missed. Small area of 2014 BPA omits hazard from the mapping. This is corrected in the 2017 BPA.
Mount Urah	14	1	A	High	Yes	3	48	13.1	N/A	N/A	21.8	N/A	17,396	17,396	Medium	Medium	N	Overestimation of hazard. Small pockets of High potential bushfire hazard exist in the 2014 BPA which are removed in the 2017 BPA version.
Mount Urah	14	2	A	Medium	Yes	1	48	13.1	N/A	N/A	21.8	N/A	15,153	15,153	Medium	Medium	S	
Mount Urah	14	3	A	High	Yes	3	48	16.1	N/A	N/A	16.0	N/A	9,371	9,371	Medium	Medium	N	Overestimation of hazard. Small pockets of High potential bushfire hazard exist in the 2014 BPA which are removed in the 2017 BPA version.
Mount Urah	14	4	A	Medium	Yes	3	48	16.1	N/A	N/A	16.0	N/A	9,371	9,371	Medium	Medium	S	
St Mary	15	1	A	Medium	Yes	0	48	9.2	N/A	N/A	17.2	N/A	8,804	8,804	Medium	Medium	S	
St Mary	15	2	A	Medium	Yes	4	48	16.1	N/A	N/A	16.0	N/A	10,040	10,040	Medium	Medium	S	
St Mary	15	3	A	Medium	Yes	1	48	16.1	N/A	N/A	16.0	N/A	8,163	8,163	Medium	Medium	S	
St Mary	15	4	A	Medium	Yes	6	48	9.2	N/A	N/A	17.2	N/A	13,319	13,319	Medium	Medium	S	
Toolara Forest	16	1	A	High	Yes	3	47	36.1	N/A	N/A	26.0	N/A	24,229	24,229	High	High	S	
Toolara Forest	16	2	A	High	Yes	3	47	36.1	N/A	N/A	26.0	N/A	24,229	24,229	High	High	S	

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Toolara Forest	16	3	A	High	No	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Toolara Forest	16	4	A	High	No	3	47	36.1	N/A	N/A	26.0	N/A	24,229	24,229	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	17	1	A	High	Yes	0	47	36.1	N/A	N/A	26.0	N/A	19,699	19,699	Medium	Medium	S	2014 BPA mapping indicates High potential bushfire hazard, the 2017 BPA version maps this area as Medium potential bushfire hazard which is consistent with the fireline intensity calculation. Spatial smoothing in BPA mapping is likely to account for hazard intensity class, straddling the threshold between High and Medium.
Tuan Forest	17	2	A	Medium	No	1	47	9.2	N/A	N/A	17.2	N/A	9,237	9,237	Medium	Medium	N	Mapped boundary challenge - hazard area missed. 2014 BPA mapping indicates Medium potential bushfire hazard but omits a narrow fire trail which the 2017 BPA version incorporates.
Tuan Forest	17	3	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	Medium	High	S	2014 BPA mapping is verified as being High potential however, 2017 BPA mapping reduces the hazard class to Medium which does not align with the fireline intensity calculation.
Tuan Forest	17	4	A	High	Yes	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	Medium	High	S	2014 BPA mapping is verified as being High potential however, 2017 BPA mapping reduces the hazard class to Medium which does not align with the fireline intensity calculation.
Tuan Forest	18	1	A	High	Yes	1	47	36.1	N/A	N/A	26.0	N/A	21,106	21,106	High	High	S	
Tuan Forest	18	2	A	High	No	1	47	36.1	N/A	N/A	26.0	N/A	21,106	21,106	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	18	3	A	High	No	1	47	36.1	N/A	N/A	26.0	N/A	21,106	21,106	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	18	4	A	High	No	1	47	36.1	N/A	N/A	26.0	N/A	21,106	21,106	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	19	1	A	Potential Impact Buffer	No	4	47	21.2	N/A	N/A	8.7	N/A	2,907	2,907	Medium	Medium	N	Mapped boundary challenge - hazard area missed. 2014 VHC input appears inaccurate, fireline intensity is likely too low for the nature of vegetation class in this location. 2017 BPA version appears accurate.
Tuan Forest	19	2	A	High	No	1	47	36.1	N/A	N/A	26.0	N/A	21,106	21,106	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Tuan Forest	19	3	A	High	No	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	19	4	A	High	No	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Cherwell	20	1	A	Medium	Yes	0	50	9.2	N/A	N/A	17.2	N/A	9,171	9,171	Medium	Medium	S	
Cherwell	20	2	A	Medium	Yes	2	50	9.2	N/A	N/A	17.2	N/A	10,528	10,528	Medium	Medium	S	
Cherwell	20	3	A	Medium	Yes	1	50	29.3	N/A	N/A	20.1	N/A	13,419	13,419	Medium	Medium	S	
Cherwell	20	4	A	Medium	Yes	1	50	29.3	N/A	N/A	20.1	N/A	13,419	13,419	Medium	Medium	S	
Duckinwilla	21	1	A	Medium	Yes	1	50	12.2	N/A	N/A	17.4	N/A	10,056	10,056	Medium	Medium	S	
Duckinwilla	21	2	A	Medium	Yes	3	50	9.2	N/A	N/A	17.2	N/A	11,280	11,280	Medium	Medium	S	
Duckinwilla	21	3	A	Medium	Yes	1	50	9.2	N/A	N/A	17.2	N/A	9,826	9,826	Medium	Medium	S	
Duckinwilla	21	4	A	Medium	Yes	1	50	9.2	N/A	N/A	17.2	N/A	9,826	9,826	Medium	Medium	S	
Teebar	22	1	A	Medium	Yes	3	49	9.2	N/A	N/A	17.2	N/A	11,055	11,055	Medium	Medium	S	
Teebar	22	2	A	Medium	Yes	5	49	9.2	N/A	N/A	17.2	N/A	12,690	12,690	Medium	Medium	S	
Teebar	22	3	A	Medium	Yes	5	49	9.2	N/A	N/A	17.2	N/A	12,690	12,690	Medium	Medium	S	
Teebar	22	4	A	Medium	Yes	4	49	9.2	N/A	N/A	17.2	N/A	11,844	11,844	Medium	Medium	S	
Boompa	23	1	A	Very High	Yes	10	50	9.1	N/A	N/A	24.2	N/A	36,196	36,196	Medium	High	N	Overestimation of hazard. The 2014 BPA mapping does not align with the verified fireline intensity. The 2017 BPA mapping similarly does not align with the verified fireline intensity.
Boompa	23	2	A	Very High	Yes	9	50	9.1	N/A	N/A	24.2	N/A	33,782	33,782	Medium	High	N	Overestimation of hazard. The 2014 BPA mapping does not align with the verified fireline intensity. The 2017 BPA mapping similarly does not align with the verified fireline intensity.
Boompa	23	3	A	High	Yes	6	50	9.1	N/A	N/A	24.2	N/A	27,466	27,466	Medium	High	S	2017 BPA mapping reduces the hazard class to Medium however this does not align with the verified fireline intensity calculation. The verified fireline intensity is consistent with the 2014 BPA mapping.
Boompa	23	4	A	Very High	Yes	19	50	9.1	N/A	N/A	24.2	N/A	67,352	67,352	High	Very High	S	2017 BPA mapping reduces the hazard class to High however this does not align with the verified fireline intensity calculation. The verified fireline intensity is consistent with the 2014 BPA mapping.
Boompa	24	1	A	Very High	Yes	27	50	10.2	N/A	N/A	18.0	N/A	64,714	64,714	High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Boompa	24	2	A	Very High	Yes	18	50	10.2	N/A	N/A	18.0	N/A	34,778	34,778	High	High	S	
Boompa	24	3	A	Very High	Yes	29	50	10.2	N/A	N/A	18.0	N/A	74,290	74,290	Very High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Boompa	24	4	A	Very High	Yes	21	50	10.2	N/A	N/A	18.0	N/A	42,776	42,776	High	Very High	S	Fireline intensity calculations in locations with maximum landscape slope exceeding 20 degrees may be subject to anomalies and over-estimation.
Gigoomgan	25	1	A	Medium	Yes	9	48	9.2	N/A	N/A	17.2	N/A	16,383	16,383	Medium	Medium	S	Cell includes slopes up to 14 degrees however, this coincides with the High hazard area. Assessment is based off vegetation in medium hazard area.

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Gigoomgan	25	2	A	Medium	Yes	6	48	9.2	N/A	N/A	17.2	N/A	13,319	13,319	Medium	Medium	S	Cell includes slope up to 7 degrees however, this mostly coincides with the high hazard area. Assessment is based off vegetation in medium hazard area. There is some VHC 10.2 in the northern part of the cell but that does not coincide with boundary of change in hazard classification which appears to be driven by the slope.
Gigoomgan	25	3	A	Medium	Yes	4	48	10.2	N/A	N/A	18.0	N/A	12,707	12,707	Medium	Medium	S	
Gigoomgan	25	4	A	Medium	Yes	6	48	10.2	N/A	N/A	18.0	N/A	14,587	14,587	Medium	Medium	S	
Woocoo	26	1	A	Medium	Yes	6	49	10.2	N/A	N/A	18.0	N/A	14,891	14,891	Medium	Medium	S	
Woocoo	26	2	A	Medium	Yes	3	49	10.1	N/A	N/A	20.8	N/A	16,166	16,166	Medium	Medium	S	
Woocoo	26	3	A	Medium	Yes	2	49	10.1	N/A	N/A	20.8	N/A	15,089	15,089	Medium	Medium	S	
Woocoo	26	4	A	High	Yes	5	49	10.1	N/A	N/A	20.8	N/A	18,559	18,559	Medium	Medium	S	
Thinoomba	27	1	A	Medium	Yes	4	49	9.2	N/A	N/A	17.2	N/A	11,844	11,844	Medium	Medium	S	
Thinoomba	27	2	A	Medium	Yes	4	49	9.2	N/A	N/A	17.2	N/A	11,844	11,844	Medium	Medium	S	
Thinoomba	27	3	A	Medium	Yes	5	49	9.2	N/A	N/A	17.2	N/A	12,690	12,690	Medium	Medium	S	
Thinoomba	27	4	A	Medium	Yes	4	49	9.2	N/A	N/A	17.2	N/A	11,844	11,844	Medium	Medium	S	
Doongul	28	1	A	High	Yes	3	50	10.1	N/A	N/A	20.8	N/A	16,496	16,496	Medium	Medium	S	
Doongul	28	2	A	Medium	Yes	2	50	10.1	N/A	N/A	20.8	N/A	15,396	15,396	Medium	Medium	S	
Doongul	28	3	A	Medium	Yes	3	50	10.1	N/A	N/A	20.8	N/A	16,496	16,496	Medium	Medium	S	
Doongul	28	4	A	Medium	Yes	3	50	10.1	N/A	N/A	20.8	N/A	16,496	16,496	Medium	Medium	S	
Duckinwilla	29	1	A	High	No	0	49	36.1	N/A	N/A	26.0	N/A	20,537	20,537	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Duckinwilla	29	2	A	High	No	1	49	36.1	N/A	N/A	26.0	N/A	22,004	22,004	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Duckinwilla	29	3	A	High	No	1	49	36.1	N/A	N/A	26.0	N/A	22,004	22,004	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Duckinwilla	29	4	A	High	No	1	49	36.1	N/A	N/A	26.0	N/A	22,004	22,004	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Netherby	30	1	A	High	Yes	7	47	10.1	N/A	N/A	20.8	N/A	20,435	20,435	Medium	High	S	2014 BPA mapping indicates High potential bushfire hazard which is consistent with the verified fireline intensity calculation, the 2017 BPA version maps this area as Medium potential bushfire hazard. It is likely that data smoothing was deployed for the 2017 version.
Netherby	30	2	A	Medium	Yes	1	47	10.1	N/A	N/A	20.8	N/A	13,508	13,508	Medium	Medium	S	
Netherby	30	3	A	Medium	Yes	2	47	10.1	N/A	N/A	20.8	N/A	14,473	14,473	Medium	Medium	S	
Netherby	30	4	A	High	Yes	5	47	10.1	N/A	N/A	20.8	N/A	17,801	17,801	Medium	Medium	S	
St Mary	31	1	A	Medium	Yes	4	48	9.2	N/A	N/A	17.2	N/A	11,603	11,603	Medium	Medium	S	
St Mary	31	2	A	Medium	Yes	2	48	10.2	N/A	N/A	18.0	N/A	11,069	11,069	Medium	Medium	S	
St Mary	31	3	A	Medium	Yes	1	48	9.2	N/A	N/A	17.2	N/A	9,433	9,433	Medium	Medium	S	
St Mary	31	4	A	Medium	Yes	4	48	9.2	N/A	N/A	17.2	N/A	11,603	11,603	Medium	Medium	S	

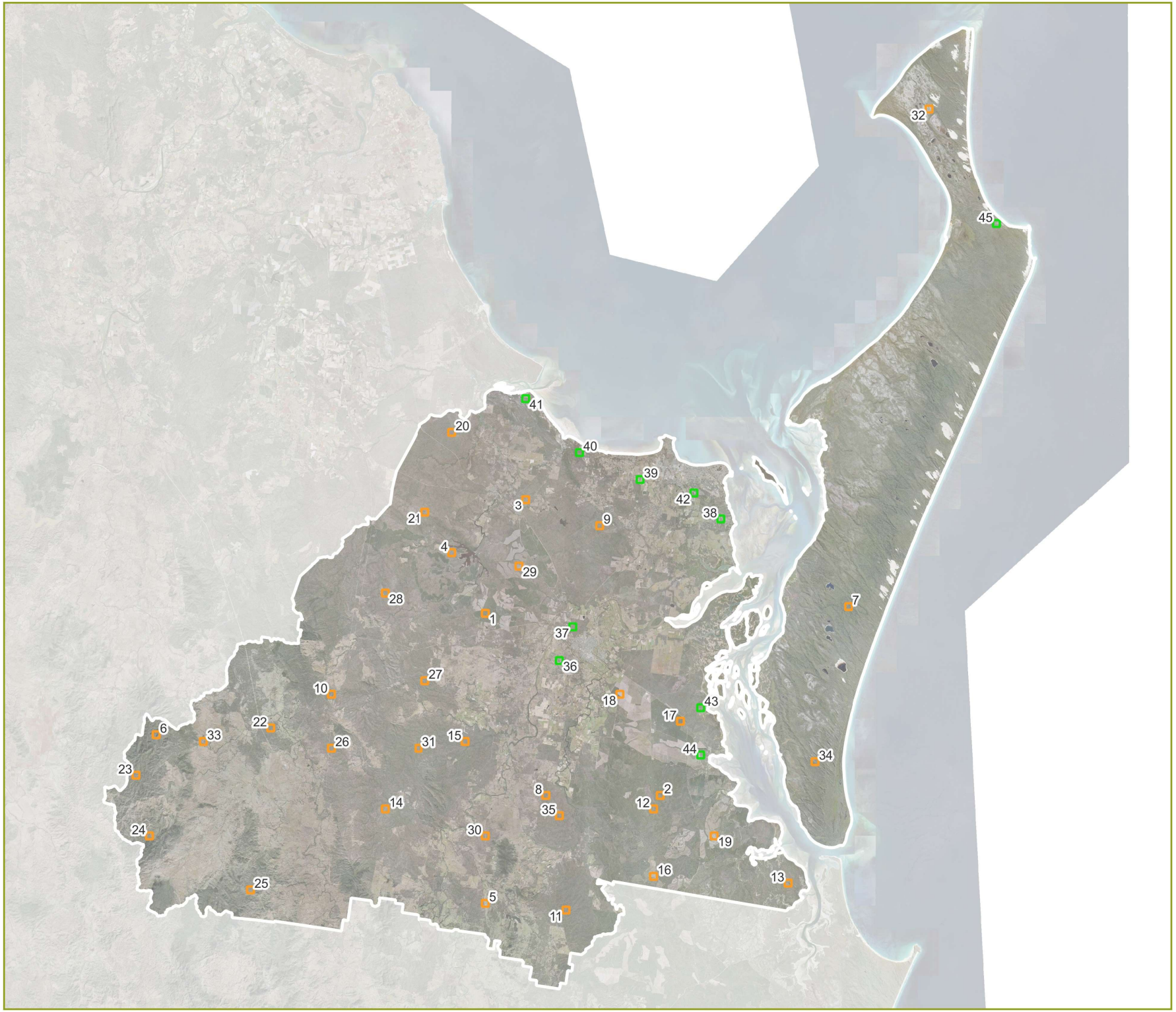
Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Fraser Island	32	1	A	High	Yes	4	50	29.2	N/A	N/A	24.3	N/A	24,123	24,123	High	High	S	
Fraser Island	32	2	A	High	Yes	2	50	29.2	N/A	N/A	24.3	N/A	21,014	21,014	High	High	S	
Fraser Island	32	3	A	High	Yes	4	50	29.2	N/A	N/A	24.3	N/A	24,123	24,123	High	High	S	
Fraser Island	32	4	A	Very High	Yes	8	50	29.2	N/A	N/A	24.3	N/A	31,791	31,791	High	High	S	
Boompa	33	1	A	High	No	4	50	9.1	N/A	N/A	24.2	N/A	23,925	23,925	Medium	High	N	Mapped boundary challenge - incorrectly mapping areas as hazard. The 2014 BPA mapping in this location does not appear to align with the extents of vegetation, including areas outside of the assessment area. The 2014 VHC inputs also appear inaccurate and the verified fireline intensity is likely too high for the nature of vegetation class in this location. 2017 BPA version appears accurate.
Boompa	33	2	A	Medium	Yes	3	50	10.2	N/A	N/A	18.0	N/A	12,354	12,354	Medium	Medium	S	
Boompa	33	3	A	Medium	Yes	8	50	10.2	N/A	N/A	18.0	N/A	17,444	17,444	Medium	Medium	S	
Boompa	33	4	A	High	Yes	7	50	10.2	N/A	N/A	18.0	N/A	16,281	16,281	Medium	Medium	S	
Fraser Island	34	1	A	Very High	Yes	14	46	8.1	N/A	N/A	35.0	N/A	91,794	91,794	Very High	Very High	S	
Fraser Island	34	2	A	Very High	Yes	7	46	8.1	N/A	N/A	35.0	N/A	56,630	56,630	Very High	Very High	S	
Fraser Island	34	3	A	Very High	Yes	11	46	8.1	N/A	N/A	35.0	N/A	74,630	74,630	Very High	Very High	S	
Fraser Island	34	4	A	Very High	Yes	4	46	8.1	N/A	N/A	35.0	N/A	46,042	46,042	Very High	Very High	S	
Talegalla Weir	35	1	A	Medium	Yes	2	47	12.2	N/A	N/A	17.4	N/A	10,128	10,128	Medium	Medium	S	

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Talegalla Weir	35	2	A	Medium	Yes	4	47	16.1	N/A	N/A	16.0	N/A	9,831	9,831	Medium	Medium	S	
Talegalla Weir	35	3	A	Medium	Yes	3	47	12.2	N/A	N/A	17.4	N/A	10,851	10,851	Medium	Medium	S	
Talegalla Weir	35	4	A	Medium	Yes	4	47	12.2	N/A	N/A	17.4	N/A	11,627	11,627	Medium	Medium	S	
Tinana	36	1	B	Medium	Yes	2	48	9.2	9.2	S	17.2	17.2	10,107	10,107	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Tinana	36	2	B	Potential Impact Buffer	No	2	48	16.1	9.2	N	16.0	17.2	8,746	10,107	Medium	Medium	N	Mapped boundary challenge - hazard area missed. Verified RE is reflective of on-ground vegetation however the mapped boundary is not accurate in either the 2014 to 2017 versions.
Tinana	36	3	B	Medium	Yes	3	48	9.2	9.2	S	17.2	17.2	10,829	10,829	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Tinana	36	4	B	Potential Impact Buffer	Yes	1	48	41.4	non-rem	N/A	3.4		287	N/A	Potential Impact Buffer	Potential Impact Buffer	S	Verified RE is reflective of on-ground vegetation.
Maryborough	37	1	B	Medium	Yes	1	48	10.1	9.2	N	20.8	17.2	13,795	9,433	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Maryborough	37	2	B	Medium	Yes	2	48	10.1	9.2	N	20.8	17.2	14,781	10,107	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Maryborough	37	3	B	Medium	Yes	3	48	9.2	9.2	S	17.2	17.2	10,829	10,829	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Maryborough	37	4	B	Medium	Yes	1	48	16.1	16.1	S	16.0	16.0	8,163	8,163	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Booral	38	1	B	Medium	No	3	47	9.2	9.2	S	17.2	17.2	10,603	10,603	Medium	Medium	N	Mapped boundary challenge - incorrectly mapping areas as hazard. Whilst the verified RE confirms the fireline intensity of the cell, the mapped boundary is incorrect for both the 2014 and 2017 BPA versions. Cleared and managed land is included as part of the bushfire prone area.
Booral	38	2	B	Medium	No	3	47	9.2	9.2	S	17.2	17.2	10,603	10,603	Medium	Medium	N	Mapped boundary challenge - hazard area missed. Whilst the verified RE confirms the fireline intensity of the cell, the mapped boundary is incorrect for both the 2014 and 2017 BPA versions. Vegetated areas which appear consistent with surrounding vegetation have been excluded from the bushfire prone area.
Booral	38	3	B	Medium	Yes	1	47	9.2	9.2	S	17.2	17.2	9,237	9,237	Medium	Medium	S	Some cleared areas around existing houses are mapped as hazard but these are relatively small. Note that verified RE has identified these areas as non remnant.
Booral	38	4	B	Medium	Yes	3	47	9.2	non-rem	N/A	17.2	N/A	10,603	N/A	Medium	Medium	S	Some cleared areas around existing houses are mapped as hazard but these are relatively small. Note that verified RE has identified these areas as non remnant.
Dundowran	39	1	B	Medium	No	4	48	9.2	9.2	S	17.2	17.2	11,603	11,603	Potential Impact Buffer	Medium	N	Mapped boundary challenge - hazard area missed. Both the 2014 and 2017 BPA boundary does not align with the mapped VHC or aerial photography. It is unclear why it has been clipped in this location.
Dundowran	39	2	B	Outside mapped BPA	Yes	2	48	38.5	non-rem	N/A	2.0	N/A	137	N/A	Outside mapped BPA	Nil	S	Cropping land

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Dundowran	39	3	B	Outside mapped BPA	No	4	48	9.2	9.2	S	17.2	17.2	11,603	11,603	Potential Impact Buffer	Medium	N	Mapped boundary challenge - hazard area missed. Both the 2014 and 2017 BPA boundary does not align with the mapped VHC or aerial photography. It is unclear why it has been clipped in this location given the patch size exceeds the minimum requirements for mapping.
Dundowran	39	4	B	Medium	No	0	48	16.1	16.1	S	16.0	16.0	7,619	7,619	Medium	Medium	N	Mapped boundary challenge - incorrectly mapping areas as hazard. Verified RE is reflective of on-ground vegetation however the mapping includes a dam. The dam was not present in 2014 however, it remains mapping in the 2017 version.
Takura	40	1	B	Medium	Yes	1	49	29.3	29.3	S	20.1	20.1	13,151	13,151	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Takura	40	2	B	Medium	Yes	1	49	29.2	29.2	S	24.3	24.3	19,221	19,221	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Takura	40	3	B	High	Yes	0	49	22.1	29.2	N	28.4	24.3	24,503	17,939	High	High	S	Verified RE results in a lower fuel load with reduced fireline intensity compared with that which is mapped. Given the mapped classification is higher, this may be accepted as satisfactory for the purposes of this assessment.
Takura	40	4	B	High	Yes	2	49	22.1	22.1	S	28.4	28.4	28,129	28,129	High	High	S	Verified RE is reflective of on-ground vegetation.
Burrum Heads	41	1	B	Medium	Yes	0	49	29.2	29.2	S	24.3	24.3	17,939	17,939	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Burrum Heads	41	2	B	Medium	Yes	0	49	29.3	29.3	S	20.1	20.1	12,274	12,274	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Burrum Heads	41	3	B	Potential Impact Buffer	No	0	49	39.2	non-rem	N/A	8.0	N/A	1,944	N/A	Potential Impact Buffer	Potential Impact Buffer	N	Mapped boundary challenge - hazard area missed. Both the 2014 and 2017 BPA boundary does not align with the mapped VHC or aerial photography. Verified RE indicates this patch is non remnant but the fuel load is nearing maturity, if not already achieved. The 2017 BPA maps part of this area but it does not match the extent of the vegetation boundary.
Burrum Heads	41	4	B	Potential Impact Buffer	Yes	1	49	39.2	non-rem	N/A	8.0	N/A	2,083	N/A	Potential Impact Buffer	Potential Impact Buffer	S	
Wondunna	42	1	B	Medium	Yes	0	48	9.1	9.2	N	24.2	17.2	17,479	8,804	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Wondunna	42	2	B	Medium	Yes	0	48	9.1	9.2	N	24.2	17.2	17,479	8,804	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Wondunna	42	3	B	Potential Impact Buffer	Yes	1	48	42.6	non-rem	N/A	2.0	N/A	128	N/A	Potential Impact Buffer	Potential Impact Buffer	S	
Wondunna	42	4	B	Medium	Yes	1	48	16.1	16.1	S	16.0	16.0	8,163	8,163	Medium	Medium	S	Verified RE is reflective of on-ground vegetation.
Maaroom	43	1	B	Potential Impact Buffer	No	1	47	21.2	N/A	N/A	8.7	N/A	2,363	2,363	Potential Impact Buffer	Potential Impact Buffer	N	Mapped boundary challenge - hazard area missed. Both the 2014 and 2017 VHC input appear inaccurate, fireline intensity is likely too low for the nature of vegetation class in this location. This is significant considering the fire run from the west to Maroom.
Maaroom	43	2	B	Medium	No	2	47	9.2	N/A	N/A	17.2	N/A	9,896	9,896	Medium	Medium	N	Mapped boundary challenge - hazard area missed. The mapped boundary in the 2014 version omits an area of hazard however this is resolved in the 2017 version.
Maaroom	43	3	B	Medium	Yes	2	47	9.2	N/A	N/A	17.2	N/A	9,896	9,896	Medium	Medium	S	
Maaroom	43	4	B	High	Yes	2	47	22.1	N/A	N/A	28.4	N/A	26,981	26,981	High	High	S	

Locality	Cell of interest	Assessment area	Sample set	Mapped BPA	Mapped boundary (Yes / No)	MLS	FFDI	Mapped VHC	Verified VHC	VHC reliability estimate	Mapped PFL (t / ha)	Verified PFL (t / ha)	Mapped fireline intensity	Verified fireline intensity	2017 BPA	Verified BPA	BPA reliability estimate	Qualitative assessment commentary
Tuan Forest	44	1	B	High	No	4	47	36.1	N/A	N/A	26.0	N/A	25,960	25,960	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1.
Tuan Forest	44	2	B	High	Yes	0	47	22.1	N/A	N/A	28.4	N/A	23,503	23,503	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1 rather than 22.1.
Tuan Forest	44	3	B	High	No	2	47	36.1	N/A	N/A	26.0	N/A	22,614	22,614	High	High	S	Cleared land, likely a mapping currency issue which is a strategic-level mapping methodology issue for plantations. This stand will re-grow and when it does, it will be consistent again with 36.1. The 2017 BPA mapping includes an area of Medium potential bushfire hazard which is inconsistent with the VHC.
Tuan Forest	44	4	B	Medium	Yes	2	47	9.2	N/A	N/A	17.2	N/A	9,896	9,896	Medium	Medium	S	
Fraser Island	45	1	B	Medium	Yes	0	49	29.2	N/A	N/A	24.3	N/A	17,939	17,939	Medium	Medium	S	
Fraser Island	45	2	B	High	Yes	7	49	9.1	N/A	N/A	24.2	N/A	28,839	28,839	High	High	S	
Fraser Island	45	3	B	High	Yes	1	49	29.2	N/A	N/A	24.3	N/A	19,221	19,221	Medium	Medium	S	
Fraser Island	45	4	B	High	Yes	6	49	9.1	N/A	N/A	24.2	N/A	26,916	26,916	High	High	S	Some cleared areas around existing houses are mapped as hazard but these are relatively small.

Appendix B - Reliability Assessment Mapping



BUSHFIRE PRONE AREA RELIABILITY ASSESSMENT - CELLS OF INTEREST

FRASER COAST REGIONAL COUNCIL

LEGEND

Cells of interest

- Sample set a
- Sample set b

0 10 20 30 km

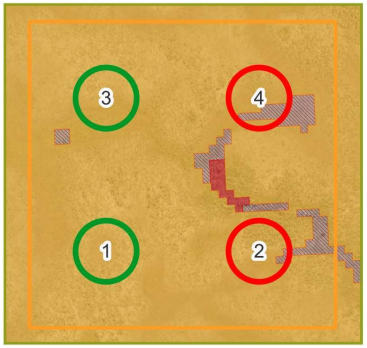
Project No: 22-013 Map No: 1 of 2

Coordinate System: GDA 2020 MGA Zone 56
Printed at: A3
Creation Date: 02/08/2022

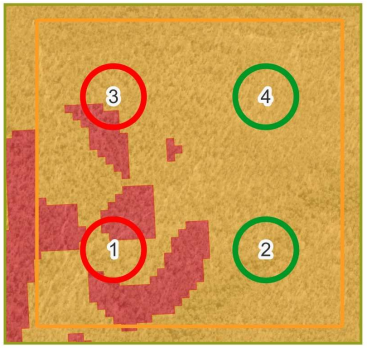
Meridian Urban

BUSHFIRE PRONE AREA RELIABILITY ASSESSMENT - NOT SATISFACTORY RESULTS

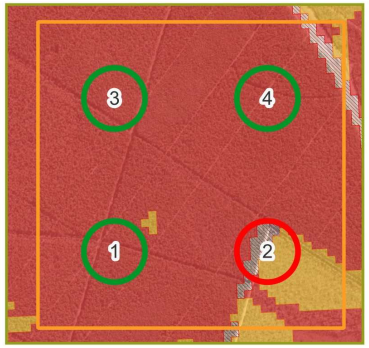
FRASER COAST REGIONAL COUNCIL



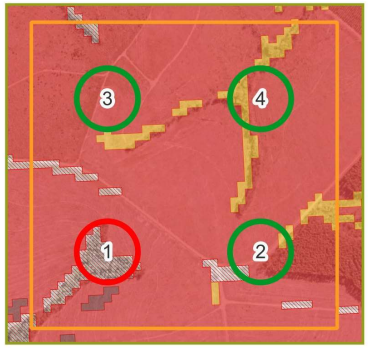
Cell 13 - Tin Can Bay



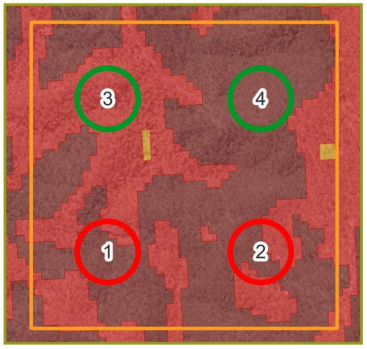
Cell 14 - Mount Urah



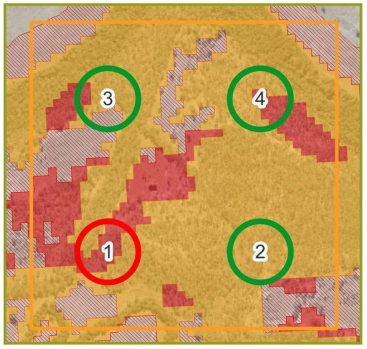
Cell 17 - Tuan Forest



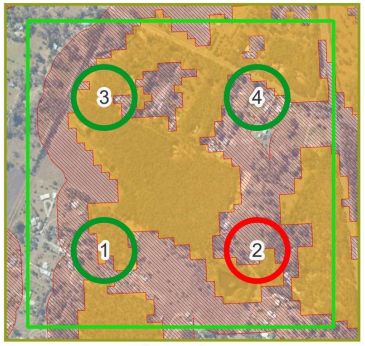
Cell 19 - Tuan Forest



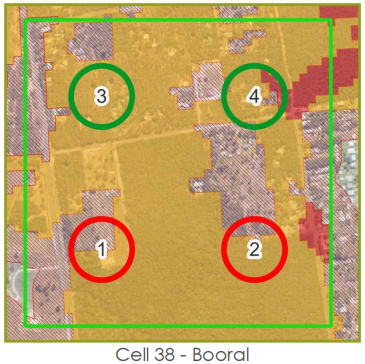
Cell 23 - Boompa



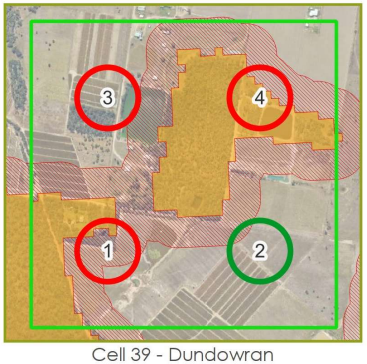
Cell 33 - Boompa



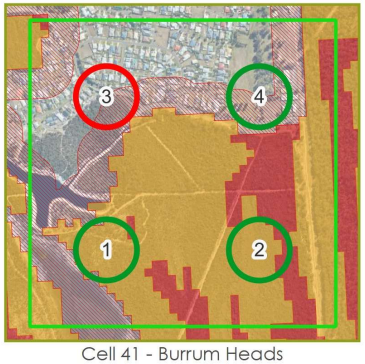
Cell 36 - Tinana



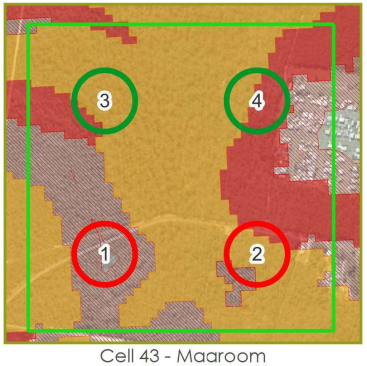
Cell 38 - Booral



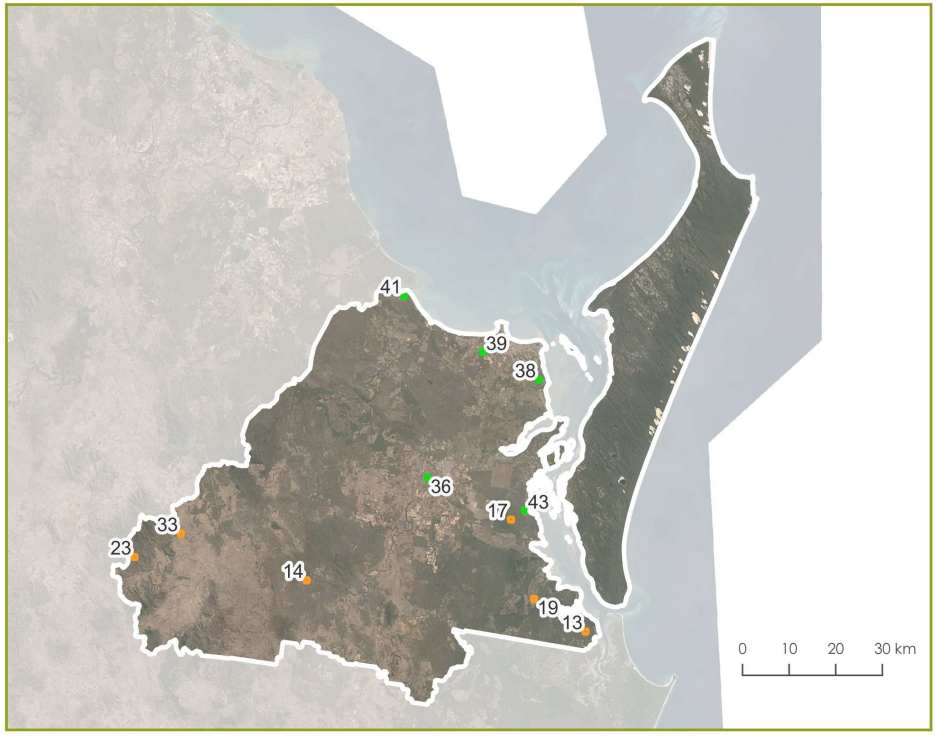
Cell 39 - Dundowran



Cell 41 - Burrum Heads



Cell 43 - Maaroom



LEGEND

Cells of interest
- Sample set a
- Sample set b

Assessment areas
- Not satisfactory
- Satisfactory

2014 Mapped Bushfire Prone Area
- Very High Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Medium Potential Bushfire Intensity
- Potential Impact Buffer

0 0.5 1 km

Project No: 22-013 Map No: 2 of 2

Coordinate System: GDA 2020 MGA Zone 56
Printed at: A3
Creation Date: 02/08/2022

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