

**Roma
Area Fire Management Group**

Murweh Local Government Area

BUSHFIRE RISK MITIGATION PLAN

1st April 2020 to 30th September 2020

OPERATION COOL BURN 2020

Table of Contents

1.	Purpose	1
2.	Role of the Area Fire Management Group	1
3.	Method used to prepare this plan	1
4.	Bushfire Risk Context	3
	4.1 Area and main features	3
	4.2 Fire history.....	3
	4.3 Vegetation types and potential fuel loads	3
	4.4 Topography	3
	4.5 Bushfire Prone Area	4
	4.7 Exposure in the Bushfire Interface Zone	4
5.	Bushfire risk by Locality	5
	5.1 Charleville.....	5
	5.2 Augathella	5
	5.3 Morven.....	5
6.	Other Planned Activities	6
7.	References	6
8.	Tables	7
	Table 1. Building Exposure in Bushfire Interface Zone by Locality.....	7
	Table 2. Potential Bushfire Risk to Community and Infrastructure by Locality	8
9.	Maps	10
	Map 1. Main features of Local Government Area	10
	Map 2. Fire history.....	11
	Map 3. Vegetation types.....	12
	Map 4. Topography	13
	Map 5. Bushfire Prone Area	14
	Map 6. Building Exposure in the Bushfire Interface Zone.....	15
	Map 7. Essential Infrastructure Exposure	16
	Map 8. Locality: Charleville	17
	Map 9. Locality: Augathella	18
	Map 10. Locality: Morven	19
	Appendix A: Flood Levee banks as a Fire Break.....	20

Document Status

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30/04/2020	Mark Saunders	AFMG Chair	Draft
		AFMG Members (see below)	Endorsed
		AFMG Chair	Approved
		LDMG	Submitted

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1. Purpose

In the 2018 and 2019 bushfire seasons, Queensland experienced unprecedented bushfires that had wide-ranging and severe impacts to communities, infrastructure and the environment. Given these circumstances community concern about bushfire mitigation is at a high level.

Because of these recent impacts and concerns, and the potential for continuing challenging bushfire weather in 2020, proactive efforts to mitigate bushfire risks are of critical importance at all levels of government and throughout the Queensland community.

The purpose of this Bushfire Risk Mitigation Plan (BRMP) is to identify and record high-risk localities, high risk hotspots and planned mitigation actions to reduce bushfire risk to the community for Operation Cool Burn (OCB) in 2020 within the Murweh Shire Local Government Area (LGA) as assessed by the Roma Area Fire Management Group (AFMG).

The BRMP will also be used to inform operational planning and decision making by AFMG members during the Operation Cool Burn period, assist forward planning for future mitigation planning in subsequent years, and inform operational readiness planning of QFES and partner organisations in preparing for the 2020 bushfire season.

It also establishes a standardised framework for reporting of bushfire mitigation activities through the Operation Cool Burn reporting period from 1st April 2020 to 30th September 2020.

This BRMP also support integration of QFES-led hazard-specific planning for bushfire mitigation into Queensland's disaster management arrangements by informing Local Disaster Management Plans (LDMPs) and associated activities of Local Disaster Management Groups (LDMGs).

2. Role of the Area Fire Management Group

QFES leads the operation of AFMGs in support of a coordinated approach to the planning, implementation and reporting of bushfire mitigation activities, under the authority of section 67 of the *Fire and Emergency Services Act 1990*.

The *Disaster Management Act 2003* identifies that managing disasters is a shared responsibility involving government agencies, individual landholders, non-government and private organisations.

AFMGs provide the primary mechanism for the coordinated identification of high-risk areas, the planning of bushfire mitigation activities, and the preparation of a BRMP for applicable Local Government Areas.

AFMGs play a key role in connecting communities, landholders and partners with local level bushfire mitigation planning, the conduct and benefits of mitigation activities, and communicating a broader understanding of the bushfire risks that cannot be addressed by these mitigation activities.

Further information on the role, membership and functions of the Roma AFMG can be obtained from the Chair of the AFMG (for contact details see inside cover of this plan).

3. Method used to prepare this plan

The method used to prepare this plan is guided by the following principles which are consistent with matters raised in the 2019 review of Queensland Bushfires by the Inspector General of Emergency Management:

- In 2020, mitigation planning through this BRMPs will place a stronger focus on actions to reduce risks at the rural-urban interface because of the growing population in urban-fringe and rural-residential areas, their exposure and vulnerabilities.
- Management of fuel structure and fuel load is a key focus of bushfire mitigation.

- Planning will take account of evidence which indicates that extreme bushfire weather conditions will become more common in the future, and that severe bushfire weather is likely to occur earlier.
- Options to mitigate bushfire risks using strategies other than hazard reduction burning (i.e. mechanical fuel reduction, community education, firebreaks and fire trails) will be more important in 2020 than previously.
- Firebreaks and fire trails are important tools for reducing exposure to bushfire risk and improving preparedness.
- Community education is an effective mechanism for reducing vulnerability to bushfires by creating greater risk awareness and improving bushfire preparedness.
- Community education activities will target vulnerable and at-risk communities using participatory delivery approaches that are appropriate to the needs of these populations and local communities.
- An integrated approach to the complexity of bushfire mitigation planning is needed to ensure mitigation actions at the landscape scale, at the bushfire interface, and at the individual property or asset scale are coordinated and collaborative.

In preparing this BRMP, AFMG members will:

- use both formal evidence and local knowledge of partners and stakeholders to identify high-risk localities, high-risk hotspots and to plan mitigation actions within the Murweh Shire LGA, and
- ensure balanced consideration is given to all information and knowledge of bushfire risk, hazard, vulnerabilities and exposure across the full extent of the Murweh Shire LGA including:
 - evidence of potential exposure to buildings, transport infrastructure and populations to bushfire impacts, particularly with regard to assets and people in urban/rural bushfire interface areas,
 - current fuel loads and fuel structure as affected by recent fire history, grazing and fuel accumulation, and
 - scientific information on potential bushfire behaviour and severity, the probability of ignition and fire arrival at asset locations and the magnitude of possible consequence, including gridded ignition fire simulations where available.

The Roma AFMG has adopted a staged approach to prepare this BRMP and a subsequent BRMP Annex, as depicted in Figure 1.

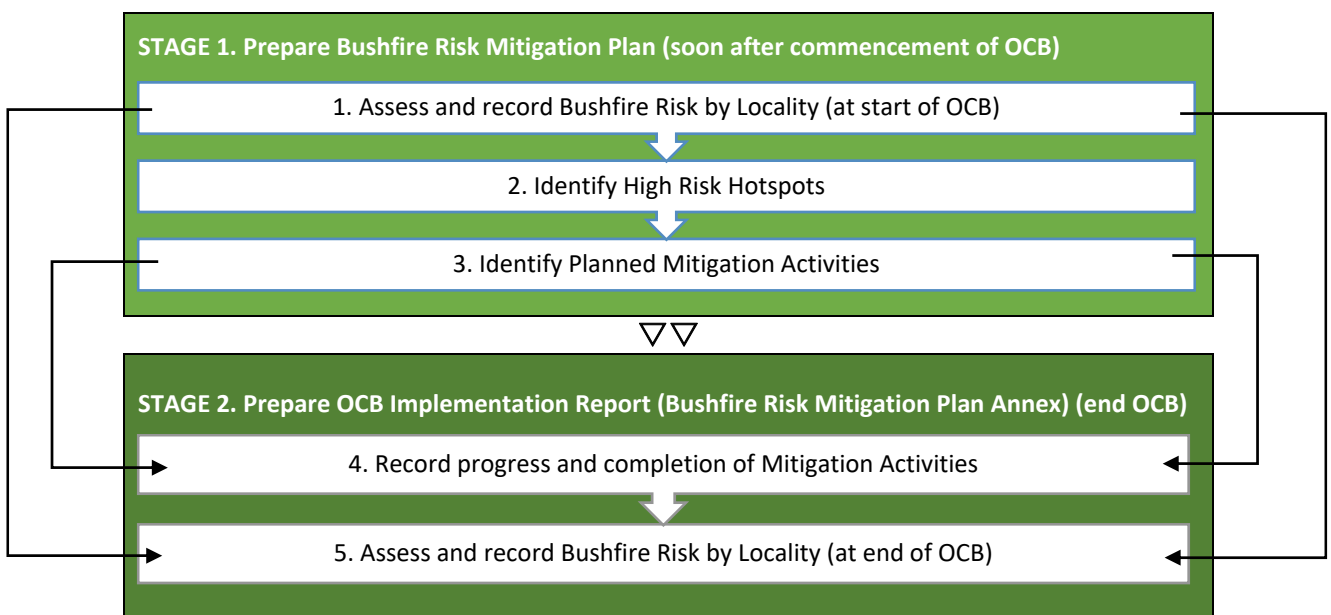


Figure 1. Staged approach for preparing the BRMP and OCB Implementation Report

In the first stage of BRMP preparation, AFMGs will use a structured and transparent approach to:

1. assess and record the level of bushfire risk (high, medium, low) at the start of the OCB 2020 for all localities in the applicable LGA/s,
2. identify high-risk hotspots associated with high-risk localities that include communities and infrastructure with high levels of vulnerability and exposure to bushfire hazards, and
3. identify planned actions to mitigate bushfire risks, specifically:
 - o hazard reduction activities (incl. planned burn, mechanical reduction, grazing management),
 - o firebreak or fire trail upgrades, maintenance or construction,
 - o community education activities (incl targeted community activities).

In the second stage is to prepare an OCB Implementation Report, as an annex to the BRMP, (at the end of the OCB period), QFES will work with AFMG members to:

4. record progress towards the completion of planned activities throughout OCB using available tools for combined single reporting of all stakeholder activities, and
5. assess and record the level of bushfire risk (high, medium, low) at the end of the OCB 2020 for all localities in the applicable LGA/s. This assessment provides an input to pre-season bushfire readiness planning and regional assessment of residual risk by QFES and other response agencies.

4. Bushfire Risk Context

4.1 Area and main features

The Murweh Shire LGA is an area of 40,700 square kilometres that is home to approximately 4,318 people (ABS, 2018 population estimate). The extent and main features of the Murweh Shire LGA is shown in Map 1. Main features.

Some of the major communities and industries at risk from bushfires within the Murweh Shire LGA include the townships of Augathella, Charleville and Morven.

4.2 Fire history

Bushfires have previously impacted communities in the Murweh Shire LGA such as Upper Warrego, Caroline Crossing, Redford, Augathella and Langlo localities in the 1950's and 1990's.

These bushfires, and planned burns in areas such as Upper Warrego and Redford localities by organisations such as QPWS in the last 5 years, have contributed to the reduction of bushfire hazard in the Murweh Shire LGA.

Available mapping of fire history for Murweh Shire LGA is shown in Map 2. Fire history. This map illustrates the extent of recent fires in Upper Warrego, Caroline Crossing, Redford, Augathella and Langlo localities.

4.3 Vegetation types and potential fuel loads

Some of the most extensive types of vegetation types that are susceptible in the Murweh Shire LGA include Eucalypt woodlands in Upper Warrego locality, Mulgalands in away from the riverine floodplains and Brigalow Belah communities in on the eastern side of the LGA. The extent of these vegetation types is shown in Map 3. Vegetation types.

Grass-fire prone pastures and grazing lands also occur around Morven, Clara Creek, Augathella and Upper Ward and Nive localities are also susceptible to fires.

4.4 Topography

Particular areas of steep topography that can magnify bushfire intensity and speed include Upper Warrego, Caroline Crossing and Redford localities as shown in Map 4. Topography.

4.5 Bushfire Prone Area

Bushfire Prone Areas associated with forested vegetation types in Murweh Shire LGA occurs primarily in Charleville, Augathella, Morven as shown in Map 5. Bushfire Prone Area. The Bushfire Prone Area for Queensland has been mapped by QFES using a methodology developed by CSIRO (Leonard and Opie, 2017; Leonard et. al. 2014).

These maps depict three categories of potential bushfire hazard: Very High, High and Medium Bushfire Hazard, to correspond with different levels of potential fire line intensity under a long-unburnt fuel load condition (80th percentile) and a severe fire weather scenario for 2050.

It is important to note that the levels of potential fire line intensity does not reflect current levels of bushfire hazard because the mapping does not take account of hazard reduction activities from recent fires, grazing or mechanical treatments.

4.7 Exposure in the Bushfire Interface Zone

The Bushfire Interface Zone, sometimes referred to as the IZone, is the rural-urban interface where there is a combination of flammable vegetation and structures. In general, the rural-urban interface zone represents a higher level of risk to bushfires because of the growing population in urban-fringe and rural-residential areas, their exposure and vulnerabilities.

To inform BRMP planning, QFES has adopted findings of CSIRO research (Leonard et. al. 2014) to define the Bushfire Interface Zone as an area of 100m surrounding any structure that falls within the Bushfire Prone Area, including a 100m Potential Impact Buffer (Figure 2). While ember attack can often extend some distances beyond this buffer, other national research indicates that in most fires over 80% of housing loss and 80% of human life loss has occurred within 100m of bushland (Chen and McAneney 2004; Bianchi, Leonard et al. 2013).

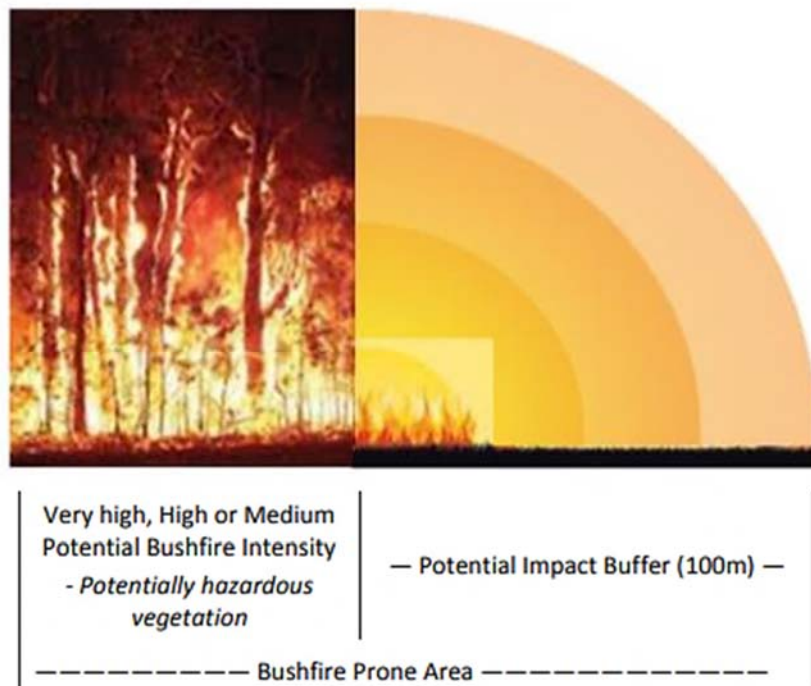


Figure 2. A Potential Impact Buffer of 100m forms part of the to the Bushfire Prone Area (CSIRO, 2014)

Exposure in the Bushfire Interface Zone can be estimated by overlaying mapping of the Bushfire Prone Area with mapped locations of structures and roads. Mapping information has also been used to classify buildings according to function as follows:

- A: Vulnerable person facilities,
- B: Essential and hazardous facilities,

- C: Residential buildings and facilities, and
- D: Industrial, commercial or agricultural buildings.

Localities in the Murweh Shire LGA with a relatively high exposure of buildings in the Bushfire Interface Zone include Charleville, Augathella, Morven as shown in Map 6. Building Exposure in the Bushfire Interface Zone.

Localities such as Charleville are observed to have a high number of vulnerable person facilities in the Bushfire Interface Zone. Localities such as Charleville, Augathella also have a high number of essential service facilities in the Bushfire Interface Zone (refer Table 1. Building Exposure in Bushfire Interface Zone by Locality)

Other infrastructure that is susceptible to bushfire impacts is shown in Map 7. Essential Infrastructure.

5. Bushfire risk by Locality

The Roma AFMG estimated the approximate level of bushfire risk to communities and infrastructure in each locality in the Murweh Shire LGA, based on a combination of formal evidence and local knowledge of partners and stakeholders, at the Roma AFMG meeting held at Maranoa Regional Council – Ernest Brock Room on 17 March 2020 as listed in Table 2. Potential Bushfire Risk to Community and Infrastructure by Locality

This assessment is based on balanced consideration of all available information and knowledge of bushfire risk, hazard, vulnerabilities and exposure including:

- evidence of potential exposure to buildings, transport infrastructure and populations to bushfire impacts with particular regard to assets and people in urban/rural bushfire interface areas,
- current fuel loads as affected by recent fire history, grazing and fuel accumulation, and
- scientific information on potential bushfire behaviour and severity, the probability of ignition and fire arrival at asset locations, and the magnitude of possible consequence, and
- gridded ignition fire simulations (where available);

Localities in the Murweh Shire LGA assessed to have a medium bushfire risk to community or infrastructure are Charleville, Augathella, Morven.

Western Queensland towns usually reside beside major streams that through history have flooded and encroached into the town. To mitigate the flooding risk, local governments have initiated works projects to build flood levee banks. Each of the levees are built to a standard and each year is maintained. Flood levee banks can and are often used to mitigate bushfires from impacting the towns. Attributes that illustrate the use of levee banks as fire breaks is in Appendix A: Flood Levee banks as a Fire Break

5.1 Charleville

Murweh Shire council annually maintains the flood levee banks that also acts as a fire break. Other fuel reduction works like slashing and mowing are completed prior to bushfire season. See Map 8.

5.2 Augathella

Murweh Shire council annually maintains the flood levee banks that also acts as a fire break. Other fuel reduction works like slashing and mowing are completed prior to bushfire season. See Map 9.

5.3 Morven

Murweh Shire council annually maintains fuel reduction works like slashing and mowing are completed prior to bushfire season See Map 10.

6. Other Planned Activities

The Roma AFMG also identified additional risk mitigation activities that help to reduce across the whole of the MURWEH SHIRE LGA or parts of the LGA which compliment activities to reduce risk in high risk localities and high risk hotspots.

7. References

Blanchi, R., J. Leonard , et al. (2013). Environmental circumstances surrounding bushfire fatalities in Australia 1901-2011. *Environmental Science & Policy*

Chen, K. and J. McAneney (2004). Quantifying bushfire penetration into urban areas in Australia. *Geophys. Res. Lett.* 31(12): L12212.

Leonard, J., Newnham, G., Opie, K., and Blanchi, R. (2014) A new methodology for state-wide mapping of bushfire prone areas in Queensland. CSIRO, Australia.

Leonard, J., Opie, K. (2017) Estimating the potential bushfire hazard of vegetation patches and corridors. CSIRO, Australia.

8. Tables

Table 1. Building Exposure in Bushfire Interface Zone by Locality

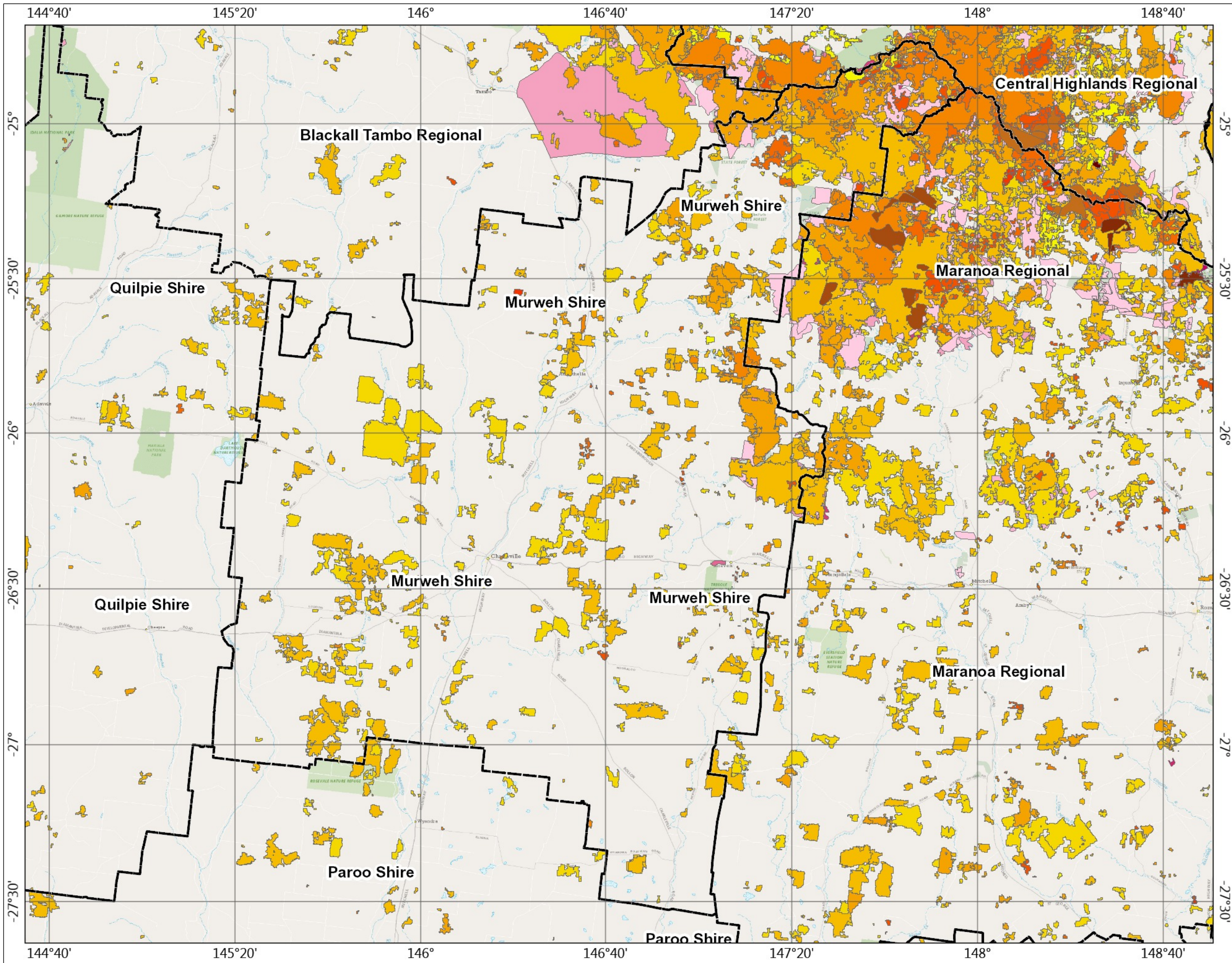
Locality Name	Number of Buildings Category A (Vulnerable Person Facility)	Number of Buildings Category B (Essential Services / Hazardous Facility)	Number of Buildings Category C (Residential)	Number of Buildings Category D (Industrial, Commercial, Agricultural)	Number of Buildings Total
CHARLEVILLE	36	10	392	308	746
AUGATHELLA	0	3	178	205	386
MORVEN	0	1	53	106	160
UPPER WARREGO	0	0	0	133	133
WARD	0	0	0	80	80
CLARA CREEK	0	0	0	77	77
LANGLO	0	0	0	68	68
COOLADDI	0	0	0	57	57
GOWRIE STATION	0	0	0	52	52
BOATMAN	0	0	0	48	48
SOMMARIVA	0	0	0	47	47
BAKERS BEND	0	0	0	45	45
CAROLINE CROSSING	0	0	0	43	43
NIVE	0	0	0	41	41
RIVERSLEIGH	0	0	0	38	38
MURWEH	0	0	0	16	16
REDFORD	0	0	0	9	9

Table 2. Potential Bushfire Risk to Community and Infrastructure by Locality

Locality Name	Number of buildings in Interface Zone	Potential Bushfire Risk to Community in Locality (High, Medium, Low)	Basis for Risk Assessment
Charleville	746	Medium	Multiple Properties exposed to fuel loads within the creek systems
Augathella	386	Medium	Lot of Rain increased fuel loads to North. Area to south prone to multiple ignitions. Minimal fire breaks.
Morven	160	Medium	Isolated farm properties along creek systems Morven has risk to the south but majority of properties have breaks between structures and fuel loads. Parks have it listed as a higher priority risk.
Upper Warrego	133	Low	Isolated farm properties along creek systems
Ward	80	Low	Isolated farm properties along creek systems
Clara Creek	77	Low	Isolated farm properties along creek systems
Langlo	68	Low	Isolated farm properties along creek systems
Cooladdi	57	Low	Isolated farm properties along creek systems Road House surrounded by breaks
Gowrie Station	52	Low	Isolated farm properties along creek systems
Boatman	48	Low	Isolated farm properties along creek systems
Sommariva	47	Low	Isolated farm properties along creek systems
Bakers Bend	45	Low	Isolated farm properties along creek systems
Caroline Crossing	43	Low	Isolated farm properties along creek systems

Nive	41	Low	Isolated farm properties along creek systems
Riversleigh	38	Low	Isolated farm properties along creek systems
Murweh	16	Low	Isolated farm properties along creek systems
Redford	9	Low	Isolated farm properties along creek systems

Map 2. Fire history



Legend

- Local Government Areas
- Air Ops
 - 20160831 - 20109999
 - 20110000 - 20119999
 - 20120000 - 20129999
 - 20130000 - 20139999
 - 20140000 - 20149999
 - 20150000 - 20159999
 - 20160000 - 20169999
 - 20170000 - 20179999
 - 20180000 - 20189999
 - 20190000 - 20199999
- NAFI
 - 20100101 - 20109999
 - 20110000 - 20119999
 - 20120000 - 20129999
 - 20130000 - 20139999
 - 20140000 - 20149999
 - 20150000 - 20159999
 - 20160000 - 20169999
 - 20170000 - 20179999
 - 20180000 - 20189999
 - 20190000 - 20199999
- QPWS
 - 19301101 - 20109999
 - 20110000 - 20119999
 - 20120000 - 20129999
 - 20130000 - 20139999
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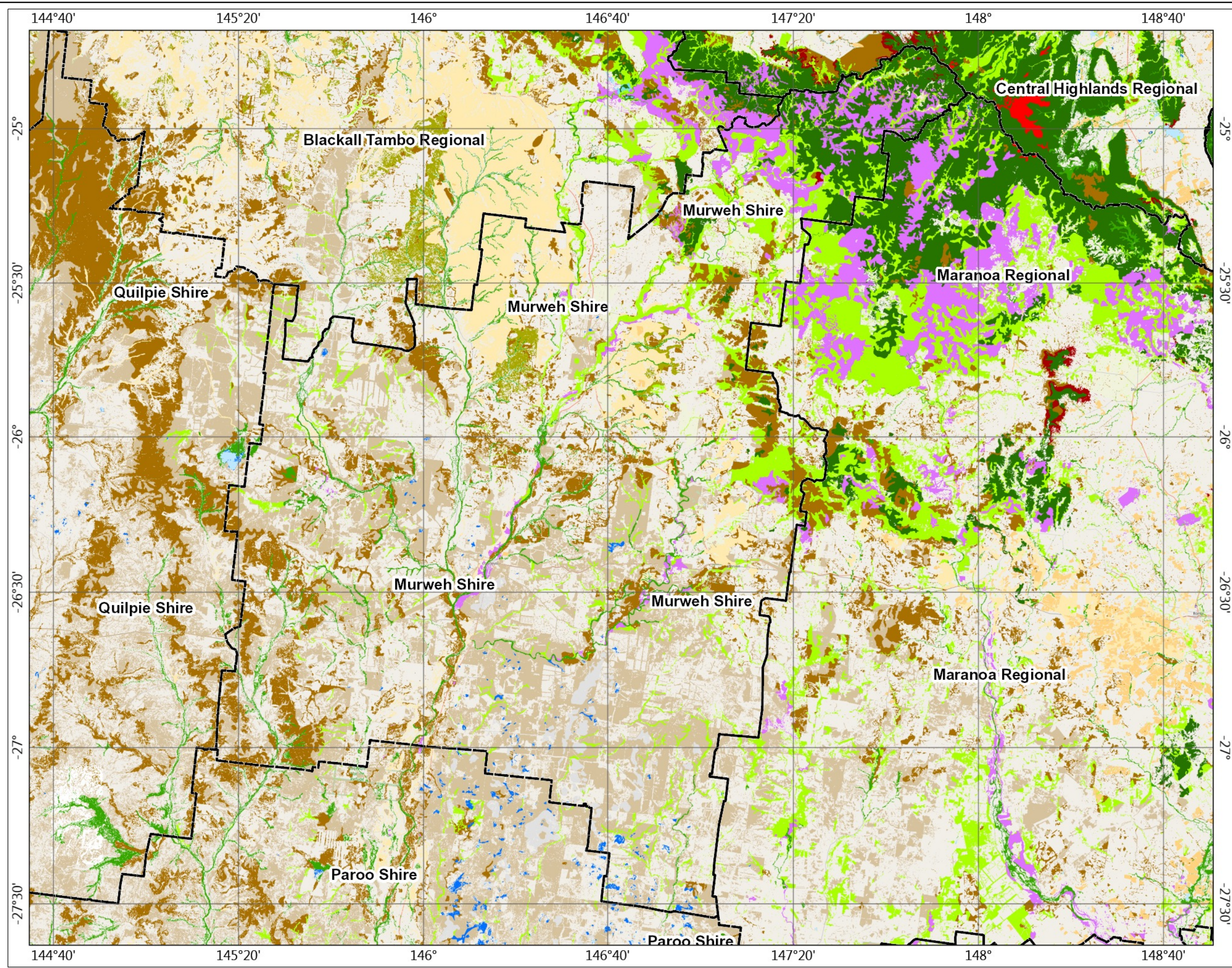


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Map 3. Vegetation types



- Legend**
- Local Government Areas
 - VHC
- Broad Vegetation Hazard Class**
- BVG 1-7 Rainforest and scrubs
 - BVG 8 Wet eucalypt open forest
 - BVG 9-15 Eastern eucalypt woodlands to open forests
 - BVG 16 Eucalypt open forests to woodlands on floodplains
 - BVG 17-19 Eucalypt dry woodlands on inland depositional plains
 - BVG 21-22 Melaleuca open woodlands on depositional plains
 - BVG 24-26 Other acacia dominated open forests, woodlands and shrublands
 - BVG 28-29 Other coastal communities or heaths
 - BVG 30-32 Tussock grasslands, forblands
 - BVG 34 Wetlands (swamps and lakes)
 - BVG 35 Mangroves and tidal saltmarshes
 - BVG 36 Exotic and hardwood plantation
 - BVG 37 Hoop plantation
 - BVG 38 Cropping and horticulture
 - BVG 39 Low to moderate tree cover in built-up areas
 - BVG 40 Low grass or tree cover in rural areas
 - BVG 41 Low grass or tree cover in built-up area
 - BVG 42 Nil to very low vegetation cover
 - BVG 43 Water bodies or very low vegetation cover

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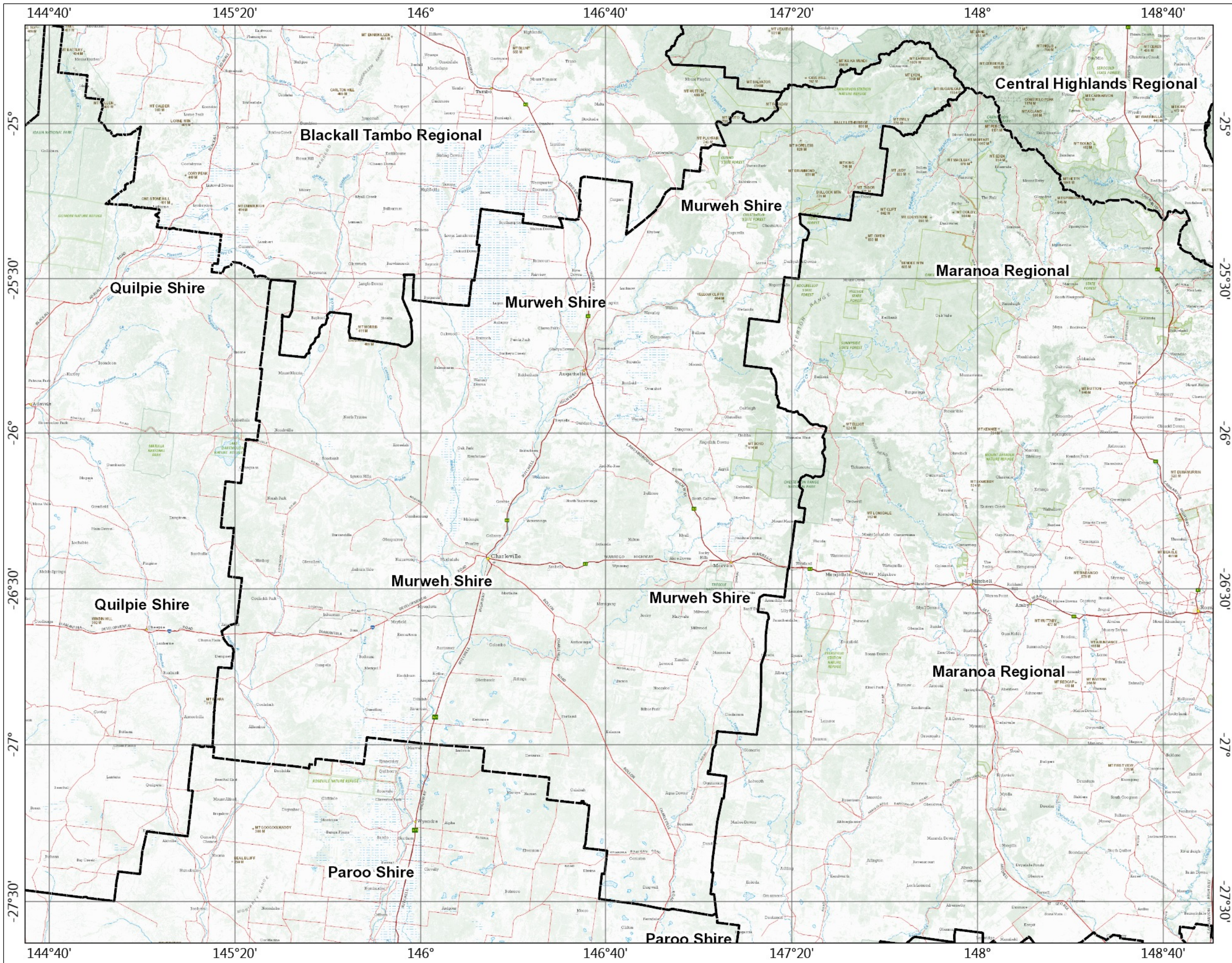


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Map 4. Topography



Legend
 Local Government Areas


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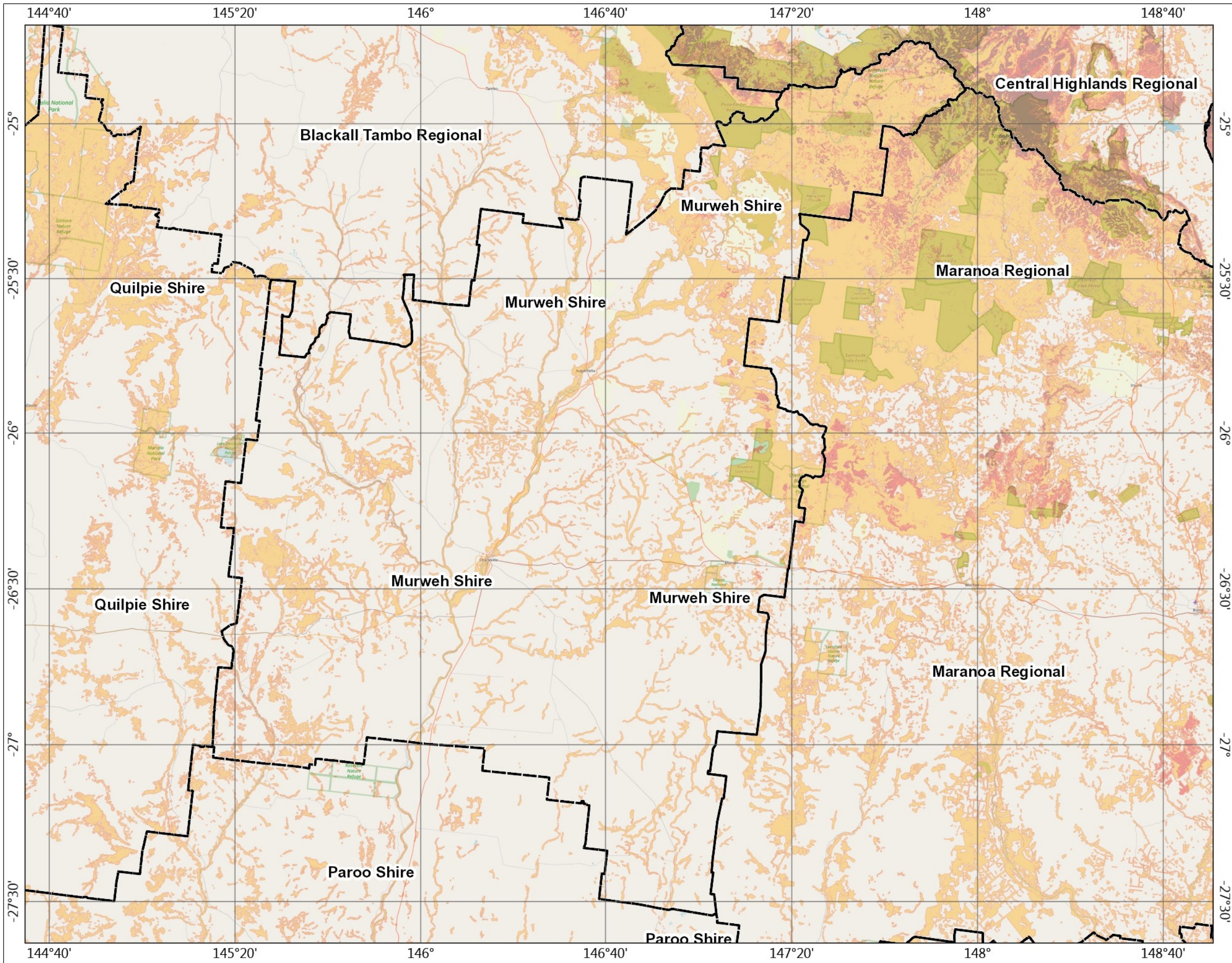
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Map 5. Bushfire Prone Area



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- Local Government Areas
- Bushfire Prone Area
- Very High Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Medium Potential Bushfire Intensity
- Potential Impact Buffer

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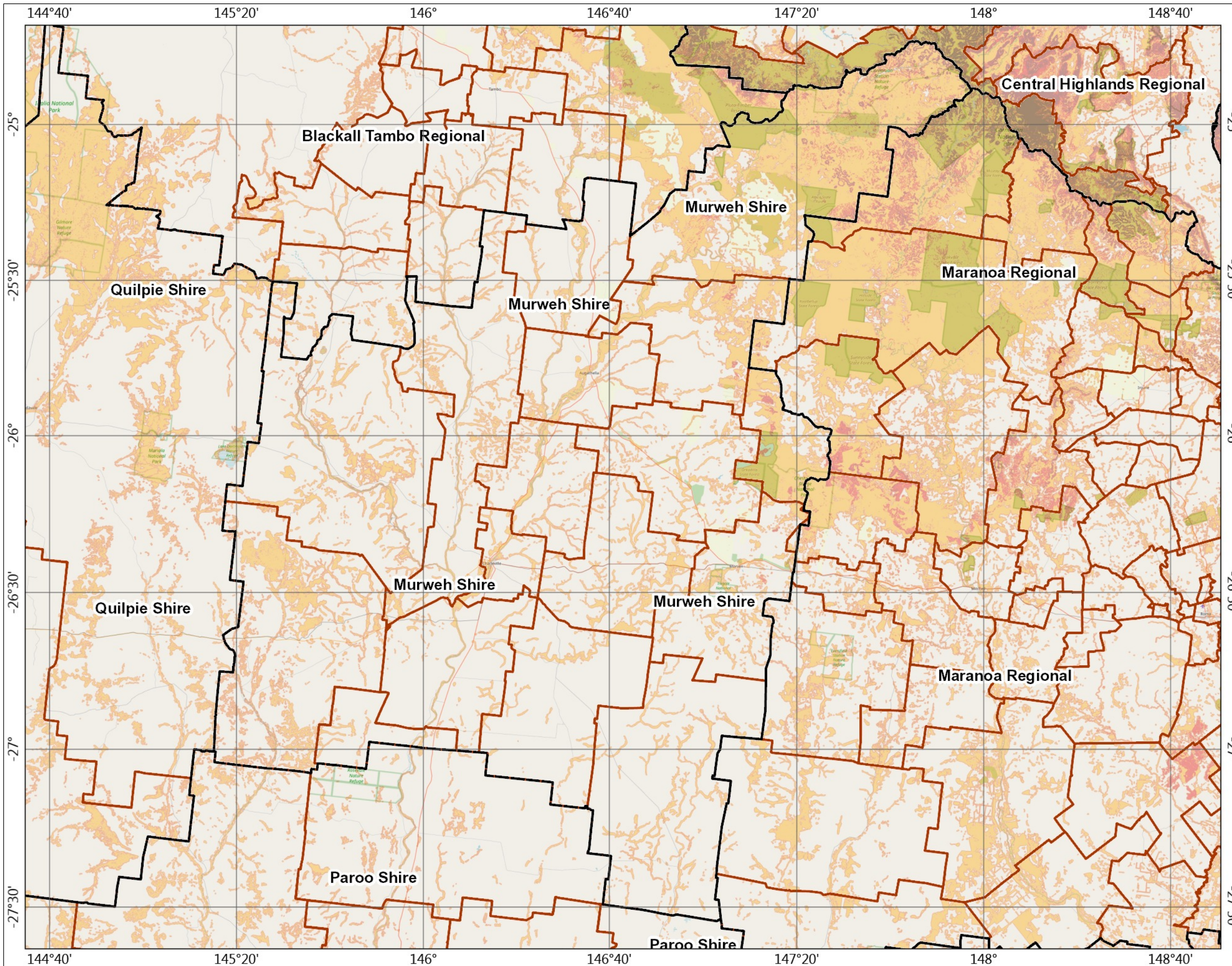
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Map 6. Building Exposure in the Bushfire Interface Zone



- Legend**
- Local Government Areas
 - Suburbs and Localities
 - Bushfire Prone Area
 - Very High Potential Bushfire Intensity
 - High Potential Bushfire Intensity
 - Medium Potential Bushfire Intensity
 - Potential Impact Buffer

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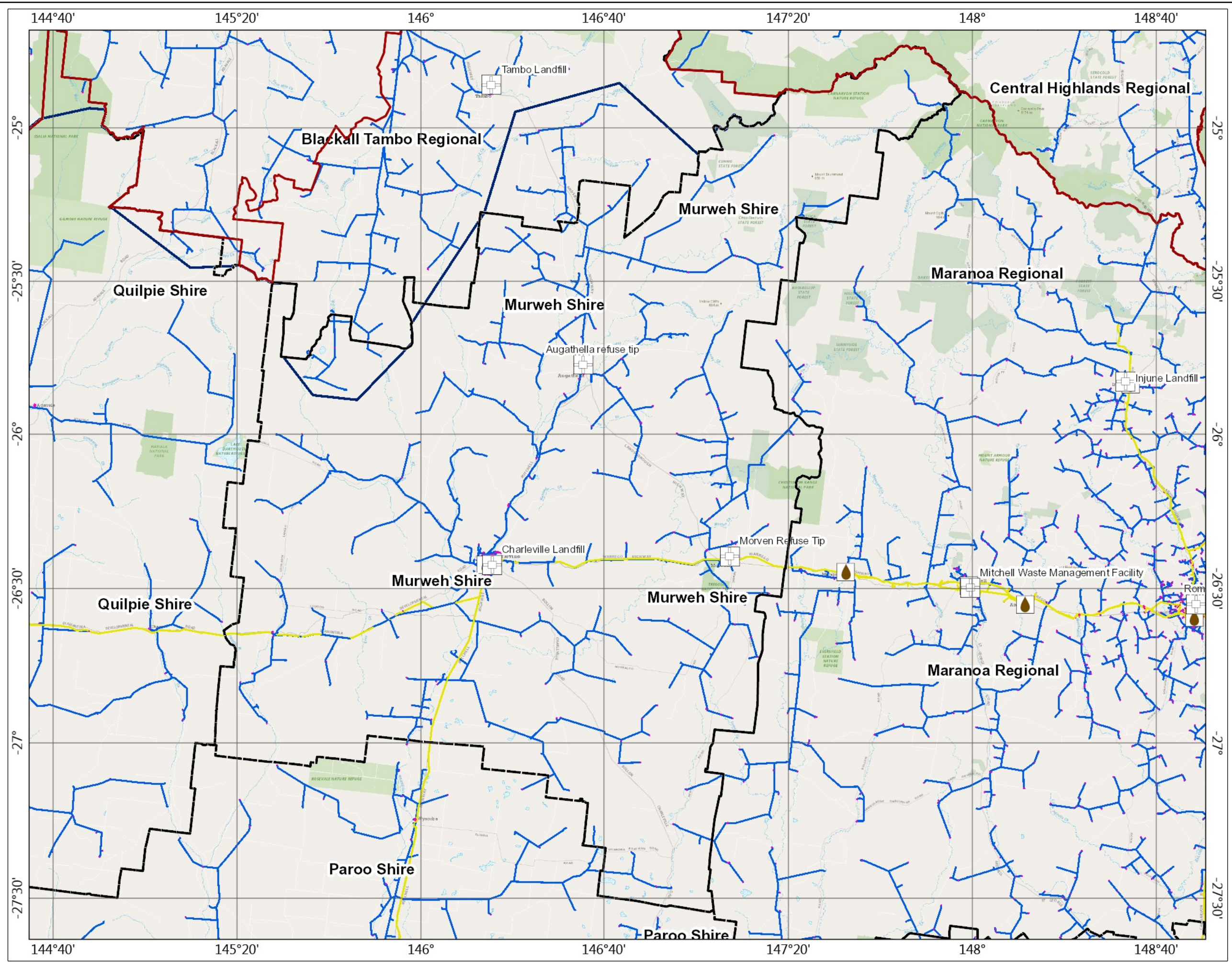
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Map 7. Essential Infrastructure Exposure



- Legend**
- Local Government Areas
 - Waste Management Facilities
 - Wastewater Treatment Plant
 - Ergon Network
 - High Voltage
 - Low Voltage
 - Transmission Line
 - Ergon Regions
 - Powerlink Feeders
 - Powerlink Communications Site
 - Powerlink Transition Site
 - Powerlink Substation
 - Powerlink Corridor
 - QFRS Regions
 - OldBase_Colour

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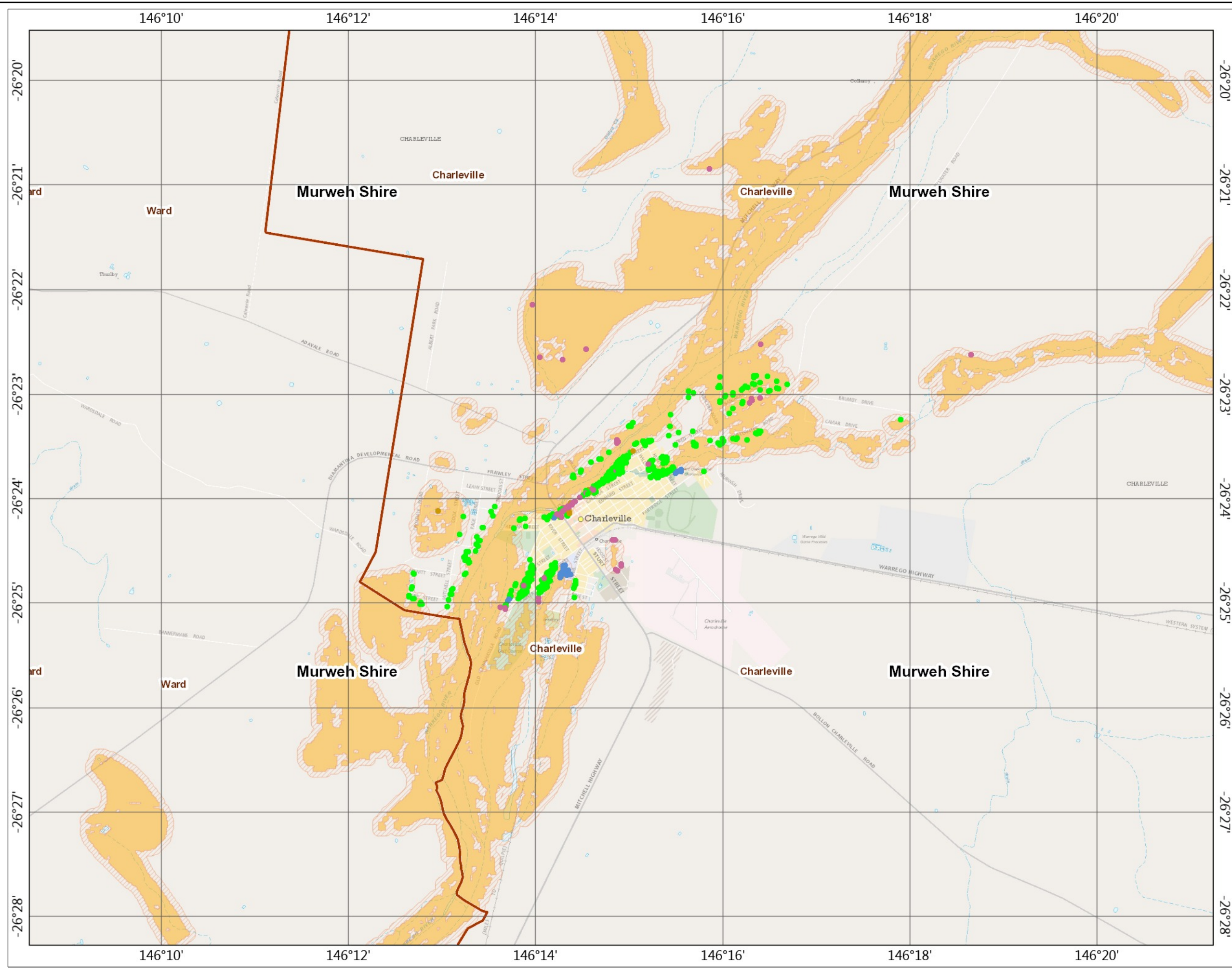


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Map 8. Locality: Charleville



Legend

- Local Government Areas
- Suburbs and Localities
- QFRS Regions
- Buildings In Bushfire Prone Area (Sept 2017)**
 - A Vulnerable persons centre
 - B Essential services
 - C Residential
 - D Commercial Industrial Agricultural
- Bushfire Prone Area**
 - Very High Potential Bushfire Intensity
 - High Potential Bushfire Intensity
 - Medium Potential Bushfire Intensity
 - Potential Impact Buffer
- QldBase_Colour

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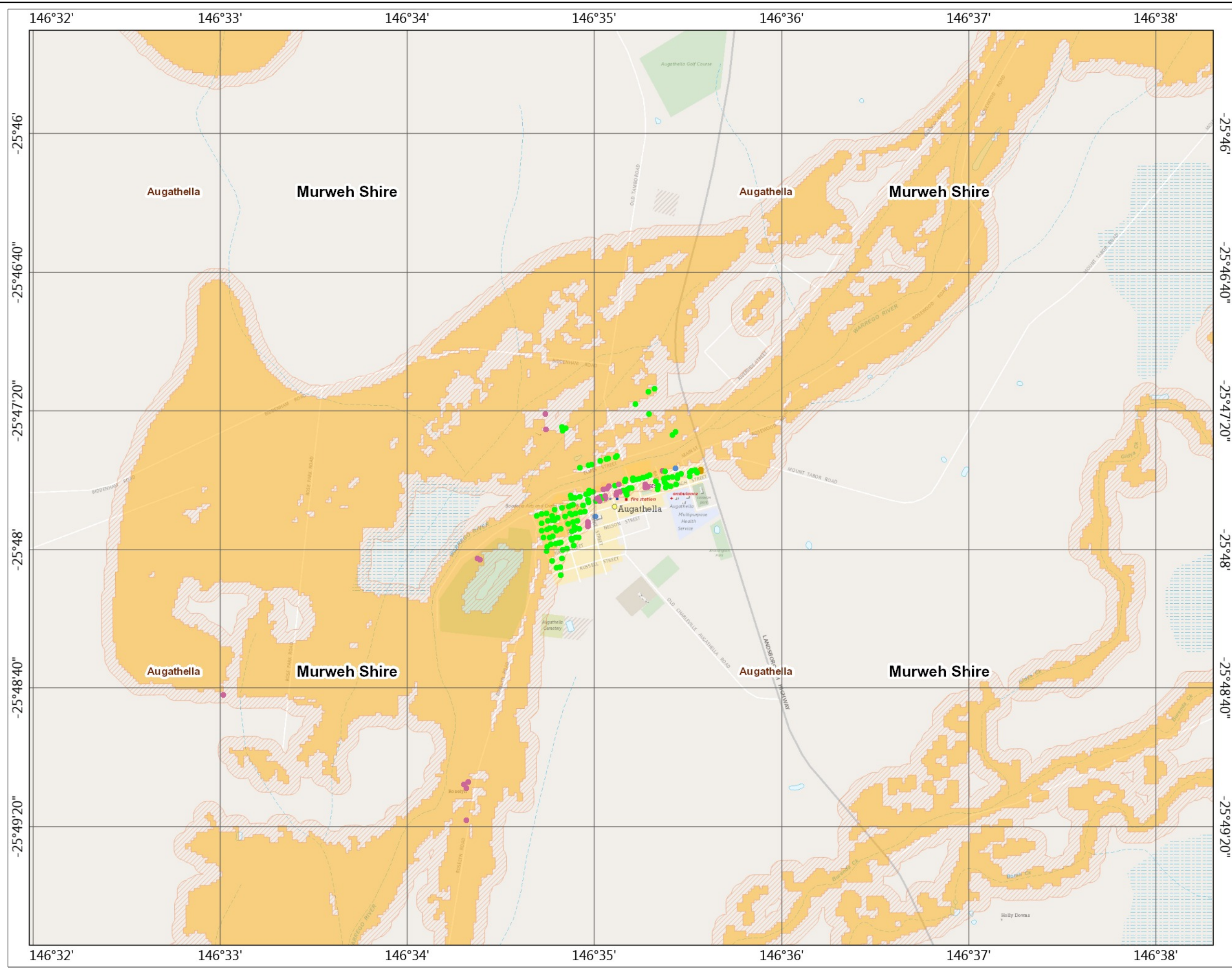
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Map 9. Locality: Augathella



- Legend**
- Local Government Areas
 - Suburbs and Localities
 - QFRS Regions
 - Buildings In Bushfire Prone Area (Sept 2017)**
 - A Vulnerable persons centre
 - B Essential services
 - C Residential
 - D Commercial Industrial Agricultural
 - Bushfire Prone Area**
 - Very High Potential Bushfire Intensity
 - High Potential Bushfire Intensity
 - Medium Potential Bushfire Intensity
 - Potential Impact Buffer
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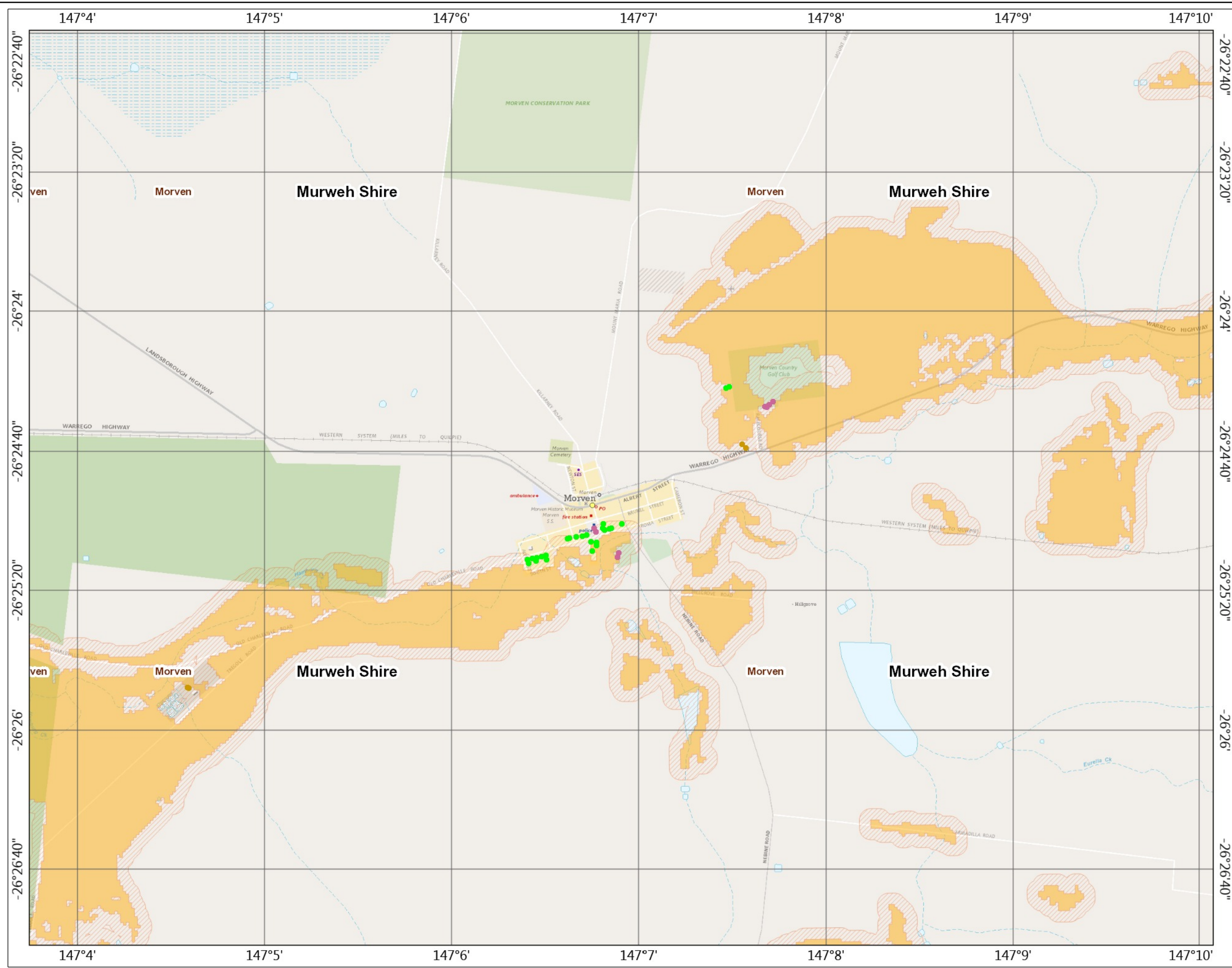
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Map 10. Locality: Morven



Legend

- Local Government Areas
- Suburbs and Localities
- QFRS Regions
- Buildings In Bushfire Prone Area (Sept 2017)**
 - A Vulnerable persons centre
 - B Essential services
 - C Residential
 - D Commercial Industrial Agricultural
- Bushfire Prone Area**
 - Very High Potential Bushfire Intensity
 - High Potential Bushfire Intensity
 - Medium Potential Bushfire Intensity
 - Potential Impact Buffer
- QldBase_Colour

Disclaimer: This product has been prepared for Queensland Fire and Emergency Services and Public Safety Business Agency. Other users must satisfy themselves it is accurate and suitable for their purpose. QFES & PSBA does not accept any liability for any loss or damage that may arise from the use of or reliance on this information.



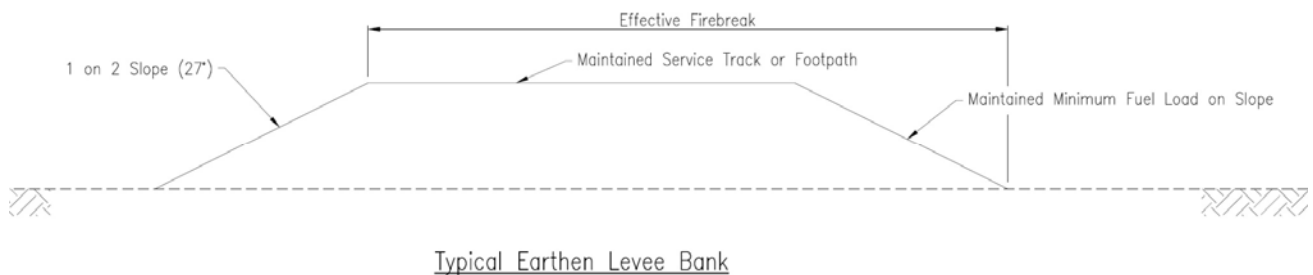
When printed at A3 - 1: 36,112
 0 0.92 1.83
 Kilometres
 WGS_1984_Web_Mercator_Auxiliary_Sphere

This map was automatically generated using Geocortex Essentials.



A3 map produced at:
 April 23, 2020 2:51:35 PM

Appendix A: Flood Levee banks as a Fire Break



Many western Queensland towns are located on the edge of river and creek systems and as a result are susceptible to flooding. To protect the town from flooding many towns are now fully or partially surrounded by earthen levee banks. These levee banks by the nature of their construction also act as a fire break, three attributes contributing to this are described.

Attribute 1: Levee banks have a reduced amount of vegetation on the slopes and top. To ensure the integrity of the levee banks local governments maintain the levee banks, ensuring they only have a grass covering and minimal or no trees. The grass covering is usually mowed to maintain the aesthetics of the town.

Attribute 2: To help with the levee banks upkeep, a maintained track or concrete footpath is usually found on the top of the levee bank. This fuel free zone provides an inherent fire break.

Attribute 3: Levee banks have steep slopes, the down slope on the town side of the levee bank is typically a 1 on 2 slope which equates to approximately down slope of 27°. This down slope can slow the forward speed of fire by up to a factor of six times.

When the above three attributes are combined, an effective fire break is established as demonstrated in the diagram above.