Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
	6A2 Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals) - Materials Handling - 100000 cubic metres per year of rocks, ores or minerals processed Mining Lease 2006 P/M			Apply 750m from the area shown in Figure 13 from EPA document.	
22	EPA Site - 8701 Quarry - 5B Extractive Pits - Extractive Industries - 20000 cubic metres per year of product. Mining Lease 1711 P/M	204 Forest Hall Road Cleveland	243828/1	300m Apply 300m out from the Mining Lease site as per Figure 14 from EPA documentation.	Rural Resource/Rural
23	Powranna Feedlot *No Related Documentation Found (Key NMC site)*	14532 Midland Highway Powranna	136123/1 (associated titles 115452/2; 173566/1; 143422/1) Also 164539/1 118 Powranna Road, Powranna TAS 7300	3000m Apply 3000m from the combined property boundaries of CT 136123/1; CT 115452/2 and 137695/1) *(Aerial imagery suggest these are the critical titles.)*	Rural Resource/Rural
24	EPA Site – 654/1 Perth Wastewater Treatment Plant 3A Wastewater Treatment Works - Wastewater Treatment - 450 kilolitres per day of design capacity to treat an average dry weather flow of sewage or wastewater	Sewage Treatment Lagoons Midland Highway	149446/1	200m Apply 200m from the property title boundary – entire site is affected.	Utilities/Utilities

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Appendix 5 – Attenuation Code Sites

Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
	(Secondary treatment)				
25	EPA Site - 9120 Western Junction Sawmill 2G Wood Processing Works - Manufacturing and Mineral Processing - 20000 cubic metres per year of product.	141 Perth Mill Road Western Junction	134004/1	500m Apply 500m from the property boundary of the Title CT 134004/1 EPA document refers to the entire parcel.	Rural Resource/Rural
26	EPA Site – 481/1 Evandale Wastewater Treatment Plant 3A Wastewater Treatment Works - Wastewater Treatment - 375 kilolitres per day of design capacity to treat an average dry weather flow of sewage or wastewater (secondary treatment)	Sewage Treatment Lagoons Lot 1 Logan Road Evandale	39223/1 (associated title 154873/1)	200m Apply 200m from the property boundary of the Title CT 39223/1.	Utilities/Utilities
27	EPA Site – 7518/1 Avoca Sawmill 2G Wood Processing Works - Manufacturing and Mineral Processing - 999 cubic metres per year of product. (Permit No. 1135)	Avoca Sawmill 2352 Esk Main Road, Avoca	243096/1 (associated titles 250729/2; 45/874; 45/874;45/874[2]) AND are included in EAP Documentation for the Site	500m Apply from the hatched area shown in Figure 15 based on EPA document. 	Rural Resource/ Rural
28	EPA Site - 8902 Bald Hill Bauxite Project	Meadowbank 150 West Street	166007/1	750m	Rural Resource/ Rural

[2] Three lots with the same Title Reference – but shown as separate lots on the Cadastre

Appendix 5 – Attenuation Code Sites

Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
	6A2 Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals) - Materials Handling - 375000 cubic metres per year of rocks, ores or minerals processed. (Mining Lease 1961 P/M)	Campbell Town		Apply 750m from the land shown as part of Mining Lease 1861 P/M and delineated in red in Figure 16 at the end of this list. (Based on the EPA documentation)	
29	EPA Site - 1578 2G Wood Processing Works - Manufacturing and Mineral Processing – 999 cubic metres per year of product.	49 High Street Campbell Town	55777/5 (associated titles 55777/6; 55777/7)	250m Apply 250m from the combined property boundaries of the 3 titles *(EPA documentation appears to refer to an old address – Permit is from 1996)*	General Residential/General Residential
30	EPA Site – 9380/1 Campbell Town Waste Treatment Plant 3A Wastewater Treatment Works - Wastewater Treatment - 325 kilolitres per day of design capacity to treat an average dry weather flow of sewage or wastewater	Sewage Treatment Lagoons 25 Harrison Street Campbell Town	165954/1	350m Apply 350m from the title boundary *(Ponds appear to be a mixture of aerated and aerobic lagoons – based on aerial imagery)*	Utilities/Utilities
31	EPA Site – 8002/1 Caltex Site CS Contaminated Site - Contaminated Sites (Currently Regulated) – (USE FOR POTENTIAL CONTAMINATED SITES OVERLAY)	184 High Street, Campbell Town	202749/1	Triggers the Contaminated Soil Code Applies to the entire site – we will still need to apply an overlay – refer to pp48-49 in Guideline 1 for C14.0	Particular Purpose/Particular Purpose

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Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
				Potentially Contaminate Land Code. **Not an Attenuation Code Activity.**	
32	EPA Site - 9156 Quarry 6A2 Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals) - Materials Handling - 130000 cubic metres per year of rocks, ores or minerals processed. (Mining Lease 2006 P/M)	Quorn Hall 295 Lake Leake Road Campbell Town	109837/10 AND 108934/2 (based on EPA doc)	1000m Apply from area outlined in yellow in Figure 17 based on the EPA document. *(References blasting and also appears to indicate 2 titles partially involved.)*	Rural Resource/Rural (apply to both titles)
33	EPA Site - 9830 Quarry 6A2 Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals) - Materials Handling - 140000 cubic metres per year of rocks, ores or minerals processed. (Mining Lease – 1502 P/M)	Tunbridge Tier Quarry 78 Tunbridge Tier Road Tunbridge	170439/4 AND 131849/1	1000m Apply from area outlined in red in Figure 18 based on EPA document. (References blasting and indicates 2 titles partially involved)	Rural Resource/Rural (apply to both titles)
34	Roberts Sale Yard Resource Processing *(Key NMC site)*	73 Powranna Road	176230/1; 176230/2	500m Apply from combined title boundary.	Rural Resource/Rural (apply to both titles)
35	Elders Saleyard Resource Processing *(Key NMC site)*	119 Powranna Road	143421/1	500m Apply from property title boundary.	Rural Resource/ Rural
36	EPA Site – 7496 Poppy Farm Resource Processing	710 Mount Joy Road Cressy	156925/1	500m	Rural Resource/Rural

2-204

Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
	(Use EPA details from item No 21 above but apply to this address & Title) *(Key NMC site)*	(NB list shows the address as 701 Mount Joy Road, but EPA permit refers to710 Mount Joy Road)		Apply 500m from the hashed square in Figure 12 at the end of this list. The aerial imagery for this map looks more like the EPA site in No 21 above. EPA symbol seems to have been applied to the incorrect parcel in the LIST –or there have been changes in the titles since the EPA permit was granted.	(Use Class – Resource Processing – Permitted Use without qualification in SPP)
37	Sports Complex Dragway (Use Class – Motor Racing Facility)	311 Powranna Rd Powranna	135381/1	3000m Apply from boundary of the property title.	Recreation/ Recreation
38	TasWater Sewage Treatment Plant (aerial imagery appears to be an aerated lagoon – although significant algal growth on top) Not an EPA site – volume unknown.	Sewage Treatment Plant Chiswick Road Ross	148121/1	400m Apply attenuation distance 400 m from property boundary *(Distance based on precautionary principle – pending further/new information)*	Utilities/Utilities
39	Campbell Town Waste Transfer Station *(Aerial imagery indicates non-putrescible waste)*	100 Sprent Street Campbell Town	147650/1	150m Apply attenuation distance 150 m from property boundary	Utilities
40	Avoca Waste Transfer Station	2352 Esk Main Road, Avoca	105863/9	150m	Utilities (Split Zoning with Rural)

Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
	(Aerial imagery indicates non-putrescible waste)			Apply attenuation distance 150 m from land shown as zoned Utilities in Figure 19 at end of this list.	
41	Sports Complex Symmons Plains Raceway	14872 Midland Highway, Perth	148056/1	3000m Apply from boundary of the property title.	Recreation/Recreation
42	Nile Sewage Treatment Ponds? (aerial imagery appears to be an aerated lagoon – although significant algal growth on top) Not an EPA site – volume unknown.	Nile Road, Nile	102791/1 *(Cadastre does not appear well aligned with aerial imagery here – title boundary clearly south of lagoon.)*	400m Apply attenuation distance 400 m from property boundary *(Distance based on precautionary principle – pending further/new information)*	Utilities/ Utilities
43	Evandale Waste Transfer Station *(Aerial imagery indicates non-putrescible waste)*	58 Gunn Street, Evandale	149359/1	150m Apply attenuation distance 150 m from property boundary	Utilities/Utilities
44	Tasmanian Gun Club Gun and Rifle	200 Nile Road Evandale	32703/5	2000m Apply attenuation distance 2000m from the property boundary.	Recreation/Recreation
45	Longford Waste Transfer Station (Aerial imagery unclear – seem to be large pile of possible putrescible waste)	291 Marlborough St Longford	141606/1	300m Apply 300m attenuation distance from title property boundary. *(Distance based on precautionary principle –*	Utilities/Utilities

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Site No	Activity	Address	Title Reference	Attenuation Code Distance (m)	Zone in NM IPS 2013 /Proposed LPS
				pending further/new information)	
46	Cressy Gun Club (firing ranges)	1383 Powranna Road Cressy	65203/1	2000m Apply attenuation distance from title property boundary	Rural Resource/Rural
47	Stanhhope Mine (Quarrying appears to be occurring on CT 225390/1) Not an EPA site	75 Story's Creek Road Avoca	220073/1 *(Quarrying appears to also be occurring on CT 225390/1)*	1000m Apply 1000m attenuation area from the red area identifying the Stanhope Mine in Figure 20 at the end of the list.	Rural Resource / Rural
48	Quarry Not an EPA site	75 Story's Creek Road Avoca	225390/1	300m Apply 300m attenuation distance from the property boundary.	Rural Resource/Rural
49	Launceston Gun Club (firing range)	813 Liffey Road Bracknell	28556/1	2000m Apply attenuation distance from title property boundary	Rural Resource/Rural
50	Brick Works ?/ Storage/ Distribution Centre/ Display Centre *Identified during check of EPA sites.*	16525 Midland Highway Perth	170418/1	300m Apply attenuation distance from title property boundary *(Distance based on precautionary principle – pending further/new information)*	Rural Resource/Rural *(NB – Split zoning with PPZ-2.0 approved planning permits for Vehicle Fuel Sales)*

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General Questions for TPC and Answers:

1) Associate attenuation code overlay with only the title on which the EPA[3] icon is located or with all titles associated with the address? *A) only apply to the titles associated with the EPA permit (as The Land) and/or the area identified in any additional schedules – see Figures below)*

2) If more than 1 activity associated with a title – which of the overlay codes should be applied? Both or just the one with the larger attenuation distance? *A) On the basis of the precautionary principles – apply both – in case one use ceases.*

3) Reading C9.2 Application of this code – should the overlay be applied to activities in Table C9.1 and C9.2 when those activities are located in the zones listed in C92.2 and C92.3? *A) Only if the attenuation distance goes beyond the exempt zones. As soon as the attenuation overlay applies to other zones – it should be shown. NB – Ensure correctly shown for the 2 activities in the Longford General Industrial Zone (EPA sites for wood works & Abattoir)*

4) Should the overlay only be applied to adjoining land if it is not in those zones – hence rather than showing the attenuation distance from all of the subject property boundaries – the overlay needs to be amended to reflect the underlying zone? *A) Yes see answer to 3 above.*

NB – Where the EPA notices contained limited information as to the precise activities being conducted at each site – the largest attenuation code distance has been applied in line with the Precautionary Principle. The overlay should cover the land within the site as well as the stipulated distance from the site area boundary. Expectation is that feedback during the TPC Public Consultation Process will provide opportunities to update the setback distances to reflect the actual operations.

2–208

[3] Sites derived from List Layer showing EPA sites as at 17 April 2019.

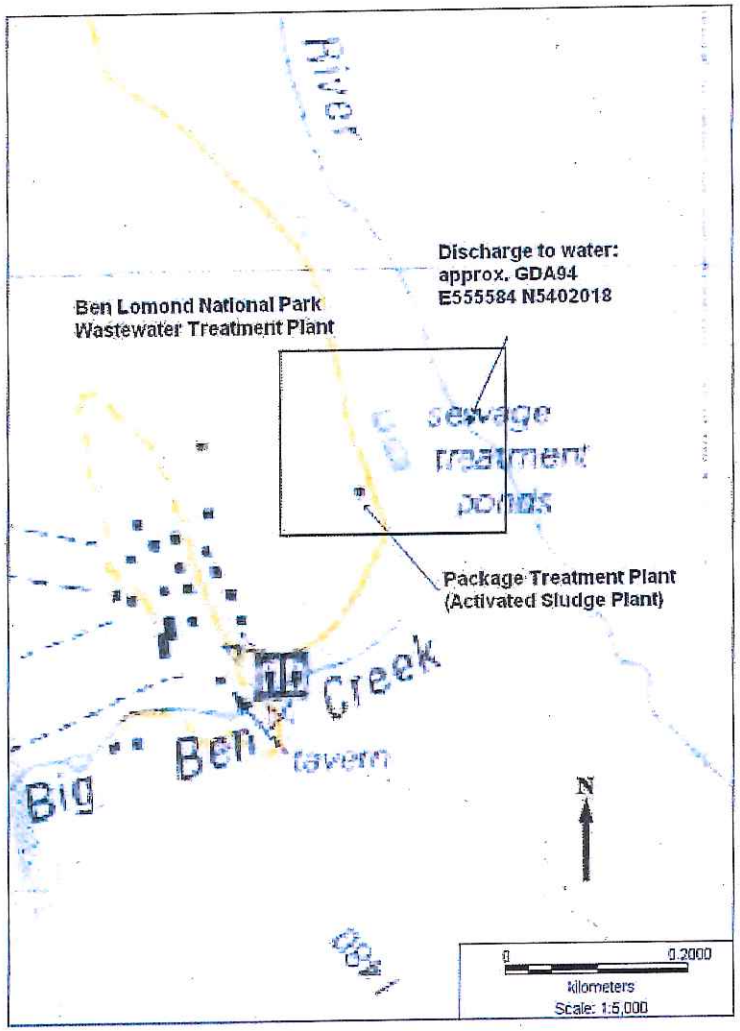
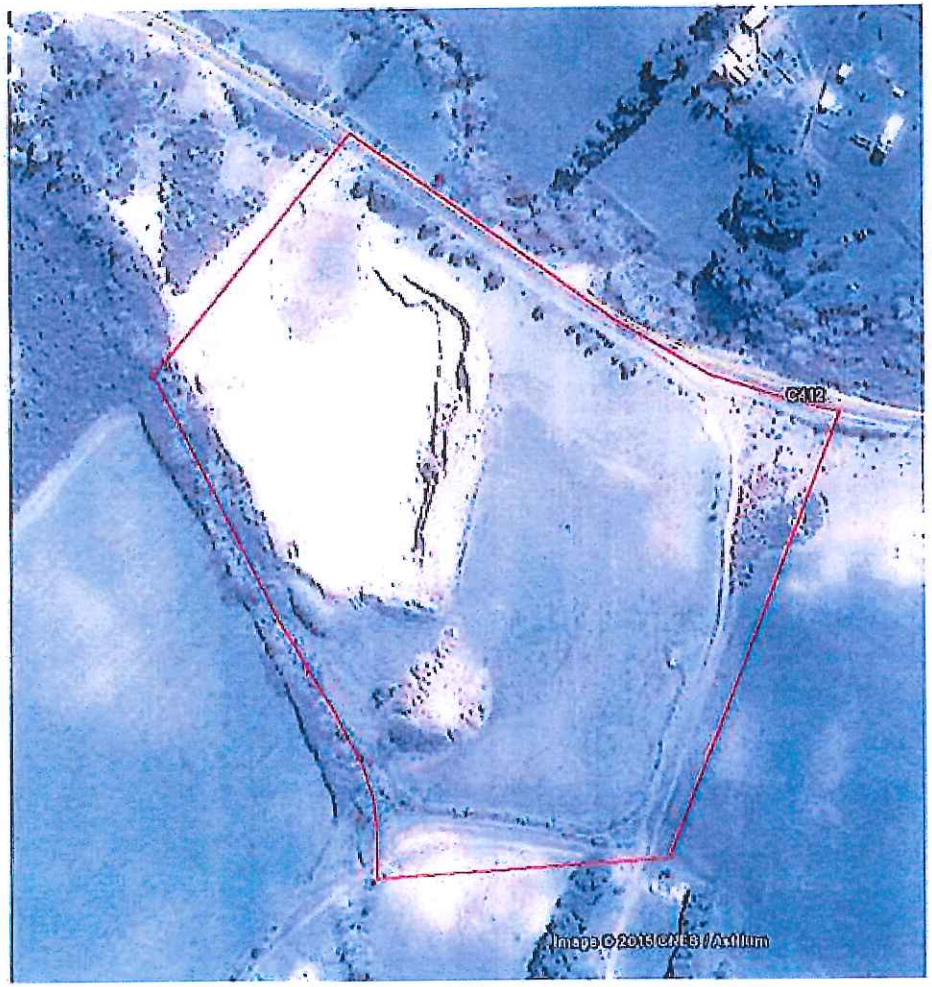


Figure 1- Ben Lomond Waste Treatment Plant – showing the area from which 150m Attenuation Code is to be applied; EPA Site Notice 8109/1

2-209



Mining Lease 1317 P/M.

Figure 2 - 300m Attenuation distance is to be applied from the red line bounding the Mining Lease site (CT 136094/2); EPA Site Notice 9195/1

2-210

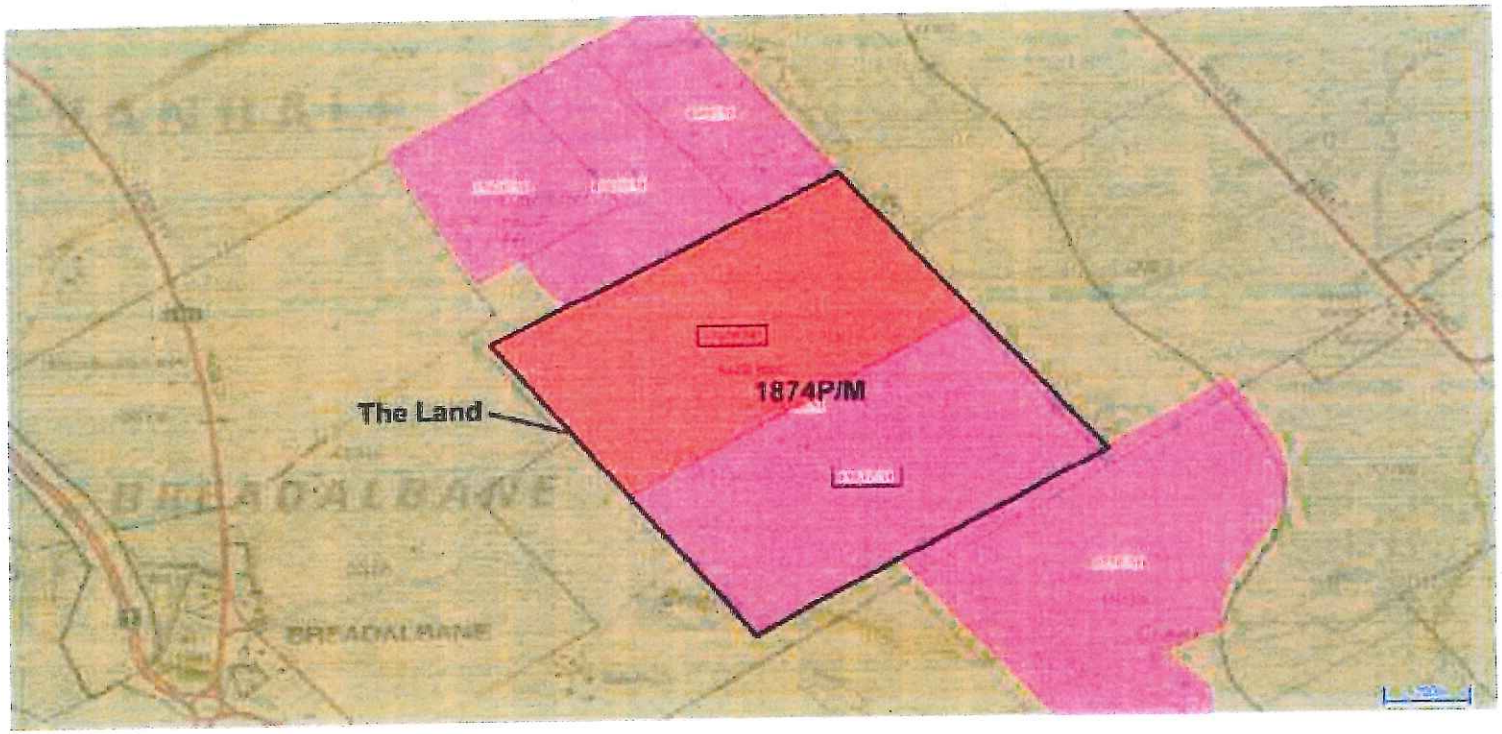


Figure 3 - 500m Attenuation distance to be applied from black lone surrounding "The Land" encompassing Mining Permit 1874 on Titles 157107/1 and 159125/2 (NB aerial imagery indicates that most of the current activity is located on CT 157107/1)

That part of mining lease 1958P/M as bounded by the below co-ordinates (within the Blue Boundary).

Position ID	Easting	Northing
North West Corner	516468.60	5404224.21
North East Corner	516672.87	5404368.20
South West Corner	517057.73	5403821.94
South East Corner	516844.11	5403691.08

(Coordinate Datum - WGS84)

Figure 4 - 750m Attenuation distance to be applied from the area delineated in blue – comprising part of CT 144549/1; EPA Site Notice 8742/3

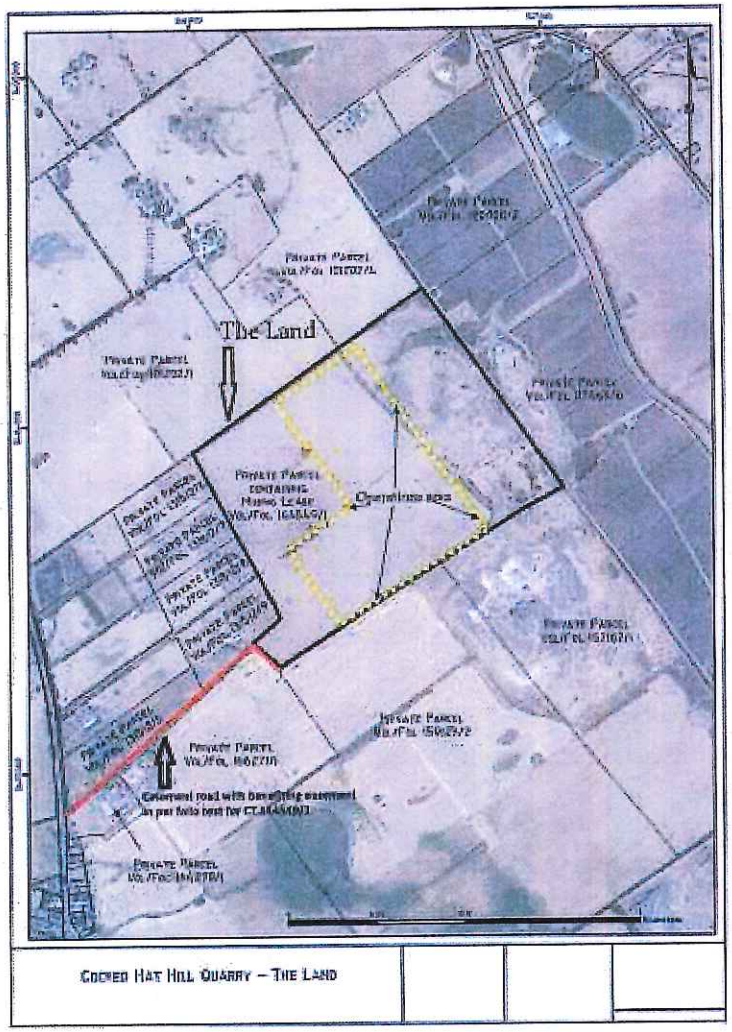


Figure 5 - 1000m Attenuation distance to be applied from yellow dotted line (Operations area) on CT 144549/1; EPA Site Notice 9656

2-213

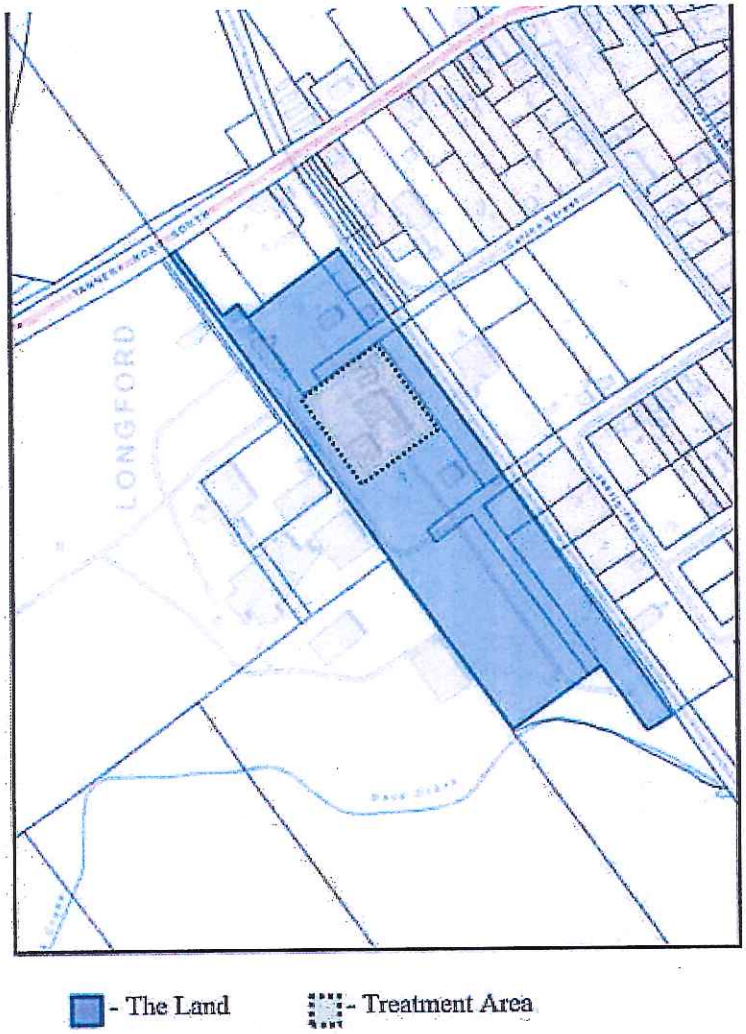


Figure 6 - 300m Attenuation distance to be applied from the land identified in blue - incorporates a number of titles either whole or partially; EPA Site Notices 7418 & 9608/1

2-214

Figure 7 - Attenuation distance of 300m to be applied to the entire title (CT 15047/1) as the EPA document is unclear as to the area to which the Mining Lease applies; EPA Site Notice 9094/1

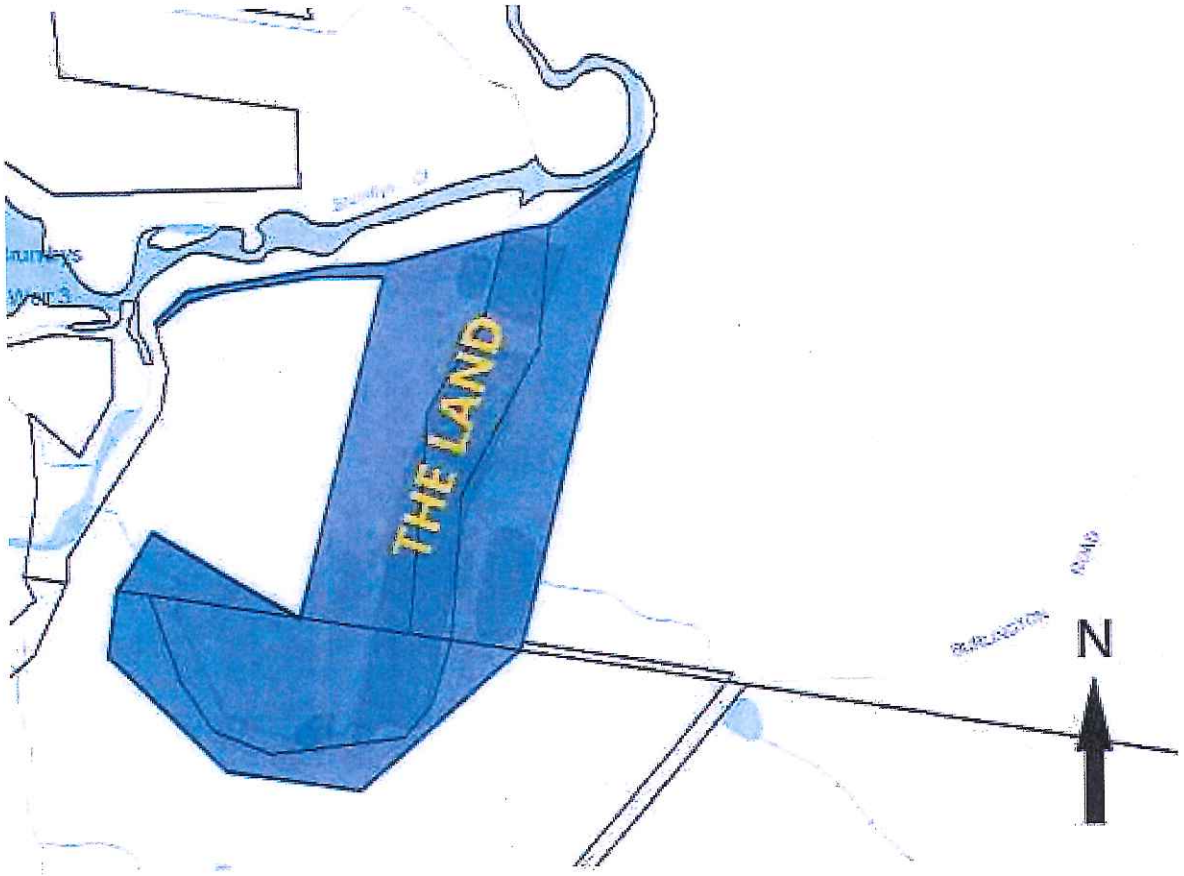


Figure 8 - Attenuation distance of 100m to be applied to the perimeter of the area shown in blue (which includes titles as listed in the table above); EPA Site Notice 9923/1

2-216

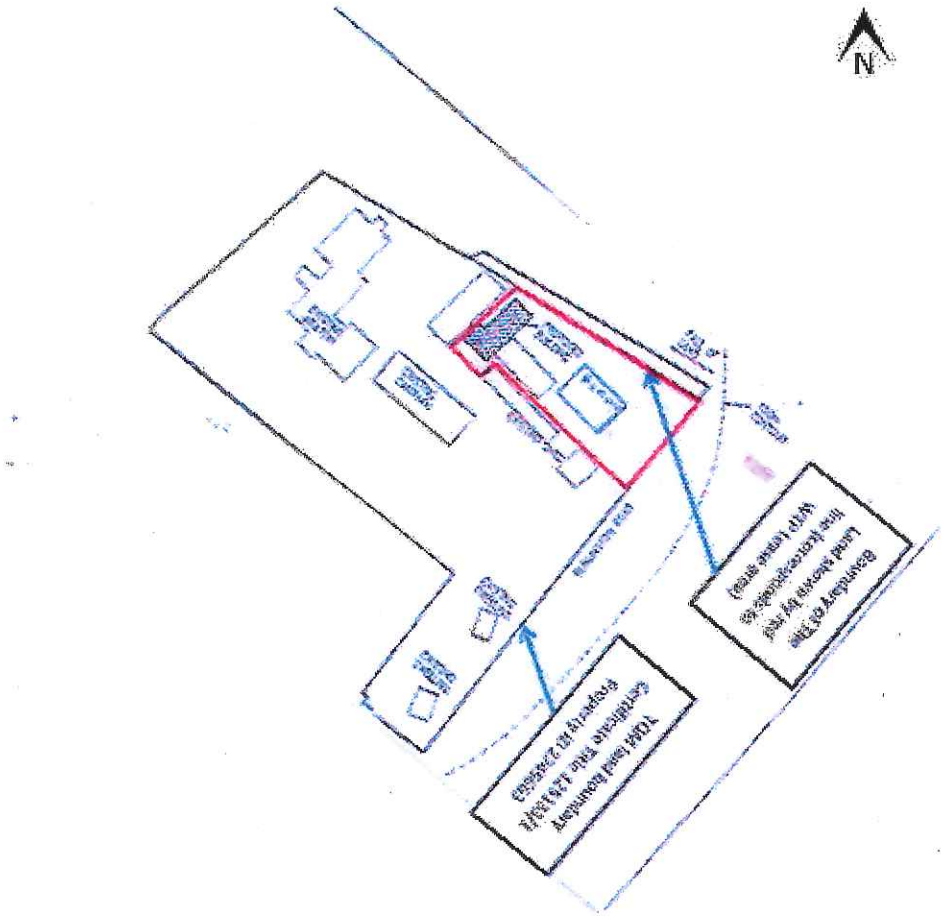


Figure 9- 1500m Attenuation distance to be applied from the area outlined in red; part of CT 125133/1; EPA Site Notice 8986

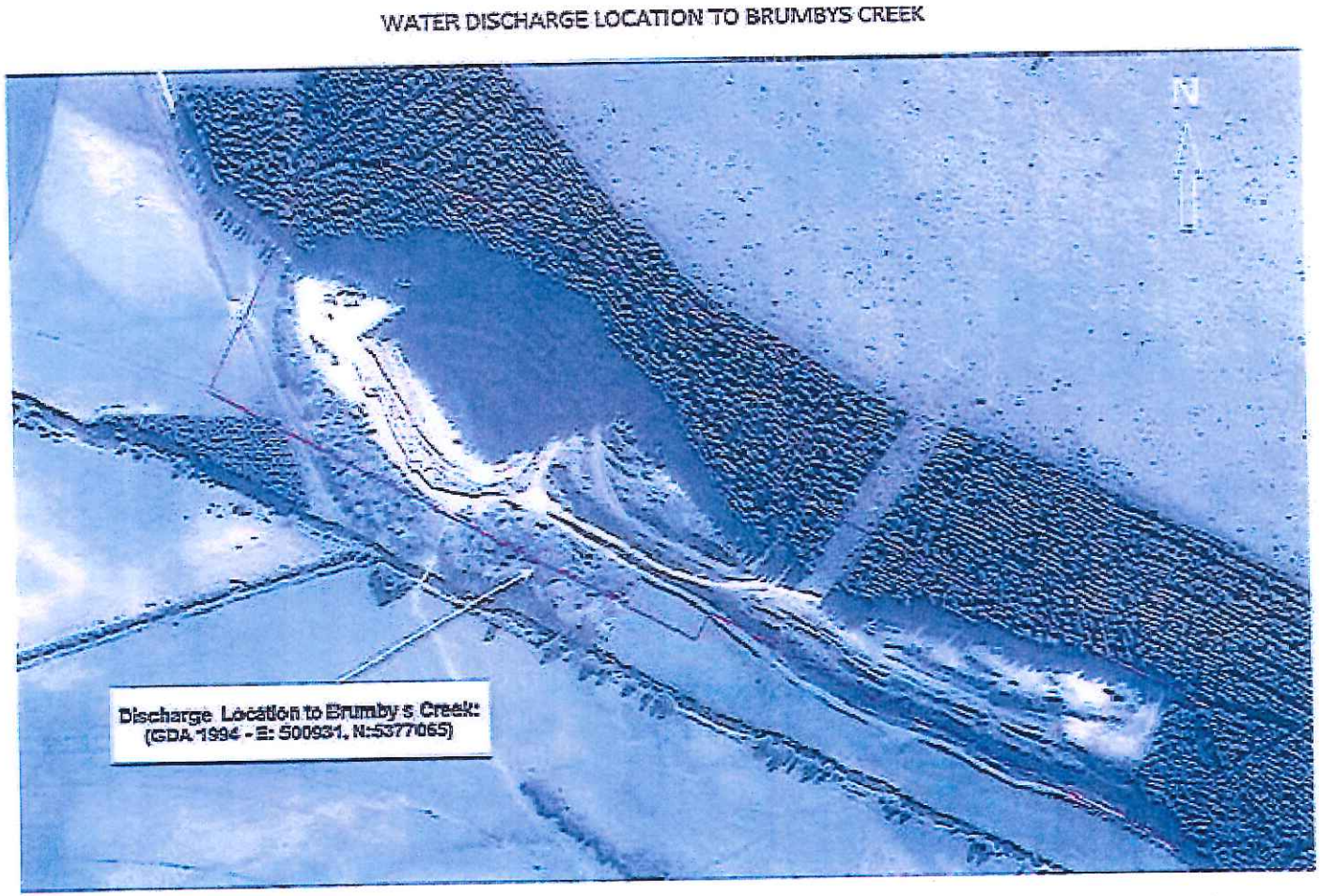


Figure 10 - 750m Attenuation distance to be applied from the area outlined in red – part CT 101400/5; EPA Site Notice 7773/1

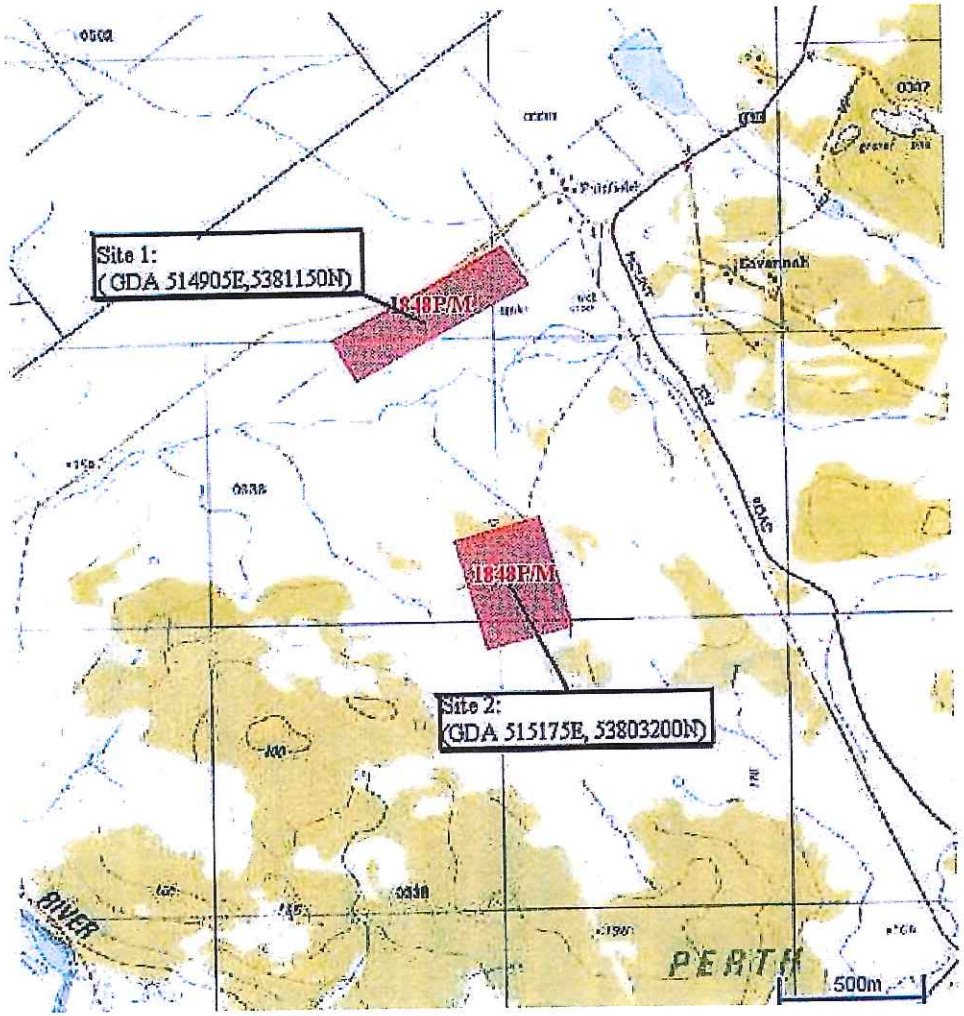


Figure 11 - Apply 300m Attenuation distance around the sites shown in red above; part of CT116920/1; EPA Site Notices 7576 & 7888/3

2-219

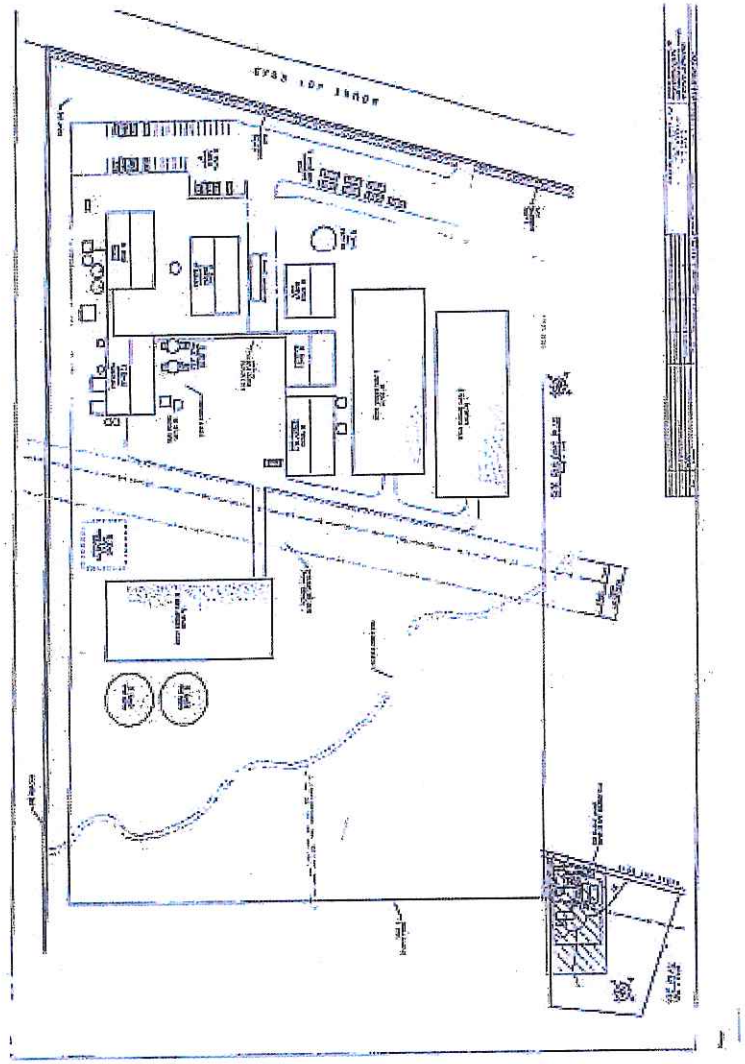


Figure 12 - Apply 1500m Attenuation distance from the outside of the hashed area (small insert in bottom right); part of CT 152765/1; EPA Site Notice 7496

The Land

The Land is delineated by a black boundary and is defined as Mining lease 2006P/M

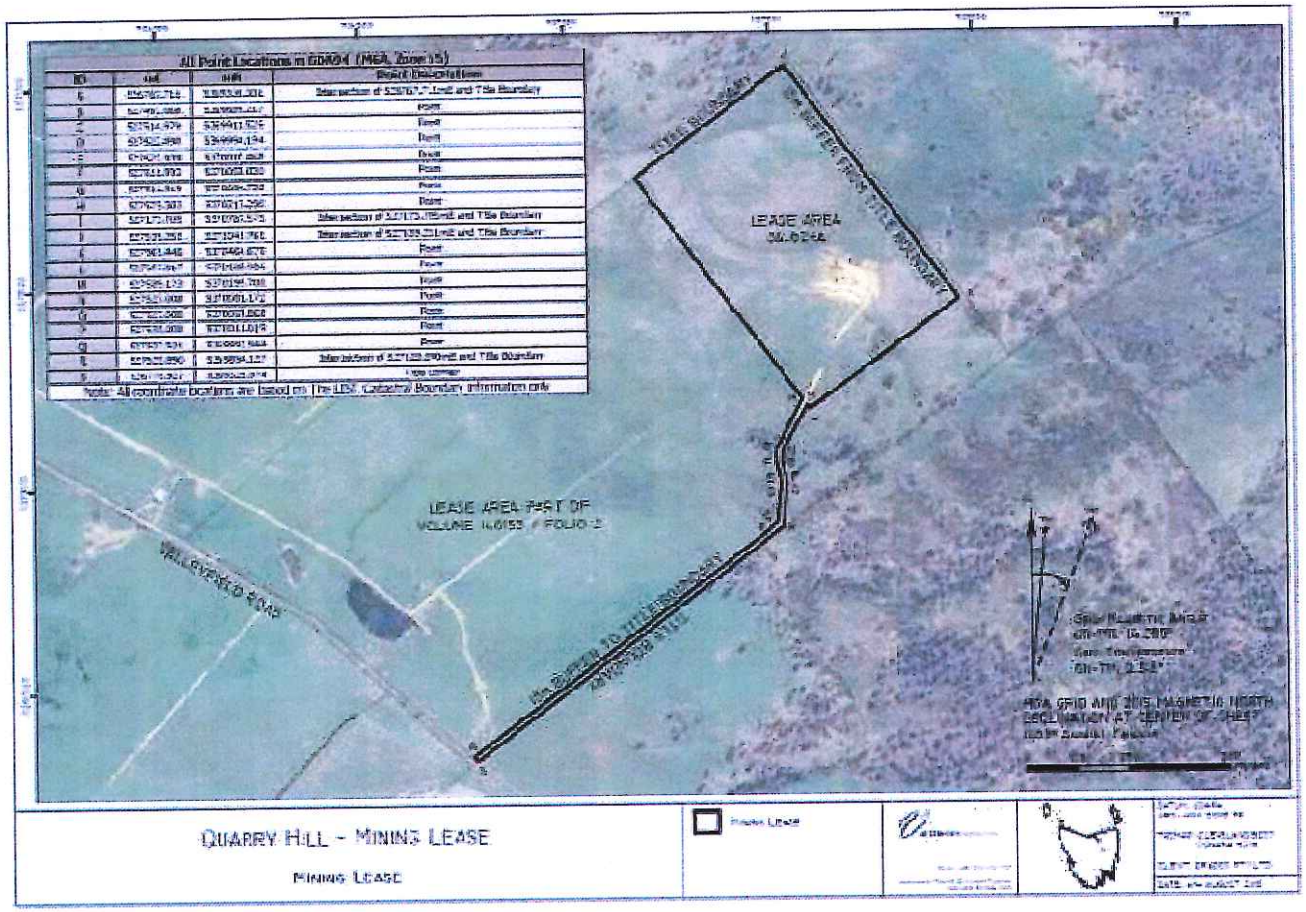


Figure 13 - 750m Attenuation distance to apply from the land outlined in black above. (Part of CT 140153/2); EPA Site Notice 9694

2-221

Appendix 5 – Attenuation Code Sites

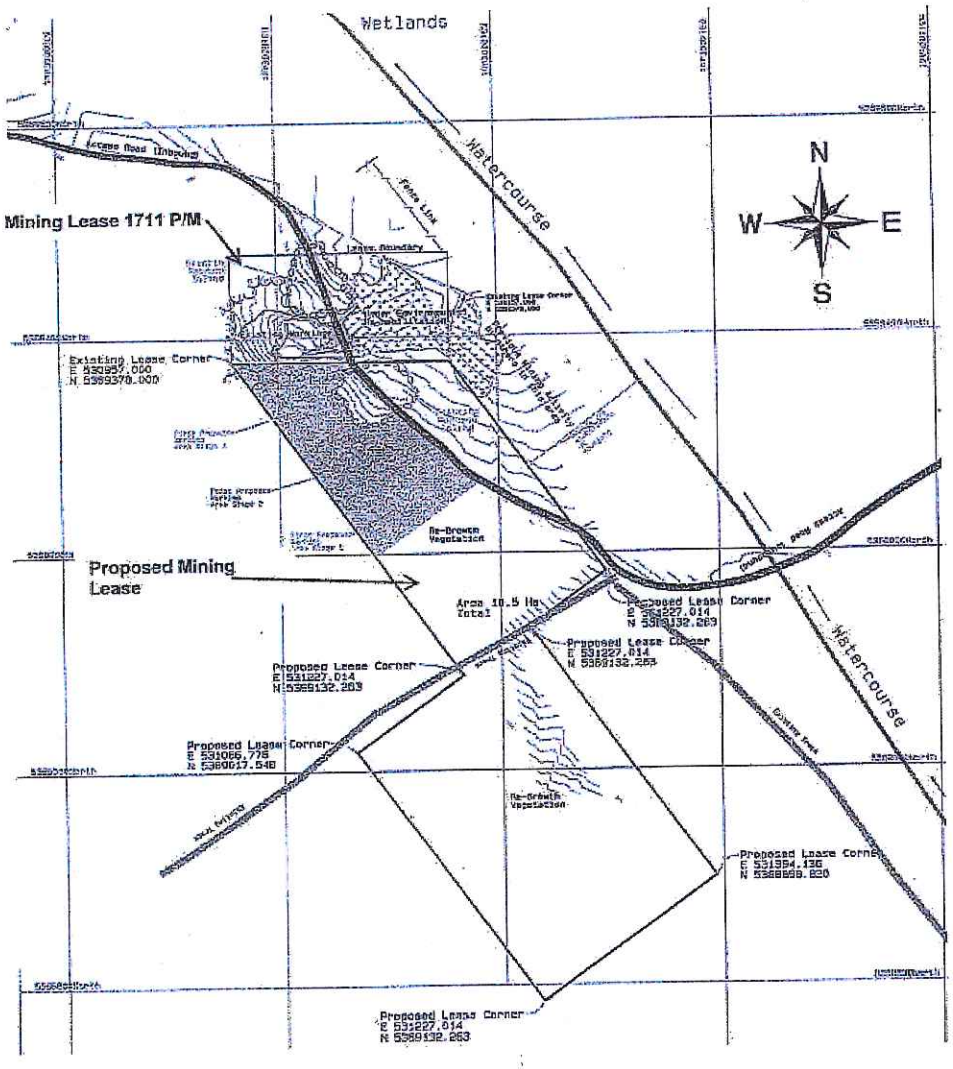


Figure 14 - 300m Attenuation distance to be applied from the boundaries associated with Mining Lease 1711 P/M and Proposed Mining Lease (part of CT 243828/1) Roads shown are internal tracks to the property; EPA Site Notice 8701;

2-222

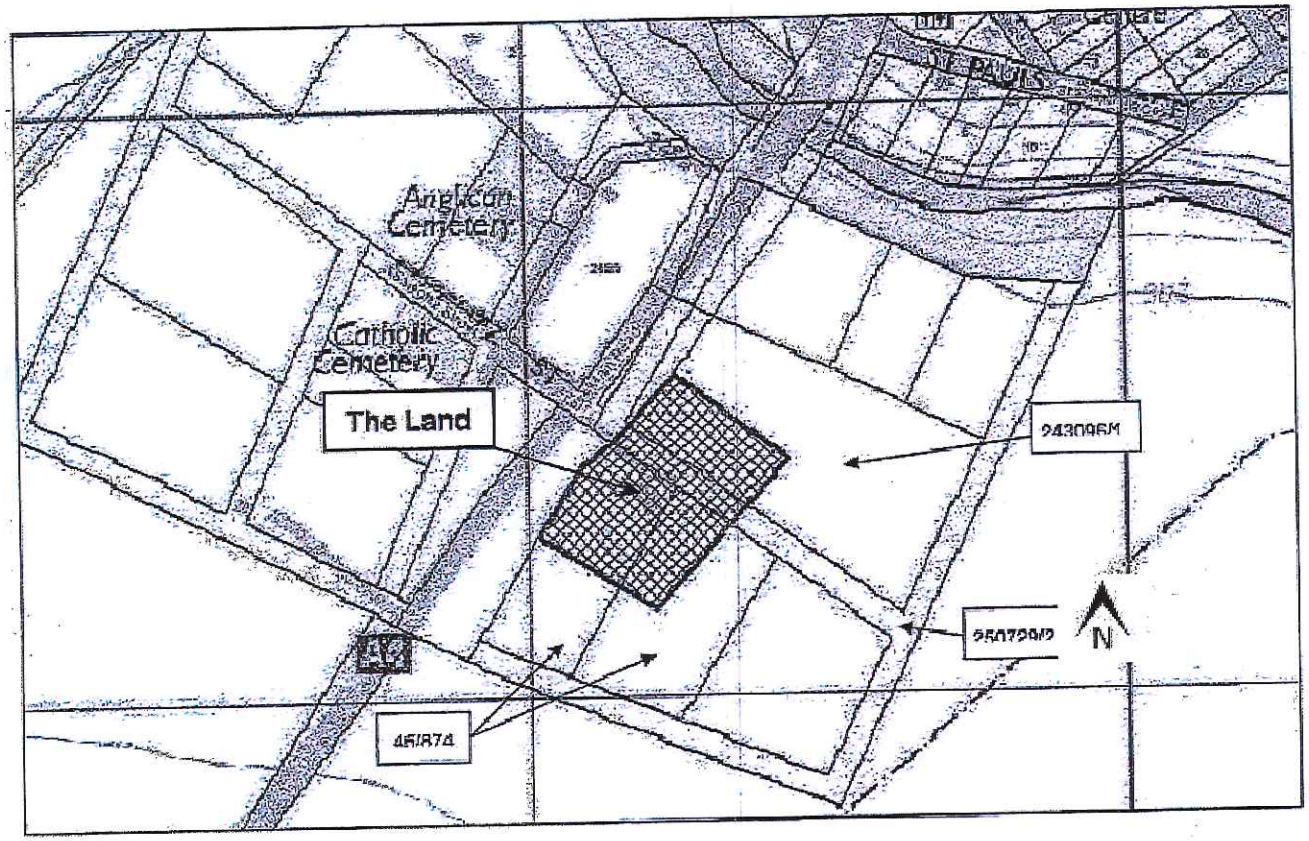


Figure 15 - 500m Attenuation distance from the hashed area "The Land" incorporating parts of the three titles shown; EPA Site Notice 27;

2-223

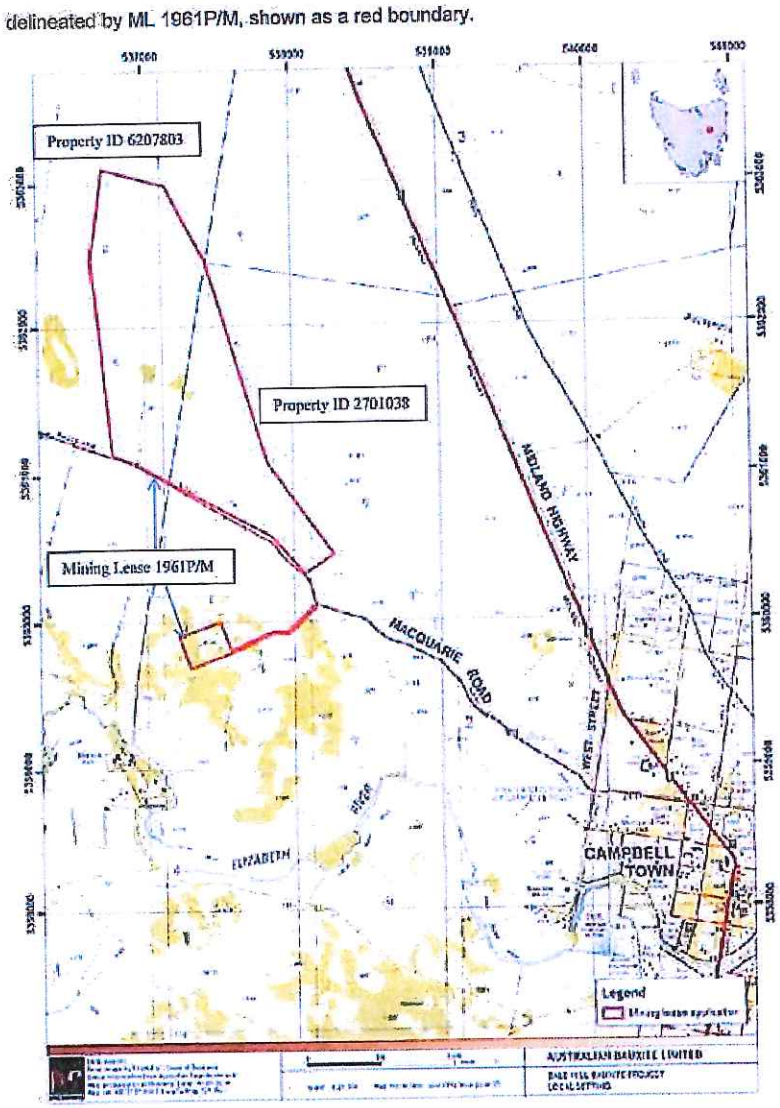


Figure 16 - 750m Attenuation distance to be applied from the Mining Lease Land outlined in red - part of CT 166007/1; EPA Site Notice 8902

2-224

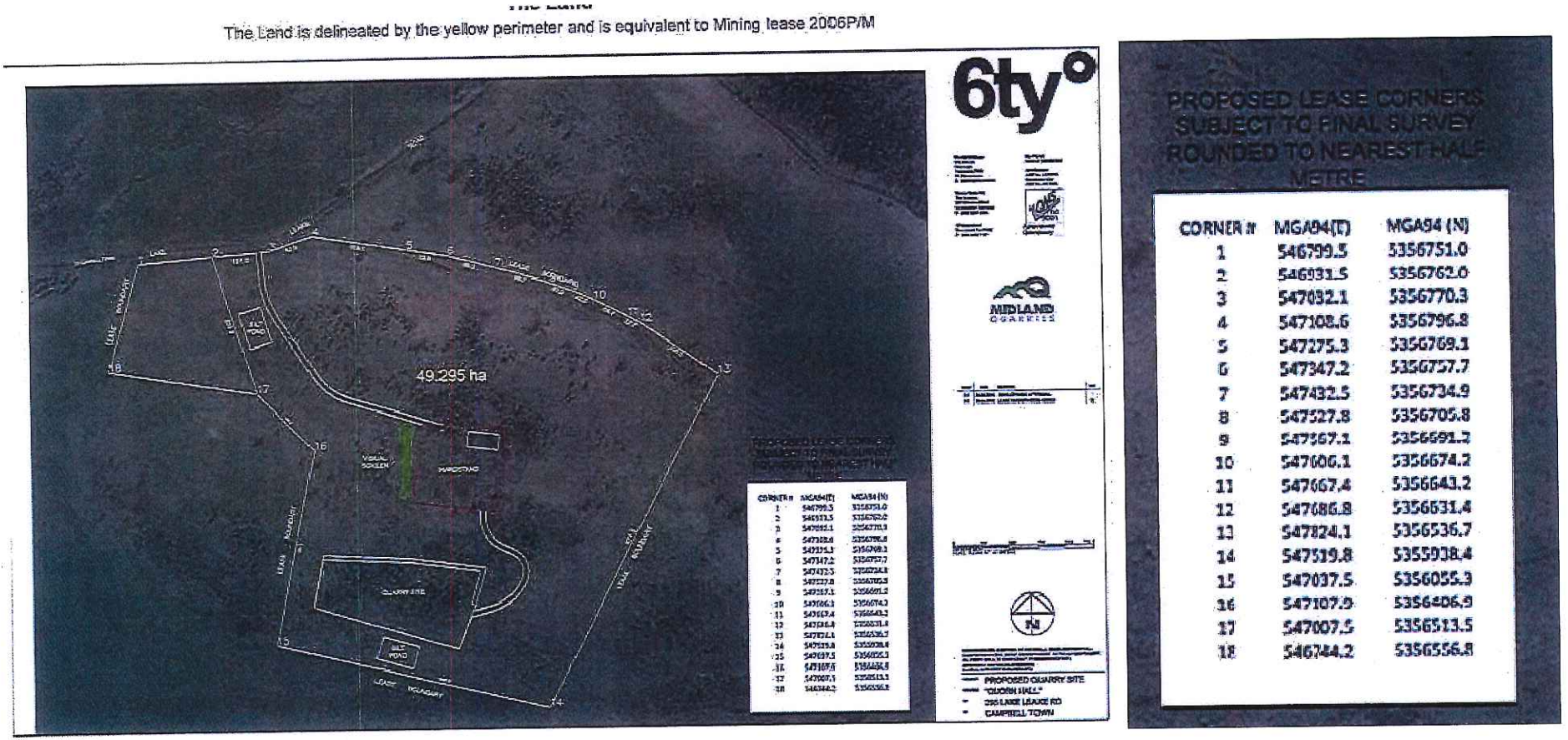


Figure 17 - 1000m Attenuation distance to be applied from the land outlined in yellow (appears to involve 2 titles CT 109837/10 and CT 109834/2); EPA Site Notice 9156

2-225

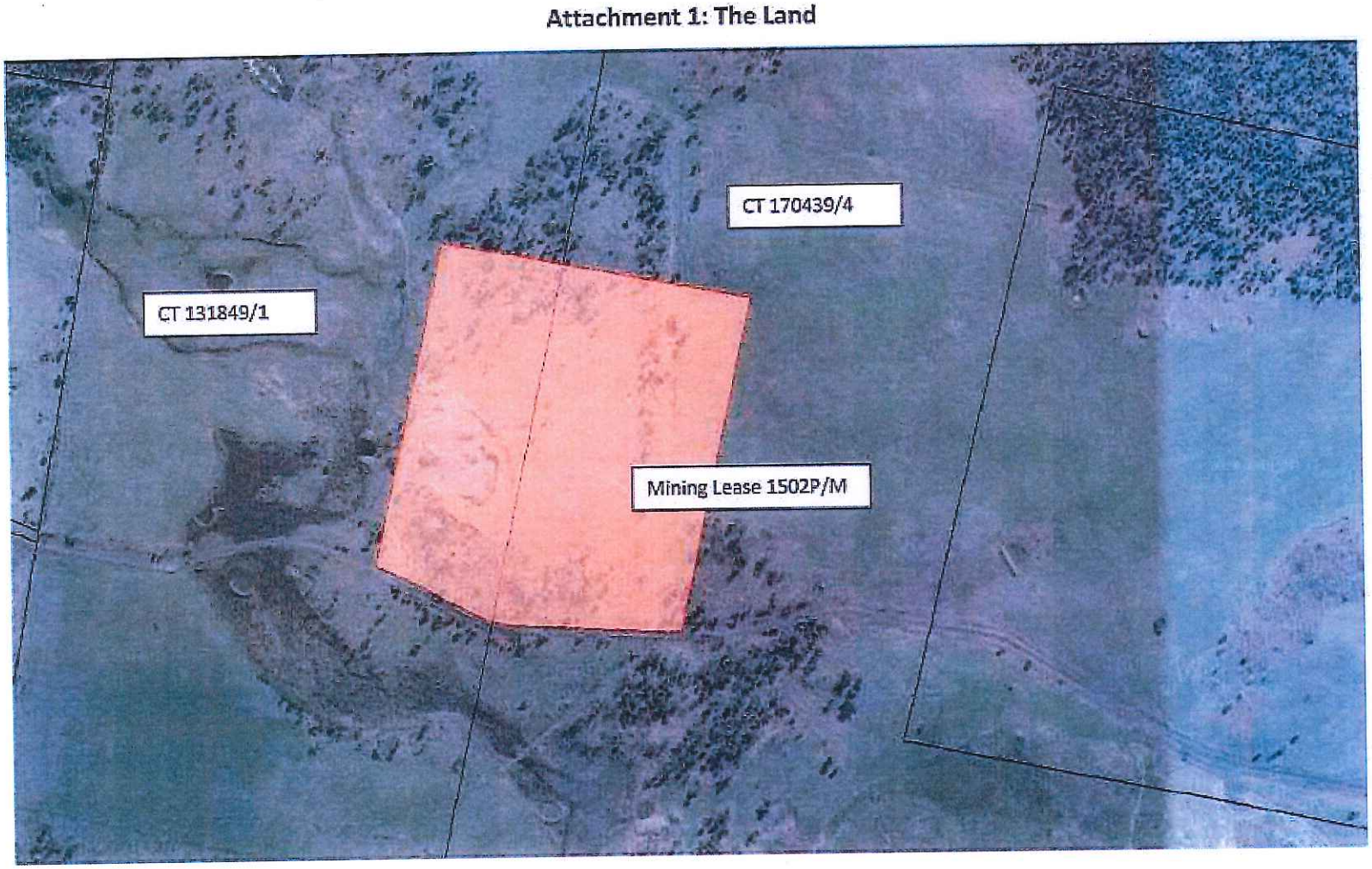


Figure 18 -1000m Attenuation distance to be applied from the outside boundary of the red area identifying Mining Lease 1502P/M; EPA Site Notice 9830

2-226

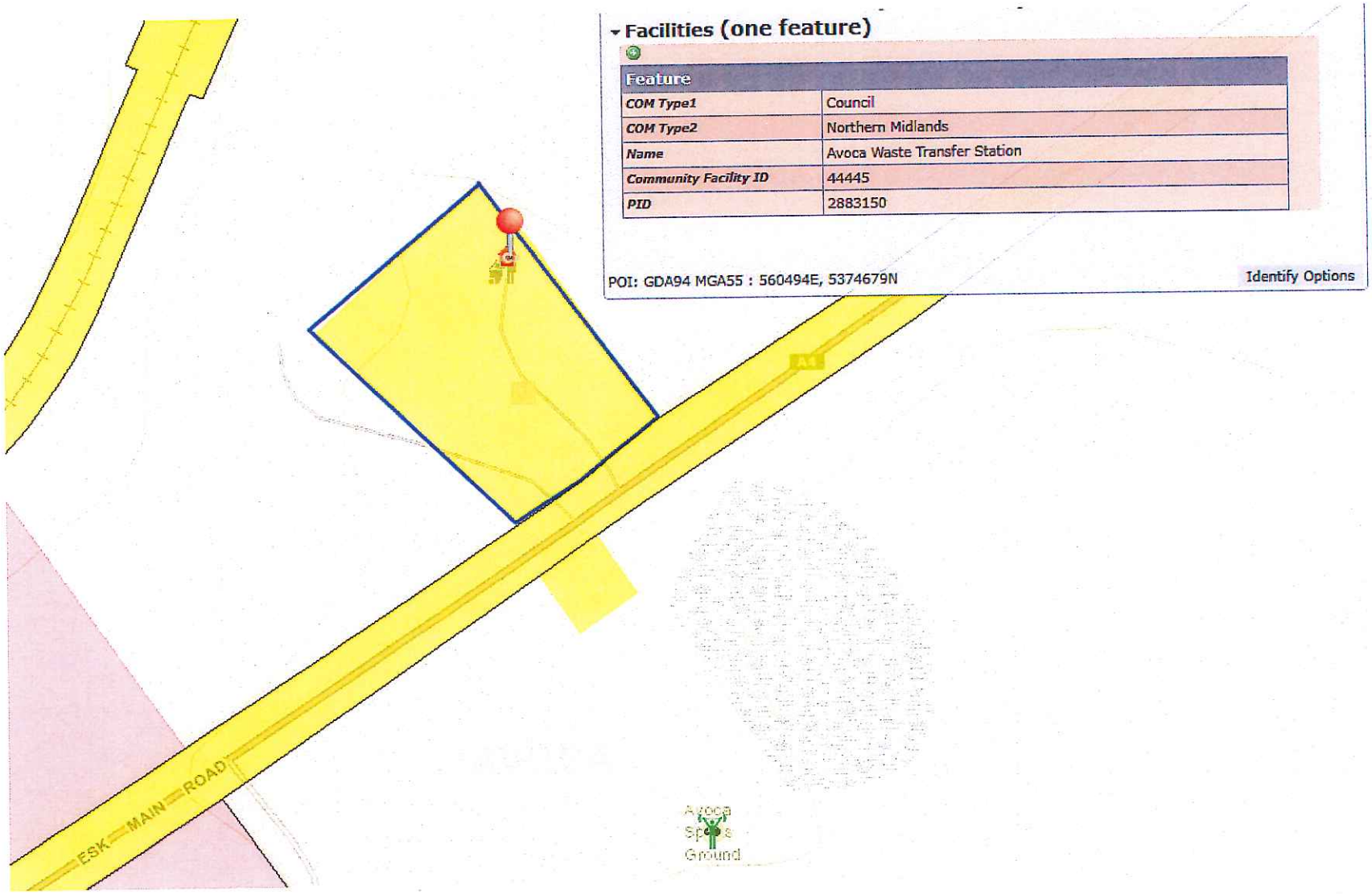


Figure 19 - 150m Attenuation distance to be applied from the blue outlined area zoned Utilities.

2-227

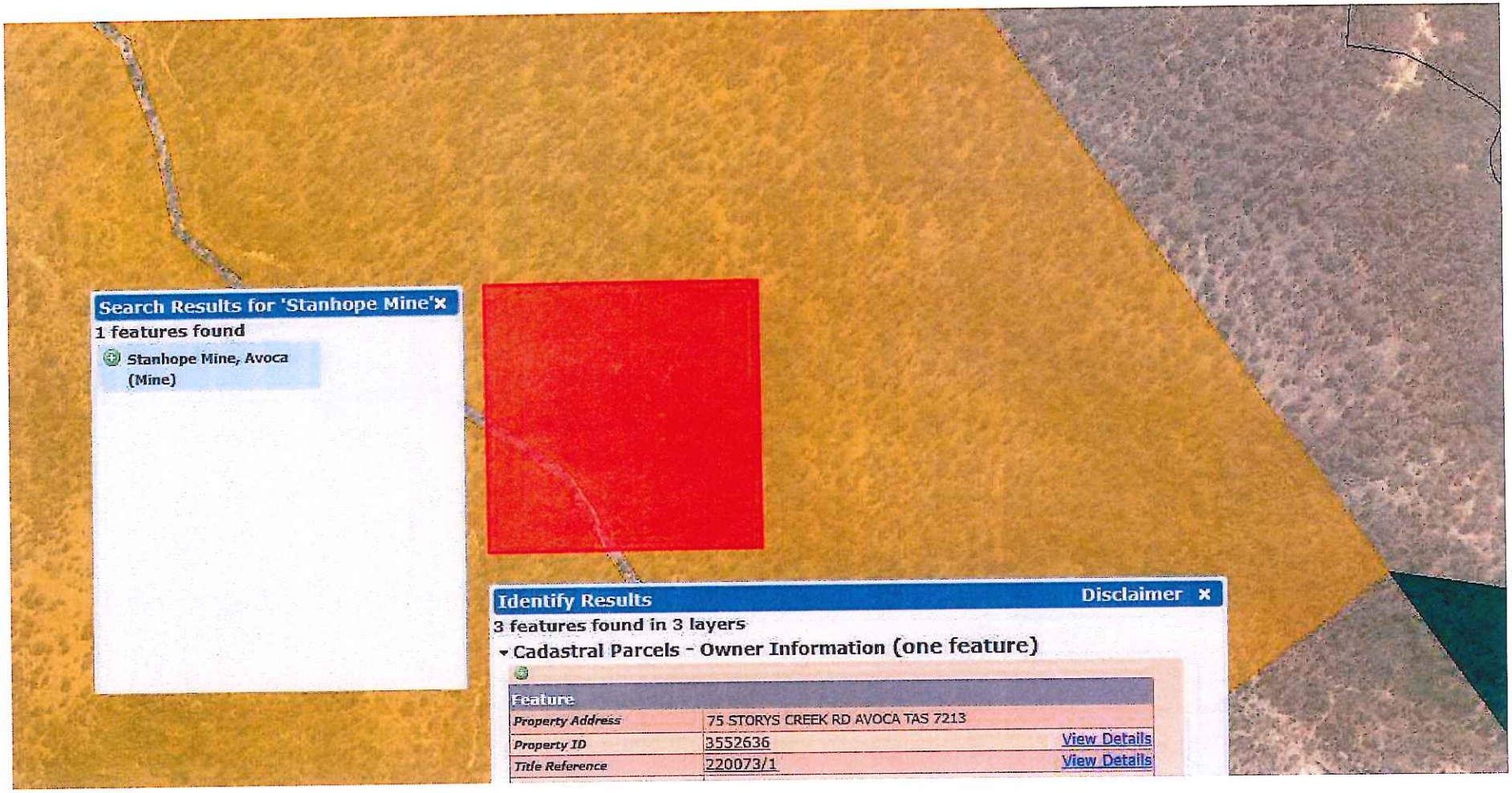


Figure 20 -1000m attenuation distance to be applied from the red area identifying the Stanhope Mine

2-228

APPENDIX 6

SUMMARY OF REGIONAL ECOSYSTEM MODEL (REM) OF TASMANIA

natural resource planning

Summary of the Regional Ecosystem Model of Tasmanian biodiversity

The Regional Ecosystem Model (REM) is a comprehensive spatial modelling system of Tasmanian biodiversity. It:

- Integrates spatial data on the distribution of the major components of biodiversity, and the factors affecting them;
- Models key biodiversity attributes that derive from multiple inputs;
- Analyses the relationships among the components of biodiversity and the environment; and
- Spatially identifies areas which have immediate or potential conservation concerns, and provides indicators of their relative importance, to inform approaches and priorities for management.

The REM was developed by Natural Resource Planning Pty Ltd using funds from the Australian Government's Caring for Our Country program. The following briefly summarises the REM, which is described in more detail in Knight and Cullen 2009[1], 2010[2].

The REM is based on a comprehensive 'Strategy Review' of both the strategic framework for biodiversity management in Tasmania and of the major themes in the relevant scientific literature. Issues identified from the Strategy Review are examined against a range of criteria to determine their suitability for incorporation into the REM, including:

- The ability of each Issue to be stored spatially and analysed in a GIS;
- Whether Issues are confounded, i.e. in combining multiple Issues into one and thus compromising objective assessment of more fundamental Issues; and
- Whether Issues are logically consistent and supported by scientific opinion.

[1] Knight, R.I. & Cullen, P.J. (2009). A review of strategies for planning & management of the natural resources of biodiversity, freshwater, land & soils in the Tasmanian midlands. A report of the Caring for Our Country project 'Using landscape ecology to prioritise property management actions in Tasmania'. Natural Resource Planning, Hobart, Tasmania.

[2] Knight, R.I. & Cullen, P.J. (2010). Specifications for a Regional Ecosystem Model of natural resources in the Tasmanian Midlands. A report of the Caring for Our Country Project 'Using landscape ecology to prioritise property management actions in Tasmania'. Natural Resource Planning, Hobart, Tasmania.

The resulting list of biodiversity Issues are placed in a conceptual framework which separately considers the biological significance of the components of biodiversity and their landscape-scale ecological context. Figure 1 shows this conceptual structure.

Issues identified as appropriate for inclusion in the REM are assessed to identify:

- Indicators that represent important ways of viewing each Issue;
- Classes within each Issue that indicate relevant ranges of variation and suitable thresholds for categories; and
- A 'Level of Concern' to be assigned to each class to be used as a guide in determining management priorities.

'Level of Concern' is considered to vary according to the management context and is defined in two ways:

- Immediate – an estimate of the relative priority for immediate management action to address current risk to the natural resource; and
- Potential – an estimate of the relative priority to protect and manage the natural resource from risks which may arise in the future.

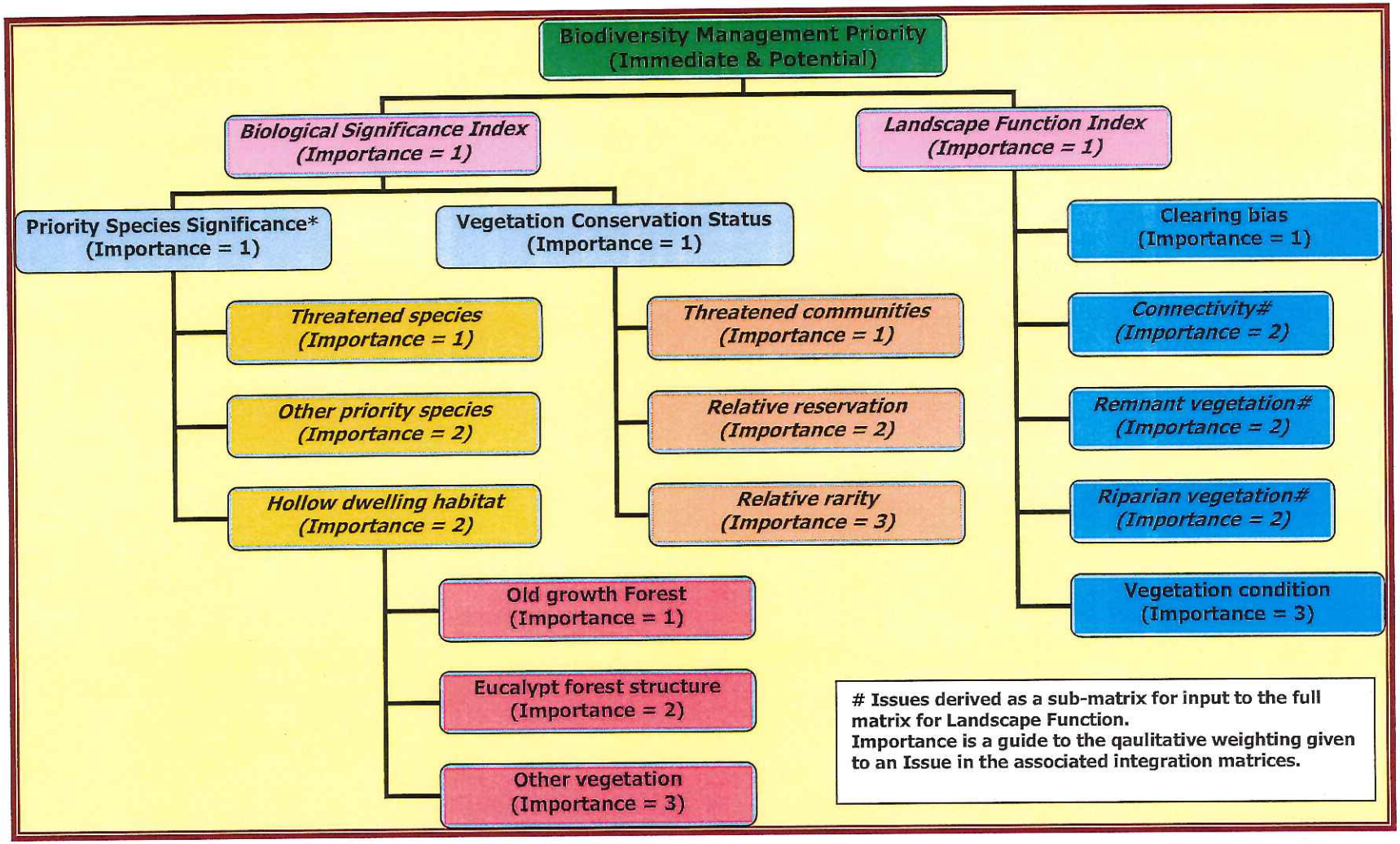
The two types of Level of Concern are designed to be consistent with the definitions of Conservation Management Priority in the Conservation of Freshwater Ecosystems Values project (DPIWE 2008[3]), which also uses the Immediate and Potential perspectives.

Use of Immediate Level of Concern is generally most appropriate where past management may have created a need to improve the condition of an Issue, or where there is continuing landuse which may place the resource at risk if not managed appropriately. For example, native vegetation whose condition has been degraded may need to be improved to help address biodiversity conservation needs.

Potential Level of Concern is generally appropriate in circumstances where a change in management could be detrimental. An example for native vegetation might be an area where its condition is considered important to maintain to address biodiversity needs, or whose loss would compromise those needs.

[3] Department of Primary Industries & Water (2008). Conservation of Freshwater Ecosystems Values (CFEV) project technical report. CFEV program, Department of Primary Industries & Water, Hobart.

Figure 1. Assets and Issues in the Biodiversity Asset Class



Where possible, classes in each Issue were chosen to reflect thresholds which have been applied elsewhere or identified in the scientific literature. An example of classes within an Issue, and their associated Level of Concern, is shown below.

Example classification: Remnant vegetation (patch size)

Native vegetation patch size (ha)	Concern – Immediate	Concern – Potential
<2ha	M	L
2-20ha	VH	VH
20-200ha	H	VH
>200ha	L	M

The ranges of patch size classes within the indicator reflect first the range of 2-200ha for remnants nominated by Kirkpatrick *et al.* (2007), with patches >2ha generally retaining much higher conservation values than smaller patches. Remnant <2ha are considered to be of little importance to landscape function, while those >200ha are subject to the processes which affect remnants at a significantly diminished intensity and effect. The split in the middle size class in the indicator is based on the RFA assessment of remnant vegetation, which considered patches <20ha, though potentially locally important, as below the threshold for importance in maintaining existing processes or natural systems at the regional scale (Tasmanian Public Land Use Commission 1997).

Source: Knight and Cullen (2010), p14.

Not all Issues have Level of Concern which diverges according to whether they are Immediate or Potential. Threatened species, for example, have statutory recognition that they are likely to become extinct. Thus both Immediate and Potential Level of Concern are considered identical, as the species status applies to the entire taxon. However, for any given species the management response at a given site may be different to that elsewhere.

Each Issue in the REM has Level of Concern classes assigned in a classification matrix (see remnant vegetation example above). Each matrix is designed to transparently illustrate how the Issue is treated in the REM, to assist interpretation, and to provide a simple method by which the REM parameters can be altered if required (e.g. where new research indicates thresholds in a matrix may need alteration).

The REM separately assesses each Issue within the Biodiversity Asset Class, but also places them in a hierarchically structured matrix that integrates related issues. This provides an overall indicator of Biodiversity Management Priority, but also means that the important issues for managing biodiversity at any one location can be readily identified. Attachment 1 summaries the terms used in the REM. Attachment 2 provides a full illustration of the prioritisation process and relationships in the REM.

The highest level in the REM classification is Biodiversity Management Priority. It is derived through integrating the prioritisation matrices of two contributing themes in biodiversity conservation:

- Biological Significance - the relative importance of the elements of biodiversity and hence their priority to be protected through appropriate management regimes; and
- Landscape Ecological Function - an assessment at multiple scales of the characteristics of the landscape and its ability to maintain the elements of biodiversity it contains.

The matrix which integrates Biological Significance and Landscape Ecological Function is shown below. An important feature of the matrix structure is that it does not dilute a high level of concern for one if the other is low. This approach addresses a known limitation that arises when using additive or averaging indices for conservation purposes and has the further advantage of being simple, transparent and flexible for use in testing different approaches.

Integration matrix for Biodiversity Management Priority

	Landscape Function Index			
Biological Significance Index	**VH**	**H**	**M**	**L**
VH	VH	VH	VH	VH
H	VH	VH	H	H
M	VH	H	M	M
L	VH	H	M	L

Similar forms of integration matrices are used at each level of the REM, with some variation according to the issues being addressed and the relative importance of each Issue to the overall index being derived. The full set of REM matrices is shown in Attachment 2.

Within the Biological Significance component of the REM are two Assets (see Figure 1) towards which management goals are likely to be directed:

- Native vegetation - composed of vegetation communities with Level of Concern a function of each community's conservation status, bioregional extent and percentage level of reservation; and
- Priority species - the subset of species and species groups identified as requiring consideration in management as a result of them being listed as threatened,

otherwise identified as priorities (e.g. Regional Forest Agreement priorities, poorly reserved flora species), or as the habitat for the group of 29 species identified in Tasmania as hollow dwelling (Koch et al. 2009[4]).

A unique feature of the REM is its system for generating spatial habitat modelling for all threatened and priority species. This is based on a two stage process that:

- Models habitat of all species from known locations, based on a simple model that considers factors such record accuracy and data, the distributional characteristics of each species (e.g. do they occur in highly restricted locations or more generally in an area), and the types of vegetation they occur in; and
- More detailed models of about 100 threatened fauna species, whose habitat is generated from within the REM data based on a model developed for the particular species (see Knight 2014[5] for details).

The Landscape Ecological Function component of the REM is designed to account for the factors that can affect biodiversity through the presence/absence of critical characteristics of the environment at multiple scales. The REM addresses Landscape Ecological Function by considering Issues at three scales:

- Broad scale habitat loss is a major threat to biodiversity and cause of biodiversity decline, which can continue after habitat loss has ceased due to ecological inertia associated with extinction debt. Habitat loss is characterised by patterns in the types of land from which habitat has been removed. The Issue of Clearing Bias measures these patterns at the landscape scale by assessing the percentage of each land component (land facet is also sometimes used) within Tasmania land systems that exist as native and cleared vegetation. More heavily cleared land components have higher Clearing Bias.
- Medium scale landscape patterns are addressed through the examination of the configuration of three landscape variables. Connectivity characteristics of the landscape are assessed by measuring the relative of isolation of remnants and the permeability of cleared land to species movements. The size of patches of native vegetation is assessed against thresholds for identifying Remnant Vegetation. The proportion of native Riparian Vegetation within each river section catchment provides an indicator of the health of the aquatic environment within each catchment, and its distal effects on biodiversity.

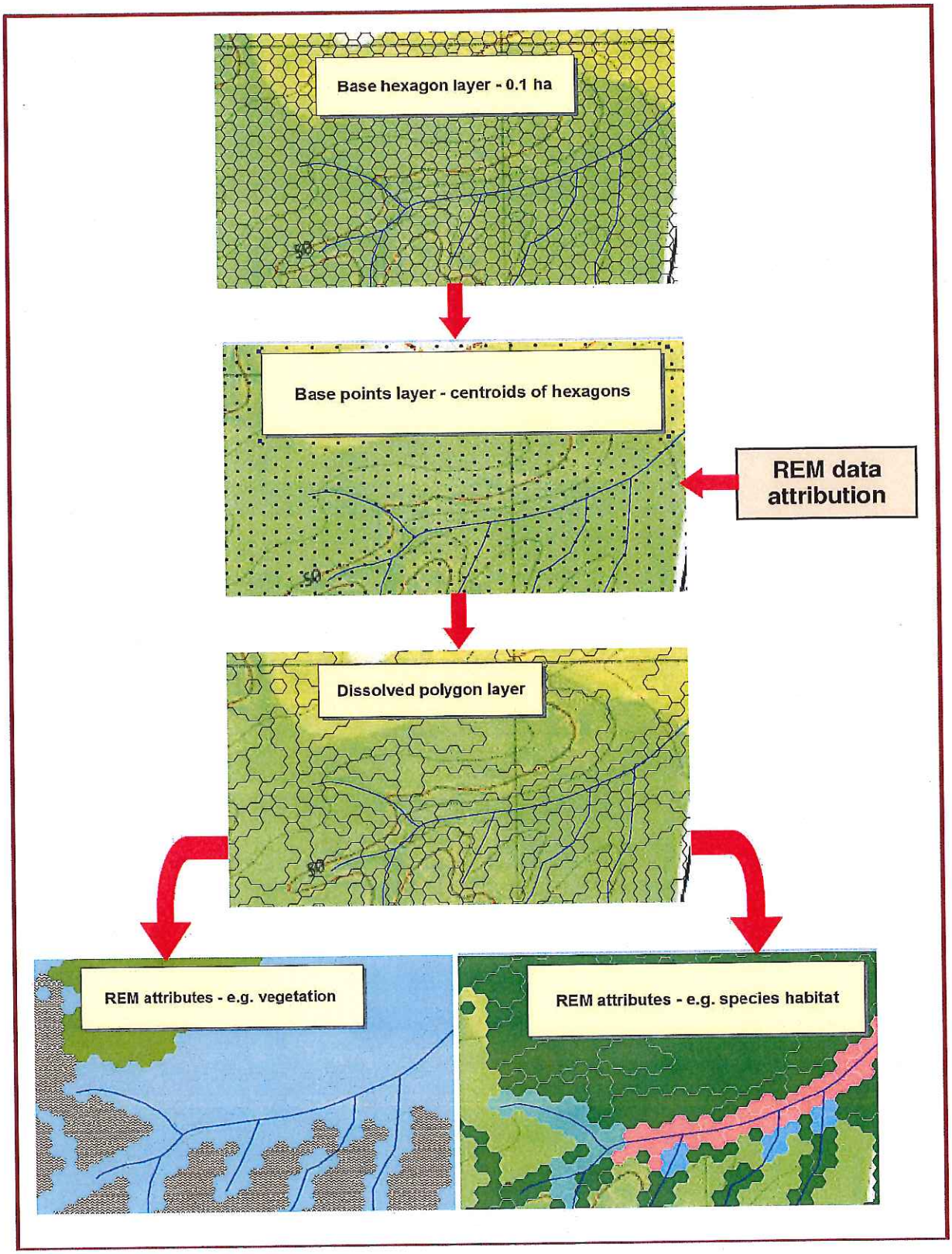
[4] Koch, A.J., Munks, S.A. & Woehler, E.J. (2009). Hollow-using vertebrate fauna of Tasmania: distribution, hollow requirements & conservation status. Australian Journal of Zoology, 56(5):323-349.
[5] Attachment 7 in Knight, R.I. (2014). Biodiversity data, models & indicators for Forestry Tasmania's Forest Management Unit. A report to Forestry Tasmania, March 2014. Natural Resource Planning, Hobart, Tasmania.

- Local scale landscape processes are assessed through assessing vegetation condition, which is expressed in the REM as Biophysical Naturalness. This assesses the characteristics of native vegetation for perturbation in structure and composition within each patch of native vegetation.

Each element of the REM is underpinned by Statewide spatial data layers. Each data layer has clear rule sets for its use in building the REM. The integrated REM spatial layers contain all the input data from the base layers, including multiple inputs for the same Issue where available (e.g. desktop and field vegetation mapping), and all the derived Level of Concern indicators.

The REM is built on a novel spatial architecture designed to store and process large amounts of spatial data efficiently and at fine scales. It is based on a non-overlapping layer of hexagonal polygons of 0.1 ha size, which approximates to a spacing of about 30 m. The centroids of the polygons are extracted and are used to process the REM and its data. The point format significantly reduces complexity of the spatial geometry and hence increases processing speed. The REM generated in the points layer is then re-attributed to the parent hexagons. A subset of the combination of primary inputs to the REM is then used to dissolve the hexagon layer to a more manageable number of polygons. Derived attributes are then re-attached to the data and the polygon layer used for multiple purposes. Figure 2 summarises the REM architecture.

Figure 2. Simplified REM spatial architecture and process



The core components of the REM described above are common to all applications. A spreadsheet version of the REM is also available[6] which can be used in the absence of spatial data to generate the full range of REM indicators. This can be used, for example, to determine REM indicators where the input data is wrong or to model the changes in indicators resulting from management actions . A standard output is also a summary REM profile, which display all the indicators as a percentage of the area of interest, as shown in Figures 3 and 4. These tools can also serve as a useful tool for modelling change, whether planned or actual, arising from conservation investments and from development.

Attachment 3 provides a simple guide giving examples of how to interpret REM indicators for particular issues and circumstances.

The REM can further customised for each project and users to deliver outputs and tools that assist meeting their specific needs. Customised add-ons that have been developed include tools to cross tabulate priority species with vegetation types, generate REM summary tables of the characteristics of multiple areas, and additional layers to assist in use of the REM. For example, a urban threat index spatial layer has been developed to assist in local government application, and for property planning the REM can be linked to data on issues such as salinity and erosion risk.

Use of the REM is licensed by NRP to clients for approved purposes, in accordance with the commercialisation provisions of the Australian Government's funding for its development. NRP wishes to establish ongoing partnerships with a wide range of potential users of the REM. Access to the REM is provided under a data license agreement and subject to a license fee negotiated on a case by case basis. License fees are designed to be cost effective – to encourage use – while also reflecting the reasonable costs to NRP of development, maintenance and support.

Clients who have used the REM or its components since completion of the original project include:

- Australian Government Biodiversity Fund;
- Clarence Council;
- Forestry Tasmania;
- Gunns Limited;
- Kingborough Council;
- NRM South;
- Norske-Skog;
- PF Olsen Pty Ltd;
- Southern Midlands Council and
- The Understorey Network.

[6] http://www.naturalresourceplanning.com.au/landscape-ecology-tools/

Figure 3. Sample REM profile – Immediate Level of Concern

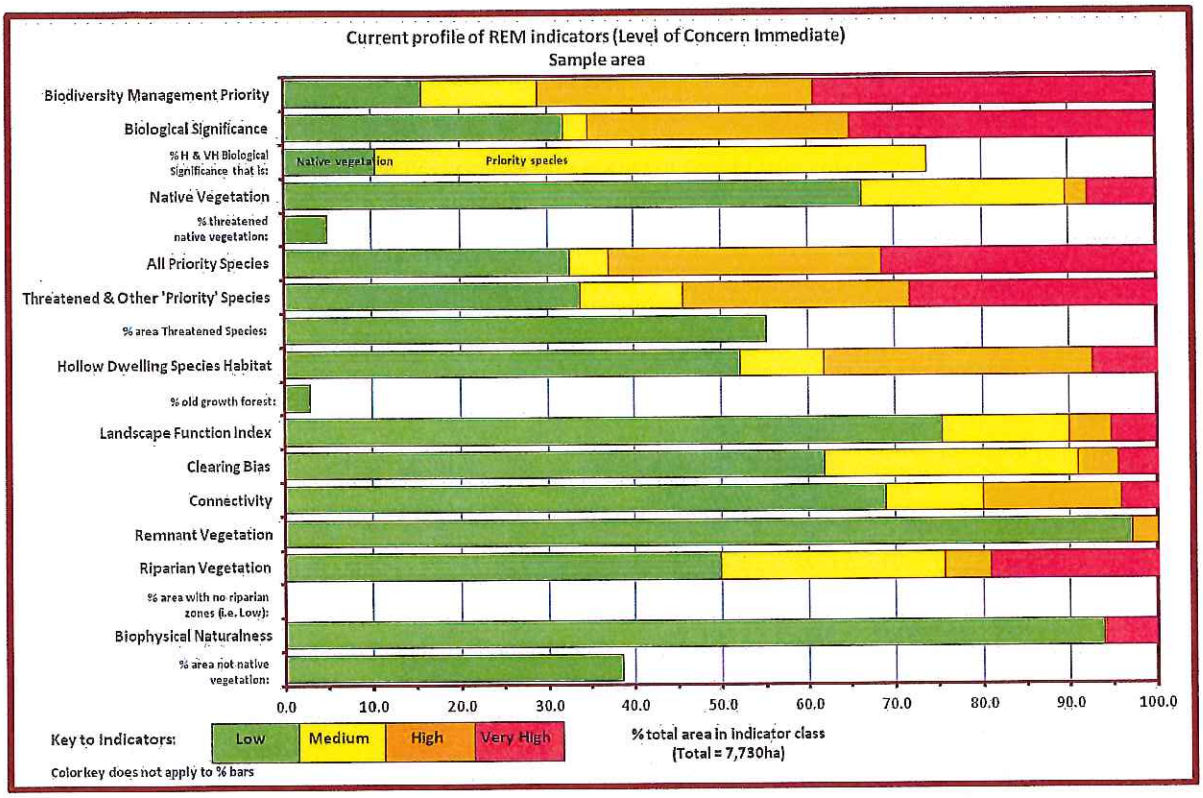
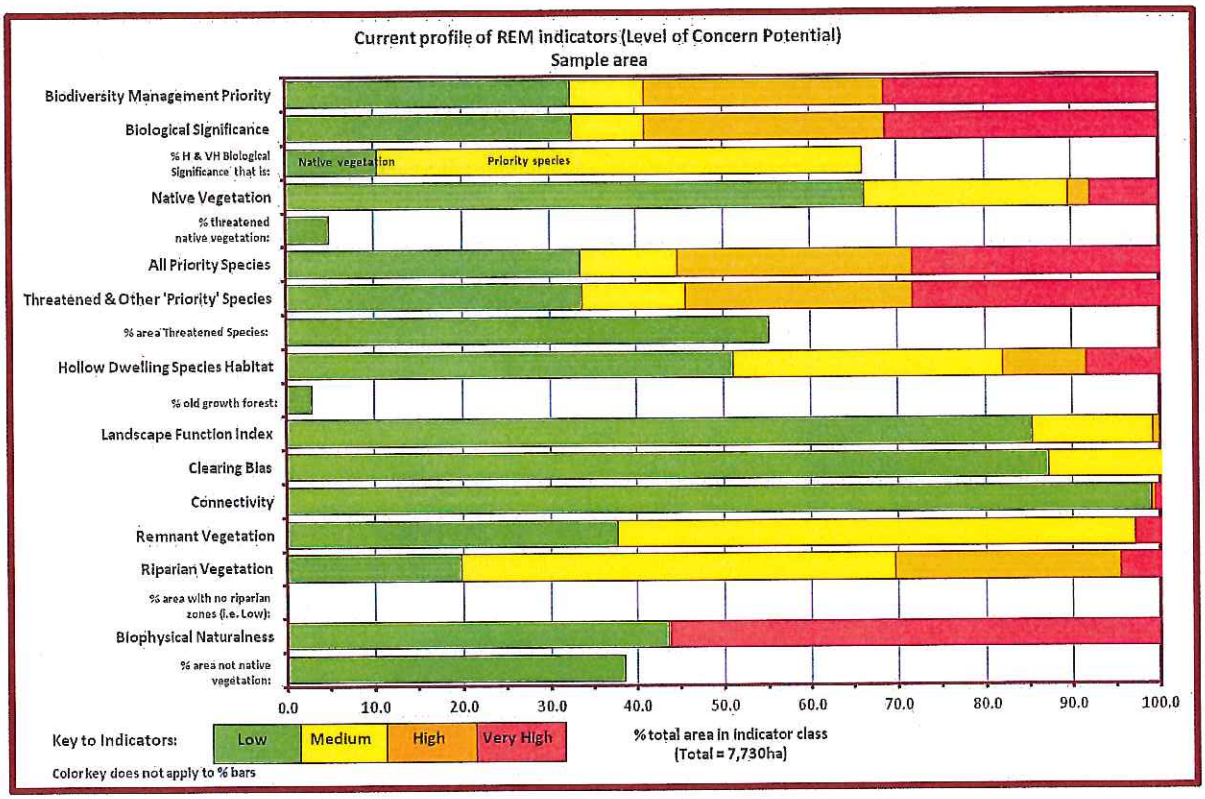


Figure 4. Sample REM profile – Potential Level of Concern



Attachment 1. Summary of REM assets, indicators and Issues

Issue	Definition	Summary	Indicator
Biological Significance	Biological significance measures the relative priority for management of the elements of biodiversity contained within a given area.	Biological significance is one of two arms of the REM and represents a structured classification of biodiversity. It is comprise of Native Vegetation and priority species (see below).	Classes ranked from Low-Very high derived from a matrix of Level of Concern classes for Native Vegetation and Priority Species.
Native Vegetation	Native vegetation communities based on the classification used in Tasveg.	Native vegetation comprises all areas mapped to the Tasveg classification, except for cleared land types ("F" codes), water, (OAQ"), sand and mud (OSM) and rock (ORO). An additional native vegetation mapping unit has been introduced to the REM for areas comprised of native vegetation plantings (DEP).	The REM contains a grouped classification for native vegetation which is used in various parts of its application.
Vegetation conservation status	Native vegetation communities with legislative recognition of being threatened.	na	Vegetation communities listed as threatened under the Tasmanian Nature Conservation Act 2002 or Commonwealth Environment Protection and Biodiversity Conservation Act 1999.
Relative reservation	Reservation status is a measure of the degree to which vegetation communities are included in the Comprehensive, Adequate and Representative (CAR) reserve system	Higher levels of reservation give greater confidence that the species for which vegetation communities are surrogates are likely to be protected, subject to appropriate geographic and biophysical distribution in the landscape.	Percentage bands of reservation of the vegetation communities, utilising the lesser of the Statewide or relevant bioregional reservation level.
Relative rarity	The extent of a native vegetation community in the bioregion being assessed.	Relative rarity is scale to reflect increased importance for vegetation types which are more restricted, and less importance for those which are relatively extensive.	The REM stratifies the extent of each community in each bioregion into bands, which are then form part of the matrix for deriving Level of Concern for native vegetation.
Priority species	Priority species are those that are recognised as threatened and certain classes of other species that are identified as priorities for conservation.	Classification within the group is structured around species listed as threatened and other priority species.	Level of Concern for priority species is classified from Low-Very High through a matrix combining threatened species status, number of threatened species, other priority species and hollow dwelling species habitat.

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Issue	Definition	Summary	Indicator
Listed threatened species	Species listed as threatened under the Tasmanian Threatened Species Protection Act (1975) or Commonwealth Environment Protection and Biodiversity Conservation Act (1999)	na	Threat status and number of co-occurring threatened species in an area.
Other priority species	Non-threatened species identified as priorities for attention to conservation and management.	Other priority species comprises non-threatened species identified in the Regional Forest Agreement as Priority Species, including species groups such as hollow dwelling species, and flora species identified as inadequately reserved at the State or bioregional level.	The presence of other priority species (excluding hollow dwelling species habitat) is assigned a single ranking the REM (Medium), above that for no priority species and below that for threatened species.
Hollow dwelling species	Habitat for hollow dwelling species.	Hollow dwelling species comprise a group of 29 species listed in the Regional Forest Agreement as a priority species group.	Hollow dwelling species habitat is classed from Low-Very High depending on the type of vegetation present, eucalypt forest structure, predicted hollow abundance and presence/absence of old growth forest.
Old growth forest	Old growth forest is ecologically mature forest demonstrating the characteristics found in older and/or minimally disturbed forests	na	Old growth forest is classed as Very High Level of Concern (Potential) and as low Level of Concern (Immediate) in the Hollow Dwelling Species component of the REM.
Eucalypt forest structure	Forest structure classes derived from air-photo interpreted vegetation mapping.	Eucalypt forest structure is derived from the published RFA map depicting standard classes as Silviculturally Regeneration, Regrowth, Predominantly Regrowth/Some Mature, Predominantly Mature/Some Regrowth and Mature. This is supplemented with more up to date data where available.	Classes ranked from Low-Very High reflecting higher Immediate Level of Concern where structure is likely to contain fewer hollows and higher Potential Level of Concern where hollows are likely to be more abundant.
Non-eucalypt vegetation.	Vegetation communities in the Tasveg classification that are not recognised as eucalypt forest.	Eucalypt forest classes are identified in Tasveg by the prefixes "W" and "D".	Non-eucalypt vegetation is ranked Low in the schema for hollow dwelling species habitat due to the absence of eucalypts.

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Issue	Definition	Summary	Indicator
Landscape Function	The ability of the landscape to sustain the elements of biodiversity it contains.	Landscape function integrates five indicators representing successively finer partitioning of the landscape.	Classes ranked from Low-Very High using a 3 way matrix combining the same classes of Clearing Bias, a submatrix combining Connectivity, Remnant Vegetation and Riparian Vegetation, and Biophysical Naturalness.
Clearing bias	Clearing bias is a measure of the patterns of habitat loss in a region.	There is potential for ecological collapse at a regional level where >70% of a region has been cleared, and potential localised collapse and stress within the region where lower levels of clearing have occurred due to preferential clearing of certain land types.	The percentage of each land component that has been cleared, stratified spatially into areas now cleared or with extant native vegetation.
Connectivity	Connectivity is the degree to which patches of native vegetation are inter-connected and the extent to which species can move between patches,	Remnant vegetation may suffer loss of species in some taxonomic groups, and loss of ecosystem function, if the distance between remnants and the impermeability of the interstice (e.g. through absence of paddock trees) exceeds that which each organism is capable of crossing.	For remnant vegetation patches, the distance to the nearest non-remnant patch. For cleared land, the distance to the nearest patch of native vegetation.
Remnant vegetation	Remnant vegetation is defined as islands of native vegetation, below a specified size, that are surrounded by cleared land.	In heavily cleared landscapes, patches of remnant vegetation can contribute significantly to the maintenance of ecosystem function, while their loss and decline is a major factor in ecosystem collapse. Their smaller size makes them vulnerable to ongoing degradation through various combinations of anthropogenic and natural ecological processes	The indicator for remnant vegetation is the contiguous extent of each patch of native vegetation communities, stratified into size classes.
Riparian vegetation	Riparian vegetation is the vegetation that adjoins freshwater features (e.g. rivers wetlands) and has ecological characteristics which are influenced by the freshwater environment.	Riparian vegetation has been found to have consistently high biodiversity values relative to its extent and therefore contribute disproportionately to landscape function. Its values are also multi-faceted, providing protection for terrestrial biodiversity, land and soils resources, and freshwater ecosystems, and multi-scale in extending beyond the immediate riparian zone.	The percentage of the local catchment of each of river section and wetland which is under native riparian vegetation, stratified into bands as described for the CFEV project. The indicator applies equally to both the cleared and native vegetation components of the catchment.

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Issue	Definition	Summary	Indicator
Vegetation condition	Vegetation condition is the composition and structure of native vegetation relative to a reference framework for the particular type of vegetation.	Vegetation condition is an indicator of the ability of native vegetation at the local physical and near-temporal scale to maintain and sustain the elements of biodiversity it contains.	Modified biophysical naturalness classes derived from RFA mapping and application of logical consistency rules to Tasveg community attributions and limited condition descriptors.

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Attachment 2. Tasmanian Regional Ecosystem Model - Indicators, Content & Prioritisation Matrices

Native Vegetation Index	Priority Species Index VH	H	M	L
VH	VH	VH	VH	VH
H	VH	VH	H	H
M	VH	H	M	M
L	VH	H	M	L

Biological Significance Index	Landscape Function Index VH	H	M	L
VH	VH	VH	VH	VH
H	VH	VH	H	H
M	VH	H	M	M
L	VH	H	M	L

Threatened & Other Priority Species		Hollow Dwelling Species Habitat VH	H	M	L
Two or more listed species	VH	VH	VH	VH	VH
Endangered, Critically Endangered	VH	VH	VH	VH	VH
Vulnerable, Rare	H	VH	H	H	H
Other Priority Species	M	H	H	M	M
None	L	H	M	L	L

Biodiversity Management Priority

Biological Significance Index (Importance = 1)

Landscape Function Index (Importance = 1)

See next page

Priority Species Significance* (Importance = 1)

Vegetation Conservation Status (Importance = 1)

Species category/ attribute	Concern – Immediate	Concern – Potential
Two or more listed species	VH	VH
Endangered, Critically Endangered	VH	VH
Vulnerable, Rare	H	H
Other priority species	M	M
None	L	L

Threatened species (Importance = 1)

Other priority species (Importance = 2)

Hollow dwelling habitat (Importance = 2)

Old growth Forest (Importance = 1)

Eucalypt forest structure (Importance = 2)

Other vegetation (Importance = 3)

Threatened communities (Importance = 1)

Relative reservation (Importance = 2)

Relative rarity (Importance = 3)

Status and bioreg. extent	Concern – Immediate & Potential Reservation level (Min. % State/bioreigon) <10%	10-30%	30-60%	>60%
Threatened				
Any	VH	VH	H	H
Not threatened Bioregional extent				
<2,000ha	VH	VH	H	M
2,000-5,500ha	VH	VH	H	M
5,500-15,000ha	VH	H	M	L
15,000-55,000ha	H	M	M	L
>55,000ha	M	M	L	L

Component Cleared (%)	Concern – Immediate	Concern – Potential
Cleared		
>90%	VH	L
70-90%	H	L
30-70%	M	L
<30%	L	L
Native veg.		
>90%	VH	VH
70-90%	H	H
30-70%	M	M
<30%	L	L

Clearing bias (Importance = 1)

Connectivity# (Importance = 2)

Remnant vegetation# (Importance = 2)

Riparian vegetation# (Importance = 2)

Vegetation condition (Importance = 3)

Distance of:	Concern – Immediate	Concern – Potential
Cleared land to native veg.		
<50m	L	L
50-250m	M	L
250-1,000m	H	L
>1,000m	VH	L
Native remnant to non-remnant		
<50m	L	VH
50-250m	M	H
250-1,000m	H	M
>1,000m	VH	L
Non-remnant		
Any	L	L

Biophysical naturalness category	Concern – Immediate	Concern – Potential
5 (highest)	L	VH
4	L	VH
3	M	H
2	H	M
1 (lowest)	VH	M
0 (non-native)	L	L
-1 (water, sand, mud)	na	na

Descriptor of hollow probability (eucalypt forest only)	Concern – Immediate	Concern – Potential
Old growth forest	L	VH
Mature; Predominantly Mature, Some Regrowth	M	H
Predominantly Regrowth, Some Mature	H	M
Regrowth, Silvicultural Regeneration	VH	L
All other vegetation	L	L

Forest Practices Authority - predicted hollow abundance	Concern – Immediate	Concern – Potential
High	L	VH
Medium	M	H
Low	H	M
Not rated	L	L

Native vegetation patch size (ha)	Concern – Immediate	Concern – Potential
<2ha	M	L
2-20ha	VH	VH
20-200ha	H	VH
>200ha	L	M

River section catchment or wetland riparian vegetation (%)	Concern – Immediate	Concern – Potential
<1	VH	L
1-20%	H	VH
20-80%	M	H
>80%	L	M

Attachment 2 (cont). Derivation of Landscape Function Index

Sub-matrix of Connectivity, Remnant Vegetation & Riparian Vegetation (CRR)

Connectivity	Remnant Vegetation	Riparian Vegetation	CRR Index	Rank (1 = highest)
VH	VH	VH	VH	1
H	VH	VH	VH	2
VH	VH	H	VH	3
VH	H	VH	VH	4
M	VH	VH	VH	5
H	VH	H	VH	6
VH	VH	M	VH	7
H	H	VH	VH	8
VH	H	H	VH	9
VH	M	VH	VH	10
L	VH	VH	H	11
M	VH	H	H	12
H	VH	M	H	13
VH	VH	L	H	14
M	H	VH	H	15
VH	H	M	H	16
H	M	VH	H	17
VH	M	H	H	18
VH	L	VH	H	19
L	VH	H	H	20
M	VH	M	H	21
H	VH	L	H	22
L	H	VH	H	23
VH	H	L	H	24
M	M	VH	H	25
VH	M	M	H	26
H	L	VH	H	27
VH	L	H	H	28
L	VH	M	H	29
M	VH	L	H	30
L	M	VH	H	31
VH	M	L	H	32
M	L	VH	H	33

Connectivity	Remnant Vegetation	Riparian Vegetation	CRR Index	Rank (1 = highest)
VH	L	M	H	34
H	H	H	H	35
M	H	H	M	36
H	H	M	M	37
H	M	H	M	38
L	VH	L	M	39
L	L	VH	M	40
VH	L	L	M	41
L	H	H	M	42
M	H	M	M	43
H	H	L	M	44
M	M	H	M	45
H	M	M	M	46
H	L	H	M	47
L	H	M	M	48
M	H	L	M	49
L	M	H	M	50
H	M	L	M	51
M	L	H	M	52
H	L	M	M	53
L	H	L	M	54
L	L	H	M	55
H	L	L	M	56
M	M	M	L	57
L	M	M	L	58
M	M	L	L	59
M	L	M	L	60
L	M	L	L	61
L	L	M	L	62
M	L	L	L	63
L	L	L	L	64

Full Landscape Function Index matrix

Clearing Bias	CRR sub-matrix	Condition	Landscape Function Index	Rank (1 = highest)
VH	VH	VH	VH	1
VH	VH	H	VH	2
VH	H	VH	VH	3
VH	VH	M	VH	4
VH	H	H	VH	5
VH	VH	L	VH	6
H	VH	VH	VH	7
VH	M	VH	VH	8
VH	H	M	VH	9
H	VH	H	VH	10
VH	M	H	VH	11
VH	H	L	VH	12
H	H	VH	VH	13
H	VH	M	VH	14
VH	L	VH	VH	15
VH	M	M	VH	16
H	H	H	H	17
H	VH	L	H	18
M	VH	VH	H	19
VH	L	H	H	20
VH	M	L	H	21
H	M	VH	H	22
H	H	M	H	23
M	VH	H	H	24
VH	L	M	H	25
H	M	H	H	26
H	H	L	H	27
M	H	VH	H	28
M	VH	M	H	29
VH	L	L	M	30
H	L	VH	H	31
H	M	M	H	32
M	H	H	M	33

Clearing Bias	CRR sub-matrix	Condition	Landscape Function Index	Rank (1 = highest)
L	VH	VH	M	34
M	VH	L	M	35
H	L	H	M	36
H	M	L	M	37
M	M	VH	M	38
M	H	M	M	39
L	VH	H	M	40
H	L	M	M	41
M	M	H	M	42
M	H	L	M	43
L	H	VH	M	44
L	VH	M	M	45
H	L	L	M	46
M	L	VH	M	47
M	M	M	M	48
L	H	H	L	49
L	VH	L	M	50
M	L	H	L	51
M	M	L	M	52
L	M	VH	L	53
L	H	M	L	54
M	L	M	L	55
L	M	H	L	56
L	H	L	L	57
M	L	L	L	58
L	L	VH	L	59
L	M	M	L	60
L	L	H	L	61
L	M	L	L	62
L	L	M	L	63
L	L	L	L	64

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Attachment 3:
A simple guide to using the
Regional Ecosystem Model for biodiversity planning

The REM contains assessments of four attributes of biodiversity that may need to be considered for conservation:

- Native vegetation (Tasveg-based units assessed Statewide and bioregionally);
- Priority species (threatened and other important species);
- Hollow dwelling species habitat; and
- Landscape ecological function – the ability of the landscape to maintain the elements of biodiversity it contains.

Actions may range from retention in an existing state, rehabilitation to a better state or restoration of native vegetation. Actions can be guided by the REM classification of attributes from two prioritisation perspectives:

- Immediate – importance for intervention to restore or rehabilitate; and
- Potential – important to protect from further loss or degradation.

In the REM these are termed 'Level of Concern'. All REM Level of Concern attributes are rated on a scale of Low, Medium, High or Very High. Immediate and Potential priorities are identical for native vegetation and priority species, but are different for hollow dwelling species habitat and landscape ecological function.

Priorities to be assigned to any of the REM attributes will be heavily influence by the purpose and objectives being considered and the adequacy of resources to effect desired outcomes. REM priorities can also be considered on an entirely objective basis, and used to judge whether objectives and resources are appropriately targeted, adequate to achieve outcomes. Monitoring over time can also be facilitated by the REM.

Prioritising areas or actions may require consideration of any of the four key attributes either singly or in combination. The potential range of combinations is large. However, for regions which are relatively intensively developed a fairly consistent set of combinations can be identified, particularly through focusing on priorities classified as either High or Very High. These are identified in the table that follows.

REM attribute (High or Very High)	Co-occurring attributes	Key considerations
Native vegetation	Priority species	Actions will depend on individual species' conservation needs.
	Landscape function – Potential	Landscape has some sensitivity to further loss or degradation. Action to protect the vegetation should be considered.
	Landscape function – Immediate	Landscape function is degraded. Consider whether actions to protect or enhance the native vegetation can make a difference.
	None	Consider if there are potential threats or other benefits that would arise from intervention. Also consider if there is a residual reservation target for the vegetation community and whether a good example of the community would be secured.
Priority species	None	Consider the conservation needs of each individual species individually.
	Landscape function – Potential	Landscape is sensitive to further loss or degradation. Consider whether this might have negative effects on each species.
	Landscape function – Immediate	Landscape function is degraded. Consider if landscape characteristics are contributing to the species status or likely persistence.
Hollow dwelling species habitat – Immediate	None	Vegetation is lacking in hollows. Look at the landscape context to determine if there is a likely benefit from taking actions which would improve long term prospects to have adequate mature eucalypt abundance, e.g. is the area a gap in distribution. The primary attribute field [Vstr_clasZ] should be used for this.
Hollow dwelling species habitat – Potential	None	Mature eucalypt abundance is likely to be relatively high. Act to protect and enhance, especially if either Immediate or Potential landscape ecological function classes are high.
Landscape function – Immediate	None	Landscape function is degraded. Consider what aspects of can be improved – condition, patch size, riparian vegetation or connectivity – within the available resources. The spreadsheet version of the REM can be used to explore scenarios.
Landscape function - Potential	None	Landscape function is sensitive to further loss or degradation. Consider what action can be take to secure landscape attributes.
Landscape function – Immediate	Landscape function - Potential	These are generally more important remnants. Consider whether resources are sufficient to both secure and improve landscape attributes.

APPENDIX 7

EXAMPLE OF REM TEMPLATE -MEANDER VALLEY

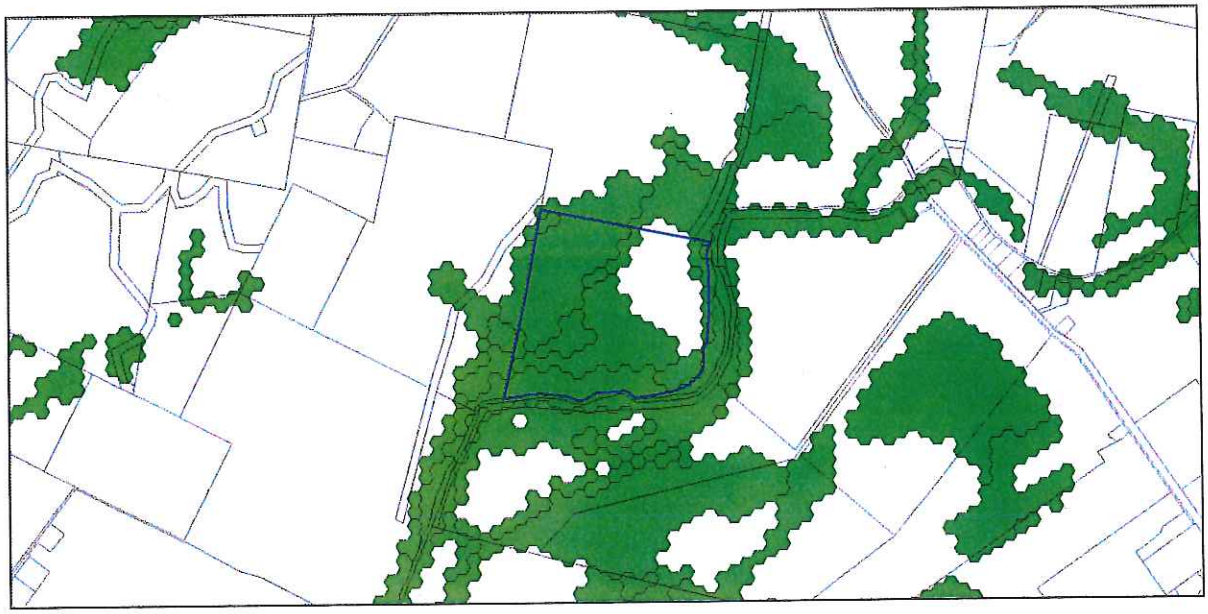
Meander Valley Council

Priority Vegetation Report

PID	CT	Address	Locality	Improvements	Area (m^2)
3444352	171239/1	9 TOWER HILL ST	DELORAINE TAS 7304	SHED	5426

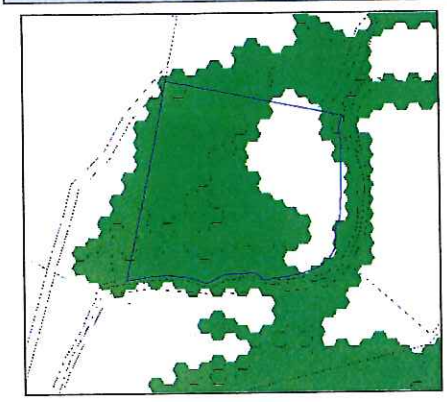
Priority Vegetation Overview

Priority Vegetation Overview Map



<Some general text about Priority Vegetation could go here>

Threatened Fauna and Significant Habitat



These are species listed as threatened fauna under the Tasmanian Threatened Species Protection Act (1975) or Commonwealth Environment Protection and Biodiversity Conservation Act (1999). Listed threatened species have statutory recognition that they are likely to become extinct if the factors causing them to be threatened are not managed. Species may be listed due to historical loss since settlement, natural rarity giving rise to potential risk, or impacts of particular land use and land management practices.

Threatened fauna habitat characteristics are extremely varied and are modelled as significant based on Natural Values Atlas records with a limited number of habitat variables or more detailed customised models for about 100 fauna species. Some species habitat occurs across the landscape but not all sites may be essential for species survival and not all suitable habitat may be occupied. Species that rely on this type of habitat are classified as landscape-dependent and are regarded as being of local importance, however the relative importance of the site to the survival of the species can only be known in response to field verification, the context and the nature of a proposal.

Why is it included?

- Statutory recognition that species extinction is likely, however not all sites are important or occupied

Data Source:

- NVA records combined with REM point-based modelling rules
- Habitat-based models

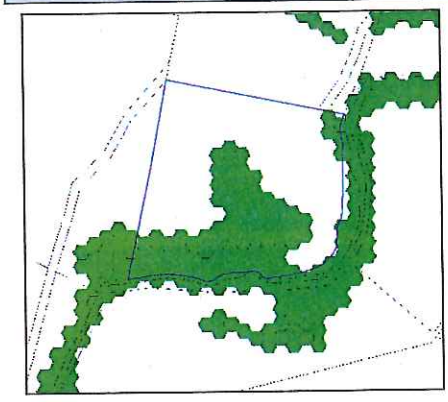
Reliability:

- Variable

Management:

- Check species observation source
- Check data on habitat and local context
- Potentially require on-ground field verification

Relative rarity



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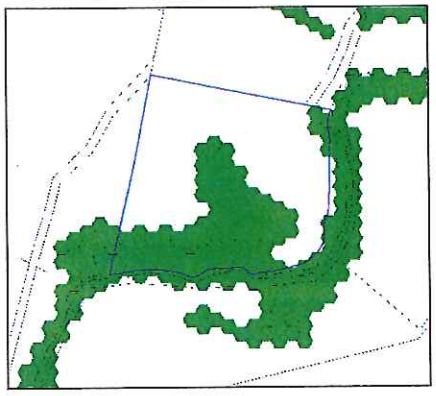
Relative reservation



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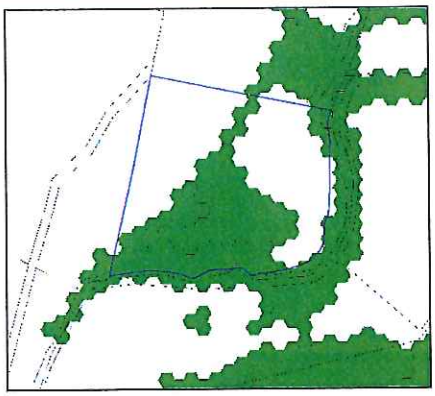
Remnant vegetation



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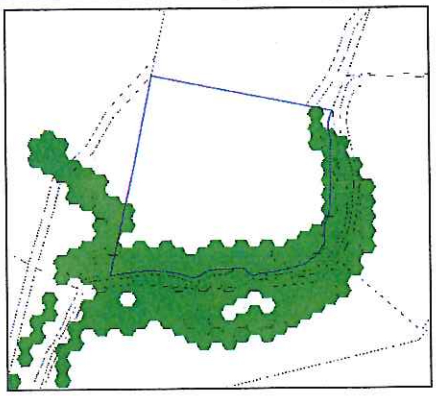
Threatened Flora



These are species listed as threatened under the Tasmanian Threatened Species Protection Act (1975) or Commonwealth Environment Protection and Biodiversity Conservation Act (1999).

Listed threatened species have statutory recognition that they are likely to become extinct if the factors causing them to be threatened are not managed. Species may be listed due to historical loss since settlement, natural rarity giving rise to potential risk, or impacts of particular land use and land management practices.

Threatened flora habitat characteristics are mostly localised and are modelled solely on Natural Values Atlas records with a limited number of habitat variables.

Why is it included?

- Statutory recognition that species extinction is likely

Data Source:

- NVA records combined with REM point-based modelling rules
- Generally highly localised

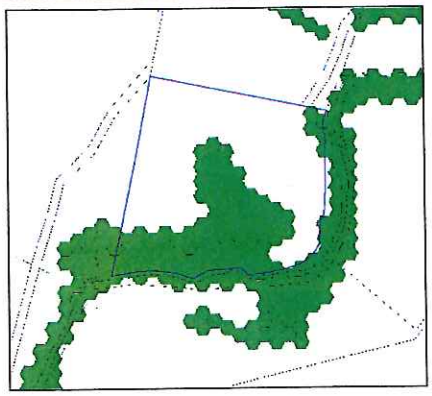
Reliability:

- Reasonably reliable – on-ground field verification

Management:

- Check species observation source
- Potentially require on-ground field verification

Threatened Vegetation Communities



Threatened Native Vegetation Communities (TNVC) are vegetation communities with legislative recognition of being threatened. The attribute comprises vegetation communities listed as threatened under the Tasmanian Nature Conservation Act 2002 or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Listing under these acts is based on historical vegetation loss since European settlement, natural limited extent or vulnerability to particular factors.

Why is it included?

- Heavily cleared – generally greater than 70% of pre-1750 extent has been cleared;
- Rarity – generally less than 1,000 hectares remaining

Data Source:

- TasVeg 3.0 (minor exceptions)

Reliability:

- Extremely variable – aerial identification and/or on-ground field verification

Management:

- Check TasVeg for field verification
- Consider local extent, condition & management option

Contacts

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Email: mail@mvc.tas.gov.au

Disclaimer

APPENDIX 8

BUSHFIRE PRONE AREAS TFS REPORT

BUSHFIRE-PRONE AREAS OVERLAY

Tasmania Fire Service

Northern Midlands LGA

Planning Report

September 2018

Tasmania Fire Service
Bushfire Planning & Policy

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Document Control					
Version	**Issued**	**Description**	**Author**	**Reviewed**	**Approved**
1.0	03/09/18	Final draft	T. O'Connor	C. Collins	C. Collins

Disclaimer

While the State Fire Commission has made every effort to ensure the accuracy and reliability of the information contained in this report, the State Fire Commission does not accept any responsibility for the accuracy, completeness, or relevance to the reader's purpose, of the information contained in this document and those reading it for whatever purpose are advised to verify its accuracy and to obtain appropriate professional advice.

The State Fire Commission, its officers, employees and agents do not accept any liability, however arising, including liability for negligence, for any loss or damage resulting from the use of, or reliance upon, the information contained in this document.

Table of Contents

Executive Summary

The Tasmania Fire Service ('TFS') is working with Local Government to prepare and implement bushfire-prone areas mapping for Tasmanian Local Government Areas ('LGA'). Draft mapping for the Northern Midlands LGA has now been completed following collaborative work between TFS and Council officers.

The purpose of the bushfire-prone area mapping is to spatially define land where potential exposure to bushfire hazard is sufficient to warrant a building and/or planning response to achieve a tolerable level of residual risk. The mapping does not imply that there is nil risk to use and development outside of the overlay, rather that residual risk to use and development outside of the overlay is deemed to be tolerable through reliance on other external measures, such as firefighter intervention.

The starting point for the map preparation was the production of a 'modelled overlay' that was generated by applying a 100m buffer to existing vegetation map data. The overlay was then progressively refined based on assessment of local conditions including bushfire behaviour and fuel management regimes. The local knowledge provided by Council officers was critical to this process.

By spatially defining bushfire-prone areas the mapping will provide clarity for permit authorities, landowners, developers, consultants and the broader community with respect to the application of existing statutory requirements for bushfire protection. The process of reviewing local conditions has also allowed for some areas that would currently trigger bushfire requirements to be 'mapped-out', thereby reducing compliance and development costs for the local community.

For the mapping to serve its intended function it needs to be incorporated within the relevant planning instrument established under the *Land Use Planning and Approvals Act 1993* ('LUPAA'). It is anticipated that the mapping will be incorporated into Council's Local Provision Schedules, which will form part of the Tasmanian Planning Scheme.

Adoption of the bushfire-prone areas overlay is consistent with the Schedule 1 Objectives of the *Land Use Planning and Approvals Act 1993*, the State Polices created under the *State Policies and Projects Act 1993* and the relevant regional land use strategy.

1. Introduction

1.1 Purpose of this Report

This report has been prepared in support of the bushfire-prone areas mapping for the Northern Midlands LGA and provides the following information:

- The background and context of the mapping;
- Description of the mapping process;
- Consideration of overlay implementation;
- Consideration of the relevant statutory planning requirements and strategic planning framework.

1.2 Background

The Tasmania Fire Service is working with Local Government to produce and deliver the bushfire-prone area mapping for Tasmania. Once completed for each municipality the mapping is intended to be integrated within the relevant planning instrument to formally identify 'bushfire-prone areas' for the purpose of planning and building control.

Bushfire has been a constant, natural phenomenon in Australia for thousands of years and south-eastern Australia is one of the most bushfire-prone regions in the world. Whilst fire has important ecological functions in the Australian context, its effects on human life, built assets and economic resources can be catastrophic if risk is not adequately managed. Not surprisingly, bushfire is identified in the Tasmanian Emergency Management Plan as Tasmania's most prominent natural hazard due to its prevalence and historical impacts on communities[1]. Recent analysis of climate data confirms that this is unlikely to change with fire danger in some parts of Tasmania expected to progressively increase over the course of this century[2].

Managing bushfire risk to communities requires a multifaceted approach that considers all aspects of the potential emergency (i.e. Prevention, Preparedness, Response and Recovery). Government interventions accordingly include a combination of measures including land use and development control, community education, fuel reduction, firefighter response and emergency management. Regulation of land use and development is a 'preparedness' strategy in this context as it aims to improve the resilience of communities and their built assets when exposed to a bushfire hazard.

Planning and building controls are now recognised in Australia as an important tool that can be used to facilitate more resilient and sustainable communities. Bushfire protection requirements are applied to use and development for the purpose of ensuring a tolerable level of residual risk is achieved. It is essentially a form of market intervention that seeks to achieve a better outcome for society than the market would otherwise deliver. Numerous public enquiries have recognised the importance of planning and building as a means for

[1] Department of Police and Emergency Management 2015, *Tasmanian Emergency Management Plan - Issue 8*, DPEM, Hobart.

[2] Fox–Hughes P, Harris RMB, Lee G, Jabour J, Grose MR, Remenyi TA & Bindoff NL (2015) *Climate Futures for Tasmania future fire danger: the summary and the technical report*, Antarctic Climate & Ecosystems Cooperative Research Centre, Hobart, Tasmania

supporting community fire safety, most notably the 2004 National Enquiry on Bushfire Mitigation and Management and the 2009 Victorian Bushfires Royal Commission.

The Tasmanian Government responded to the 2009 Victorian Bushfires Royal Commission by initiating significant planning and building reforms, including the introduction of Planning Directive No.5 Bushfire-Prone Areas Code within planning schemes in 2012 and state variations to the Building Code of Australia. This provided – for the first time – state-wide consistency in relation to use and development standards for bushfire protection. The importance of these reforms was confirmed by the 2013 Tasmanian Bushfires Inquiry, which recommended that the Tasmanian Government make land use planning and building construction for bushfire a high priority and that it progress improvements in this area[3].

The planning and building regulatory system in Tasmania includes bushfire protection requirements to mitigate risk to communities and assets in bushfire-prone areas. The existing framework includes:

- The Bushfire-Prone Areas Code, which applies through local planning schemes under the *Land Use Planning and Approvals Act 1993;* and

- The Director's Determination – Requirements for Building in Bushfire-Prone Areas, which applies through the *Building Regulations 2016* and *Building Act 2016.*

This framework is structured in a way that enables application of bushfire controls through the planning approvals process for proposals involving land subdivision, vulnerable and hazardous uses. Bushfire requirements for other types of use and development are applied through the building approvals process.

For the purposes of both planning and building permit approvals it is necessary to determine whether proposed works are located within a 'bushfire-prone area'. This term is currently defined as follows:

> *Bushfire-prone area*
>
> *Means:*
>
> *(a) Land that is within the boundary of a bushfire-prone area shown on an overlay on a planning scheme map; or*
>
> *(b) Where there is no overlay on a planning scheme map, land that is within 100m of an area of bushfire-prone vegetation equal to or greater than 1 hectare.*

In the absence of mapping, planning authorities, permit authorities, landowners and developers are reliant on interpretation of subclause (b).

Incorporation of the mapping within the relevant local planning scheme overlay map will enable the use of subclause (a) of the abovementioned definition, thereby reducing the amount of assessment required to determine applicability.

The 100m rule that forms the basis of the abovementioned definition has historically been accepted as a benchmark for the application of development control for bushfire and is the maximum distance considered in Australian Standard 3959-2009. Post-fire investigations have indicated that 85% of building loss resulting from major bushfires has historically occurred at distances within 100m of the urban interface[4]. Notwithstanding this, bushfire

[3] Department of Premier and Cabinet, 2013 Tasmanian Bushfires Inquiry, DPAC, Hobart.

[4] Ahern, A., *and* M. Chladil *(1999), How far do bushfires penetrate urban areas?* paper presented at *1999 Australian Disaster Conference*, Emergency Manage. of Aust., Canberra, A. C. T.

behaviour is not uniform across all situations some circumstances application of a 'blanket' 100m buffer is considered unnecessarily conservative.

2. Study Area

The study area for the purpose of this mapping project is the Northern Midlands Local Government Area ('LGA') as shown in Figure 1. Northern Midlands has a total area of 5,133km² and is located in the northern Tasmania. It adjoins the Launceston, Break O'Day, Glamorgan-Spring Bay, Southern Midlands, Central Highlands and Meander Valley LGAs.

The major population centres within Northern Midlands include Longford, Perth and Evandale, which are within commuting distance to Launceston City. The LGA includes a range of smaller rural townships including Campbell Town, Perth, Evandale, Cressy and Ross. A significant proportion of the municipality supports agricultural land uses.

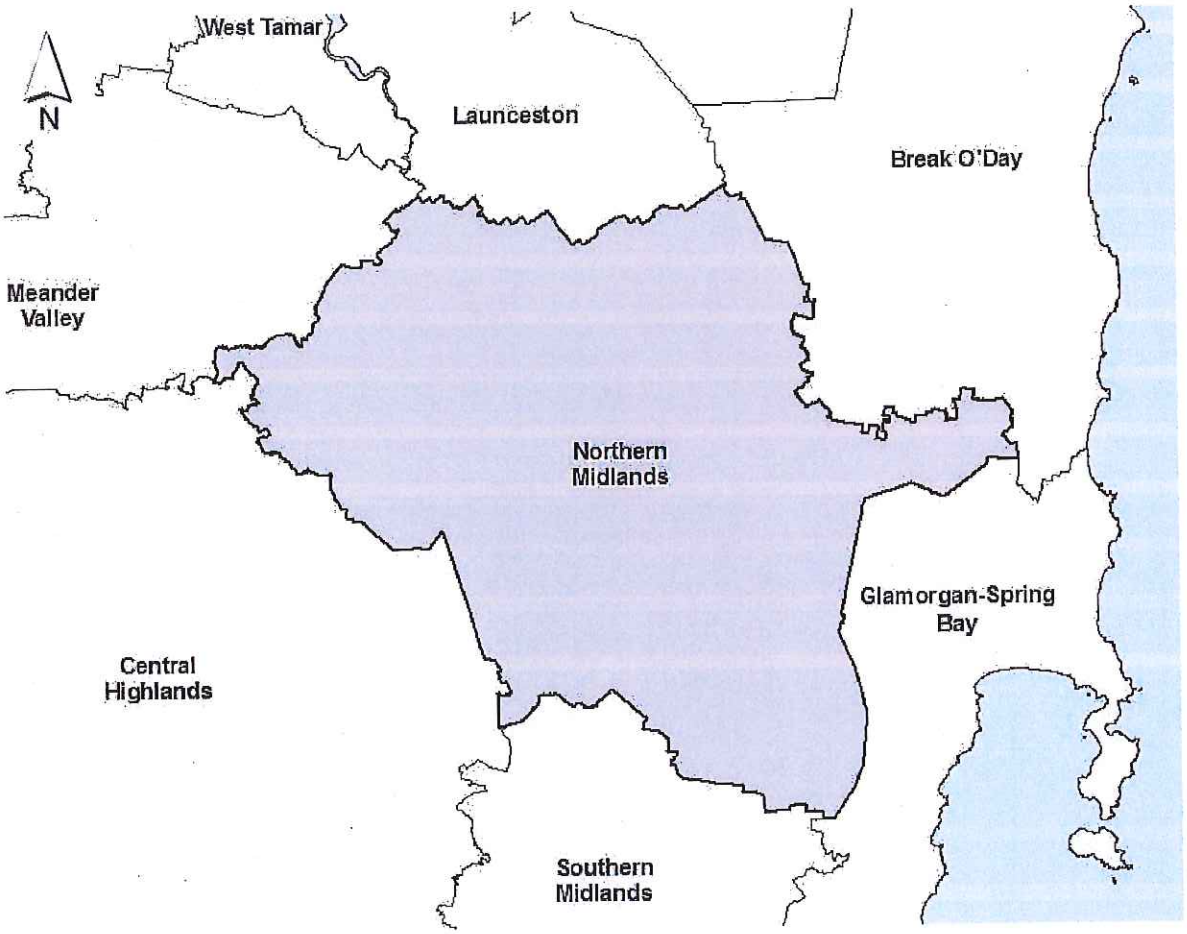


Figure 1 – Northern Midlands LGA location map

3. Bushfire-Prone Area Overlay

The draft Bushfire-Prone Area Overlay for Northern Midlands has been completed following collaborative work between the Tasmania Fire Service and Council officers. The draft maps are enclosed as **Appendix A** to this report.

3.1 Purpose of Overlay

The bushfire-prone area overlay primarily relates to use and development control. Its purpose is to spatially define areas where risk is sufficient to require specific bushfire protection measures in order to achieve a tolerable level of residual risk. The mapping will provide a definitive trigger for assessment under the existing planning and building requirements for bushfire protection. Spatially defining bushfire-prone areas is consistent with the approach adopted for other natural hazards within Tasmanian planning schemes (inundation, landslip hazard).

The mapping is not intended to identify all land that may be impacted by bushfire hazard, nor does it imply that there is nil residual risk to use and development outside of the overlay. Rather, residual risk to use and development outside of the mapped areas is deemed to be tolerable through reliance on other external measures, such as firefighter intervention.

By removing the need to evaluate whether vegetation is 'bushfire-prone' before confirming whether a site is within a 'bushfire-prone area', the mapping will remove ambiguity and improve the development assessment process to the benefit of permit authorities, land owners and developers.

The mapping also provides a more sophisticated mechanism than the standard 100m rule trigger that is currently relied upon. Evaluation of local conditions and likely bushfire behaviour has informed the mapping process and has allowed for some reductions to the standard 100m buffer in situations where it has been determined that the risk does not warrant application of planning or building standards to achieve a tolerable level of residual risk. In doing so, the mapping will refine application of bushfire requirements and reduce circumstances whereby a bushfire report is required for low-risk development.

The overlay can also have other uses. It can be used to support community education in support of community fire safety as it will be accessible through multiple websites including the LIST, iplan, and the TFS website. Additionally, TFS will use the map as the basis for issuing fire permits and when advising the community about using fire and burning off. TFS will not issue Fire Permits outside bushfire-prone areas and will advise the community to not use fire for fire hazard removal outside bushfire-prone areas. Council staff will be able to use the mapped areas when dealing with hazard complaints and abatement issues.

3.2 Mapping Process

The process that has been followed in preparing the draft overlay and that will be followed for implementation is summarised conceptually in Figure 2. The draft overlay has been prepared by the TFS in collaboration with Council's planning officers.

The starting point for the mapping was the generation of a 'modelled overlay', which was created by applying a 100m buffer to all TASVEG 3.0 vegetation communities, excluding those types deemed to be 'low threat' and exclusions as specified under AS 3959-2009.

The mapping provided in TASVEG 3.0 provides high-level guidance with respect to vegetation distribution and as such, its accuracy is limited when applying it to individual properties. The modelled overlay was therefore based on imperfect spatial data and it was

important to verify the boundaries that were produced and adjust accordingly. An initial desktop assessment was undertaken to identify obvious discrepancies and ascertain any key areas that required closer examination.

Verification of specific areas was completed through physical inspection and/or enquiries into the development status and management regime of particular properties where necessary. As discussed previously, bushfire impact is not uniform across all situations and in some cases, relaxation of the standard 100m buffer has been adopted where site characteristics will effectively limit fire intensity, spread and subsequent impact on surrounding development. Relevant factors include the total area, type and location of vegetation, fire run potential, effective slope, prevailing wind and the use, development or land management status of the property.

The overlay was then aligned with cadastral title boundaries. This was necessary to ensure that application of the overlay to specific properties and future developments can be easily determined. For urban lots in particular there is little merit in mapping a property as partially bushfire-prone, hence this has been avoided as far as possible. For lots 2,000sqm (or less) in area the overlay was aligned to include the entire title if an area of 15% (or greater) was affected. For these lots, it is considered increasingly unlikely that a future development on the site would be able to wholly avoid the overlay and - as vegetation communities are not static - the actual separations from hazardous vegetation should be verified at the time a development is proposed. Where the overlay covered less than 15% of an urban title, the title was generally excluded entirely from the overlay, as it is considered increasingly likely that future development will be 100m or further from the hazard source.

The approach used is consistent with that used for the existing bushfire-prone areas overlays within the Clarence Interim Planning Scheme 2015 and the Hobart Interim Planning Scheme 2015. Furthermore, in preparing the overlay TFS has sought to ensure consistency with Tasmanian Planning Commission's *Practice Note 7: Draft LPS Mapping Technical Advice*.

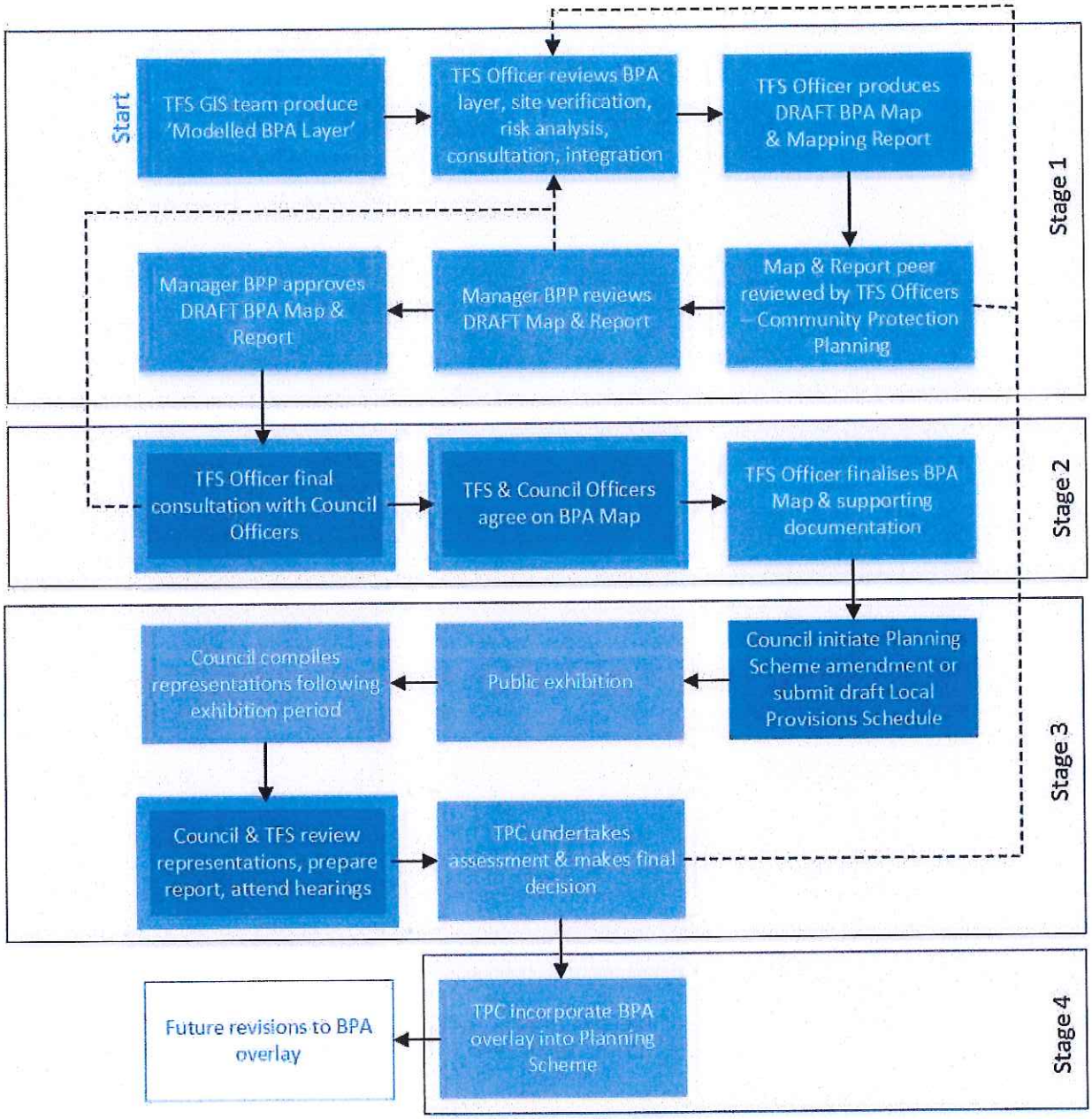


Figure 2 – Overview of mapping preparation and implementation

3.3 Overlay Refinement

As discussed previously, refinement of the original 'modelled overlay' into the final draft overlay has been informed by evaluation of local conditions.

A significant portion of the Northern Midlands is vegetated with improved pasture. Where Grassland fuels are predominant the overlay has been limited to include properties within a maximum of 50m (a relaxation from the standard 100m). This relaxation reflects the reduced ember potential associated with Grassland fuels and is consistent with the minimum distance required for a BAL-LOW rating under AS 3959-2009.

3.4 Outcome

It is clear that the majority of the land within Northern Midlands is designated as bushfire-prone as a result of the mapping process, including a total of 6,036 private parcels.

Table 1 provides a comparison of the number of lots that intersect with the computer generated modelled overlay versus the final draft overlay. The modelled overlay more closely reflects the number of lots that would currently be subject to bushfire requirements under the current 100m rule that operates in the absence of the overlay, as it is based on a 100m buffer from TASVEG mapping. The statistics show that the overall number of properties affected has been reduced as the overlay has been refined.

Table 1 - Comparison of properties affected by modelled overlay versus final draft overlay

Cadastral type ('CAD_TYPE1')	Final draft Overlay (n)	Modelled overlay (n)
Authority Land	764	839
Local Government Reserve	8	17
Private Parcel	5,061	6,111
Public Land Classification	203	204
Total intersected	**6,036**	**7,171**

Of most significance in Table 1 are the statistics for private parcels. The mapping process has enabled TFS to identify approximately 1,135 private properties that will no longer require further bushfire assessment, should they be developed or redeveloped in future.

To illustrate the benefit of this, if each of those properties were to be developed/redeveloped at some stage in the future, the mapping at a minimum would deliver an economic benefit to private landowners in the range of approximately $0.45M-$1.1M from the avoided cost of bushfire assessment fees alone. Further economic benefit is derived from the reduced time required for building work to be designed, documented and approved and potentially also avoided constructions costs for some of the excluded properties (if an exemption were not obtained).

4. Implementation

For the mapping to serve its intended statutory function it is necessary to incorporate it within the relevant planning instrument established under the *Land Use Planning and Approvals Act 1993* ('LUPAA').

All Tasmanian Councils are required to transition into the Tasmanian Planning Scheme ('TPS'). The TPS will be comprised of the State Planning Provisions ('SPP') and Local Planning Schedules ('LPS'), the latter of which is to be provided by Local Government.

The Bushfire-Prone Areas Code has been incorporated within the SPP. It is anticipated that the bushfire-prone areas overlay will be included in Council's LPS as a planning scheme overlay prior to submission to the Tasmanian Planning Commission. Once the LPS has progressed through the statutory process and is formally approved, the Tasmanian Planning Scheme will be activated and will supersede the Northern Midlands Interim Planning Scheme 2015.

The timing of the Tasmanian Planning Scheme's introduction is unclear at present. It is noted that should Council seek to implement the overlay sooner, there is provision to amend the Northern Midlands Interim Planning Scheme 2015 via LUPAA's Savings and Transitional Provisions.

5. Future Revisions

The Bushfire-Prone Areas Overlay should be reviewed and updated periodically to ensure it remains accurate. This will logically occur as part of Council's periodic review of their Local Provision Schedules under the Tasmanian Planning Scheme. Section 35O of the *Land Use Planning & Approvals Act 1993* requires that this review occur every five years at a minimum, however a draft amendment may be prepared at any time.

In the situation where a scheme amendment is required to facilitate a new development (e.g. a combined rezoning and greenfield subdivision proposal) it may be appropriate to review and modify the overlay as part of the amendment process. It is anticipated that TFS will be consulted as part of this process.

TFS is committed to working with Council as part of any future review of the overlay.

6. Planning Framework

As the bushfire-prone areas mapping will form an overlay within Council's Local Provision Schedule, it must satisfy the criteria set out in s.34(2) of the *Land Use Planning & Approvals Act 1993,* which states:

> ***34. LPS criteria***
>
> ***(1)*** ...
>
> ***(2)*** *The LPS criteria to be met by a relevant planning instrument are that the instrument –*
>
> *(a) contains all the provisions that the SPPs specify must be contained in an LPS; and*
>
> *(b) is in accordance with section 32 ; and*
>
> *(c) furthers the objectives set out in Schedule 1 ; and*
>
> *(d) is consistent with each State policy; and*
>
> *(e) is consistent with the regional land use strategy, if any, for the regional area in which is situated the land to which the relevant planning instrument relates; and*

(f) is consistent with the strategic plan, prepared under section 66 of the Local Government Act 1993 , that applies in relation to the land to which the relevant planning instrument relates; and

(g) as far as practicable, is consistent with and co-ordinated with any LPSs that apply to municipal areas that are adjacent to the municipal area to which the relevant planning instrument relates; and

(h) has regard to the safety requirements set out in the standards prescribed under the Gas Pipelines Act 2000 .

(3) ...

Incorporating the mapping as an overlay is consistent with the relevant provisions of the State Planning Provisions, specifically clause 1.2.3 and the definition of 'bushfire-prone area' in clause C13.3.1. The overlay is therefore consistent with s.34(2)(a).

Relevant to s.32, the map overlay will provide for the spatial application of the State Planning Provisions to particular land and is accordingly consistent with s.34(2)(b).

With respect to the strategic considerations referred to in s.34(2)(c),(d),(e) and (f):

- The Schedule 1 Objectives of the Act are considered in section 6.1 of this report;
- The State policies are considered in section 6.2 of this report;
- The Regional Land Use Strategy for Northern Tasmania is considered in section **Error! Reference source not found.** of this report; and
- The Northern Midlands Council Strategic Plan 2017-2027 is considered in section 6.4 of this report.

The overlay has been designed to integrate with the draft mapping completed for adjoining LGAs. The overlay accordingly satisfies s.34(2)(g).

The overlay will not introduce any new development standards, rather it will support the application of an existing Code. As such, it is not considered to be in conflict with the *Gas Pipelines Act 2000* and therefore satisfies s.34(2)(h).

6.1 LUPAA Schedule 1 Objectives

Schedule 1 of the *Land Use Planning and Approvals Act 1993* specifies the strategic objectives for the Resource Management and Planning System and for the planning process established by the Act.

The Schedule 1 Objectives are considered in Table 2 and Table 3.

Table 2 - Schedule 1, Part 1 Objectives

Objective	Response
(a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity; and	Adoption of the overlay will support the application of existing regulations. It will not facilitate any loss of natural values, nor any development of physical resources. The overlay is accordingly considered to be consistent with (a).
(b) to provide for the fair, orderly and sustainable use	The proposed overlay will improve clarity for the community, for developers and for authorities responsible for regulating planning and building matters.

and development of air, land and water; and	In developing the mapping, the Tasmania Fire Service has excluded some areas that could currently be considered as being within a 'bushfire-prone area' but which have been deemed to be suitably low threat. This was based on expert judgement in bushfire behaviour and evaluation of local conditions. By refining the application of the bushfire requirements in this way, the planning scheme amendment will facilitate fairer outcomes for landowners. The overlay is accordingly considered to be consistent with (b).
(c) to encourage public involvement in resource management and planning; and	In developing the overlay the Tasmania Fire Service has sought and considered input from Council's officers. This dialogue has provided important local knowledge into the project, in relation to land use practices and management of specific sites. The general public will have an opportunity to review the draft overlay and submit a representation on any aspect they would like the Planning Authority to consider. This is a requirement of the statutory approvals process. The overlay is accordingly considered to be consistent with (c).
(d) to facilitate economic development in accordance with the objectives set out in paragraphs (a), (b) and (c); and	Incorporation of the overlay within Council's planning provisions will improve clarity with respect to whether a site is within a 'bushfire-prone area'. This supports the property industry in the following ways: • It will ensure landowners and developers can easily determine whether their site is in a bushfire-prone area early in the development process and therefore factor this into concept design and feasibility assessments; • By removing areas from the mapping that have been deemed to be suitably low threat by the Tasmania Fire Service, the overlay will reduce costs and delays from the approvals process for applicants (e.g. costs of engaging a bushfire hazard practitioner to certify an exemption, delays associated with s.54 requests). As stated previously, the overlay will not facilitate any loss of natural values, nor any development of physical resources. The overlay is accordingly considered to be consistent with (d).
(e) to promote the sharing of responsibility for resource management and planning between the different spheres of Government, the community and industry in the State.	The Tasmania Fire Service has collaborated with Council officers in preparing the draft overlay to ensure that it is technically sound and appropriate to local circumstances. By incorporating the overlay within local planning provisions it will support the application of the Bushfire-Prone Areas Code and Building Regulations, which Local Government is obliged to enforce. The approvals process requires the support of both Council and the Tasmanian Planning Commission for the overlay to become effective. The overlay is accordingly considered to be consistent with (e).

Table 3 - Schedule 1, Part 2 Objectives

Objective	Response
(a) to require sound strategic planning and co-ordinated action by State and local government; and	The introduction of the Bushfire-Prone Areas Code as a state-wide Planning Directive was a strategic response by the Tasmanian Government to the recommendations produced by the Victorian Bushfires Royal Commission. Incorporating the bushfire-prone areas mapping as part of Council's planning instrument will support the application of the Bushfire-Prone Areas Code. The approach used in developing the mapping is consistent with that used for Clarence and Hobart's interim planning schemes. Tasmania Fire Service seeks to maintain a consistent approach as it progresses mapping for remaining Local Government Areas. As is discussed further in this report, the overlay is consistent with current State Policies and the Regional Land Use Strategy. The overlay is accordingly considered to be consistent with (a).
(b) to establish a system of planning instruments to be the principal way of setting objectives, policies and controls for the use, development and protection of land; and	As discussed previously in this report, the proposed overlay will support the efficient application of existing regulations by clearly identifying which land is subject to bushfire requirements. The overlay is accordingly considered to be consistent with (b).
(c) to ensure that the effects on the environment are considered and provide for explicit consideration of social and economic effects when decisions are made about the use and development of land; and	The overlay will not facilitate any loss of biodiversity or any other impacts on natural values. The social and economic benefit of the mapping will be to improve clarity with respect to what land is considered bushfire-prone and to avoid application of the planning/building regulations to land that has insufficient risk to warrant planning or building control. The overlay is accordingly considered to be consistent with (c).
(d) to require land use and development planning and policy to be easily integrated with environmental, social, economic, conservation and resource management policies at State, regional and municipal levels; and	As occurs at present, future development in bushfire-prone areas will be required to comply with all other applicable planning and environmental requirements. The overlay is not considered to be in conflict with any environmental, social, economic, conservation or resource management policies. The overlay is accordingly considered to be consistent with (d).
(e) to provide for the consolidation of approvals for land use or development and related matters, and to co-	At present, bushfire requirements are triggered through either the planning approvals process or the building approvals process, depending on the type of development proposed. Under each process the definition of 'bushfire-prone area' refers to planning scheme overlay mapping (where available). The completion of

ordinate planning approvals with related approvals; and	the mapping will ensure that assessments as to whether a site is bushfire-prone will be consistent throughout the entire process. Single dwellings, visitor accommodation and some other types of buildings are triggered through the building approvals process and not at planning. This can give rise to situations whereby a development may receive planning approval that does not account for the vegetation removal required to comply with the bushfire requirements at the building approvals stage. Inclusion of the mapping will ensure that assessing planning officers and developers consider at the development application stage of any requirement to consider vegetation removal. The overlay is accordingly considered to be consistent with (e).
(f) to promote the health and wellbeing of all Tasmanians and visitors to Tasmania by ensuring a pleasant, efficient and safe environment for working, living and recreation; and	The overlay will support the application of planning and building requirements for bushfire protection, the key purpose of which are to reduce risk to life and property. The overlay will accordingly support the aim of securing a safe environment for working, living and recreation. The overlay is accordingly considered to be consistent with (f).
(g) to conserve those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value; and	The overlay is not considered to be in conflict with the conservation of any places identified as holding heritage, aesthetic, architectural or other cultural value. The overlay is accordingly considered to be consistent with (g).
(h) to protect public infrastructure and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community; and	Introduction of the overlay will simply focus the application of existing regulations. Standards for water and access infrastructure in bushfire-prone areas will remain unchanged. The overlay is therefore not considered to be in conflict with public infrastructure and will not compromise the orderly provision and co-ordination of public utilities. The overlay is accordingly considered to be consistent with (h).
(i) to provide a planning framework which fully considers land capability.	Incorporation of the proposed mapping will have no significant effect on agricultural land capability. The overlay is accordingly considered to be consistent with (i).

6.2 State Policies

Current State Policies created under the *State Policies and Projects Act 1993* include:

- State Policy on the Protection of Agricultural Land 2009;
- State Coastal Policy 1996; and
- State Policy on Water Quality Management 1997.

Adoption of the draft overlay does not introduce any new development standards, rather, it will improve the application of the Bushfire-Prone Areas Code. It will accordingly not facilitate

the loss of productive agricultural land, nor the degradation of coastal land or water resources. The overlay is accordingly not considered to be in conflict with any of the existing State Policies.

6.3 Regional Land Use Strategy of Northern Tasmania

Local Provision Schedules must be consistent with the relevant regional land use strategy. For Northern Midlands, this is the Regional Land Use Strategy of Northern Tasmania ('RLUS'), as amended by 27th June 2018.

The key section of RLUS is Section E.7 Regional Environment. The relevant policies and actions are as follows:

Policy	Relevant Actions
NH-P03 *Future land use and development is to minimise risk to people and property resulting from bushfire hazard.*	***NH-A05*** *Include controls in planning schemes based on current best practice to minimise risk to persons and property resulting from bushfire hazard.* ***NH-A06*** *Subdivision design is to respond to bushfire hazard risks by providing for alternative access, building setbacks and buffer distances based on current best practice.* ***NH-A07*** *Adopt the relevant risk management AS/NZS standard as part of core management methods for emergency, hazard and risk management.*

Incorporation of the proposed overlay will mean that bushfire-prone land will be easily identifiable early in the land use and development process. The mapping will signal to developers that there are Code (and building) requirements that need to be considered during any due-diligence evaluation, subdivision design or building design.

Inclusion of the overlay within the LPS will support existing bushfire regulations by providing a clear mechanism to trigger their application, thereby facilitating consistency in the permit approvals process. The mapping will integrate with the existing format of the Bushfire-Prone Areas Code and building regulations, each of which defines 'bushfire-prone area' by reference to the planning scheme overlay map.

The overlay may also be utilised to inform other risk mitigation programs including hazard abatement programs. Fire Permits and community education.

Incorporation of the overlay is accordingly consistent with NH-P03 and its associated actions.

6.4 Northern Midlands Council Strategic Plan 2017-2027

The Northern Midlands Council Strategic Plan 2017-2027 is the relevant strategic plan prepared under s.66 of the *Local Government Act 1993.* It provides high-level guidance in the form of municipal goals, supporting strategies and key project that seek to guide Council's delivery of services to the community.

The Strategic Plan identifies the transition to the Tasmanian Planning Scheme as a project to for completion by 2020. Completion of the draft bushfire-prone areas overlay is part of this strategic work and will support Council's progress towards completing the transition.

There are no other specific policies within the Strategic Plan that require consideration.

7. Conclusion

The Tasmania Fire Service in collaboration with Council officers have completed the draft Bushfire-Prone Area Overlay for the Northern Midlands LGA. The overlay provides a clear statutory mechanism that will determine the applicability of planning and building requirements for bushfire protection.

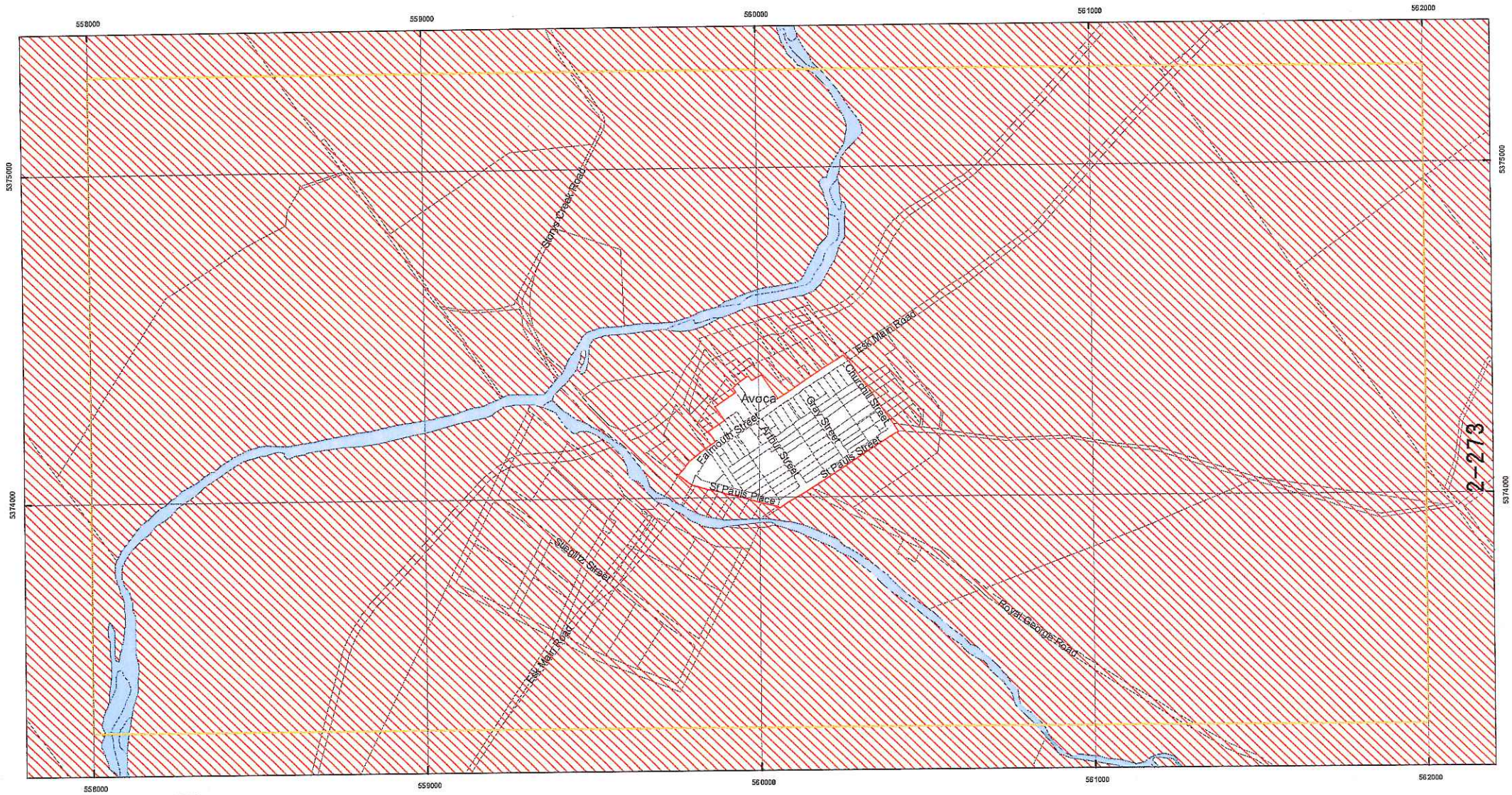
As discussed in this report, incorporating the mapping as an overlay within Council's Local Provision Schedule is consistent with all relevant strategic planning considerations.

It is accordingly recommended that Council adopt the proposed overlay and implement it through the Tasmanian Planning Scheme. Subject to the expected timing of the TPS, Council may also wish to consider introducing the overlay through amendment to the Northern Midlands Interim Planning Scheme 2015.

APPENDIX A

Bushfire-Prone Areas Overlay

Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 1 of 46

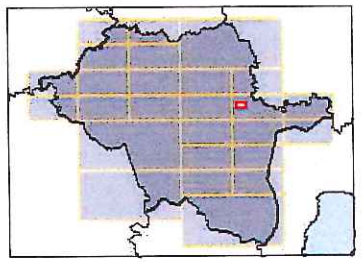
0 100 200 300 400 500
Metres

N

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay

Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 2 of 46

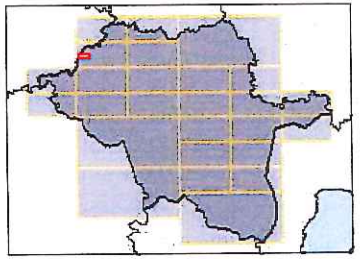
0 100 200 300 400 500
Metres

N

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay

Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 3 of 46

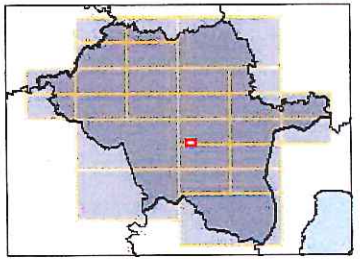
0 100 200 300 400 500
Metres

N

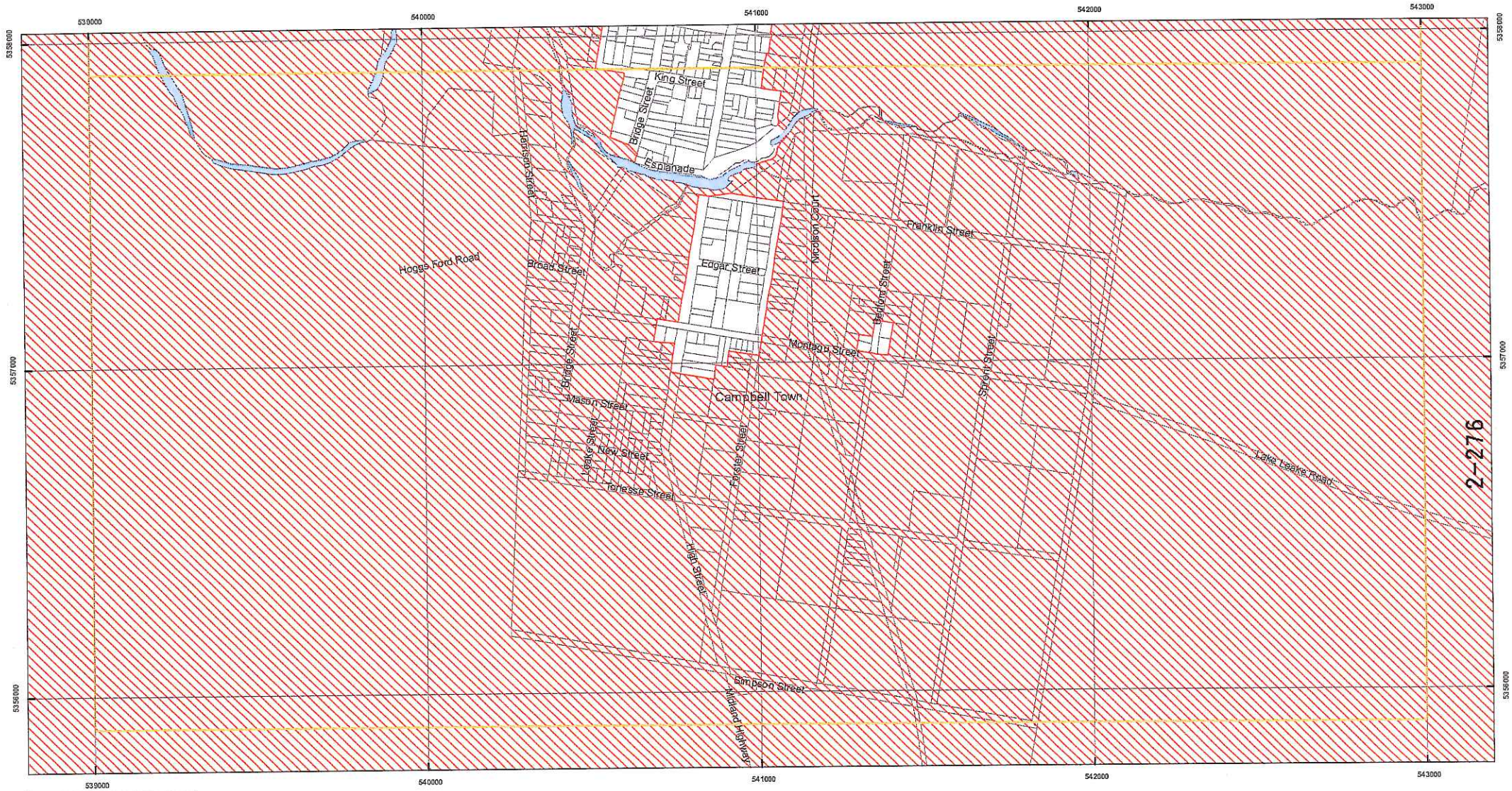
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 4 of 46

0 100 200 300 400 500
Metres

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

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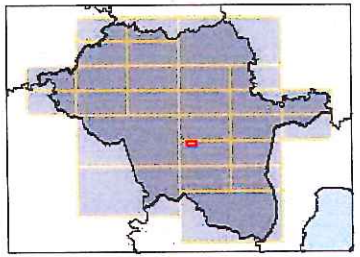
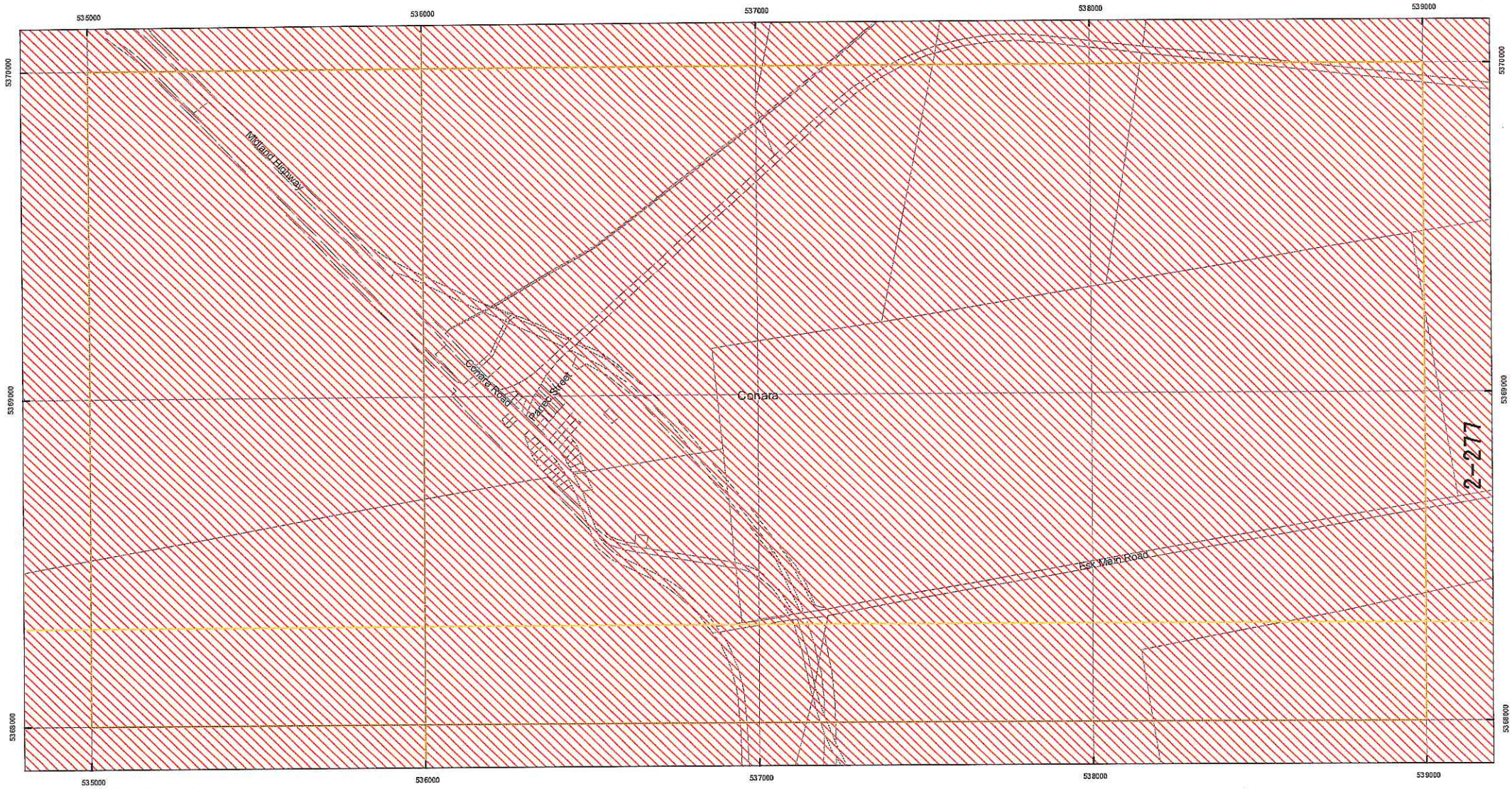


Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 5 of 46

0 100 200 300 400 500
Metres

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018

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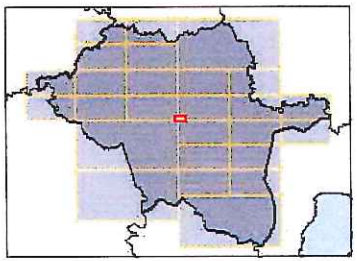


Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay

Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 6 of 46

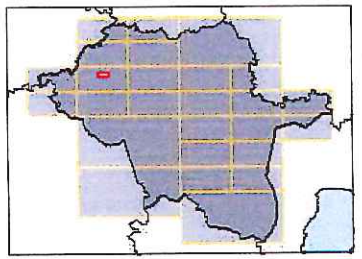
0 100 200 300 400 500
Metres

N

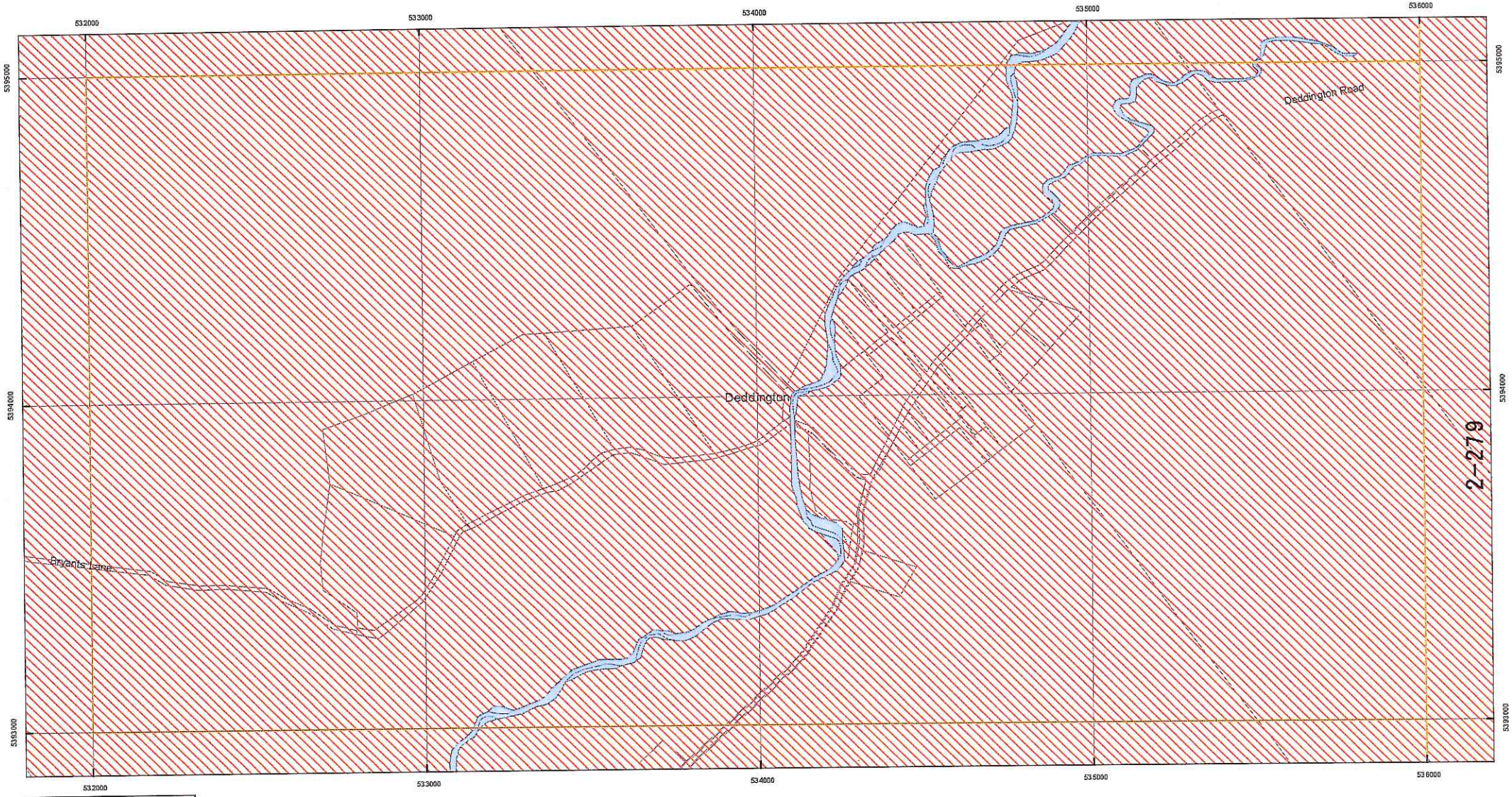
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 7 of 46

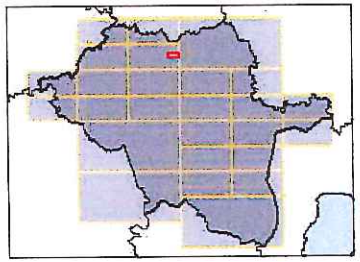
0 100 200 300 400 500
Metres

N

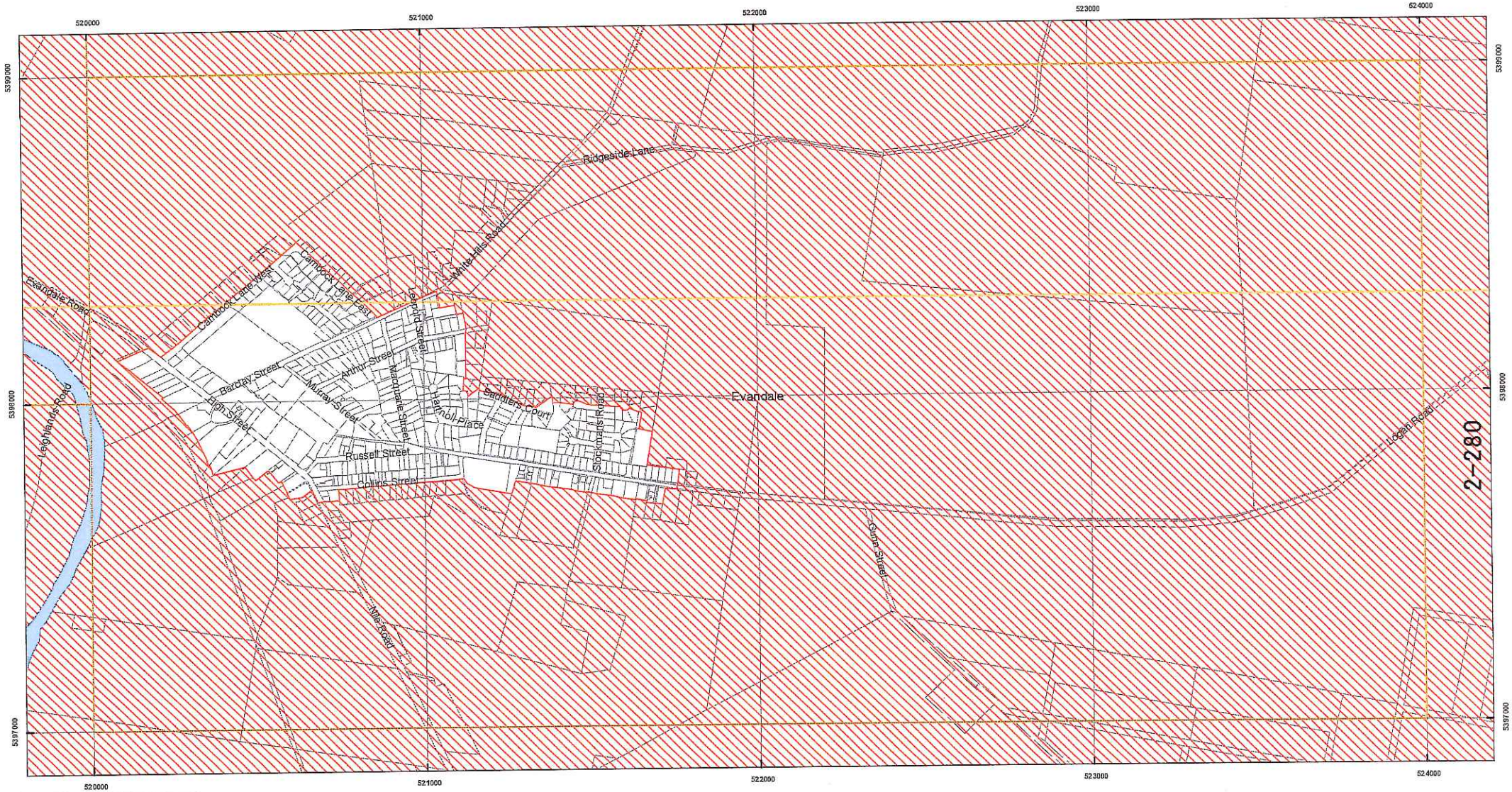
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 8 of 46

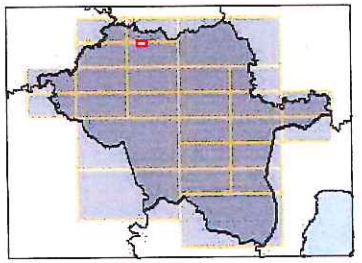
0 100 200 300 400 500
Metres

N

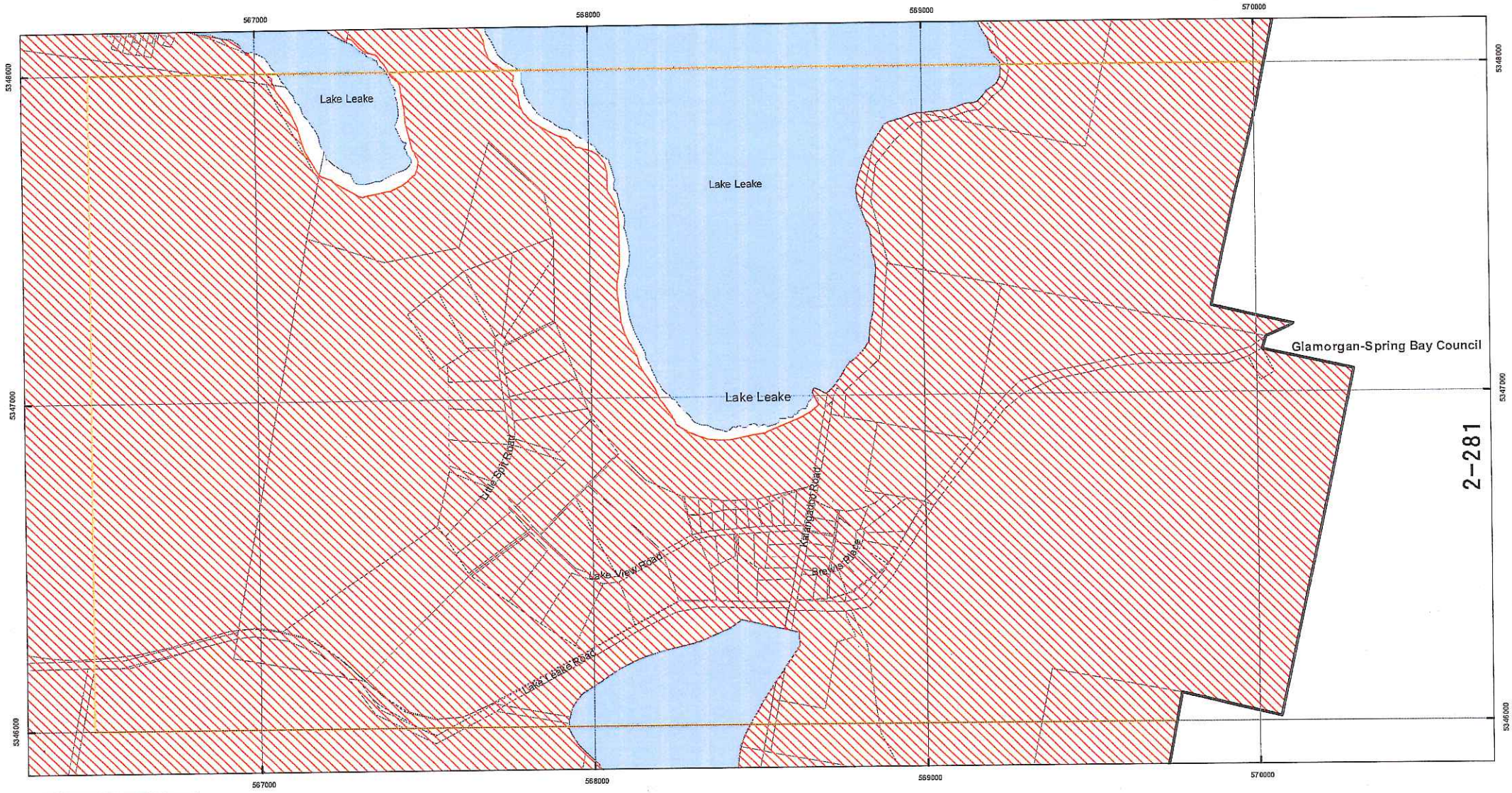
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 9 of 46

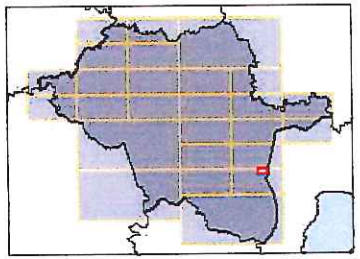
0 100 200 300 400 500
Metres

N

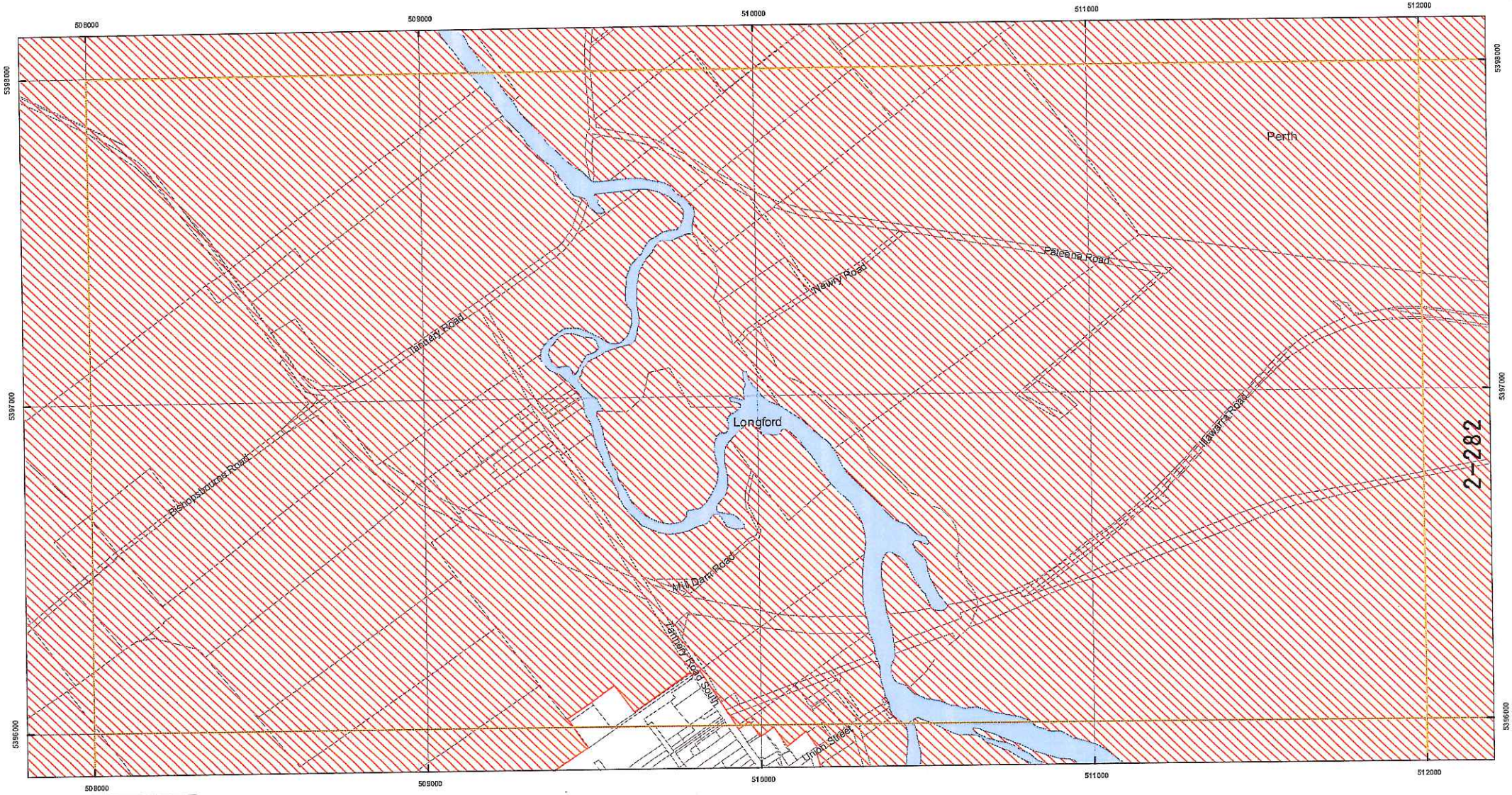
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 10 of 46

0 100 200 300 400 500
Metres

N

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

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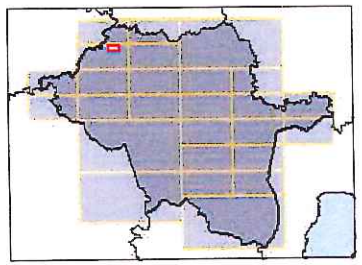

Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay

Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 11 of 46

0 100 200 300 400 500
Metres

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

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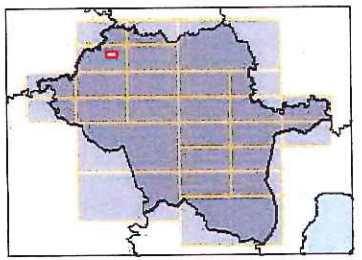
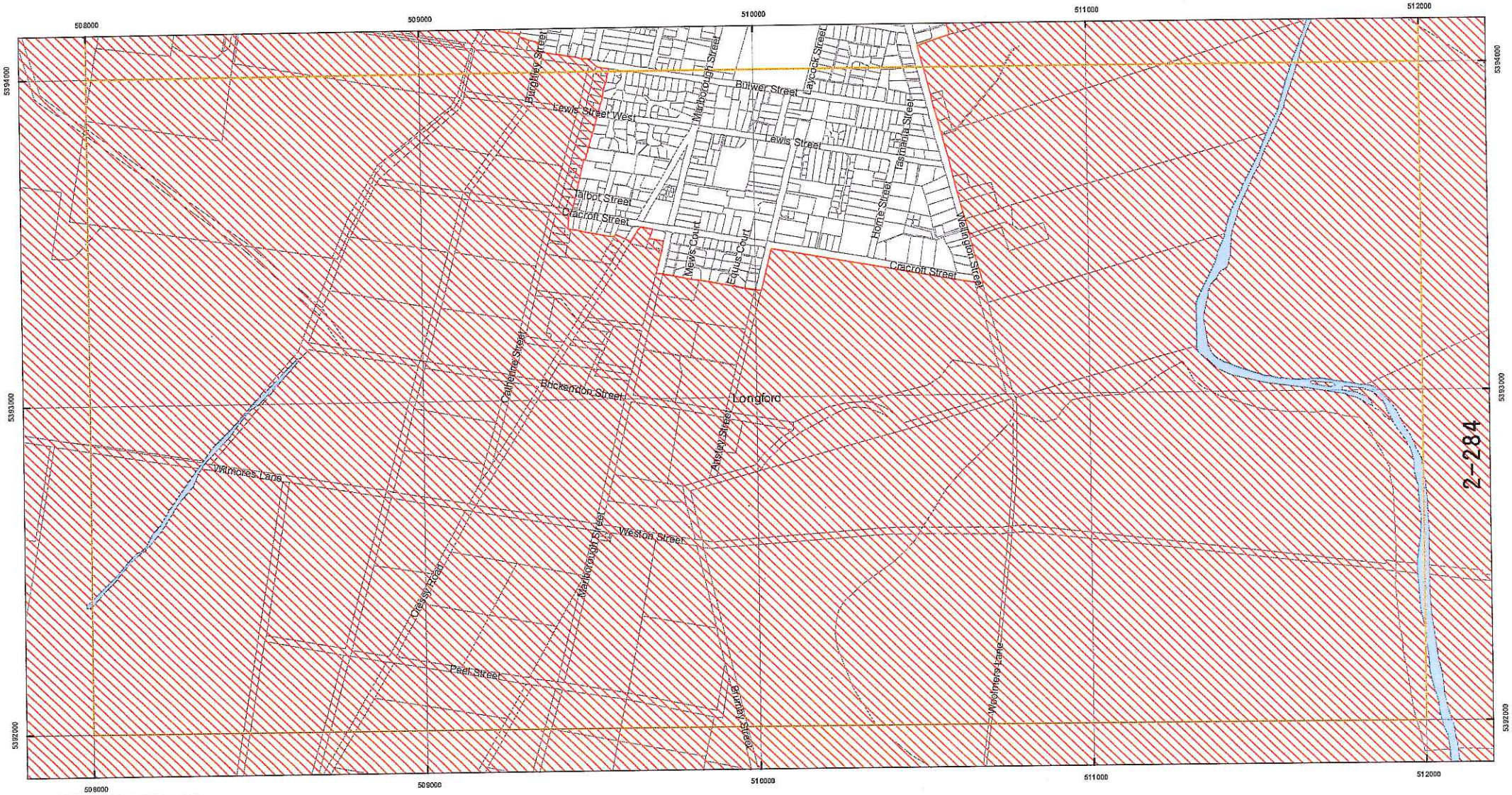


Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 12 of 46

0 100 200 300 400 500
Metres

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

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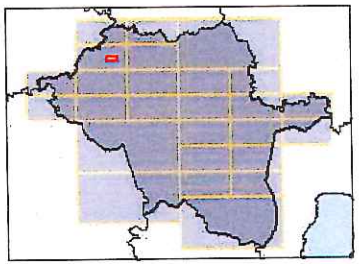
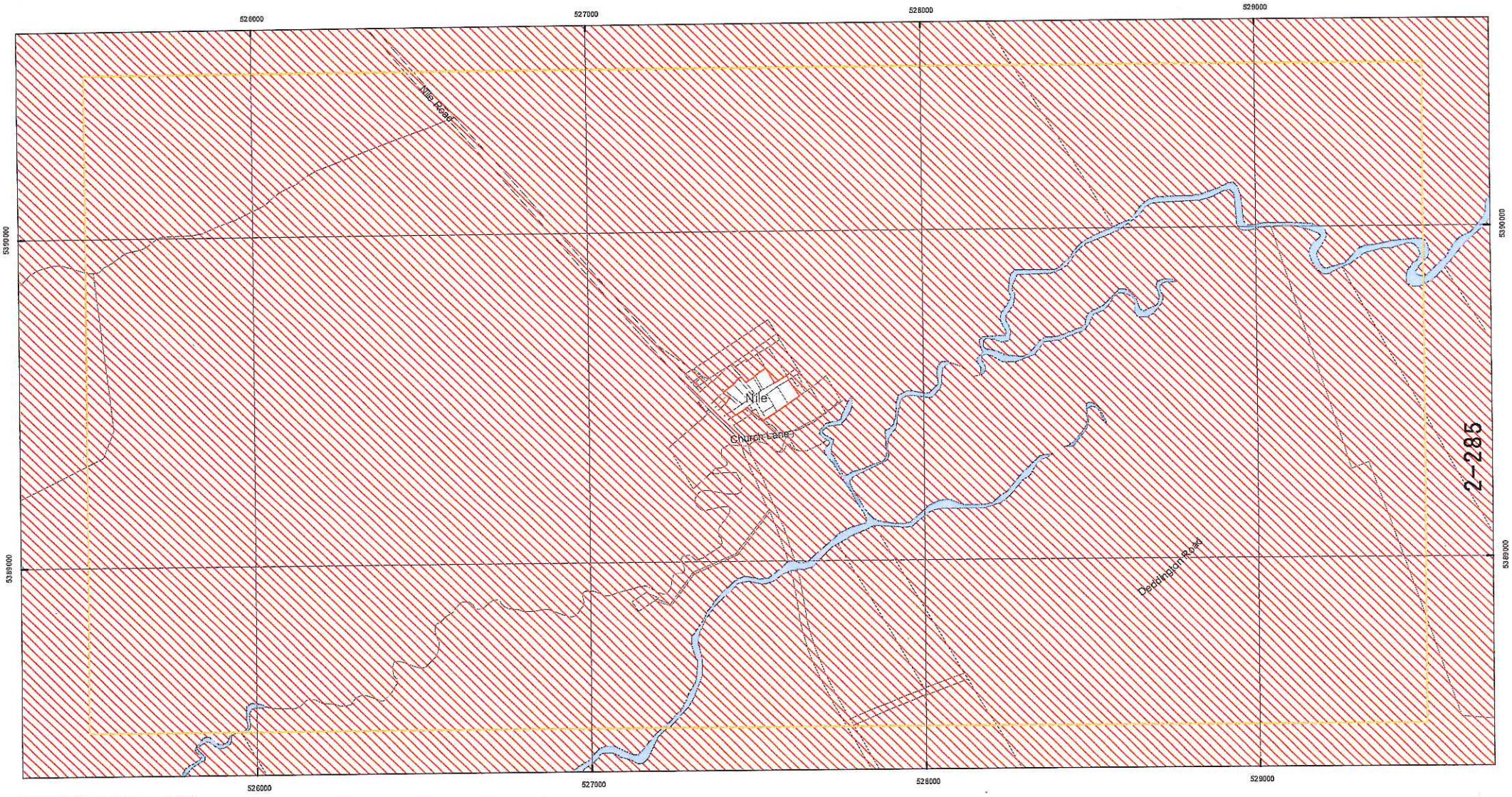


Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 13 of 46

0 100 200 300 400 500
Metres

N

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

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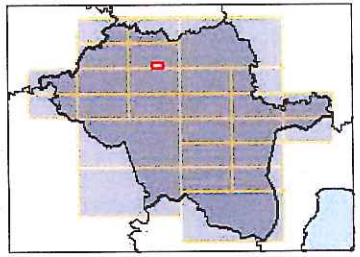
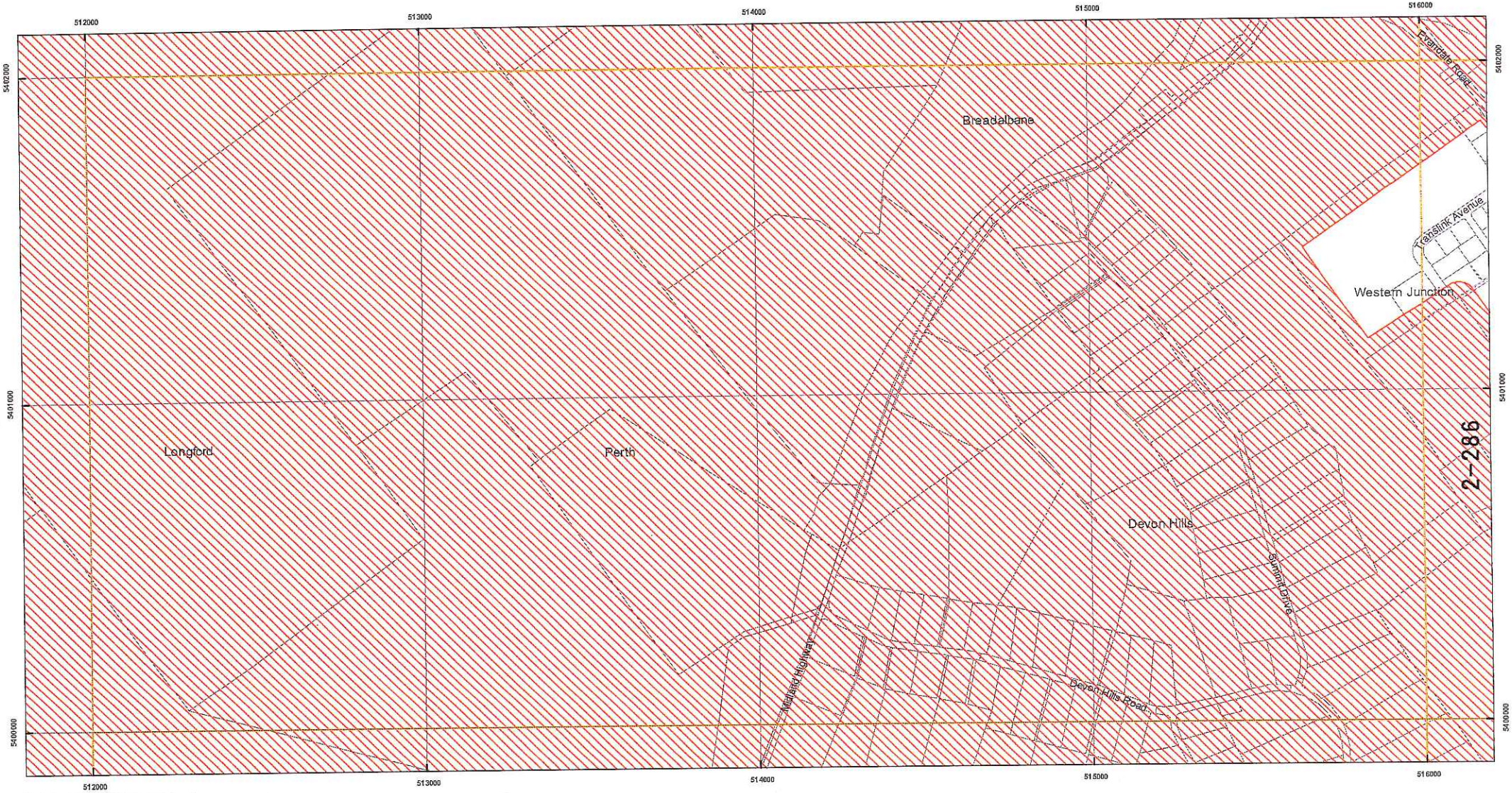


Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

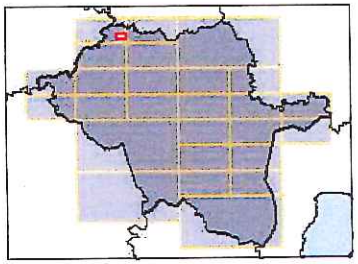
Map 14 of 46

0 100 200 300 400 500
Metres

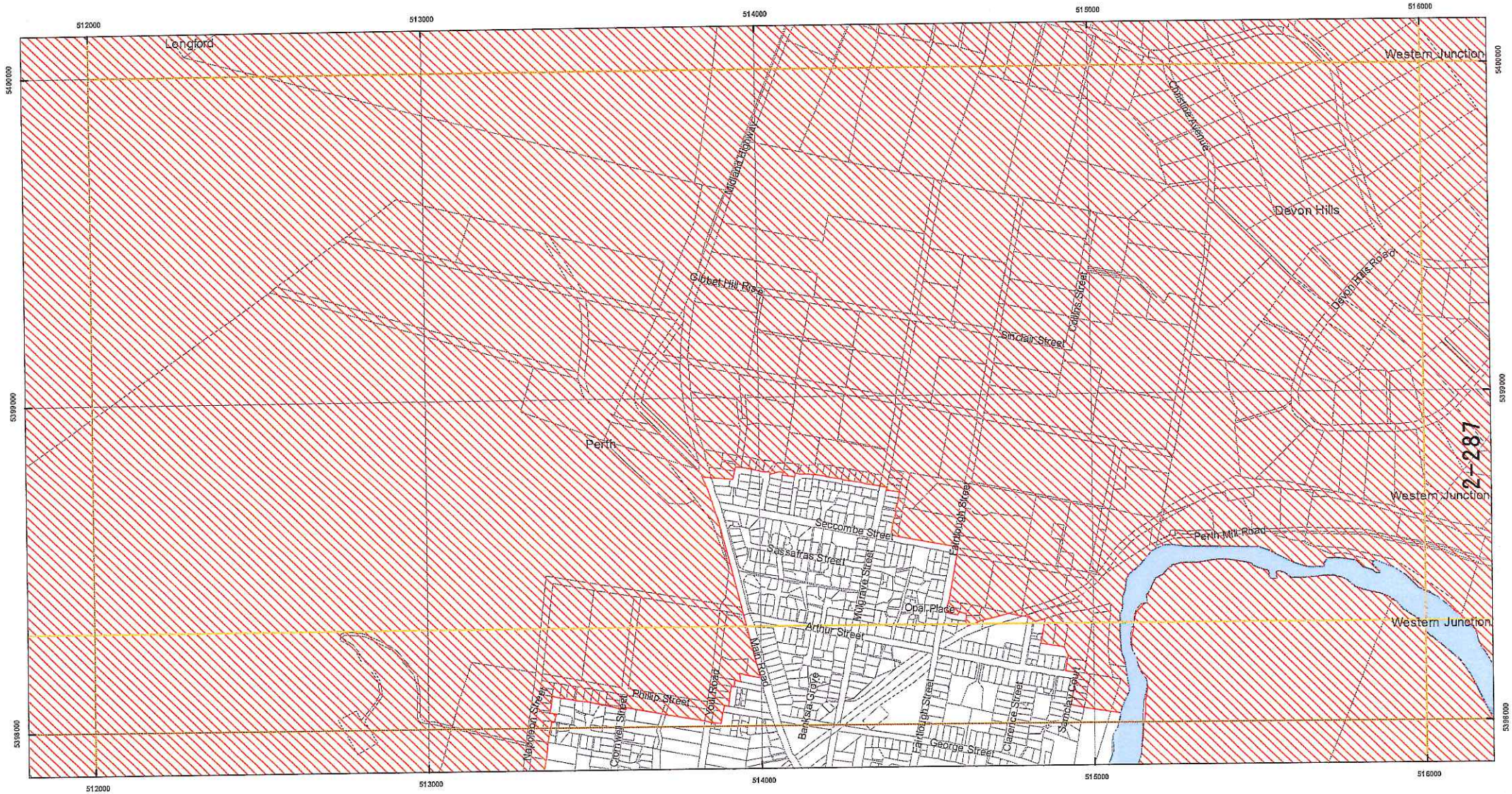
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 15 of 46

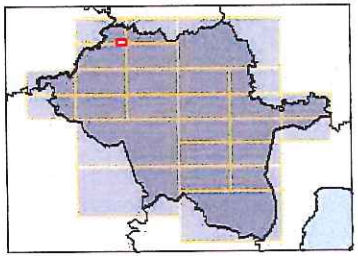
0 100 200 300 400 500
Metres

N

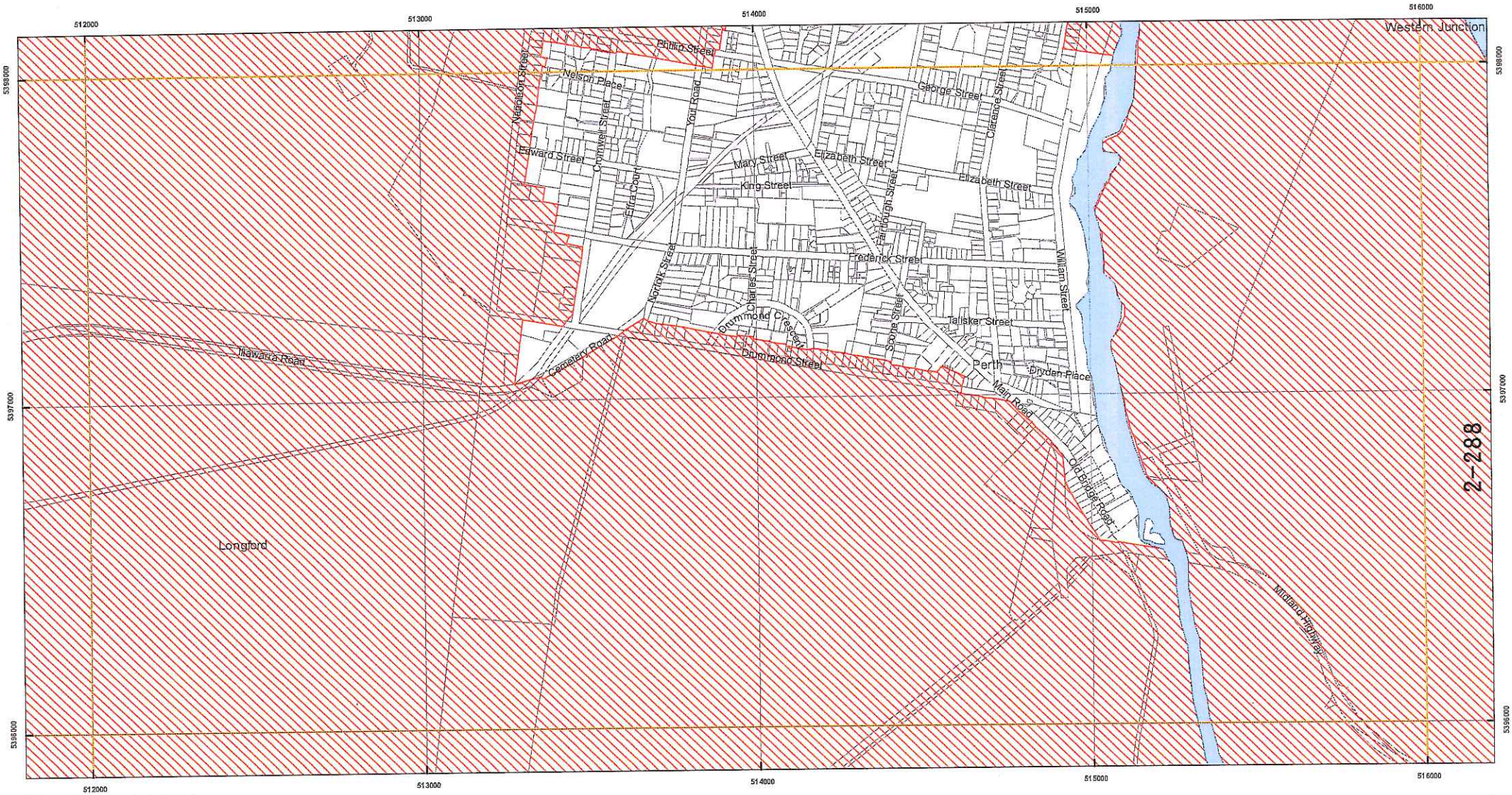
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

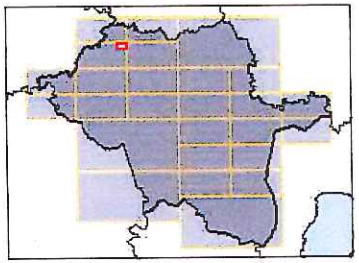
Map 16 of 46

0 100 200 300 400 500
Metres

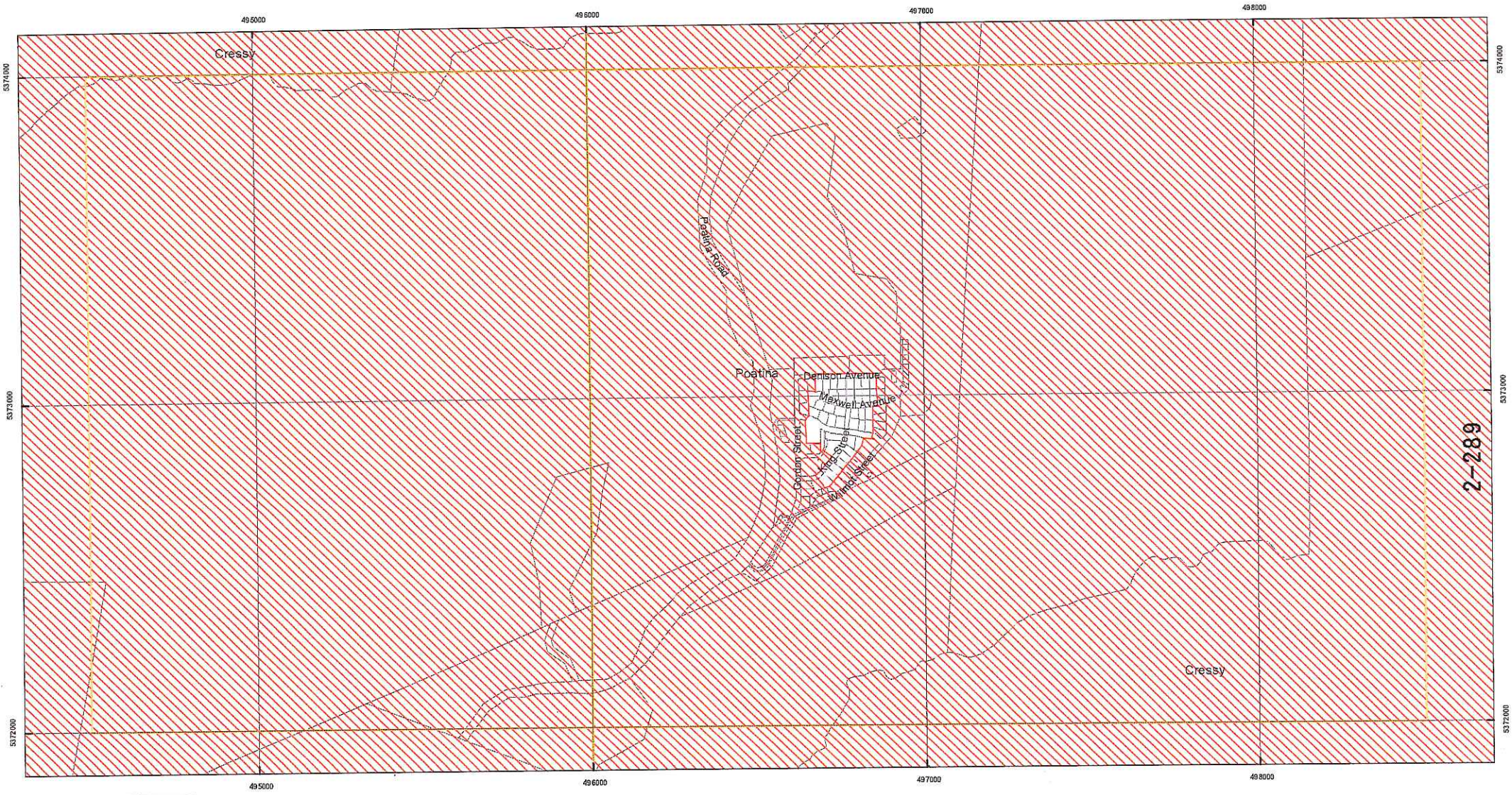
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

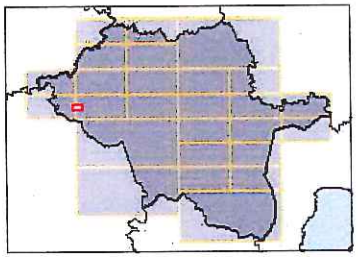
Map 17 of 46

0 100 200 300 400 500
Metres

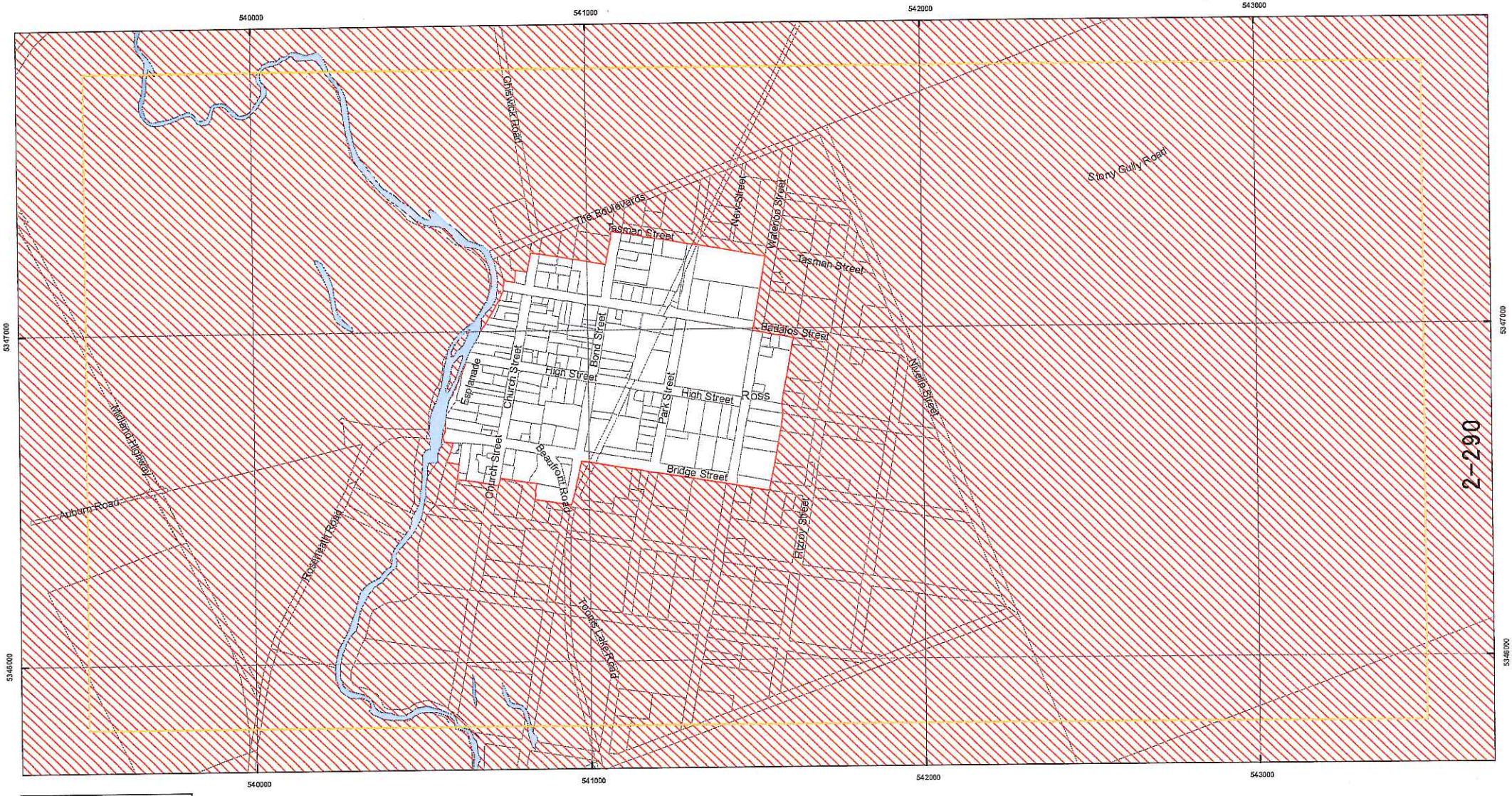
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 18 of 46

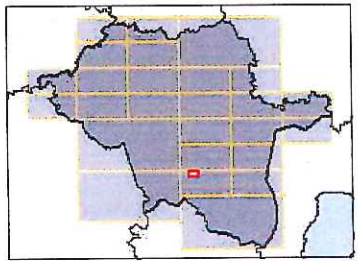
0 100 200 300 400 500
Metres

N

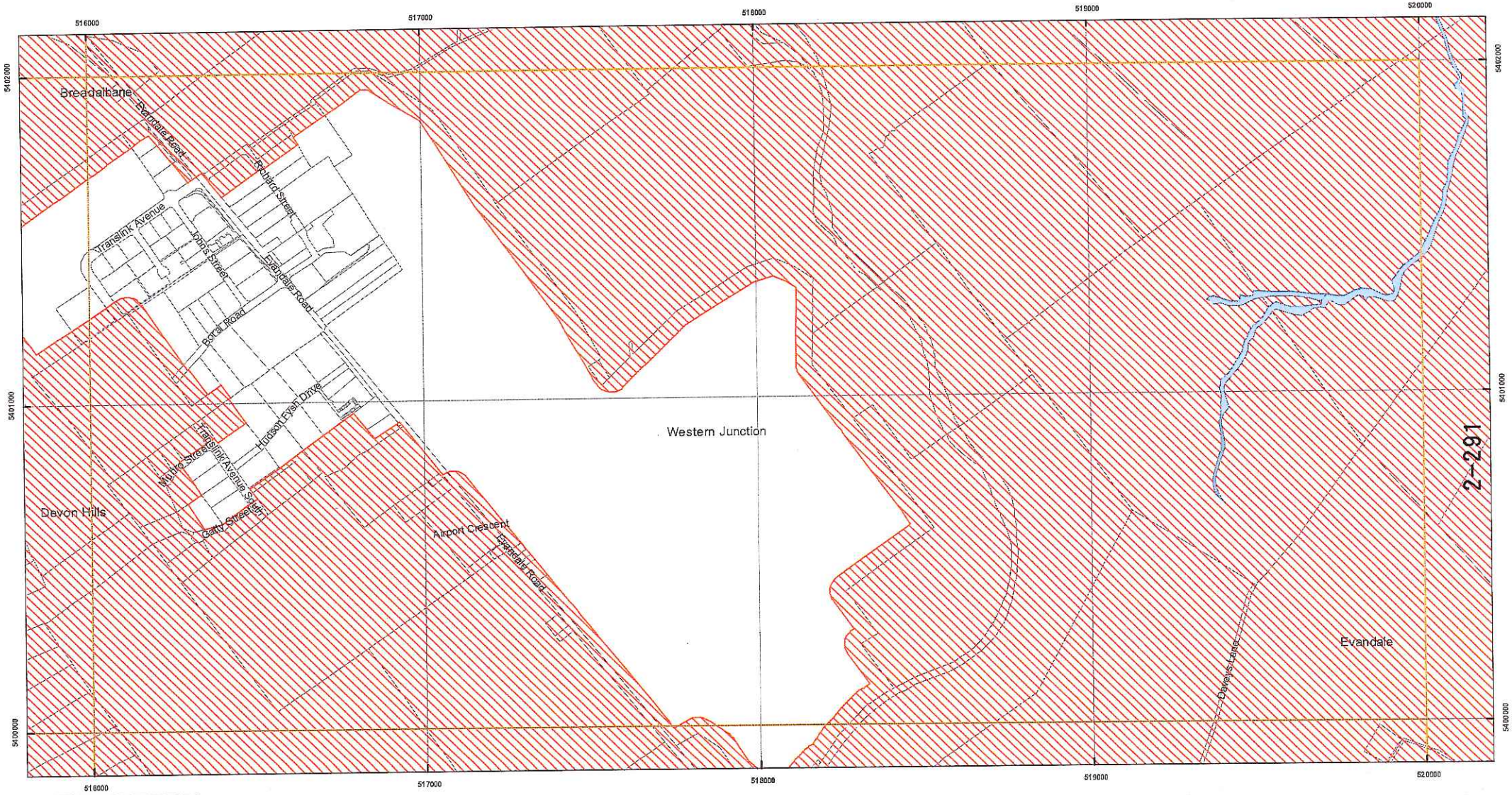
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

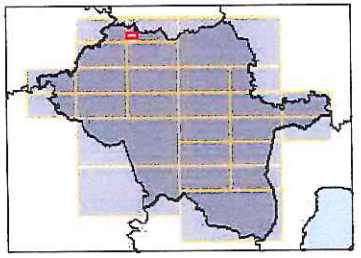
Map 19 of 46

0 100 200 300 400 500
Metres

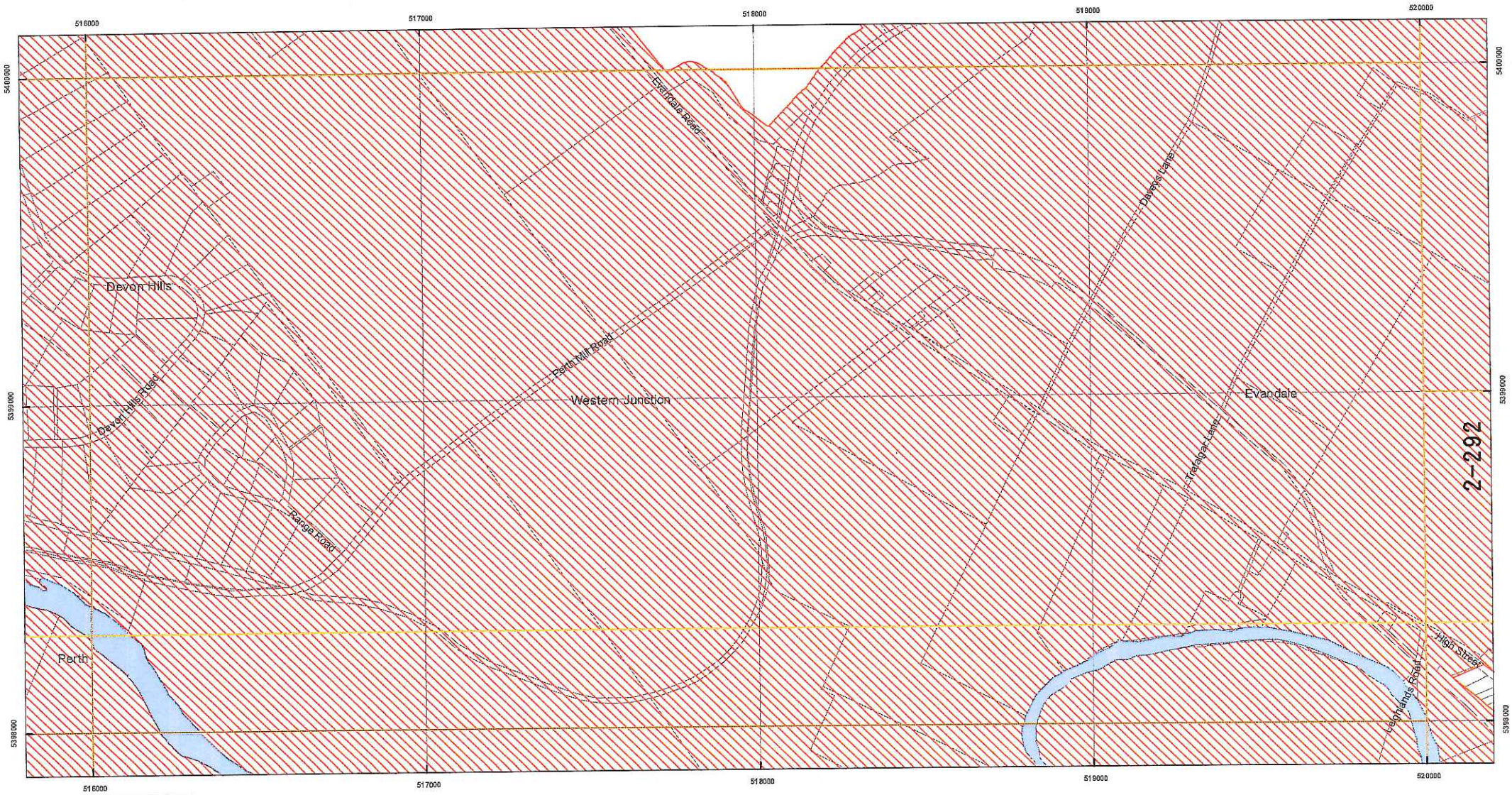
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

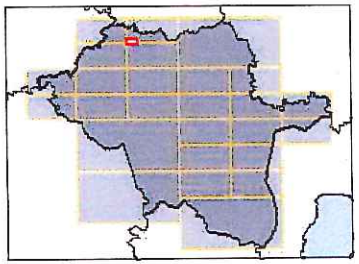
Map 20 of 46

0 100 200 300 400 500
Metres

Coordinate System: GDA 94 MGA Zone 55

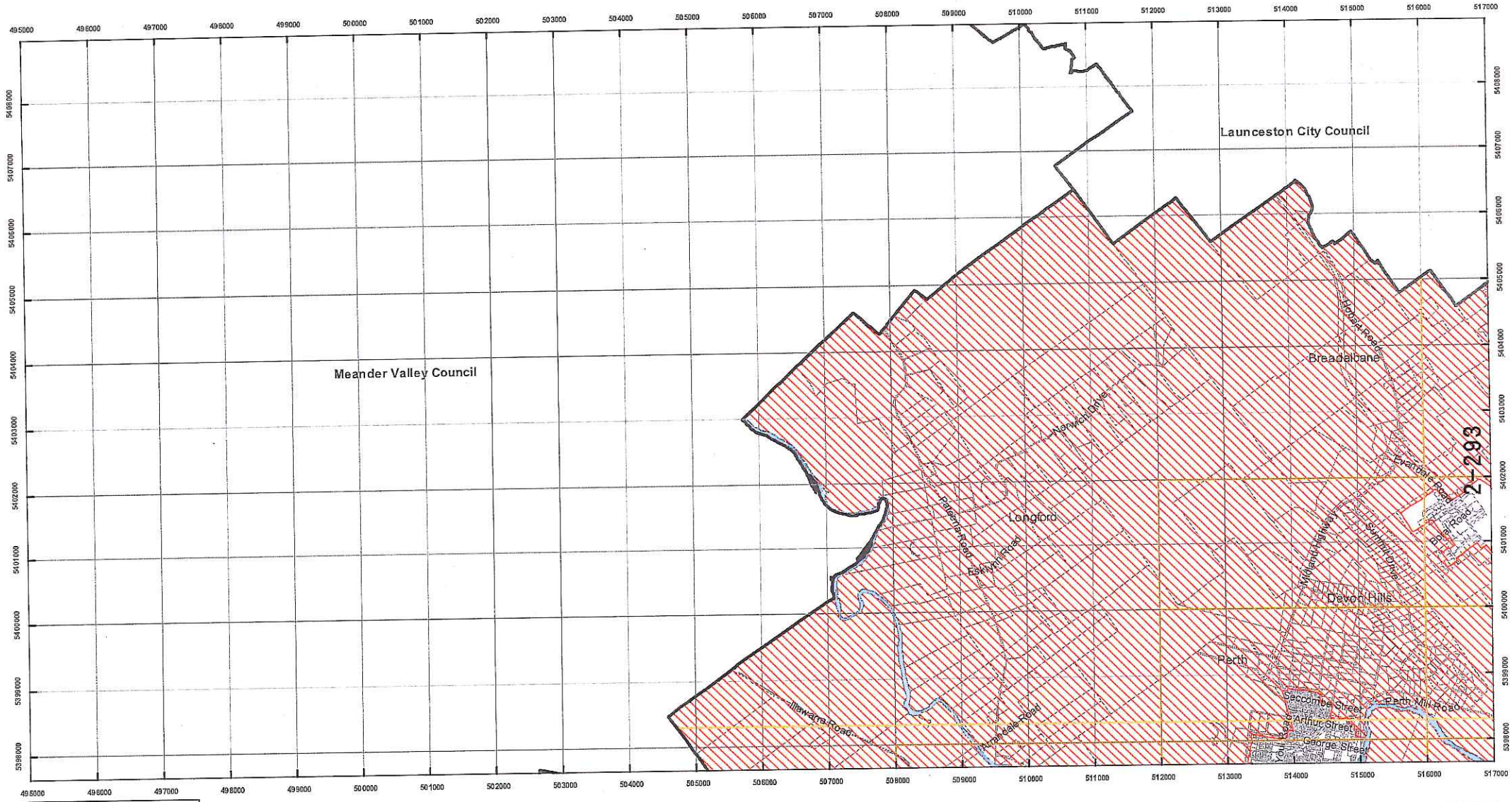
Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:

Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

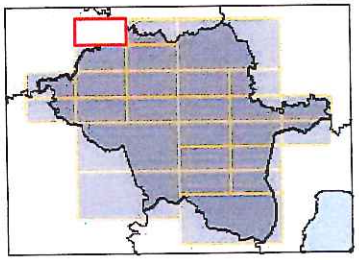
Map 21 of 46

0 520 1,040 1,560 2,080 2,600
Metres

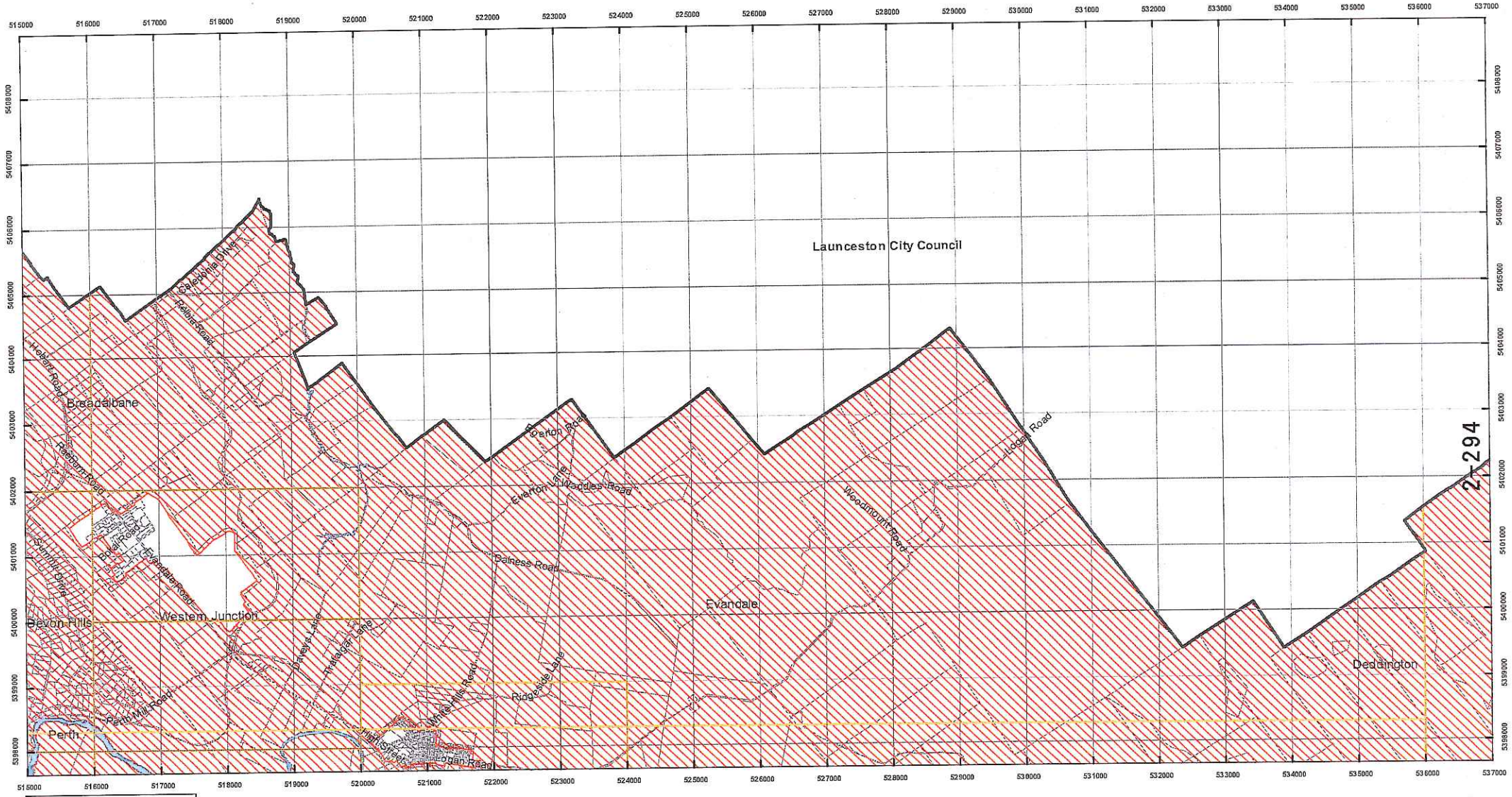
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 22 of 46

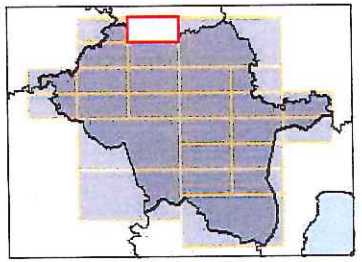
0 520 1,040 1,560 2,080 2,600
Metres

N

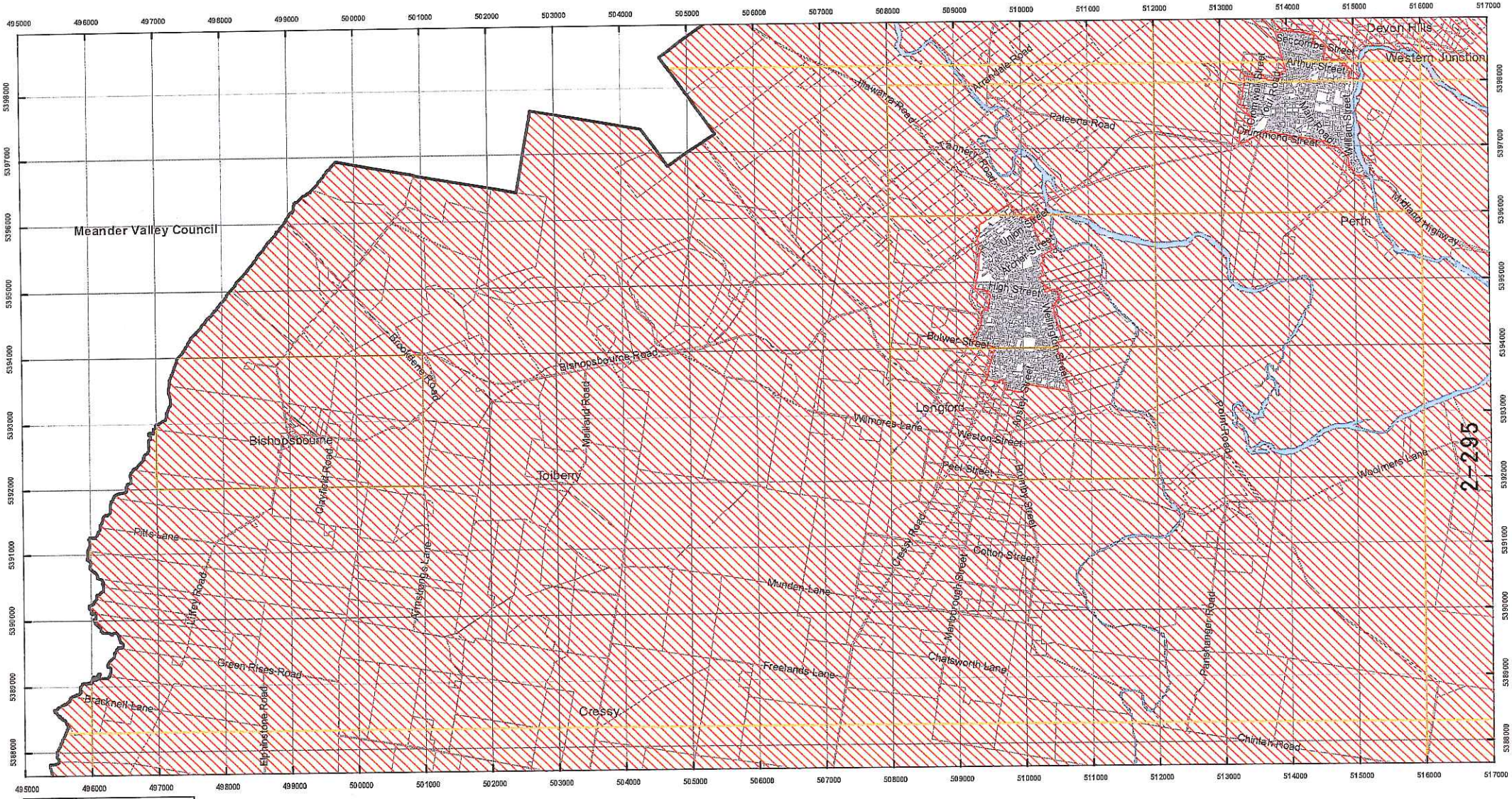
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

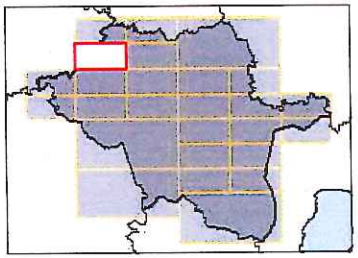
Map 23 of 46

0 520 1,040 1,560 2,080 2,600
Metres

Coordinate System: GDA 94 MGA Zone 55

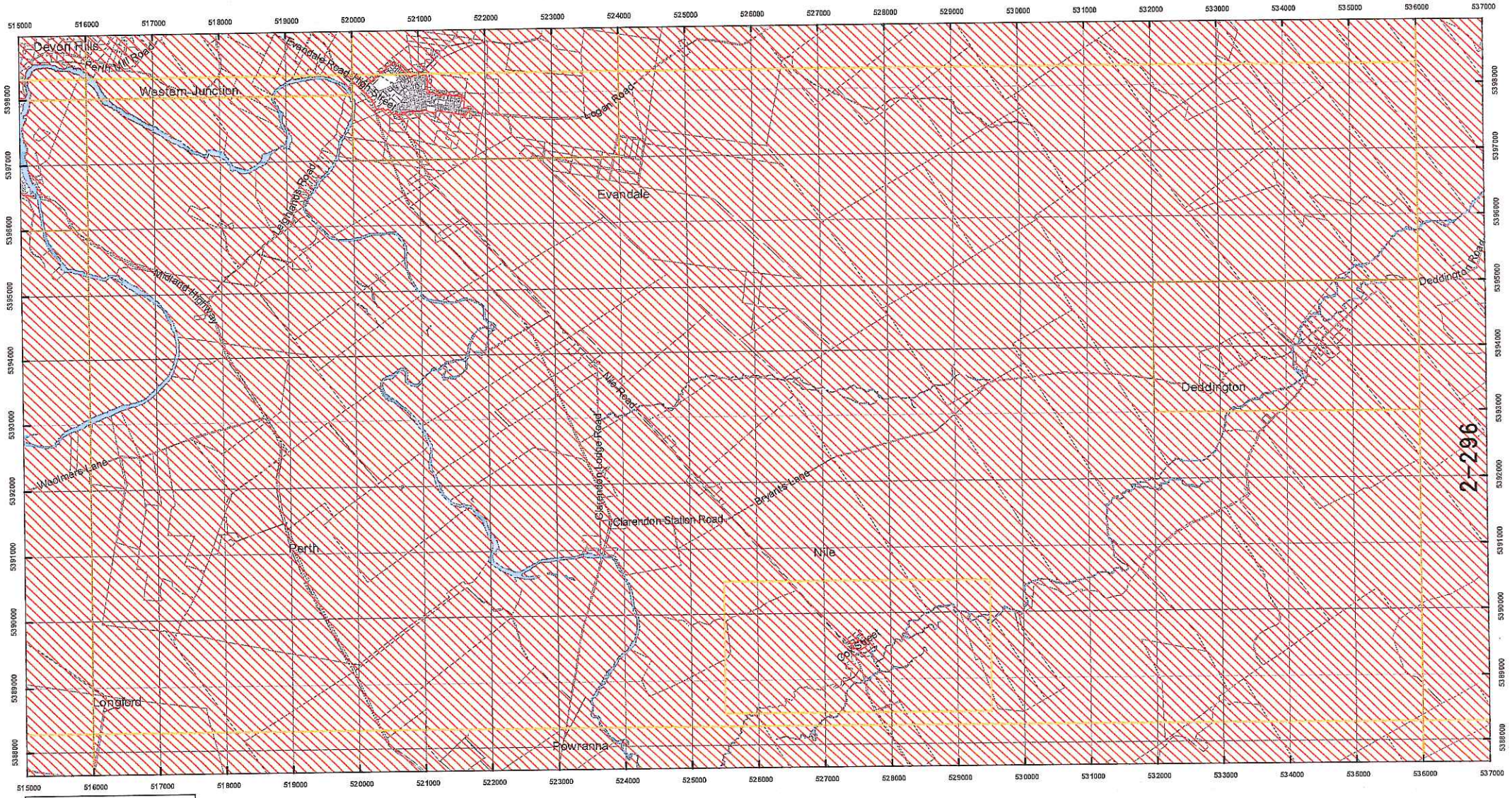
Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:

Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 24 of 46

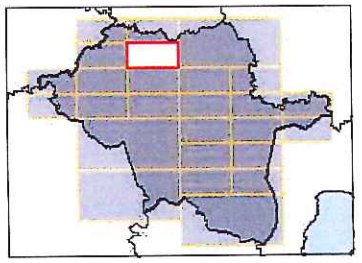
0 520 1,040 1,560 2,080 2,600
Metres

N

Coordinate System: GDA 94 MGA Zone 55

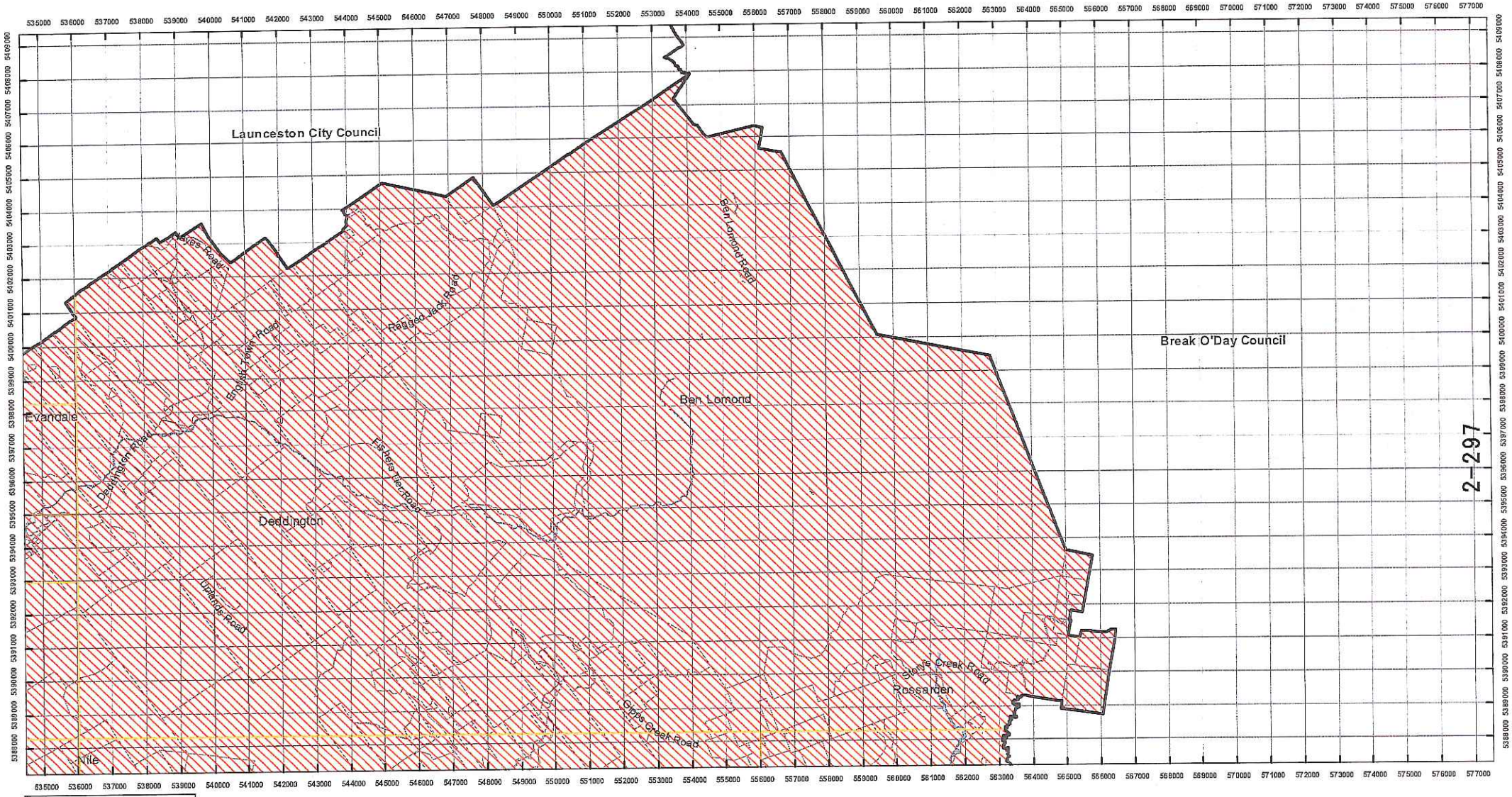
Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:

Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

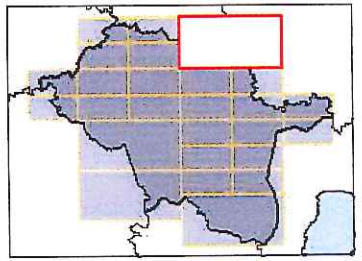
Map 25 of 46

0 1,000 2,000 3,000 4,000 5,000
Metres

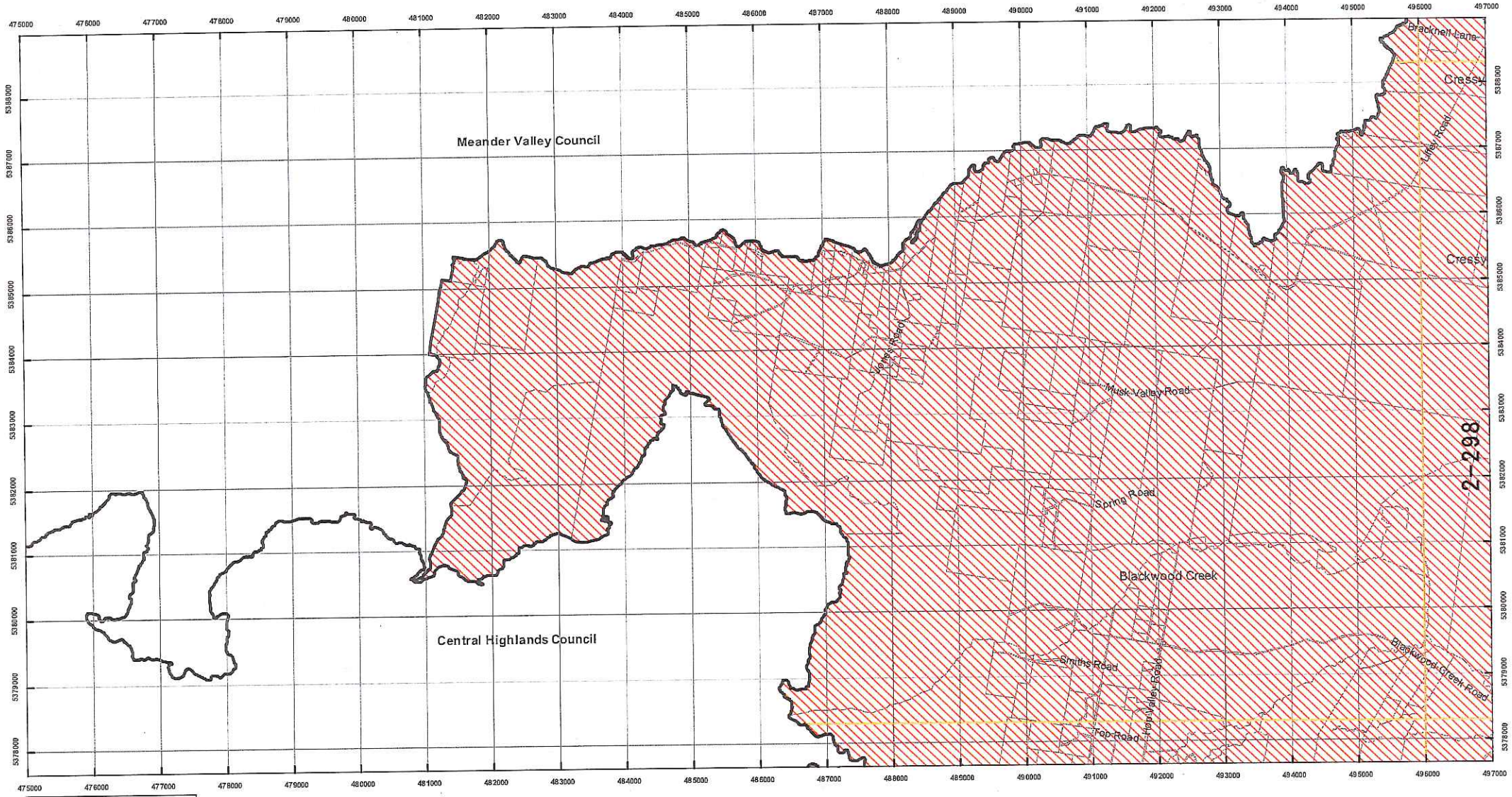
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

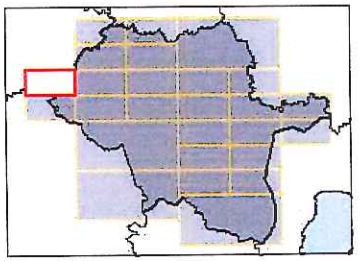
Map 26 of 46

0 520 1,040 1,560 2,080 2,600
Metres

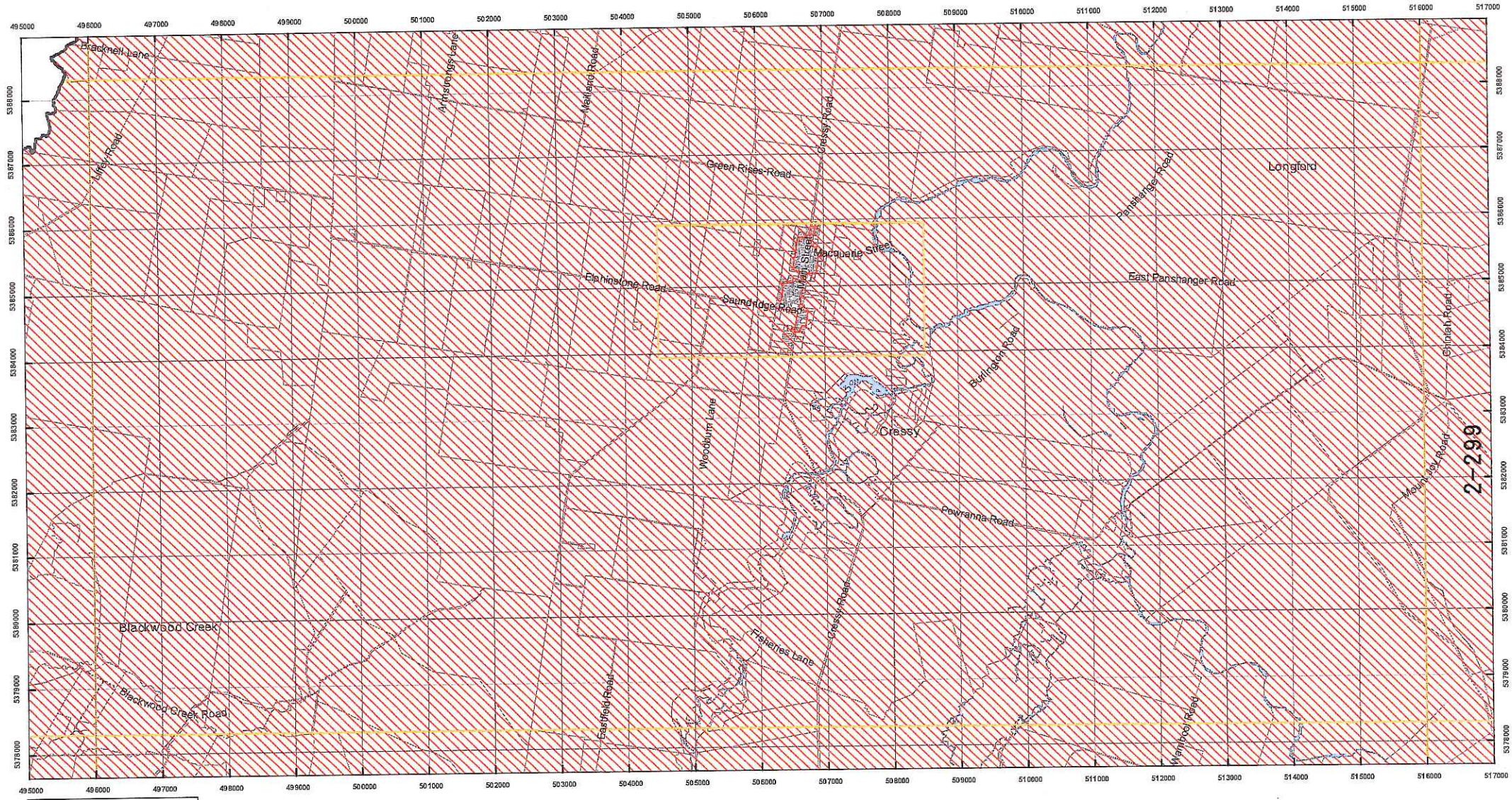
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:
Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 27 of 46

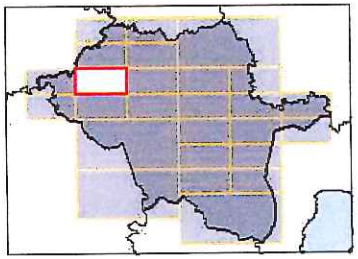
0 520 1,040 1,560 2,080 2,600
Metres

N

Coordinate System: GDA 94 MGA Zone 55

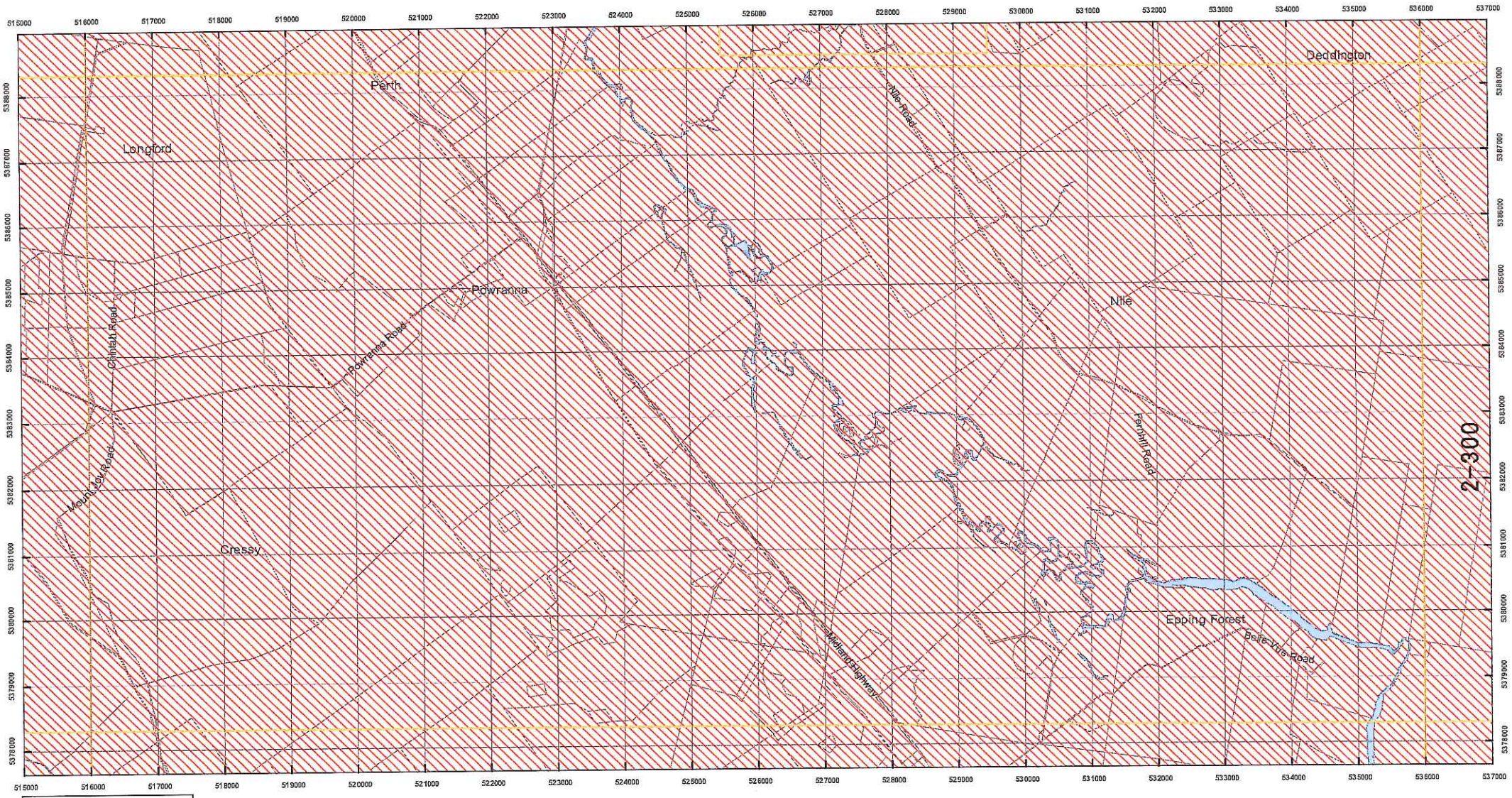
Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018



Tasmanian Planning Scheme - Northern Midlands Local Provisions Schedule:

Bushfire-Prone Areas Overlay



Legend

- Bushfire-Prone Area
- Cadastral Parcels

Map 28 of 46

0 520 1,040 1,560 2,080 2,600
Metres

N

Coordinate System: GDA 94 MGA Zone 55

Overlay data from Northern Midlands Council and Tasmania Fire Service
Base topographic data from the LIST © State of Tasmania

Print Date: 3/09/2018