7.4 Fauna and habitat

7.4.1 Fauna species

Terrestrial fauna

A total of 61 fauna species (56 native and five introduced) were recorded from the project area during field assessments undertaken by Biosis between November 2020 and July 2021 (Appendix 3, Table A3.1). The 61 fauna species recorded within the study area included 50 bird species (two introduced), seven mammal species (three introduced), two reptile species and two frog species. No significant fauna species were recorded during these field assessments. A VBA search encompassing the study area and a 10 kilometre buffer returned 38,832 observations for up to 772 species, including 248 birds, 74 mammals, 31 reptiles, 16 amphibians, 35 fish and 368 invertebrates. Significant fauna species that make up this total are discussed in Section 7.4.4 and listed in Appendix 3, Table A3.2, along with an assessment of their likelihood of occurring within the project area.

All 61 fauna species recorded by Biosis within the project area have been previously recorded within the project search area. Practical Ecology (2019) did not provide a fauna recorded list in their report but noted incidental observations of common forest fauna species and groups throughout the report. Further detail on the terrestrial fauna habitats present within the study area, and the fauna that occur within those habitat types, is discussed in Section 7.4.2.

Aquatic fauna

A total of 153 aquatic fauna species have been recorded within the Yarra River basin, including 35 fish species, 13 frog species, 80 aquatic invertebrates, 17 crustacea and eight molluscs. A list of Yarra Basin aquatic species recorded within 10 kilometres of the project area, including the number of times in which they have been recorded, is provided in Appendix 3.

Of the threatened aquatic species within 10 kilometres of the project area, six species have previously been recorded or are predicted to occur (i.e. medium or higher likelihood of occurrence) with the project area or assessment corridor, including:

- One is listed as endangered under the provisions of the EPBC Act (Macquarie Perch).
- Two are listed as vulnerable under the provisions of the EPBC Act (Australian Grayling and Murray Cod).
- Five are listed as endangered under the new FFG Act listings (Australian Grayling, Murray Cod, Macquarie Perch, Curve-tailed Burrowing Crayfish and Tubercle Burrowing Crayfish).
- One species classified as an invertebrate, Mount Donna Buang Wingless Stonefly, is listed as critically endangered under the FFG Act, and has an aquatic larval (nymph) stage.

Further detail on the aquatic fauna habitats present within the project area, and the fauna that occur within those habitat types, is discussed in Section 7.4.3. Significant aquatic fauna species known or predicted to occur within 10 kilometres of the project area are discussed further in Section 7.4.5.

7.4.2 Terrestrial fauna habitat types

The main focus of the assessment for fauna undertaken by Practical Ecology (2019) was the consideration of the project area to provide fauna habitat. The fauna habitat observed by Practical Ecology (2019) within the project area included:

- Tree canopies, and trees with small and large hollows, including dead stags.

- Dense understorey vegetation including shrubs and grasses.
- Vegetation (foliage, fruit and grasses) that provide food resources.
- Leaf litter and rocks.
- Moist depressions and wet areas along gully lines.
- Large fallen logs that are hollow or concave.

Practical Ecology (2019) describes the vegetation throughout the assessment area as providing high-quality fauna habitat for hollow-utilising and hollow-dependent fauna due to the abundance of medium and large old trees and/or dead stags including trees with a range of hollow sizes suitable for a diverse array of fauna species. The dense midstorey provides suitable nesting and foraging habitat for a range of small bird species and arboreal mammals. Most of the assessment area supports a consistent cover of leaf litter and large fallen logs, and in some areas grass tussocks, that are ideal habitat for smaller ground-dwelling fauna species such as small mammals, birds, reptiles, frogs and invertebrates.

To provide further information on the fauna habitat within the project area, and the species present within these habitats, field assessments and fauna observations were undertaken by Biosis, along with a desktop review of existing information on the vegetation of the site and existing fauna records obtained from the VBA. Further discussion on the fauna habitat of the project area is provided below.

Wet and damp forests

The majority of the project area consists of wet and damp forest communities including Damp Forest, Montane Wet Forest and Wet Forest. These vegetation communities occur across the south-facing slopes of the Yarra Ranges National Park within the project area, and on much of the more sheltered north-facing slopes and gullies of the southern section of the project area within Yarra State Forest. These wetter, closed forests provide a variety of resources for a diverse range of local fauna. Flowering eucalypts provide food for nectar-feeding fauna, such as honeyeaters and gliders. Large old trees and dead stags provide nesting resources for a range of hollow-dependent fauna, including forest owls, possums and gliders. In particular, hollow-bearing trees in these forests provide nesting resources for the EPBC Act listed Southern Greater Glider *Petauroides Volans* and Leadbeater's Possum *Gymnobelideus leadbeateri*, as well as FFG Act listed Powerful Owl *Ninox strenua* and Sooty Owl *Tyto tenebricosa*. Trees and shrubs provide habitat for insectivorous birds that forage on tree trunks, limbs, underneath the bark, on leaves, around flowers and in coarse woody debris and leaf litter at ground level. The arboreal Spencer's Skink *Pseudemoia spenceri* is also likely to be present and utilise trees within these forest types.

The ground layer is structurally diverse with dense shrubs, ferns, grasses and a deep layer of bark and leaf litter, along with coarse woody debris. This provides foraging habitat and cover for a number of small ground-dwelling mammals such as Bush Rat *Rattus fuscipes*, Agile Antechinus *Antechinus agilis* and Mainland Dusky Antechinus *Antechinus mimetes*. Small birds that utilise this layer include White-browed Scrubwren *Sericornis frontalis* and Superb Fairy-wren *Malurus cyaneus*, and a number of small skinks associated with forest habitat are also likely to be present including McCoy's Skink *Anepischtos maccoyi* and Garden Skink *Lampropholis guichenoti.*

Larger fallen branches and the occasional presence of sub-canopy trees provides foraging opportunities for small insectivorous birds such as Eastern Yellow Robin *Eopsaltria australis* and Grey Fantail *Rhipidura albiscapa*, both of which are recorded regularly from the local area (DELWP 2020a). Areas where stem densities allow for a dense and well connected sub-canopy layer, including thickets dominated by Mountain Tea-tree or Lemon Bottlebrush, represent critical habitat for the EPBC Act listed Leadbeater's Possum, particularly in proximity to known colonies occurring around Mount Donna Buang, Ben Cairn and Mount Bride.

Creeks and streams that occur within these forest types are likely to support semi-aquatic vertebrate fauna including common frog and water skink species such as Common Froglet *Crinia signifera*, Victorian Smooth Froglet *Geocrinia Victoriana* and Southern Water Skink *Eulamprus tympanum tympanum*, all of which have been recorded within the project area or broader project search area (DELWP 2020a).

Rainforest

Rainforest and other forest located in sheltered, wet gullies support similar resources for fauna as adjacent vegetation types throughout the surrounding landscape. Rainforest within the project area is confined to south-facing gullies around the Ben Cairn and Mount Donna Buang areas, and is represented by a closed canopy of Myrtle Beech and Southern Sassafras with a ground layer dominated by ferns and mosses, and a deep litter layer and presence of coarse woody debris. There are a number of fauna species that are more commonly associated with rainforest habitat, which are likely to utilise these parts of the project area. These species include a number of insectivorous birds that utilise the ground-layer of rainforest habitats, such as Bassian Thrush *Zoothera lunulata*, Pilotbird *Pycnoptilus floccosus,* Superb Lyrebird *Menura novaehollandiae* and Large-billed Scrubwren *Sericornis magnirostra*. Rainforest habitat within the project area is also likely to support breeding habitat for Rose Robin *Petroica rosea*, Pink Robin *Petroica rodinogaster* and the EPBC Act listed migratory Rufous Fantail *Rhipidura rufifrons*. The EPBC Act listed Leadbeater's Possum is also likely to utilise these areas.

Drier forest habitat

Drier forest habitat occurs on the lower north and west facing foothills and ridges of the southern section of the project area. These relatively drier habitats largely correspond with Shrubby Foothill Forest and also include occurrences of Lowland Forest, Herb-rich Foothill Forest and Heathy Valley Forest. These drier habitats typically contain a denser and more diverse herb and shrub layer that is made up of heaths and other fire-adapted species. Drier forest habitat provides a similar range of resources for fauna to wetter forest habitats, however the composition of species is slightly different and includes a diverse range of birds, reptiles and some additional mammal species that are unlikely to be present in wetter forest habitats such as Short-beaked Echidna *Tachyglossus aculeatus* and Koala *Phascolarctos cinereus*. Reptiles that are more likely to occur in these areas include Lace Monitor *Varanus varius* and Tree Dragon *Amphibolurus muricatus.* The EPBC Act listed Smoky Mouse *Pseudomys fumeus* and Southern Brown Bandicoot *Isoodon obesulus obesulus* are also considered to have potential to occur within these drier and heathier forest habitats.

Planted vegetation and urban areas

The project area includes proposed trails in and around the townships of Warburton and Wesburn, which contain cleared areas, built structures and planted vegetation associated with landscape plantings, golf courses and private gardens. Many of these plantings are exotic or non-indigenous, and provide an alternative food source for common local fauna that are wide-ranging and well-adapted to disturbed environments. The township is also located on relatively flat land adjacent to the Yarra River, and therefore a number of wetlands, dams and ephemeral flooded areas occur, which provide habitat for locally common waterbirds such as Pacific Black Duck *Anas superciliosa* and the FFG Act listed Great Egret *Ardea alba,* and common frogs including Southern Brown Tree Frog *Litoria ewingii* and Southern Bullfrog *Limnodynastes dumerilii*. Planted flowering trees may also be utilised by the EPBC Act listed Swift Parrot *Lathamus discolor* and Grey-headed Flying-Fox *Pteropus poliocephalus*.

7.4.3 Aquatic habitat types

The project area contains a diversity of aquatic and riparian habitat consisting of numerous creeks, rivers, drainage lines, seasonal gullies, damp depressions and riparian vegetation. Spatial analysis identifies approximately 64 named waterways in the project area (Figure 7), defined according to the *Waterway Determination Guidelines* (DNRE 2002). Of these waterways, 18 are crossed by the assessment corridor. These waterways are listed in Appendix 6 for the project area and for the assessment corridor (also see Table 23).

Waterways in the project area are presented in Figure 7, with streams identified according to hierarchy. Waterways and smaller watercourses within the project area are predominantly comprised of fern gullies and small creeks (see photos in Appendix 4). The majority of waterways within the project area are surrounded by forested areas of the Yarra Ranges National Park and broader public land estate, which is contiguous with large tracts of Wet Forest, Damp Forest and Shrubby Foothill Forest. The limited modification of terrestrial riparian habitat infers limited disturbance or modification to existing ephemeral, semi-permanent or permanent instream pool or riffle environments and that high quality instream habitats containing woody debris and aquatic epifauna are likely to exist. Photographs of typical waterways and watercourses in forested gullies are presented in Appendix 4.

Several of the drainage lines and damp depressions encountered during vegetation mapping were observed to contain a dense mid-storey shrub layer of tree ferns and tall shrubs typical of mesic environments. This vegetation structure provides protective cover and foraging resources for small insectivorous birds. Damp areas of Montane Wet Forest are also likely to be closely associated with habitat utilised by the listed Curve-tailed Burrowing Crayfish and Mount Donna Buang Wingless Stonefly (>900 metres above sea level).

Small to medium creeks (such as Big Pats Creek and Britannia Creek) are typically known to be 4 to 6 metres in width, containing shallow riffles (20 - 40 centimetres), pools 50 to 85 centimetres and a mix of both rubble and sand substrate. Habitats in these environments are noted to be of excellent condition, and are known to provide habitat for a diversity of common aquatic fauna including Short-finned Eel, Brown Trout, River Blackfish and Small Spiny Crayfish as well as the potential for threatened species such as the Macquarie Perch. Boulders and small areas of exposed rock adjacent to waterways are also likely to provide potential basking and foraging habitat for reptiles.

Several small wetlands also occur within the project area (Figure 7). These environments were not visually assessed but it is likely they contain a high diversity of macrophytes due to their occurrence within undisturbed environments and are thus likely to provide high quality breeding habitat for a small number of locally common waterbirds, fish and frogs.

Large waterways within the project area include the Yarra River, which is typically surrounded by open forest or modified riparian environments ranging in levels of disturbance. Instream habitat of the Yarra River is characterised as being 4 to 16 metres in width, with numerous shallow riffles and pools up to 1.7 metres in depth. Substrate is a mixture of gravel and rubble, with an increase in the presence of boulders to the east and described generally as being of excellent condition despite mild levels of disturbance where it passes through the Warburton Township.

Instream habitat of the Yarra River within this section is known to provide habitat for a diversity of locally common waterbirds, frogs and fish species including Brown Trout, River Blackfish, Pouched Lamprey, Shorthead Lamprey, Mountain Galaxias, Rainbow Trout, Redfin and Australian Smelt. European Carp are described as being present in the Yarra River downstream of the Warburton township but not common. It is likely that instream habitat in this reach, and associated tributaries, may also provide habitat for the threatened species Australian Grayling and Macquarie Perch.

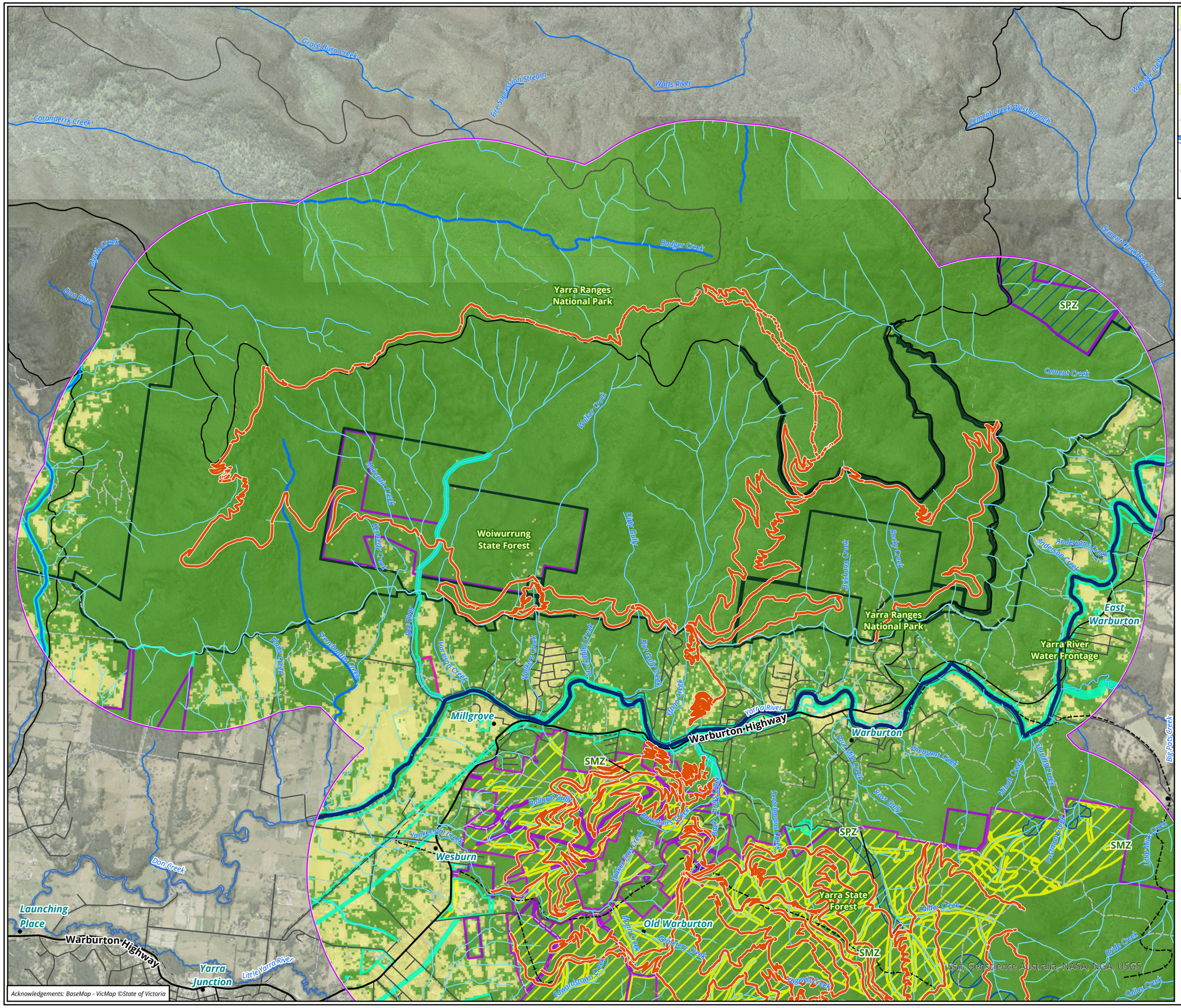
7.4.4 Aquatic habitat condition assessment

The condition assessment criteria for the desktop assessment of waterways was applied to all 18 named waterways crossed by the 20 metre wide assessment corridor. These results are presented in Table 23 below and this assessment indicates that all named waterways have high aquatic habitat values for a single or combination of reasons related to presence of continuous riparian vegetation, near natural or excellent instream habitat and/or presence of Platypus habitat and/or significant aquatic species habitat. Small watercourses such as unnamed waterways, gullies and headwater tributaries were not assessed individually but where they support the seasonal presence of water these features also provide high value aquatic habitats based on the forested catchments they occur in and the lack of major hydrological disruption in their upstream catchments.

Table 23 Aquatic habitat condition assessment results for waterways in the assessment corridor (desktop)

Named waterway crossed by assessment corridor	Waterway hierarchy (L – low, M – medium, H – high)	Waterway condition at crossing point	Rationale
Anderson Creek	L	Trail 8 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Ballarat Gully	L	Trail 12, 13 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Calder Creek	L	Trail 50, 51 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Cemetery Creek	L	Trail 28, 35, 37 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Dee River	L	Trail 1 – high	Continuous riparian vegetation Near natural/excellent instream habitat Platypus or significant aquatic species habitat clearly present
Dirt Gully Creek	L	Trail 1, 2 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Four Mile Creek	L	Trail 51 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Frenchmans Creek	M	Trail 1 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Harrison Creek	L	Trail 1, 2 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Kennedy Creek	L	Trail 1 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Mann Creek	L	Trail 35 – high	Continuous riparian vegetation Near natural/excellent instream habitat

Named waterway crossed by assessment corridor	Waterway hierarchy (L – low, M – medium, H – high)	Waterway condition at crossing point	Rationale
Mckenzie Creek	L	Trail 1 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Oshannassy Aqueduct	L	Trail 1, 5, 7, 8 – high	Continuous riparian vegetation Near natural/excellent instream habitat Platypus or significant aquatic species habitat clearly present
Rocky Creek	L	Trail 8, 47 – high	Continuous riparian vegetation Near natural/excellent instream habitat Platypus or significant aquatic species habitat clearly present
Scotchmans Creek	L	Trail 30, 33, 39, 41 – high	Continuous riparian vegetation Near natural/excellent instream habitat Platypus or significant aquatic species habitat clearly present
Tugwell Creek	L	Trail 27, 28, 56 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Walkers Creek	L	Trail 1 – high	Continuous riparian vegetation Near natural/excellent instream habitat
Ythan Creek	L	Trail 9 – high	Continuous riparian vegetation Near natural/excellent instream habitat Platypus or significant aquatic species habitat clearly present



Acknowledgements: BaseMap - VicMap ©State of Victoria

Legend

- Project area
- Proposed MTB trail
- Proposed walking trail

Stream hierarchy

- High
- Medium
- Low

Land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Native vegetation extent (DELWP, 2017)

- Native vegetation cover
- Other coverage

Forest management zone

- Special Management Zone
- Special Protection Zone

Figure 7.1 Hydrology and land uses for the proposed northern trails

0 500 1,000 1,500

Metres

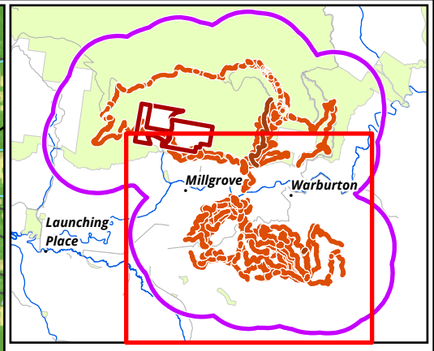
Scale: 1:42,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F7_HydroLandUse
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Project area
- Proposed MTB trail
- Proposed walking trail

Stream hierarchy

- High
- Medium
- Low

Land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Native vegetation extent (DELWP, 2017)

- Native vegetation cover
- Other coverage

Forest management zone

- Special Management Zone
- Special Protection Zone

Figure 7.2 Hydrology and land uses for the proposed southern trails

0 500 1,000 1,500

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F7_HydroLandUse
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx

7.4.5 Significant fauna

The background review of relevant databases, reports and the PMST produced a list of significant fauna species recorded or predicted to occur within 10 kilometres of the project area (the 'search area', Figure 9; Figure 14) , which is provided in Appendix 3 (fauna). An assessment of the likelihood of these species to occur in the project area is included in Appendix 3. Appendix 3 also contains broader habitat descriptions and context for all significant species from the project search area. Of the significant species recorded or predicted to occur within the project search area, 30 are considered to have a medium or higher likelihood of occurrence (Table 24). Species may fall into more than one category of legislative listing, therefore the combined sum of the below numbers totals more than 30 significant fauna species:

- 11 EPBC Act listed threatened species.
- 27 with new FFG Act listing.
- 29 DELWP Advisory Listed threatened or near-threatened species.

A summary of the species recorded or likely to occur within the project area is provided in Table 24. Rationale for the likelihood assessments are provided in Appendix 3. None of these species have been recorded on site by either Practical Ecology (2019) or the current Biosis assessment, however no targeted surveys have been undertaken for this project. Table 24 provides a summary of the areas of particular value within the project area based on general fauna assessments, available published research, discussions with experts and database records.

Table 24 Significant fauna species recorded or predicted to have a likelihood of occurrence of medium or higher within the project area

Species scientific name	Species common name	Conservation status		Significance (as defined in Section 6.2.11)	Area of value within the project area
		EPBC	FFG/Adv list		
Commonwealth listed fauna species					
Lathamus discolor	Swift Parrot	CR	cr/e	Threatened	Flowering eucalypts throughout the project area provide an occasional foraging resource.
Hirundapus caudacutus	White-throated Needletail	VU	v/v	Threatened	Aerial species that is likely to forage over the majority of the project area.
Dasyurus maculatus maculatus	Spot-tailed Quoll	EN	e/e	Threatened	Potential habitat located throughout the project area, though few local records.
Petauroides volans	Southern Greater Glider	VU	v/v	Threatened	Wet and damp forest throughout the project area, likely to be widespread within the project area.
Gymnobelideus leadbeateri	Leadbeater's Possum	CR	cr/e	Threatened	Areas of damp and wet forest with a well-connected sub-canopy and hollow-bearing trees (Mount Donna Buang and Mount Bride areas where old growth trees occur).
Pseudomys fumeus	Smoky Mouse	EN	e/e	Threatened	Forest with a diverse understorey of heath and bush-pea species, such as areas of Shrubby Foothill Forest.

Species scientific name	Species common name	Conservation status		Significance (as defined in Section 6.2.11)	Area of value within the project area
		EPBC	FFG/Adv list		
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN	e/nt	Threatened	Potential suitable habitat in areas with a heathy understorey, such as Shrubby Foothill Forest and Valley Heathy Forest.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	v/v	Threatened	Flowering eucalypts, including planted trees in and around Warburton and the Golf Course.
Prototroctes maraena	Australian Grayling	VU	e/v	Threatened	Known to occur in the Yarra River.
Maccullochella peelii	Murray Cod	VU	e/v	Threatened	Introduced population within the Yarra River.
Macquaria australasica	Macquarie Perch	EN	e/e	Threatened	Introduced population within the Yarra River.
FFG Act listed fauna species					
Egretta garzetta	Little Egret		e/e	Threatened	Yarra River Floodplain, including flooded pasture.
Ardea alba	Great Egret		v/v	Threatened	Yarra River Floodplain, including flooded pasture.
Accipiter novaehollandiae	Grey Goshawk		e/v	Threatened	A variety of forest types throughout the project area.
Ninox connivens	Barking Owl		cr/e	Threatened	Some potential to occur in areas of drier, more open forest.
Ninox strenua	Powerful Owl		v/v	Threatened	A variety of forest types throughout the project area.
Tyto novaehollandiae	Masked Owl		cr/e	Threatened	A variety of forest types.
Tyto tenebricosa	Sooty Owl		e/v	Threatened	Wet and Damp Forest.
Phascogale tapoatafa	Brush-tailed Phascogale		v/v	Threatened	A variety of forest types.
Ornithorhynchus anatinus	Platypus		v	Threatened	Yarra River and other permanent waterways containing suitable habitat.
Rhinolophus megaphyllus megaphyllus	Eastern Horseshoe Bat		e/e	Threatened	A variety of forest types throughout the project area.
Miniopterus orianae oceanensis	Common Bent-wing Bat (eastern ssp.)		cr/cr	Threatened	A variety of forest types throughout the project area.
Varanus varius	Lace Monitor		e/e	Threatened	A variety of forest types.
Riekoperla darlingtoni	Mount Donna Buang Wingless Stonefly		cr/cr	Threatened	Streams and springs within the Mt Donna Buang area.
Engaeus curvisuturus	Curve-tail Burrowing Crayfish		e/e	Threatened	Damp and occasionally inundated areas within the project area.
Engaeus tuberculatus	Tubercle Burrowing Crayfish		e/e	Threatened	Damp and occasionally inundated areas within the project area.

Notes to table: CR/cr– Critically Endangered, EN/e – Endangered, VU/v – Vulnerable, nt – near threatened (DELWP Advisory list)

Swift Parrot

The project area does not contain preferred foraging habitat for the Swift Parrot, and there are only six previous records of the species from the project search area. The species was recently recorded in the project search area in 2019 along Scotchmans Creek in Warburton (Eremaea Birdline 2019). This observation was of a single bird perched high in a Manna Gum, and was the first time the species had been recorded in the local area for approximately 40 years (Eremaea Birdline 2019). The remaining five previous records of the species from the project search area are located to the west of the project area, at three locations north of Launching Place. Swift Parrots, when seasonally present on mainland Australia, typically favour certain winter tree species for foraging including a number of box and ironbark species, Swamp Mahogany, Forest Red Gum, Blackbutt and Spotted Gum (Saunders and Tzaros 2011). None of these species naturally occur within the project area, however planted specimens are likely to be present in and around the township of Warburton. For this reason, and given the highly mobile nature of the species, individuals may occasionally utilise planted trees within the project area, and fly over other sections of the project area. The project area is not within the core range of the species on mainland Australia, and is within a broader area identified as secondary range by BirdLife Australia (undated publication). Most native vegetation within the project area is dominated by a canopy of eucalypts (except for rainforest areas) and is therefore considered to provide occasional foraging habitat within the secondary range of the Swift Parrot.

White-throated Needletail

The White-throated Needletail occurs over most habitats in Australia. The species is listed as vulnerable under the EPBC Act and FFG Act, and is also listed as a migratory species under the EPBC Act (Section 7.4.5). White-throated Needletails breed in a number of locations throughout Asia and spend the non-breeding portion of the year in Australia and occasionally Papua New Guinea and New Zealand (DAWE 2020). The species is present in Australia between roughly October and March, during which time it is likely to be almost exclusively aerial, however the species has occasionally been recorded roosting in the canopy foliage or within hollows of tall trees (DAWE 2021; DoE 2015).

The project search area returned 63 previous records of White-throated Needletail, the most recent of which was from 2019. As the species is wide-ranging and occurs over most habitats in southern Australia, it is considered to have a medium likelihood of occurrence over all parts of the project area, and may utilise forest habitat within the project area for roosting, particularly hollows and canopy foliage of tall trees in large tracts of vegetation (DoE 2015; DAWE 2021). The species is likely to forage over all parts of the project area on occasions, and sometimes in large numbers, and may utilise tall trees for roosting during their non-breeding period.

Spot-tailed Quoll

The Spot-tailed Quoll is known to occur within a range of forest habitats characterised by high rainfall, which is consistent with habitat present throughout the project area. Den sites comprise of rock crevices, caves, hollow logs and hollows within trees. The species typically occupies large home ranges and occurs in low densities, with distribution being patchy throughout their broader range (DELWP 2016d). The project search area returned two records for Spot-tailed Quoll, including a 2006 record to the east of Powelltown, approximately 10 kilometres south-east of the project area, and a 1994 record from Badger Creek, approximately 8 kilometres north-west of the project area (DELWP 2020a). The species is therefore considered to have a medium likelihood of occurrence within all forest habitat present within the project area.

Southern Greater Glider

The Southern Greater Glider occurs in forest environments in eastern Australia, particularly tall, moist montane forest, where the density of hollow-bearing trees is a key factor determining population numbers (TSSC 2016a). The species was listed as vulnerable under the EPBC Act in 2016 largely due to impacts associated with forest clearance and habitat loss (TSSC 2016a). Southern Greater Gliders typically occupy small home ranges and have poor dispersal ability (TSSC 2016a). The project search area returned 376 records for the species, of which the most recent was from 2020. The species is known to occur throughout forest habitat in the local area and is therefore considered to have a high likelihood of occurrence within the project area. Hollow-bearing trees within the project area provide an important resource for shelter and breeding.

Leadbeater's Possum

The Leadbeater's Possum is endemic to Victoria, where it has a patchy distribution throughout the Central Highlands in montane forest and sub-alpine woodland above 400 metres elevation (TSSC 2019). An outlying lowland population also occurs near Yellingbo, in lowland floodplain forest (Smales 1994). The species is listed as critically endangered under the EPBC Act, with the effects of extensive wildfire being one of the key threats to their recovery, along with clear-fell logging and predation by cats (TSSC 2019). Extensive and intense wildfires have burnt significant areas of Leadbeater's Possum habitat in the broader region, particularly the 1939 and 2009 fires. Prior to the 2009 fires, the species occurred in good numbers at Lake Mountain, Mount Bullfight and Mount Baw Baw (TSSC 2019). Leadbeater's Possum do not occur on burnt sites until required conditions have returned, which includes the presence of large hollow-bearing trees and a structurally dense interlocking canopy and/or sub-canopy layer to facilitate movement (TSSC 2019). Trees that provide suitable hollows for the species typically need to be at least 190 years old, and many of these large ash trees have been killed by extensive wildfire through much of the central highlands. Fire-killed stags provide alternative denning sites in previously burnt areas, however these are now decaying at unsustainable rates, prompting research and efforts into providing artificial nest boxes while the next generation of hollow-bearing trees establish (Harley 2006). Several of these nest boxes (installed by Parks Victoria) are located within the project area, around Mount Donna Buang and Ben Cairn, to increase the density of available denning sites (Figure 10). Some of these locations have also been recipient sites for translocations undertaken in accordance with objectives outlined in the Action Statement for the species (DEPI 2014b). High stem densities of mid-storey plants appear to be an important habitat feature, as found in lowland sites by Greet et al. (2020), and within the project area the loss of such stems is likely to result in structural fragmentation and make individuals more susceptible to predation. Lateral sub-canopy branches and laterally suspended fallen stems (see Appendix 4, Plate 14) are also important habitat features that facilitate movement.

The project area supports known colonies of Leadbeater's Possum in patchy habitat around Mount Donna Buang and Ben Cairn. Sub-canopy connectivity is a critical habitat feature in these locations, which is typically provided by high stem density of mid-storey species including *Acacia* ssp., *Callistemon* spp. and Mountain Tea-tree (Appendix 4, Plate 14). The project search area contains a total of 303 VBA records for the species, with the most recent being from 2020. Zoos Victoria holds an additional seven unpublished records of the species, all for new locations in the Mount Donna Buang and Ben Cairn areas (Zoos Victoria unpub. data; Figure 10). The species has also been previously recorded in State Forest in and around the Mount Bride area as recently as 2015, and from Groom Hill in 1976 (DELWP 2020a). The majority of habitat located within the project area near Mount Bride and Groom Hill is tall forest with a history of logging from the 1970s to late 1980s (Figure 5).

As a species that is listed as critically endangered under the EPBC Act, and due to their restricted distribution, ongoing population decline and risk of future fires, all populations of the species are considered important. The draft National Recovery Plan (CoA 2016) and FFG Act Action Statement (DEPI 2014b) both identify the southern parts of the Yarra Ranges National Park, which encompasses part of the project area around Mount

Donna Buang and Ben Cairn (Figure 10), as one of several strongholds for this species located in the southern Central Highlands. This is due to large areas of reserved tall wet forest and associated habitat, and more recently as translocation recipient sites based on advice from species experts.

Broad-toothed Rat

Broad-toothed Rat occupies structurally dense vegetation communities in high rainfall areas in south-eastern Australia (Menkhorst 1995), and has a highly fragmented and patchy distribution (TSSC 2016). The species typically inhabits closed vegetation communities such as heathland, grassland and sedgeland and is a specialist feeder on the stems of plants from the families Poaceae and Cyperaceae. Broad-toothed Rats occur at a range of elevations within their range, however they tend to occur in higher densities in sub-alpine and alpine areas, where they use a wider variety of habitats including disturbed areas associated with ski resorts (Whisson et al. 2015). The species was listed as vulnerable under the EPBC Act in 2016 due a range of threats including introduced predators, fire, habitat loss, fragmentation and climate change (TSSC 2016b). Being well adapted to stable environments, Broad-toothed Rat populations are particularly sensitive to large-scale disturbance events such as fire. In a recent study, Shipway et al. (2020) found that Broad-toothed Rats had disappeared from 53% of historically occupied sites across their range in Victoria.

According to database search results, Broad-toothed Rat has been recorded from the project search area 10 times, with the most recent record being from 1991, however only one previous record occurs within 5 kilometres of the project area, which is a 1977 record from the Mount Bride area that occurs within 150 metres of the project area, near the intersection of Burns Road and Mount Bride Road in Yarra State Forest (Figure 9; Figure 15).

As described in Section 6.2.7 and shown in Figure 6, a field-based habitat assessment was undertaken within the project area on 24-26 February 2021 to determine the likely presence of Broad-toothed Rat within the project area. Active searching was undertaken in any areas of potential habitat in an attempt to detect the characteristic scats of the species, which is a highly effective method of determining species presence in areas of suitable habitat (Green and Osborne 2003; Shipway et al 2020). Habitat assessments were undertaken in areas flagged during vegetation assessments as supporting high cover of grasses and/or sedges, and any additional areas potentially supporting suitable habitat features that were opportunistically encountered, including the following:

- An open sedgy area near Mount Victoria that was flagged during vegetation assessments. This area was deemed unsuitable due to being dominated by Tall Sword-sedge *Lepidosperma elatius*, which is not known to provide habitat or foraging resources for Broad-toothed Rat and does not structurally resemble Broad-toothed Rat habitat. No runways or scats were located.
- The area surrounding the 1977 Broad-toothed Rat record near Mount Bride. This area was logged in the late 1970s and the record is likely to be the result of a pre-logging audit. The regenerated forest at this location contains an understorey dominated by ferns, and only scattered, small occurrences of grasses and sedges. No suitable Broad-toothed Rat habitat was recorded at this location, and no runways or scats located.
- Several scattered occurrences of sedgy habitat flagged during vegetation assessments along Cumming Spur Track. These areas were subsequently flagged as unsuitable habitat due to presence of Tall Sword-sedge.
- Potentially suitable areas identified near Groom, based on identification of canopy gaps in aerial photography and presence of gentle topography that could represent perched, open wet sedgy areas above drainage lines. No suitable habitat was identified within these areas.

- Opportunistic searching around Scotchmans Creek, Mount Donna Buang, Aqueduct trail and Ben Cairn also failed to locate any suitable Broad-toothed Rat habitat.

In summary, no areas of suitable habitat for Broad-toothed Rat were identified within the project area near the assessment corridor. Areas flagged during vegetation assessments as containing the closest representation of Broad-toothed Rat habitat were subsequently inspected by zoologists and determined to be unsuitable, and further opportunistic searching around areas that were identified as potentially supporting suitable features also failed to identify suitable habitat. Broad-toothed Rat is now considered to have a low likelihood of occurrence within the assessment corridor, but is still considered in the assessment of impacts.

Smoky Mouse

The Smoky Mouse has a disjunct Victorian distribution with populations in the Snowfields, Eastern Highlands, East Gippsland, Otway Range and the Grampians. The species has been recorded from a variety of vegetation communities ranging from coastal heath and heathy woodland in East Gippsland to sub-alpine heath and dry forest, and typically occupies vegetation dominated by heathy shrubs. The project search area returned two previous records for Smoky Mouse, both from 2019 in State Forest near East Warburton, approximately 10 kilometres east of Mount Bride (DELWP 2020a). These recent records were obtained from Shrubby Foothill Forest occurring amongst Damp Forest and Wet Forest, which is much like the vegetation in the lower south and west facing slopes of the southern section of the project area. The field assessment confirmed the presence of epacrid heath and leguminous vegetation in patches of Shrubby Foothill Forest, which form part of the diet for this species. These areas are therefore considered to represent potential habitat for this species.

This cryptic species is unlikely to be detected without an extensive survey effort in areas of suitable habitat within the assessment corridor, which is unlikely to be commensurate with expected impacts from the project. Even if assumed to be present in areas of suitable Shrubby Foothill Forest habitat in the southern section of the project area, a previous study by Macak and Menkhorst (2017) on the impact of fire breaks suggest that the construction of a mountain bike trail is unlikely to significantly impact the species. Further information and consideration of impacts to this species is provided in Sections 9 and 10.

Southern Brown Bandicoot

The Southern Brown Bandicoot occurs in a range of dense vegetation types, including predominately introduced vegetation, throughout south-eastern Australia, including south, central and east Gippsland, the southern and eastern outskirts of Melbourne and south-west Victoria. They occur in a range of habitats including tall open forest, woodland and heathland, but do not typically occur in closed wet forest types, such as those that make up the majority of the project area. The species has previously been recorded 18 times from the project search area, however the majority of those records are more than 5 kilometres from the project area, and of those within 5 kilometres all but one is from 1972 or earlier. The most recent record of the species within the project search area is a 1999 record from Millgrove (DELWP 2020a). The species is known to occur in Bunyip State Park, approximately 20 kilometres south of the project area. There are additional records to the north of the project area. This cryptic species is unlikely to be detected without an extensive survey effort in areas of suitable habitat within the assessment corridor, which is unlikely to be commensurate with expected impacts from the project. Within the project area, the species is considered to have some potential to occur in drier forest types located in the southern sections of the project area, particularly around Wesburn. The species is not likely to be present in other parts of the project area.

Grey-headed Flying-fox

The Grey-headed Flying-fox occurs through-out much of Victoria and is a wide-ranging species with the ability to travel up to 50 kilometres from their roost to forage (DAWE 2020). They feed on nectar and pollen of Myrtaceae and Proteaceae plants, as well as fruit from both introduced and native trees. A large, permanent and nationally important Flying-fox camp is located at Yarra Bend in Kew, Melbourne, approximately 55 kilometres west of the project area at its closest point. A permanent camp is also located in Doveton, approximately 45 kilometres to the south-west (CSIRO 2014). The project search area returned four previous records of Grey-headed Flying-fox, the most recent of which was a 2015 record from Warburton. Plants within the Myrtaceae family are distributed throughout the project area in patches of native vegetation and as planted trees around Warburton. This wide-ranging species is therefore considered likely to utilise food resources within the project area on occasion, however these would not constitute an important food resource for the species and the species is not expected to make significant use of these areas.

Australian Grayling

Australian Grayling spend most of their lives in freshwater, preferring to inhabit streams with a moderate flow, alternating pool and riffle zones and a gravel substrate (Backhouse, Jackson, & O'Connor 2008), but it is also known to inhabit turbid water. Whilst spending most of its life in freshwater, the species is diadromous, meaning adults respond to flow events in autumn (April-May) by undertaking downstream migrations to lower freshwater reaches of rivers to spawn. Eggs and larvae then drift downstream into marine or estuarine waters, before juveniles migrate back into freshwater in spring and early summer (September-December) during high flow events (Webb et al. 2018).

Approximately 231 observations have been recorded as recently as 2015 within the Yarra River basin (DSE 2009b). An additional five individuals were also detected in the Yarra River in 2018 (*n*=4) and 2019 (*n*=1) as a result of surveying undertaken as part of the Native Fish Report Program (a partnership between DELWP, Arthur Rylah Institute and the Victorian Fisheries Authority (VFA) and recreational fishing license holders) (DELWP, ARI, & VFA 2019a).

Since the installation of the fish ladder at Dight Falls in 1994, records for Australian Grayling have been documented by anglers in the Yarra River as far upstream as Wesburn (approximately 400 metres downstream of the project area) (VFA 2018). Suitable habitat values for Australian Grayling including clear water pools (<170 cm in depth) and extensive rapids (consisting predominantly of gravel, rubble and boulder substrate) are known to exist within the confines of the project area (VFA 2018). Due to the diadromous nature of the species, proximity of recent records and existence of preferred habitat values (including a moderate flow, with alternating pools and riffles zones) it is considered a high likelihood for individuals of Yarra River Australian Grayling population to occasionally occur within the project area.

Murray Cod

Murray Cod is the largest of Australia's native freshwater fishes (Koehn & Clunie 2010). Although occurring in a range of flowing and standing waters, the species is most frequently observed in sluggish, turbid waters that contain complex structural cover such as large rocks, large woody debris (Instream Woody Habitat: IWH) and/or undercut banks with over-hanging vegetation (Koehn & Clunie 2010). Both Murray Cod and Macquarie Perch have been introduced into the Yarra River Basin at various times since the first translocation from King Parrot Creek (Goulburn River basin) to the Plenty River in 1857 (VFA 2018).

Approximately 121 observations of Murray Cod have been recorded as recently as 2015 within the Yarra River basin, including one record at Launching Place in 1970 (approximately 3 kilometres downstream of the project area) (DSE 2009b). An additional 65 individuals were also detected in the Yarra River in 2017 (*n*=24), 2018 (*n*=14) and 2019 (*n*=27) as a result of surveying undertaken as part of the Native Fish Report Program (a

partnership between DELWP, ARI and the VFA and recreational fishing license holders) (DELWP, ARI, & VFA 2019b). The majority of the Yarra River population are known to exist between Warrandyte and Lower Plenty, where the Yarra River flows through a lightly timbered gorge, providing suitable habitat values of IWH and extensive sluggish and deep pools (<3 m) consisting of both mud and rock substrate. Typically lesser numbers of individuals are known to inhabit Warrandyte upstream to Healesville (VFA 2018)

The species is generally considered to be sedentary during the months of autumn and winter, with most long-distance movements associated with the spawning or rising waters (Koehn & Clunie 2010). It is therefore considered a low likelihood for a significant number of individuals of this species to reside within the confines of the project area. This is predominantly attributed to the project area not being known as a spawning site for migrating adults, the general sedentary nature of the species, angler knowledge and the limited distribution of deep pools, undercutting banks or holes pertaining IWH which it requires for cover. Nevertheless, occupation of a rare number of individuals within the project area cannot be discounted.

Macquarie Perch

Macquarie Perch naturally reside in cool, rocky, slow-flowing rivers with deep holes; predominantly in the upper reaches of forested catchments with intact riparian vegetation (DEE 2018). Several self-sustaining, introduced populations also exist, including the Yarra River, and its associated tributaries, from fish translocated (from its natural range within the Murray Darling Basin) at various times since 1909 (VFA 2018).

Approximately 480 observations of Macquarie Perch have been recorded as recently as 2015 within the Yarra River basin (DSE 2009b). An additional 122 individuals were also detected in the Yarra River in 2017 (*n*=46), 2018 (*n*=47) and 2019 (*n*=29) as a result of surveying undertaken as part of the Native Fish Report Program (a partnership between DELWP, ARI and the VFA and recreational fishing license holders) (DELWP, ARI, & VFA 2019c).

Whilst one record of the species has been documented from Cement Creek (a tributary of the Yarra River, from within the confines of the project area) (Figure 9), a significant proportion of the Yarra River population are known to exist between Tarrawarra and Yarra Glen; where the river width is up to 25 metres in width, contains depths up to 3 metres and the substrate is predominantly sand (although there are extensive areas of mud and gravel) (VFA 2018). Some individuals also occur downstream near Wonga Park through Warrandyte. Although greater numbers are often found further downstream between Warrandyte and Lower Plenty, where extensive sluggish pools with mud and rock substrate exists, and major River Health Program works have been undertaken involving improving riparian vegetation and bank stability (VFA 2018).

Macquarie Perch tagged and released in the Yarra River over a ten month period between Heidelberg and Wonga Park typically occupied restricted reaches (<450 metres) (Koster 2015). Although it is noted that some individuals in the study undertook occasional upstream or downstream movements (<1000 metres) from their usual locations, associated with large flow variations during the spawning season (Koster 2015). Due to presence of suitable habitat values, the species restricted range movements and a recent record from within the project area, it is considered a medium likelihood for a small number of individuals to reside within the Yarra River, and its associated tributaries, within the confines of the project area.

Little Egret

Little Egrets can occur within a variety of wetlands containing open water throughout lowland areas of Victoria. The project search area only returned one previous record of the species, which is a record from 1994 near Healesville. More broadly, the species has been recorded more recently near Lake Eildon, and around the greater Melbourne area. This species is considered highly unlikely to occur in steep, forested parts of the study area, but may utilise wetlands and flooded areas in and around the township of Warburton, on the Yarra River floodplain.

Eastern Great Egret

Eastern Great Egrets utilise a range of shallow wetland habitats throughout Victoria, including flooded crops and pasture. The project search area contains 60 previous records of the species, the most recent of which was from 2019. Almost all of these records occur within the Yarra River floodplain, including in and around East Warburton, Warburton, Launching Place and Woori Yallock. This species is considered unlikely to occur in steep and forested parts of the project area, but is likely to occur in wetlands and flooded areas in and around the Warburton township, on the Yarra River floodplain.

Grey Goshawk

The Grey Goshawk occurs in a variety of forest habitats, including rainforest and montane forest. There are 28 previous records of this species from the project search area, mostly around Wesburn and Launching Place, to the west of the project area. While the species has not been previously recorded in more forested habitat located within the project search area, the species is known to utilise these types of habitats and is therefore considered to have potential to occur throughout the project area.

Barking Owl

The Barking Owl occurs within a range of forest and woodlands, particularly in central and north-eastern Victoria. The species has been previously recorded within the project search area four times, the most recent sighting being from 2001 near Wesburn, near the south-western extent of the project area. More recently, the species has been recorded near Lake Mountain in 2019 (30 kilometres north-east of the project area) and near Monbulk in 2018 (15 kilometres south-west of the project area; DELWP 2020a). There are several additional older records from the broader region. While there are few recent records from the local area, and the species typically occupies drier habitat types than other forest owls, the presence of recent records in similar vegetation types in the broader landscape suggests that this species has potential to occur within the project area. The drier forest habitat located in the southern section of the study area in Yarra State Forest is considered to provide potential habitat for the species.

Powerful Owl

The Powerful Owl occupies a variety of forest habitats throughout Victoria, as well as urban areas around the north-eastern and eastern suburbs of Melbourne. The species largely feeds on arboreal mammals, and requires very large tree hollows for breeding. The project search area returned 114 previous records for the species, the most recent of which was from 2020. These records occur throughout the broader forest environment in which the Project area occurs. All forest within the project area contains suitable habitat for the breeding, roosting and foraging activities of this species and is highly likely to support current populations of the species.

Masked Owl

The Masked Owl occupies a range of lowland forests and woodlands in southern and eastern parts of Victoria south of the Great Dividing Range, particularly in the coastal forests and woodlands of East Gippsland. The species has not been previously recorded within the project search area, however suitable habitat elements exist and the species has been recorded several times within Bunyip State Park to the south, and as recently as 2019 from Toolangi to the north-west. The majority of the assessment area for the project does not contain DELWP modelled habitat for the species (Figure 14). The species is often considered an edge specialist as it is commonly associated with cleared farmland adjacent to forested environments. Potential habitat is considered to be present throughout the project area.

Sooty Owl

The Sooty Owl occupies a range of closed forests, including rainforests, and some open forests across their range. In the central highlands of Victoria, the species occurs in montane forest, wet forest and riparian forest. The species feeds on a range of arboreal and terrestrial mammals. The project search area contains 110 previous Sooty Owl records, the most recent of which is from 2020. While the species is largely associated with wetter vegetation types, the species has also been recorded in drier vegetation near Wesburn (DELWP 2020a). The entire project area is therefore considered to support habitat for the species, where large old trees support potential breeding habitat in the form of large tree hollows, and densely vegetated gullies or slopes provide potential roosting habitat.

Brush-tailed Phascogale

The Brush-tailed Phascogale is a nocturnal, arboreal dasyurid that occurs throughout eastern mainland Australia. In Victoria, the species' distribution is fragmented, but is largely associated with dry open woodlands dominated by ironbark, box and stringybark eucalypts through central Victoria. The species has six previous records within the project search area, with the most recent being from Warramate Hills in 1998, to the west of the project area. The species has also been recorded near Healesville in 2005, to the north-west of the project area. The species is known to occur around Warrandyte, Yarra Glen and Christmas Hills, with numerous recent records from those areas (DELWP 2020a). There are also a number of historical records to the south-east of the project area, in the foothill forests north of the Princes Highway between Warragul and Sale, however the majority of these are from before 1970, with only a small number of recent records from 2004-2006 near Moondarra and Erica (DELWP 2020a). Within the project area, the species is only considered to have potential to occur in drier, more open woodland located near Wesburn. The species is unlikely to be present throughout the remainder of the project area dominated by tall forest.

Platypus

The Platypus occupies a wide range of waterways and wetlands throughout Victoria, particularly where banks are stable and vegetated to allow for burrows, and where shallow waters occur for foraging activities. The species was listed as threatened in Victoria in early 2021, due to concerns about population declines and local extinctions. The species has been previously recorded a total of 102 times in the project search area, with the most recent sighting being from 2013 at Warburton. The species is known to occur in and around Warburton, and could potentially occupy additional streams and tributaries supporting suitable habitat features further upstream within forested sections of the project area (e.g. the lower slopes of Yarra Ranges National Park).

Common Bent-wing Bat (eastern ssp.)

The eastern subspecies of the Common Bent-wing Bat occurs along the east coast of Australia, including eastern Victoria and parts of central and south-western Victoria. They are a cave-roosting species, and therefore utilise caves and disused mines for breeding. They forage above a range of habitats, including tall forest. The species has been recorded from the project search area a total of 514 times, with the most recent record being from 2000. Suitable foraging habitat occurs throughout the project area, however the assessment corridor it is not considered likely to support any breeding habitat with only one capped mineshaft known to be present along an existing 4WD track on Mineshaft Hill Track near Trails 62 and 63.

Eastern Horseshoe Bat

Like the Common Bent-wing Bat (eastern ssp.) described above, the Eastern Horseshoe Bat is also a cave-dwelling bat species that is distributed across the eastern coast of Australia. In Victoria, this species is more confined to the eastern section of the state than the Common Bent-wing Bat (eastern ssp.), and is also more closely associated with forest and woodland habitats. The Eastern Horseshoe Bat has only been recorded

from the project search area once, in 1998 near Wesburn (DELWP 2020a). There are three additional records from 1998 and 1999 near Reefton to the north-east, as well as several records in and around Kinglake National Park to the north-west. The project area represents the southern extent of previous records for the species; only a small number of records near Lakes Entrance in East Gippsland are slightly further south. Suitable foraging habitat occurs throughout the project area, however the assessment corridor it is not considered likely to support any breeding habitat with only one capped mineshaft known to be present along an existing 4WD track on Mineshaft Hill Track near Trails 62 and 63.

Lace Monitor

Lace Monitors occur within a variety of woodland and forest habitats throughout much of south-eastern Australia. They largely forage on the ground but are proficient climbers and will also climb trees to prey on nests and when disturbed. The project search area returned 39 previous records of the species, with the most recent being from 2019. The majority of these records occur in drier vegetation to the west of the project area, and along the Yarra River to the east of the project area. The species is considered most likely to occur in drier vegetation located in the lower north and west facing foothills and ridges of the southern section of the project area, such as around Wesburn, and is less likely to occur in wetter forests at higher elevations.

Mount Donna Buang Wingless Stonefly

Mount Donna Buang Wingless Stonefly *Riekoperla darlingtoni* is known to occur near the summit of Mount Donna Buang (>900 metres above sea level), in suitable habitat of slow-flowing ephemeral springs and trickles associated with forest and high water quality. Surveys for this project have revealed the species also occurs in headwater streams towards Mount Victoria, including Cement Creek and Ythan Creek (Appendix 10).

Approximately nine observations of the Mount Donna Buang Wingless Stonefly have been recorded as recently as 1999 in the Yarra Ranges National Park within the project search area. Additional surveying undertaken by Eddie Tsyrlin in 2019 and in 2021 specifically for this project also detected two probable stonefly locations using environmental DNA (eDNA) at two locations to the west of Mount Donna Buang along the Donna Buang Road near Trail 2 (2019 observations) and addition nymphs and eDNA between Mount Donna Buang and Mount Victoria along alternative trails 45 and 46 (2021 observations). This species has been demonstrated to occur in the project area and in proximity to assessment corridors between Mount Donna Buang, Mount Victoria and Ben Cairn (Figure 13) in areas of Montane Wet Forest and Cool Temperate Rainforest that are associated with low-flowing ephemeral springs or trickles.

The detailed results of targeted surveys for this species are provided in Appendix 10.

Curve-tail Burrowing Crayfish

The Curve-tail Burrowing Crayfish is found in wet, muddy floodplains in areas of native forest adjacent to creeks and rivers. They have a limited distribution, spending the majority of their life in large underground burrows where they feed on a variety of plant material such as roots, decomposing leaves, rotting logs and small invertebrates. The Curve-tail Burrowing Crayfish forms characteristic chimneys of soil around the openings of their burrows, which are classified as 'Type 2' burrows as they occur in association with the water table, rather than permanent waterbodies (Horwitz and Richardson 1986). Type 2 burrows of this species are unlikely to occur away from the influence of the water table.

Approximately six observations of Curve-tail Burrowing Crayfish have been recorded as recently as 1983 from within the Yarra River basin (DSE 2009b). These records include two from within the project area and two from within the project search area. Due to the limited number of records and cryptic nature of the species, understanding the current presence and distribution of Curve-tail Burrowing Crayfish within the project area

remains difficult to assess. Due to the species limited dispersal abilities and preferred habitat requirements it is considered a medium likelihood that the Curve-tailed Burrowing Crayfish occurs throughout wet forests associated with low-flowing ephemeral springs, drainage lines or low order streams.

Tubercle Burrowing Crayfish

The Tubercle Burrowing Crayfish is found in Mountain Ash forests where there is an abundance of ferns at ground level. Like other burrowing crayfish, they feed on rotting wood, detritus, root material and occasionally animal material (Horwitz 1990). Like the Curve-tail Burrowing Crayfish described above, Turbercle Burrowing Crayfish also produce 'Type 2' burrows in association with the water table, however they primarily produce 'Type 3' burrows, which are independent of the water table and any waterbodies. Burrows are usually created in clay-dominated soil of hill slopes. Pellets of soil from the burrow excavation are brought to the surface where they often fall down the hill slope, creating a fan of soil, rather than the characteristic chimney that other *Engaeus* species build (Horwitz and Richardson 1986). The Tubercle Burrowing Crayfish is found primarily in the Dandenong Ranges, with a single observation recorded in the project search area in 1963 (DELWP 2020a). Due to their patchy distribution, cryptic nature and limited number of past records, the abundance of the Tubercle Burrowing Crayfish within the project area is difficult to accurately determine without extensive and impractical surveys (Bryant, Crowther and Papas 2014; Hopper and Huryn 2012). It is therefore considered to be a medium likelihood that the Tubercle Burrowing Crayfish occurs in a patchy distribution throughout Mountain Ash forests associated with ferns growing at ground level.

7.4.6 DELWP Habitat importance modelling - fauna

To support decision making under the Guidelines, DELWP has produced maps for Victoria showing the modelled extent of habitat for most listed rare or threatened species. These maps are called 'habitat importance maps' and they assign a 'habitat importance score' to a location based on the importance of that location in the landscape as habitat for a particular rare or threatened species, in relation to other suitable habitat for that species (DELWP 2019). Maps for species likely to occur in the project area are provided in Figure 14 also showing VBA records of these species.

Under the Guidelines, these maps form the basis for determining the impact of potential native vegetation removal on rare and threatened species. The maps only apply where a proposal to remove native vegetation is considered on detailed assessment pathway according to the Guidelines. The habitat importance scores are used to calculate the type and extent of biodiversity offsets required for native vegetation removal that impacts on individual rare or threatened species habitat.

A summary of those fauna species for which habitat is modelled in the project area is provided in Table 25. These data were obtained through an analysis using DELWP's Ensym Tool. Determination of the requirement for a species offset based on the extent of impact to one or more rare or threatened species is addressed in Section 9.9 and Section 12.3.

Table 25 Summary of fauna species' habitats modelled in the project area

Species number	Species scientific name	Species common name	Conservation status
2365	*Thaumatoperla alpina*	Alpine Stonefly	Vulnerable
4686	*Prototroctes maraena*	Australian Grayling	Vulnerable
10220	*Accipiter novaehollandiae novaehollandiae*	Grey Goshawk	Vulnerable
10230	*Lophoictinia isura*	Square-tailed Kite	Vulnerable
10248	*Ninox strenua*	Powerful Owl	Vulnerable
10253	*Tyto tenebricosa tenebricosa*	Sooty Owl	Vulnerable
10334	*Hirundapus caudacutus*	White-throated Needletail	Vulnerable
11008	*Dasyurus maculatus maculatus*	Spot-tailed Quoll	Endangered
11133	*Petauroides volans*	Greater Glider	Vulnerable
11141	*Gymnobelideus leadbeateri*	Leadbeater's Possum	Endangered
11280	*Pteropus poliocephalus*	Grey-headed Flying-fox	Vulnerable
11303	*Rhinolophus megaphyllus megaphyllus*	Eastern Horseshoe Bat	Vulnerable
11438	*Mastacomys fuscus mordicus*	Broad-toothed Rat	Endangered
11458	*Pseudomys fumeus*	Smoky Mouse	Endangered
12283	*Varanus varius*	Lace Monitor	Endangered
13073	*Mixophyes balbus*	Southern Barred Frog	Critically endangered

7.4.7 Migratory species

Although migratory species are not considered a controlling provision under the EPBC Act controlled action decision, they have been included in this technical report as some migratory species are also threatened species and it was deemed appropriate to assess all migratory species for completeness of this technical studies. Thirteen migratory fauna species, all birds, have been recorded or are predicted to occur within the project search area (Appendix 3, Table A3.3). Of these 13 species, six have been previously recorded within the project search area and seven are predicted to occur by the PMST models. Of the 13 migratory species listed in Appendix 3, the following four species are considered to have a medium or higher likelihood of occurrence within the project area:

- **White-throated Needletail** - This migratory species is also listed as vulnerable under the EPBC Act; refer to species description in Section 7.4.4.
- **Fork-tailed Swift** - This species is almost exclusively aerial and is wide-spread in Victoria, where it forages above a broad range of habitats. It is a non-breeding visitor to Australia during spring and summer.
- **Rufous Fantail -** This species occurs in wet sclerophyll forests, and has been recorded throughout the project area (including during Biosis field studies) and broader local area. They are likely to breed within the project area and broader local area during spring and summer months, after which individuals migrate north for the winter months. The species has been recorded migrating as far north as southern Papua New Guinea.
- **Satin Flycatcher -** This species occurs in a range of eucalypt forest, particularly wet sclerophyll forest and well-vegetated gullies associated with watercourses. Suitable habitat for this species occurs throughout the project area, and many previous records exist for the species throughout the project

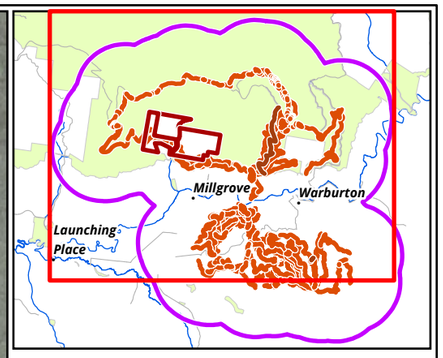
search area. It was recorded during the current study. Satin Flycatchers breed in south-east Australia in spring and summer, before migrating north in autumn to over-winter in northern Australia and Papua New Guinea.

The remaining nine migratory species listed in Appendix 3 (Table A3.3) are considered highly unlikely to occur or make regular use of the project area based on the absence of suitable habitat (for example, the absence of suitable wetlands for migratory shorebirds) and/or known distributional range and movement patterns.

7.4.8 Introduced species

Introduced fauna species are likely to be widespread across the project area and the impacts of these species through competition and predation are already operating in forested and aquatic habitats. The Yarra Ranges National Park management plan acknowledged back in 2002 that deer were already a significant problem in the park and were impacting water quality and vegetation condition. The 2002 management plan also acknowledges that pest animal trapping had indicated introduced predators, particularly foxes, cats and dogs, were present in the park in large numbers (Parks Victoria 2002). During field assessments feral cats have been observed in the Mount Donna Buang area and deer scats and signs were recorded across the project area. The project area already contains many movement and invasion corridors for introduced animals as depicted in Figure 16.

There are database records of 32 introduced fauna species within the project search area, including nine mammals, nine fishes and 14 birds. The most common and widespread introduced bird in the project area is likely to be Common Blackbird *Turdus merula*, which is one of the few introduced bird species that will occur throughout large and intact tracts of forested vegetation, while the majority of remaining introduced birds are more likely to occur within developed and cleared areas, such as Warburton township and surrounds. Of the introduced mammals recorded from the project search area, cats, deer and foxes present the biggest threat in terms of predation, habitat disturbance and modification. Rabbits are also likely to cause significant damage in more open areas. Introduced fish such as Brown Trout *Salmo trutta* and Redfin *Perca fluviatilis* predate on native frogs and fish and present a significant threat to a number of species in the catchment.



Legend

- Project area
- State significant flora
- Proposed MTB trail
- Proposed walking trail
- Existing trail not assessed

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 8.1 Significant VBA flora records within the project area for the proposed northern trails

0 500 1,000 1,500

Metres

Scale: 1:42,000 @ A3

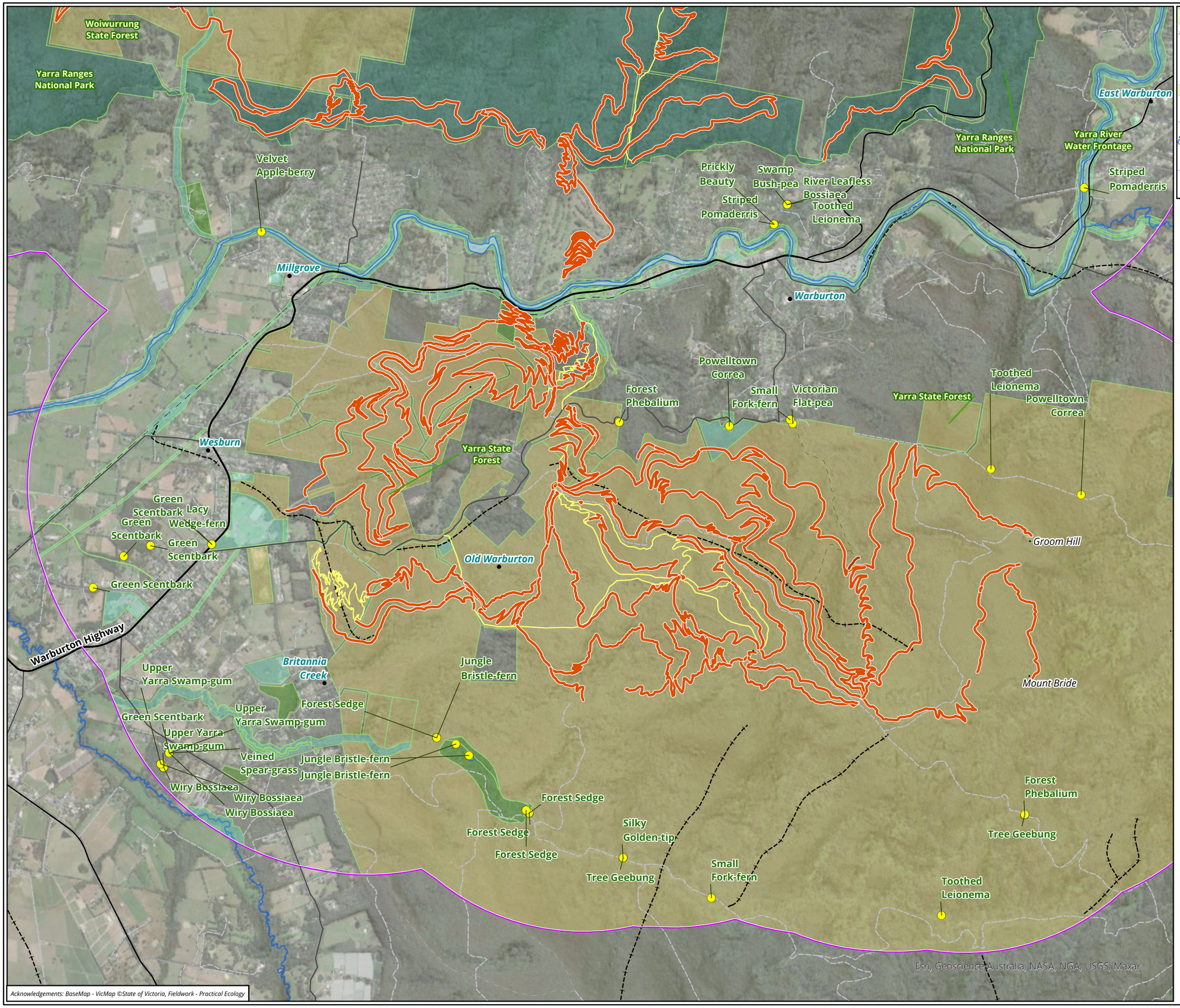
Coordinate System: GDA 1994 MGA Zone 55

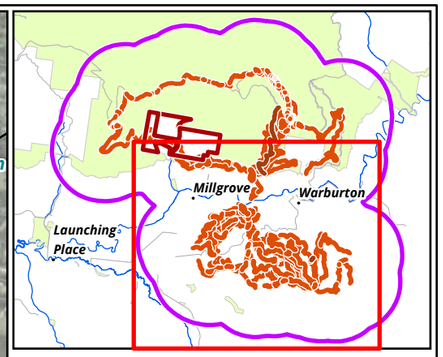
biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F8_FloraRecords
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx

Acknowledgements: BaseMap - VicMap ©State of Victoria, Fieldwork - Practical Ecology





Legend

- Project area
- State significant flora
- Proposed MTB trail
- Proposed walking trail
- Existing trail not assessed

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 8.2 Significant VBA flora records within the project area for the proposed southern trails

0 500 1,000 1,500

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
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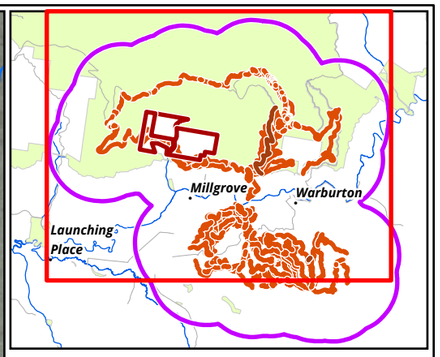
Layout: 33805_F8_FloraRecords
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Project area

Nationally significant fauna

- Fish
- Mammals
- Other Non-passerine birds
- Passerine birds

State significant fauna

- Bats
- Mammals
- Mussels, decopod crustacea
- Other Non-passerine birds
- Passerine birds

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 9.1 Significant VBA fauna records within the project area

0 500 1,000 1,500

Metres

Scale: 1:42,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F9_FaunaRecords
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33805_Warburton_EES_Figures_Ecology.aprx

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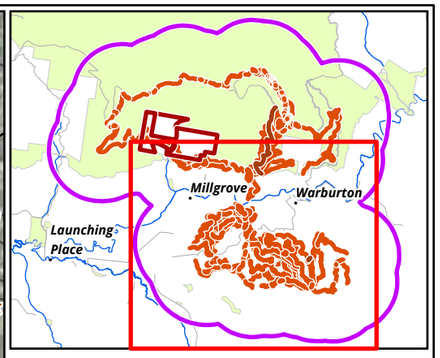

Legend

- Project area

Nationally significant fauna

- Amphibians
- Bats
- Mammals
- Other Non-passerine birds
- Passerine birds

State significant fauna

- Bats
- Mammals
- Mussels, decopod crustacea
- Other Non-passerine birds

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 9.2 Significant VBA fauna records within the project area

0 500 1,000 1,500

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F9_FaunaRecords
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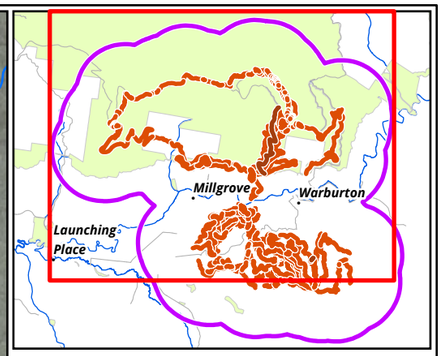


Legend

- Project area
- Leadbeater's Possum VBA record (DELWP 2020)
- Leadbeater's possum nest box (Parks Victoria, unpub. data)
- Leadbeater Possum record (Zoos Victoria, unpub. data)
- Confirmed Leadbeater's Possum sites (DELWP 2021b)
- Melbourne Water catchment
- Confirmed Leadbeater's Possum site buffer (DELWP 2021d)

Warburtion MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 10.1 Leadbeater's Possum (*Gymnobelideus leadbeateri*) records within the project area for the proposed northern trails

0 500 1,000 1,500 2,000

Metres

Scale: 1:42,000 @ A3

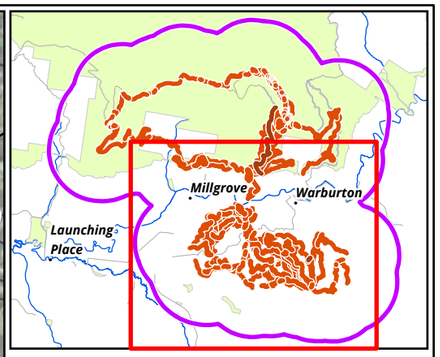
Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 09 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F10_Leadbeater
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology_Temp.aprx

Acknowledgements: BaseMap - VicMap ©State of Victoria, Fieldwork - Practical Ecology



Legend

- Project area
- Leadbeater's Possum VBA record (DELWP 2020)
- Confirmed Leadbeater's Possum sites (DELWP 2021b)
- Confirmed Leadbeater's Possum site buffer (DELWP 2021d)

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 10.2 Leadbeater's Possum (*Gymnobelideus leadbeateri*) records within the project area for the proposed southern trails

0 360 720 1,080 1,440

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 09 September 2021,
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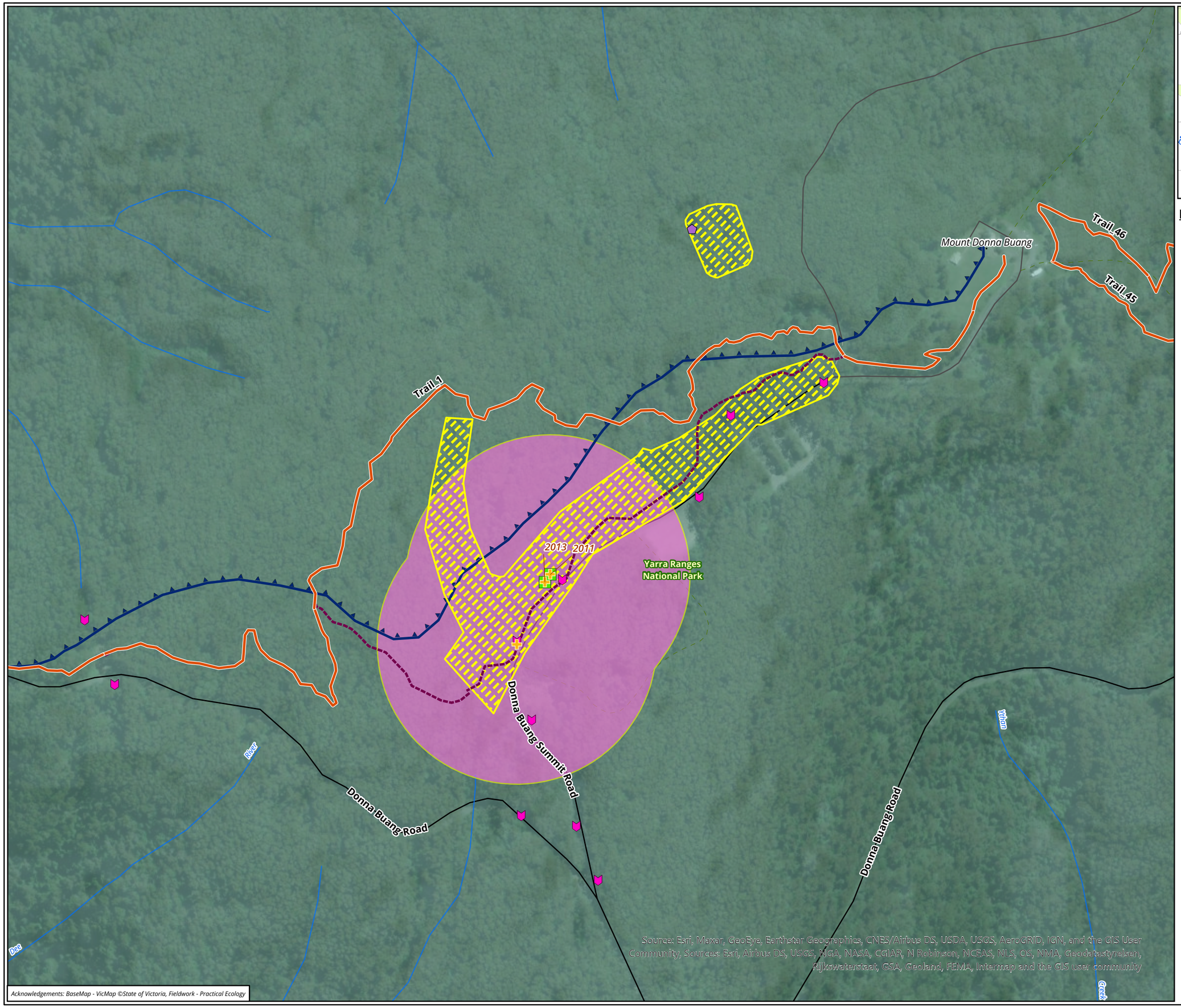

Legend

- Project area
- Leadbeater's Possum VBA record (DELWP 2020)
- Leadbeater's possum nest box (Parks Victoria, unpub. data)
- Leadbeater Possum record (Zoos Victoria, unpub. data)
- Confirmed Leadbeater's Possum sites (DELWP 2021b)
- Melbourne Water catchment
- Indicative Leadbeaters Possum dense montane thicket habitat (visited with species expert)
- Confirmed Leadbeater's Possum site buffer (DELWP 2021d)

Warburtion MTB trail network

- Proposed MTB trail
- Previous Trail 1 alignment

Public land category

- National parks and nature conservation reserves

Figure 10.3 Leadbeater's Possum (*Gymnobelideus leadbeateri*) records within the project area for the proposed Leadbeaters Possum dense montane thicket habitat

0 60 120 180 240

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 09 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F10_Leadbeater
Project: P:\33800s\33805\Mapping\
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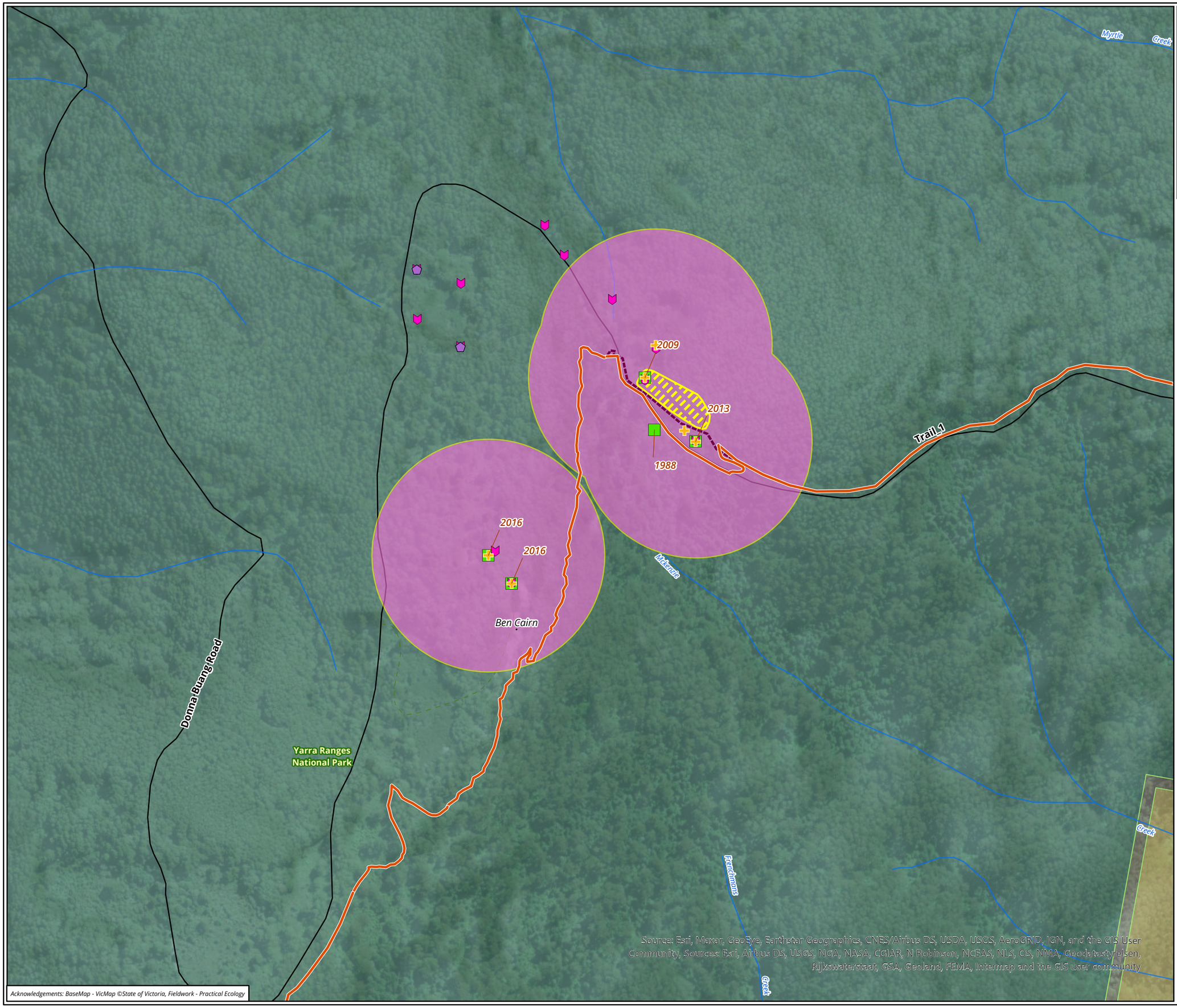
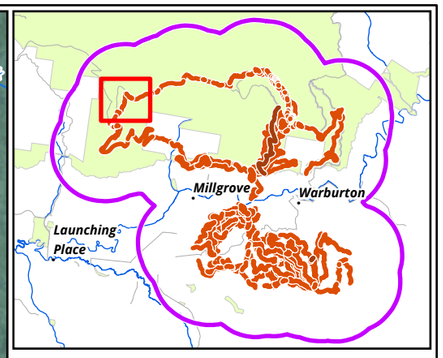




Legend

- Project area
- Leadbeater's Possum VBA record (DELWP 2020)
- Leadbeater's possum nest box (Parks Victoria, unpub. data)
- Leadbeater Possum record (Zoos Victoria, unpub. data)
- Confirmed Leadbeater's Possum sites (DELWP 2021b)
- Indicative Leadbeaters Possum dense montane thicket habitat (visited with species expert)
- Confirmed Leadbeater's Possum site buffer (DELWP 2021d)

Warburtion MTB trail network

- Proposed MTB trail
- Previous Trail 1 alignment

Public land category

- National parks and nature conservation reserves
- State forest

Figure 10.4 Leadbeater's Possum (*Gymnobelideus leadbeateri*) records within the project area for the proposed Leadbeaters Possum dense montane thicket habitat

0 70 140 210 280

Metres

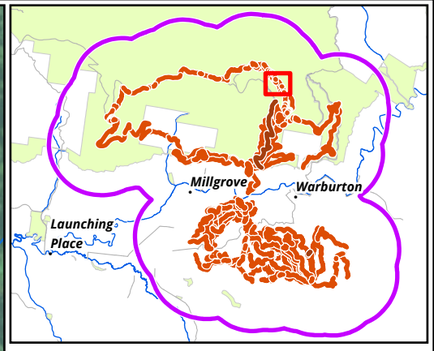
Scale: 1:6,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 09 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F10_Leadbeater
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology_Temp.aprx



Legend

- Project area
- Leadbeaters Possum - trail microsited to avoid small open thickets in this area

Warburtion MTB trail network

- Proposed MTB trail

Public land category

- National parks and nature conservation reserves

Figure 10.5 Leadbeater's Possum (*Gymnobelideus leadbeateri*) records within the project area for the proposed trails alinged to avoid habitat

0 30 60 90 120

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 09 September 2021,
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33805_Warburton_EES_Figures_Ecology_Temp.aprx

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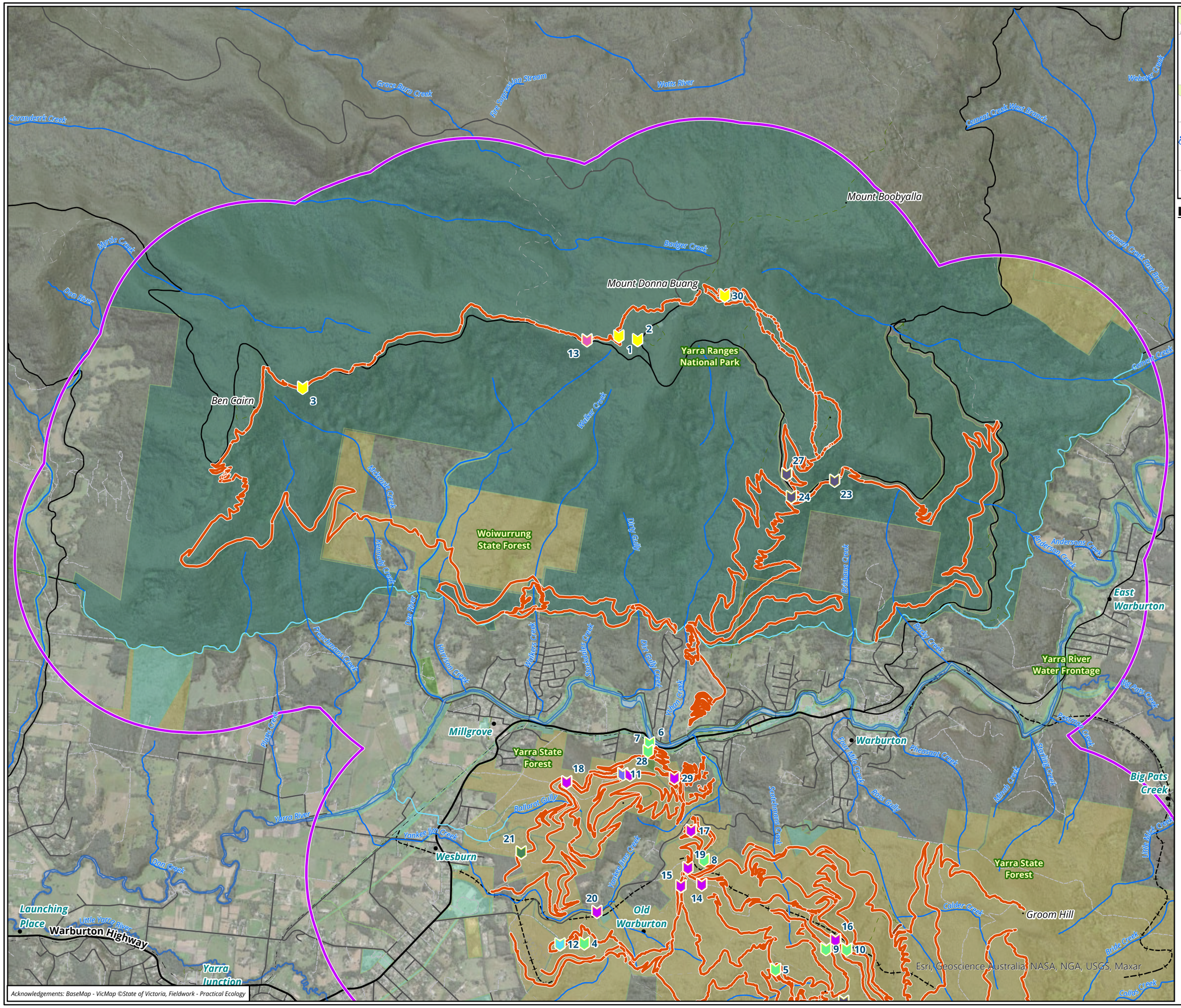
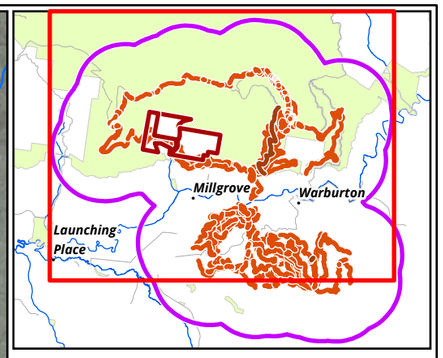




Legend

Project area

Arborist survey points by Ecological vegetation class

- Cool Temperate Rainforest
- Damp Forest
- Herb-rich Foothill Forest
- Lowland Forest
- Montane Wet Forest
- Shrubby Foothill Forest
- Valley Heathy Forest
- Wet Forest

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 11.1 Arborist survey points

0 500 1,000 1,500

Metres

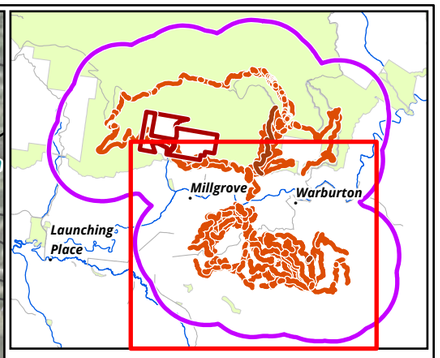
Scale: 1:42,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F11_ArboristSurvey
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Project area

Arborist survey points by Ecological vegetation class

- Damp Forest
- Herb-rich Foothill Forest
- Lowland Forest
- Shrubby Foothill Forest
- Valley Heathy Forest
- Wet Forest

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- State forest

Figure 11.2 Arborist survey points

0 500 1,000 1,500

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F11_ArboristSurvey
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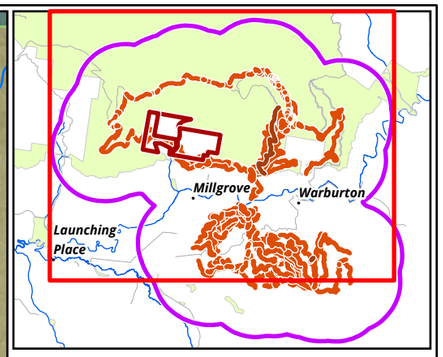


Legend

- Project area

CaLP Act listed flora

- VBA record
- Biosis record

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- Commonwealth land
- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- Plantation on crown land
- State forest

Figure 12.1 CaLP Act listed records within the project area for the proposed northern trails

0 500 1,000 1,500

Metres

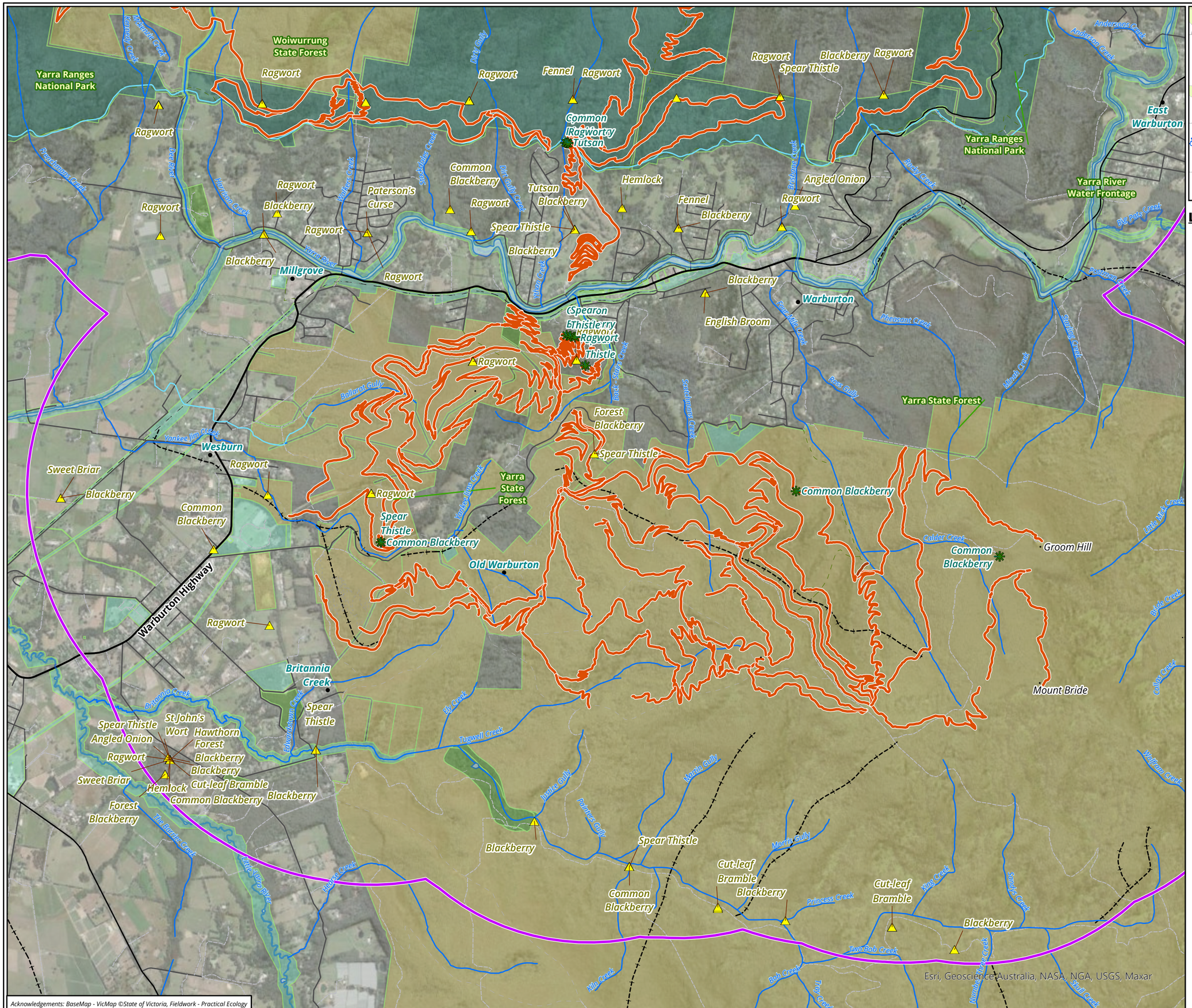
Scale: 1:42,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F12_CaLP_Act
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Project area

CaLP Act listed flora

- VBA record
- Biosis record

Warburton MTB trail network

- Proposed MTB trail
- Proposed walking trail

Public land category

- Commonwealth land
- National parks and nature conservation reserves
- Other conservation reserves
- Other public land
- Plantation on crown land
- State forest

Figure 12.2 CaLP Act listed records within the project area for the proposed southern trails

0 500 1,000 1,500

Metres

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F12_CaLP_Act
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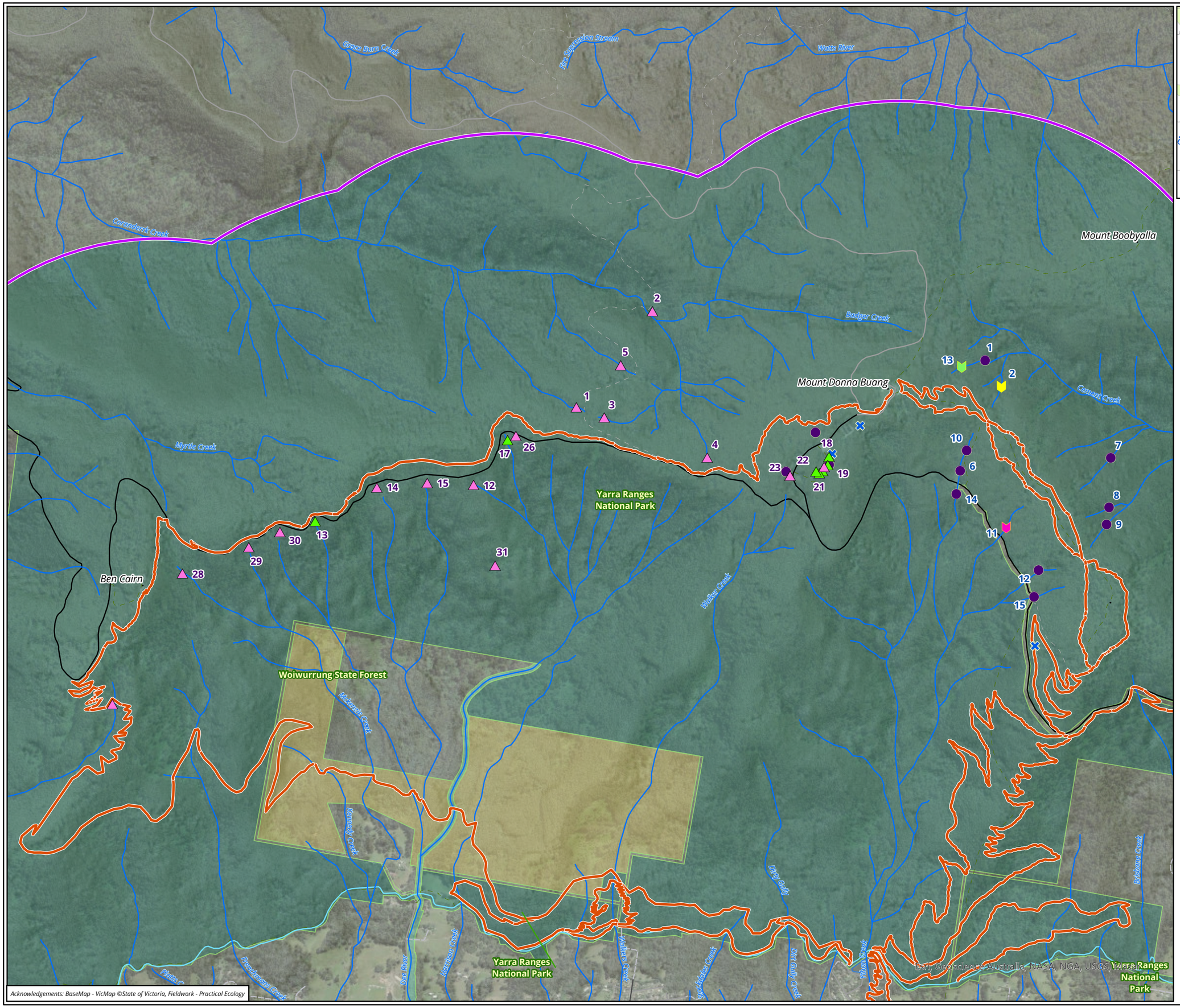
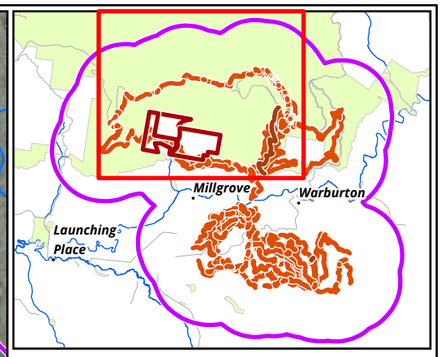
33805_Warburton_EES_Figures_Ecology.aprx





Legend

- Project area
- Proposed MTB trail
- MtDB WSF VBA record

MtDB WSF survey results - 2019

- DNA detected
- Sample point

MtDB WSF survey results - 2021

- DNA detected
- DNA detected, nymphs observed
- No DNA detected, no larvae observed
- No DNA detected, nymph observed

Public land category

- National parks and nature conservation reserves
- Other public land
- State forest

Figure 13 Murray-Darling Basin Wingless Stonefly

0 500 1,000 1,500

Metres

Scale: 1:25,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

N

Matter: 33805,
Date: 06 September 2021,
Prepared for: ML, Prepared by: LW, Last edited by: lmilne
Layout: 33805_F13_MDB_Wingless_Stonefly
Project: P:\33800s\33805\Mapping\
33805_Warburton_EES_Figures_Ecology.aprx

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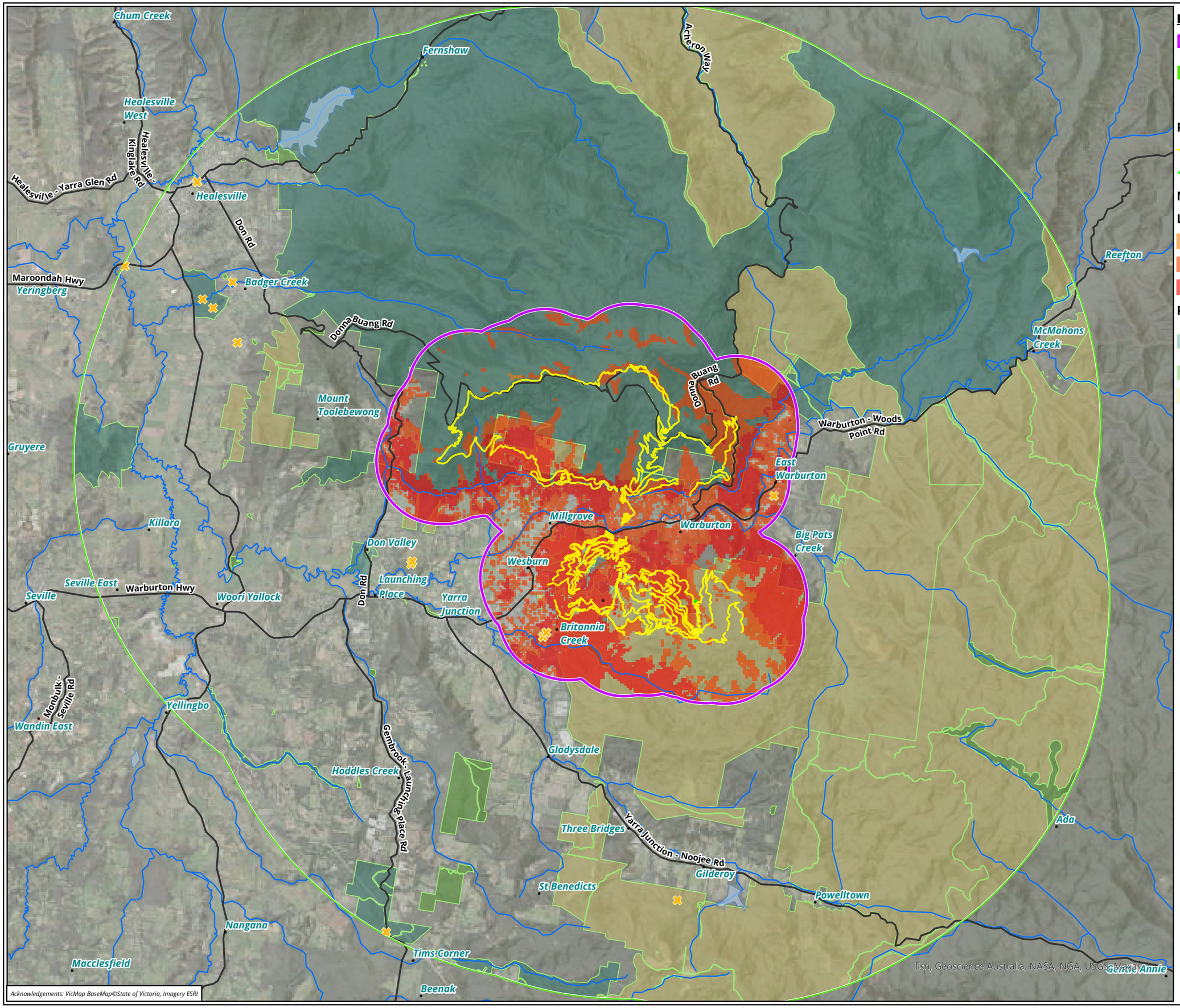


Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.1 Significant species Habitat Importance Map (HIM) - Grey Goshawk (*Accipiter novaehollandiae*)

Taxon ID - 010220

0 1 2 3 4

Kilometers

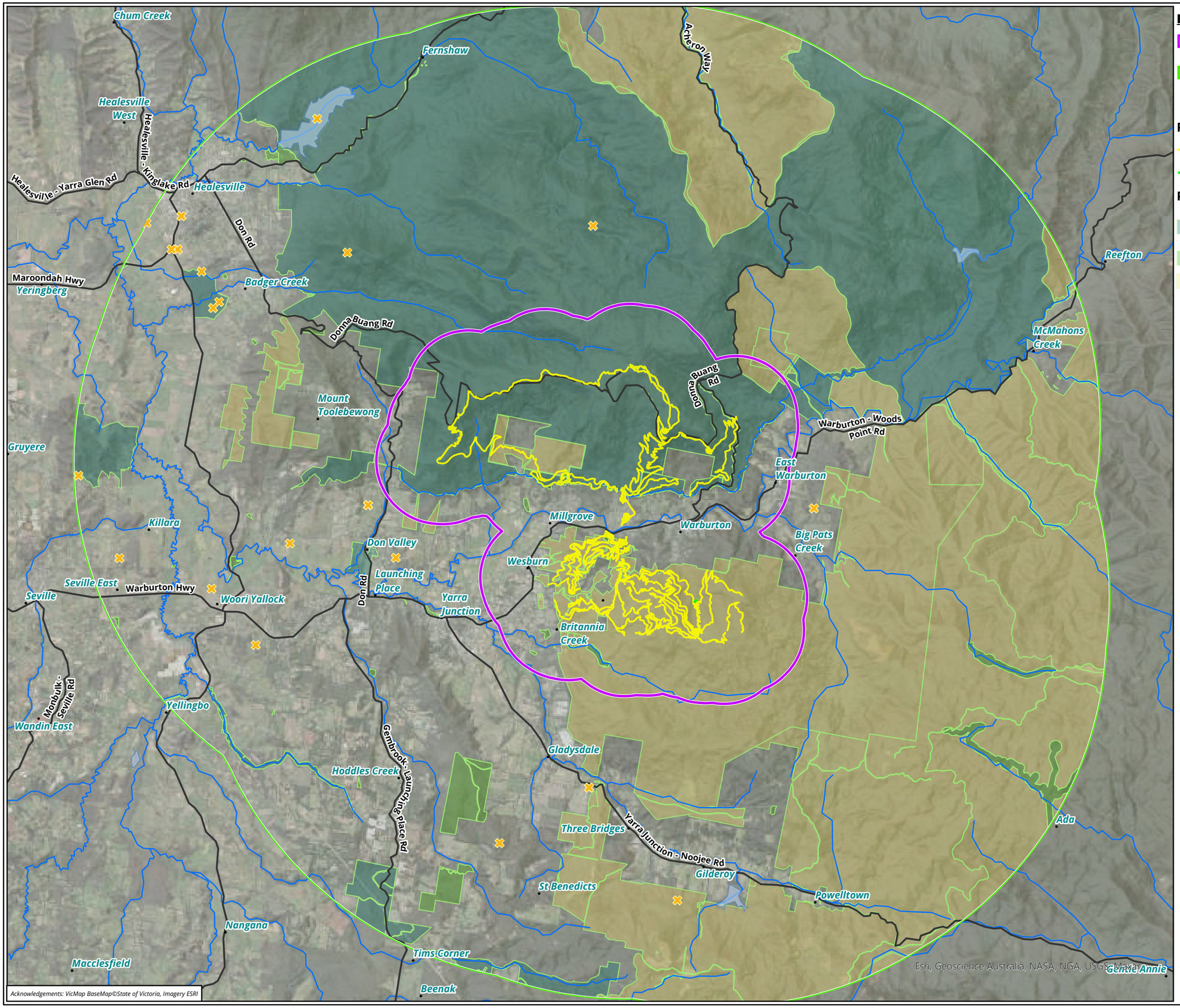
Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

biosis

Matter: #####, [CHMP],
Date: 09 September 2021 ,
Prepared for: [Consultant], Prepared by: [GIS], Last edited by: lmilne
Layout: 33805_F14_HIM
Project: P:\33800s\33805\Mapping\33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.2 Significant species Habitat Importance Map (HIM) - Great Egret (*Ardea alba*)

Taxon ID - 903268

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

biosis

Matter: #####, [CHMP],
Date: 09 September 2021 ,
Prepared for: [Consultant], Prepared by: [GIS], Last edited by: lmilne
Layout: 33805_F14_HIM
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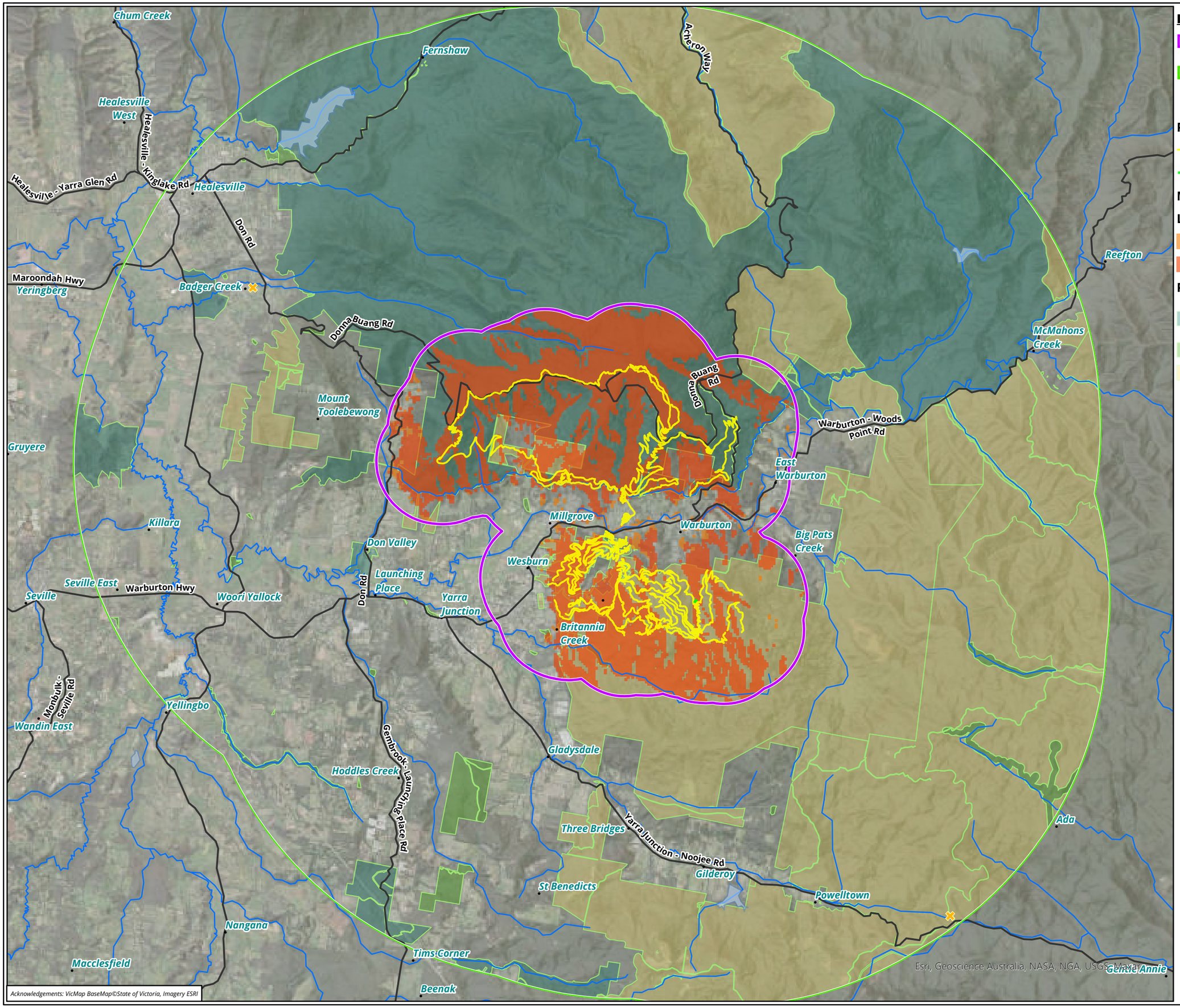
33805_Warburton_EES_Figures_Ecology.aprx



Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.3 Significant species Habitat Importance Map (HIM) - Spot-tailed Quoll (*Dasyurus maculatus maculatus*)

Taxon ID - 011008

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

biosis

Matter: #####, [CHMP],
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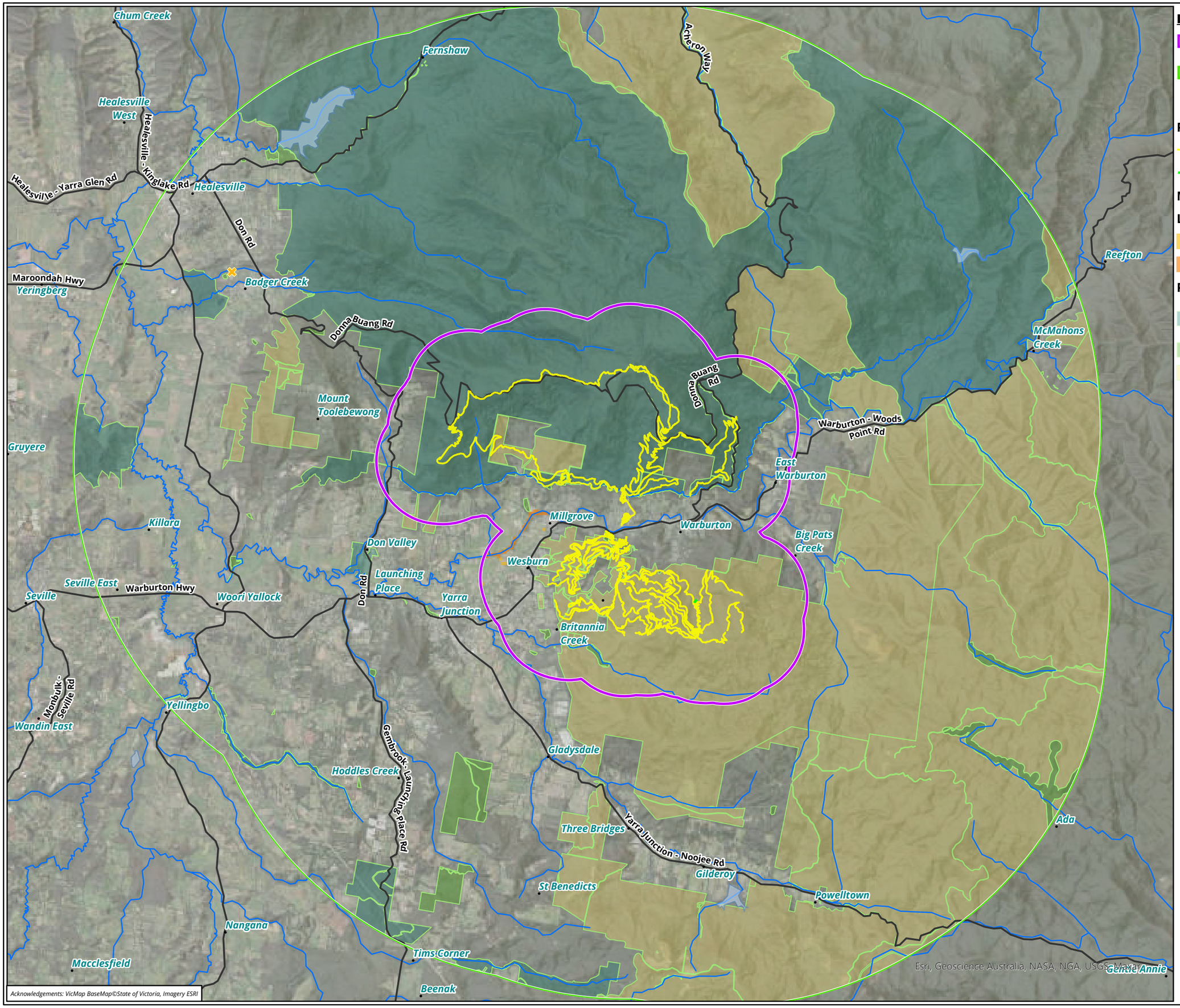

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.2 - 0.4
- 0.4 - 0.6

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.4 Significant species Habitat Importance Map (HIM) - Little Egret (*Egretta garzetta nigripes*)

Taxon ID - 010185

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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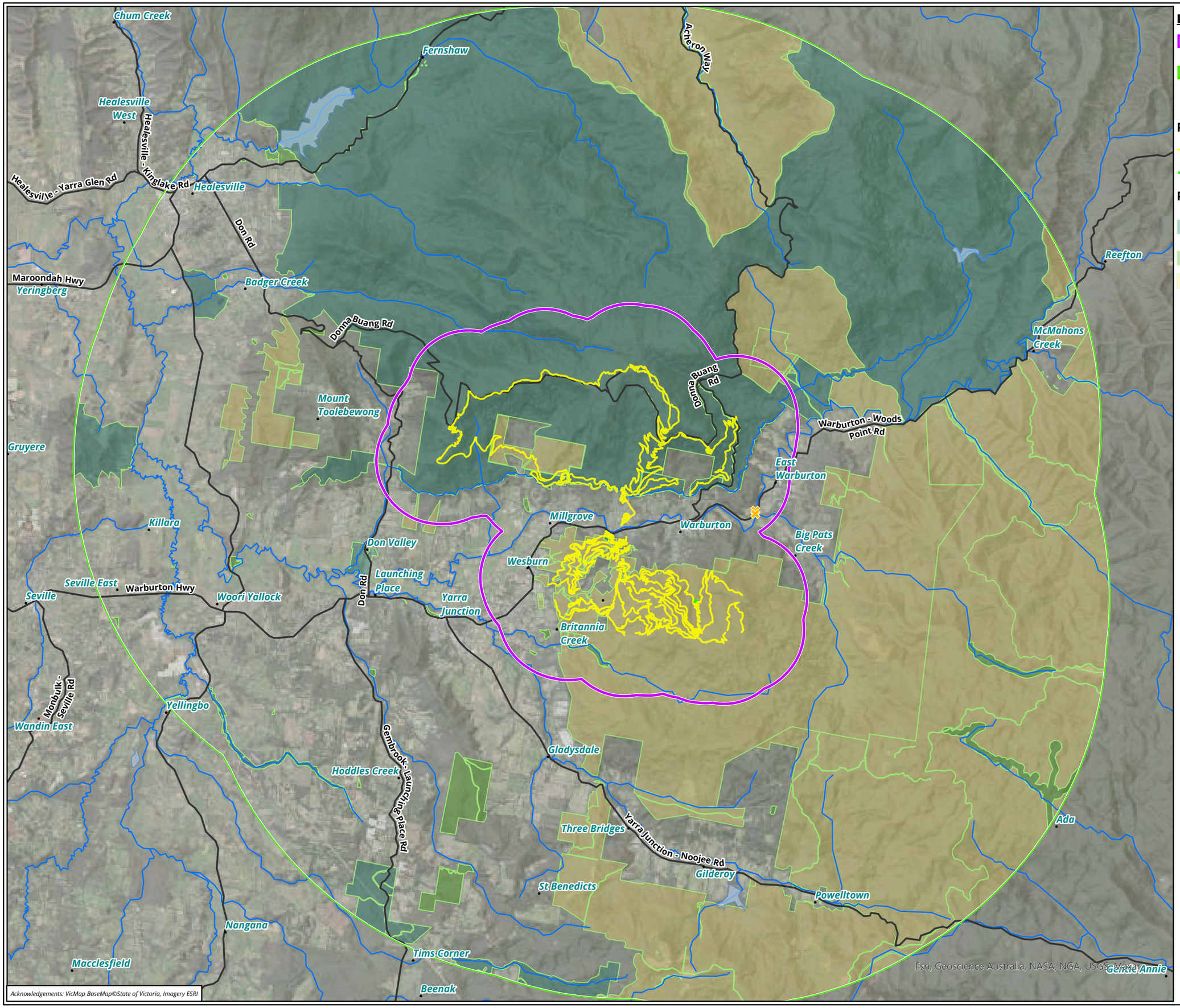

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.5 Significant species Habitat Importance Map (HIM) - Curve-tail Burrowing Crayfish (*Engaeus curvisuturus*)

Taxon ID - 001679

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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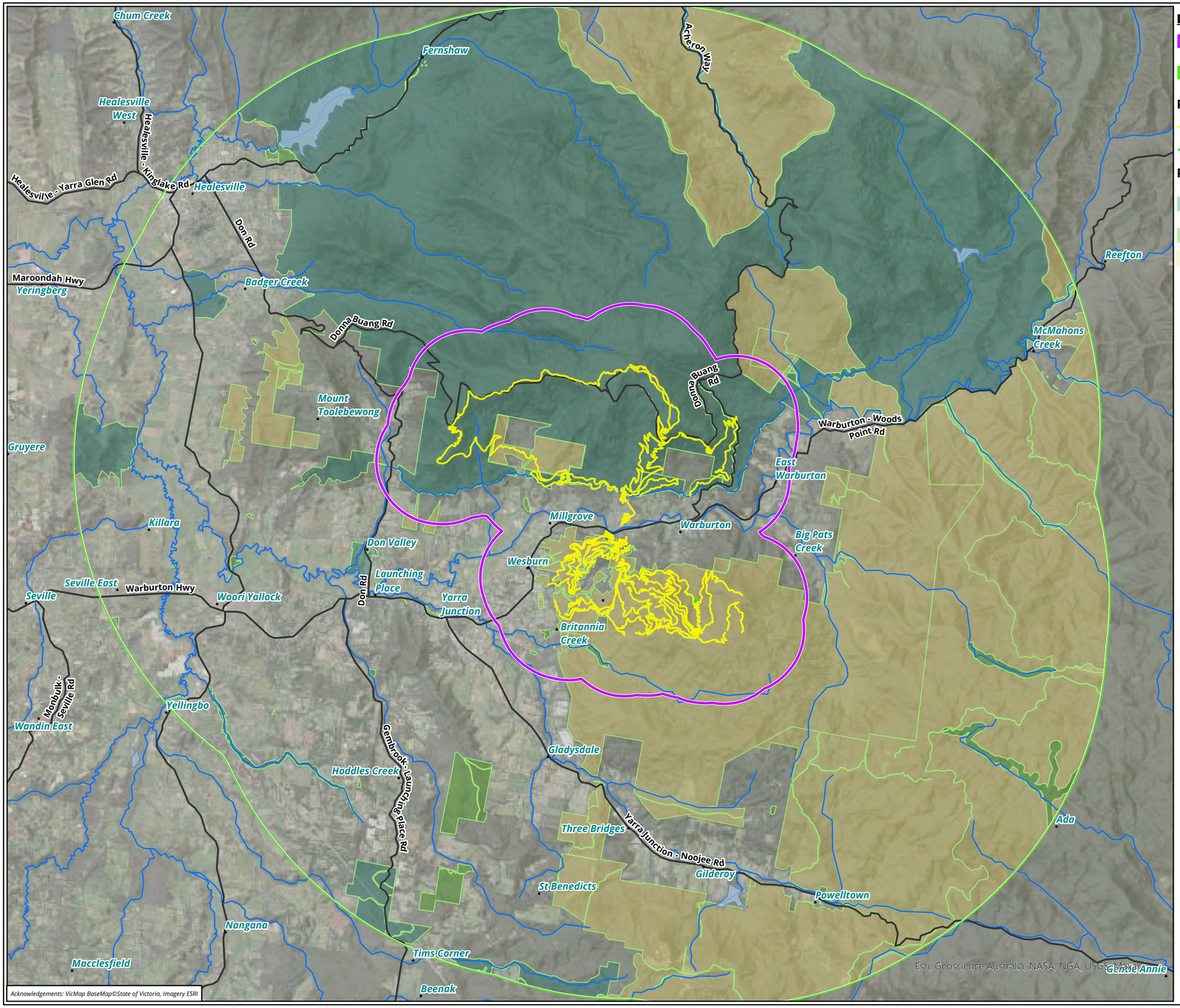

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.6 Significant species Habitat Importance Map (HIM) - Tubercle Burrowing Crayfish (*tuberculatus*)

Taxon ID - 001689

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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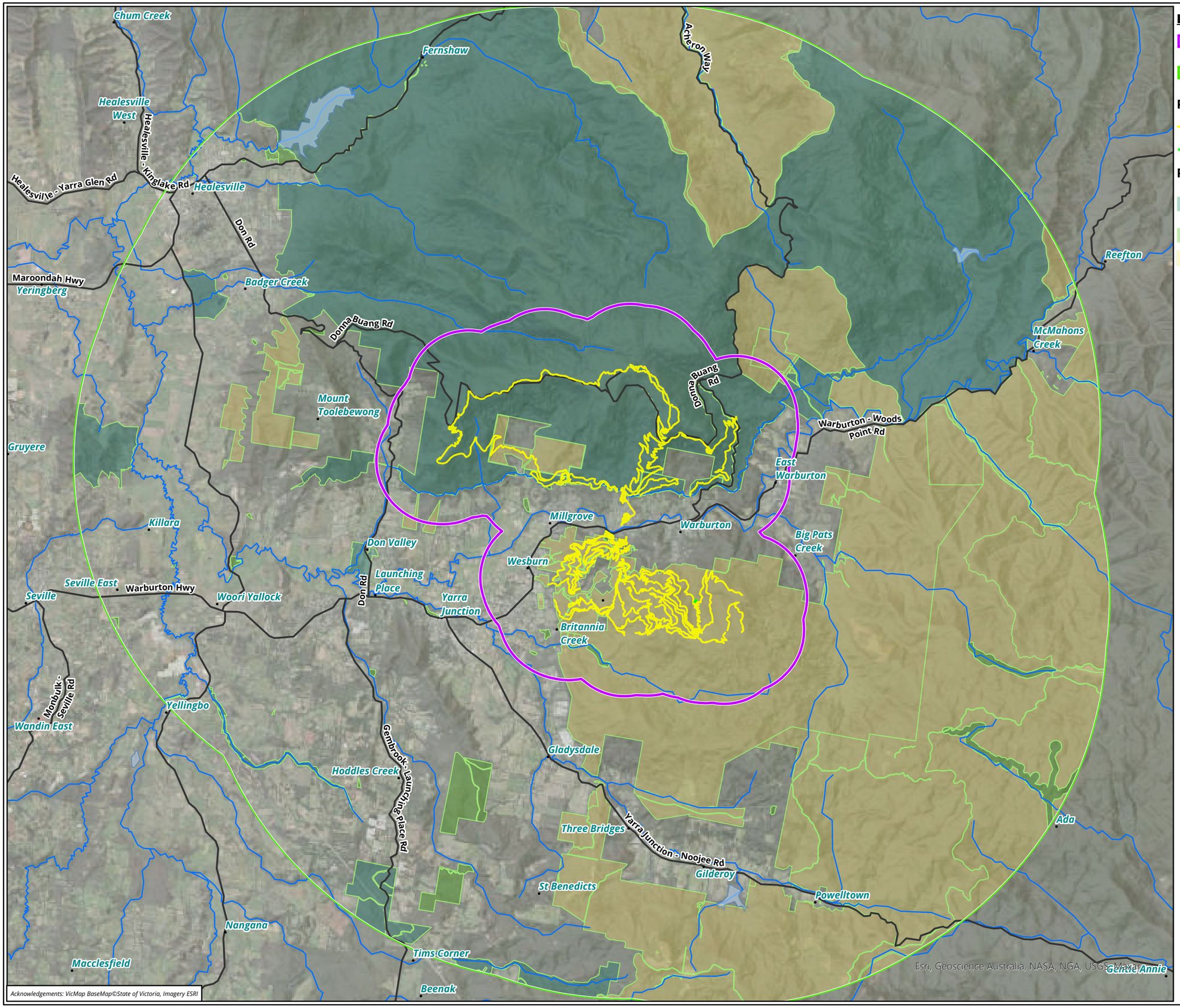

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.7 Significant species Habitat Importance Map (HIM) - Flat-headed Galaxias (*Galaxias rostratus*)

Taxon ID - 004692

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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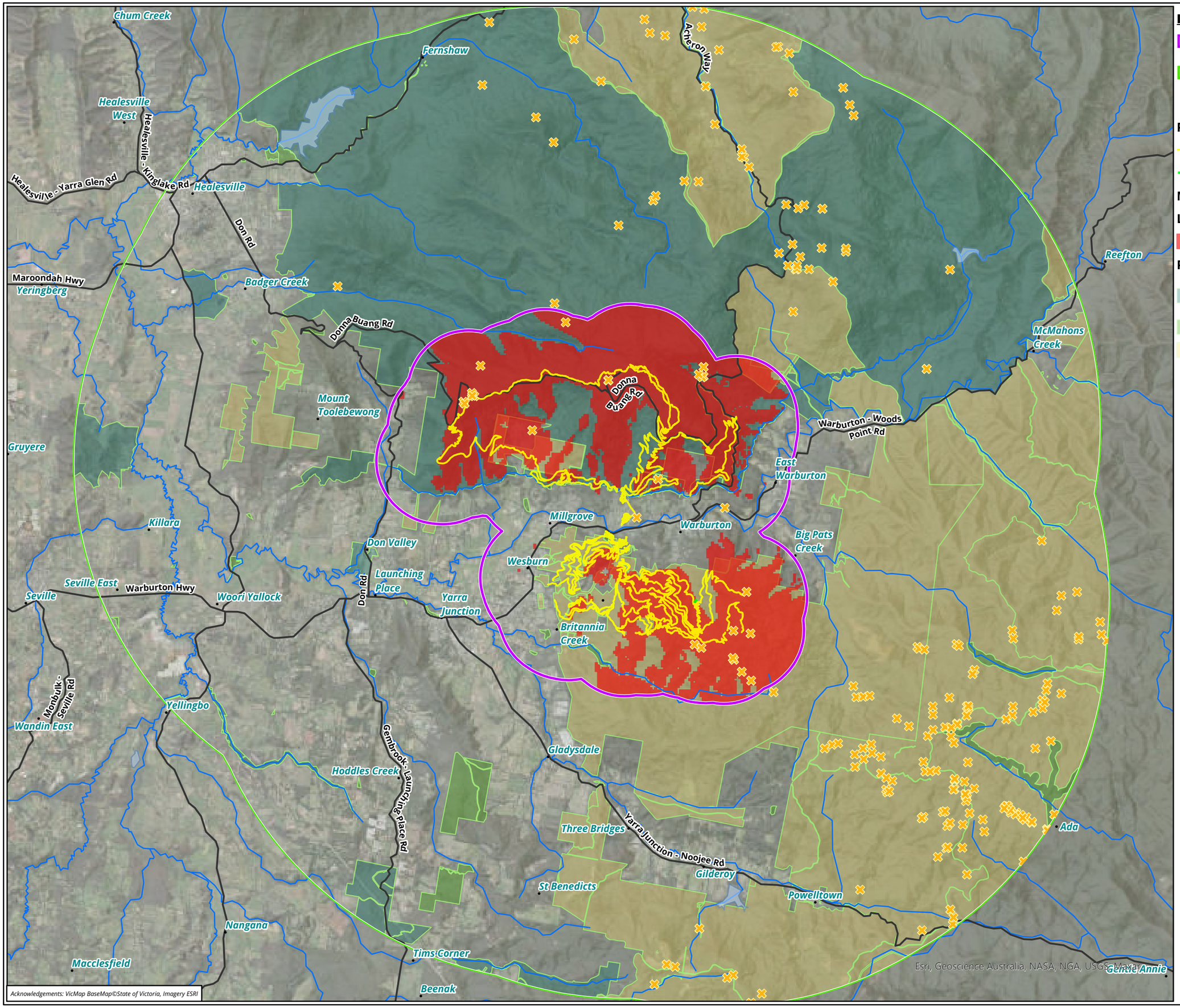

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.8 Significant species Habitat Importance Map (HIM) - Leadbeater's Possum (*Gymnobelideus leadbeateri*)

Taxon ID - 011141

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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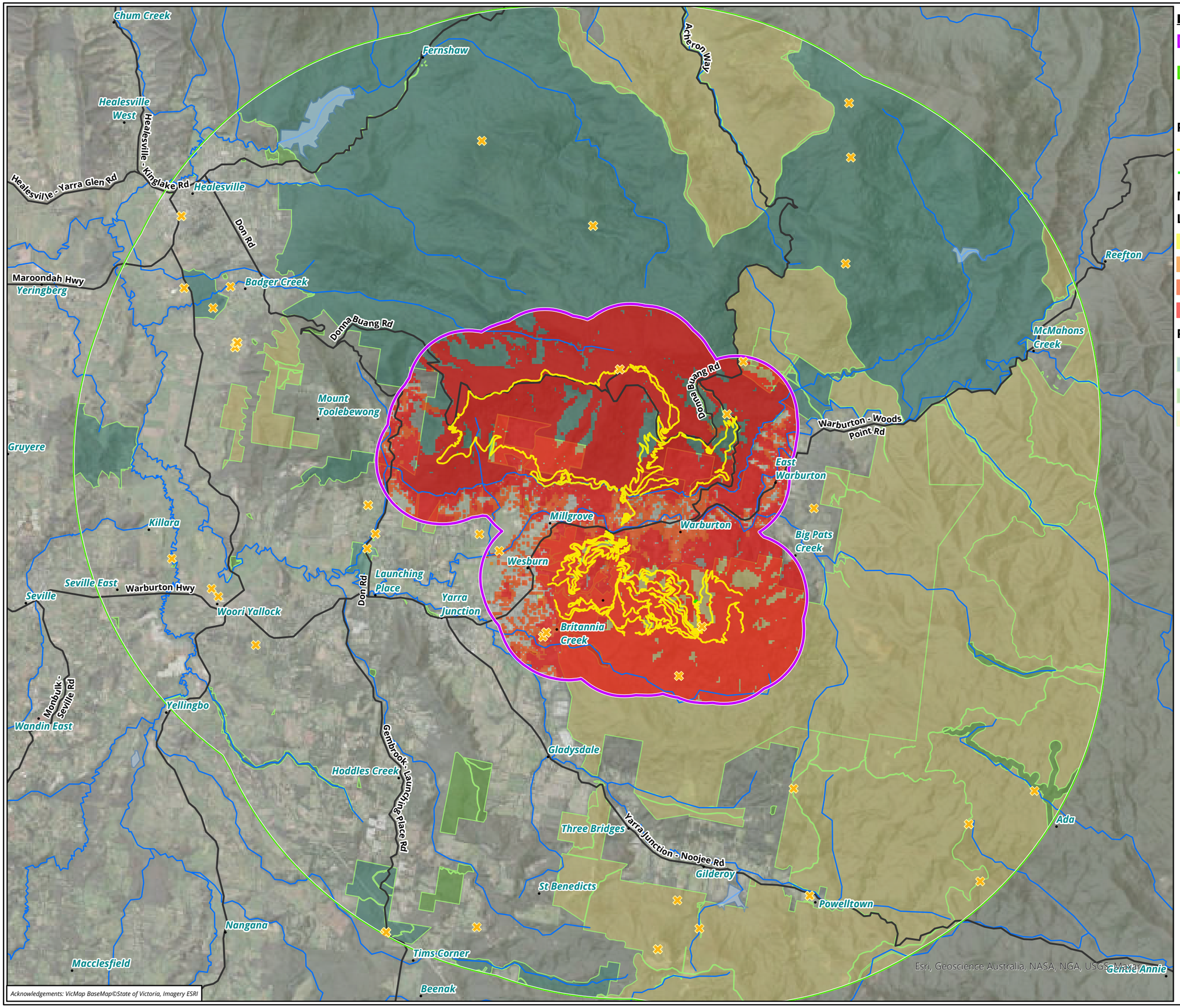

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.9 Significant species Habitat Importance Map (HIM) - White-throated Needletail (*Hirundapus caudacutus*)

Taxon ID - 010334

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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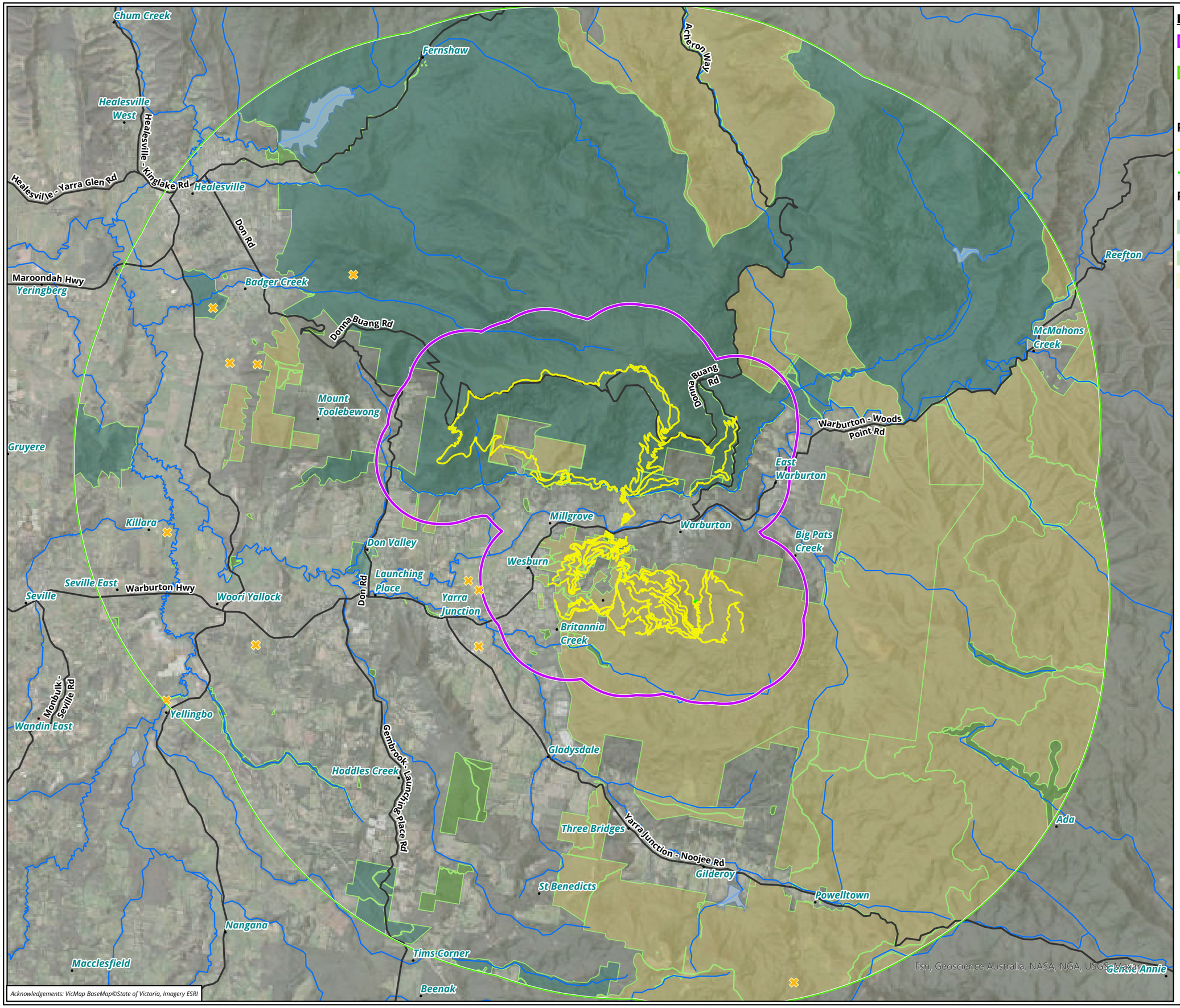

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.10 Significant species Habitat Importance Map (HIM) - Southern Brown Bandicoot (*Isoodon obesulus obesulus*)

Taxon ID - 061092

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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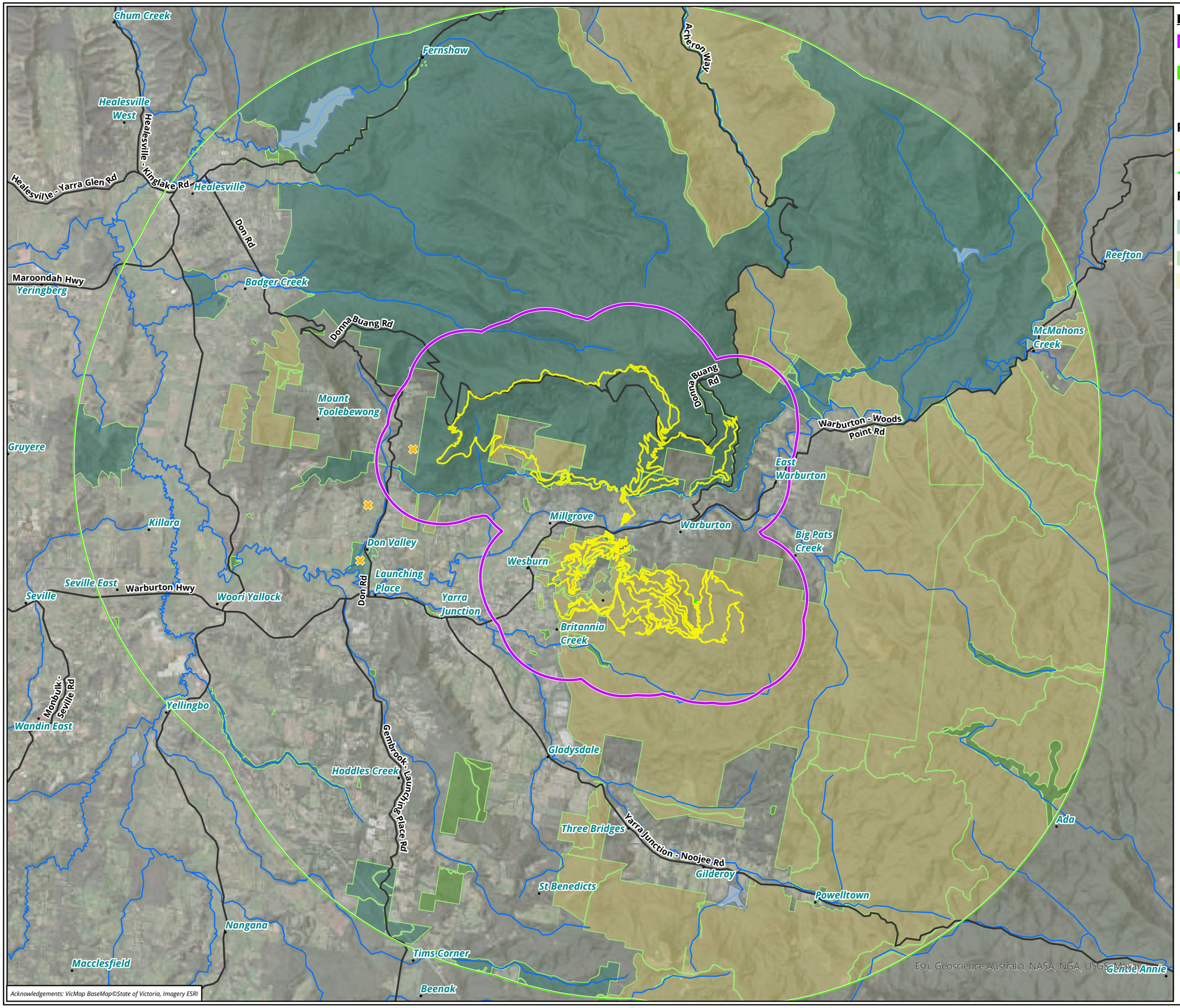

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.11 Significant species Habitat Importance Map (HIM) - Swift Parrot (*Latha discolor*)

Taxon ID - 010309

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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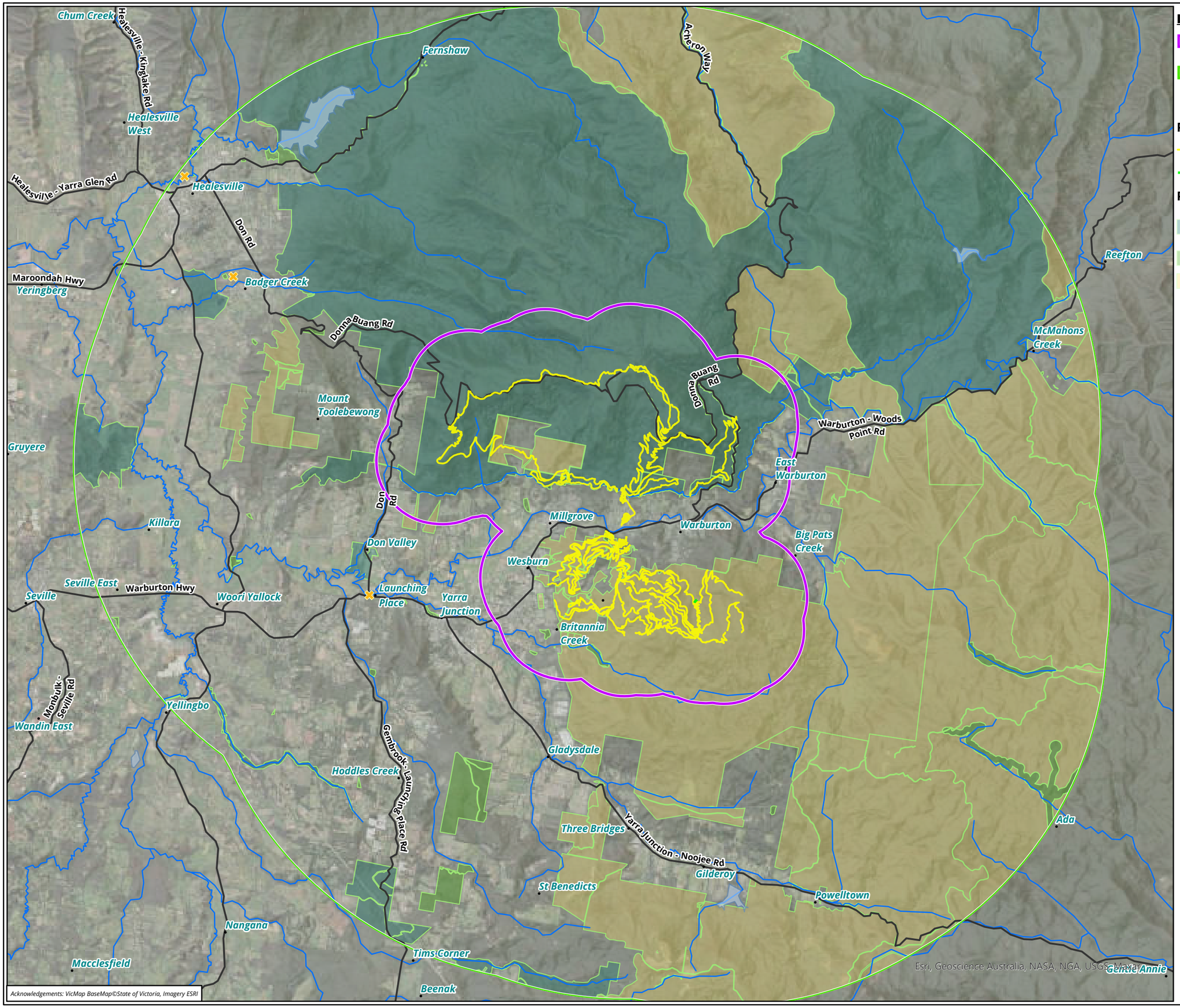

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.12 Significant species Habitat Importance Map (HIM) - Murray Cod (*Maccu peelii*)

Taxon ID - 004871

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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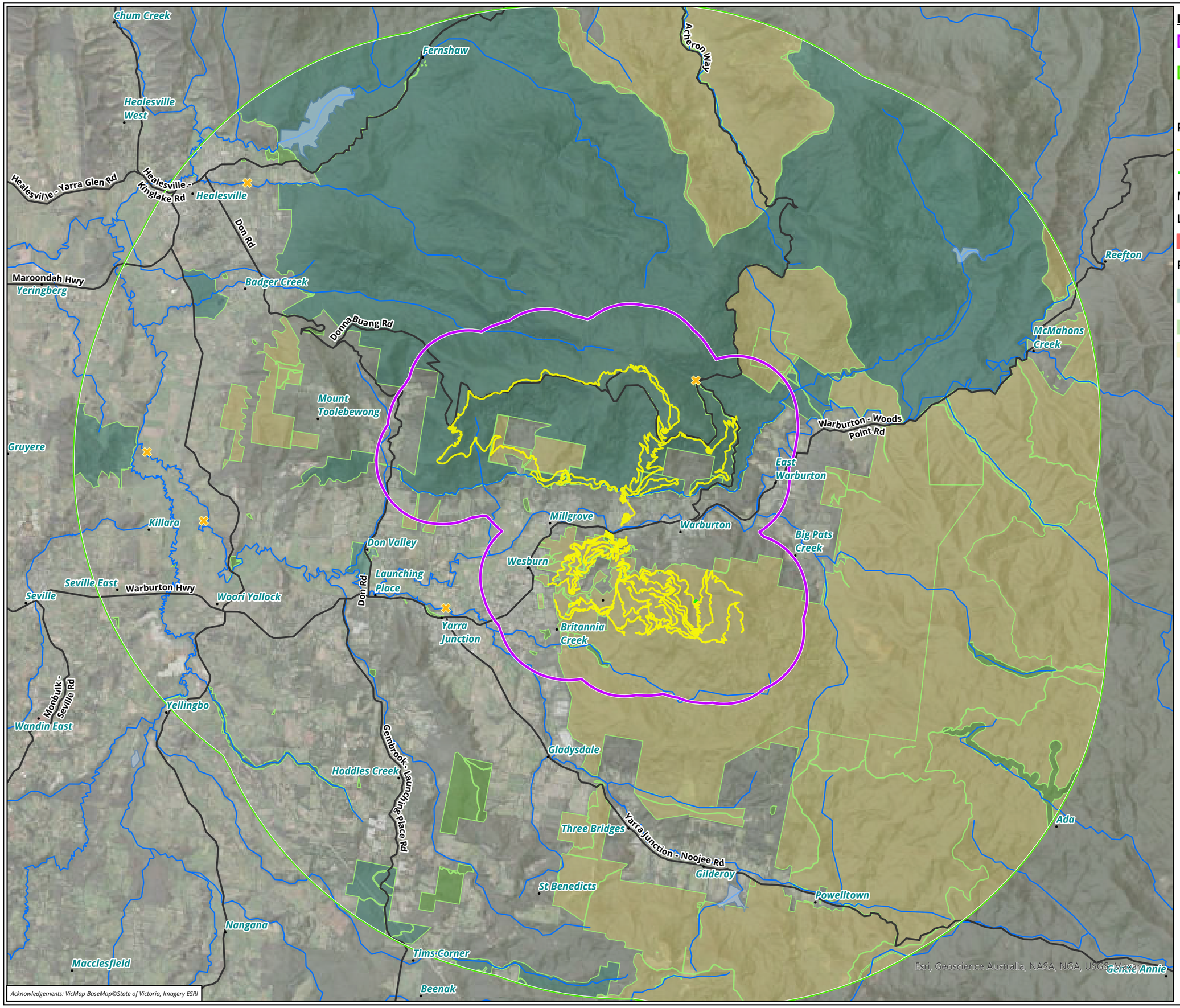

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.13 Significant species Habitat Importance Map (HIM) - Macquarie Perch (*M australasica*)

Taxon ID - 004874

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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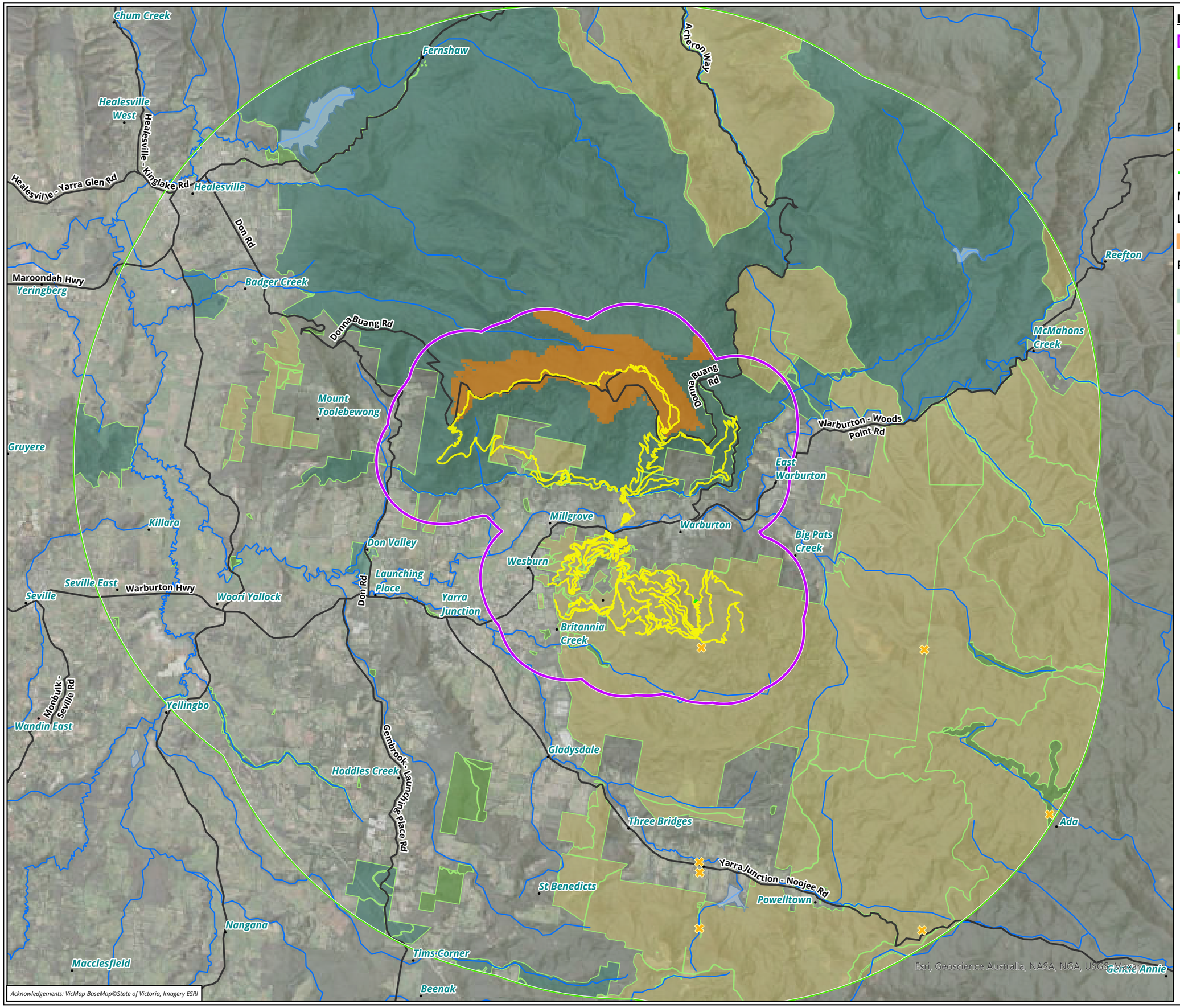

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.14 Significant species Habitat Importance Map (HIM) - Broad-toothed Rat (*Mastacomys fuscus mordicus*)

Taxon ID - 011438

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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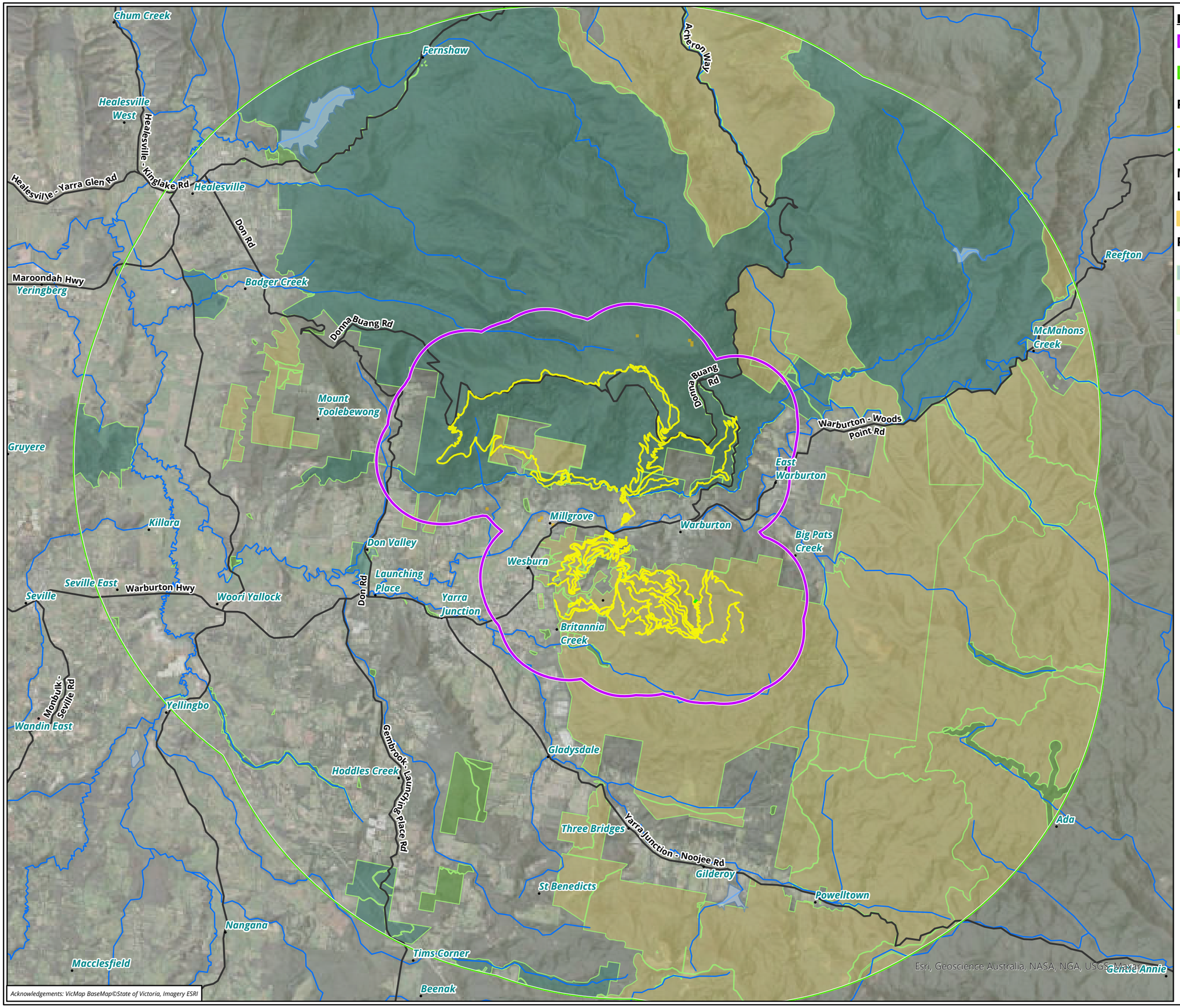

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.2 - 0.4

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.15 Significant species Habitat Importance Map (HIM) - Common Bent-wing Bat (eastern ssp.) (*Miniopt schreibersii oceanensis*)

Taxon ID - 061342

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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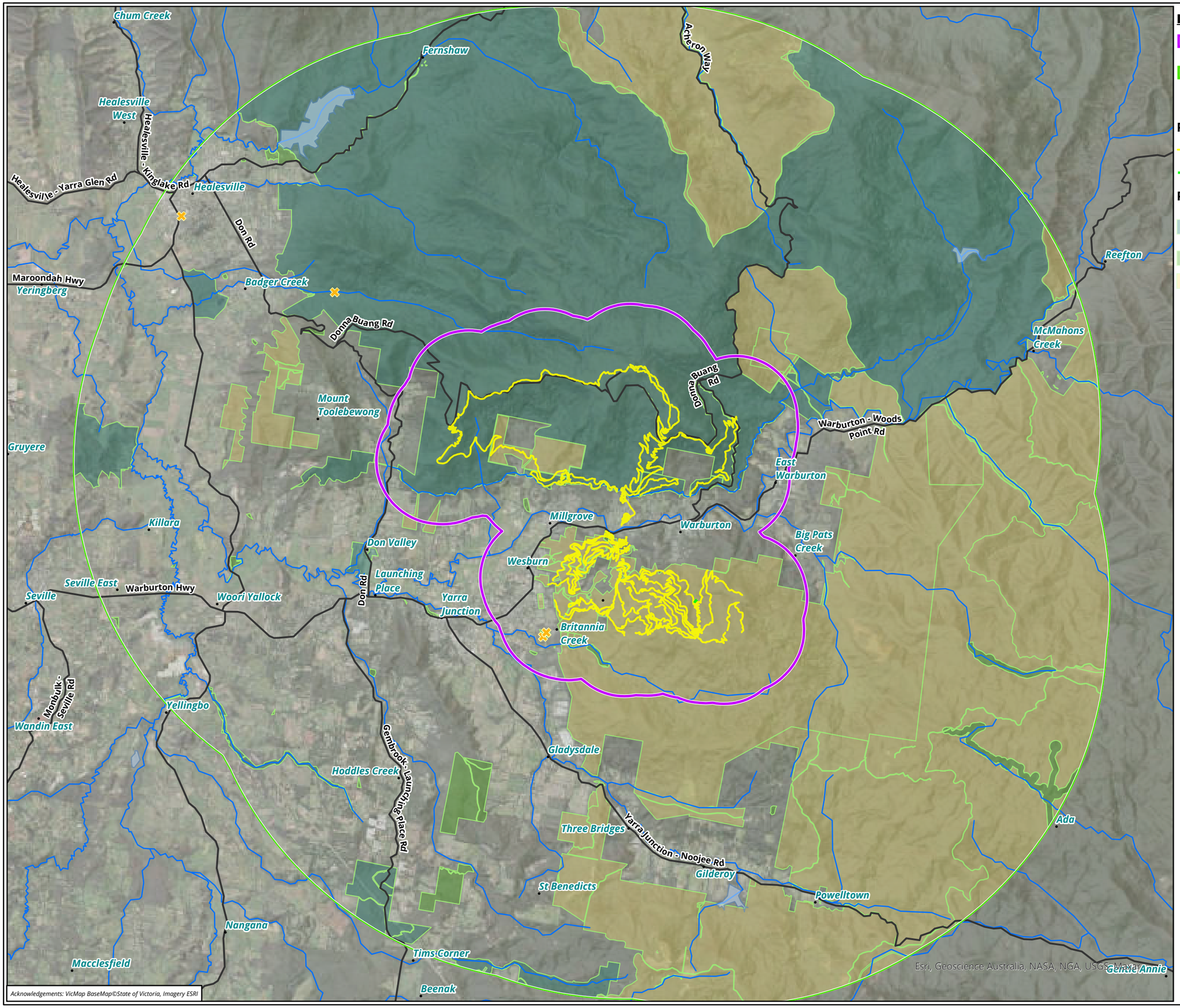

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.16 Significant species Habitat Importance Map (HIM) - Barking Owl (*Ninox connivens*)

Taxon ID - 010246

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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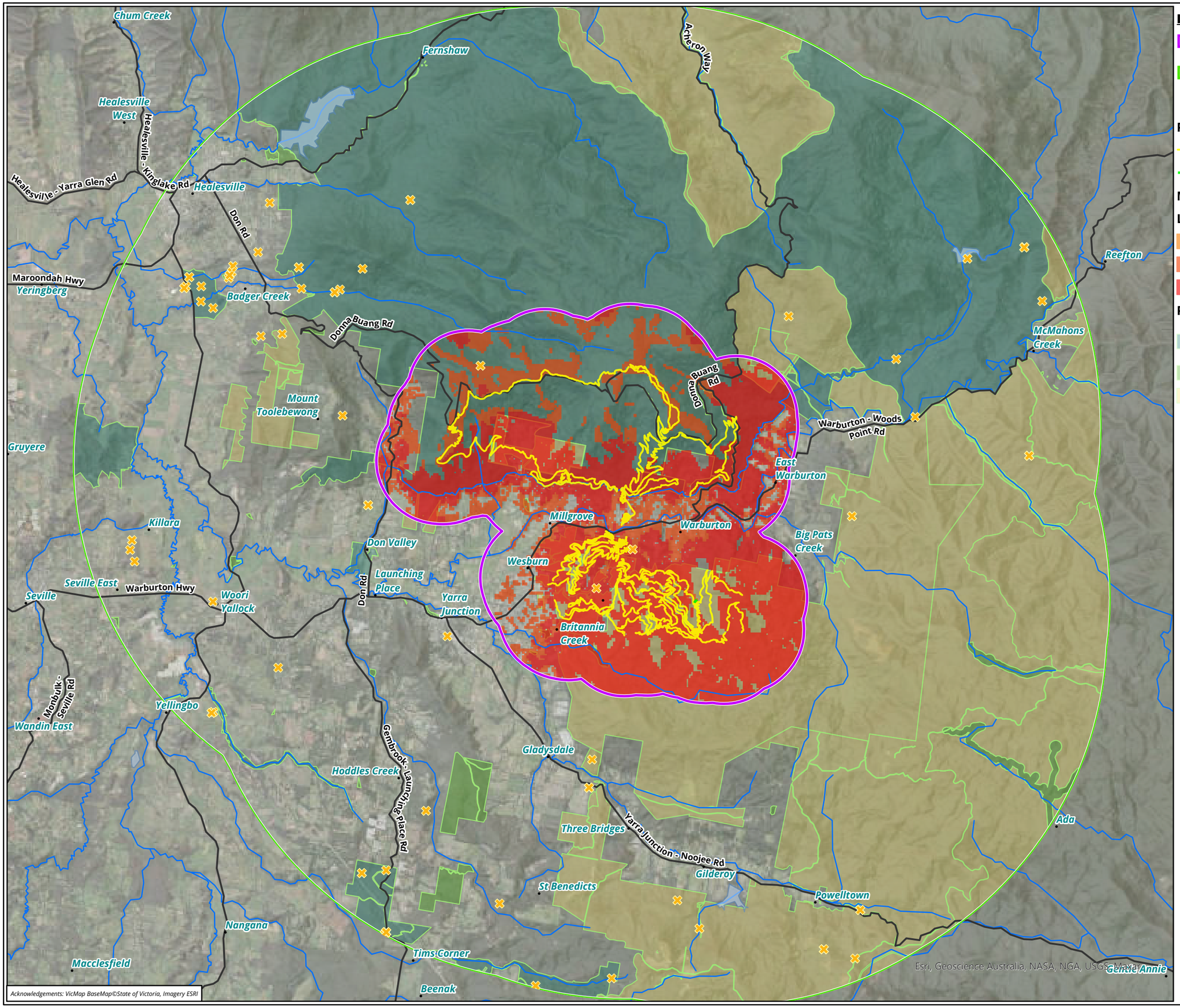

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.17 Significant species Habitat Importance Map (HIM) - Powerful Owl (*Nino strenua*)

Taxon ID - 010248

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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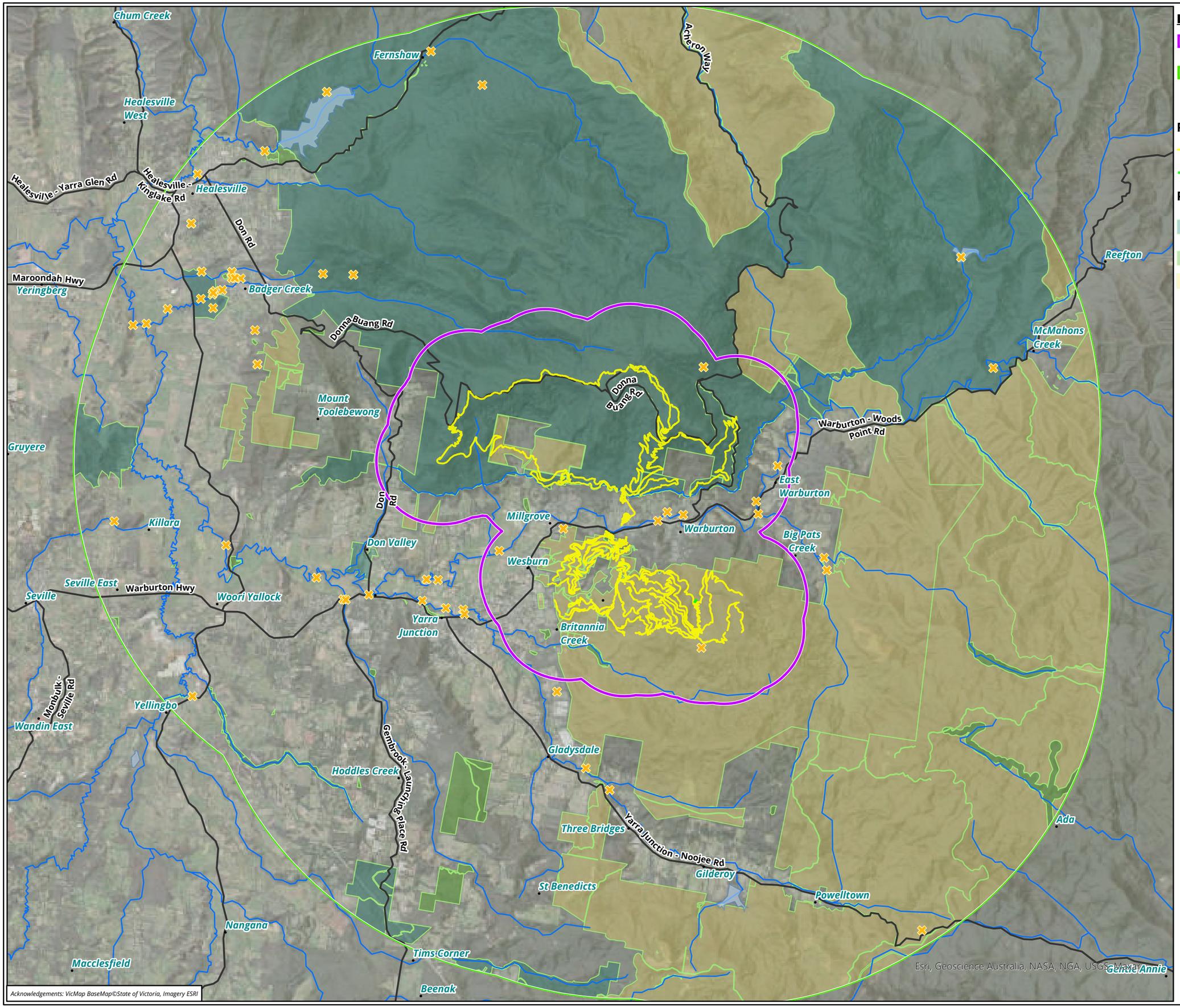

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.18 Significant species Habitat Importance Map (HIM) - Platypus (*Ornithorh anatinus*)

Taxon ID - 005136

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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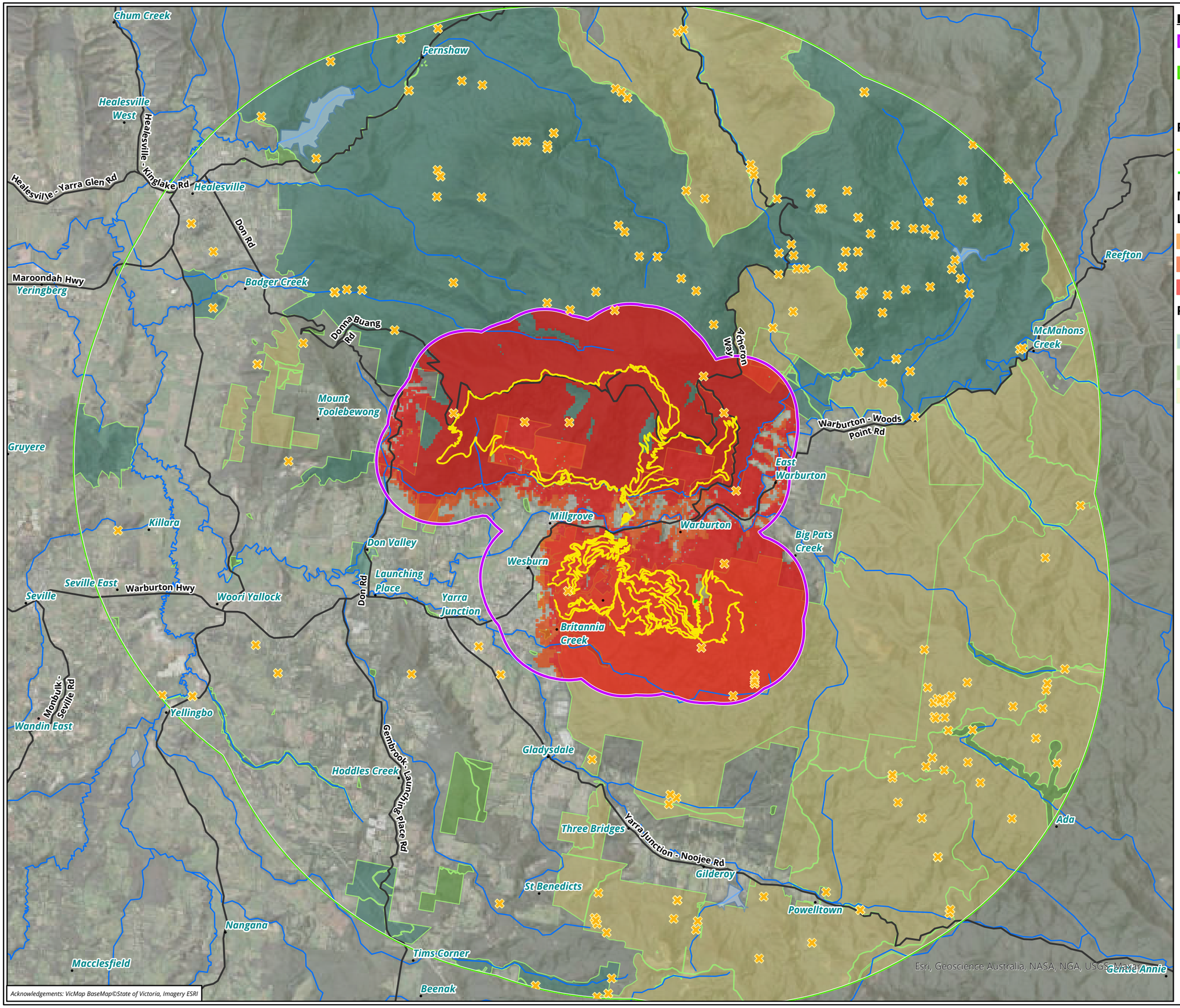

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.19 Significant species Habitat Importance Map (HIM) - Southern Greater Glider (*Petauroides volans*)

Taxon ID - 011133

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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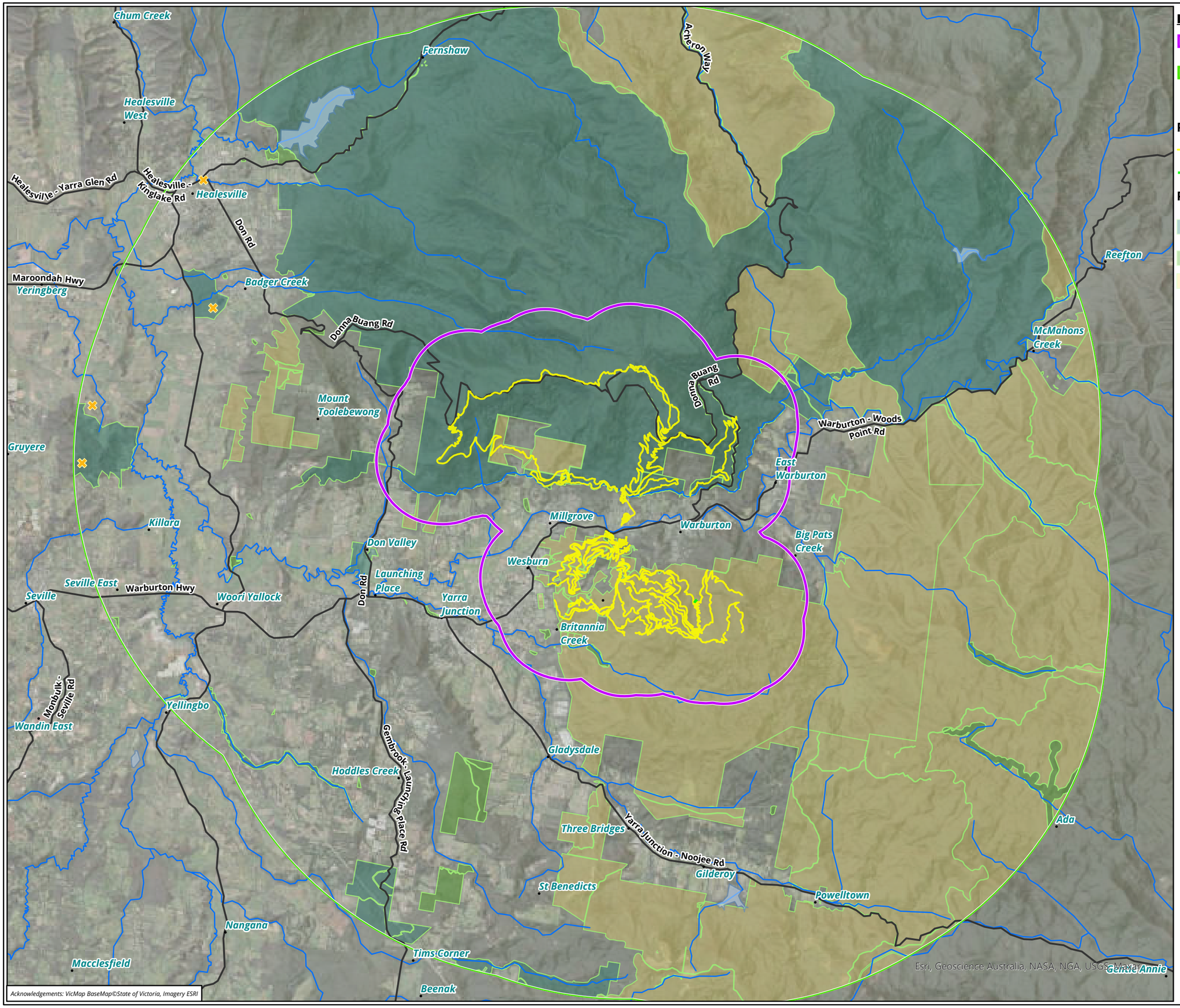

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.20 Significant species Habitat Importance Map (HIM) - Brush-tailed Phascogale (*Phascogale tapoatafa*)

Taxon ID - 011017

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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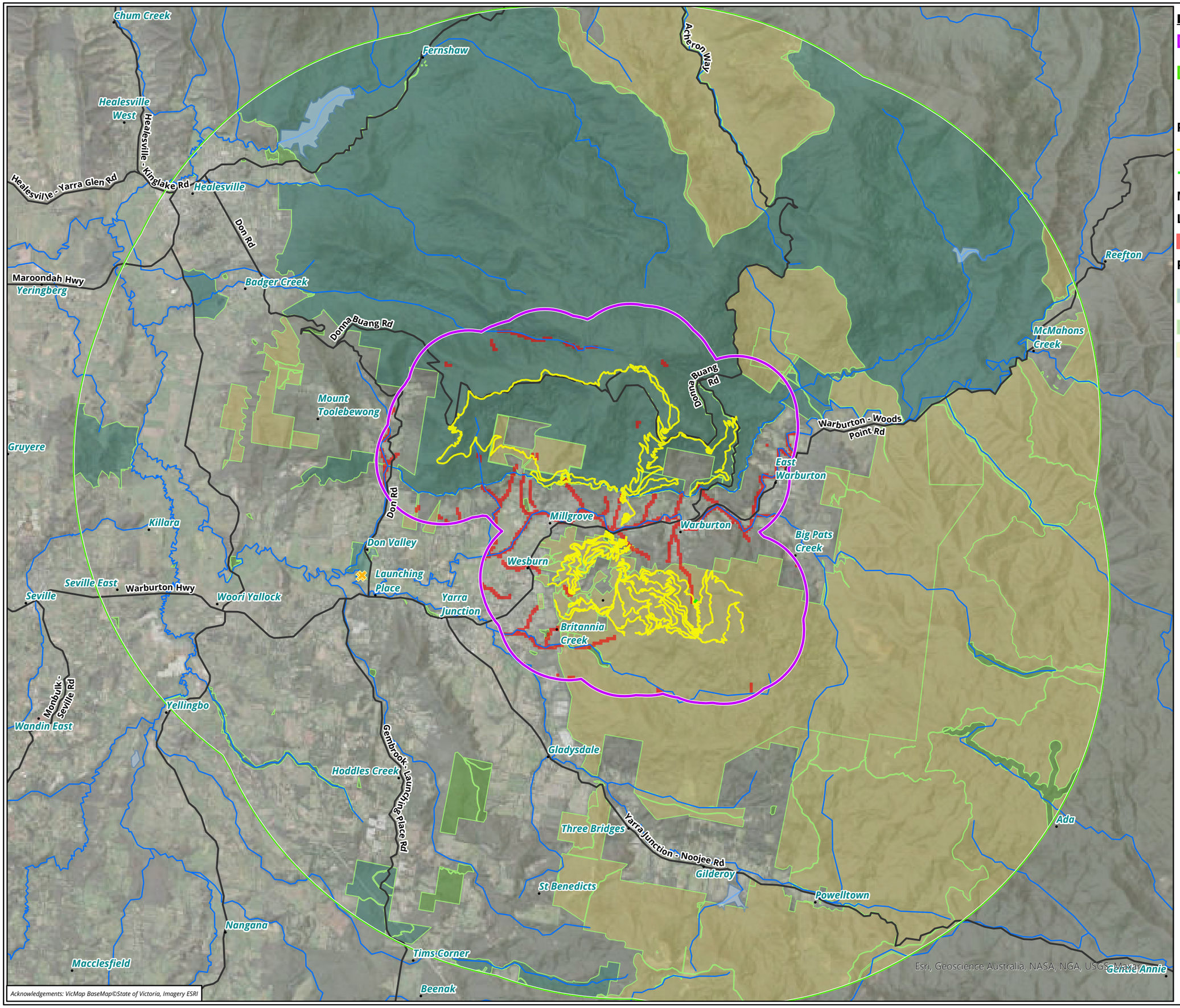

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.21 Significant species Habitat Importance Map (HIM) - Australian Grayling (*Prototroctes maraena*)

Taxon ID - 004686

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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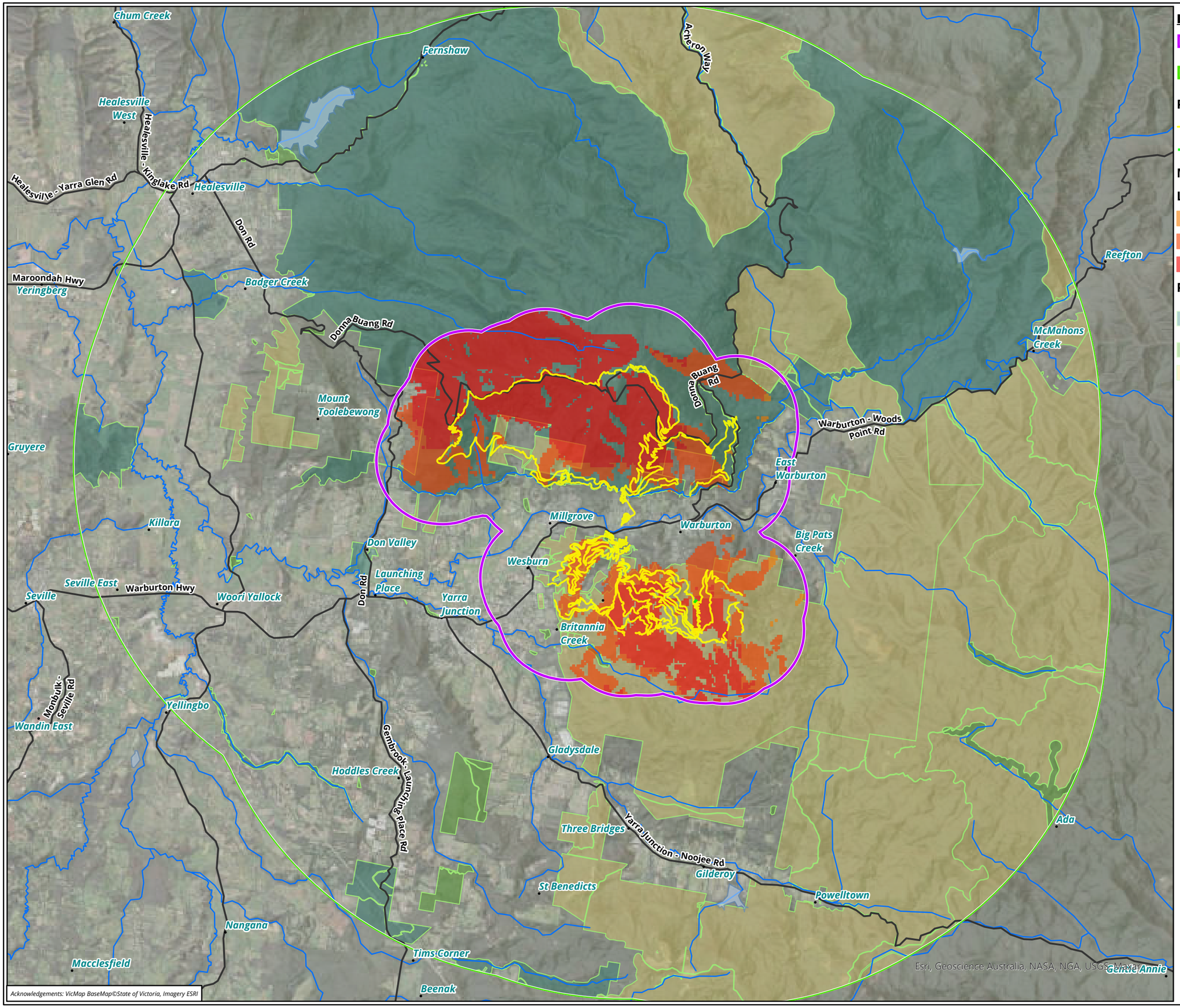

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.22 Significant species Habitat Importance Map (HIM) - Smoky Mouse (*Pseudfumeus*)

Taxon ID - 011458

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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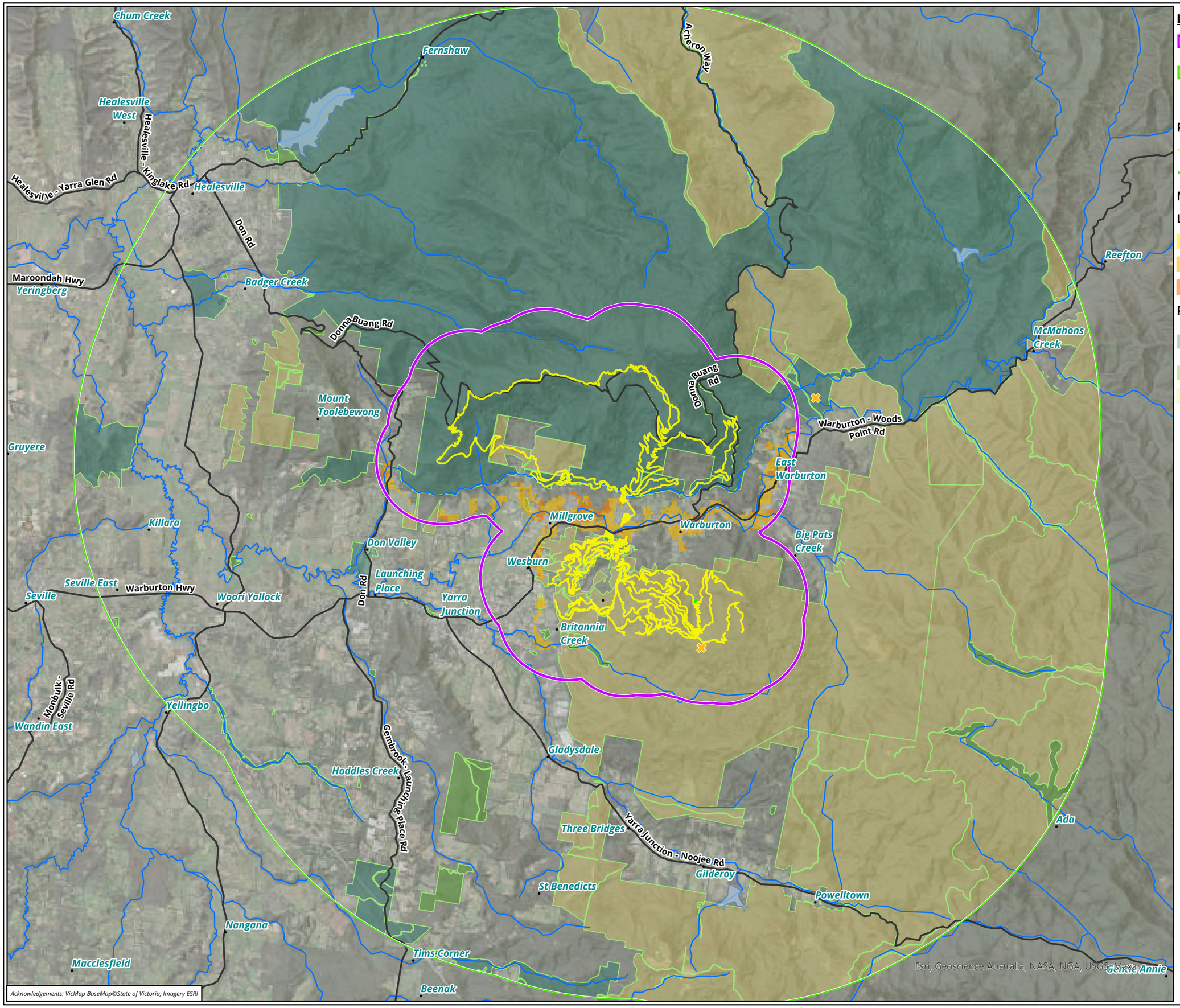

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.23 Significant species Habitat Importance Map (HIM) - Grey-headed Flying-fox (*Pteropus poliocephalus*)

Taxon ID - 011280

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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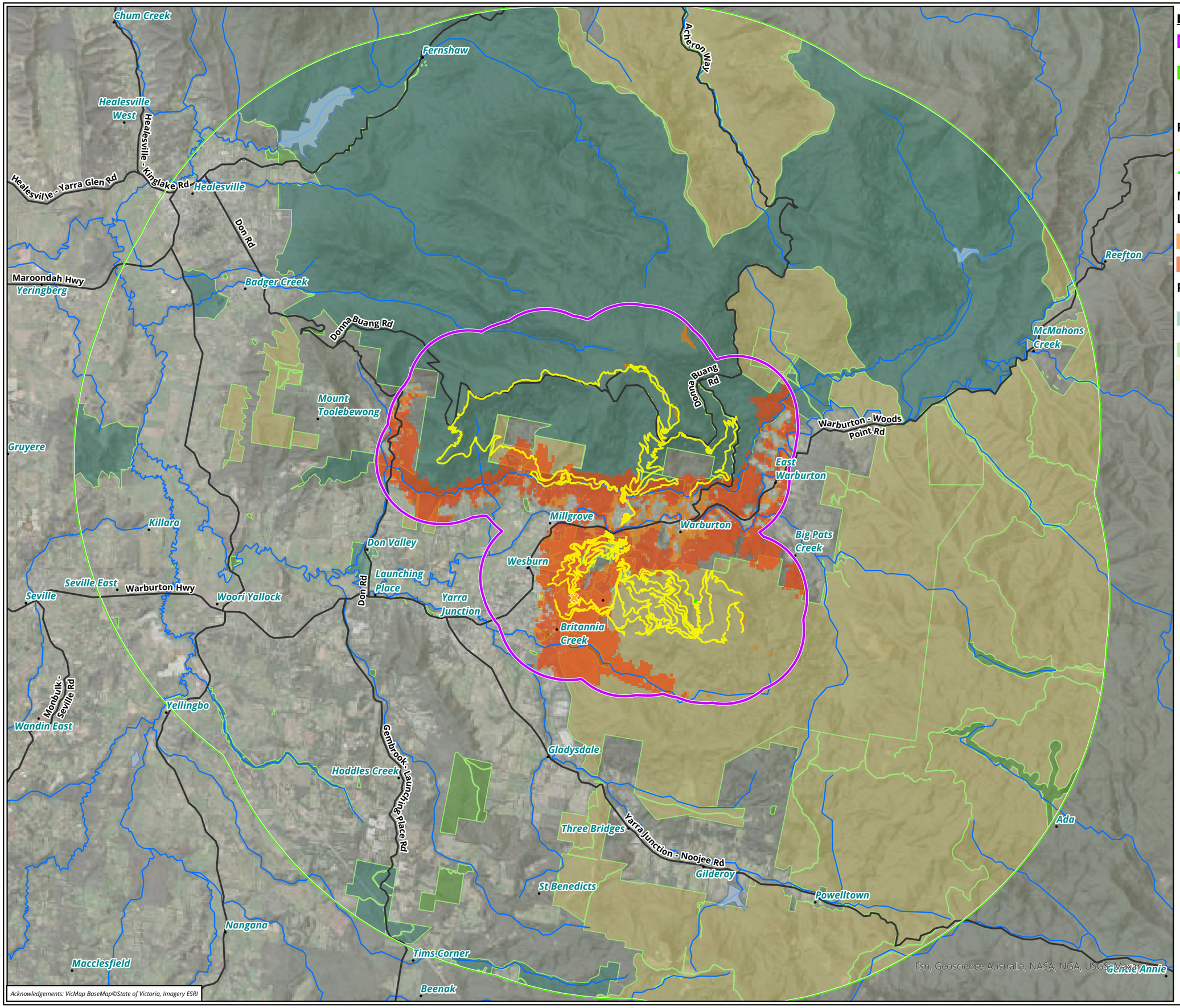

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.24 Significant species Habitat Importance Map (HIM) - Eastern Horseshoe Bat (*Rhinolophus megaphyllus megaphyllus*)

Taxon ID - 011303

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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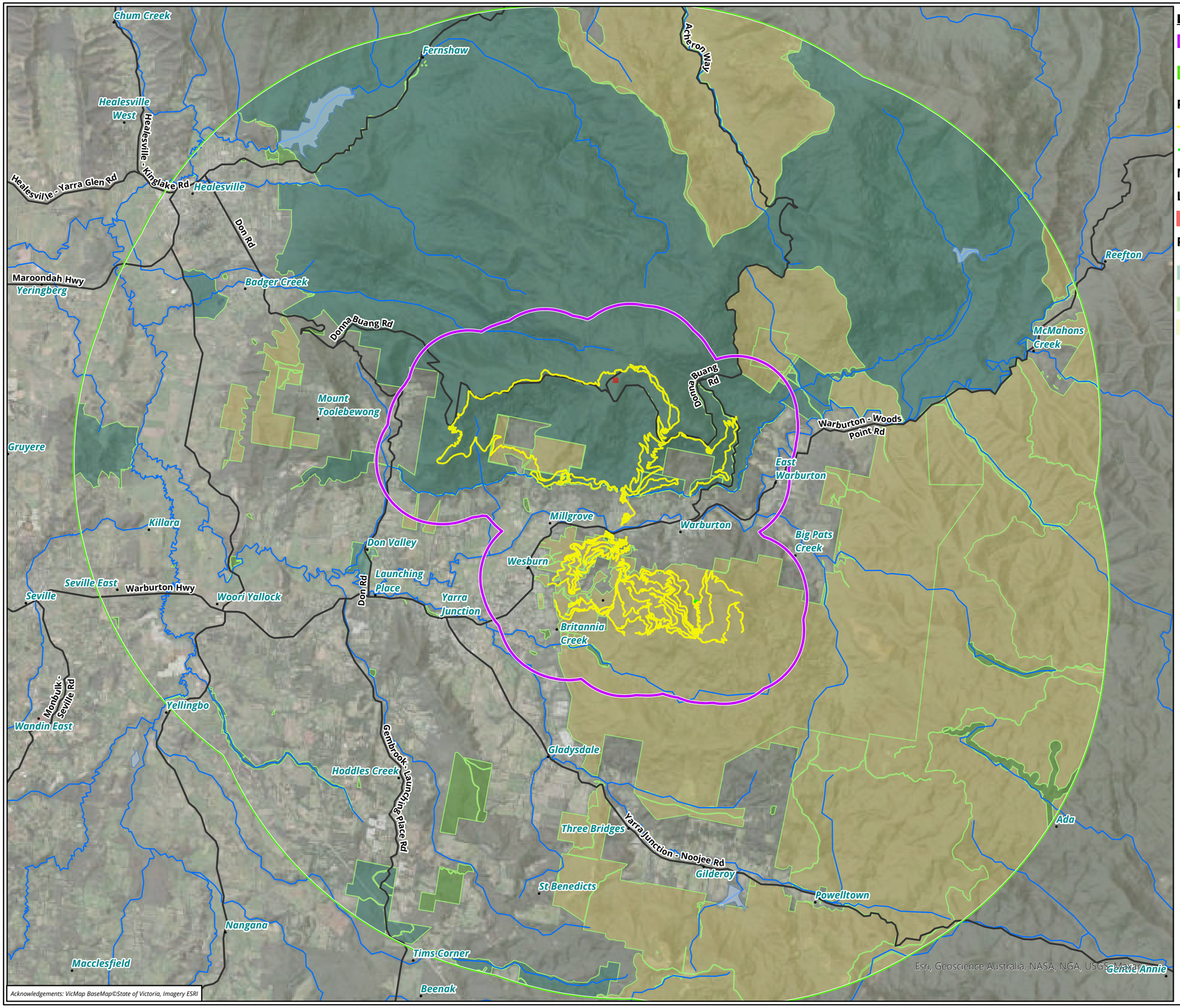

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.25 Significant species Habitat Importance Map (HIM) - Mt Donna Buang Wingless Stonefly (*Riekoperla darlingtoni*)

Taxon ID - 002512

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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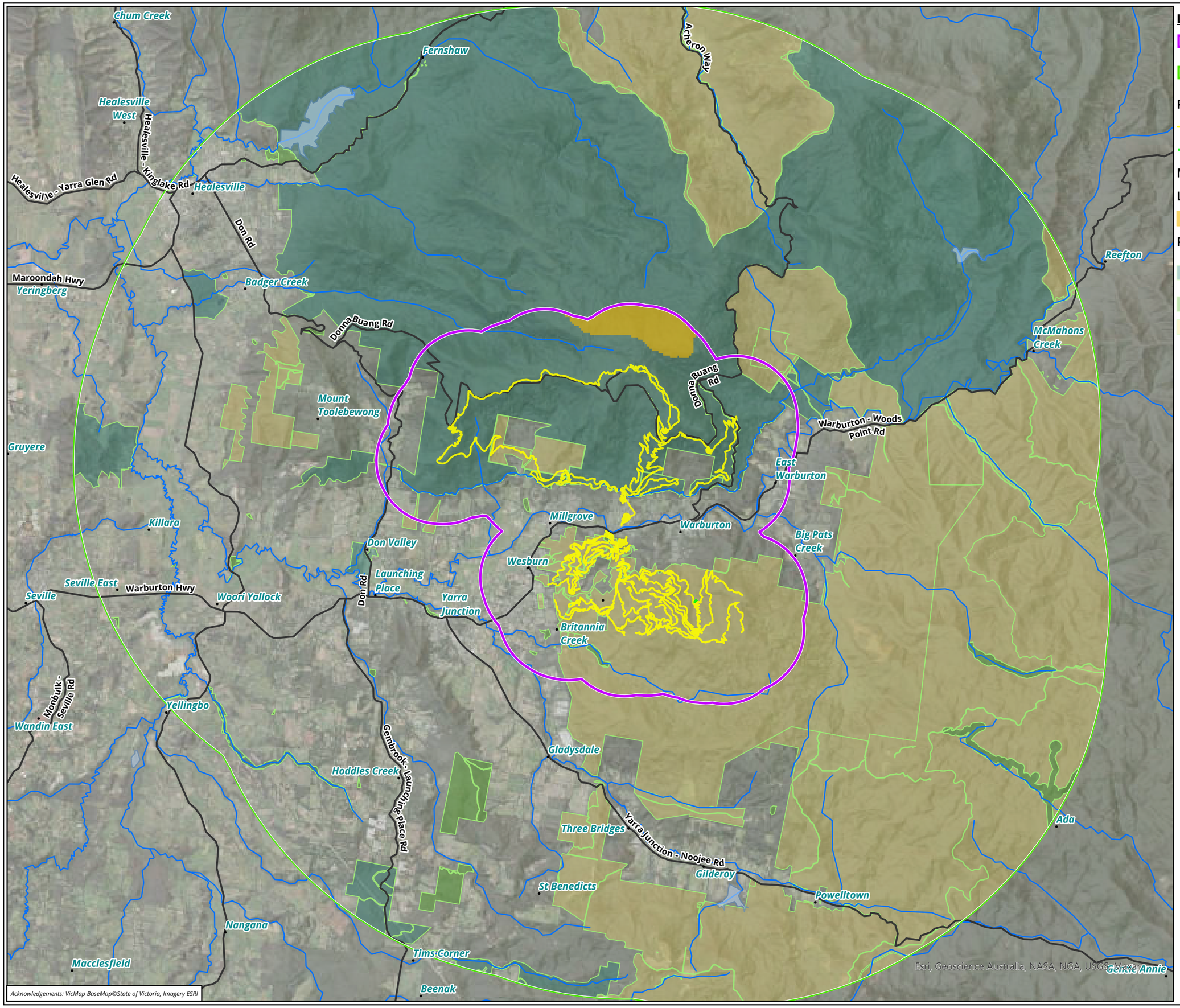

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.2 - 0.4

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.26 Significant species Habitat Importance Map (HIM) - Masked Owl (*Tyto novaehollandiae*)

Taxon ID - 010250

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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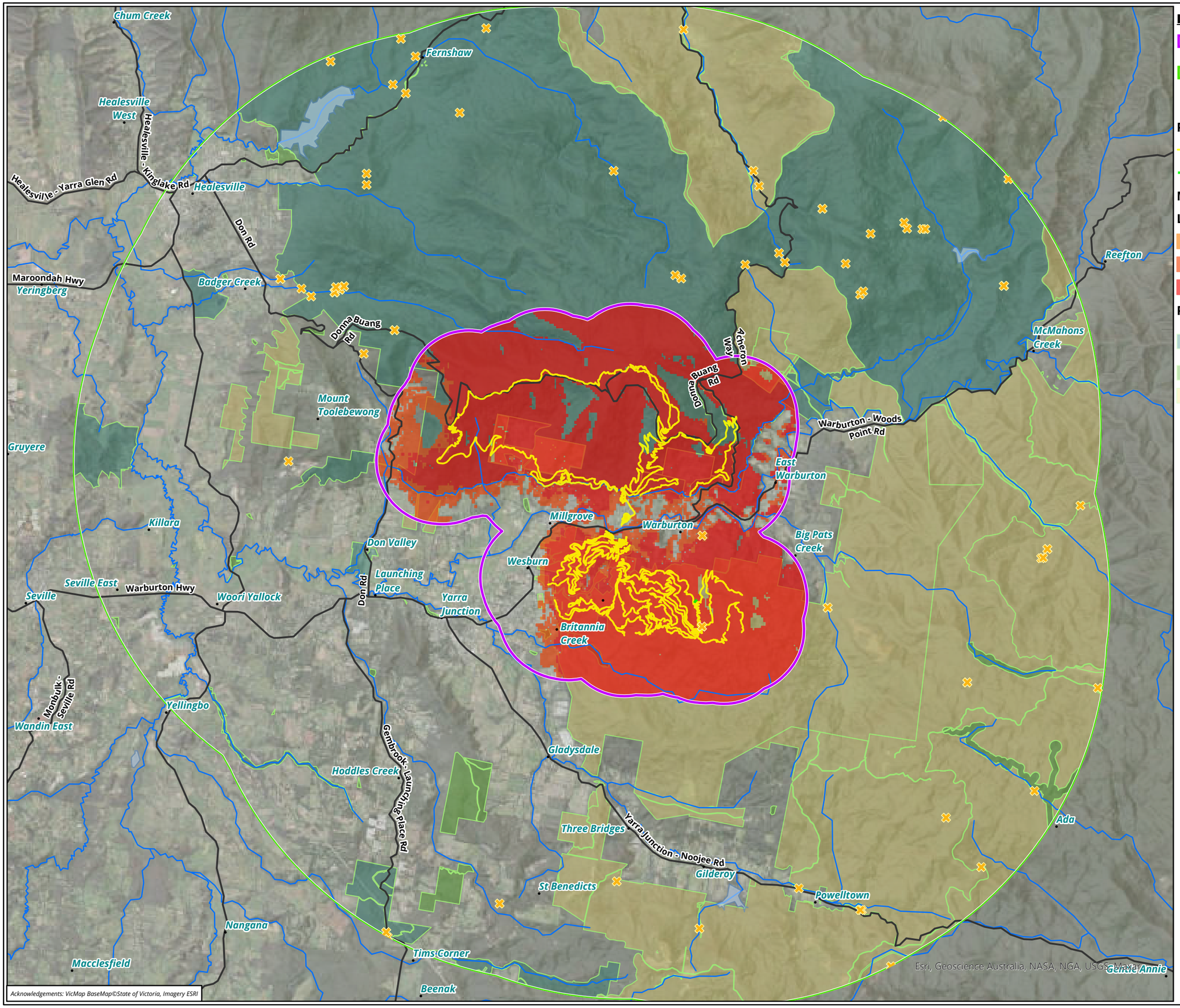

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA fauna record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.27 Significant species Habitat Importance Map (HIM) - Sooty Owl (*Tyto tenebricosa*)

Taxon ID - 010253

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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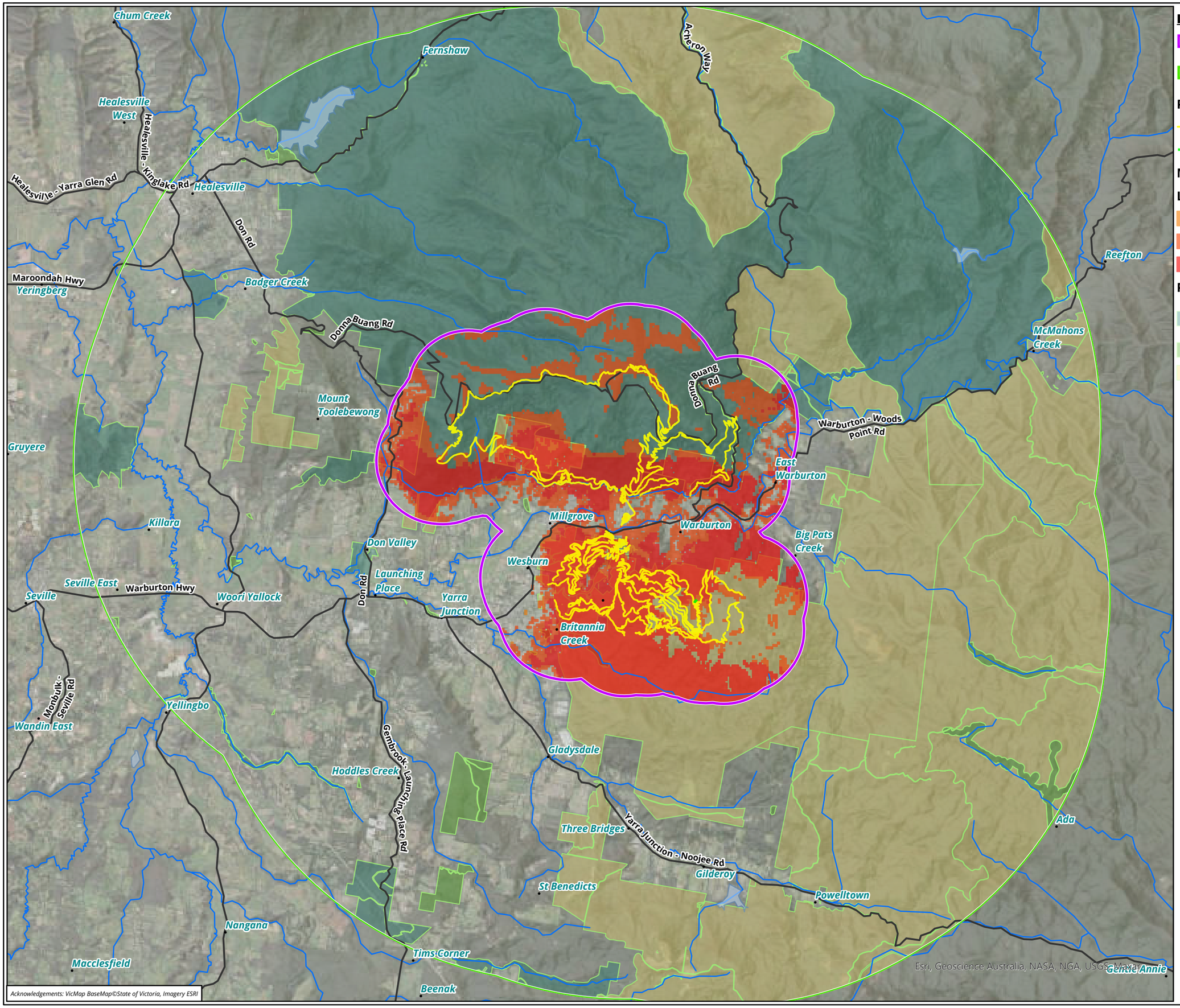

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.28 Significant species Habitat Importance Map (HIM) - Lace Monitor (*Vara varius*)

Taxon ID - 012283

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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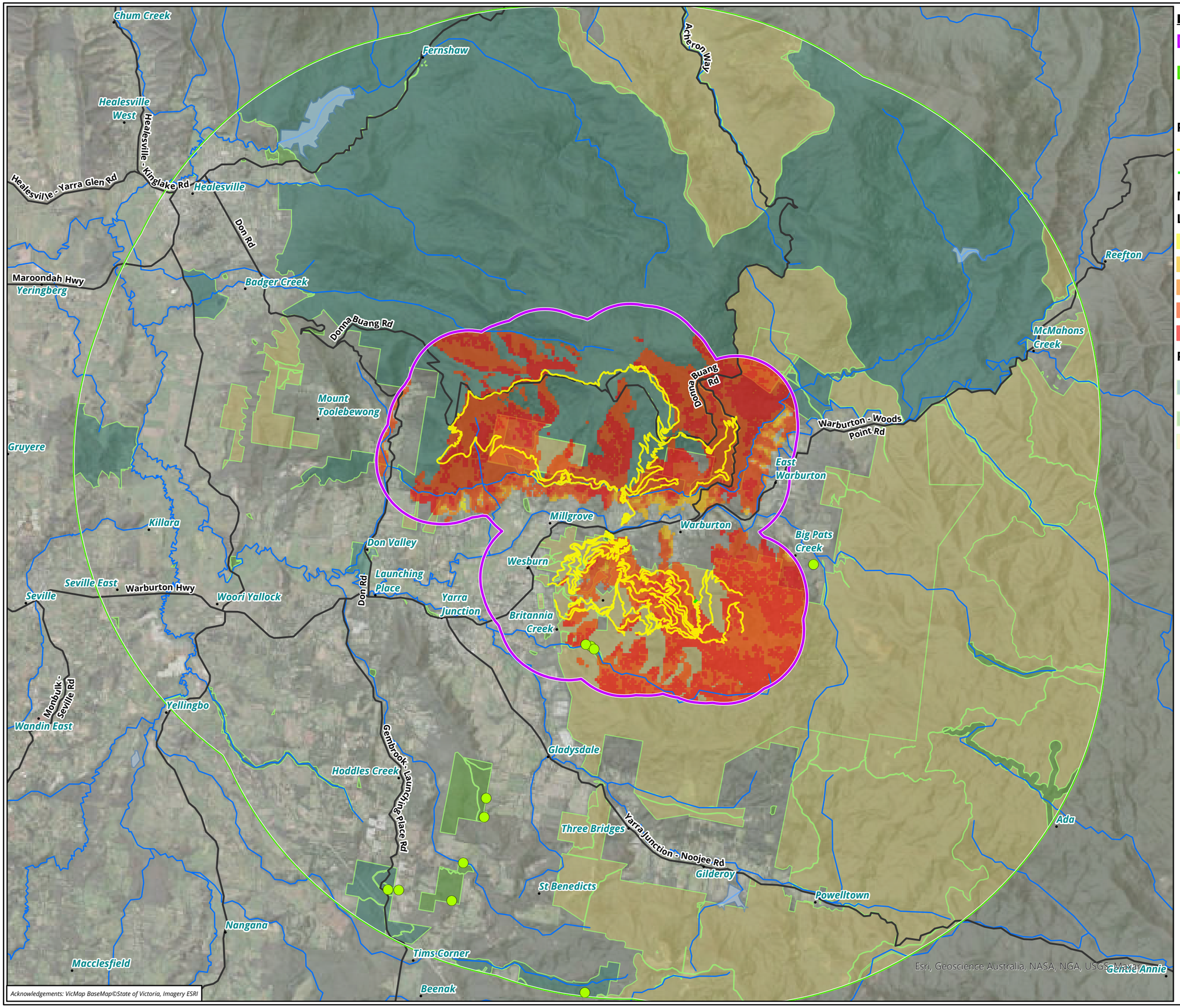

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.29 Significant species Habitat Importance Map (HIM) - Jungle Bristle-fern (*Abrodictyum caudatum*)

Taxon ID - 502094

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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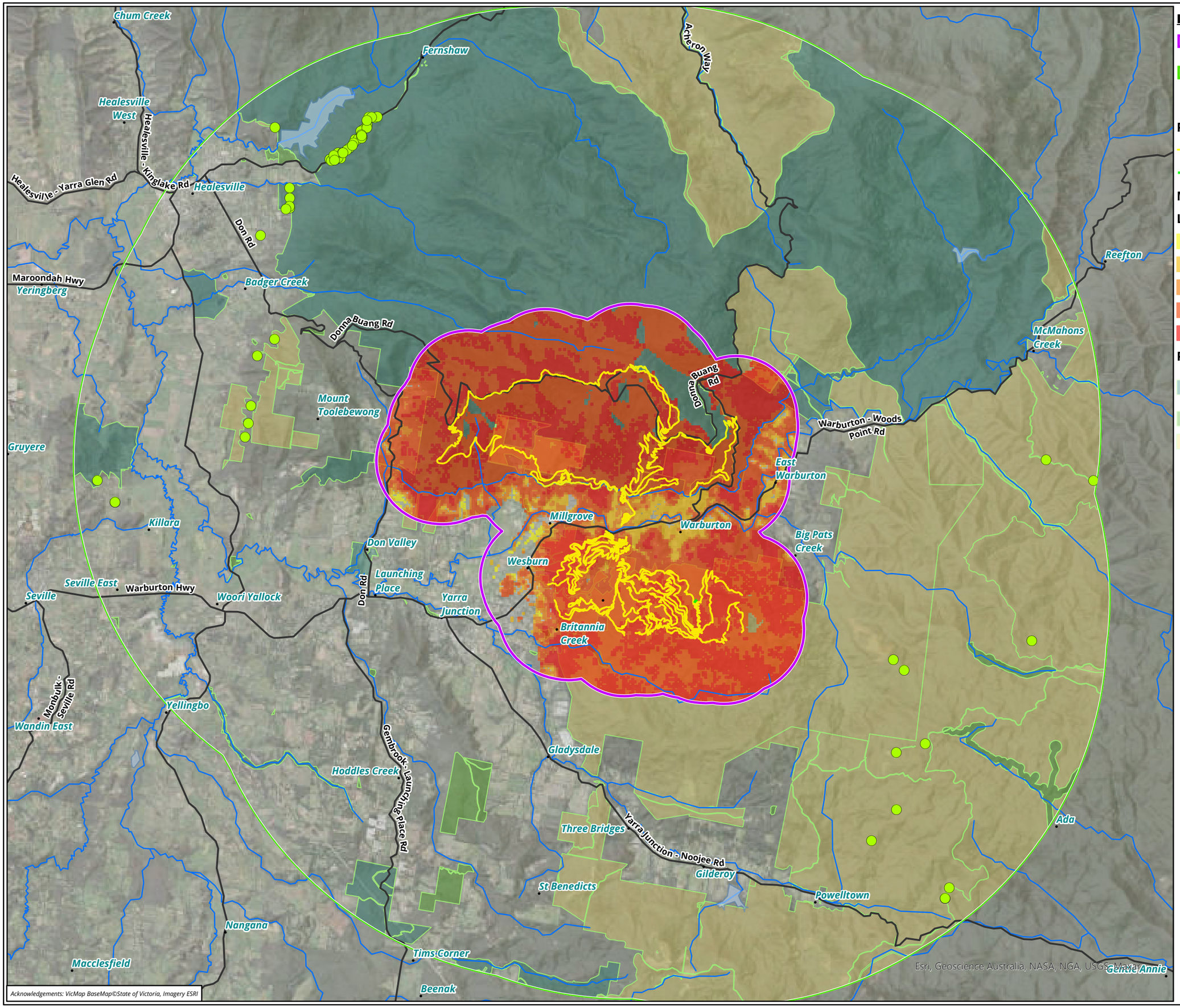

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.30 Significant species Habitat Importance Map (HIM) - Large-leaf Cinnamon-wattle (*Acacia leprosa var. uninervia*)

Taxon ID - 505141

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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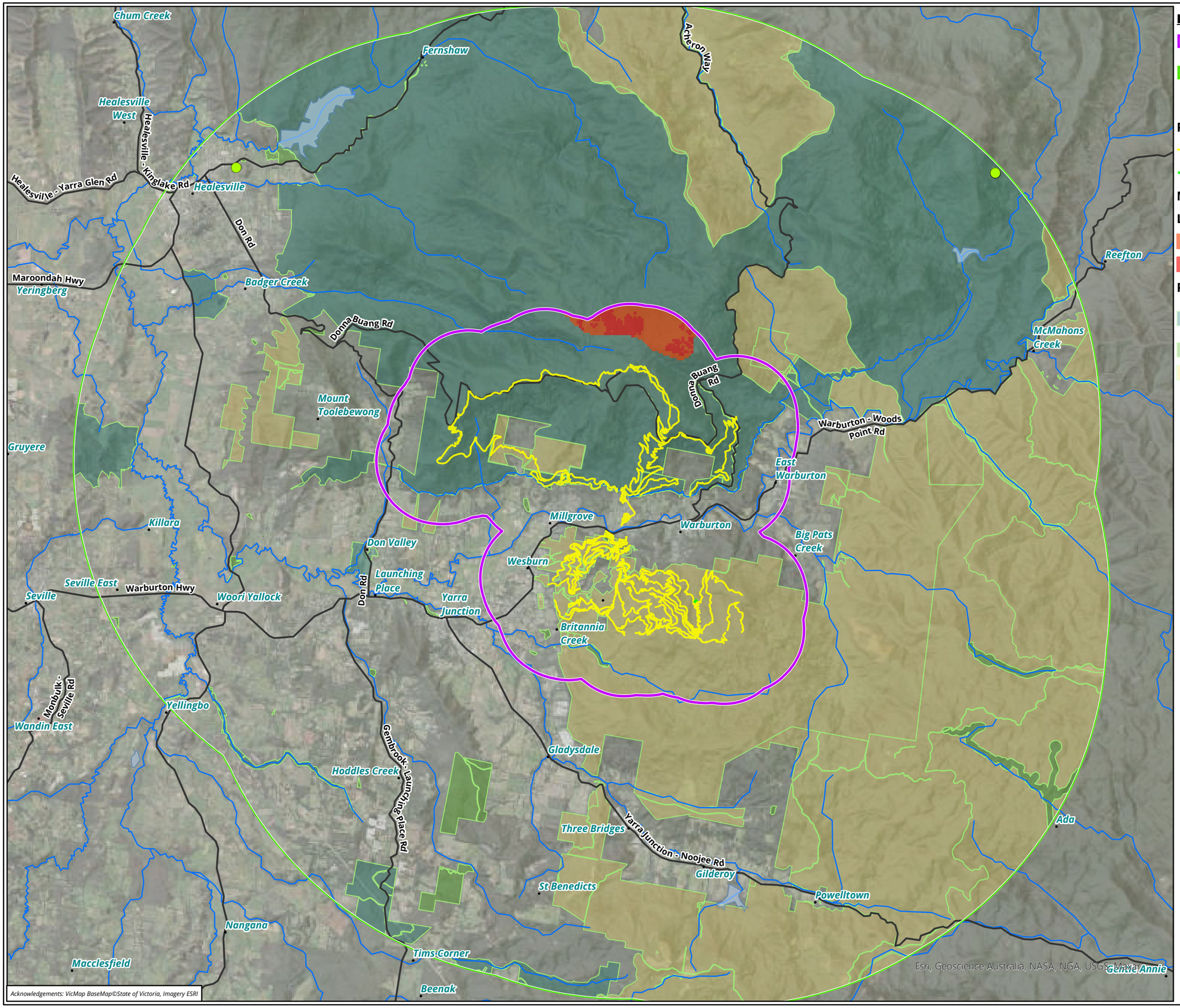

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.31 Significant species Habitat Importance Map (HIM) - Dwarf Silver-wattle (*Acacia nanodealbata*)

Taxon ID - 500064

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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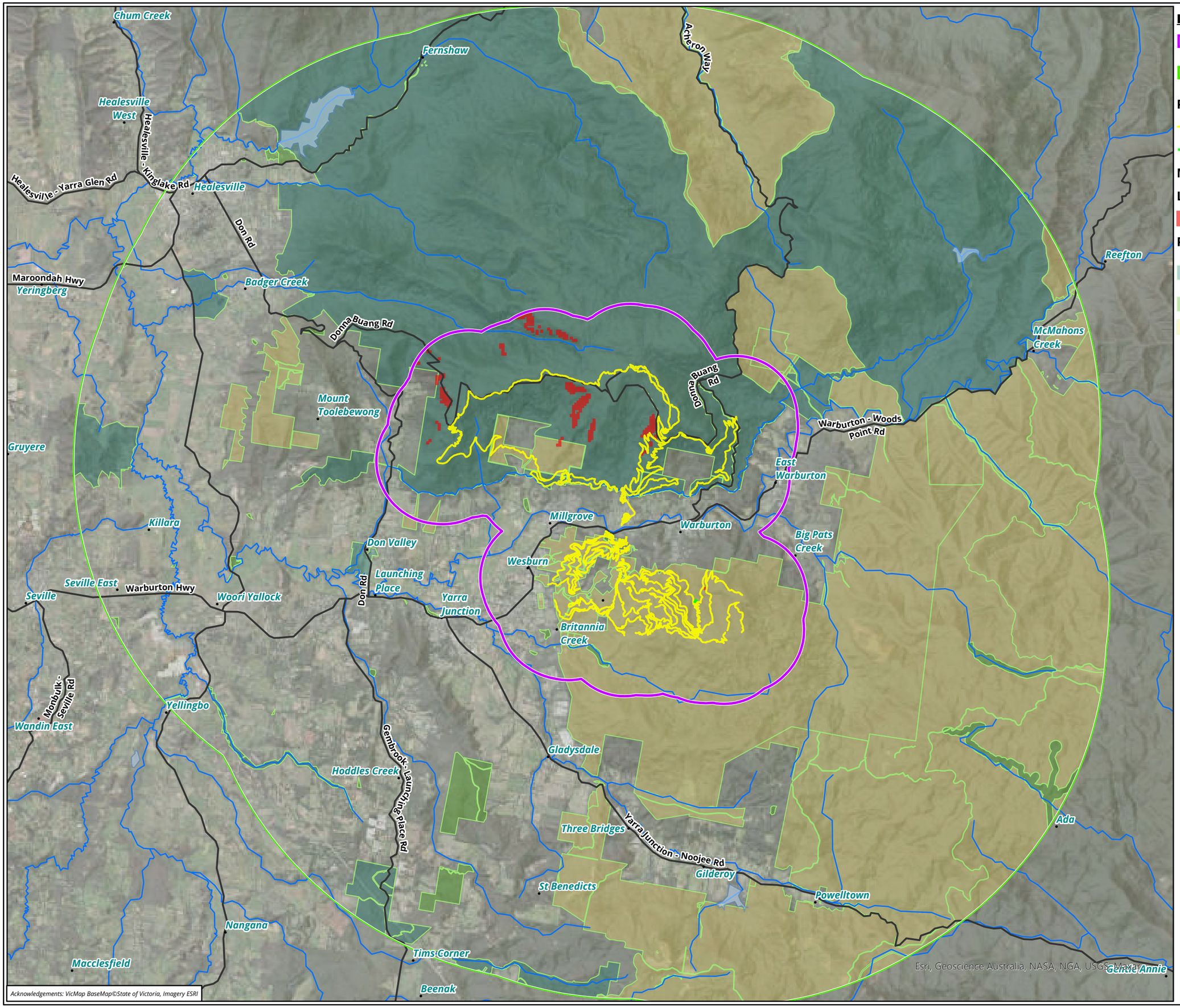

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.32 Significant species Habitat Importance Map (HIM) - Grey Pouchwort (*A cinerascens*)

Taxon ID - 506010

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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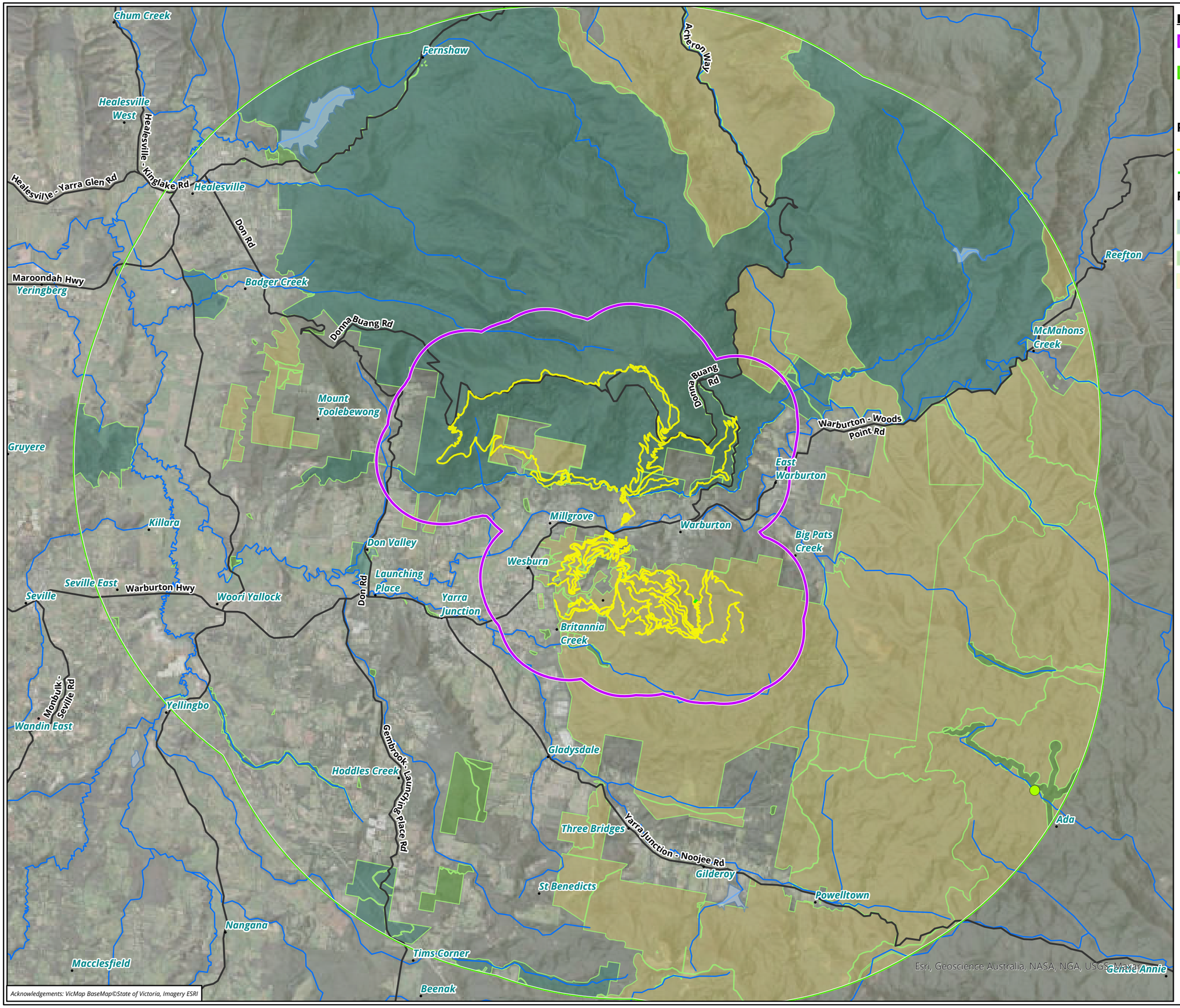

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.33 Significant species Habitat Importance Map (HIM) - Twin-tooth Featherwort (*Adelanthus bisetulus*)

Taxon ID - 506017

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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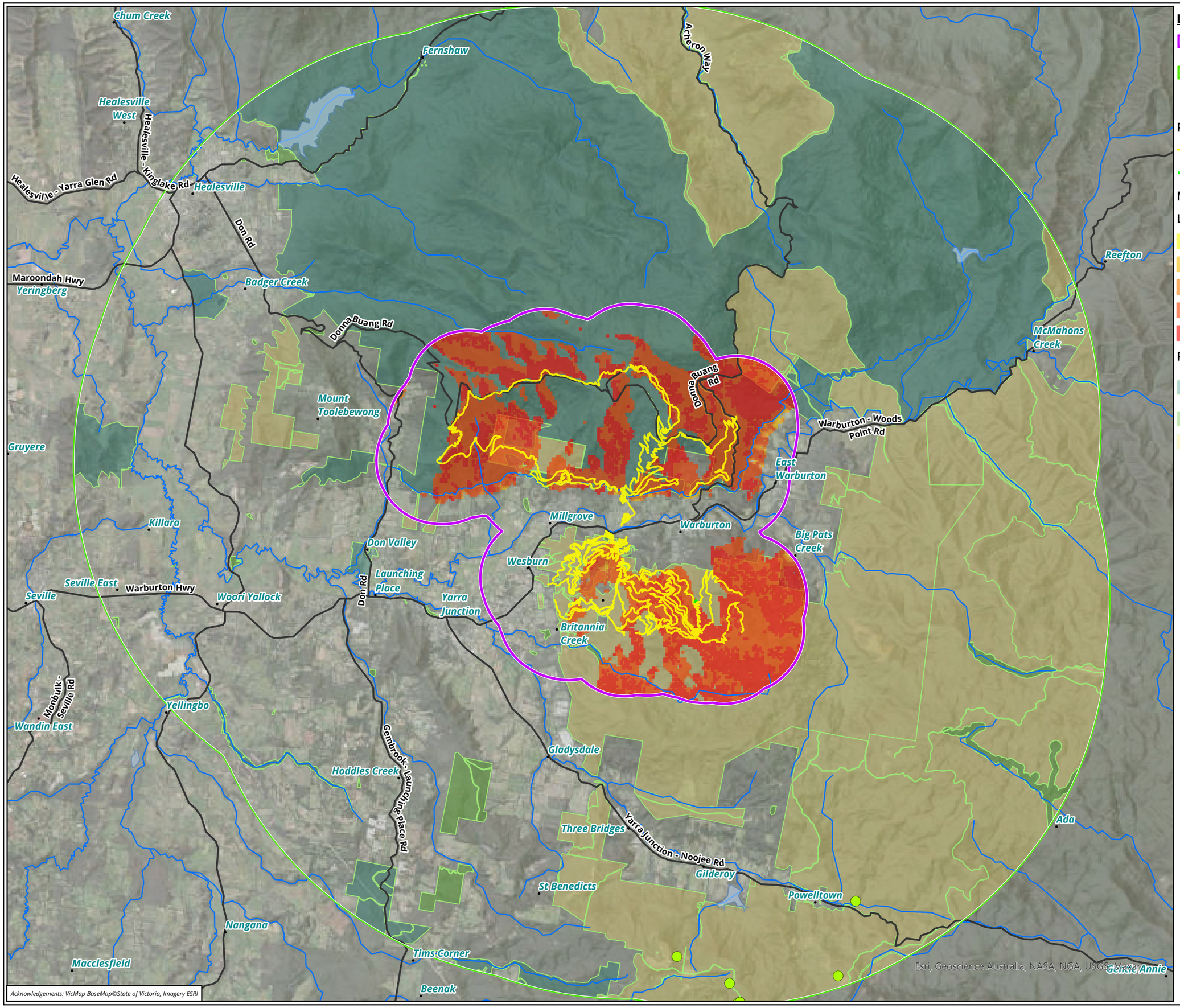

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.34 Significant species Habitat Importance Map (HIM) - Tall Astelia (*Astelia australiana*)

Taxon ID - 500296

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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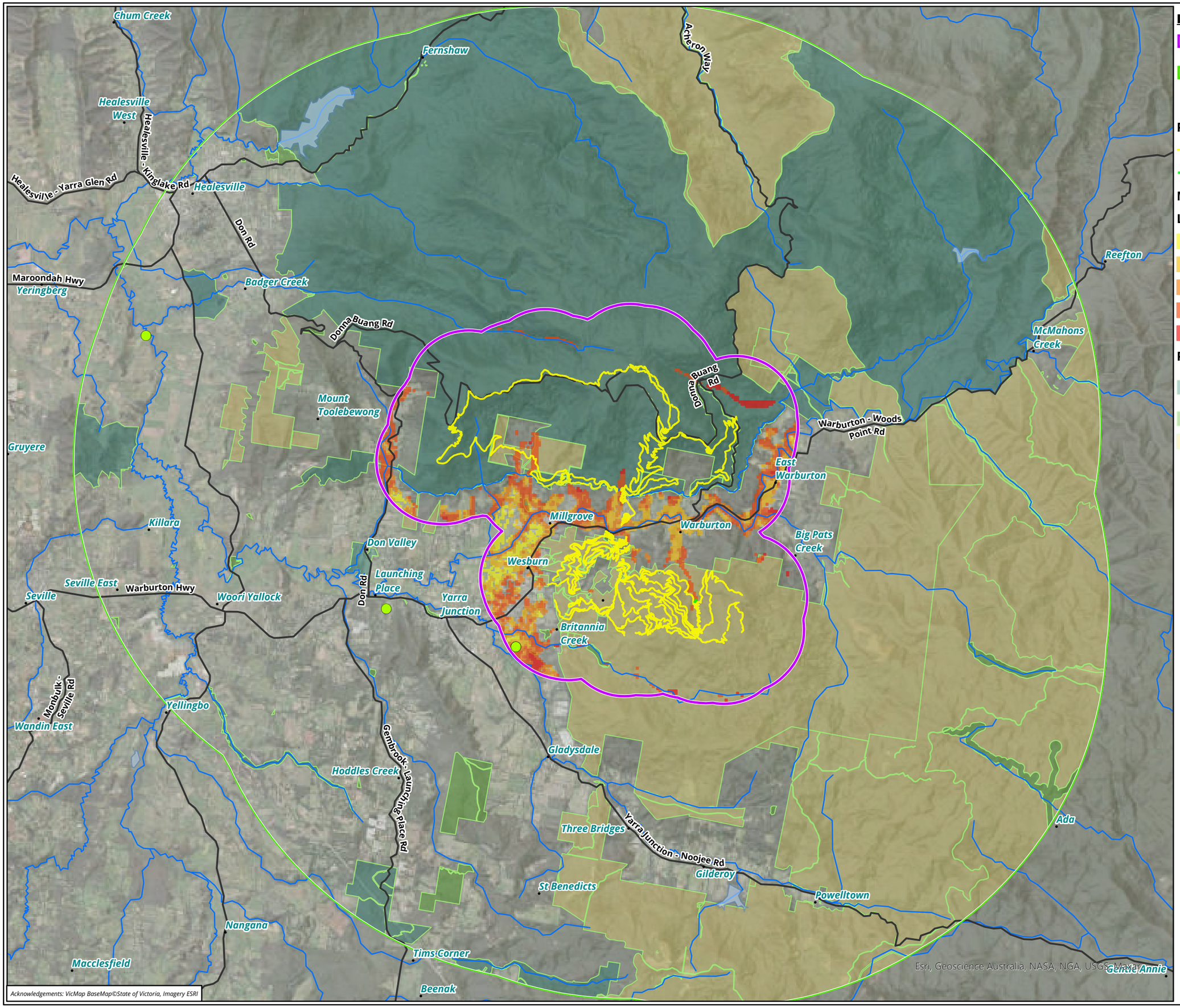

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.35 Significant species Habitat Importance Map (HIM) - Veined Spear-grass (*Austrostipa rudis subsp. australis*)

Taxon ID - 504940

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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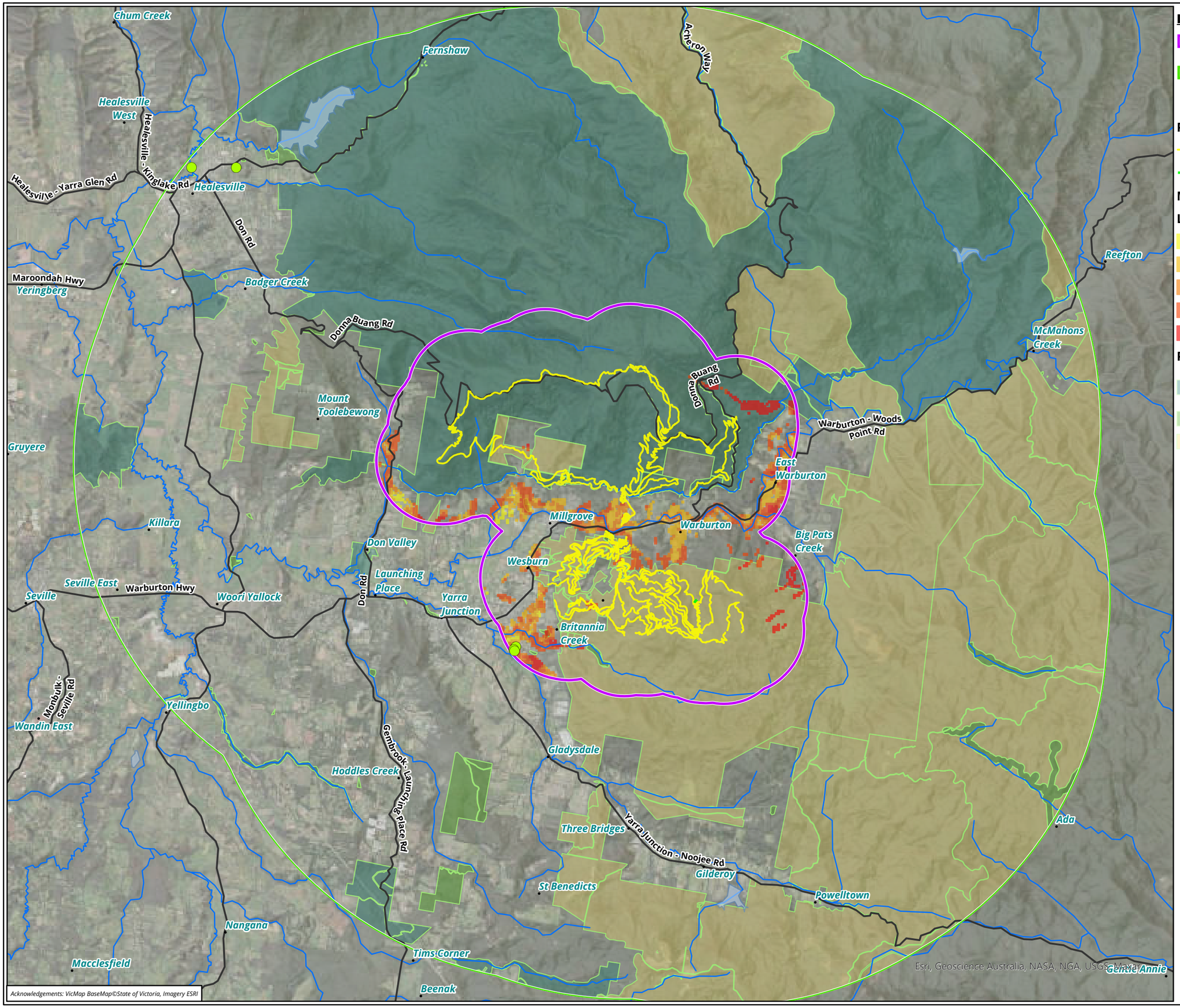

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.36 Significant species Habitat Importance Map (HIM) - Wiry Bossiaea (*Boss cordigera*)

Taxon ID - 500435

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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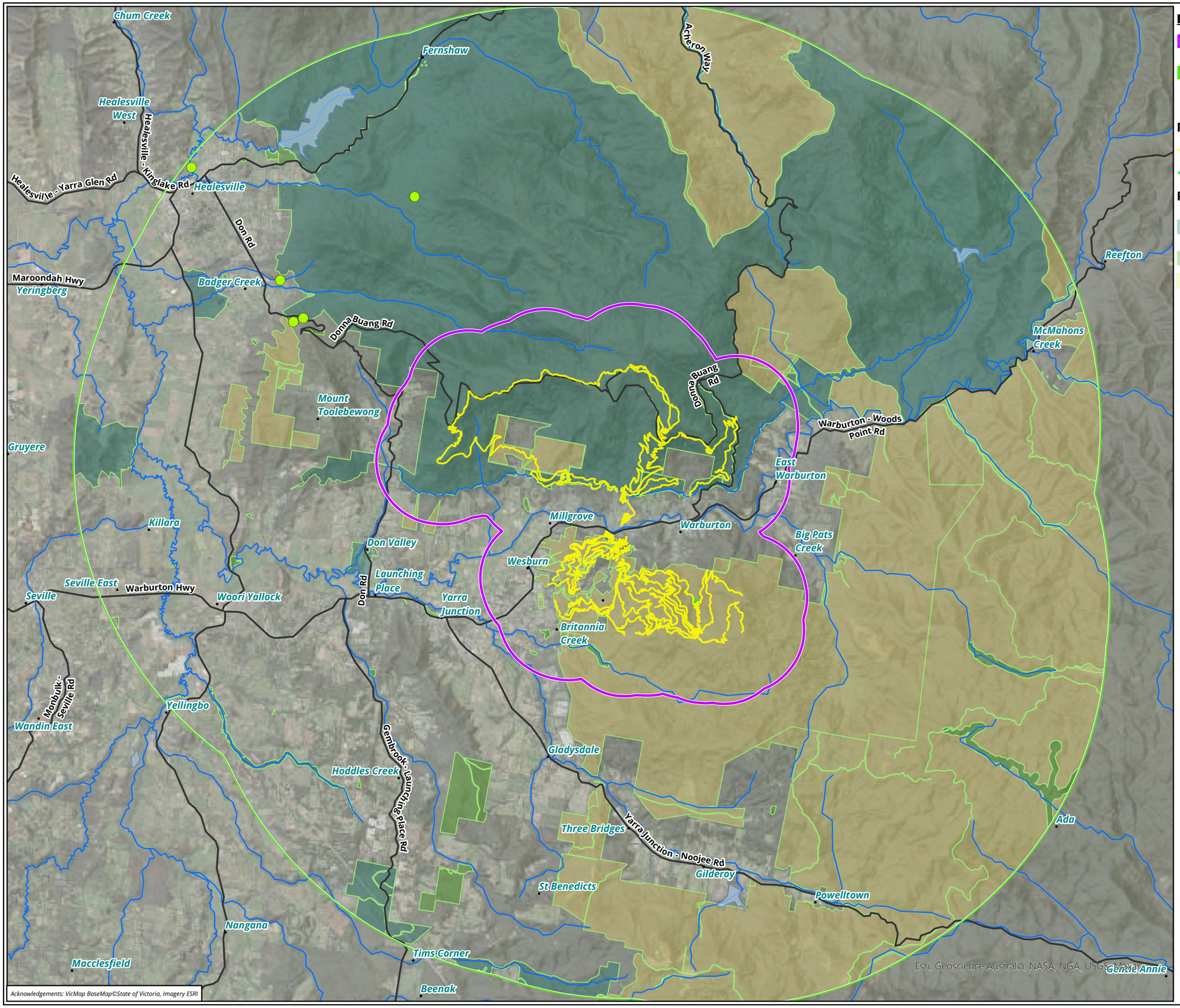

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.37 Significant species Habitat Importance Map (HIM) - Christmas Spider-orchid (*Caladenia flavovirens*)

Taxon ID - 500541

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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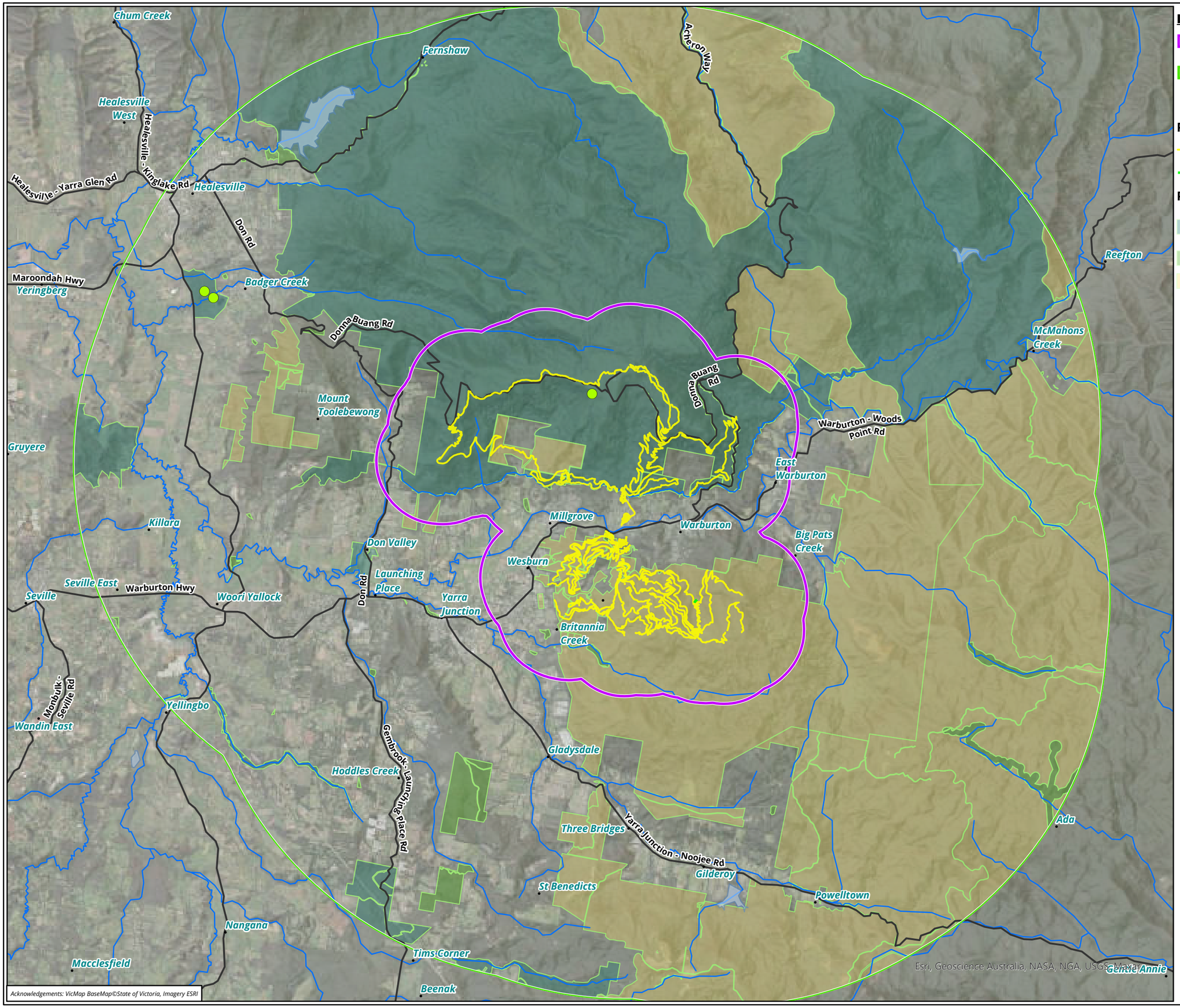

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.38 Significant species Habitat Importance Map (HIM) - Naked Beard-orchid (*Calochilus imberbis*)

Taxon ID - 503670

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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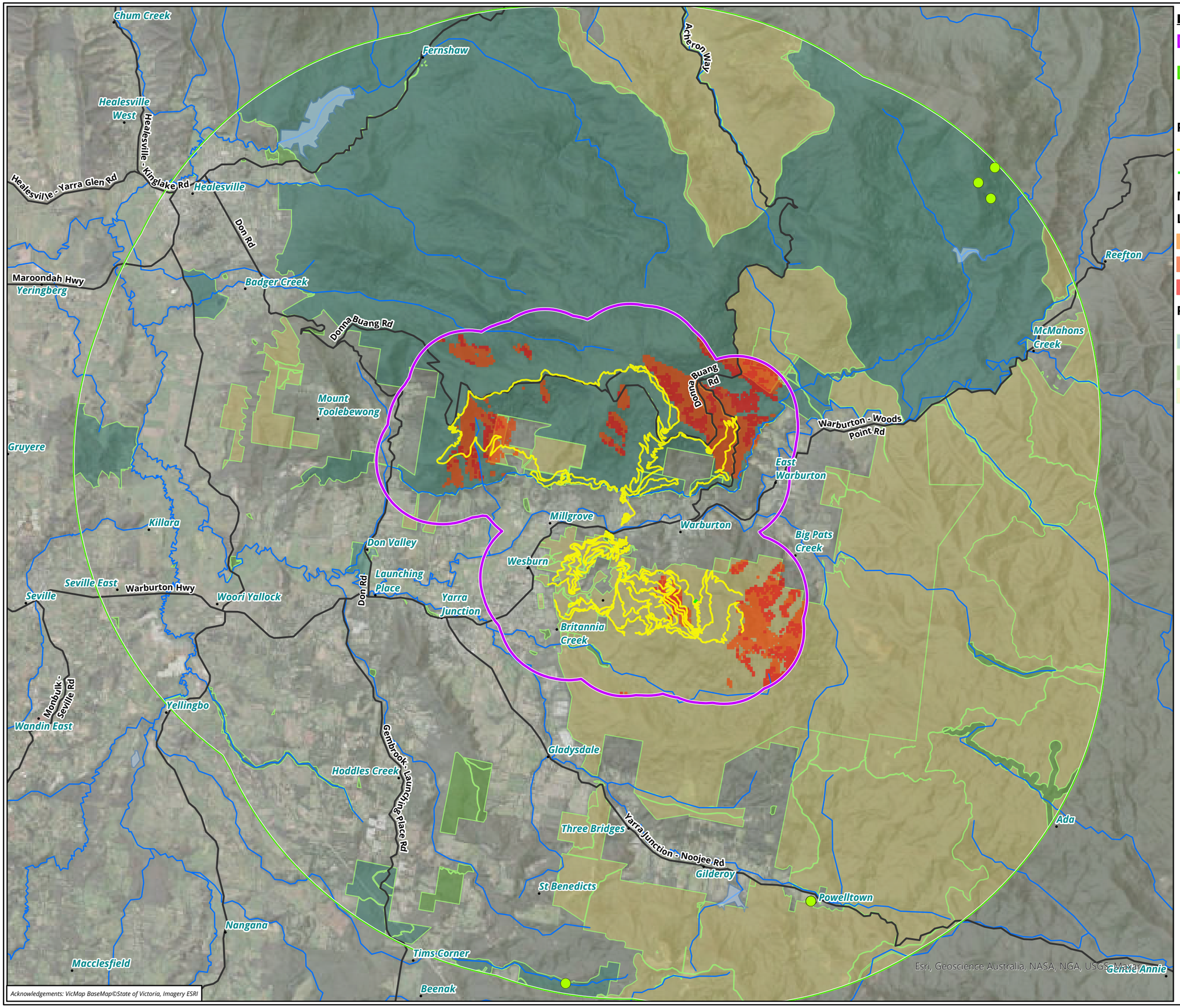

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.39 Significant species Habitat Importance Map (HIM) - Brown's Mitre-moss (*Calyptrochaeta brownii*)

Taxon ID - 506252

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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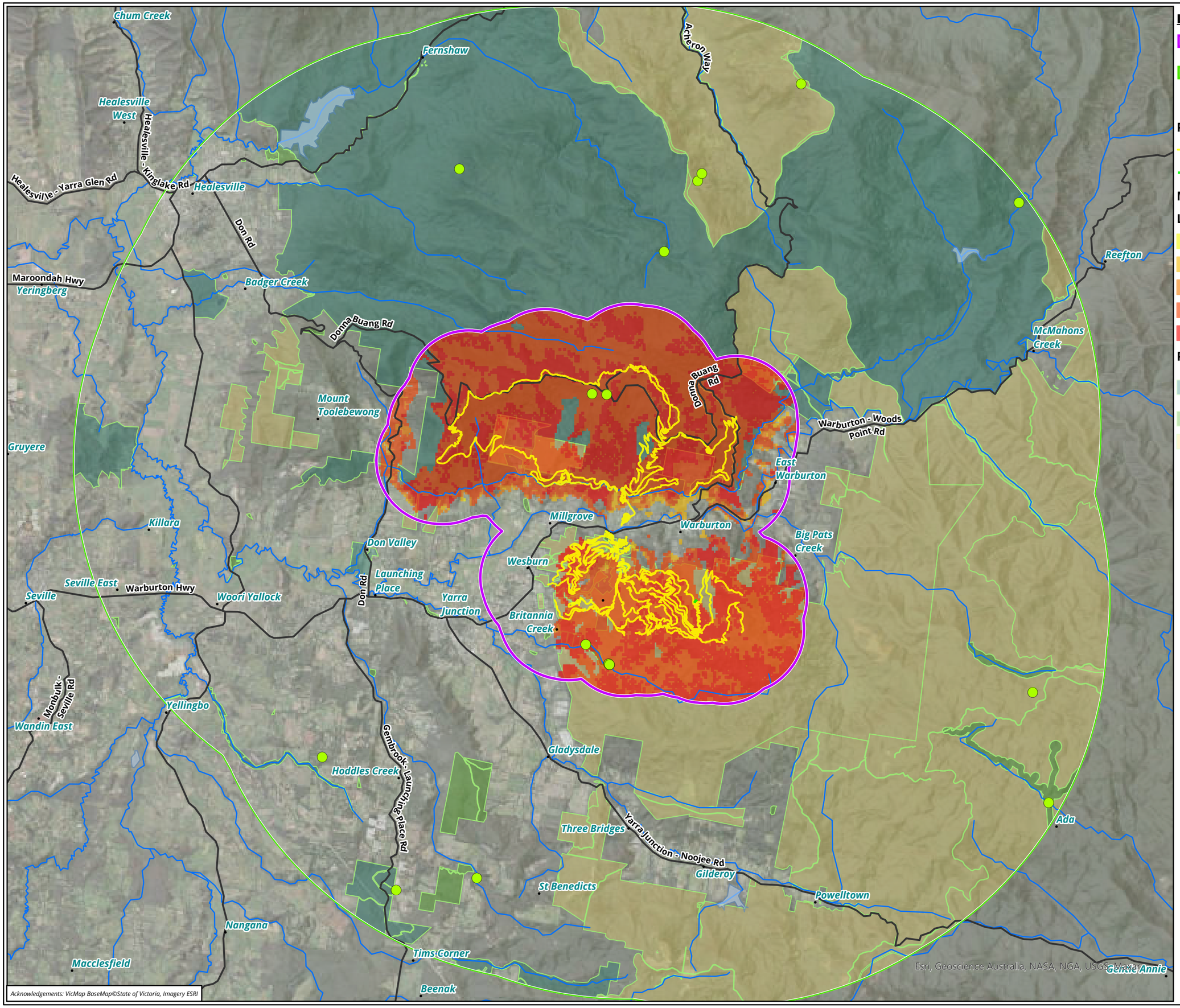

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.40 Significant species Habitat Importance Map (HIM) - Forest Sedge (*Carex alsophila*)

Taxon ID - 500622

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

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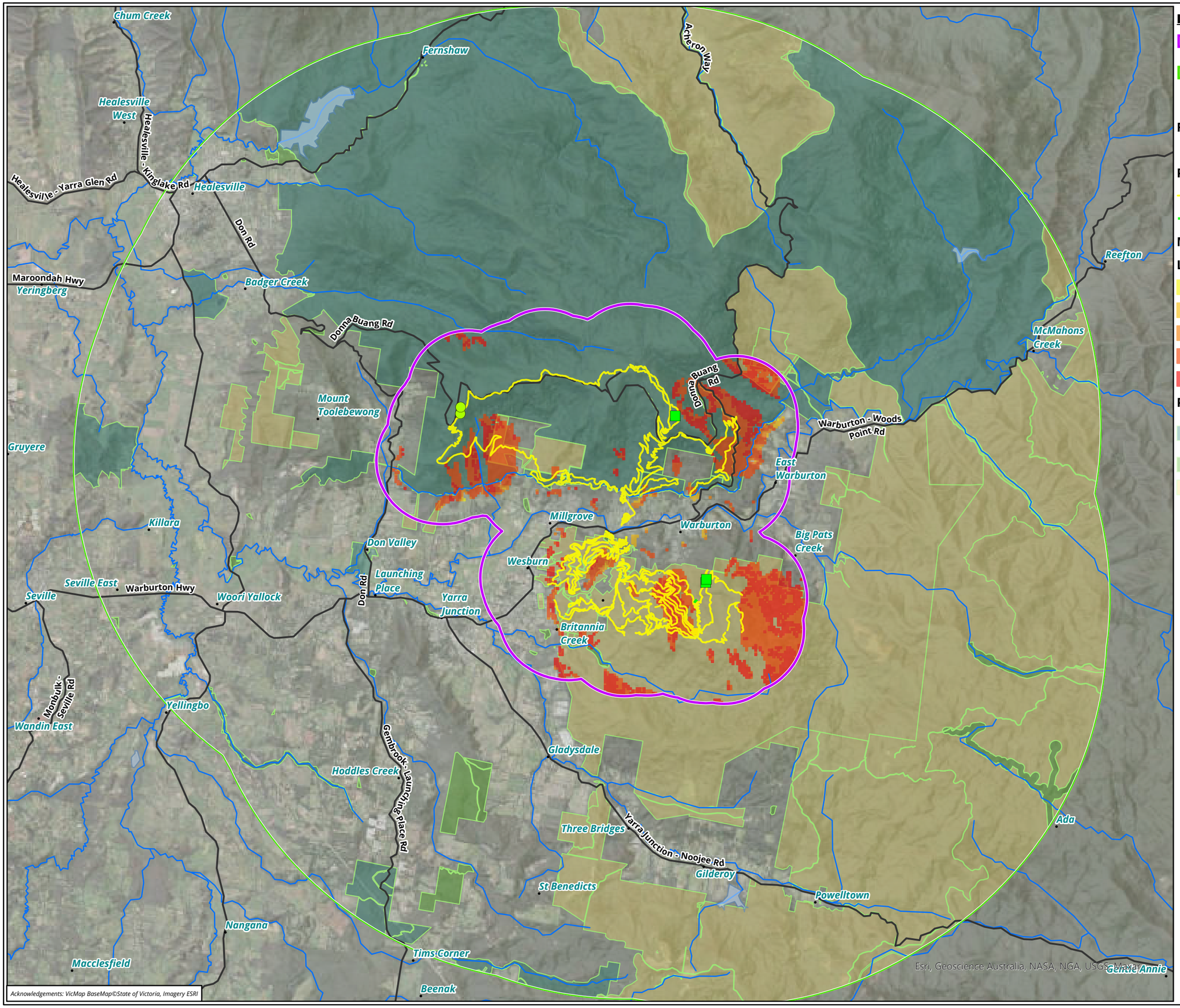

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.41 Significant species Habitat Importance Map (HIM) - Mountain Bird-orchid (*Chiloglottis jeanesii*)

Taxon ID - 504499

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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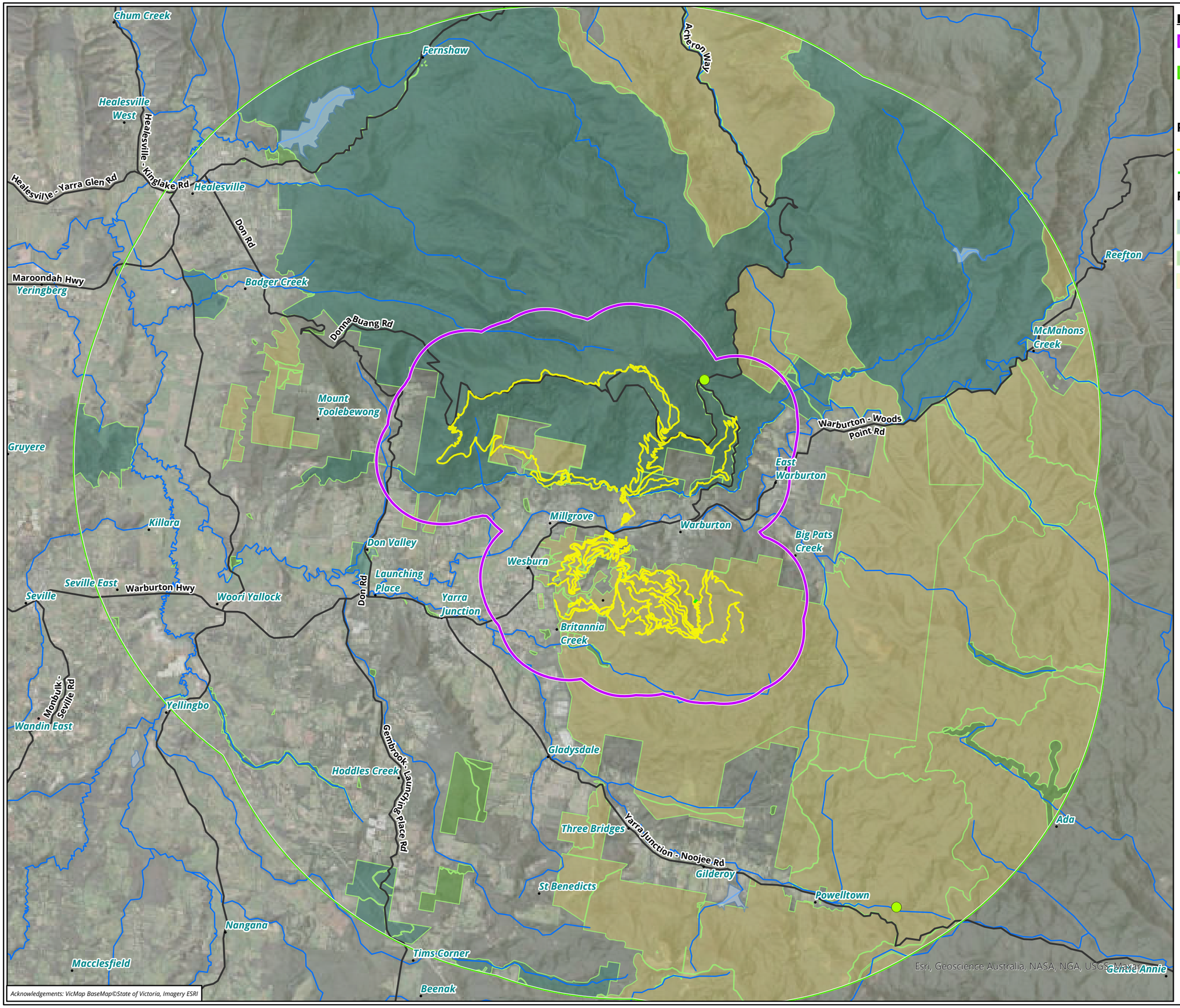

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.42 Significant species Habitat Importance Map (HIM) - Two-tone Vibrissea (*Chlorovibrissea bicolor*)

Taxon ID - 507604

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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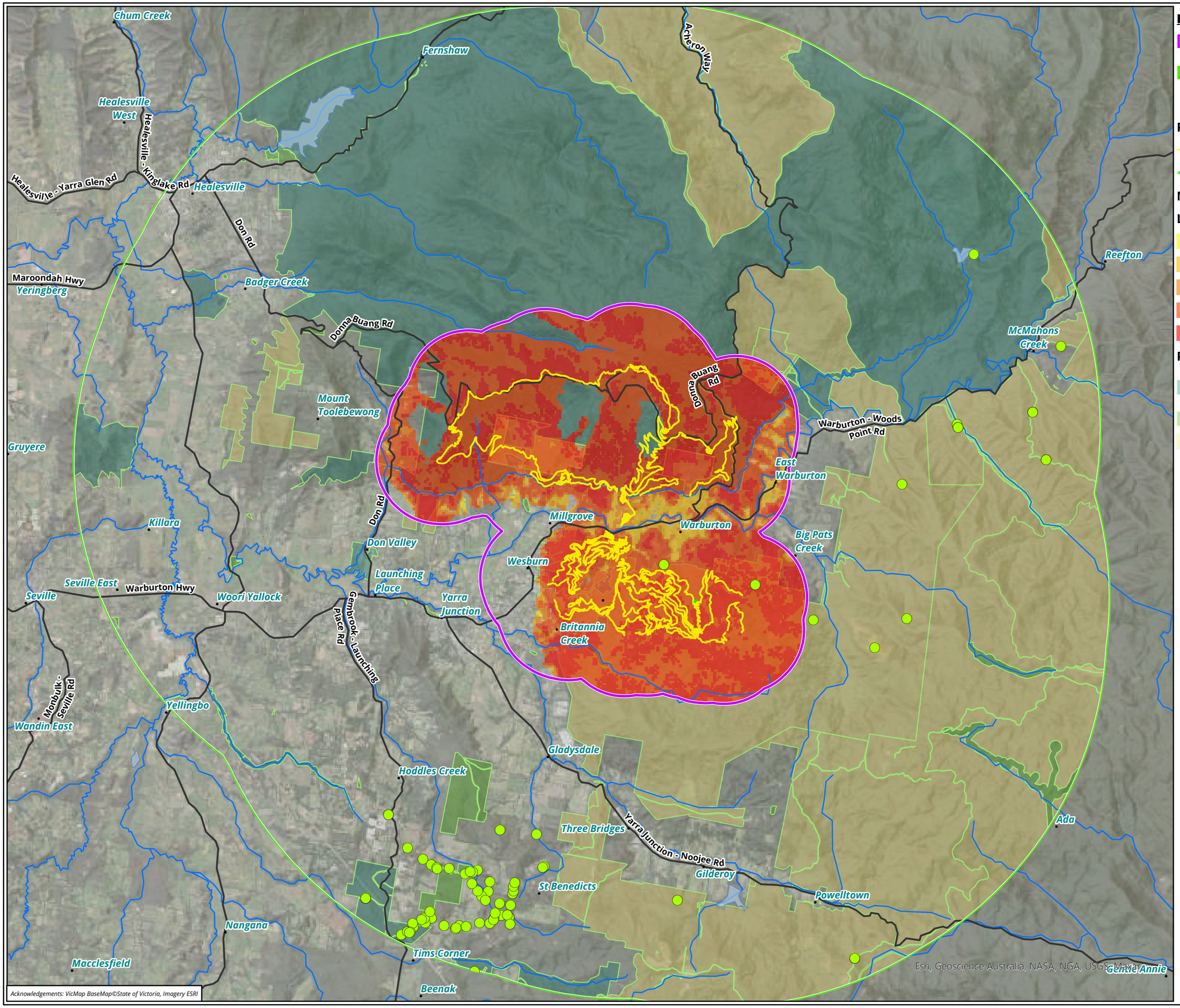

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.43 Significant species Habitat Importance Map (HIM) - Powelltown Correa (*Correa reflexa var. lobata*)

Taxon ID - 505404

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

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Matter: #####, [CHMP],
Date: 09 September 2021 ,
Prepared for: [Consultant], Prepared by: [GIS], Last edited by: lmilne
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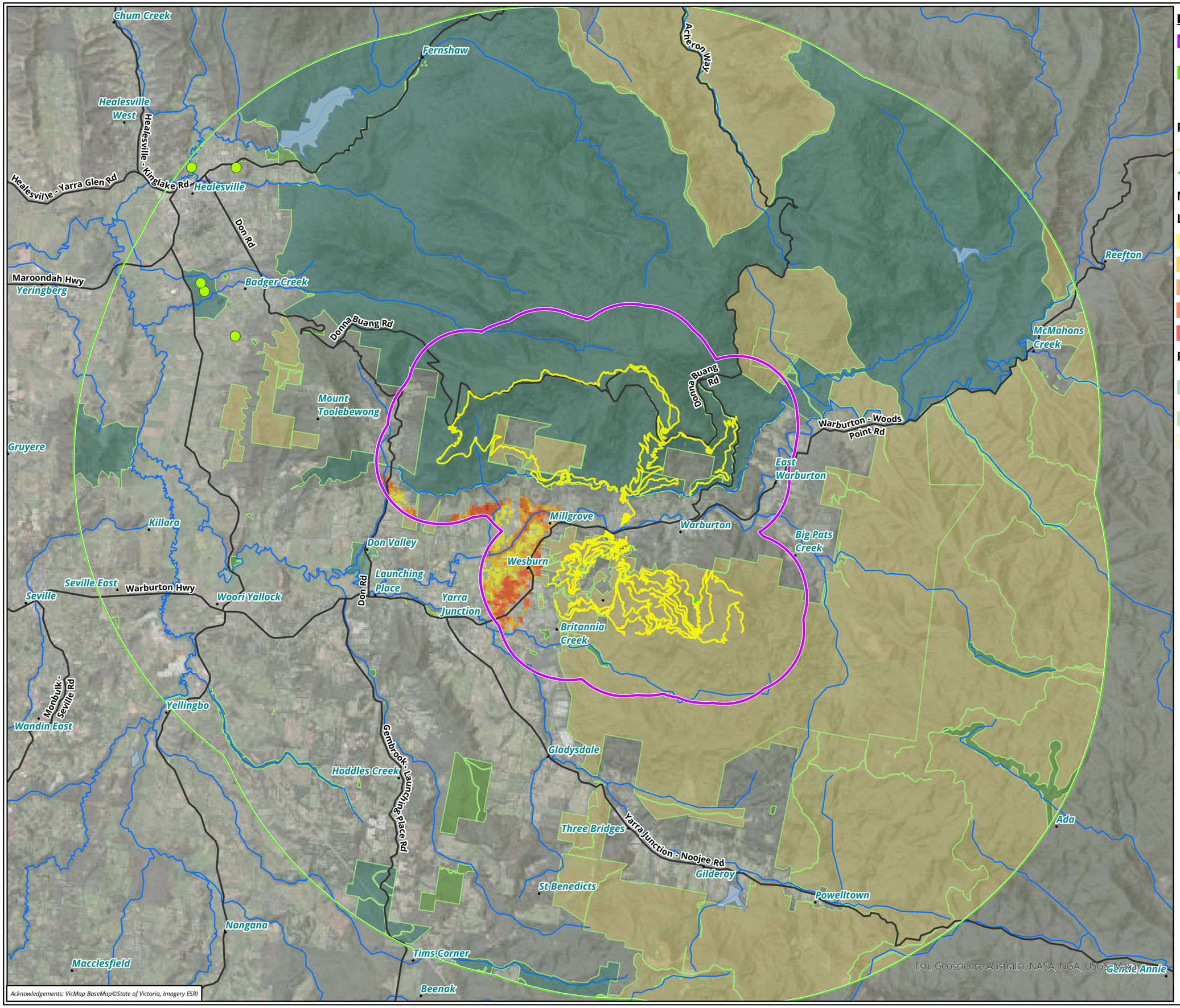

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.44 Significant species Habitat Importance Map (HIM) - Spurred Helmet-orchid (*Corybas aconitiflorus*)

Taxon ID - 500835

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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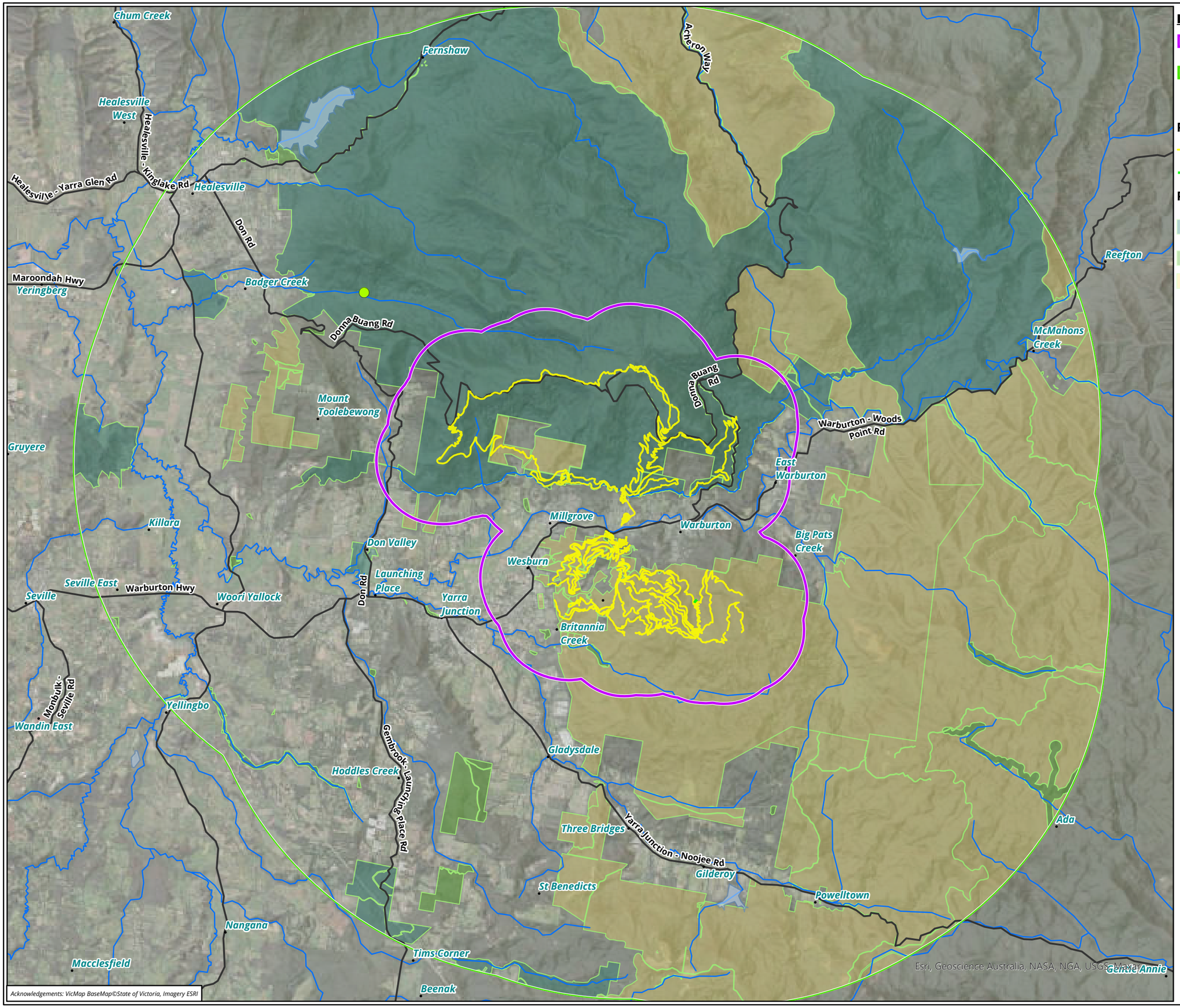

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.45 Significant species Habitat Importance Map (HIM) - Mountain Helmet-orchid (*Corybas grumulus*)

Taxon ID - 505622

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

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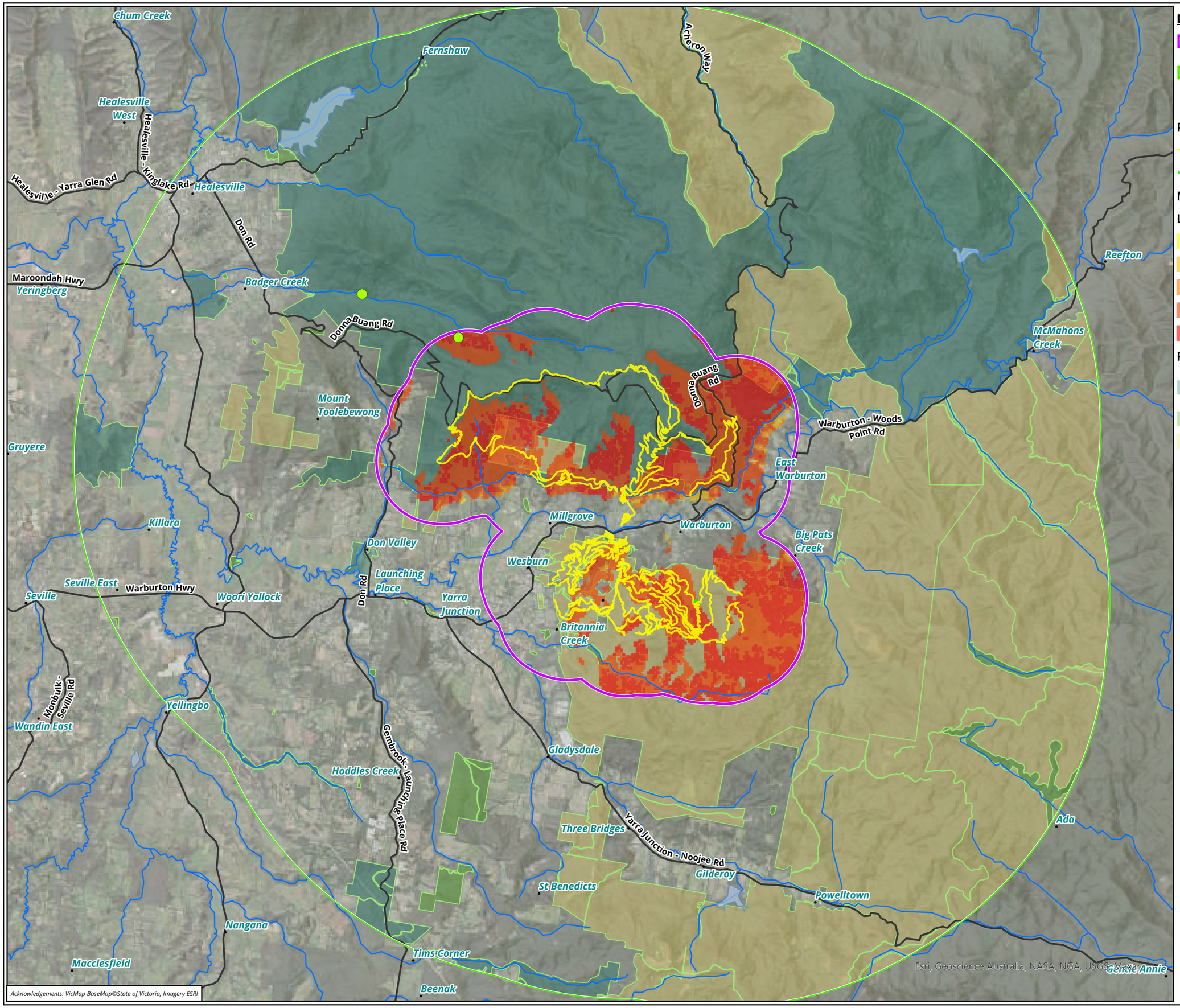

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.46 Significant species Habitat Importance Map (HIM) - Slender Tree-fern (*cunninghamii*)

Taxon ID - 500896

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

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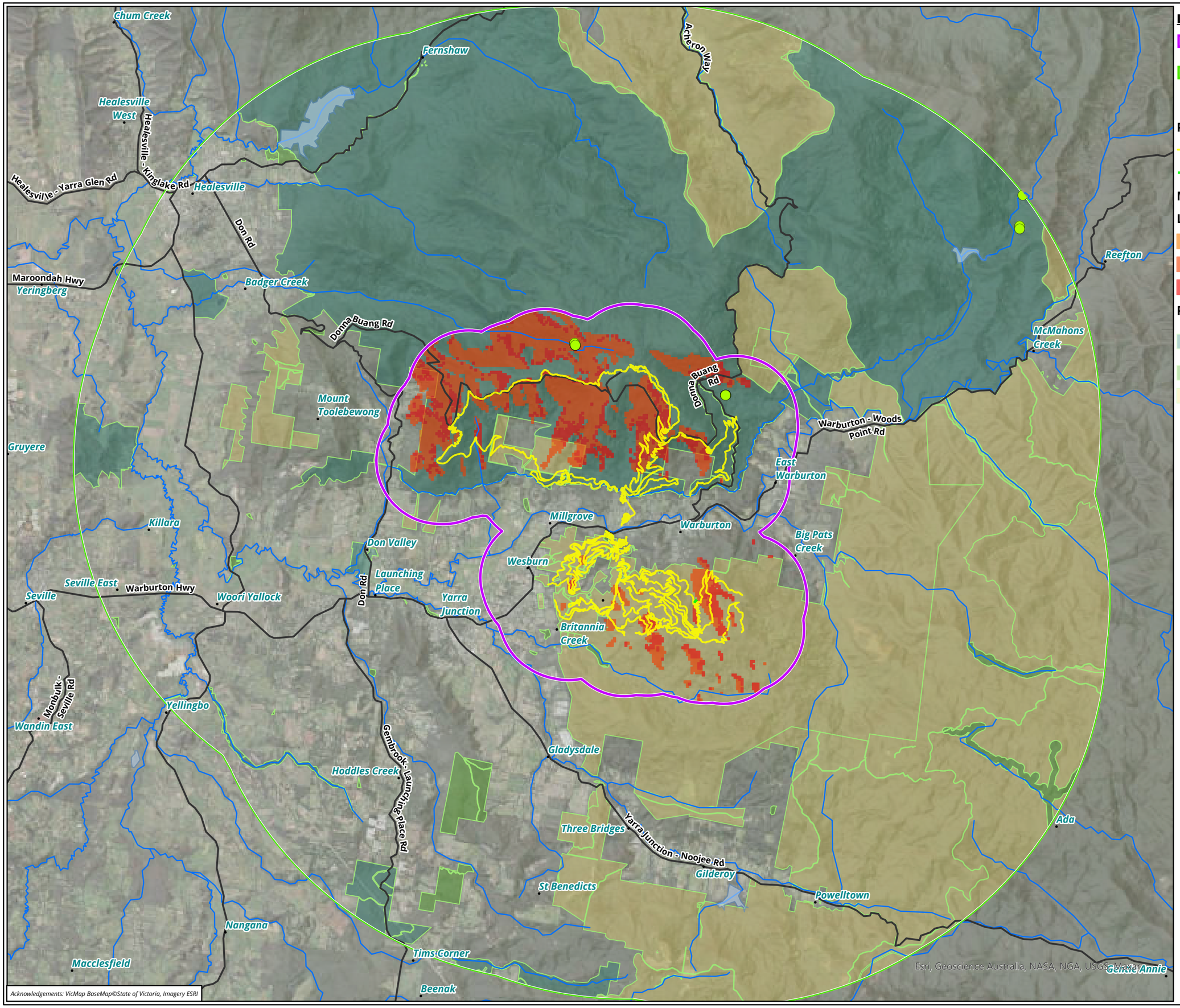

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.47 Significant species Habitat Importance Map (HIM) - Wavy Fork-moss (*D platycaulon*)

Taxon ID - 506754

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

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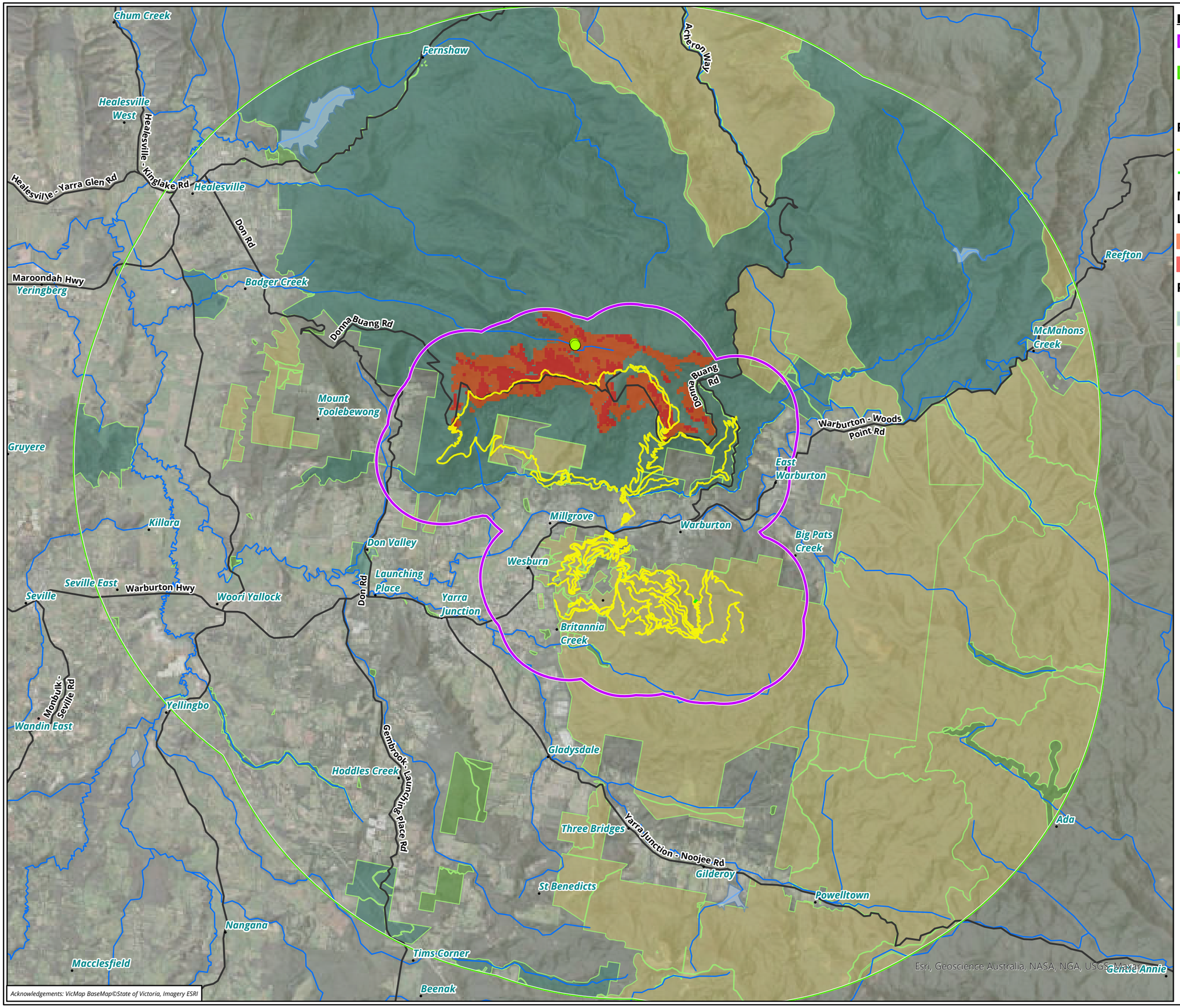

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.48 Significant species Habitat Importance Map (HIM) - Crisped Mitre-moss (*Distichophyllum crispulum*)

Taxon ID - 506219

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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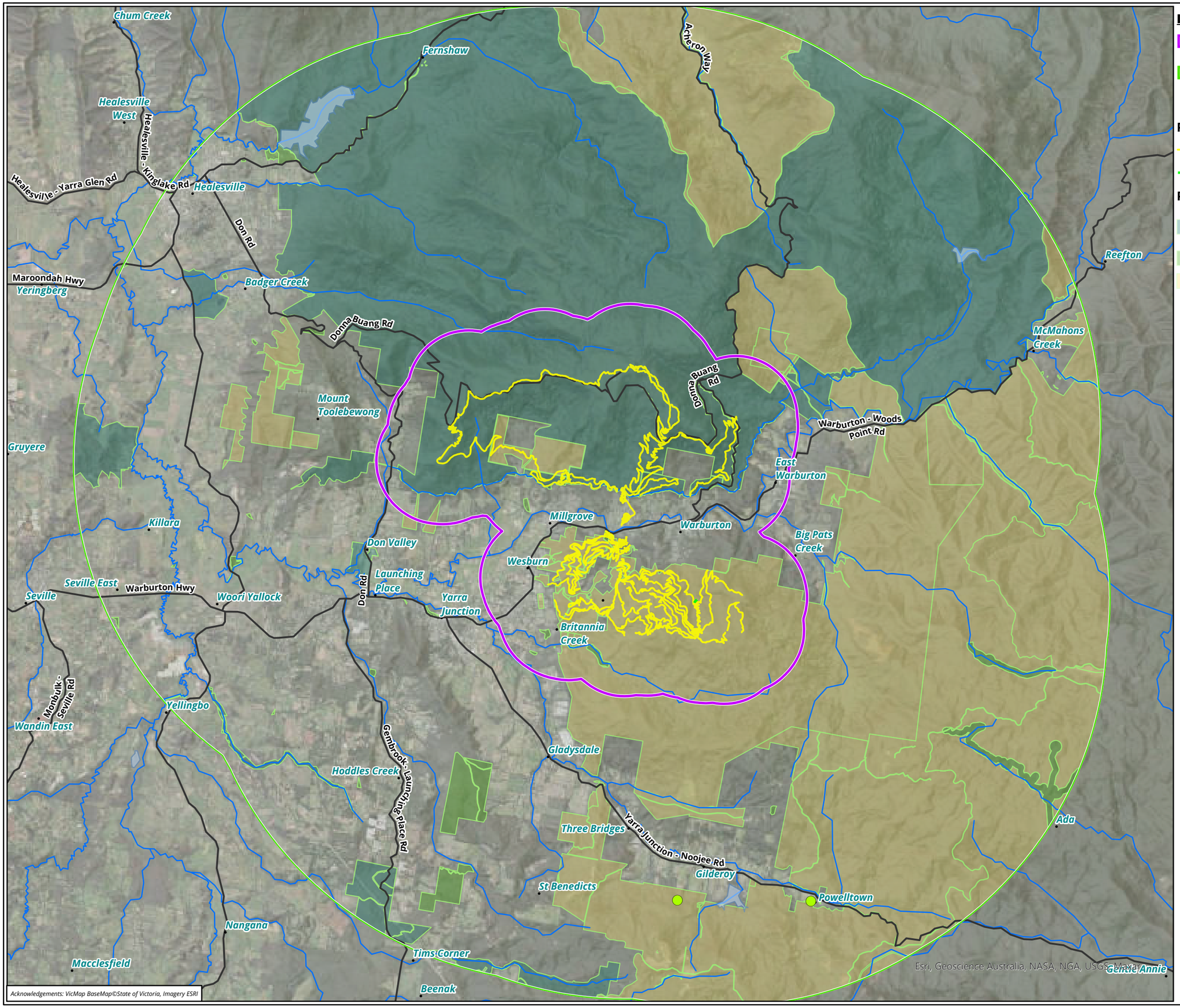

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.49 Significant species Habitat Importance Map (HIM) - Madeira Moss (*Echi hispidum*)

Taxon ID - 506238

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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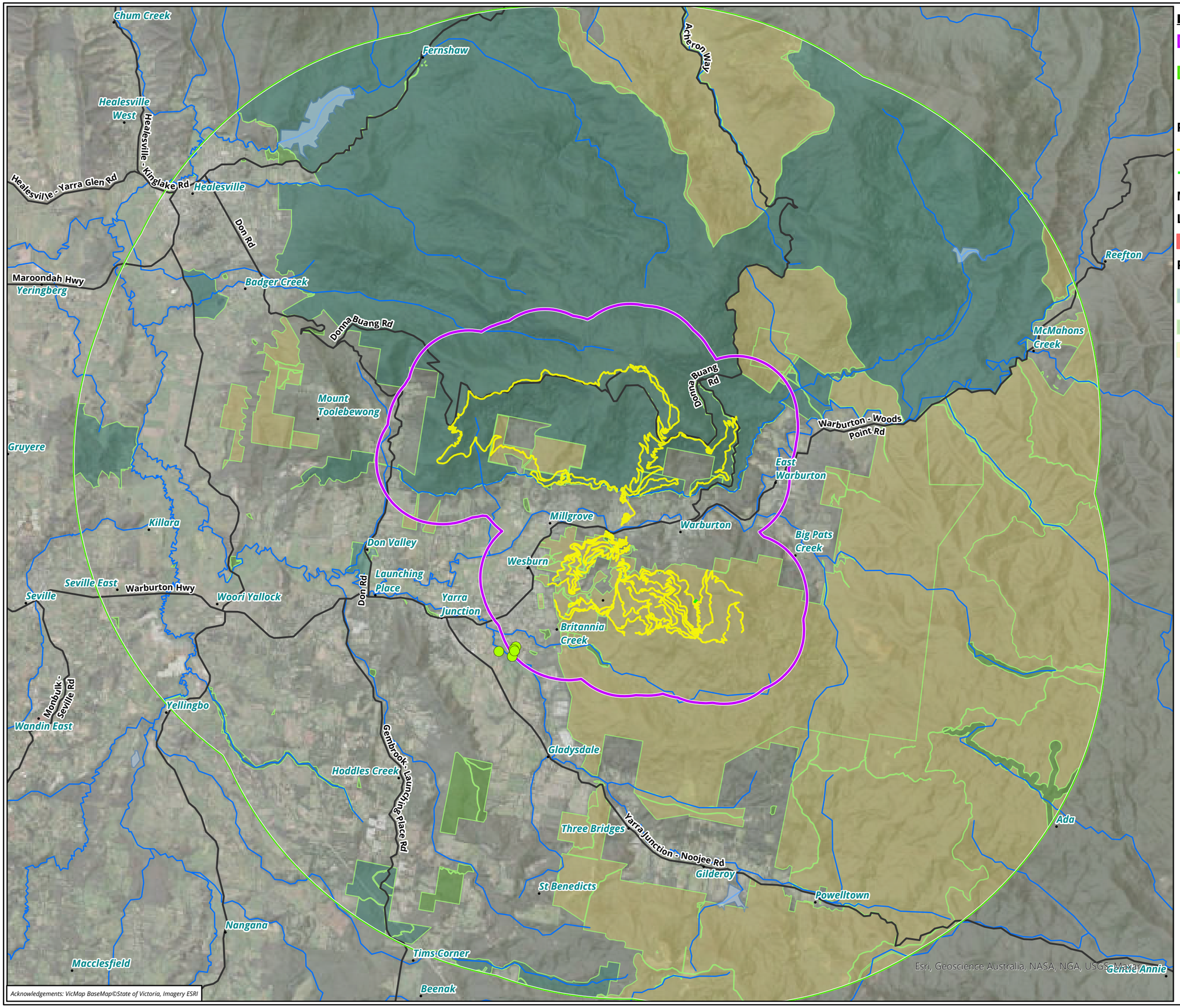

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.50 Significant species Habitat Importance Map (HIM) - Upper Yarra Swamp-gum (*Eucalyptus aff. camphora (Upper Yarra)*)

Taxon ID - 507688

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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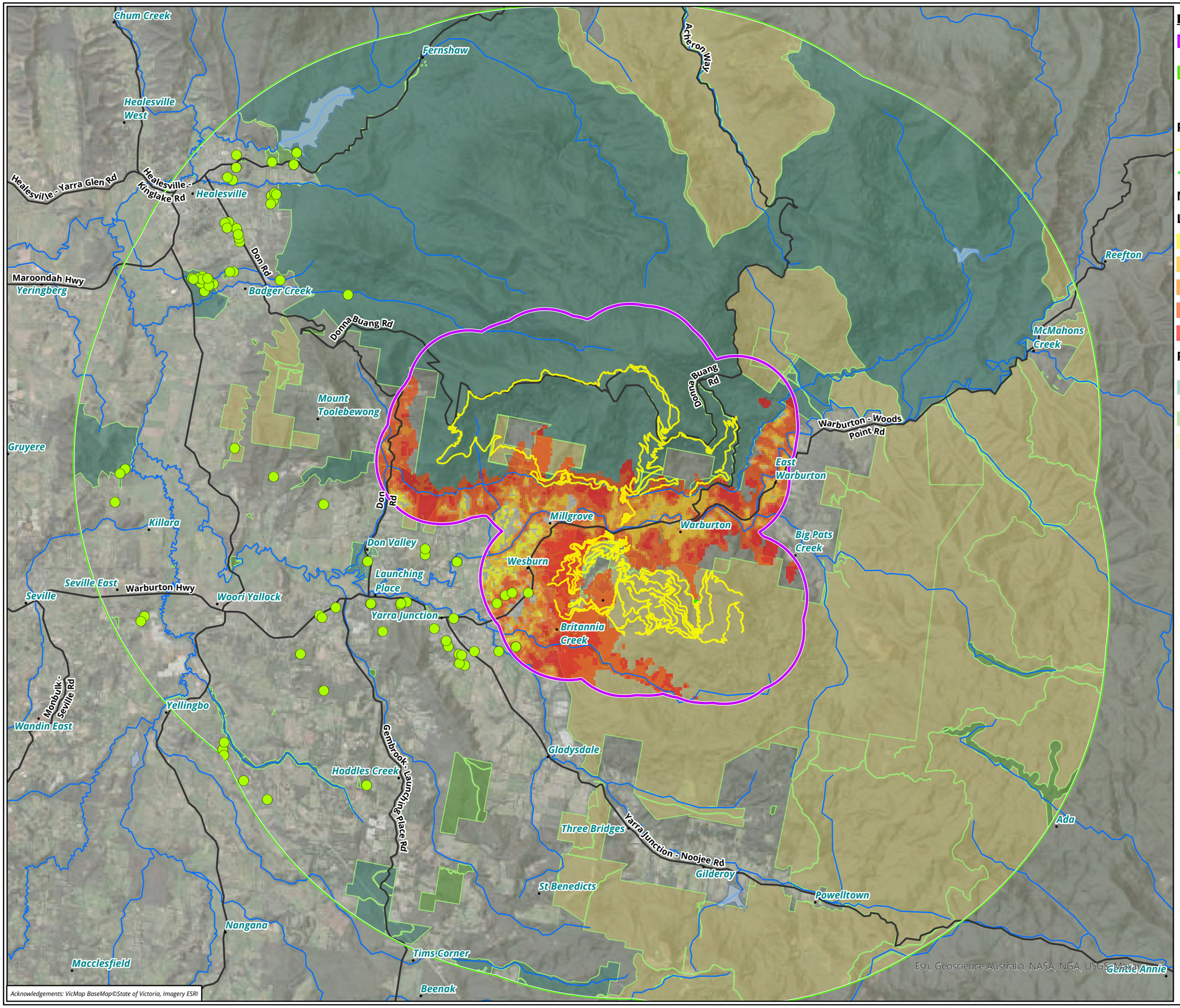

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.51 Significant species Habitat Importance Map (HIM) - Green Scentbark (*E fulgens*)

Taxon ID - 505175

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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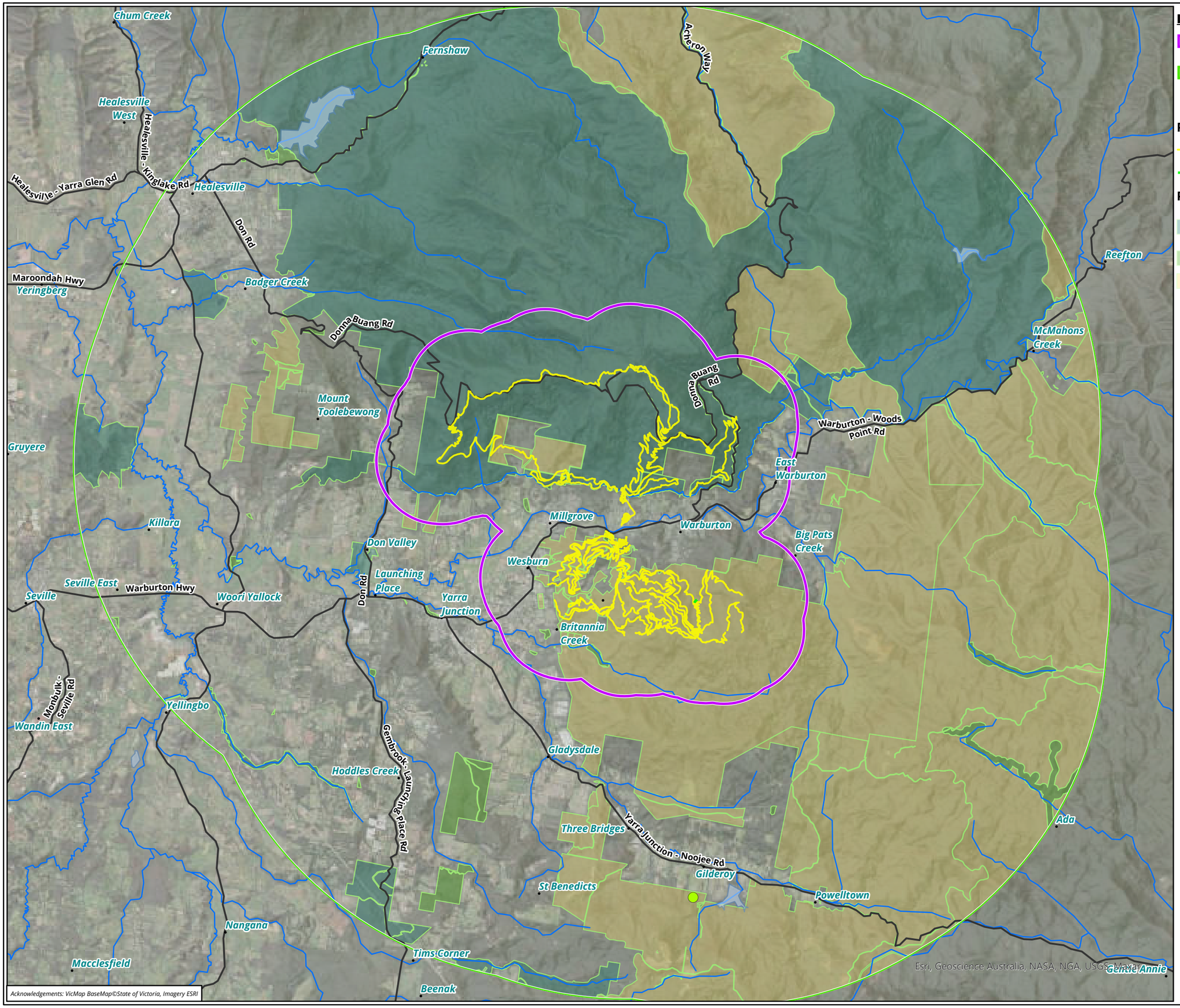

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.52 Significant species Habitat Importance Map (HIM) - Grey Scentbark (*Eu ignorabilis s.s.*)

Taxon ID - 505176

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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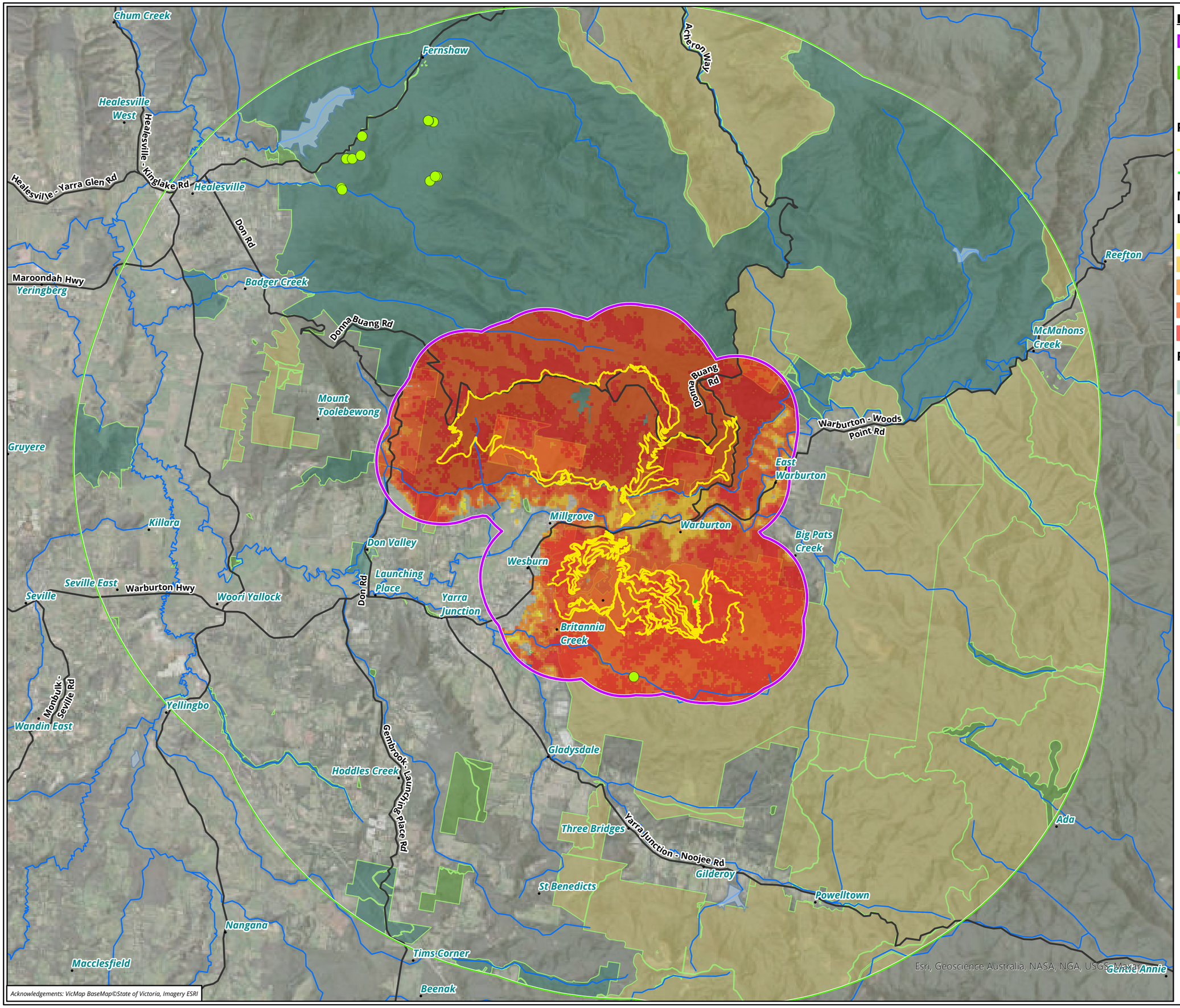

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.53 Significant species Habitat Importance Map (HIM) - Silky Golden-tip (*Go pubescens*)

Taxon ID - 504600

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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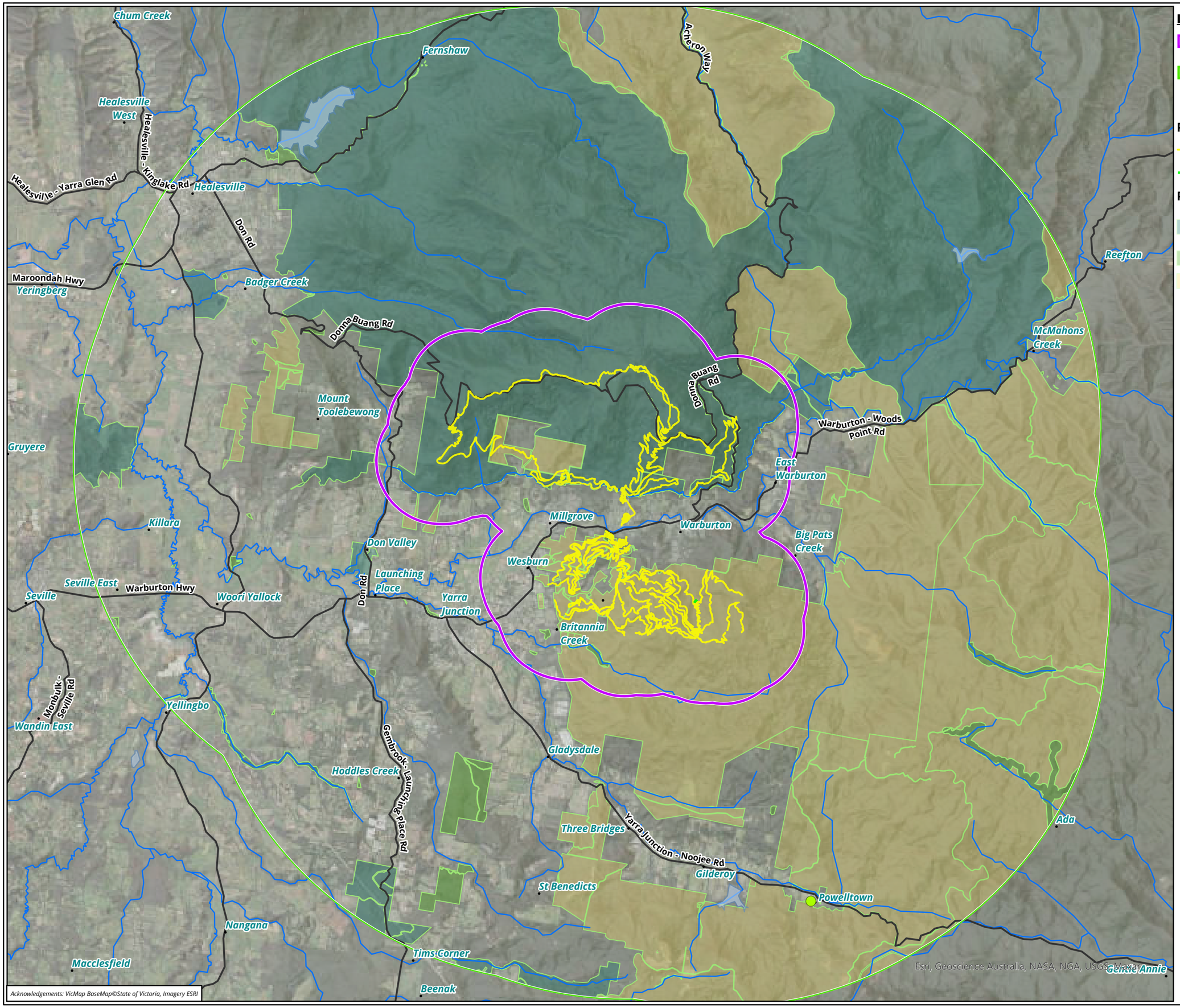

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.54 Significant species Habitat Importance Map (HIM) - Arc Moss (*Hampeell alaris*)

Taxon ID - 506755

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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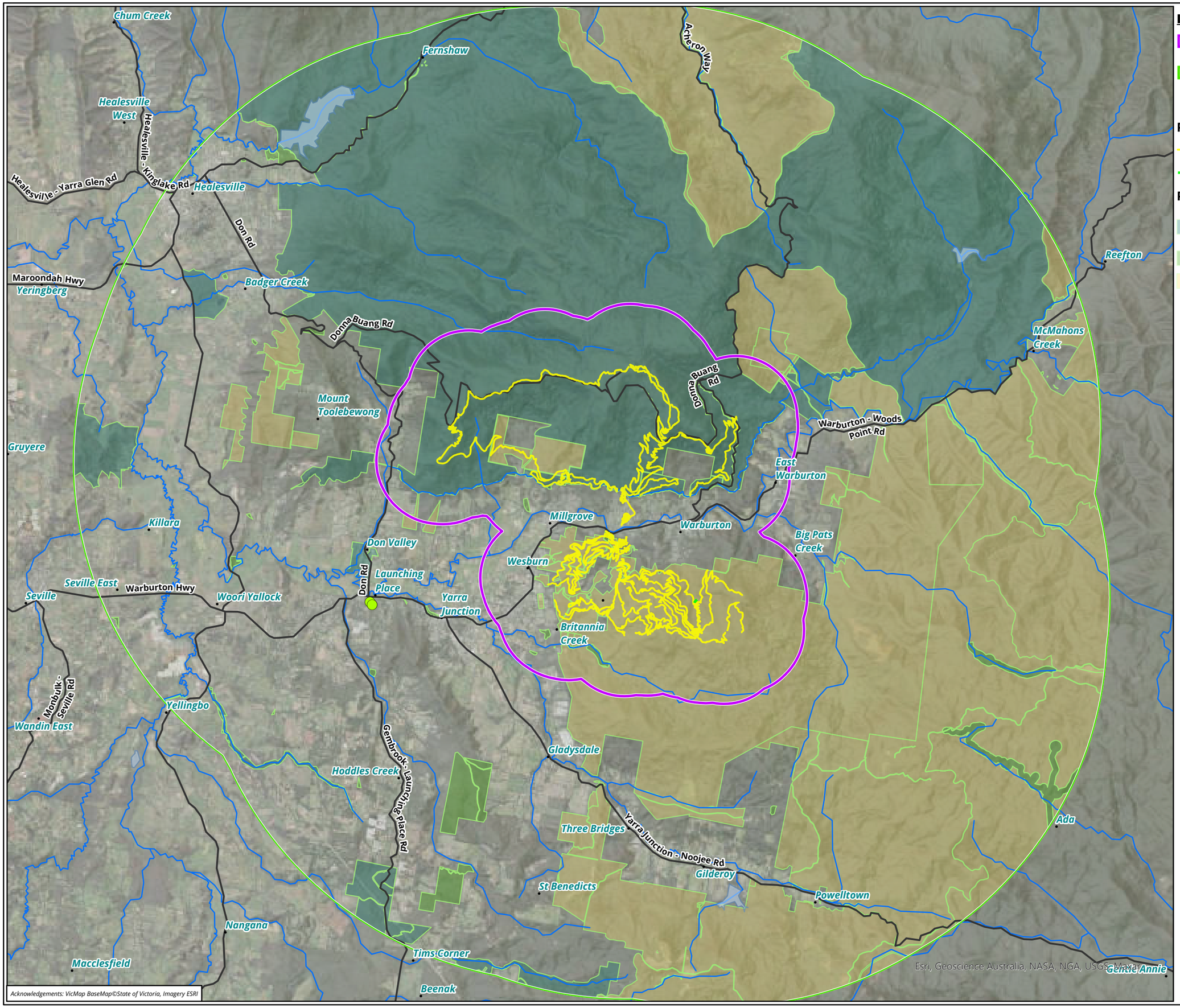

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.55 Significant species Habitat Importance Map (HIM) - Clasping Hypocreopsis (*Hypocreopsis amplectens*)

Taxon ID - 507602

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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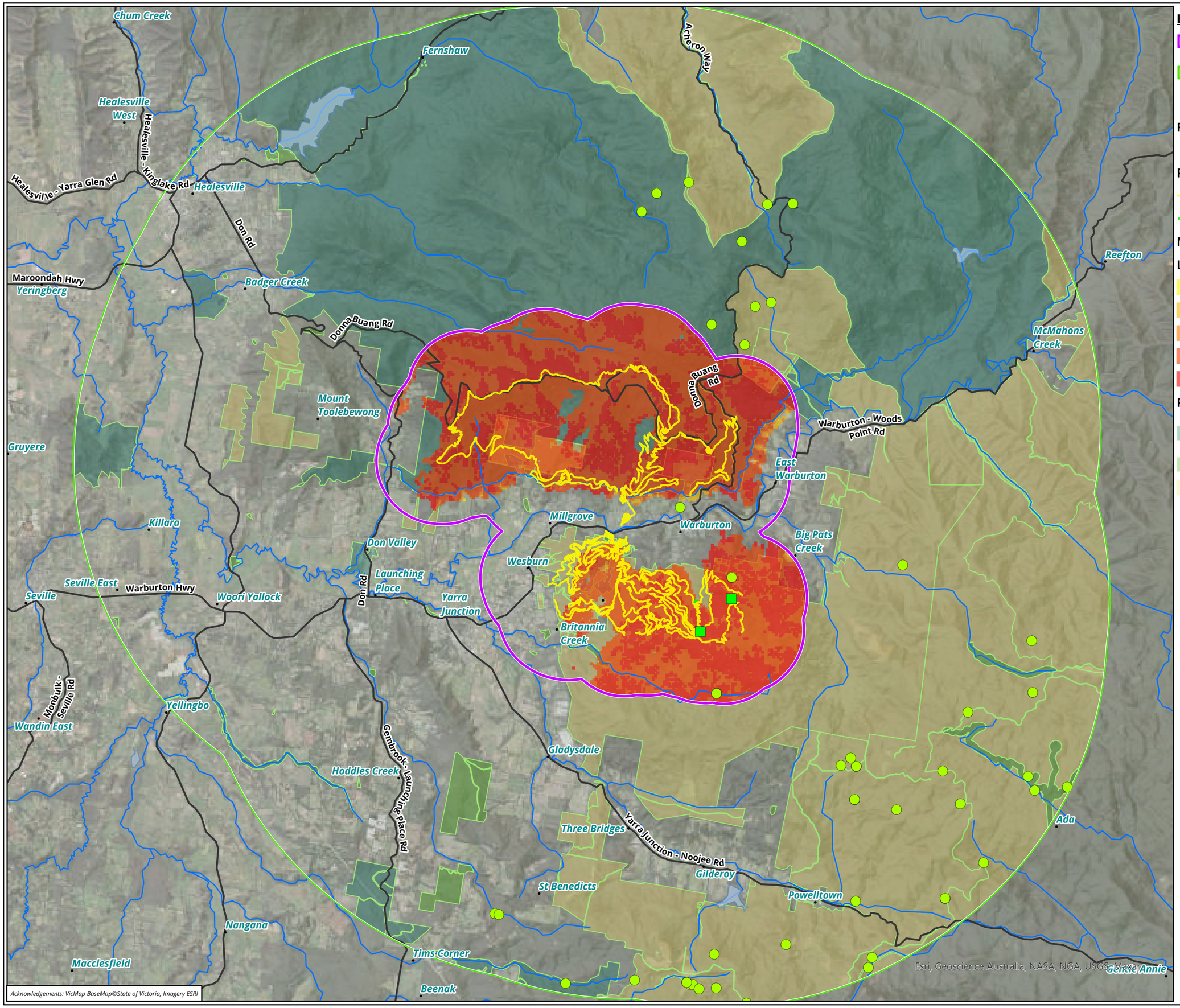

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.56 Significant species Habitat Importance Map (HIM) - Toothed Leionema (*Leionema bilobum subsp. serrulatum*)

Taxon ID - 505480

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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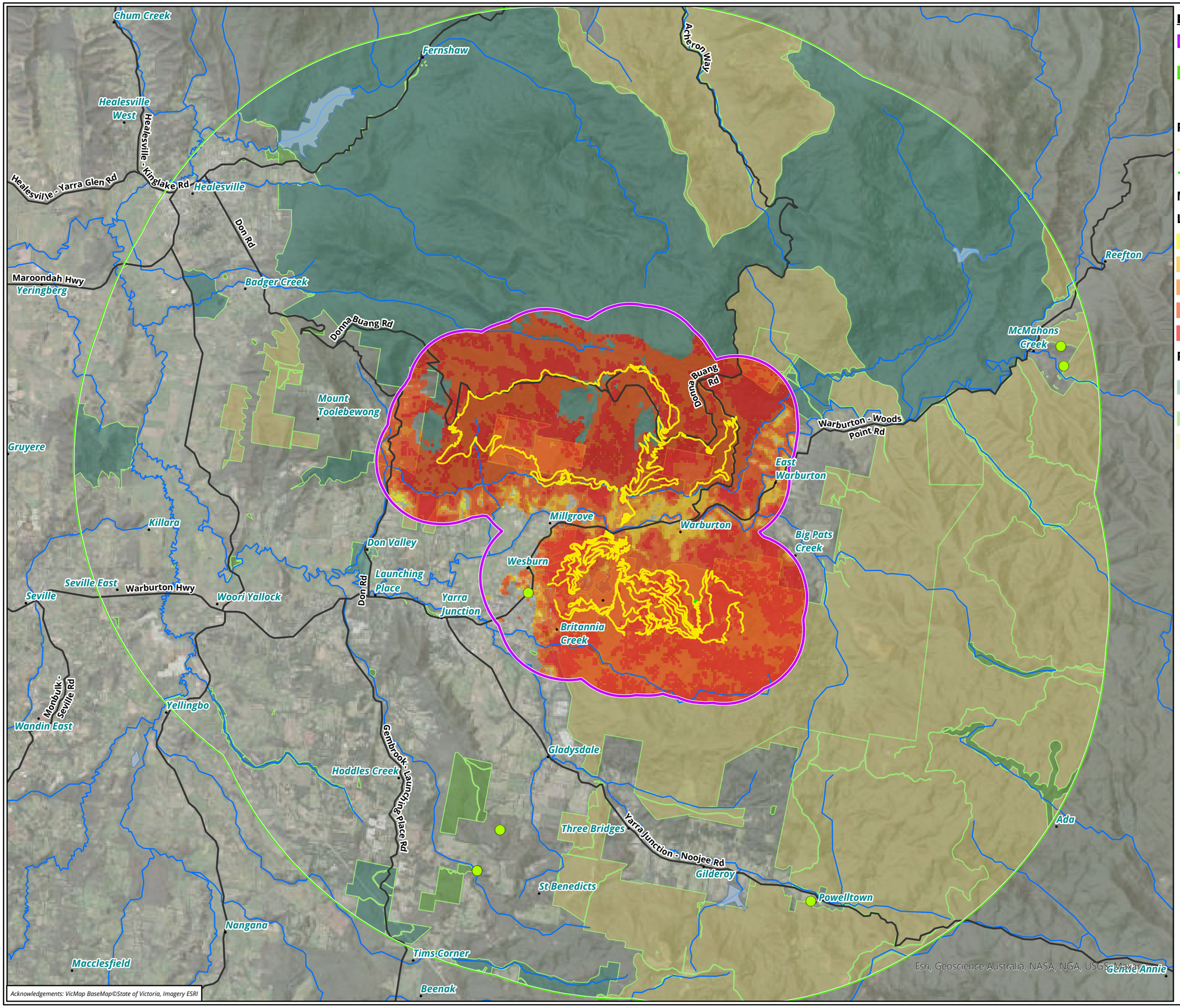

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.57 Significant species Habitat Importance Map (HIM) - Lacy Wedge-fern (*L microphylla*)

Taxon ID - 502015

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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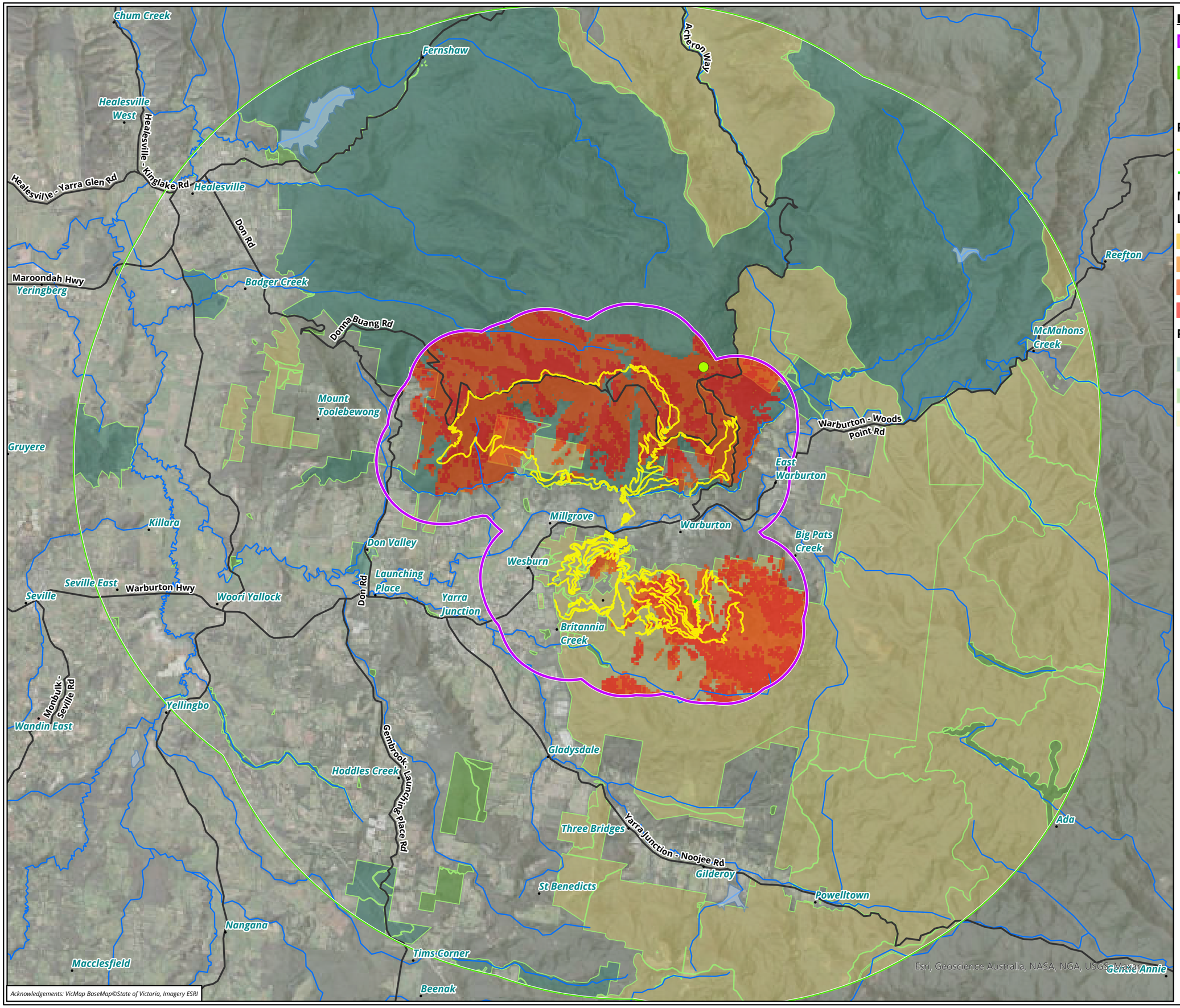

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.58 Significant species Habitat Importance Map (HIM) - Beech Finger-fern (*angustifolia subsp. nothofageti*)

Taxon ID - 503742

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

N

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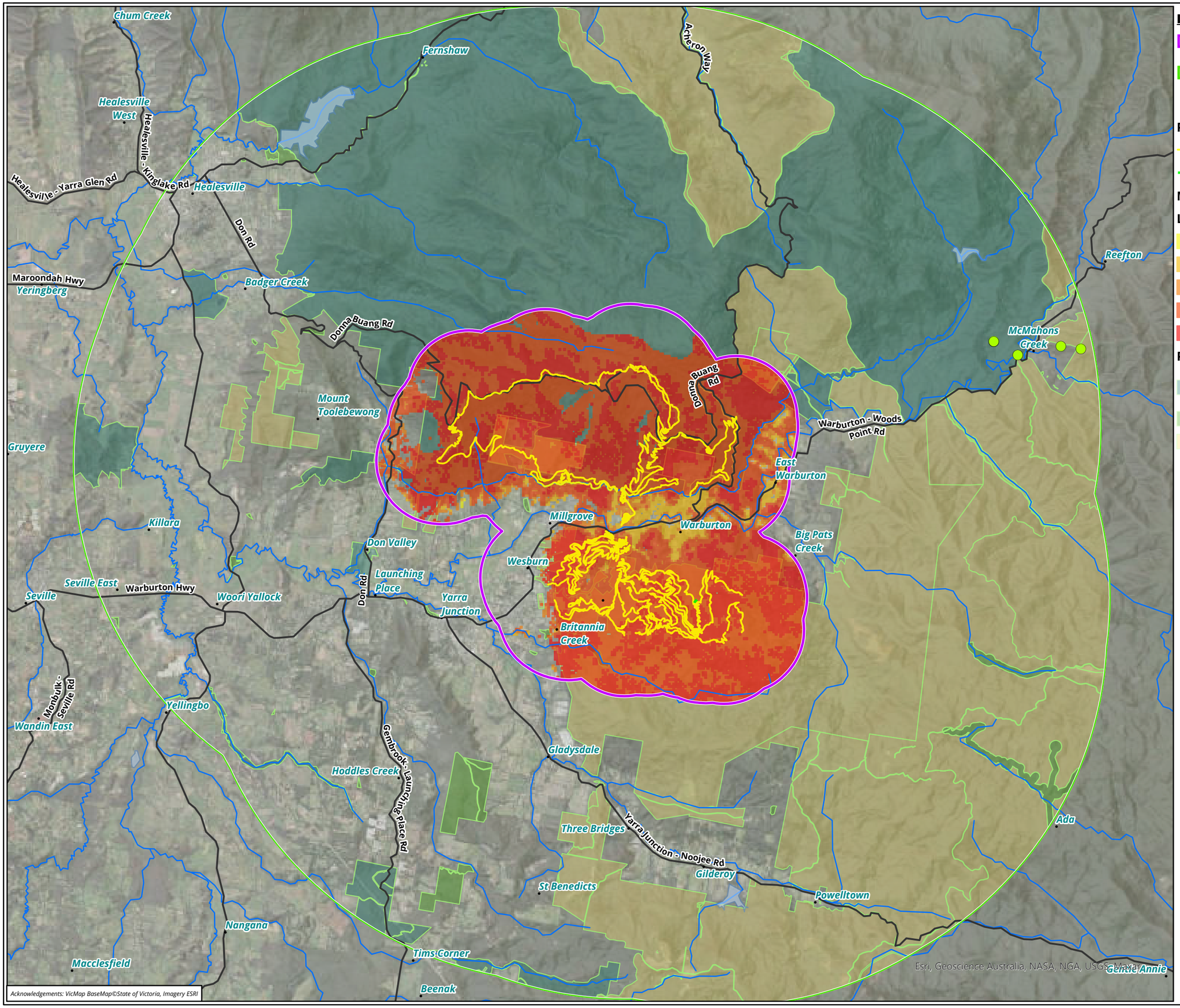

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.59 Significant species Habitat Importance Map (HIM) - Nunniong Everlasting (*Ozothamnus rogersianus*)

Taxon ID - 501623

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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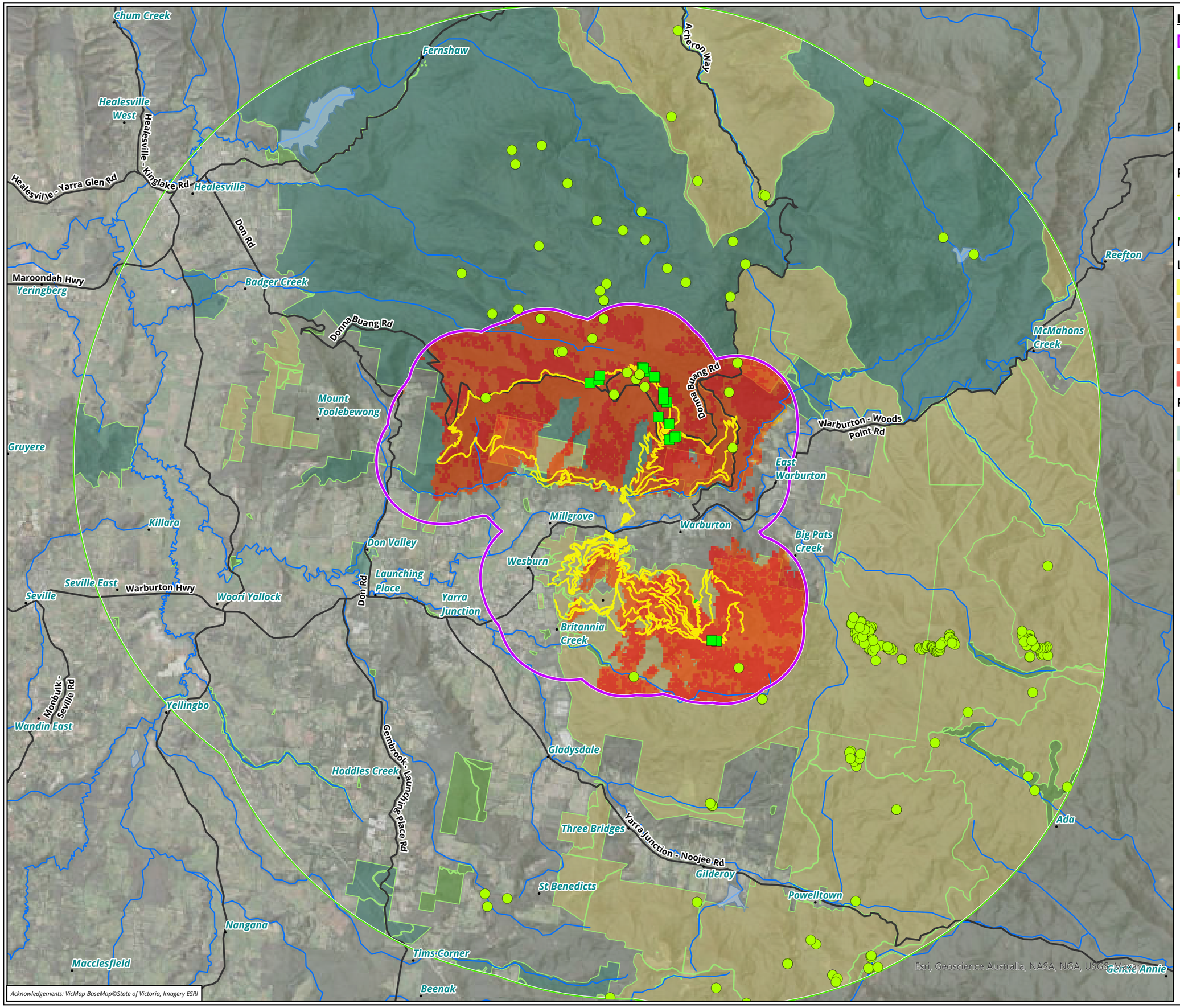

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.60 Significant species Habitat Importance Map (HIM) - Tree Geebung (*Pers arborea*)

Taxon ID - 502459

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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biosis

Matter: #####, [CHMP],
Date: 09 September 2021 ,
Prepared for: [Consultant], Prepared by: [GIS], Last edited by: lmilne
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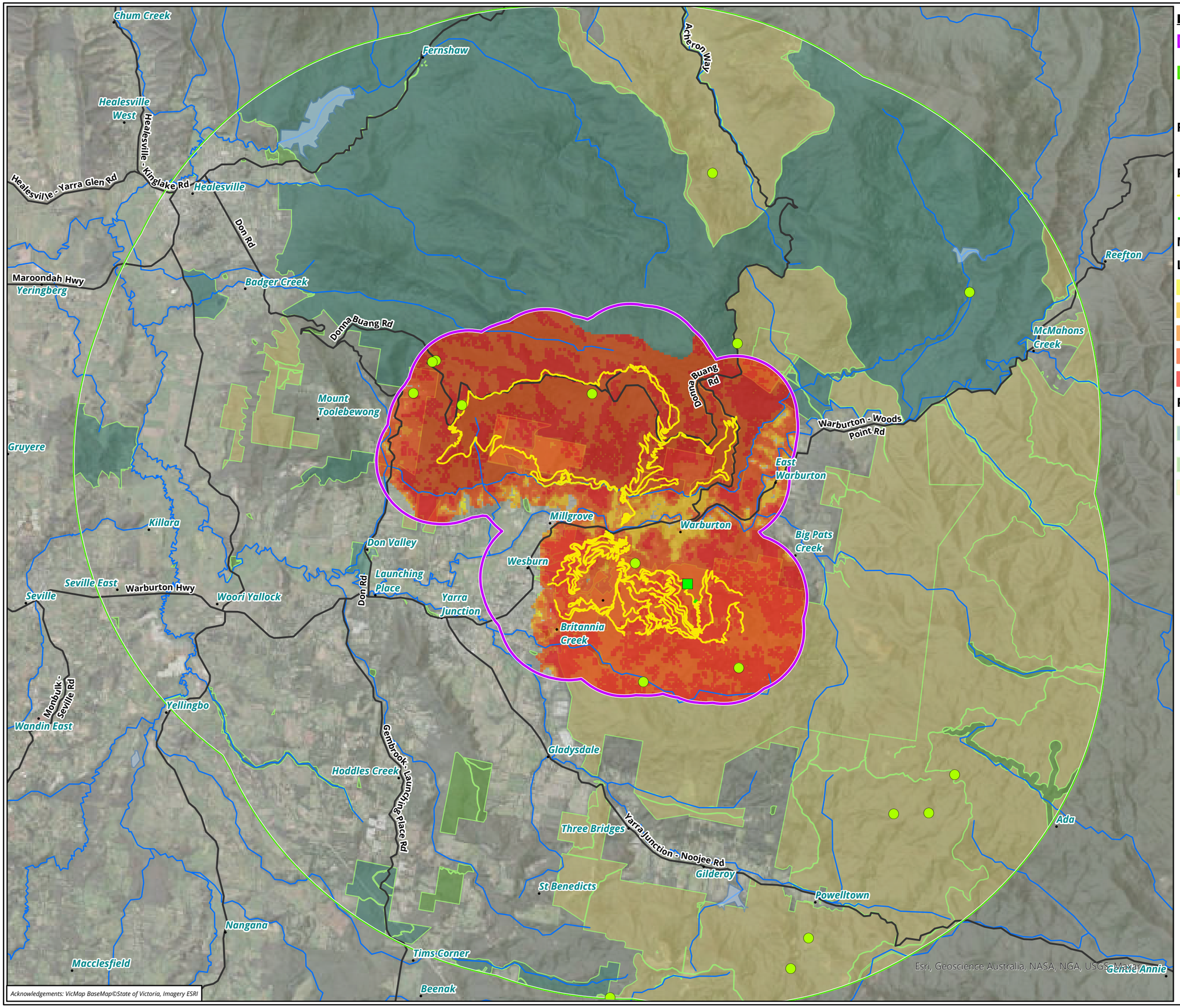

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.61 Significant species Habitat Importance Map (HIM) - Forest Phebalium (*squamulosum subsp. squamulosum*)

Taxon ID - 504817

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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biosis

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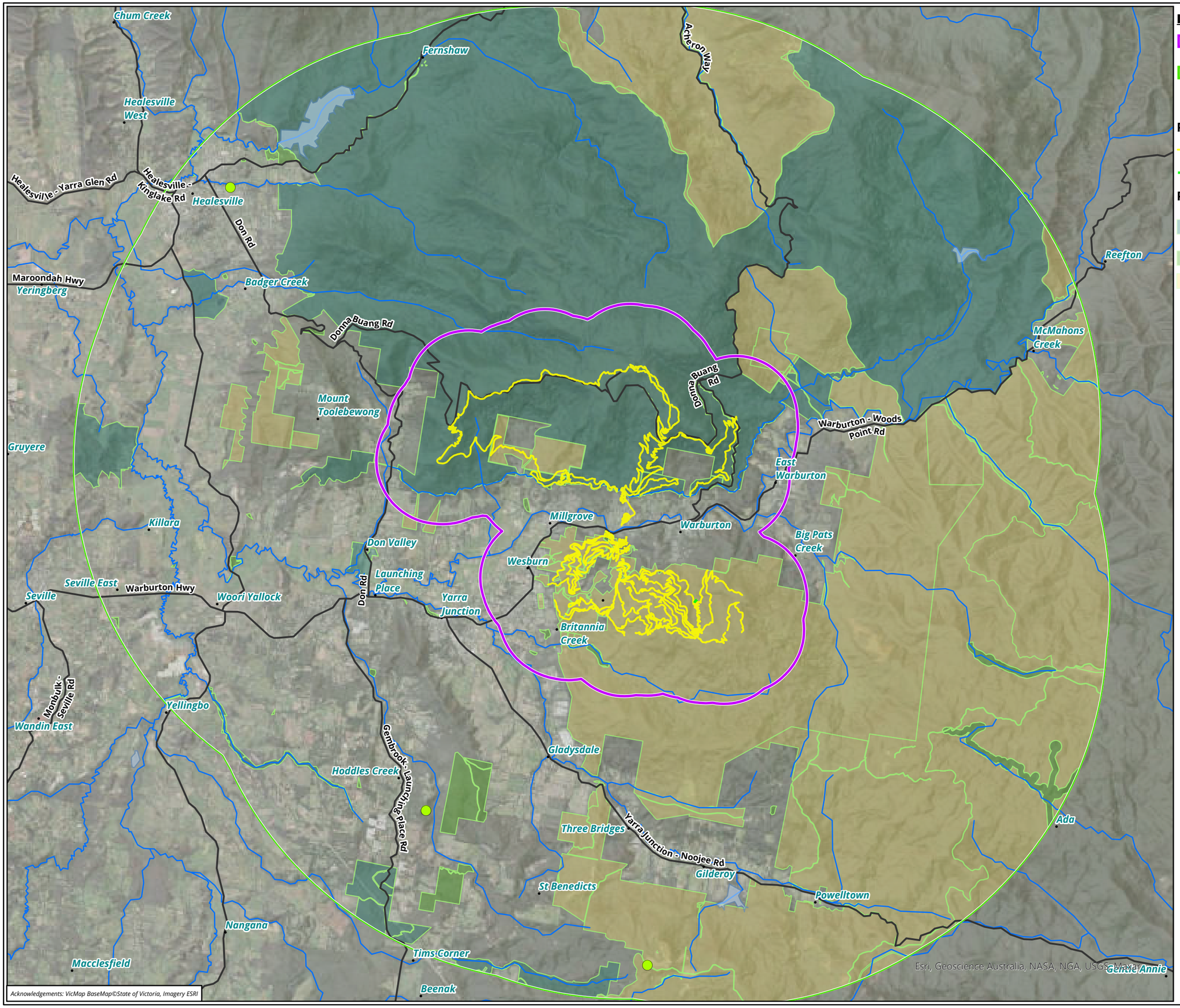

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.62 Significant species Habitat Importance Map (HIM) - Hybrid Pittosporum (*Pittosporum bicolor x undulatum*)

Taxon ID - 505795

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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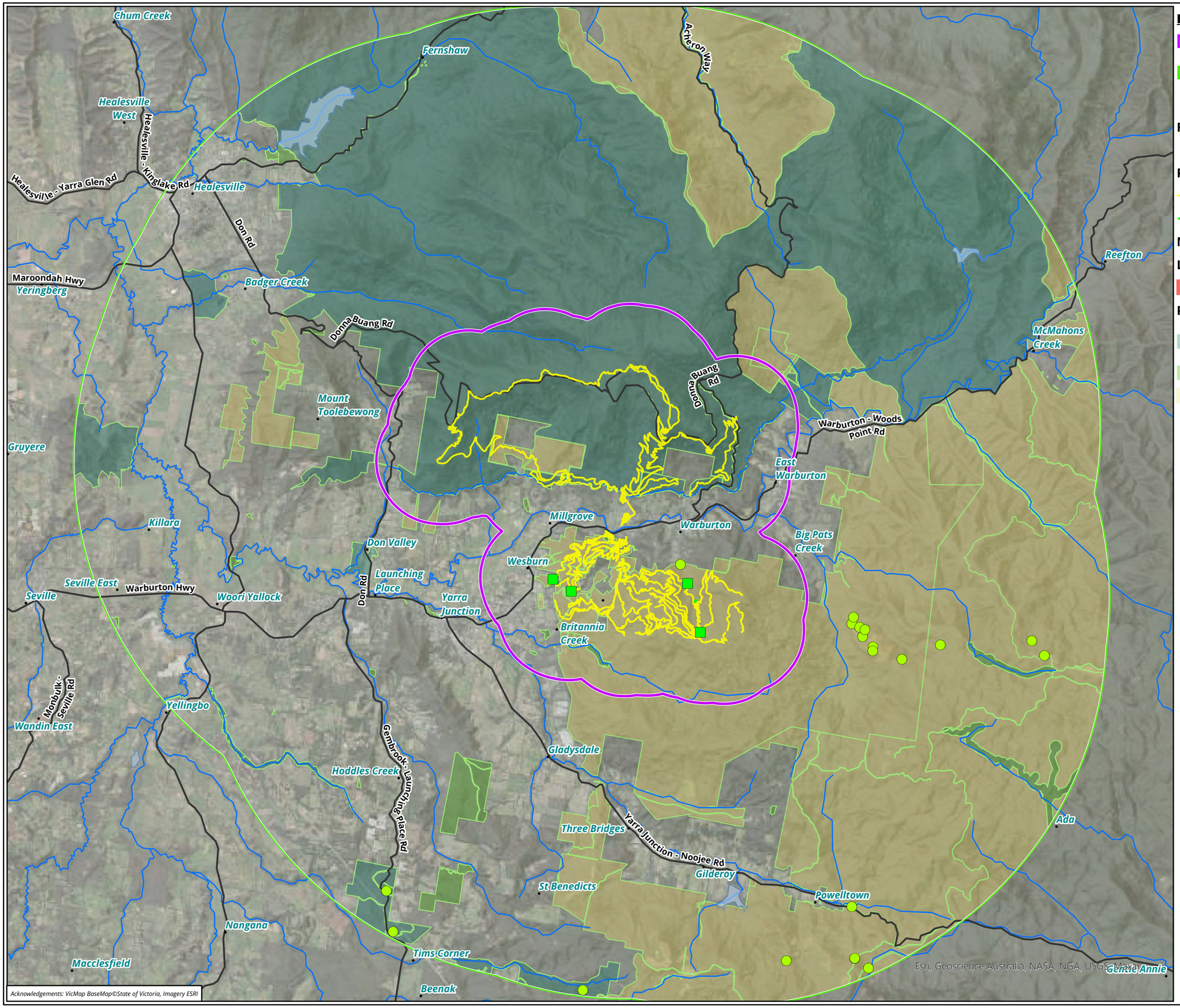

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.63 Significant species Habitat Importance Map (HIM) - Victorian Flat-pea (*reflexum*)

Taxon ID - 528675

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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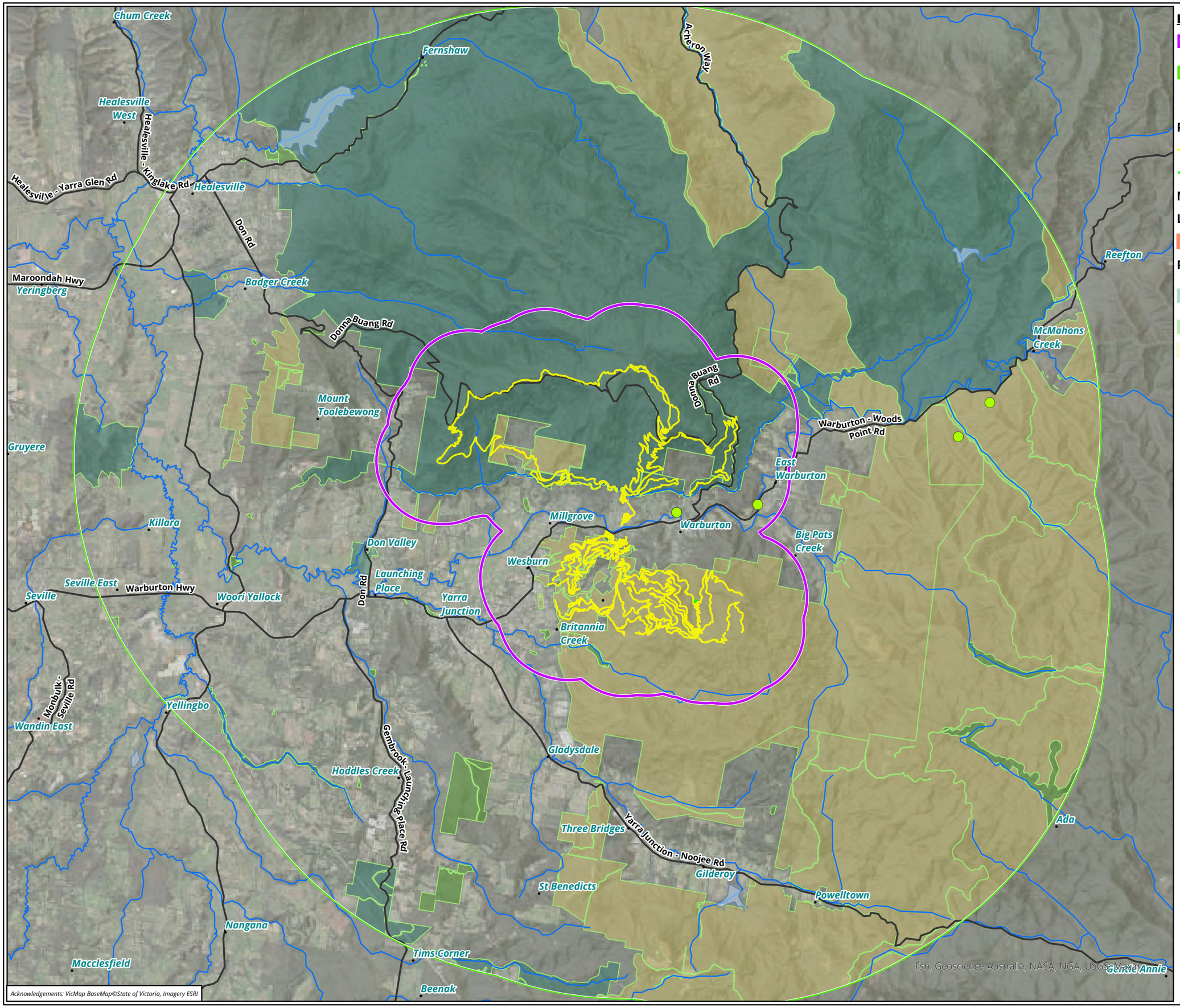

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.6 - 0.8

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.64 Significant species Habitat Importance Map (HIM) - Striped Pomaderris (*Pomaderris pilifera subsp. pilifera*)

Taxon ID - 502669

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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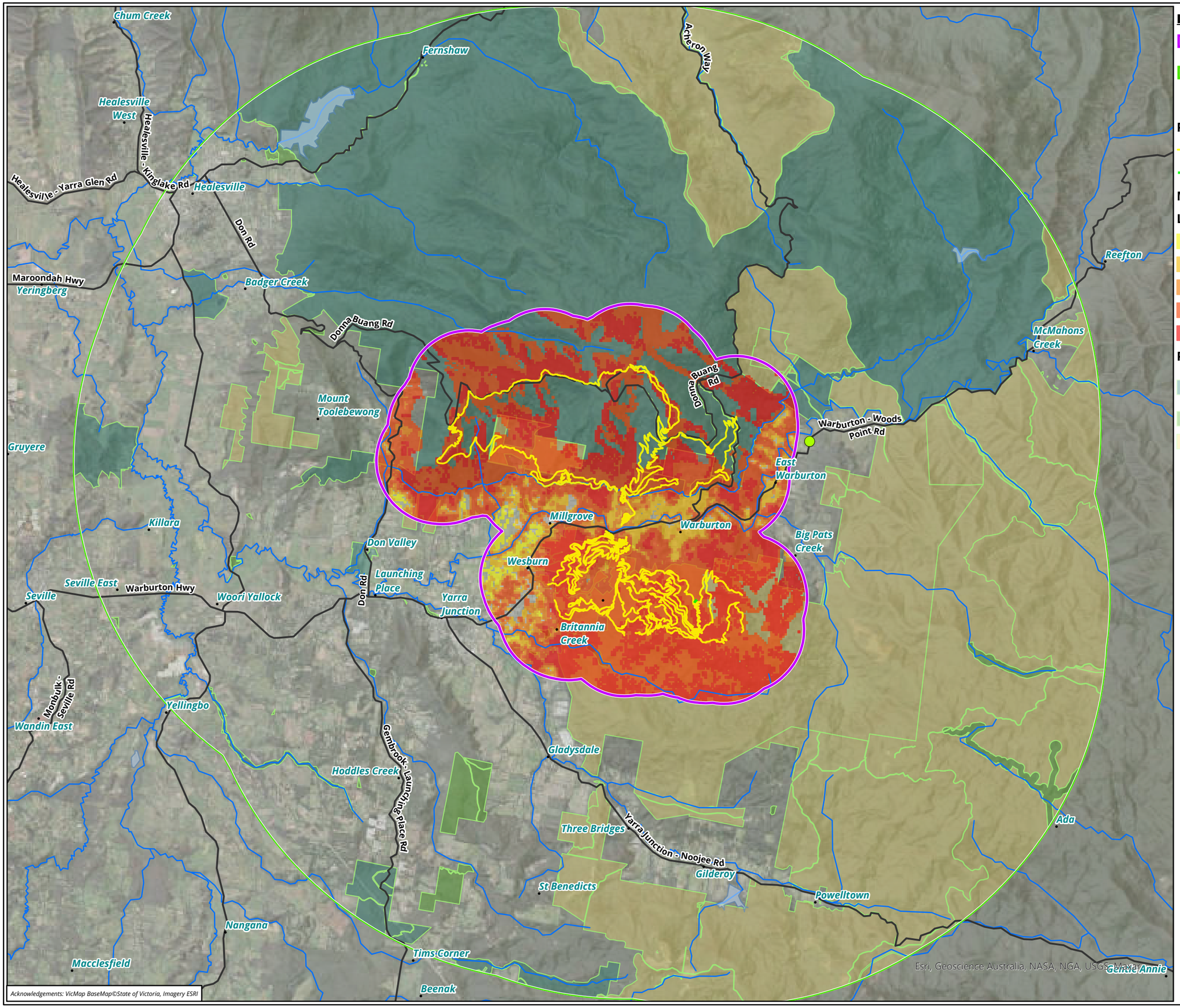

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.65 Significant species Habitat Importance Map (HIM) - Round-leaf Pomaderris (*Pomaderris vaccinifolia*)

Taxon ID - 502675

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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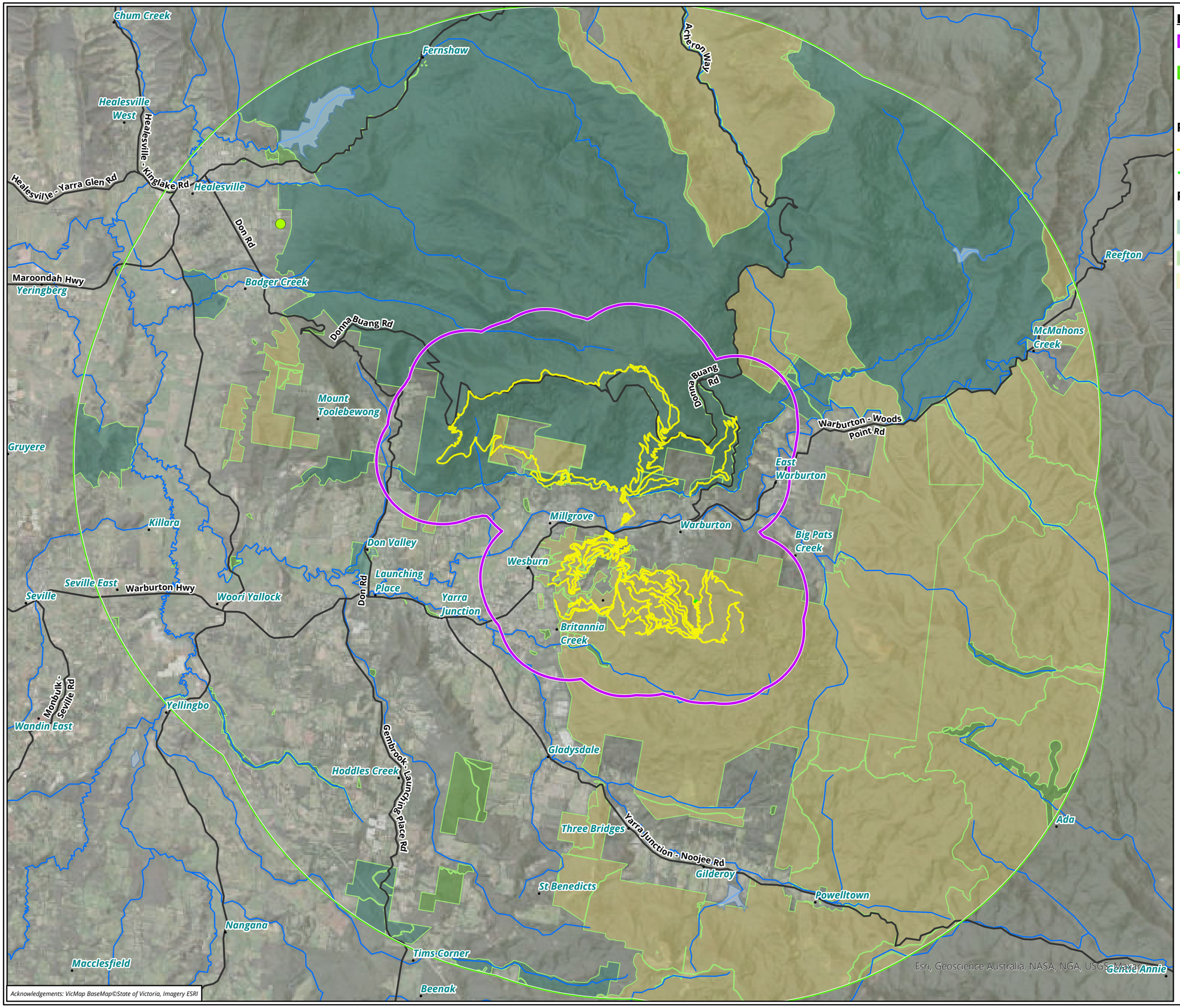

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.66 Significant species Habitat Importance Map (HIM) - Sharp Greenhood (*X ingens*)

Taxon ID - 502800

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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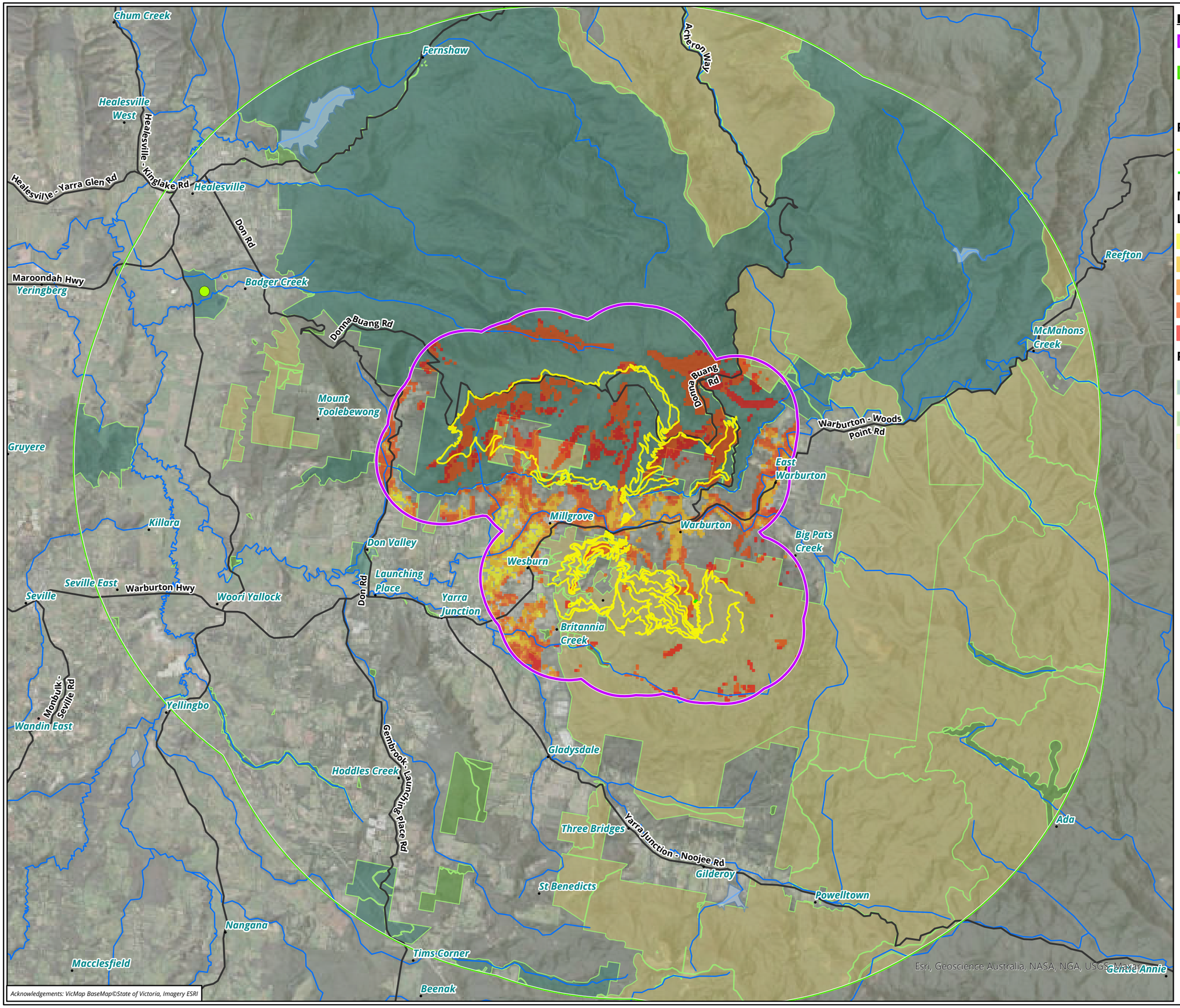

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.67 Significant species Habitat Importance Map (HIM) - Floodplain Fireweed (*Senecio campylocarpus*)

Taxon ID - 507136

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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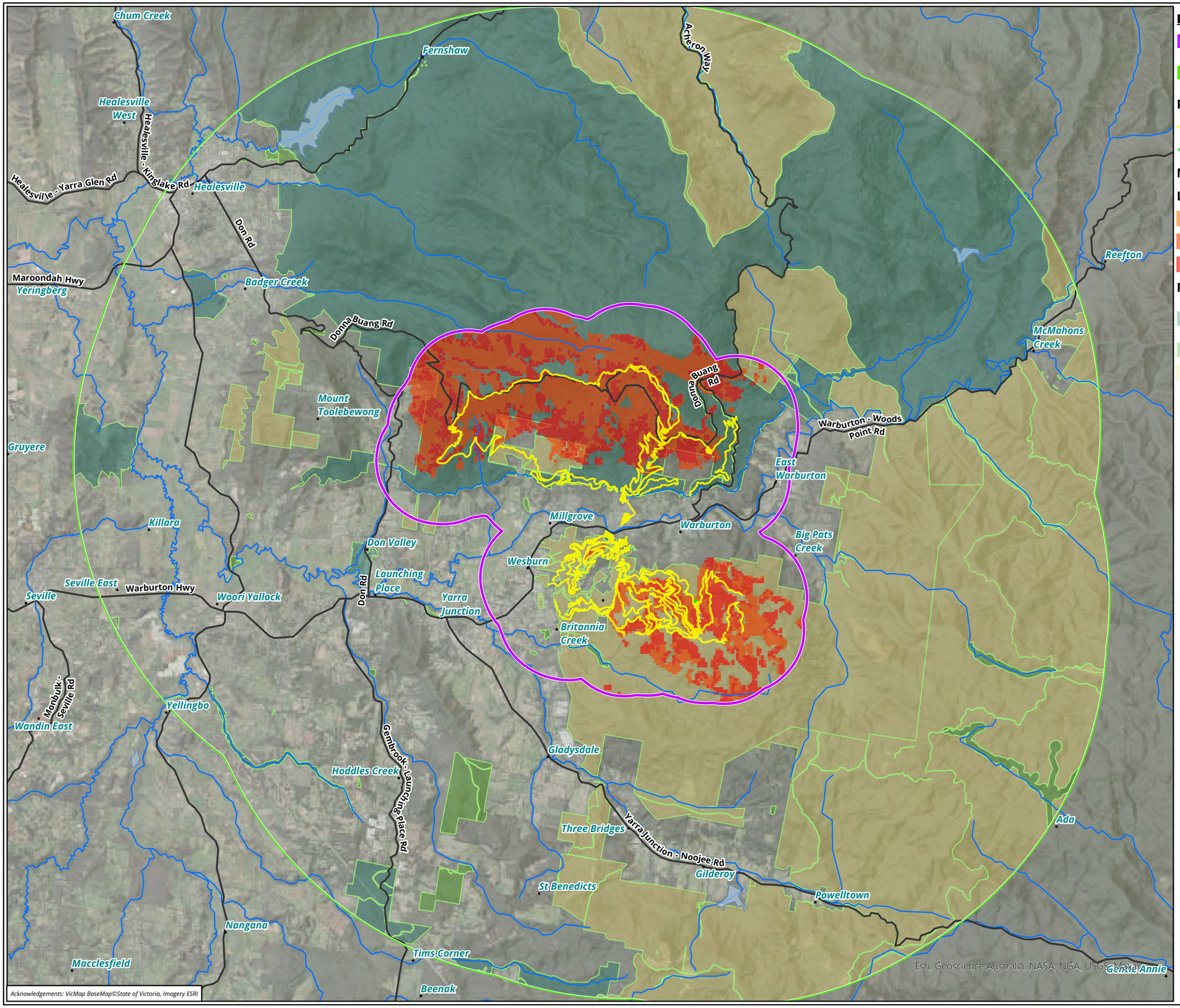

Acknowledgements: VicMap BaseMap©State of Victoria, Imagery ESRI

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.68 Significant species Habitat Importance Map (HIM) - Distal-lobe Fireweed (*Senecio distalilobatus*)

Taxon ID - 507028

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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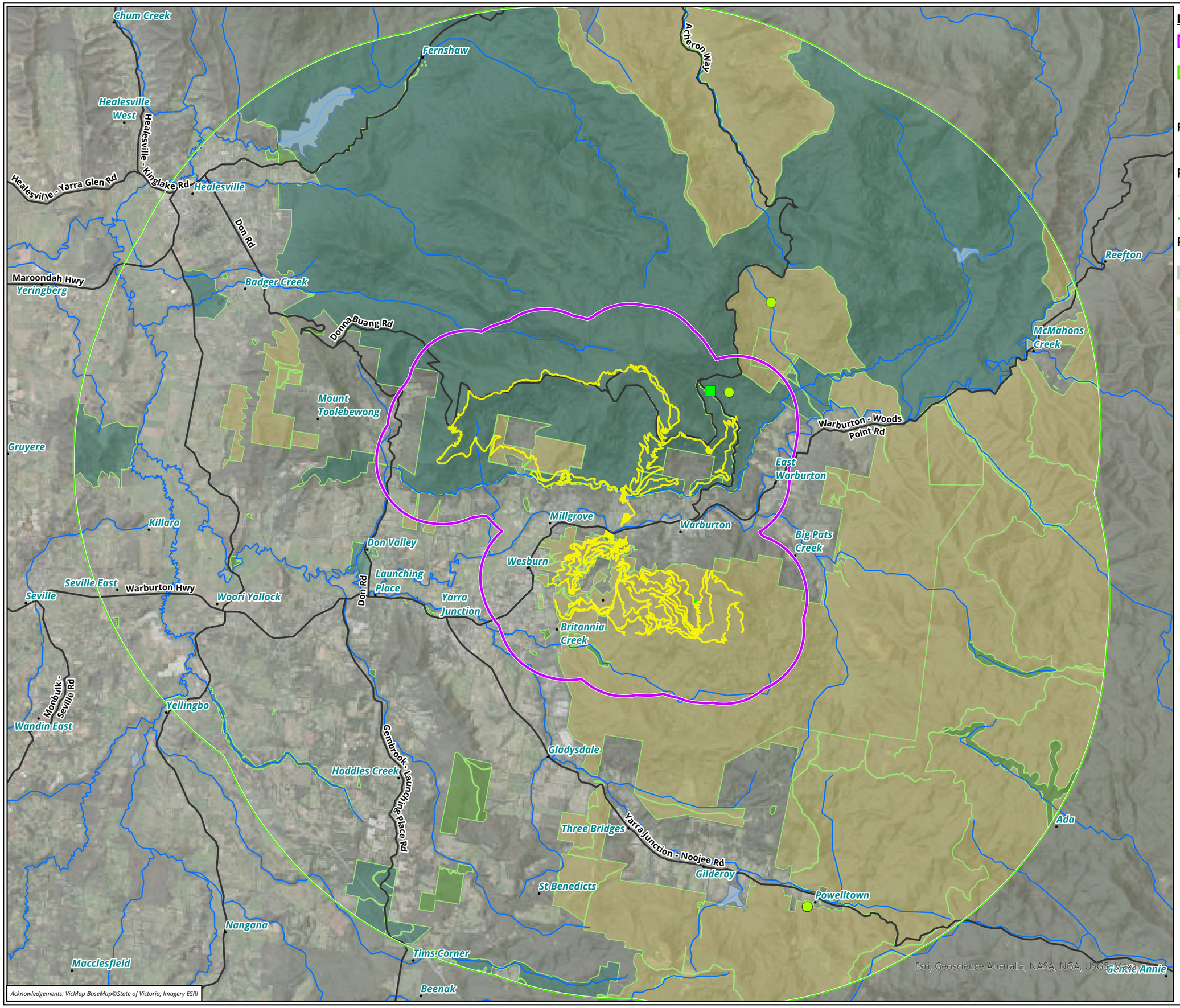

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.69 Significant species Habitat Importance Map (HIM) - Tasman Fan-fern (*S tener s.s.*)

Taxon ID - 505334

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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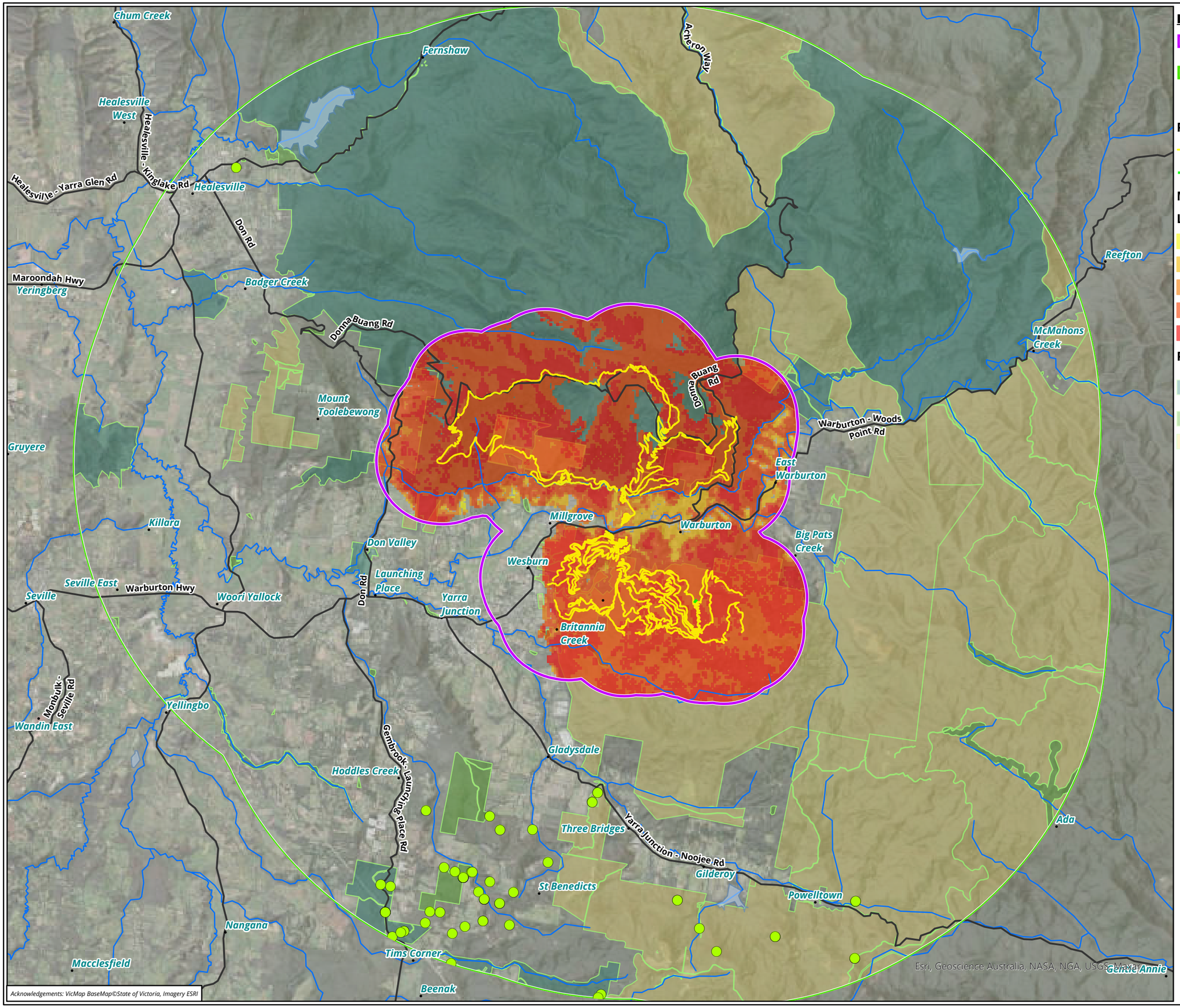

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.70 Significant species Habitat Importance Map (HIM) - Long Pink-bells (*Tet stenocarpa*)

Taxon ID - 503354

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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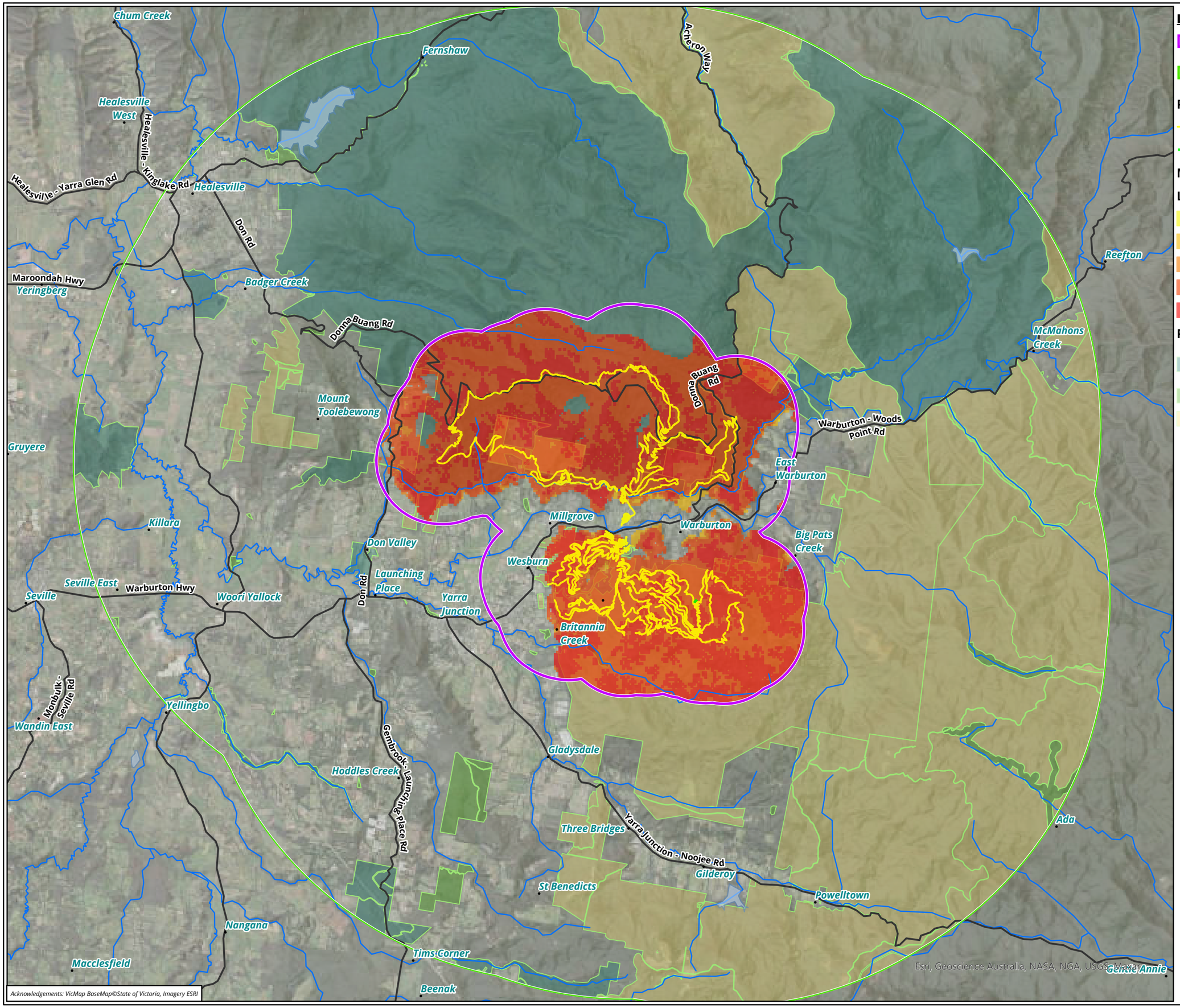

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.71 Significant species Habitat Importance Map (HIM) - Leafless Pink-bells (*Tetratheca subaphylla*)

Taxon ID - 503355

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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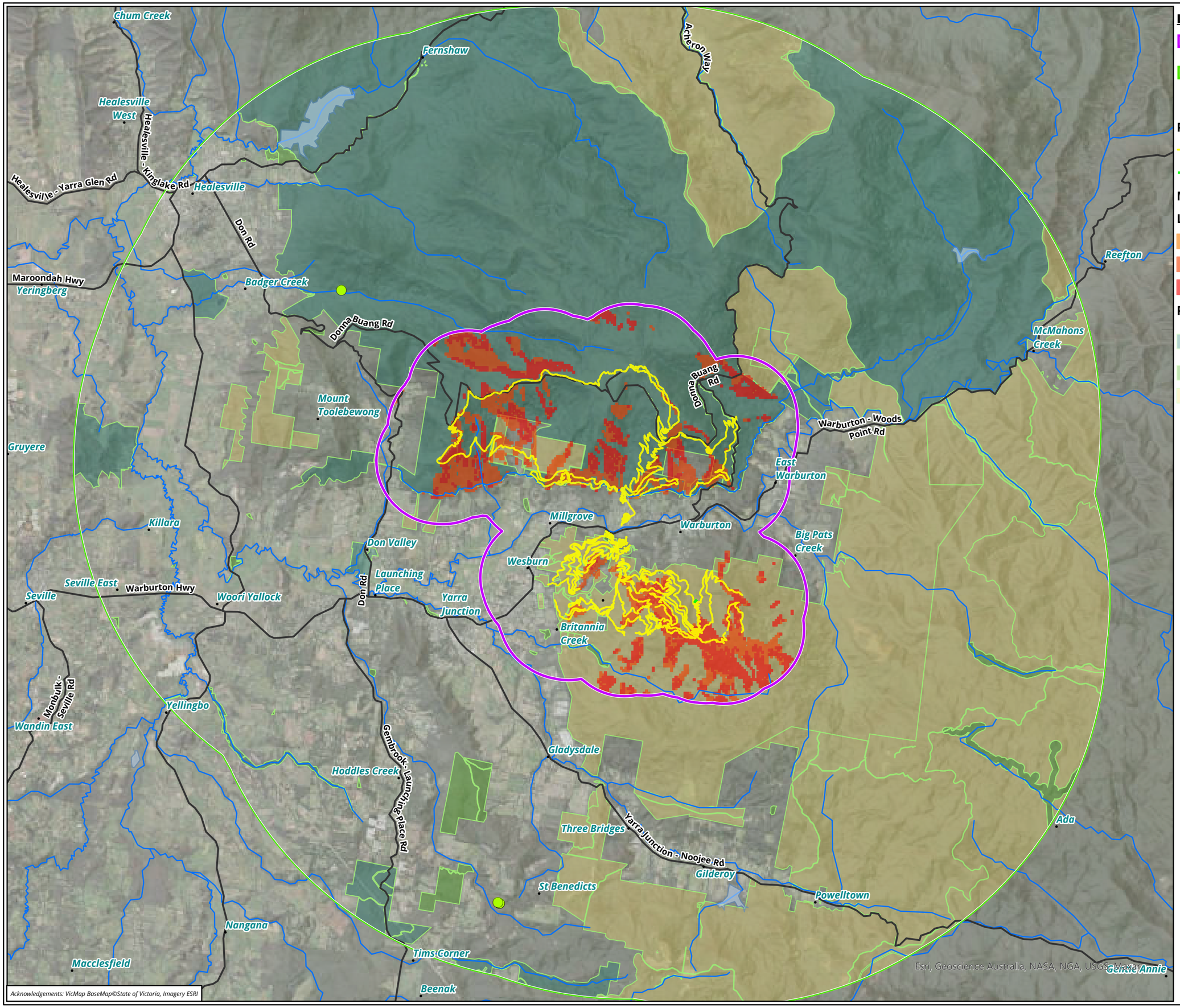

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.72 Significant species Habitat Importance Map (HIM) - Fairy Lanterns (*This rodwayi*)

Taxon ID - 503390

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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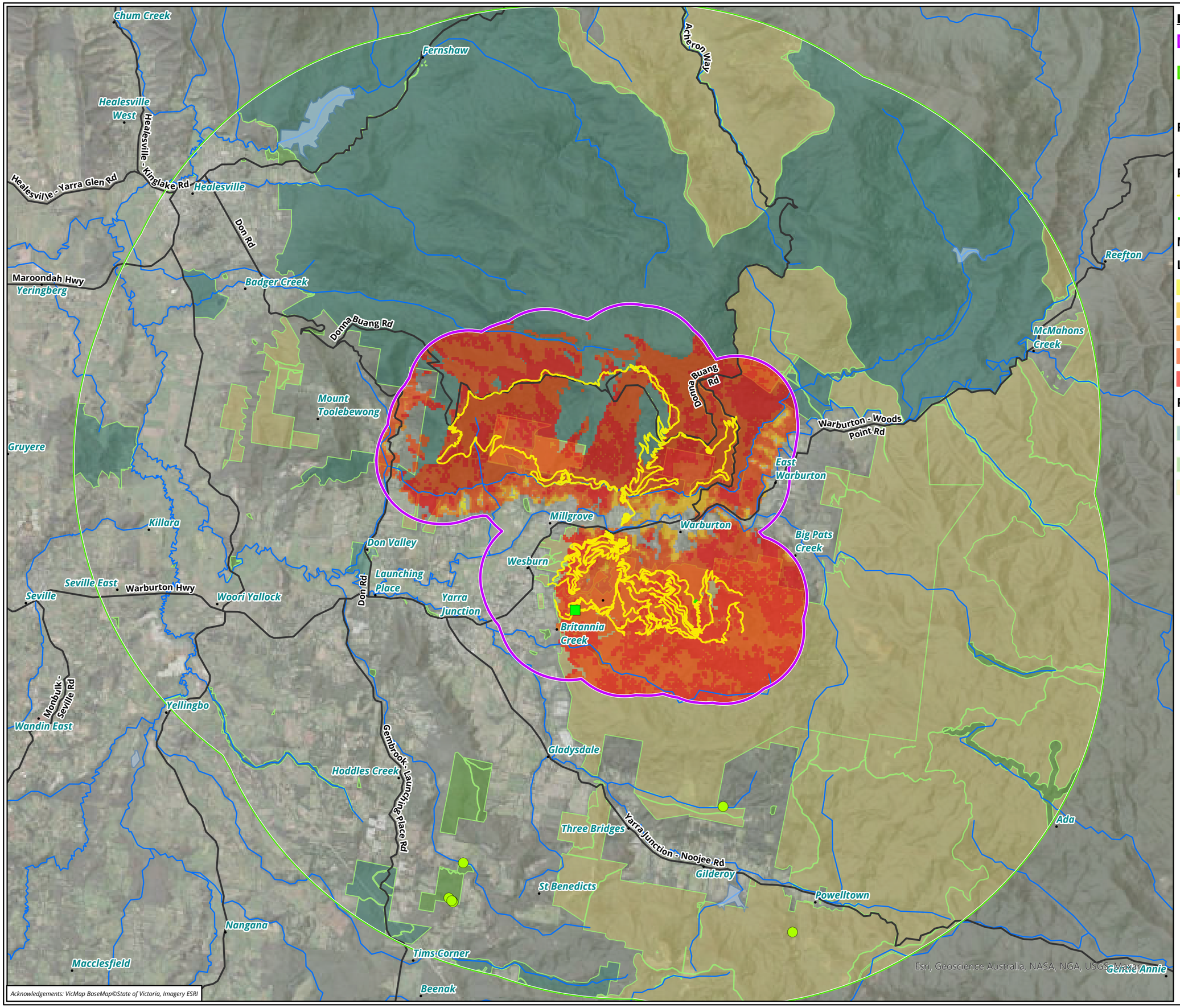

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Field flora species observation

- Biosis flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.73 Significant species Habitat Importance Map (HIM) - Oval Fork-fern (*Tm ovata*)

Taxon ID - 503404

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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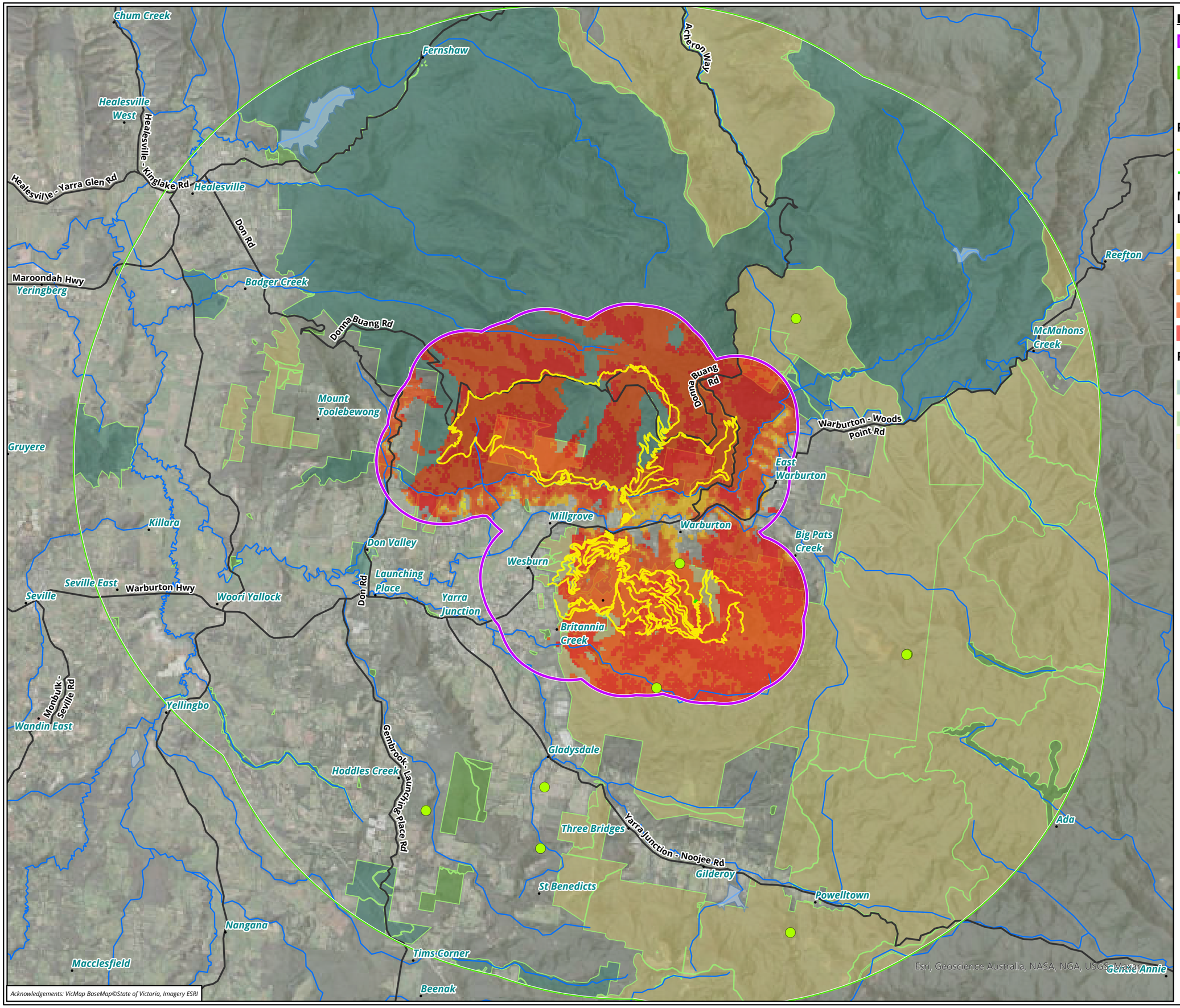

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.74 Significant species Habitat Importance Map (HIM) - Small Fork-fern (*Tm parva*)

Taxon ID - 503405

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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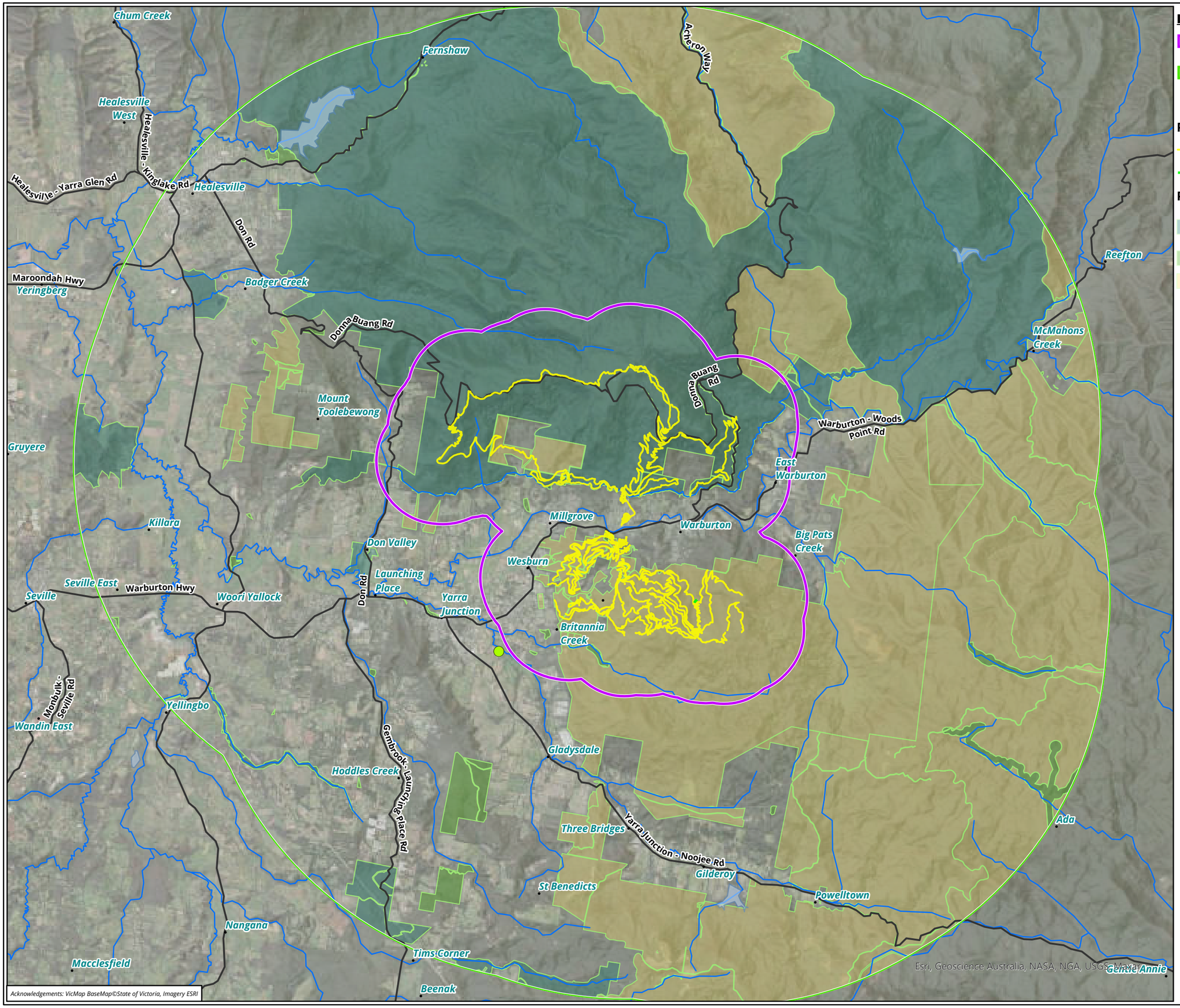

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.75 Significant species Habitat Importance Map (HIM) - Floating Bladderwort (*Utricularia gibba*)

Taxon ID - 505223

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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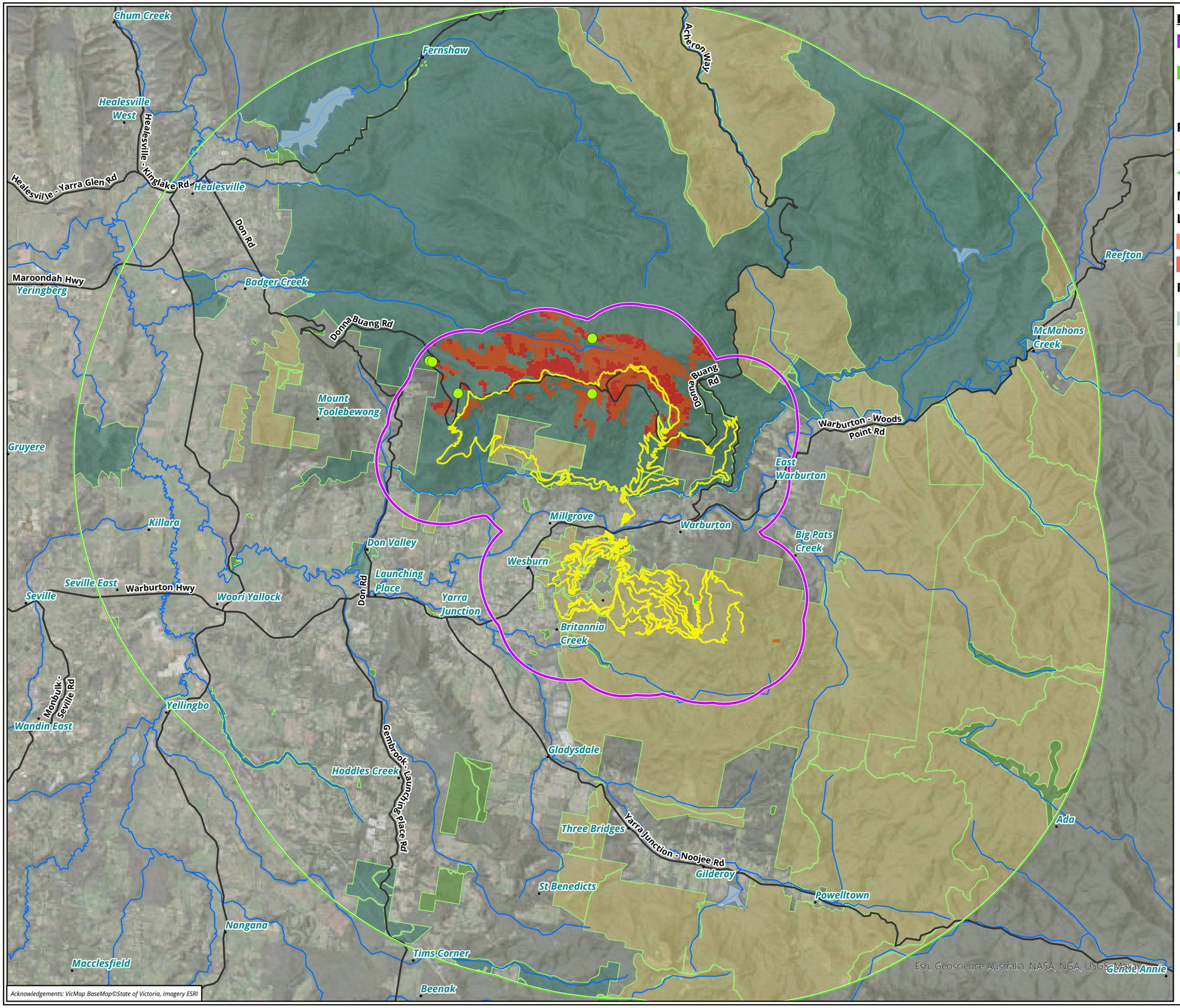

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Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.76 Significant species Habitat Importance Map (HIM) - Alpine Westringia (*senifolia*)

Taxon ID - 503572

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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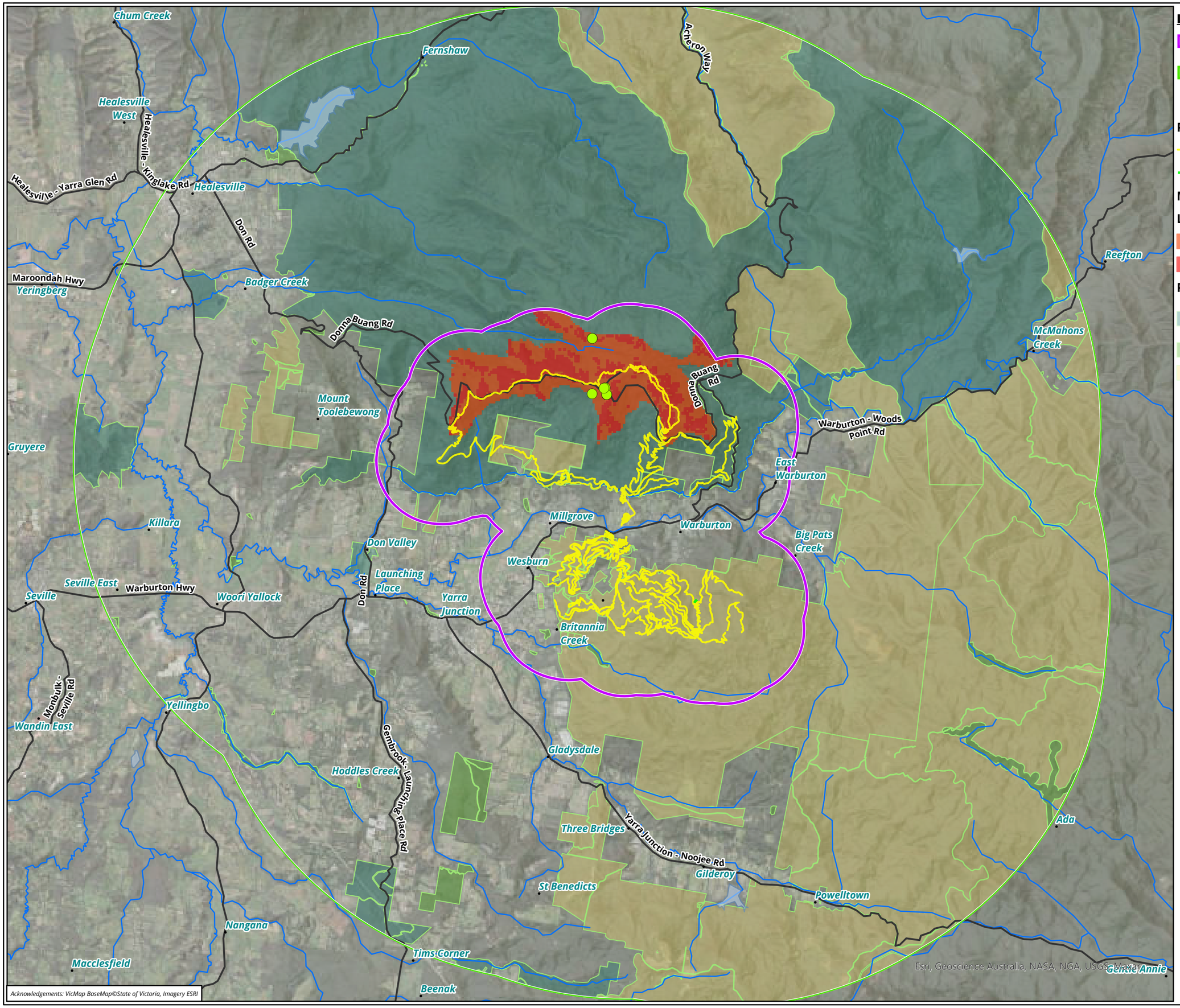

Legend

- Assessment area
- VBA search buffer (10km beyond assessment area)
- VBA flora record

Proposed trail network

- Proposed MTB Trail
- Proposed Walking Trail

Modelled threatened species habitat

Likelihood rank

- 0.6 - 0.8
- 0.8 - 1.0

Public land category

- National parks and nature conservation reserves
- Other conservation reserves
- State forest

Figure 14.77 Significant species Habitat Importance Map (HIM) - Baw Baw Berry (*Wi vacciniacea*)

Taxon ID - 503576

0 1 2 3 4

Kilometers

Scale: 1:115,000 @ A3

Coordinate System: GDA 1994 VICGRID94

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7.5 Significant ecological communities

7.5.1 EPBC Act listed ecological communities

The background review identified the following EPBC listed threatened ecological community as having potential to occur within the project area:

- Alpine *Sphagnum* Bogs and Associated Fens (Critically Endangered under EPBC Act)

Native vegetation was assessed to determine whether it corresponded to this significant ecological community by assessing the vegetation against relevant condition thresholds and community descriptions published by the Commonwealth of Australia.

Alpine *Sphagnum* Bogs and Associated Fens can be found in small pockets in alpine, subalpine and montane areas (DEWHA 2008). The community is typically defined by the presence of *Sphagnum* spp. on an underlying peat substrate though *Sphagnum* spp. may also be absent (TSSC 2009). In Victoria there are seven EVCs that are associated with the ecological community. These EVCs are summarised in Table 26. None of these EVCs were mapped within the assessment corridor by either Practical Ecology (2019) or during Biosis' November 2020 field investigations, nor was the ecological community observed within the assessment corridor or within the project area by Practical Ecology or Biosis ecologists during field investigations. The National Recovery plan (CoA 2009) for this community indicates the closest occurrences of this community to Warburton are in the vicinity of Lake Mountain and Baw Baw plateau. These two locations are not in the same catchment as the project area and are at higher elevations indicating indirect or off-site impacts are negligible.

No other EPBC Act listed ecological communities were recorded within the project area.

Table 26 EVCs that correspond to Alpine *Sphagnum* Bogs and Associated Fens TEC (TSSC 2009).

Classification	Community Name
EVC 171	Alpine Fen
EVC 210	Sub-alpine Wet Heathland
EVC 221	Sub-alpine Wet Heathland/Alpine Fen Mosaic
EVC 288-61	Alpine Valley Peatland (Raised Bog)
EVC 288-62	Alpine Valley Peatland (Valley Bog)
EVC 917	Sub-alpine Wet Sedgeland
EVC 1011	Alpine Peaty Heathland

7.5.2 FFG Act listed ecological communities

The EPBC Act listed alpine bog community discussed above also corresponds with a number of FFG Act listed alpine vegetation communities and none of these were recorded or are likely to occur in the project area.

Two FFG Act listed threatened communities, CTR and CTMF, occur within the project area in the Yarra Ranges National Park between Mount Donna Buang, Mount Victoria and Ben Cairn. The extent of these communities within the project area is mapped in Figure 6 and was summarised under EVC 31 in Table 13 in Section 7.3.1.

The FFG Act describes CTR as:

'Combinations of Myrtle Beech (Nothofagus cunninghamii), *Southern Sassafras* (Atherosperma moschatum = A. moschatum *subsp*. moschatum), *Black Olive-berry* (Elaeocarpus holopetalus) *and Blackwood* (Acacia melanoxylon) *according to the site, the dominant tree species varying with the longitude. Cool Temperate Rainforest includes closed transitional and seral communities, with emergent eucalypts, that are similar in botanical*

composition to mature rainforests in which eucalypts are absent. In these situations, a more or less closed rainforest canopy occurs beneath the emergent eucalypts. The understorey is typically dominated by Musk Daisy-bush, Austral Mulberry and tree-ferns, with a ground stratum dominated by ferns. Epiphytes are abundant on both trees and tree-ferns, and a rich bryophyte flora is also present. In undisturbed conditions, Cool Temperate Rainforest has a closed canopy.' (SAC 2013).

The slopes of Mount Donna Buang are modelled by DELWP as Montane Wet Forest (EVC 39) (DELWP 2014a). This EVC is variously dominated by Alpine Ash, Mountain Ash or Shining Gum. The lower slopes then give way to Wet Forest (EVC 30) dominated by Mountain Ash with the drainage lines often supporting ribbons of CTR (EVC 31) dominated by Myrtle Beech and / or Southern Sassafras. The DELWP 2005 EVC mapping rarely extends CTR to the ridgelines above these drainage lines (DELWP 2014a).

Cool Temperate Rainforest is also classified by DELWP as an endangered EVC within the Victorian Alps and Highlands Southern Fall bioregions. The presence of CTR (both the EVC and the FFG Act listed threatened ecological community) was confirmed on site, however, much of the vegetation that contains dominant tree species characteristic of CTR, most notably Myrtle Beech, is better described as the CTMF ecological community and Montane Wet Forest EVC.

Cool Temperate Mixed Forest is not acknowledged or mapped as a separate EVC by DELWP. However, it is listed under the FFG Act as a threatened community in Victoria. The community is acknowledged under the listing recommendation as effectively the CTR community occurring under a canopy of eucalypts and that this, in the absence of fire, would develop into CTR over time. The community description highlights that CTMF mostly occurs in geographically sheltered locations such as saddles on mountain plateaus, cool, permanently moist valley sides and in gullies (DELWP 2021b).

EVC mapping provided by DELWP is produced at a scale of between 1:100,000 and 1:50,000. As such, any fine scale variation in the vegetation communities present (i.e. occurrences of different EVCs covering an area of less than 4 hectares) or the presence of vegetation communities not considered at the time of mapping (i.e. CTMF) is not visible within the mapping available. Therefore, some level of variation from the DELWP 2005 EVC mapping is to be expected at the scale of observation conducted to assess this project.

The mountain slopes east and west of Mount Donna Buang are relatively gentle and are initially dominated by Montane Wet Forest. Within this forest Myrtle Beech is a relatively common understorey tree which sometimes forms a continuous dense understorey with a cover of greater than 70%. This dense understorey tree cover occurs in various sizes and shapes, often occurring as linear ribbons or broader occurrences. Myrtle Beech also occurs as a scattered understorey tree, providing a variable cover as scattered individuals or small clusters (see photos in Appendix 4).

Relatively large areas (greater than 1 hectare) of Montane Wet Forest supporting an understorey dominated by Myrtle Beech were considered to represent examples of the CTMF ecological community. However, this includes relatively narrow bands of Myrtle Beech being only one tree wide (estimated at 10 metres) linking broader areas dominated by this species. Beyond these, Myrtle Beech also occurs as scattered individuals or smaller understorey stands.

While a prolonged absence of fire in this environment would see the eucalypts senesce and Myrtle Beech form a closed canopy (i.e. transition to CTR in terms of canopy composition) the occurrence of Myrtle Beech in this area of Montane Wet Forest is not confined to otherwise geographically sheltered locations. The vegetation community composition associated with these stands of CTMF is therefore more closely aligned with the surrounding Montane Wet Forest EVC rather than supporting a suit of species otherwise more closely associated with the CTR EVC.

The primary management issues associated with the protection of CTMF and providing opportunities for this community to develop into CTR includes protection from fire and minimising the potential impact of Myrtle Wilt.

Areas identified by Practical Ecology (2019) as the CTR ecological community to the west of Mount Donna Buang were refined by Biosis as a combination of areas of CTR in more sheltered locations and CTMF in more exposed locations where Myrtle Beech was present amongst Montane Wet Forest.

Of the areas assigned to Cool Temperate Rainforest EVC 31 in the assessment corridor, 4.96 hectares is considered Cool Temperate Rainforest and 14.05 hectares is considered Cool Temperate Mixed Forest. Photographs in Appendix 4 (Plate 6 and Plate 7) show the difference between CTR and CTMF in the project area. These two communities are shown in EVC mapping on Figure 5.

No other FFG Act listed ecological communities were recorded within the project area.

7.6 Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) are ecosystems that are partially or completely dependent on underground water, or the surface expression of this water, for their existence or health. These ecosystems include flora and fauna species and communities that are dependent on water discharge to the surface at a level where they can access to persist in permanently wet environments, or to persist during times of extended low rainfall. GHD's (2019b) *Warburton Mountain Bike Destination Project – Desktop Hydrogeological Assessment* and GHD (2021) did not identify any known GDEs within the project area. However the study did identify a number of high potential aquatic GDEs, primarily associated with the Yarra River, Little Yarra River and associated tributaries (GHD 2019b). Three low to moderate potential terrestrial GDEs occur in the north-west of the project area with several high potential GDEs occurring outside of the project area to the west (GHD 2019b).

Montane thickets embedded within EVC30, EVC31 and EVC39 dominated by Lemon Bottlebrush and / or Mountain Tea-tree *Leptospermum grandifolium*, which thrive in damp, poorly drained soils, were observed within the assessment corridor between Mount Donna Buang, Mount Victoria and Ben Cairn. Given the locations of these thickets are away from surface water drainage lines it is highly likely that these thickets are dependent on shallow aquifer groundwater sources and could be considered GDEs (see Appendix 4, Plate 14). This vegetation may also be sustained by the high rainfall conditions and high soil moisture content in the project area during winter and spring months. Aquatic habitat for the larval stage of Mount Donna Buang Wingless Stonefly's lifecycle is associated with, or is feed by, a combination of surface water run-off and water from seasonal springs and soaks between Mount Donna Buang, Mount Victoria and Ben Cairn. On this basis at least some habitat for this species could be considered a GDE.

7.7 Potentially threatening processes

Potentially threatening processes, as defined in the FFG *Processes List* (DELWP 2016c), that are either already occurring or likely to be present within the project area are summarised below:

- Alteration to the natural flow regimes of rivers and streams.
- Collection of native orchids.
- Degradation of native riparian vegetation along Victorian rivers and streams.
- Habitat fragmentation as a threatening process for fauna in Victoria.

- High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition.
- Human activity which results in artificially elevated or epidemic levels of Myrtle Wilt within *Nothofagus*-dominated Cool Temperate Rainforest.
- Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity.
- Increase in sediment input into Victorian rivers and streams due to human activities.
- Infection of amphibians with Chytrid Fungus, resulting in chytridiomycosis.
- Invasion of native vegetation by Blackberry *Rubus fruticosus* L. agg.
- Invasion of native vegetation by 'environmental weeds'.
- Loss of coarse woody debris from Victorian native forests and woodlands.
- Loss of hollow-bearing trees from Victorian native forests.
- Predation of native wildlife by the cat, *Felis catus*.
- Predation of native wildlife by the introduced Red Fox *Vulpes vulpes*.
- Prevention of passage of aquatic biota as a result of the presence of instream structures.
- Reduction in biodiversity of native vegetation by Sambar *Cervus unicolor*.
- Spread of *Pittosporum undulatum* in areas outside its natural distribution.
- The spread of *Phytophthora cinnamomi* from infected sites into parks and reserves, including roadsides, under the control of a state or local government authority.

Key threatening processes listed under the EPBC Act (DAWE 2020) that are either already present or likely to be present within the project area are:

- Infection of amphibians with chytrid fungus resulting in chytridiomycosis
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants.
- Predation by feral cats.
- Predation by European red fox.
- Dieback caused by the root-rot fungus *Phytophthora cinnamomi*.
- Land clearance.

These threatening processes are discussed in relation to the potential cumulative effects of the project in Section 9.11.

7.8 Summary

The existing conditions investigations undertaken between 2017 and July 2021 have focussed on native vegetation assessment, tree assessments, investigating and developing alternative trail alignments and mitigation measures through field-based discussions with stakeholders and experts. This body of work is describes the existing conditions of the project area as a foundation for undertaking a biodiversity risk assessment and impact assessment that is commensurate with the expected magnitude, extent and duration

of biodiversity impacts likely to arise from mountain bike trail construction and operation (e.g. understorey vegetation removal and minor earthworks). This information also provides a basis for the assessing the project against key State and Commonwealth biodiversity protection regulations such as the EPBC Act, FFG Act and *Guidelines for the removal, destruction or lopping of native vegetation*.