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Attention: Native Vegetation Regulation
Department of Water and Environmental Regulation
Locked Bag 10
JOONDALUP WA 6919

Delivered by email to: info@dwer.wa.gov.au

Dear Sir/Madam

CLEARING PERMIT (AREA PERMIT) APPLICATION TO IMPLEMENT UPGRADE WORKS WITHIN A PART OF FERGUSON ROAD STRAIGHT LINE KILOMETRE (SLK) 13.60 TO SLK 19.60, FERGUSON/WELLINGTON MILL

With regard to the letter content outlined below, please keep in mind the following key terms as they relate to this clearing application:

- **Native vegetation clearing area (or clearing area)** – this refers to the area of native vegetation that is proposed to be cleared and is the subject of this clearing permit application. The extent of native vegetation has been surveyed and is clearly understood. This area is 3.19 ha in size.
- **Road works area** – this refers to the broader area within which the road upgrade is proposed to occur. This area has been provided for context, to demonstrate that the actual road upgrade is predominantly associated with cleared or areas with non-native vegetation. This area is 9.64 ha in size.
- **Survey area** – this refers to the area over which the ecological surveys (flora, vegetation and fauna) were completed in support of the road upgrade. It covers a broader area (14.26 ha) than both the native vegetation clearing area and road works area.

1 OVERVIEW

Emerge Associates (Emerge) have been engaged by the Shire of Dardanup ('the applicant') to support the preparation of a clearing permit application, including the completion of flora, vegetation and fauna surveys, for upgrades to Ferguson Road, extending from straight line kilometre (SLK) 13.60 to SLK 19.60. This area is herein referred to as the 'road works area' and is found within the localities of Ferguson and Wellington Mill. The road works area is shown in **Figure 1** and is provided for context. To implement the required road upgrades, areas of native vegetation determined through the site-specific surveys will need to be removed and is the subject of this clearing permit application. This area is herein referred to as the 'native vegetation clearing area' or 'clearing area'.

The road works area is approximately 9.64 hectares (ha) in size and contains approximately 6.44 ha of existing hardstand road surface and non-native vegetation (consisting of mostly paddock grasses and weeds). The remaining area is comprised of 3.19 ha of native vegetation (the 'native vegetation clearing

area') required to be cleared to implement the road upgrade. The 3.19 ha of native vegetation clearing area contains the following values:

- 0.18 ha of native plant community **CcEmBa** in 'very good' condition.
- 2.61 ha of native plant communities **Af**, **AfTL**, **Cc** and **CcAf** in 'degraded' condition.
- 0.40 ha of isolated trees found in the **non-native** plant community in 'completely degraded' condition.
- Of the vegetation, it is identified to include:
    - 3.06 ha of moderate - high quality Carnaby's black cockatoo foraging habitat.
    - 3.04 ha of moderate - high quality Baudin's black cockatoo foraging habitat.
    - 3.06 ha of moderate - high quality Forest-red-tailed black cockatoo foraging habitat.
    - 111 black cockatoo habitat trees. Of these trees, three (3) were identified as having a potentially suitable hollow for breeding purposes (the base of the hollows was not visible, so could not be completely verified). No signs of nesting were identified.
- In addition to black cockatoo habitat trees, four (4) of the 111 trees were identified to also contain a hollow that could be utilised by western ringtail possums.

The following letter is provided in support of the clearing permit application (area permit) form (provided separately) pursuant to Part V of the *Environmental Protection Act 1986* (EP Act) and is to be read in conjunction with the following attachments (provided as part of the permit application):

- **Attachment 1** – Landholder Memorandums of Understanding.
- **Attachment 2** – which is this letter.
- **Attachment 3**– *Reconnaissance Flora and Vegetation Assessment – Part Ferguson Road, Ferguson* (Emerge Associates 2023b).
- **Attachment 4**– *Basic Fauna and Targeted Black Cockatoo Assessment – Part Ferguson Road, Ferguson* (Emerge Associates 2023a).
- **Attachment 5**– *Targeted Flora and Vegetation Assessment – Part Ferguson Road, Ferguson* (Emerge Associates 2023c).
- **Attachment 6** – Ferguson Road Design (Coats Civil Consulting 2023)
- A shape (.shp) file of the native vegetation clearing area has been submitted to Department of Water and Environmental Regulation (DWER) as part of the application.

2 INTRODUCTION AND BACKGROUND

The applicant is seeking a clearing permit to upgrade a section of Ferguson Road within the Shire of Dardanup between SLK 13.6 to 19.6. The upgrade is required for safety purposes and specifically relate to widening the existing road pavement and installing audible edge treatments.

The existing sealed width of Ferguson Road between SLK 13.6 and SLK 19.6 varies and has unsealed gravel shoulders on both sides of the road. "Clear zones", that is, the distance between the sealed edge and traffic hazards such as trees, do not currently meet the minimum distances recommended in the Austroads Guidelines. The majority of crashes on Ferguson Road, as well as other similar roads in the area, are run-off type vehicle crashes.

The recommended treatment for this road comprises a 7 m seal width (2 x 3.5 m lanes), audible edge lines, and 0.5 m partially sealed shoulders on both sides (8.0 m width total seal). This treatment was developed through the State Blackspot Program and is considered a compromise for local roads such as Ferguson Road, where construction of alternative alignments would not be possible, minimum clear zones could not be reasonably established and/or there are areas of adverse road geometry that would be impractical to improve.

The audible edge line treatment provides warning to road users and the partially sealed shoulder provides some margin of error for the driver, who may be inadvertently veering off the road, to recover and revert to the lane. The treatment increases the safety of the road without having to realign the road or provide clear zones that would necessitate extensive clearing of native vegetation, particularly trees. The recommended treatment minimises the need for clearing since the existing alignment is generally maintained, the increase in road width is small, and clear zones are largely left in their current state.

The road works area is approximately 9.64 ha in size and includes the existing bitumen surface and unsealed gravel shoulders. The location and extent of the road works area and associated native vegetation clearing area is shown in **Figure 1**. The western and eastern portions of the native vegetation clearing area is bounded by rural landholdings, whilst the central portion is bounded by the Wellington State Forest, consisting of a pine plantation to the north, and remnant native vegetation and another pine planation to the south.

The native vegetation clearing area is 3.19 ha in size and has been able to be defined based on the detailed investigations completed to support this clearing permit application within the existing road reserve and portions of private landholdings that are under acquisition. The project has sort to minimise the clearing footprint through the road design approach discussed above, and utilised existing cleared areas, or areas containing non-native vegetation. Approximately 67% of the road works area comprises existing bitumen and gravel shoulders or non-native vegetation.

In accordance with the Environmental Protection Authority's (EPA's) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) a flora and vegetation assessment to the standard required of a 'Reconnaissance survey' was undertaken in May 2022 (provided as **Attachment 3**) as well as a follow up 'Targeted spring flora survey' with two separate site visits in September and November (provided as **Attachment 5**).

A basic fauna assessment as well as targeted habitat assessment for black cockatoos and western ringtail possums was also undertaken in accordance with the Environmental Protection Authority (EPA) *Technical Guidance – Terrestrial fauna Surveys for environmental impact assessment* (EPA 2020) in May 2022 (provided as **Attachment 4**).

It is important to note the survey area associated with the flora, vegetation and fauna assessments cover a much larger footprint (14.26 ha) and is associated with the entire Ferguson Road reserve for the extent being upgraded.

A summary of the environmental conditions identified through the flora, vegetation and fauna assessments as relevant to the native vegetation clearing area are outlined below.

3 SUMMARY OF ENVIRONMENTAL CONDITIONS

3.1 Clearing application area

The majority of the road works area (6.44 ha) comprises bitumen and unsealed gravel surfaces, existing cleared areas, and areas non-native vegetation.

The native vegetation clearing area (3.19 ha) reflects the extent of native vegetation identified within the road works area that will need to be cleared to facilitate the road upgrade. The native vegetation clearing area has been determined based on the outcomes of the site-specific surveys completed within the broader road reserve and potential works area. The native vegetation clearing area is based on the presence of native vegetation canopy cover, and includes canopy cover that extends over the existing cleared bitumen and cleared gravel shoulders. The identified clearing area extent is considered to be a conservative approach as it assumes all vegetation that overhangs the road will be removed. It is expected, like the existing conditions, that the native vegetation clearing extent will be less than the area stated (currently approximately 1.79 ha of the native vegetation clearing area is already composed of bitumen and cleared gravel shoulders) as trees (located at their base) included in the count are likely situated

beyond the native vegetation clearing area and will be retained. Vegetation retention is discussed further below (see **Section 4**) in response to the mitigation hierarchy.

Figure 1 illustrates the proposed native vegetation clearing area, assuming all native vegetation within the road works area will be removed. The native vegetation clearing area is 3.19 ha in size. The remainder of the road works area does not contain native vegetation (as determined through the flora, vegetation and fauna assessments) and comprises 3.10 ha comprised of non-native grasses and weeds whilst 3.35 ha were identified as exiting road surface or cleared areas. A summary of the vegetation condition and community composition applicable to the native vegetation clearing area is described further in **Section 3.3**.

3.2 Historical clearing

A review of available historical aerial images (from 1996 onwards) shows that the road works area has remained largely unchanged in that time. The majority of the native vegetation within road works area was removed prior to 1996, and has since regrown (WALIA 2022).

3.3 Flora and vegetation values

A reconnaissance flora and vegetation survey (see **Attachment 3**) was undertaken by Emerge Associates on the 25 and 26 May 2022, with a follow-up targeted flora survey (see **Attachment 5**) completed in 30 September and 1 November. These surveys were undertaken to determine the vegetation condition, identify plant communities as well as the presence of threatened and priority ecological communities and threatened and priority flora species. The following provides a summary of the flora and vegetation values pertaining to the native vegetation clearing area in the context of the road works area.

Six plant communities were identified within the native vegetation clearing area. Each plant community is described below in, and the location and extent is shown in **Figure 4a-e**. The data presented in **Table 1** shows that the native vegetation clearing area (which is the basis for the permit application) is specific to the native vegetation values identified within the broader works area.

Of the identified plant communities, **CcEmBa** was identified to represent the most intact vegetation. Non-native vegetation comprised of grasses and herbs occupy large extents of the understory throughout the remainder of identified plant communities. Representative photos of the associated plant communities are provided in **Plate 1** to **Plate 6** below.

Table 1: Vegetation values identified within the road works area and native vegetation clearing area.

Plant community and description	Vegetation condition (Keighery 1994)	Road works area (ha)	Native vegetation clearing area (ha)
Af – Open forest of *Agnois flexuosa* over non-native grasses and herbs (see **Plate 1**).	'Degraded'	0.04	0.04
AfTi - Open forest of *Agonis flexuosa* over tall shrubland of *Taxandria linearifolia* over non-native grasses and herbs including **Eragrostis curvula* (see **Plate 2**).	'Degraded'	0.05	0.05
Cc – Open forest to woodland of *Corymbia-calophylla* over scattered native shrubs including *Acacia urophylla*, *Hibbertia hypericoides*, *Leucopogon capitellatus* and *Pteridium esculentum* and non-native grasses and herbs including **Cynodon dactylon* and **Paspalum dilatatum* (see **Plate 3**).	'Degraded'	2.10	2.10
CcAf – Closed forest to woodland of *Corymbia calophylla* over *Agonis flexuosa* over non-native grasses and herbs (see **Plate 4**)	'Degraded'	0.42	0.42
CcEmBa - Closed forest of *Corymbia calophylla* and *Eucalyptus marginata* over shrubland of *Acacia urophylla*, *Bossiaea aquifolium*, *Hakea amplexicaulis*, *Hibbertia hypericoides*, *Persoonia longifolia* and *Rubus ulmifolius* over grassland of *Lepidosperma pubisquameum* (see **Plate 5**).	'Very good'	0.18	0.18
Non-native – Heavily disturbed areas comprising of weeds and occasional scattered native vegetation and shrubs and planted vegetation in addition to bare areas (see **Plate 6**).	'Completely degraded'	3.50	0.40**
Total		6.29*	3.19

**The remaining area (3.35 ha) consists of existing bitumen road surface.*

***The extent of native isolated trees within the 'non-native' plant community has been determined based on detailed habitat assessment which identified native trees.*

Plate 1: Plant community Af in 'degraded' condition

Plate 2: Plant community AfTi in 'degraded' condition

Plate 3: Plant community Cc in 'degraded' condition

Plate 4: Plant community CcAf in 'degraded' condition

Plate 5: Plant community CcEmBa in 'very good' condition

Plate 6: Non-native vegetation in 'completely degraded' condition (in foreground of image)

A targeted spring flora survey (provided as **Attachment 5**) was completed to identify threatened or priority species on 30 September and 1 November. Transects were walked within areas of the site previously identified as 'very good' condition (associated with the identified **CcEmBa** vegetation community). No threatened or priority flora species were identified within the native vegetation clearing area. The majority of the threatened and priority flora species identified in the desktop assessment as possibly occurring are therefore not considered to occur due to extensive historical disturbance or because they were not recorded during the 'reconnaissance' field survey or follow up 'targeted' spring survey.

Based on the surveys no conservation significant flora or ecological communities was identified within the native vegetation clearing area.

3.4 Fauna values

A basic fauna assessment and targeted black cockatoo and western ring tail possum surveys were conducted by ecologists from Emerge Associates on 25 and 26 May 2022 to determine suitability of habitat for conservation significant fauna (provided as **Attachment 4**). A follow up black cockatoo hollow assessment of the which encompasses the clearing area was undertaken by Emerge Associates on 15 August 2022 (provided as **Attachment 4**). The following provides a summary of the fauna values pertaining to the native vegetation clearing area.

The basic fauna survey assessed the various habitat types and overall site conditions and the likelihood to provide suitable habitat for conservation significant fauna species. Based on the outcomes of the desktop assessment, nine conservation significant fauna species were considered likely to occur and are summarised in **Table 2** below. Two conservation significant fauna species were recorded within the survey area during the assessment, namely Carnaby's black cockatoo and forest red-tailed black cockatoo (FRTBC) and are discussed in further detail below.

Table 2: Conservation significant fauna species recorded within the local area or deemed possible to occur within the site based on available databases and habitat values identified during site assessment(Emerge Associates 2023a).

Scientific name	Common name	Conservation code (state and federal)	Habitat	Likelihood of occurrence within clearing area based on habitat values identified
Bird				
Apus pacificus	Fork-tailed swift	Migratory (state and federal)	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey and Knight 2012).	**Possible:** May opportunistically occur in or fly over the clearing area on commute but only for short periods of time.
Zanda baudinii	Baudin's Cockatoo	Vulnerable (state and federal)	Mainly eucalypt forests. Attracted to seeding *Corymbia calophylla*, *Banksia* spp., *Hakea* spp., and to fruiting apples and pears (Johnstone and Storr 1998).	**Possible:** Suitable breeding, roosting and foraging habitat present.
Calyptorhynchus banksii naso	Forest red-tailed black cockatoo	Vulnerable (state and federal)	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla*, *Eucalyptus marginata*, introduced *Melia azedarach* and other *Eucalyptus* spp. trees (Johnstone *et al.* 2017).	**Recorded:** Observed flying over clearing area. Suitable breeding, roosting.
Zanda latirostris	Carnaby's cockatoo	Endangered (state and federal)	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of *Pinus* spp. Attracted to seeding *Banksia* spp., *Dryandra* spp., *Hakea* spp., *Eucalyptus* spp., *Corymbia calophylla*, *Grevillea* spp., and C*asuarina* spp. (Johnstone and Storr 1998).	**Recorded:** Observed foraging within the clearing area. Suitable breeding, and roosting habitat present.
Falco peregrinus	Peregrine falcon	Other specially protected (state)	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	**Possible:** May opportunistically occur in or fly over the clearing area on commute or while searching for prey but only for short periods of time.

Table 2: Conservation significant fauna species recorded within the local area or deemed possible to occur within the site based on available databases and habitat values identified during site assessment(Emerge Associates 2023a). (continued)

Scientific Name	Common Name	Conservation Code	Habitat	Likelihood of occurrence within clearing area based on habitat values identified within the site
Bird (continued)				
Tyto novaehollandiae novaehollandiae	Australian masked owl	Priority 3 (state)	Forests, open woodlands, farmlands with large trees. E.g. river red gums, adjacent cleared country, timbered watercourses, paperbark woodlands and caves (Pizzey & Knight 2012).	**Possible:** Suitable habitat occurs in the clearing area.
Mammal				
Falsistrellus mackenziei	Western false pipistrelle	Priority 4 (state)	High rainfall forests dominated by jarrah, karri, marri, and tuart. Occupies hollow logs for breeding and resting (Van Dyck and Strahan 2008). Also known to utilise Banksia woodland on the Swan Coastal Plain (Hosken and O'Shea 1995).	**Possible:** Suitable habitat occurs in the clearing area.
Phascogale tapoatafa wambenger	South-western brush-tailed phascogale	Conservation dependent (state)	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	**Likely**: Suitable habitat present and recent records (2018) of this species occur in the clearing area.
Pseudocheirus occidentalis	Western ringtail possum, ngwayir	Critically endangered (state and federal)	Dense stands of *Agonis flexuosa*, as well as *Eucalyptus gomphocephala*, *Corymbia calophylla* and *Eucalyptus marginata* forests (DBCA 2017).	**Possible:** Suitable habitat occurs in the clearing area.

The targeted black cockatoo habitat assessment identified 111 habitat trees (trees with a diameter at breast height (DBH) 500 mm or greater) within the native vegetation clearing area. A detailed hollow assessment was then completed, and found that three (3) of these trees contained potentially suitable hollows. The location of the habitat trees are shown in **Figure 6a-e**. No evidence of roosting activity such as droppings, feathers or branch clippings were observed during the black cockatoo habitat assessments.

The 3.19 ha of native vegetation to be cleared was assessed to also represent foraging habitat for the three black cockatoo species. The area of moderate to high quality foraging habitat (explained in further detail in **Attachment 4**) varies based on species (and their individual habitat preferences), but includes approximately:

- 3.06 ha of moderate - high quality FRTBC foraging habitat,
- 3.04 ha of moderate – high quality Baudin's foraging habitat; and
- 3.06 ha of moderate - high quality Carnaby's cockatoo foraging habitat.

The extent of potential foraging habitat for each black cockatoo species is shown in **Figure 7a-e**, **Figure 8a-e**, and **Figure 9a-e** respectively**.**

A targeted western ringtail possum assessment was also completed, and identified no western ringtail possums and no secondary evidence of their presence (dreys, scats, claw marks or skeletal remains). Four (4) of the black cockatoo habitat trees were also identified to contain hollows that would be suitable for western ringtail possum. The location of these trees is shown in **Figure 6a-e**.

Overall, based on the findings from the basic fauna assessment and targeted black cockatoo and western ring tail possum assessment, the fauna habitat values within the native vegetation clearing area is generally poor, although it does contain habitat that could be utilised by the black cockatoo species (but would not

be significant, particularly in the context of the large proportion of the available habitat in nearby conservation areas). Ground dwelling fauna could temporarily enter the area while traversing between the small sections of higher quality forest situated either side of the native vegetation clearing area, particularly in the central portion which is connected to larger forested areas.

4 APPLICATION OF MITIGATION HIERARCHY

In accordance with *A guide to the assessment of applications to clear native vegetation* (DER 2014), the impact mitigation sequence has been considered as part of the proposed clearing, in order to ensure the environmental impact was kept to a minimum.

It is relevant to keep in mind, and as discussed in **Section 2**, the proposed clearing is to support required road safety upgrades (specifically widening the existing road pavement and installing audible edge treatments), and the impact mitigation sequence should be considered in this context. The existing sealed width of Ferguson Road subject to the proposed road works varies, and existing "clear zones" (the distance between the sealed edge and traffic hazards such as trees) do not currently meet the minimum distances recommended in the Austroads Guidelines, with the majority of crashes on Ferguson Road, run-off type vehicle crashes. The road upgrades are provided in **Attachment 6**.

4.1 Avoidance

Multiple widening and realignment scenarios, as well as design approaches, have been considered during the project development process in order to avoid impacts to native vegetation. Initially, the road works area was to be 11.25 ha (which would have included approximately 4.29 ha native vegetation clearing area) but has been able to be reduced to a 9.64 ha road works area (which includes a 3.19 ha native vegetation clearing area, which is the subject of this application). This has been achieved by:

- Consideration of the road seal width in the context of the environmental values. The treatment for this road comprises a 7 m seal width (2 x 3.5 m lanes), audible edge lines, and 0.5 m partially sealed shoulders on both sides (8.0 m width total seal).
- The use of an audible edge line treatment to increases the safety of the road without having to realign the road or provide additional clear zones that would necessitate extensive clearing of native vegetation, particularly trees.
- Revising road batters at the design stage, and seeking to steepen these where possible to minimise the extent of clearing. Further reductions may be possible at the time of implementation and is discussed further below.

Overall, the treatment has avoided clearing of native vegetation by maintaining use of the existing alignment (pavement and cleared shoulders, which is approximately 1.79 ha of the clearing area) as much as possible and using audible edge line treatments (see **Attachment 6**). This has meant that the increase in road width is small, and clear zones have largely been left in their current state. It is acknowledged that further avoidance of native vegetation clearing would likely result in compromising optimal road safety and not allow the road to achieve the required engineering outcomes. Therefore, where avoidance is not possible mitigation has been considered throughout the project.

4.2 Minimise

The majority of the proposed clearing is associated with native vegetation identified as 'degraded' and 'completely degraded' (see **Table 1**), minimising impacts on better quality vegetation. Of the native vegetation clearing area, only 0.18 ha is vegetation in 'good' or better condition. This has been a purposeful consideration where possible, to minimise impacts on existing values.

As noted above, the road safety upgrades are making use of the existing road pavement and cleared shoulders as much as possible. In this context, it is relevant to note that approximately 1.79 ha of the native vegetation cover included in the proposed 3.19 ha native vegetation clearing area extends over the existing cleared road pavement and shoulders. It is difficult to be specific with the exact impact of the

proposed works on the existing canopy overhanging the road pavement and cleared shoulders, so a conservative approach has been undertaken assuming all canopy cover will be removed where within the road works area. It is therefore highly likely that the clearing will not be as much as predicted based on canopy cover, given it is anticipated that canopy cover and the road pavement and cleared shoulders can co-exist.

Measures that will be implemented during the construction and operation of the proposed road upgrade to minimise the duration, intensity and extent of impacts on conservation significant values, and is based on compliance with the Shire of Dardanup local council policies (including, but not limited to), namely *CP058 – Roadside vegetation*; *CP120 – Environment*; and *CP121 – Tree Management Policy*. Measures include:

- Ongoing liaison with the works team, to ensure that clearing areas are known and observed.
- Use of existing cleared areas within or nearby the road works area to stockpile materials and retain machinery.
- During woks, as much as possible, opportunities to modify the embankment/batter (e.g., steepen in places) will be actively applied, to reduce the number of habitat trees being removed. It is difficult to predict at this stage the likely reduction in tree removal, so a conservative assessment of impact has been applied to this permit (e.g. none will be retained).
- Appropriately managing construction to prevent the potential spread of weeds and dieback into areas of retained vegetation. This includes ensuring all machinery, vehicles, tools and footwear is cleaned down before entering the works area, and any fill brought onto the works area to be weed and/or disease free.
- Ensuring a suitably qualified zoologist undertakes a fauna inspection of the vegetation to be cleared 1-2 days before clearing, and remains on site during clearing activities should any fauna management/relocation be required.
- Undertaking vegetation clearing in accordance with Shire of Dardanup local council policies, and includes (but is not limited to) felling trees in a manner to reduce damage to surrounding vegetation; mulching material and spreading within the works area or where not suitable, disposing at a separate suitable location designated by Shire Environment Officer; and undertaking clearing in manageable sections and towards retained vegetation to enable fauna species to move to adjacent habitat.
- Where possible, clearing outside of the black cockatoo breeding season (i.e. August to December) will be avoided to minimise potential disturbance to breeding individuals. This will be weather dependent (with spring/summer a key construction period in the south west); however, inspection by a zoologist can ensure any potential impacts on fauna utilising trees can be managed appropriately.
- Constructing culverts and drainage in accordance with the proposed designed, to prevent long term erosion.
- Limit vehicle speeds within the project footprint area to reduce the chance of fauna vehicle strike.
- Where applicable during works, temporary control measures such as the installation of silt traps/sediment control measures to slow surface run off and minimise erosion and subsequent sedimentation during rain events and dust suppression during dry weather period.

The Shire of Dardanup will typically prepare a construction environmental management plan (or similar) to support projects, including road upgrades, and this details activities such as site preparation (tree marking/surveying); vegetation clearing (and completing this in a safe manner); earthworks; construction of culverts and drains; and bitumen sealing of the road. The Shire also undertake clearing and maintenance in accordance with the *Handbook of Environmental Practice for Road Construction and Maintenance Works* (Roadside Conservation Committee 2010).

As mentioned, it is anticipated that a further reduction in clearing will be possible as part of implementing the road works program. It is standard practice for the Shire of Dardanup to implement a strategy that identifies vegetation within the clearing area which can be retained as the works progress. This includes, where possible modifying batters through local steepening to avoid the removal of individual trees. Therefore, whilst the clearing area of 3.19 ha has been proposed and applied for, the above Shire of Dardanup process is likely to reduce this clearing extent.

4.3 Rehabilitation

At this stage, no active rehabilitation is proposed. The Shire of Dardanup will typically mulch/stabilise the implemented batters and support natural regeneration of these areas. If a more active approach to rehabilitation is required, the Shire would welcome the opportunity to discuss further with the DWER.

4.4 Offset

Whilst avoidance and mitigation measures have been explored and implemented as part of the proposed clearing, if significant residual impact(s) remain, an offset may be required to counterbalance the significant residual impact(s) of a project.

At this stage no significant residual impact is predicted, and therefore an offset has not been proposed. As discussed further below (see **Section 7**), the clearing permit application is not likely to be at variance to the clearing principles due to the degraded quality of the majority of vegetation within the clearing area and the mitigation measures that will be implemented as part of the works program. Extensive areas of remnant native vegetation nearby to the clearing area mean the predicted 3.19 ha of native vegetation clearing will not significantly change the available vegetation, particularly for conservation significant fauna.

5 PLANNING INSTRUMENTS AND OTHER ENVIRONMENTAL APPROVALS

No further planning approvals are required to support the Ferguson Road upgrades.

6 PROPOSED CLEARING OF NATIVE VEGETATION

As outlined above, the proposed clearing of native vegetation totals an area of 3.19 ha and is sought to facilitate the safety improvements of a portion of Ferguson Road. A breakdown of the native vegetation proposed to be cleared within the native vegetation clearing area, grouped by plant community and vegetation condition, is provided in **Table 1** in **Section 3.3**. The proposed clearing would comprise removal of approximately 5.6% of native vegetation in 'very good' condition, and 94.4% of vegetation in a 'degraded' or 'completely degraded' condition. This is anticipated to be an overestimation of the likely clearing, given 1.79 ha (50%) of the clearing area is canopy over the existing bitumen and cleared shoulders, and it is likely that canopy will remain over the road pavement in the long term.

Consideration of the clearing principles in the context of the above clearing is provided in **Section 7**.

7 RESPONSE TO EP ACT CLEARING PRINCIPLES

Under Section 51C of the EP Act, clearing of native vegetation is an offence unless a clearing permit has been obtained or an exemption applies. When assessing clearing permit applications, DWER has regard to the ten clearing principles contained in Schedule 5 of the EP Act so far as they are relevant to the matter under consideration.

In support of this area permit clearing application, we have considered and responded to the ten clearing principles in the following sections.

Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity.

The road works area is located in the South West Forest region of Western Australia, which is an area recognised for its high biological diversity. Based on the results of the flora and vegetation assessment undertaken by Emerge in 2022, the native vegetation clearing area has been significantly disturbed through historic clearing for agricultural and road construction activities (since at least 1996 based on publicly available aerial photography). The road works area contains six plant communities ranging from 'very good' to 'completely degraded' condition as shown in **Figure 4**.

The majority of the road works area is associated with 'cleared' or the **non-native** community (6.45 ha) and is generally void of native of vegetation, comprising predominantly of grassland and weeds and bitumen or gravel shoulders, noting that there may be occasional scattered native vegetation trees present within this area (but these have been included in the clearing area). The native vegetation clearing area, as per **Table 1**, comprises predominantly the native plant communities **Af**, **AfTL**, **Cc** and **CcAfc** which were assessed as 'degraded' condition (2.61 ha); while 0.18 ha of the native plant community **CcEMBa** was in 'very good' condition. A small portion of the clearing area (0.40 ha) is associated with isolated individual native tree species that are in the **non-native** community and in 'completely degraded' condition.

The clearing area is found within the 'Lowdon' vegetation complex and is characterised by a mixture of open forest of Jarrah-marri and peppermint with wandoo and occasional mountain marri on slopes and woodland of flooded gum and paperbark on the valley floor (Heddle *et al.* 1980). Based on the most recent vegetation complex statistics for the South West Forest area, there is 36.64% of the Lowdon complex remaining in the Darling Plateau sub-region with 15.74% remaining in Department of Biodiversity and Conservation and Attractions (DBCA) managed lands (DBCA 2019a). The most intact and diverse plant community, **CcEMBa**, is likely to representative of this complex.

A total of 48 native and 39 non-native species were recorded within the site representing 44 families and 75 genera (Emerge Associates 2023b). Of these, no threatened or priority flora species, or threatened or priority ecological communities were identified within the native vegetation clearing area or broader survey area, including as part of the follow-up targeted flora survey (Emerge Associates 2023c).

Due to the level of historical disturbance, the small extent (0.18 ha) of better-quality vegetation within the clearing area, the majority of vegetation being in a 'degraded' or 'completely degraded' condition, and the limited fauna habitat present within the clearing area (particularly compared to the broader location), the clearing area does not support a high level of biological diversity.

The proposed clearing is therefore not considered to be at variance with Principle (a).

Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

As discussed above in **Section 3.4**, the fauna assessment (Emerge Associates 2023a) observed two species of conservation significance (Carnaby's cockatoo and Forest red-tail black cockatoo) occurring within the survey area, while a further seven conservation significant fauna species were deemed likely or possible to occur based on observed habitat (see **Attachment 4** for further detail). The majority of the native vegetation clearing area was identified to be highly disturbed, namely 77.1 % is **forest no understorey** and 17.56 % is **scattered trees and shrubs** habitat which provides limited value to fauna species. The highest

fauna habitat values were associated with the **forest** habitat (which is 5.34 %). The native vegetation clearing area is not likely to provide significant habitat for conservation significant fauna (or more common and widespread fauna species) given the abundance of better-quality vegetation within the broader local area, much of which is within the nearby national park, state forest and conservation reserves.

Given the general cleared nature of the road works area and largely degraded and completely degraded nature of the native vegetation clearing area, the majority is likely to be primarily used by common and widespread native and non-native fauna species with non-specific habitat requirements. Notwithstanding this, the overstory species of marri and jarrah trees provide suitable habitat for some of the conservation significant fauna species, particularly western ringtail possum and black cockatoos.

The marri, jarrah and peppermint trees within the site could provide foraging, refuge and/or breeding habitat (4 trees were identified with suitable hollows) for western ringtail possum, however no individuals or secondary evidence of the species was observed as part of a targeted survey. If they do occur, they would not be a regular inhabitant of the vegetation being removed. This vegetation would instead form part of a larger home range they inhabit, and therefore removing the vegetation would not be at variance to the principle for this species.

Potential impacts related to the three black cockatoo species, Baudin's black cockatoo, Carnaby's black cockatoo and the forest red-tailed black cockatoo, is discussed below.

Black cockatoo foraging habitat

The clearing area supports predominantly moderate and/or high value foraging habitat for the three black cockatoo species, including: 3.06 ha for forest red-tailed black cockatoo; 3.04 ha for Baudin's black cockatoo; and 3.06 ha for Carnaby's black cockatoo. The foraging habitat extent for the three black cockatoo species within the native vegetation clearing area is shown in **Figure 7a-e**, **Figure 8a-e**, and **Figure 9a-e.**

For the purposes of this application, 'high' foraging value is characterised as areas with 50% of known primary food sources and moderate between 10% and 50% as defined by Emerge Associates (Emerge Associates 2023a), and is based on the assessment of the vegetation identified during the detailed surveys. The small patches of 'low foraging value' habitat were identified to be foraging habitat of lesser value as these areas are predominantly comprised with understory peppermint trees or grass trees which are regarded as secondary food source when compared to marri, jarrah or banksia species which are a primary food source.

Overall, the foraging habitat within the native vegetation clearing area, while not insignificant, does not represent a significant area of habitat for the three black cockatoo species. The foraging habitat within the clearing area extends over a narrow area and there are extensive areas of potential foraging habitat located immediately adjacent to the clearing area to the north and south, particularly the Wellington State Forest and further north the Wellington National Park (see **Figure 10**). This is discussed further below.

Potential black cockatoo breeding and roosting habitat

The native vegetation clearing area contains 111 black cockatoo habitat trees (including native *Corymbia, Eucalyptus* species and stag trees with diameter at breast height (DBH) ≥ 50 cm). A targeted black cockatoo hollow inspection determined that 3 trees contain hollows that were potentially suitable for use by breeding black cockatoos within the native vegetation clearing area. These trees are 'potentially' suitable as the bases were not visible and it was not possible to confirm if these were flat as required by black cockatoos, but all other hollow attributes such as branch diameter, entry angle and height were suitable. The location of the habitat trees is shown in **Figure 6a-e.** As outlined as part of the proponent's avoidance, and mitigation approach, there will be opportunity to minimise clearing of habitat trees as part of the implementation of the road through localised steepening of the road batters (which is what the majority of clearing is related to). However, this avoidance will need to be based on the ground conditions.

A dusk roost survey was not undertaken but no secondary evidence of roosting such as branch clippings, droppings or feathers were observed within the site. Therefore, there is no reason to suspect that roosting by black cockatoos has recently occurred in the native vegetation clearing area. Nevertheless, the site contains many tall trees and groups of tall trees that may provide roosting habitat for black cockatoos.

No breeding or roosting was observed within the site. There are 3 habitat trees with potentially suitable hollows that are currently assumed to be cleared as part of this assessment (although as outlined, it may be possible to avoid these as part of detailed implementation, but will not be known until the works occur). The proposed clearing is not considered to result in a significant residential impact (noting there were 147 habitat trees in the original clearing footprint) and particularly in the context of the habitat in the nearby state forest and national park (discussed below).

Consideration of habitat within the clearing area in the context of the location and surrounding habitat

Black cockatoos occur within the site and broader area, with 5 known roost sites and a possible breeding site within 12 km of the native vegetation clearing area (see **Figure 10**).

The removal of native vegetation as proposed in this application, even with the 3 trees with potentially suitable hollows, is unlikely to result in a significant residual impact to the three black cockatoo species. Based on a review of publicly available native vegetation data there is significant areas of foraging, roosting and breeding habitat for the three black cockatoo species within 12 km of the native vegetation clearing area. The black cockatoo habitat within 12 km of the site is shown on **Figure 10**. The clearing of vegetation as part of this application represents approximately 0.01% of the possible foraging (and associated breeding and roosting) habitat in the surrounding 12 km area (a combined total of 31,273 ha excluding pine plantations). Of the areas of habitat present in the surrounding 12 km area, approximately 79% (24,606 ha) of black cockatoo foraging habitat is located within State controlled lands. Given that significant areas of foraging habitat (which, in this part of the south west, would also equate to potential breeding and foraging habitat) located within 12 km of the native vegetation clearing area is contained within State controlled lands and the land unlikely to be cleared (national park and state forest), it is not likely that the proposed clearing would result in cumulative impacts to the extent that the occurrence of the species locally or regionally would be affected.

Overall, it is unlikely that clearing associated with this application would result in significant impact to fauna habitat necessary for the maintenance of fauna indigenous to Western Australia. The key conservation significant fauna species associated with the native vegetation clearing area is the three black cockatoo species. The clearing area comprises only 0.01 % of the foraging (and associated roosting/breeding) habitat available within the surrounding 12 km. Three (3) trees with potentially suitable breeding hollows may be removed (and are assumed to be for the purposes of this application), but given the presence of similar habitat in the wider area, is not considered to be significant change to the habitat values. Larger areas of better-quality vegetation is located further to the north, east, west and south, including Wellington National Park, which will be used more extensively by native fauna including black cockatoos.

As a result of the above, clearing within the native vegetation clearing area is not considered to be at variance with Principle (b).

Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

There are no historical records of threatened or priority flora occurring within the native vegetation clearing area. The flora and vegetation survey, including spring targeted survey update, undertaken within the native vegetation clearing area (Emerge Associates 2023c), did not identify any threatened or priority flora (Emerge Associates 2023b). This included a detailed traverse of the areas identified as floristic community **CcEmBa,** which represents the most intact portions of the survey area.

As stated previously, it is noted that the majority of the native vegetation proposed to be cleared as part of this application is in a degraded or completely degraded condition (3.01 ha) and is unlikely to support threatened or priority flora species.

As no threatened flora have been identified within the native vegetation clearing area (or the surrounding survey area), nor is it likely that any threatened or priority flora will occur, the proposed clearing is not considered to be at variance with Principle (c).

Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

As outlined in **Section 3.2**, the flora and vegetation assessment confirmed that the plant communities identified within the native vegetation clearing area do not represent a threatened ecological community (TEC) or priority ecological community (PEC). Furthermore, based on geomorphology, soils and regional vegetation patterns, no TECs or PECs were considered to have the potential to occur in the site.

As no TECs or PECs have been identified within road works area (or surrounding survey area), the proposed clearing is not considered to be at variance with Principle (d).

Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The EPA's *Guidance Statement No. 33 Environmental Guidance for Planning and Development* has identified a level of 30% retention of pre-European extent of each vegetation association/complex outside of the areas constrained of urban development, stating a region with levels below 30% should be fully retained (EPA 2008).

The native vegetation clearing area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) region. The Jarrah Forest IBRA region has approximately 39.84% of its pre-European (1750) vegetation extent remaining (Government of Western Australia 2019).

As outlined for Principle (a), the native vegetation clearing area is in an area mapped within the 'Lowdon complex' in the South-west forest region (DBCA 2019b). The 'Lowdon complex' has 36.64 % of its pre-European vegetation extent remaining, with 15.74 % under DBCA management and 11.84 % (2,047.46 ha) with formal protection (DBCA 2019a). At a more localised scale, 36.80 % of the Lowdon vegetation complex remains within the Shire of Dardanup. The native vegetation clearing area comprises 0.15 % (3.19 ha) of this remaining local extent (2,131 ha) and therefore would not significantly change the remaining extent. This is summarised in **Table 3**.

Table 3: Vegetation type and corresponding representation at regional and local scales (DBCA 2019a).

Scale	Vegetation complex (DBCA 2019b)	Pre-European (ha)	Current extent (ha)	Remaining (%)	Current extent protected for conservation
South-west forest; Darling Plateau	Lowdon	17,287.73	6,334.80	36.64	11.84 % (2,047.46 ha)
Shire of Dardanup	Lowdon	5,791.29	2,131.10	36.80	Not available.

The majority of the vegetation proposed to be cleared has been assessed as being in a 'degraded' or 'completely degraded' condition (see **Figure 5a-e**) and is not considered a significant remnant of native vegetation. A review of aerial imagery indicates that the road works area is connected to extensive areas of native vegetation within the local area and its removal would not change this connectivity. Furthermore, not all vegetation within the road reserve is being removed and will continue to contribute to the broader vegetation connectivity.

The proposed clearing is not considered to be at variance with Principle (e) given the small area being cleared in the context of the remaining and protected vegetation.

Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

No Ramsar wetlands, geomorphic wetlands or defined rivers were identified within or in close proximity to the native vegetation clearing area based on a review of publicly available databases, as shown in **Figure 2**.

A number of small unnamed waterway features were identified in association with the native vegetation clearing area, as shown in **Figure 2**. However, no wetland or riparian vegetation was identified within the native vegetation clearing area (Emerge Associates 2023b), nor are these waterway features identified as significant features as listed by the guidelines (DER 2014).

The proposed clearing is not considered to be at variance with Principle (f).

Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

A review of soil landscape mapping (DPIRD 2018) indicates that the majority of the native vegetation clearing area is identified as the 'Lowden Valleys System', which contains 'brown loamy earth' (soil group 541) and 'friable/brown loamy earth' (soil group 543) (DPIRD 2019). The primary risk for land degradation for these soil types is water erosion, however is only a concern in steep sloping areas. Both soil groups, are identified as moderately permeable soil types in elevated landscape positions and are therefore not likely to cause appreciable land degradation in the form of water erosion or waterlogging. Erosion due to water will be managed through the proposed road design and construction process (discussed further in association with Principle (i)).

Salinity mapping (DPIRD-09) indicates the site and surrounding area is mapped as a low salinity hazard category with a groundwater salinity of 500-1000mg/L (DWER 2018). Clearing is not likely to cause or be affected by soil and groundwater salinity (DWER 2018a).

The proposed clearing of the site will result in the removal of only narrow extent of native vegetation, which will be mostly bitumised or stabilised as cleared gravel shoulders as part of the road upgrade and therefore, it is unlikely the clearing would increase the risk of land degradation. In addition, any risk of land degradation will be mitigated through controls applied during clearing and construction processes (such as design of batters to minimise erosion, dust suppression, mulching, erosions control and silt traps as required).

The proposed clearing is therefore not likely to be at variance to Principle (g).

Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The Wellington State Forest area borders the central and eastern extents of the native vegetation clearing area, both to the north and south (as shown in **Figure 3**). The proposed native vegetation clearing will not impact on any values in adjacent or nearby conservation areas as it does not extend into these areas, and the mitigation measures proposed to be implemented (and outlined in **Section 4**) will ensure no impacts on adjacent values. As outlined previously, the majority (3.01 ha) of the native vegetation proposed to be cleared is in a degraded or completely degraded condition.

The proposed clearing will not be at variance to Principle (h). Based on the current footprint of vegetation proposed to be cleared, no portion of the state forest or national park is anticipated to be cleared and the management and mitigation measures that will be implemented through the clearing process will ensure there is no impact on the surrounding conservation areas.

Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Deterioration in quality of surface water or underground water can be as a result of activities that result in sedimentation, increased nutrient levels, changes to pH (through acid sulphate soils), salinity or changes in water regimes of groundwater dependent ecosystems. The proposed works relate to the upgrade of an existing road, and will require minor disturbance of soil and vegetation to accommodate road widening and installation of audible edge treatments. One of the key risks from the works will be deterioration in the quality of surface water through increased surface water flows and sedimentation, during works and as part of ongoing use of the road. Existing runoff from Ferguson Road is managed through stabilising batters and use of culverts, and similar approaches will be employed as part of the upgrades. No long-term change to the surface or groundwater conditions is likely as part of the road upgrade works.

As part of the proposed works, a number of road culverts (for drainage) will be upgraded. To minimise the potential for erosion, these have been designed to accommodate the likely volume of water that will move through the existing water features, and include features such as rock pitching, rock spalls, silt sumps and wet ground bedding to minimise likelihood of erosion, and to slow stormwater flows prior to discharge to the natural surface. Batters have been based on a 1:4 side slope, to provide stability and will be mulched and allowed to naturally revegetate, minimising long term erosion (and sedimentation). Where batters are steepened locally as part of works, to minimise clearing of vegetation and manage works around existing fencelines and similar, this will be completed in consideration of the local conditions to ensure the batter is stabilised in the long-term and does not result in movement of soil. Acid sulfate soils (ASS) are not expected to be mobilised by the proposed works.

If required (and will be based on conditions during construction, particularly if rainfall occurs or is forecast), temporary sedimentation control features will be implemented, including sediment traps (sand bags/filter socks), sedimentation fences, straw bale filters or similar, particularly while culvert works are underway.

The proposed design accommodates treatments for managing surface water and the potential risks of erosion and associated sedimentation. Issues that could cause a deterioration in water quality within or surrounding the road works area have been considered as part of the design and can be managed, and therefore the proposed clearing is not considered to be at variance with Principle (i).

Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

The proposed clearing of native vegetation is associated with the removal of narrow strips of vegetation along either side of an existing road. As outlined above, the road design has considered (and designed for) managing stormwater and existing surface water flows, and will not increase or change the behaviour or volume of surface water that it would cause or exacerbate the incidence or intensity of flooding.

The proposed clearing is not considered to be at variance with Principle (j).

8 SUMMARY AND CLOSING

The road works area is approximately 9.64 ha in size while the native vegetation clearing area (and subject of this application) is 3.19 ha. The clearance area contains:

- 0.18 ha of the native plant community **CcEmBa** in 'very good' condition.
- 2.61 ha of the native plant communities **Af**, **AfTL**, **Cc** and **CcAf** in 'degraded' condition.
- 0.40 ha of the **non-native** community which contains isolated native trees in 'completely degraded' condition.
- Fauna habitat, including:
    - 3.06 ha of moderate – high quality foraging habitat for the Carnaby's black cockatoo.
    - 3.04 ha of moderate – high quality foraging habitat for the Baudin's black cockatoo.
    - 3.06 ha of moderate - high quality foraging habitat for the forest-red tailed black cockatoo.
    - 111 black cockatoo habitat trees, of which 3 contain potentially suitable hollows for breeding.

Overall, the majority of native vegetation within the clearing area is in 'completely degraded' or 'degraded' condition, with only 5.6% (0.18 ha) of vegetation in 'very good' condition.

Emerge believe that the proposed clearing is consistent with the EP Act Clearing Principles, as detailed in this letter. A summary of the clearing principles has been provided in **Table 4**.

A number of black cockatoo habitat trees, including 3 with potentially suitable hollows, are proposed to be cleared as part of the road upgrade. Removal of these trees may be considered at variance to Principle (b), however based on the small extent of clearing and the large extent of higher quality native vegetation surrounding the native vegetation clearing area (24,606 ha of which is within state forest or national park), the clearing is not likely to detrimentally impact the ability for fauna, particularly black cockatoos, to survive and the vegetation would not be significant habitat. Efforts will be made during the implementation of works to locally steepen batters where possible to minimise tree clearing, particularly the potentially suitable breeding habitat trees.

Table 4: Summary of response to each clearing principle

Clearing principle	Response to clearing permit principle
Principle (a)	The majority of native vegetation within the clearing area has been assessed as being in a 'degraded' or 'completely degraded' condition (3.01 ha). Due to the highly degraded nature of the vegetation, the small extent of the clearing, the presence of weeds, the lack of threatened or priority flora, and the lack of high quality fauna habitat, the native vegetation clearing area is not considered to represent a high level of biological diversity.
Principle (b)	Overall, the native vegetation clearing area is not likely to provide significant habitat for conservation significant fauna (or more common and widespread fauna species) given the abundance of better-quality vegetation within the broader local area, much of which is within the nearby national park and state forest. The three black cockatoo species and western ringtail possum were identified as key conservation significant species that could be impacted by the proposed clearing. No western ringtail possums were observed within the site, and no secondary evidence was observed. If this species is present in the clearing area, this would be irregular and part of a larger home range. The native vegetation to be cleared includes foraging habitat (3.06 ha) and 111 habitat trees (3 with potentially suitable hollows) for the three black cockatoo species. It is unlikely the three black cockatoo species are reliant on vegetation within the native vegetation clearing area as significant habitat, including the trees with potentially suitable hollows given the abundance of suitable habitat nearby (24,606 ha within 12 km).
Principle (c)	No state or federally listed threatened or priority flora species were recorded within the clearing area or are considered likely to occur given the highly degraded nature of the vegetation, identified as part of the flora and vegetation survey.
Principle (d)	No state or federally listed threatened or priority ecological communities were identified within the clearing area or are considered likely to occur.
Principle (e)	The proposed clearing is associated with a small area of road-side vegetation in predominantly degraded and completely degraded condition. The native vegetation clearing area comprises 0.15 % (3.19 ha) of the remaining local extent (2,131 ha) of the Lowdon vegetation complex and therefore would not significantly change the remaining extent. The vegetation in the clearing area is not significant as a remnant.
Principle (f)	The flora and vegetation assessment did not identify any riparian or wetland vegetation. A number of minor unnamed water features are mapped along the road alignment, but clearing of adjacent vegetation would not be at variance to this principle.
Principle (g)	The proposed clearing will not cause appreciable land degradation. Water erosion is the main risk for the clearing area, and the proposed road design and management measures will reduce the potential for this to occur.
Principle (h)	While the native vegetation clearing area is located adjacent to state forest, no impact on these adjacent areas is likely. The management and mitigation measures as part of the construction of the road will ensure no impacts in these adjacent areas.
Principle (i)	The proposed clearing is not considered to pose a risk in terms of the deterioration of surface or groundwater given the drainage and erosion design included as part of the proposed road upgrades.
Principle (j)	The proposed clearing is not likely to cause or exacerbate a risk of flooding given the extent of works (upgrade to an existing road) and design measures to be implemented to manage surface water.

The mitigation strategies in the planning and the design of the road upgrades have been undertaken to minimise impact to the identified environmental values. Clearing activities will be managed to minimise any potential impacts on nearby areas and fauna species, including clearly defining the extent of the clearing area, fauna inspections by a qualified zoologist prior to and during clearing activities, and managing site works to prevent the spread of weeds and dieback into areas of retained vegetation and to allow any fauna present within the clearing area to move into the adjacent state forest areas. Opportunities will be identified during implementation (and is a typical process for the Shire of Dardanup) to locally steepen batters where possible to reduce the extent of clearing, and in particular to retain habitat trees.

Should you have any questions regarding the content of this letter, please do not hesitate to contact the undersigned on 9758 8159.

Yours sincerely
Emerge Associates

Kirsten Knox
PRINCIPLE ENVIRONMENTAL CONSULTANT

cc: Nathan Ryder – Shire of Dardanup

Encl:
Figure 1: Site Location and Application Area
Figure 2: Hydrography, Soil and Topography
Figure 3: Vegetation Complexes and Conservation Areas
Figure 4a-e: Plant Communities
Figure 5a-e: Vegetation Condition
Figure 6a-e: Black Cockatoo Habitat Trees
Figure 7a-e: Carnaby's Cockatoo Habitat
Figure 8a-e: Baudin's Cockatoo Habitat
Figure 9a-e: Forest Red-Tailed Black Cockatoo Habitat
Figure 10: Black Cockatoo Habitat Context

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Figures

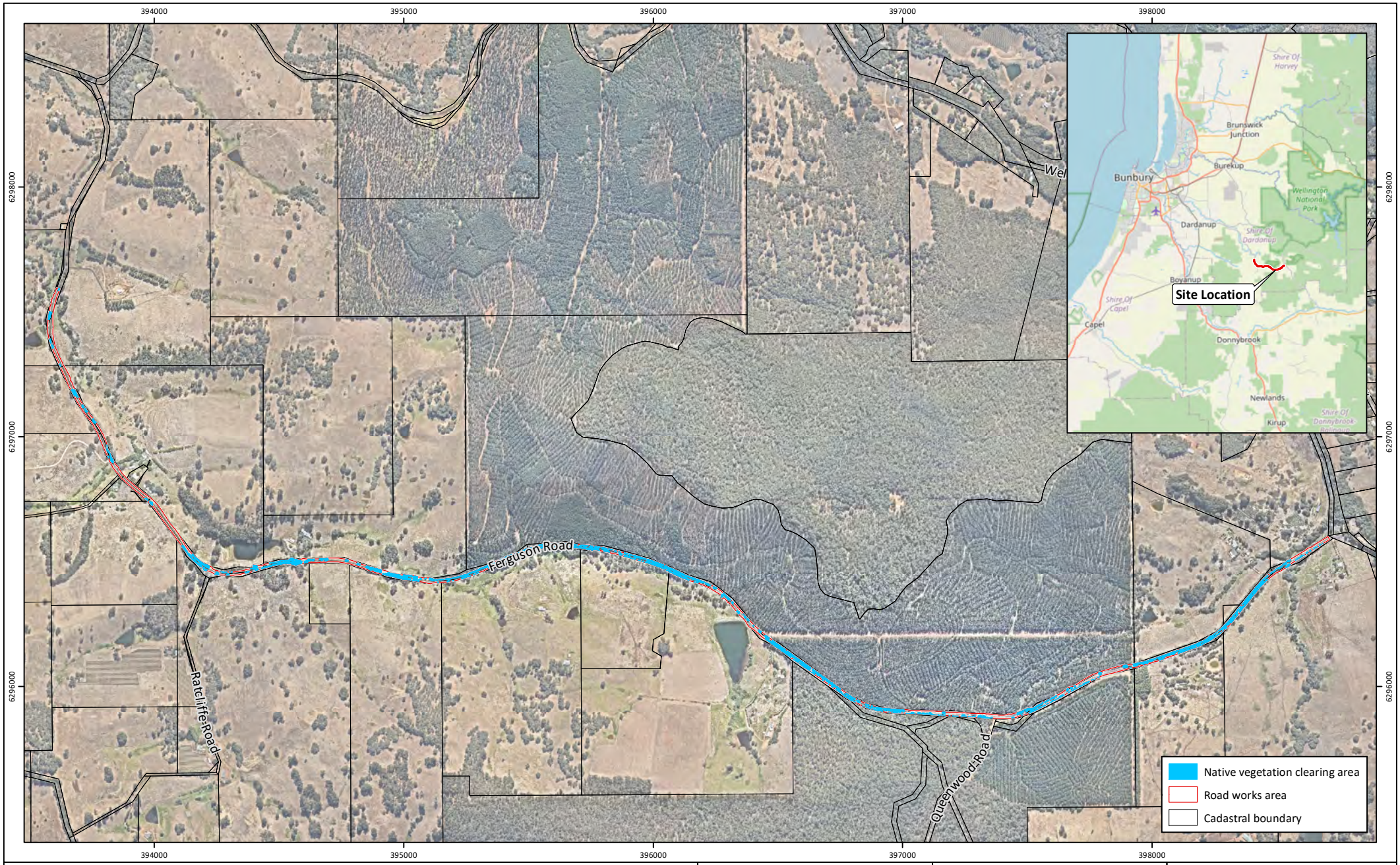

Figure 1: Site Location

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F16

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:20,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

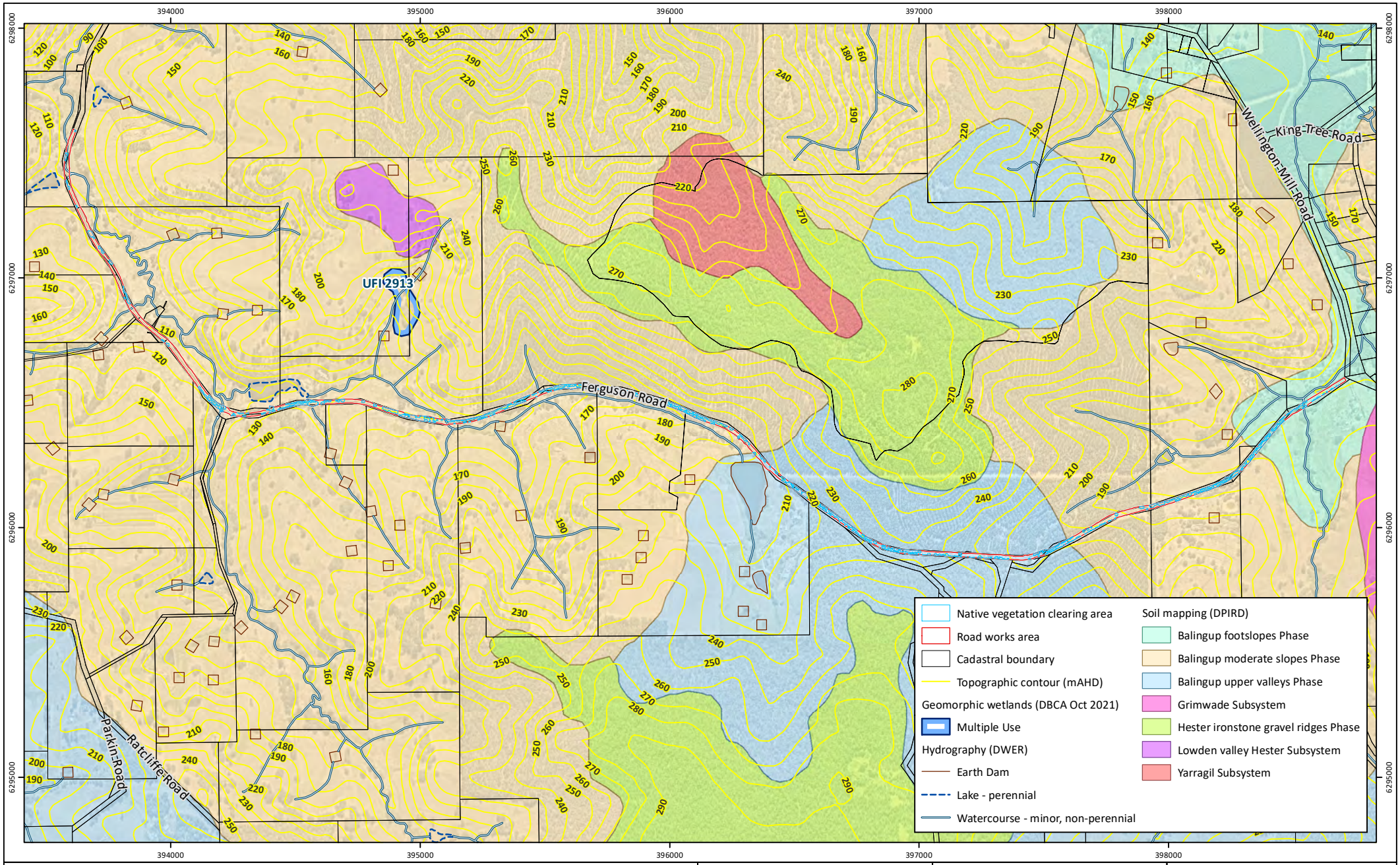

Figure 2: Hydrography, Soils and Topography

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F17

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 400 800
Metres

Scale: 1:20,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

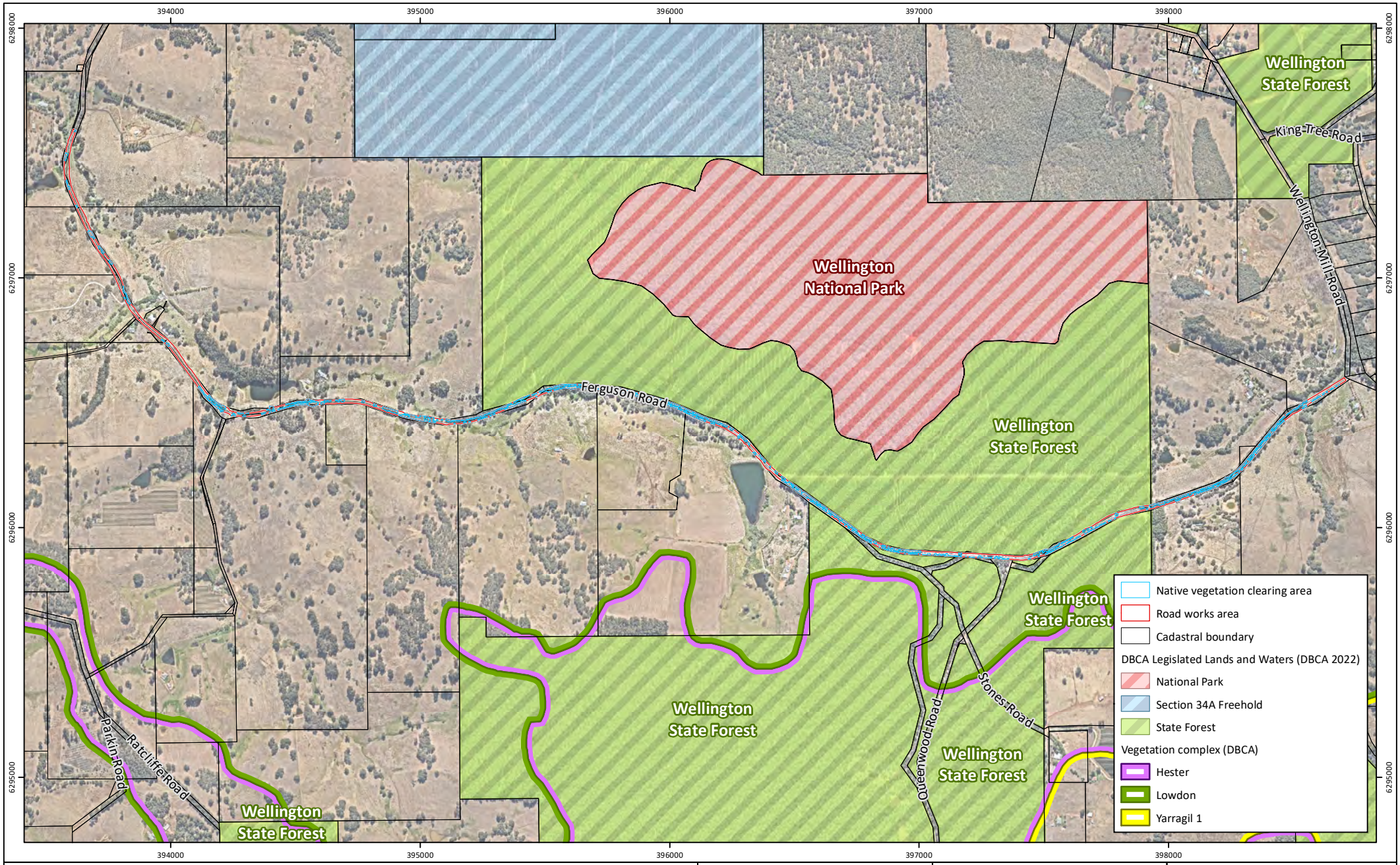

Figure 3: Vegetation Complexes and Conservation Areas

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F18

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:20,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

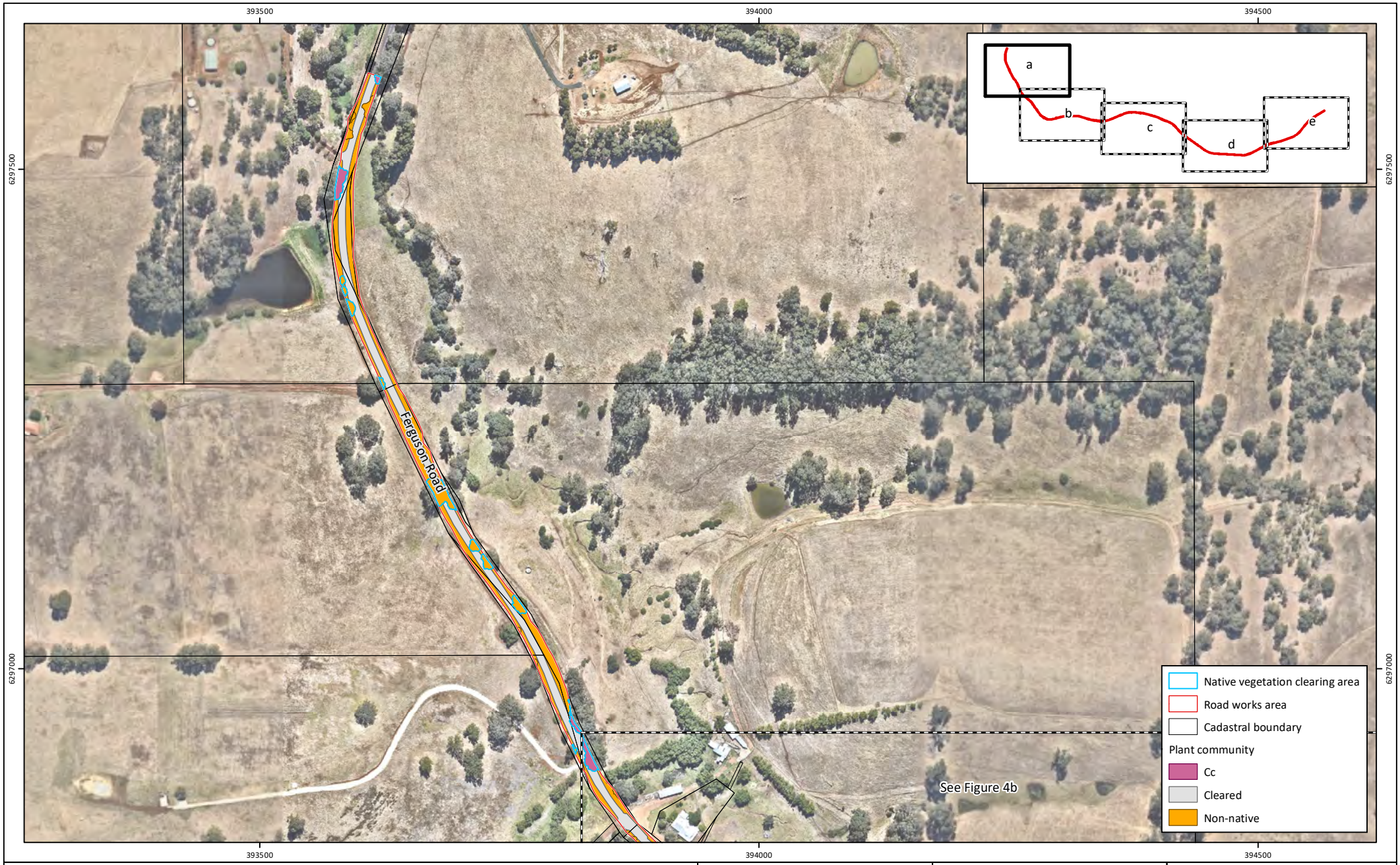

Figure 4a: Plant Communities

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F19

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

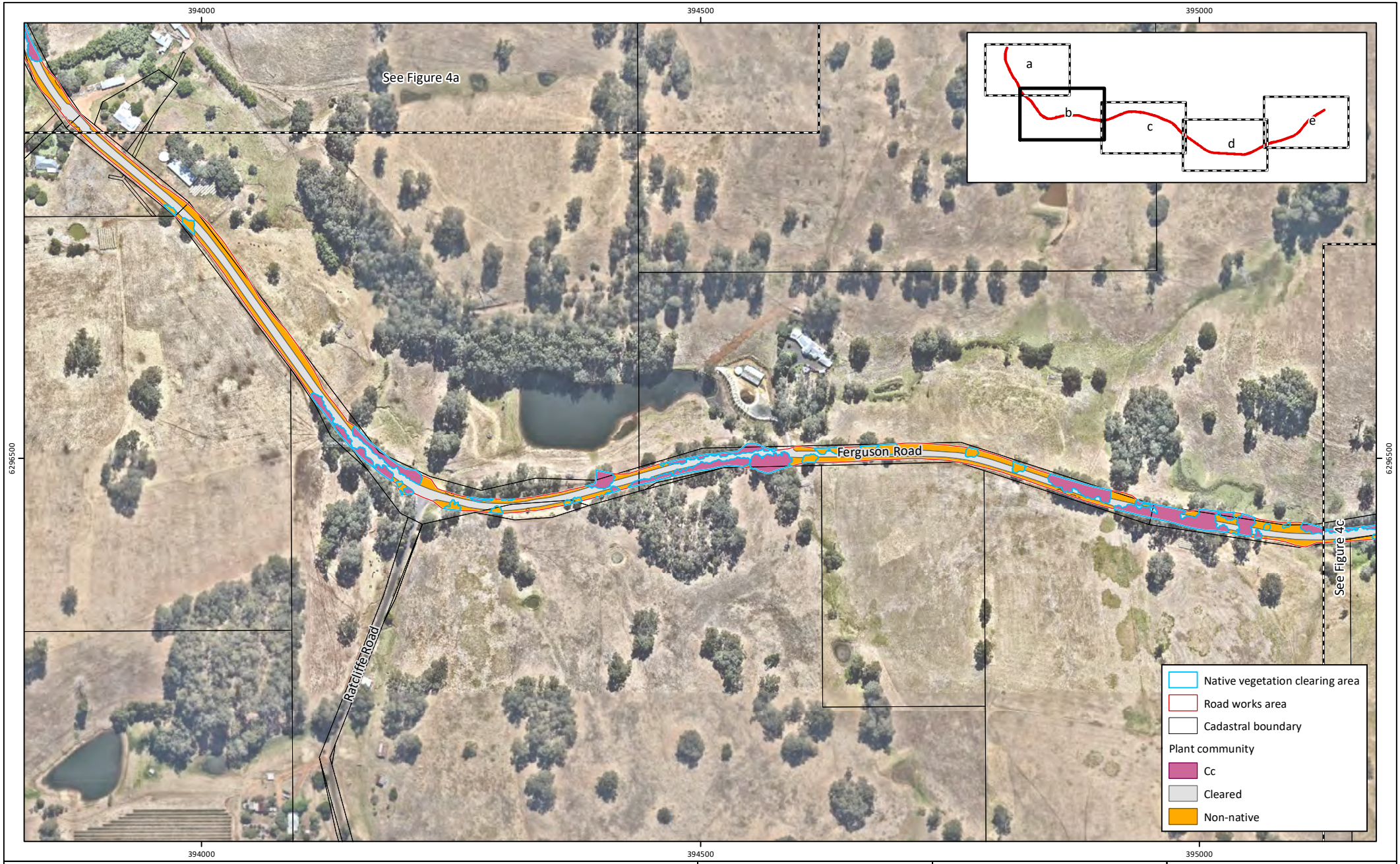

Figure 4b: Plant Communities

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F19

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

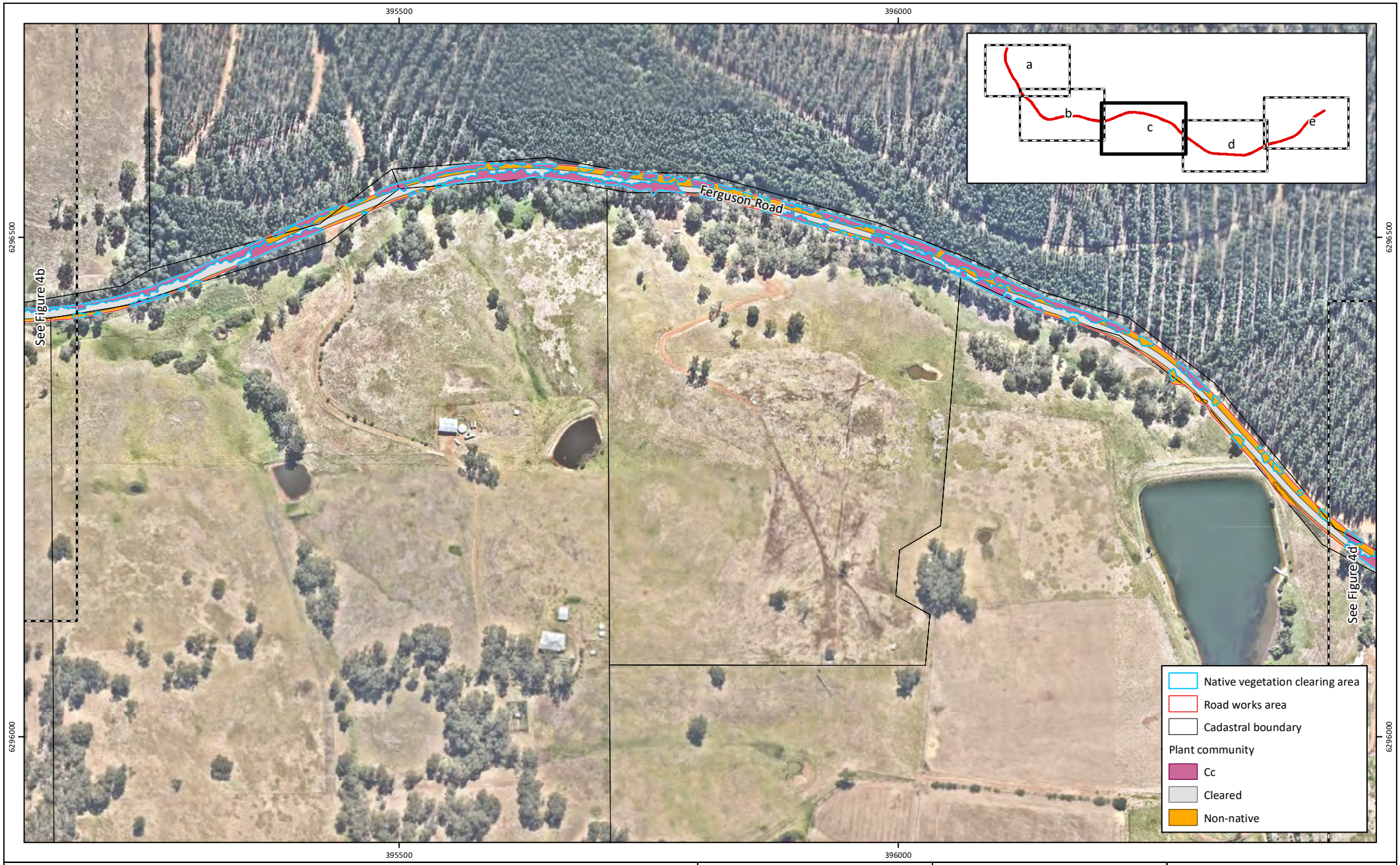

Figure 4c: Plant Communities

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F19

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

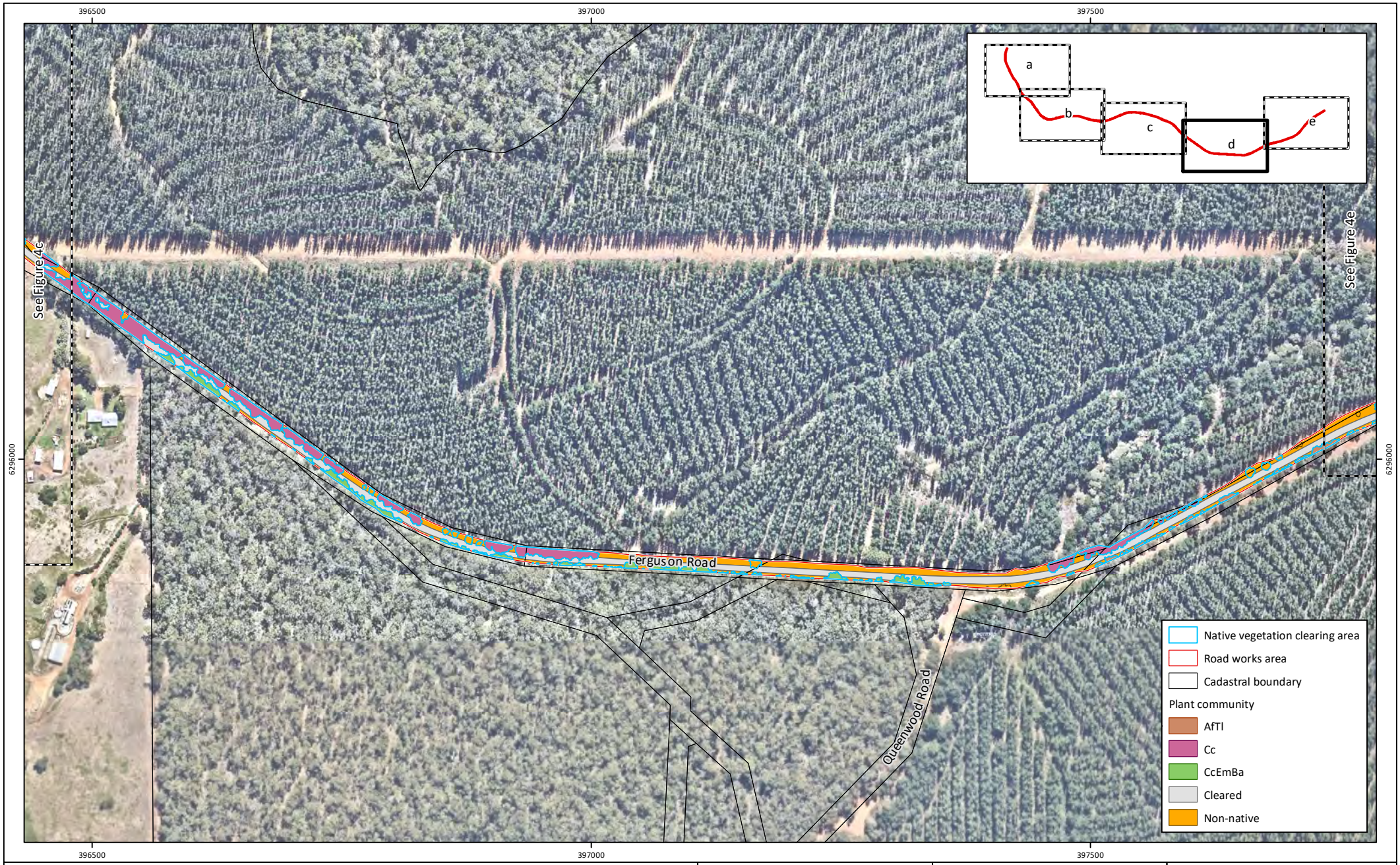

Figure 4d: Plant Communities

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F19

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 4e: Plant Communities

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F19

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

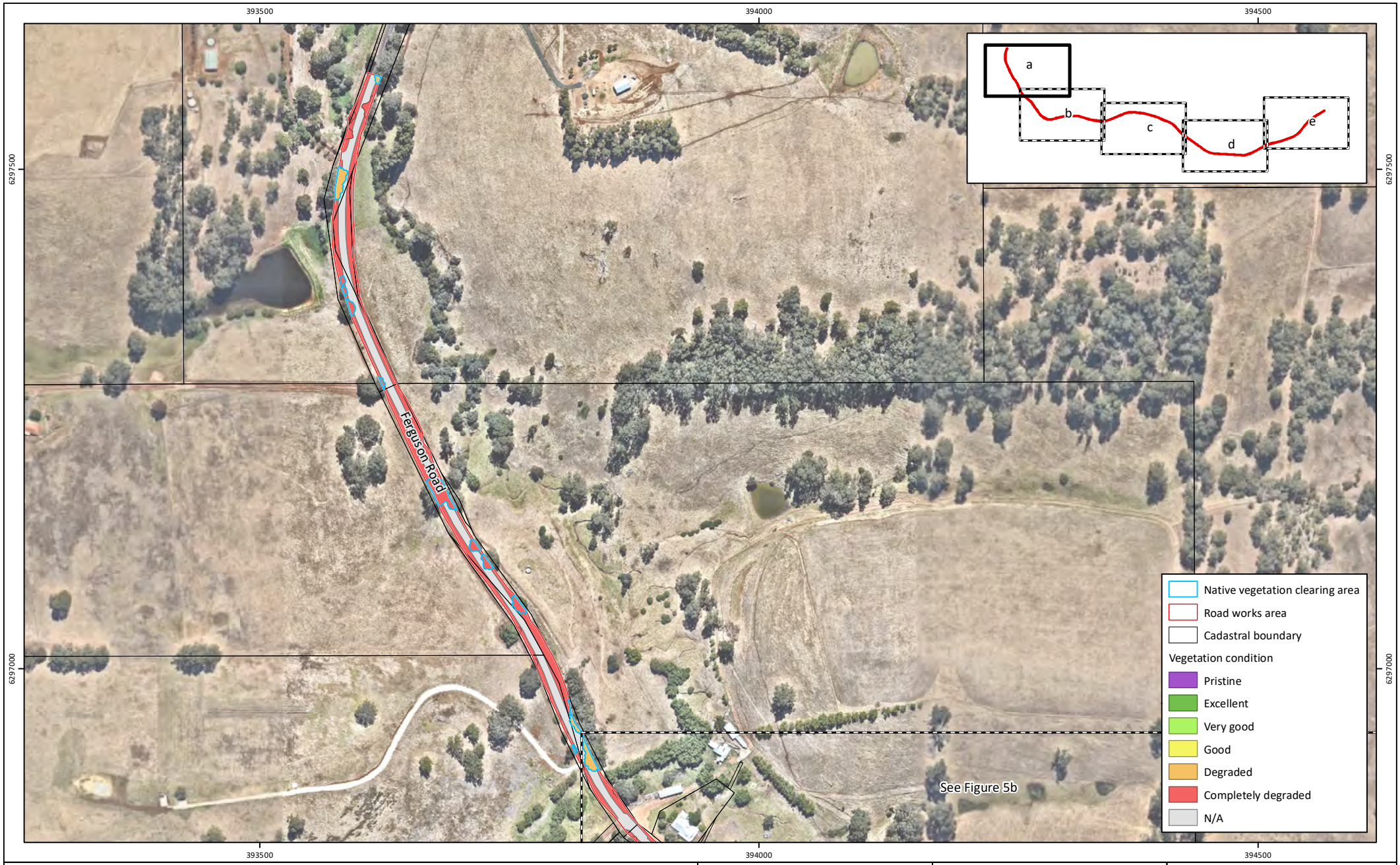

Figure 5a: Vegetation Condition

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F20

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

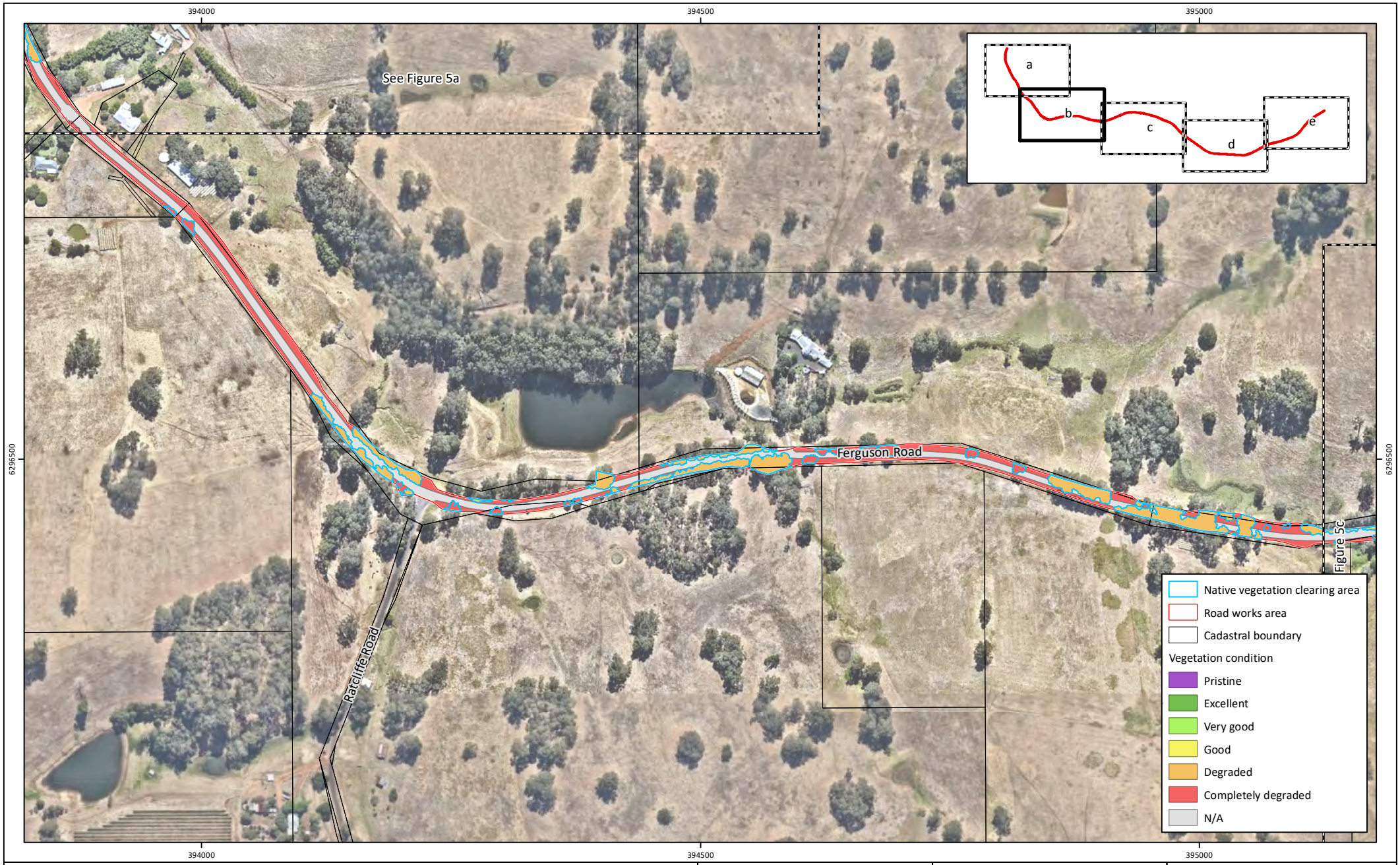

Figure 5b: Vegetation Condition

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F20

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

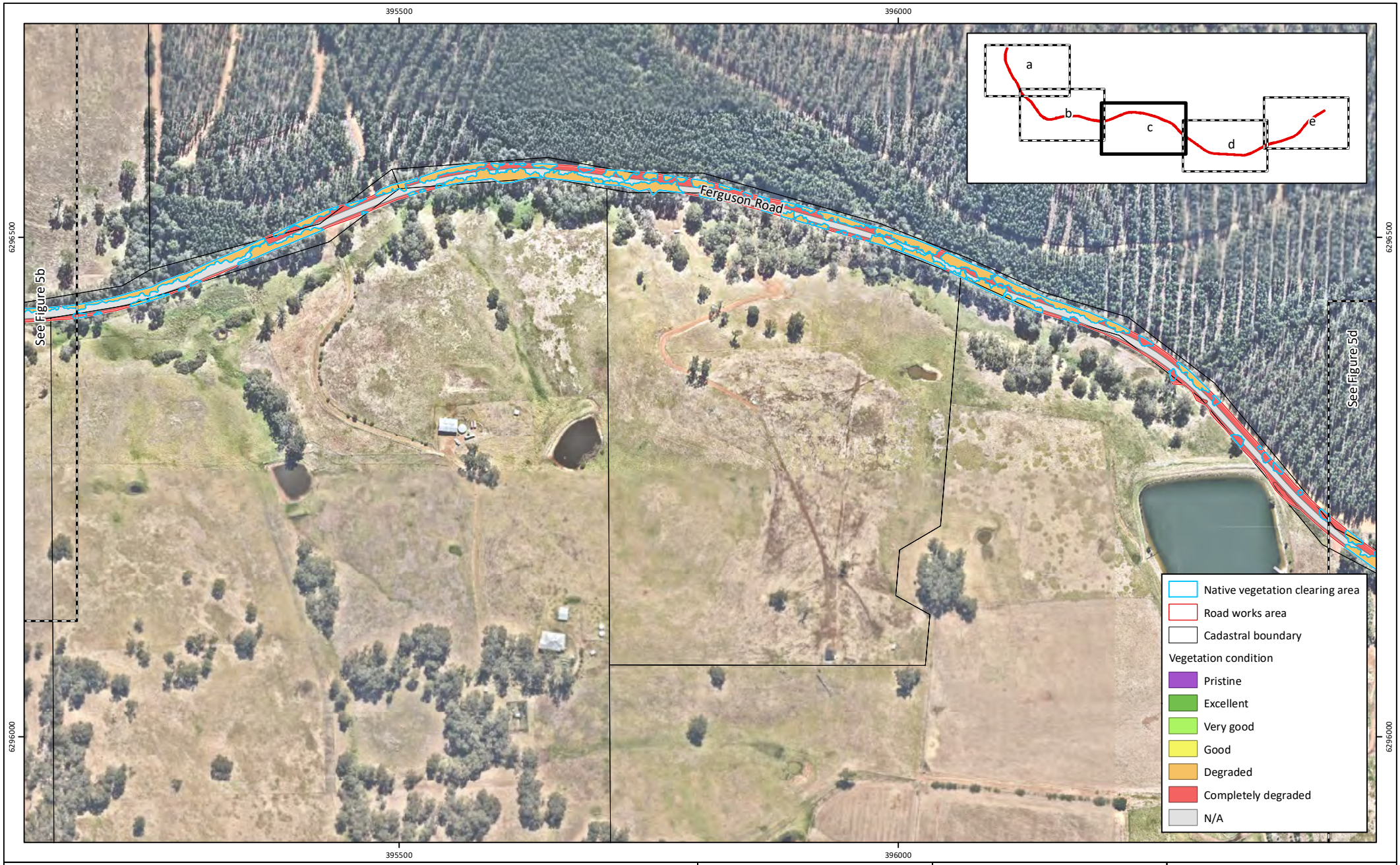

Figure 5c: Vegetation Condition

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F20

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

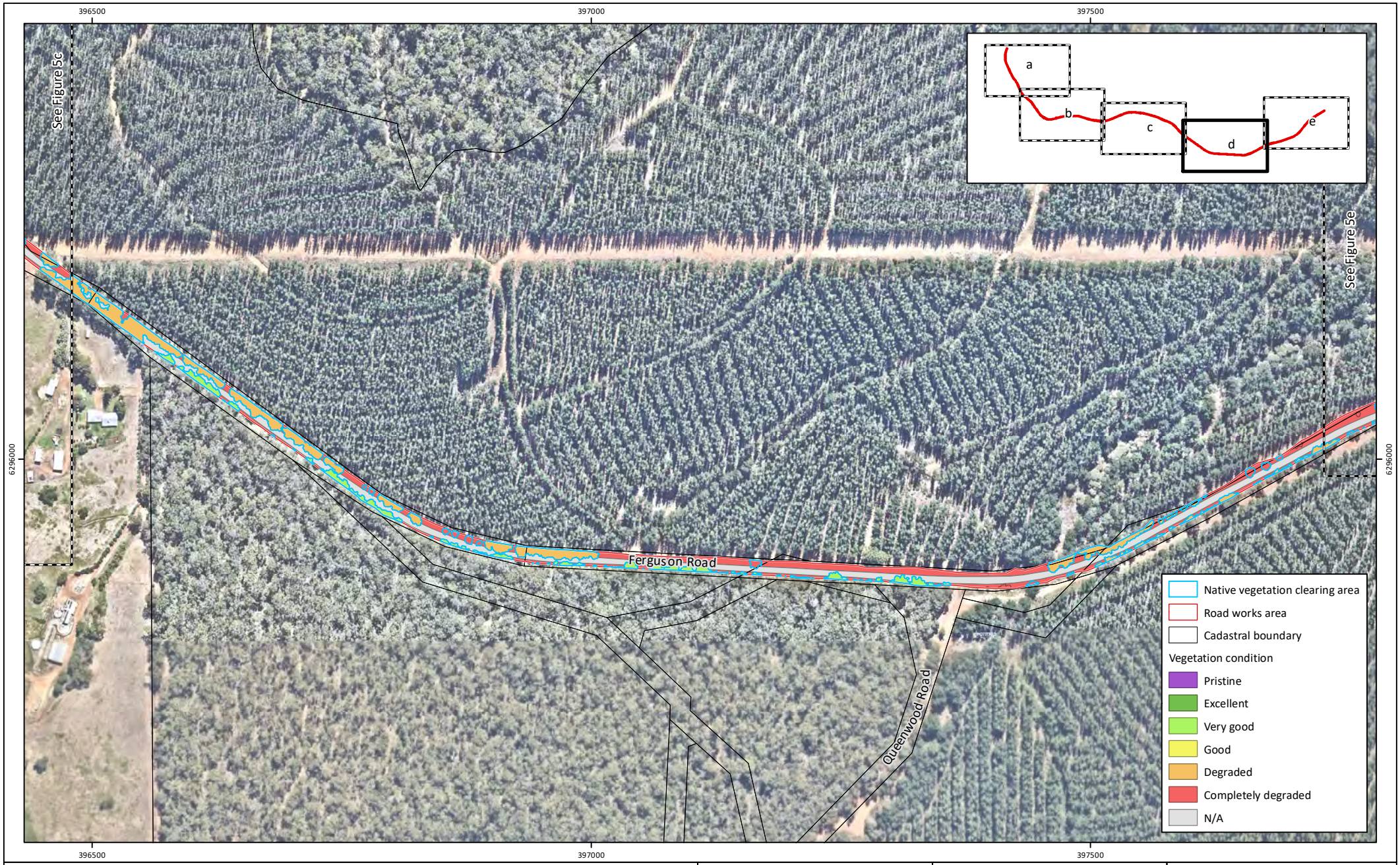

Figure 5d: Vegetation Condition

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F20

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 5e: Vegetation Condition

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F20

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

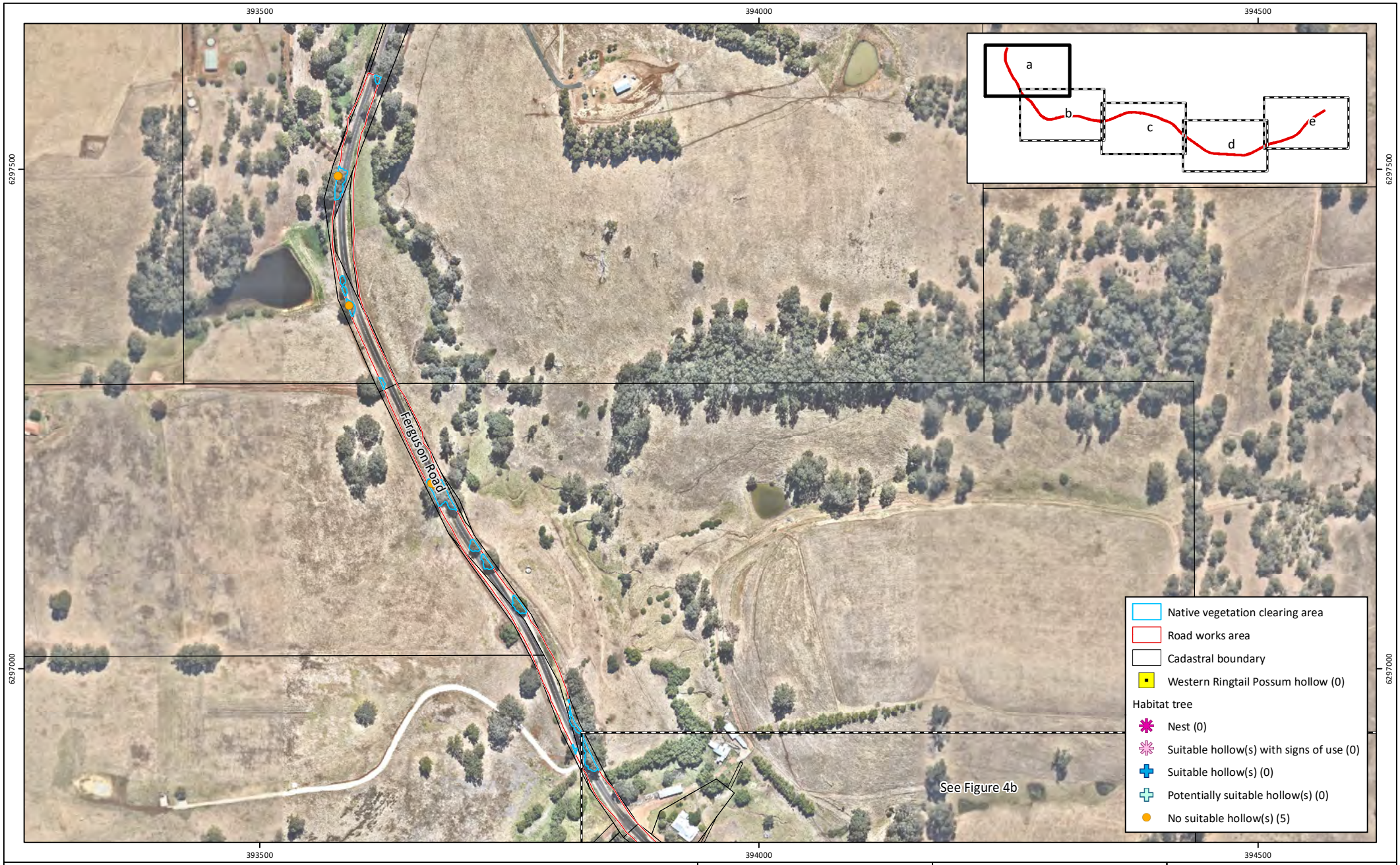

Figure 6a: Black Cockatoo and Western Ringtail Possum Habitat Trees

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F21
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

0 60 120 180
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 6b: Black Cockatoo and Western Ringtail Possum Habitat Trees

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F21
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

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Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

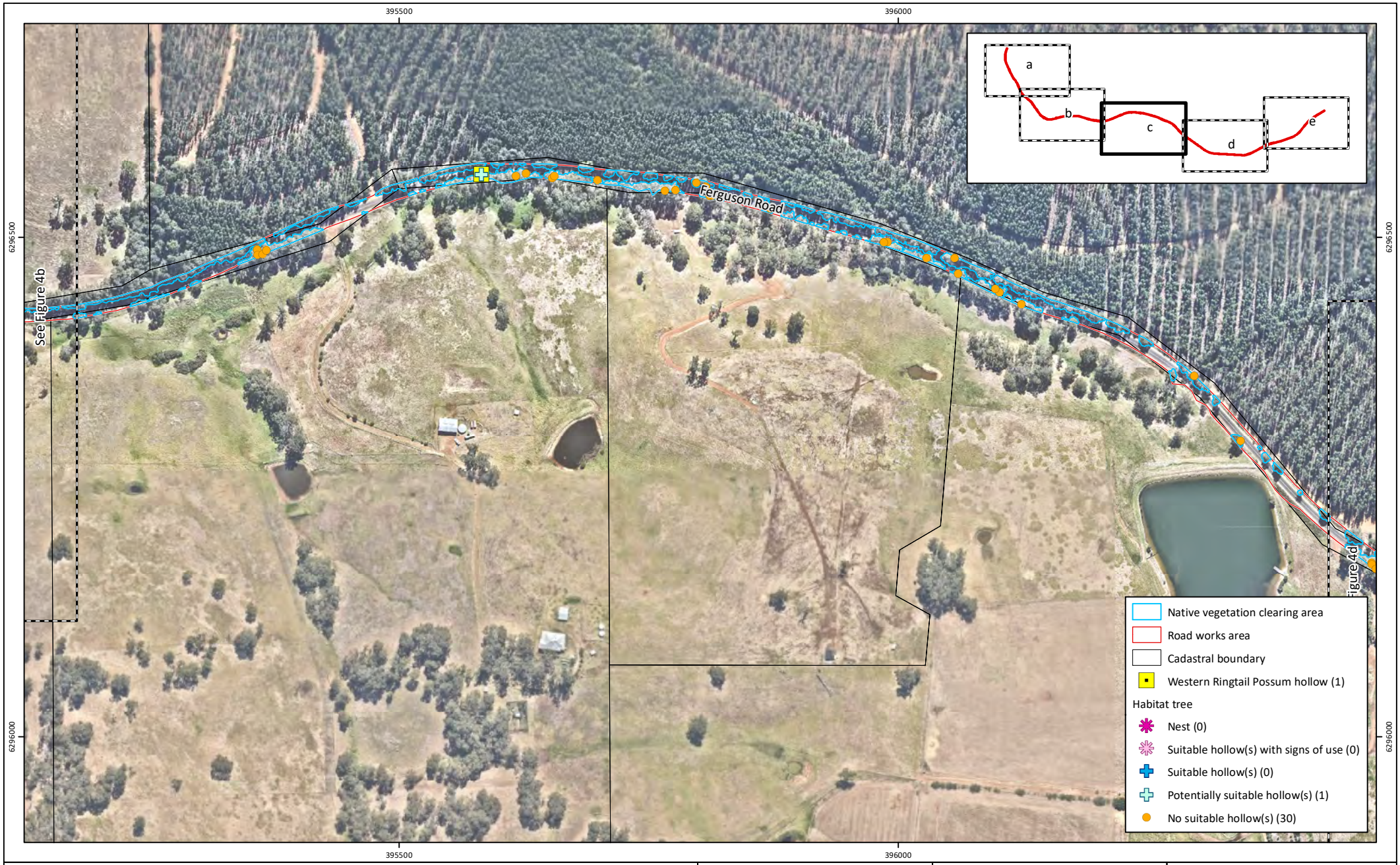

Figure 6c: Black Cockatoo and Western Ringtail Possum Habitat Trees

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F21
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

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Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

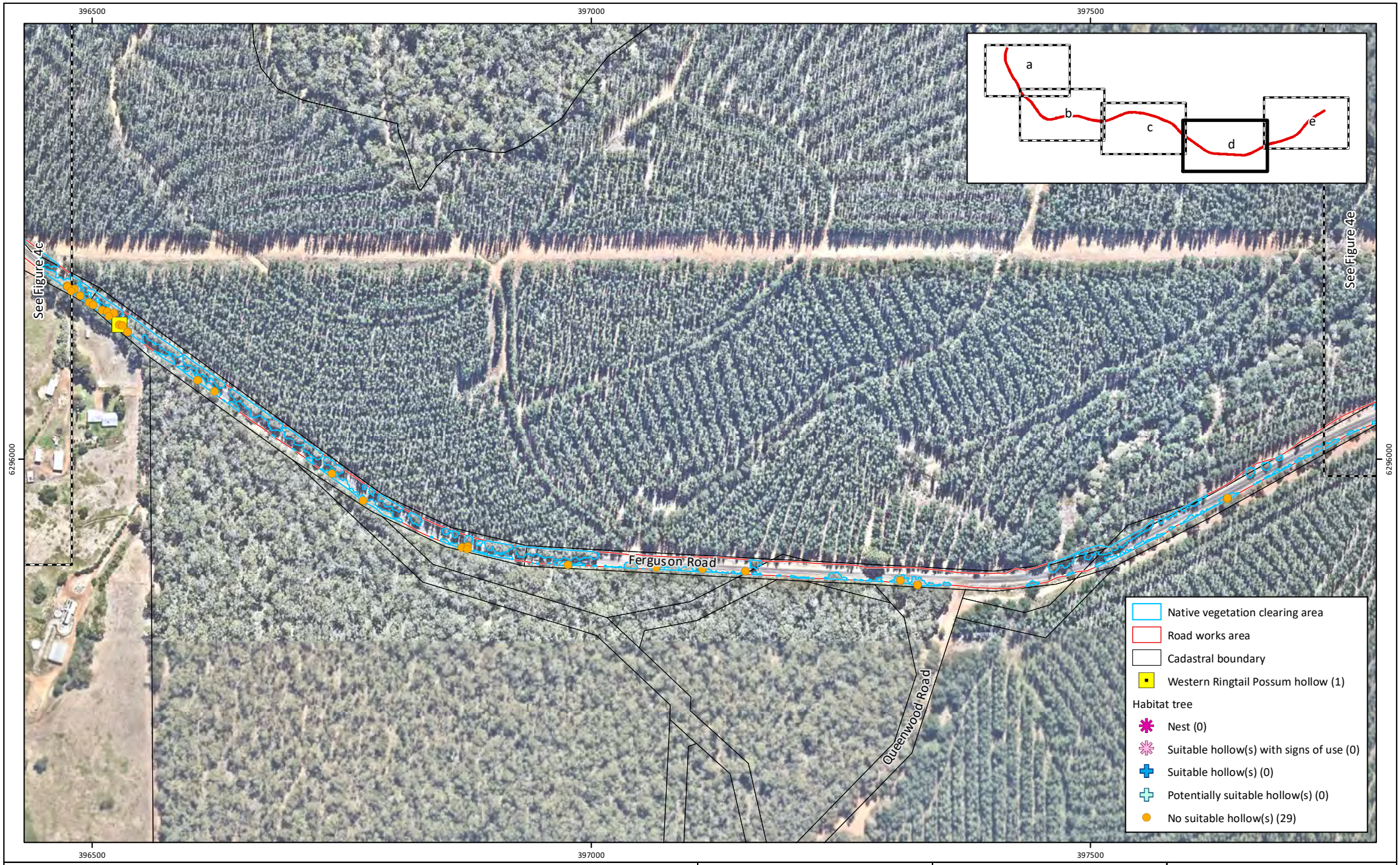

Figure 6d: Black Cockatoo and Western Ringtail Possum Habitat Trees

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F21

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 6e: Black Cockatoo and Western Ringtail Possum Habitat Trees

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F21

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

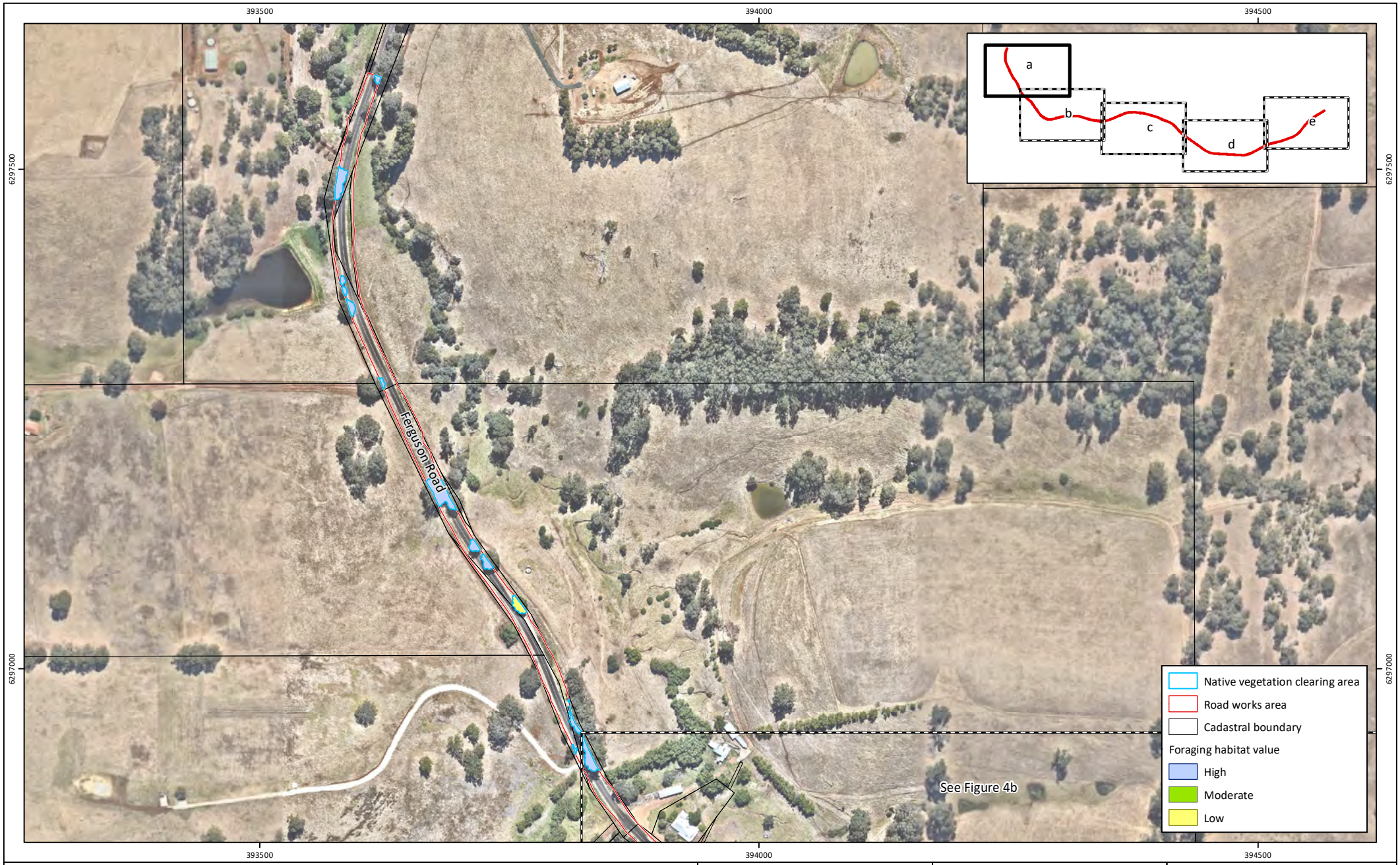

Figure 7a: Carnaby's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F22
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

0 60 120 180
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 7b: Carnaby's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F22

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

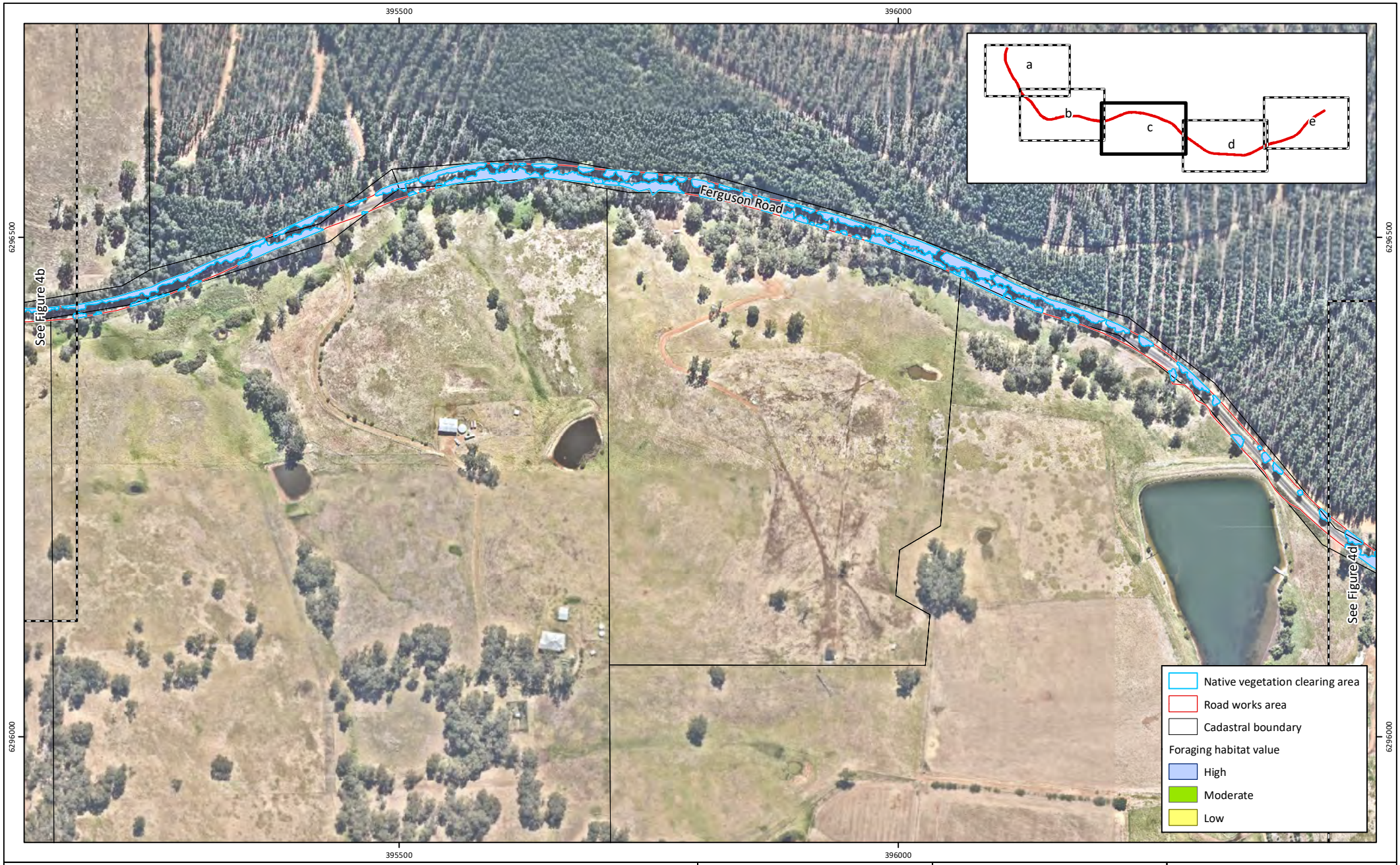

Figure 7c: Carnaby's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F22

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

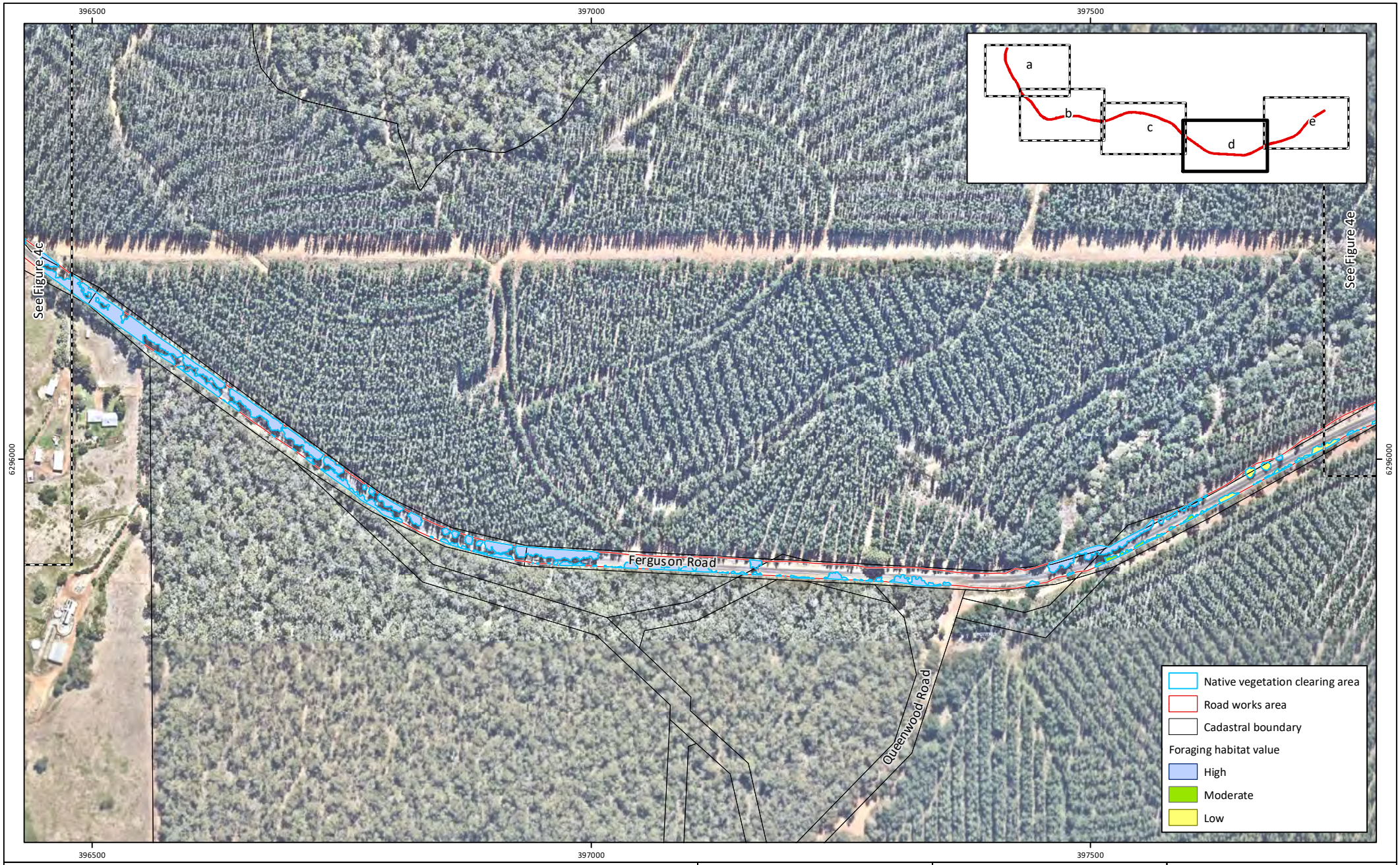

Figure 7d: Carnaby's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F22
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

0 60 120 180
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 7e: Carnaby's Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F22

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

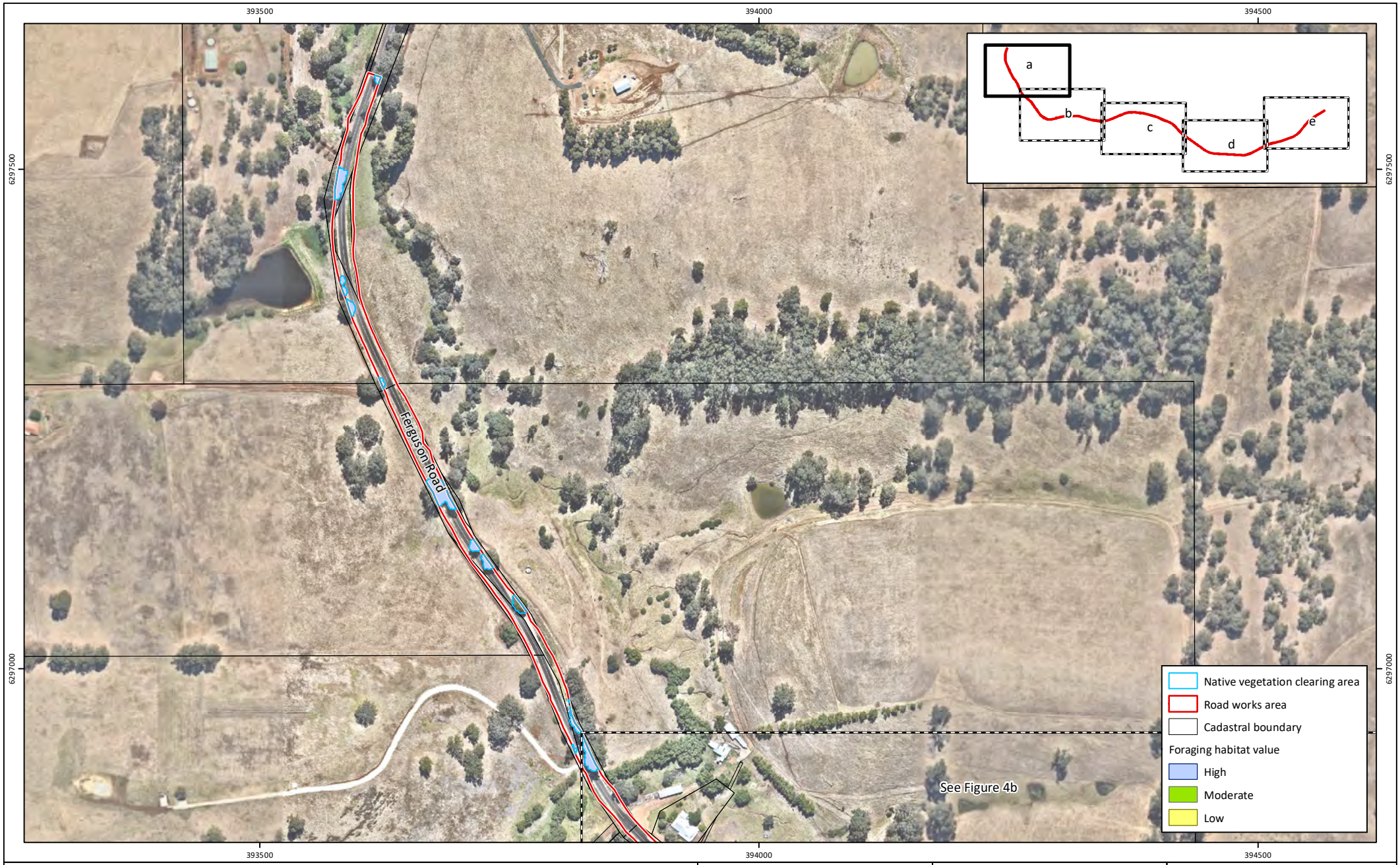

Figure 8a: Baudin's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F23
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

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Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

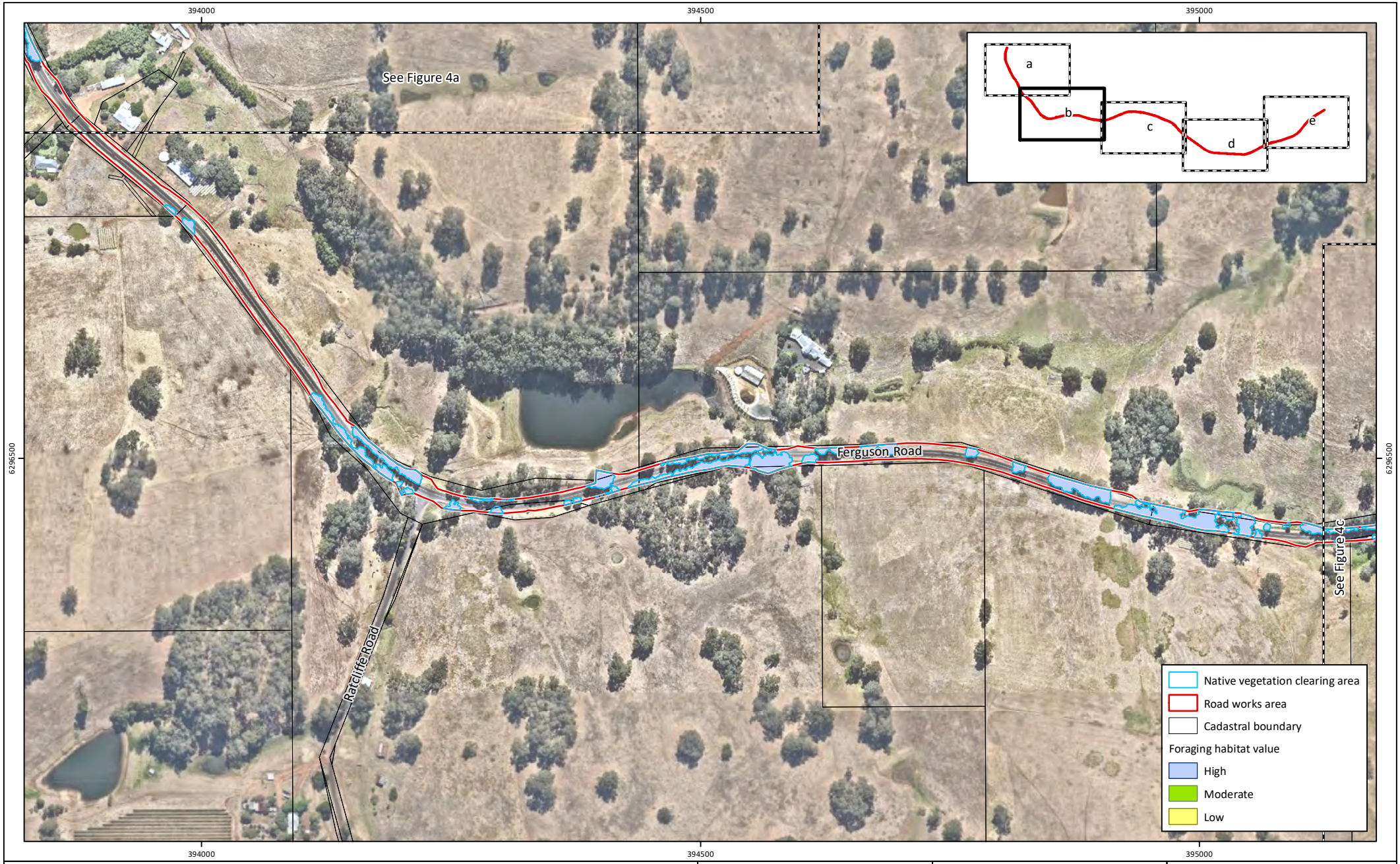

Figure 8b: Baudin's Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F23

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

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Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

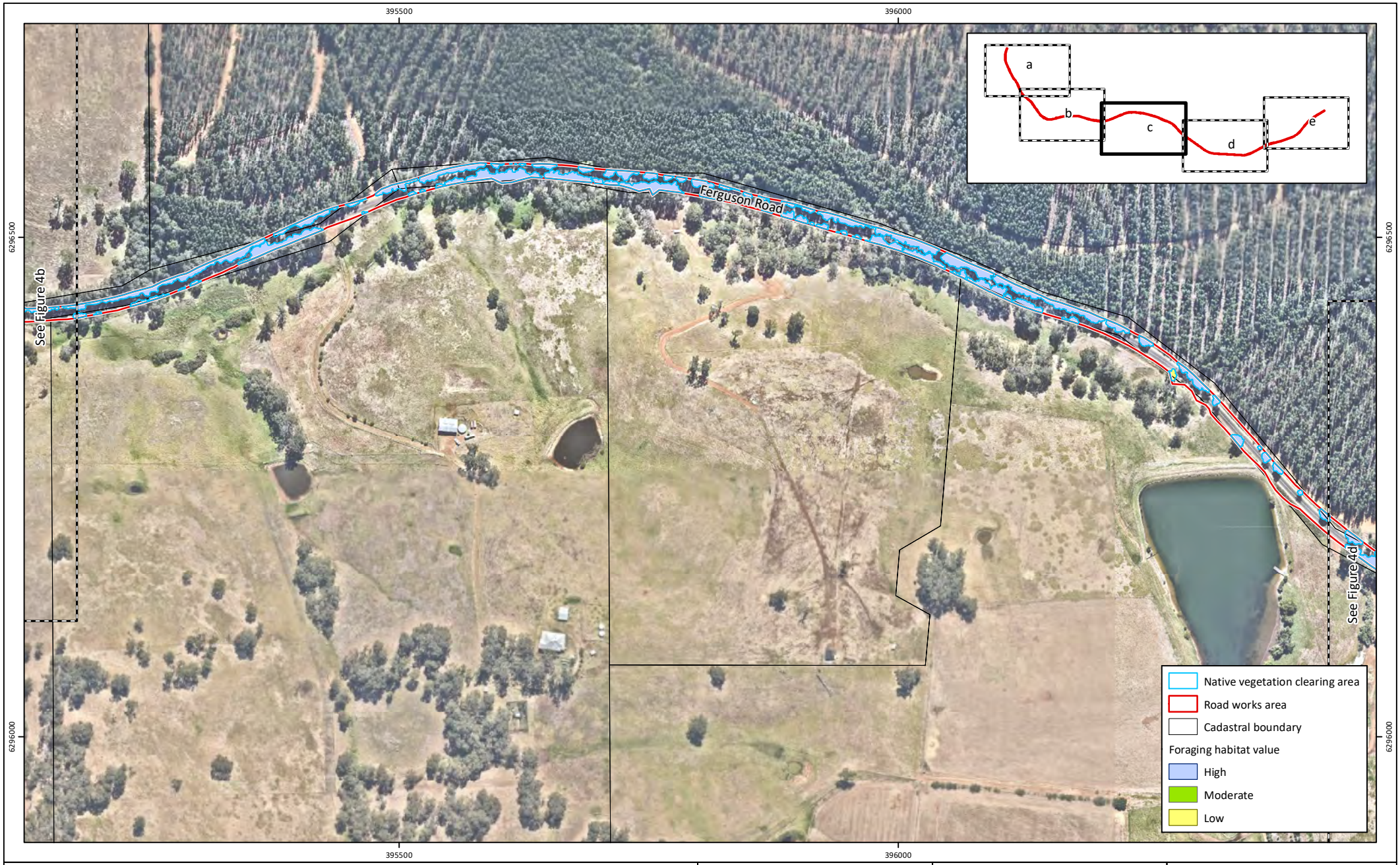

Figure 8c: Baudin's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson
Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F23
Drawn: GAR
Date: 25/01/2023
Checked: DVB
Approved: KK
Date: 11/04/2023

N

0 50 100 150
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

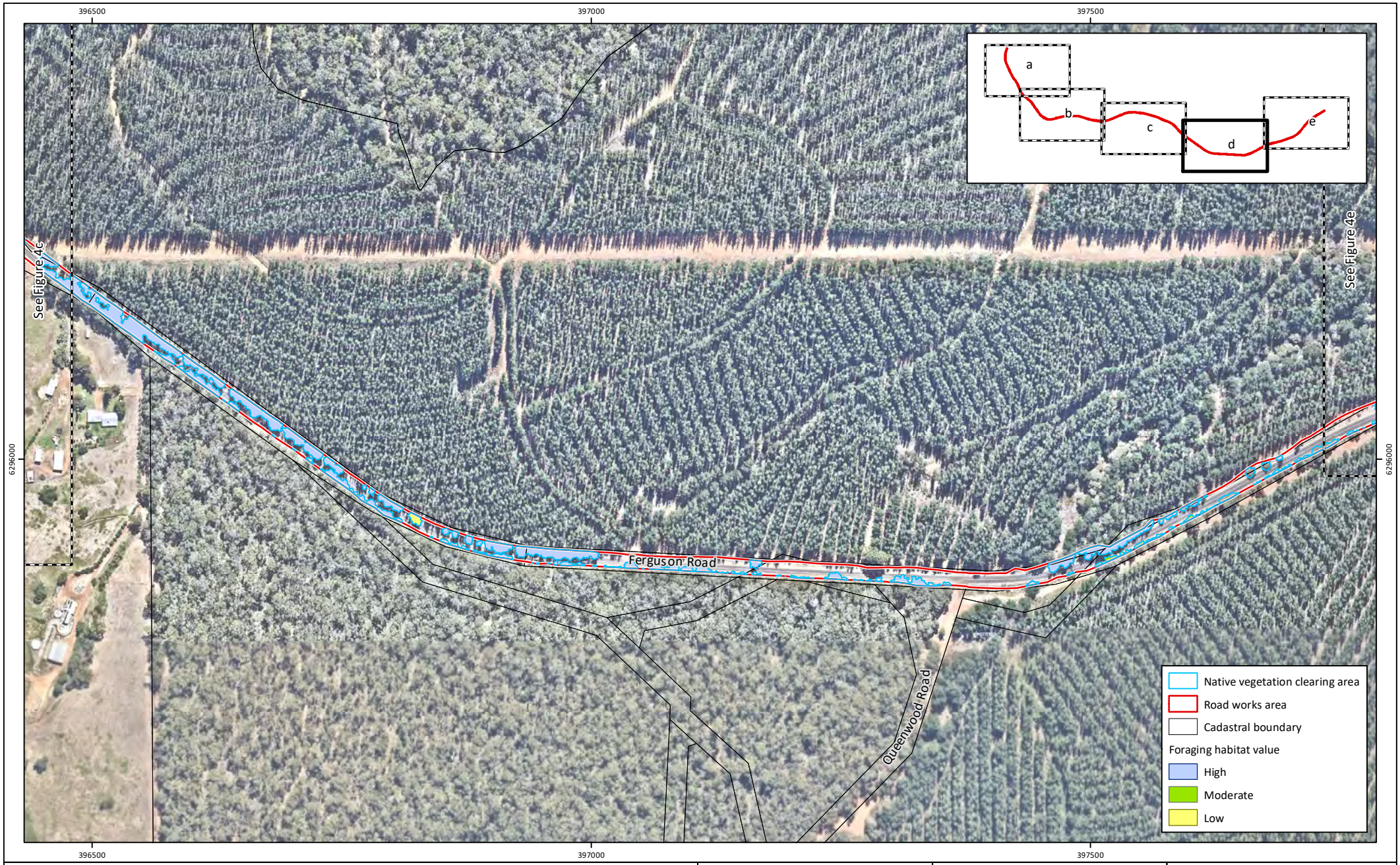

Figure 8d: Baudin's Cockatoo Foraging Habitat

Project: Clearing Permit Supporting Letter
Part Ferguson Road, Ferguson

Client: Shire of Dardanup

Plan Number:
EP22-044(03)--F23

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 8e: Baudin's Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F23

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 50 100 150
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

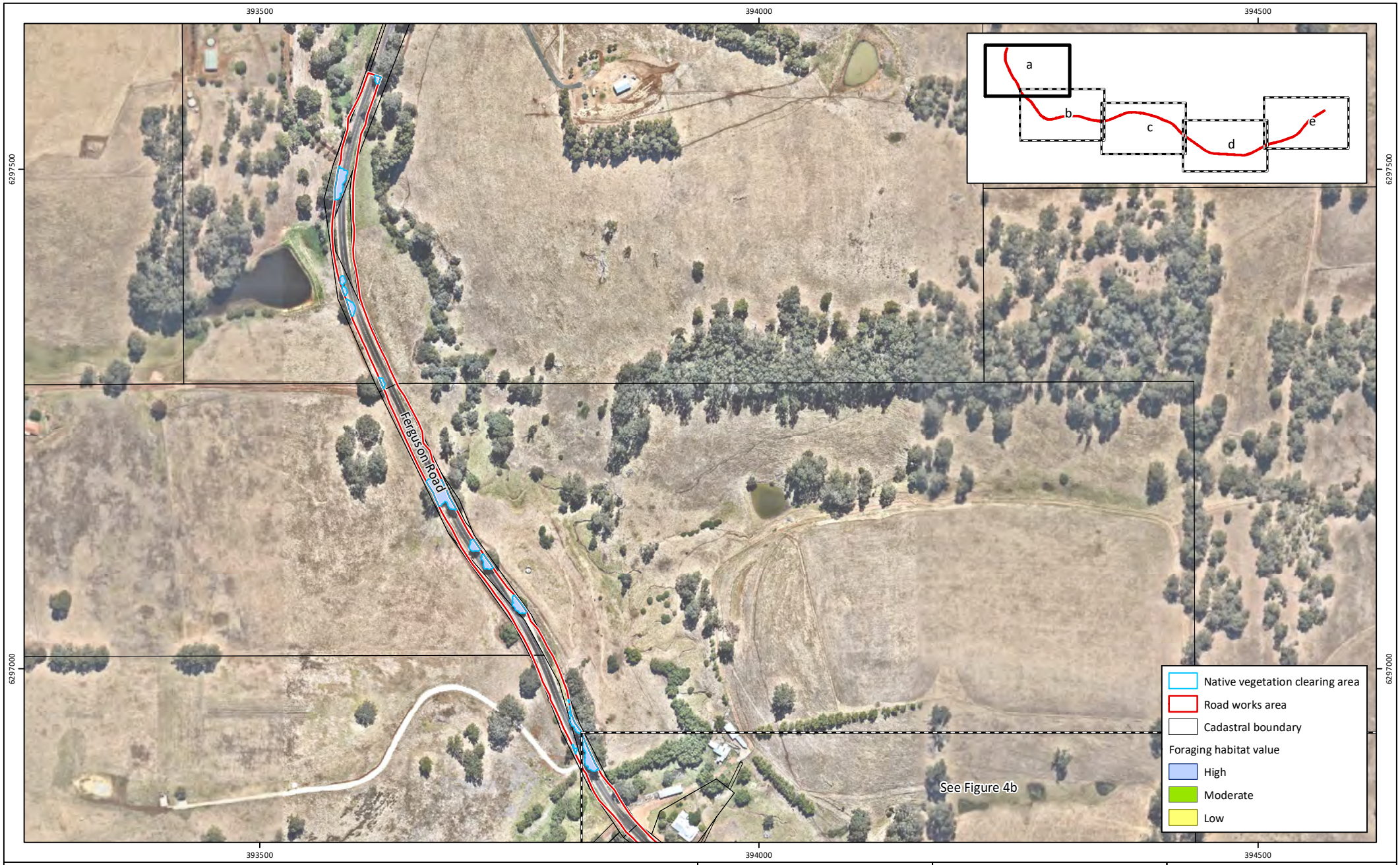

Figure 9a: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F24

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 9b: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F24

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

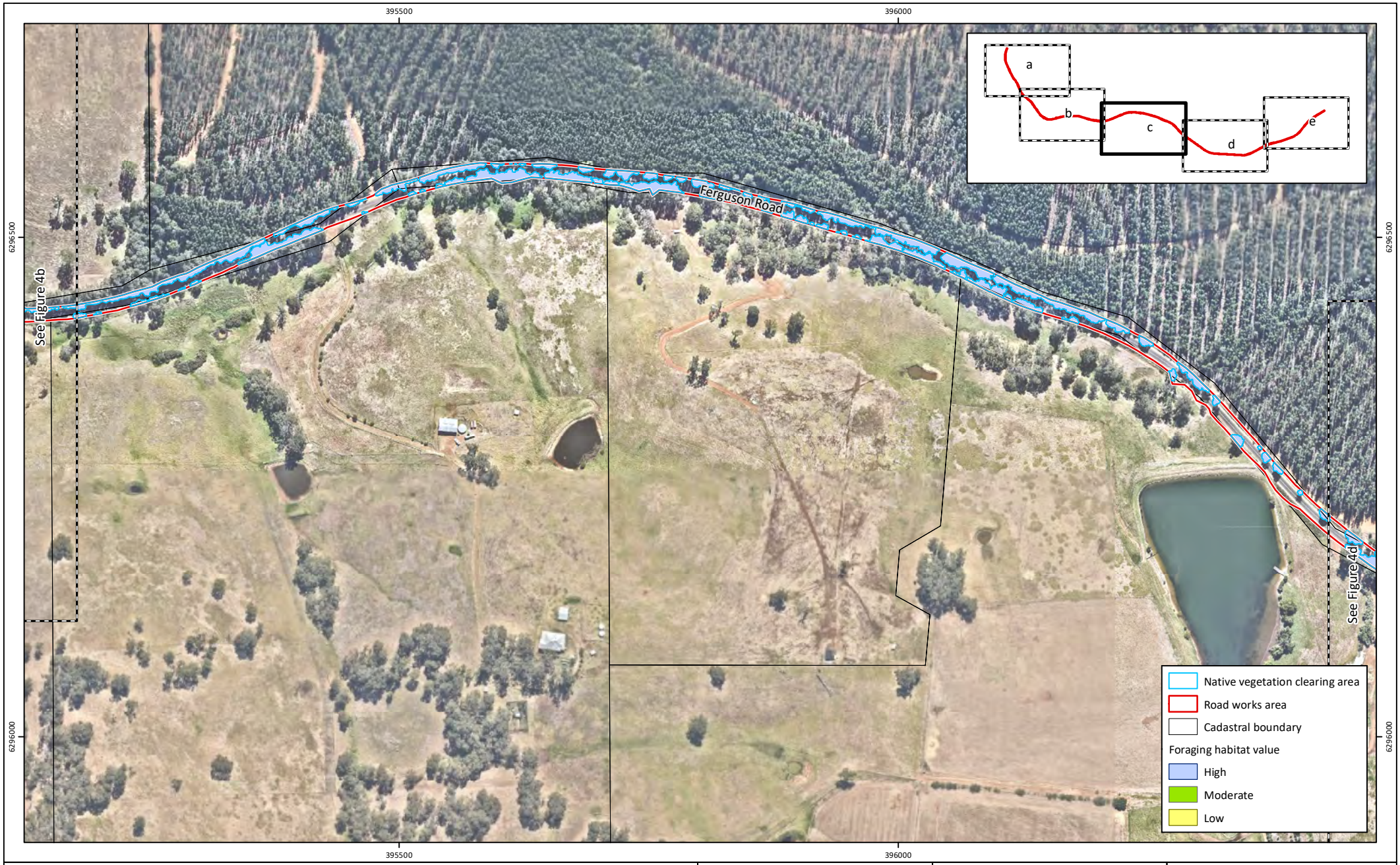

Figure 9c: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F24

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

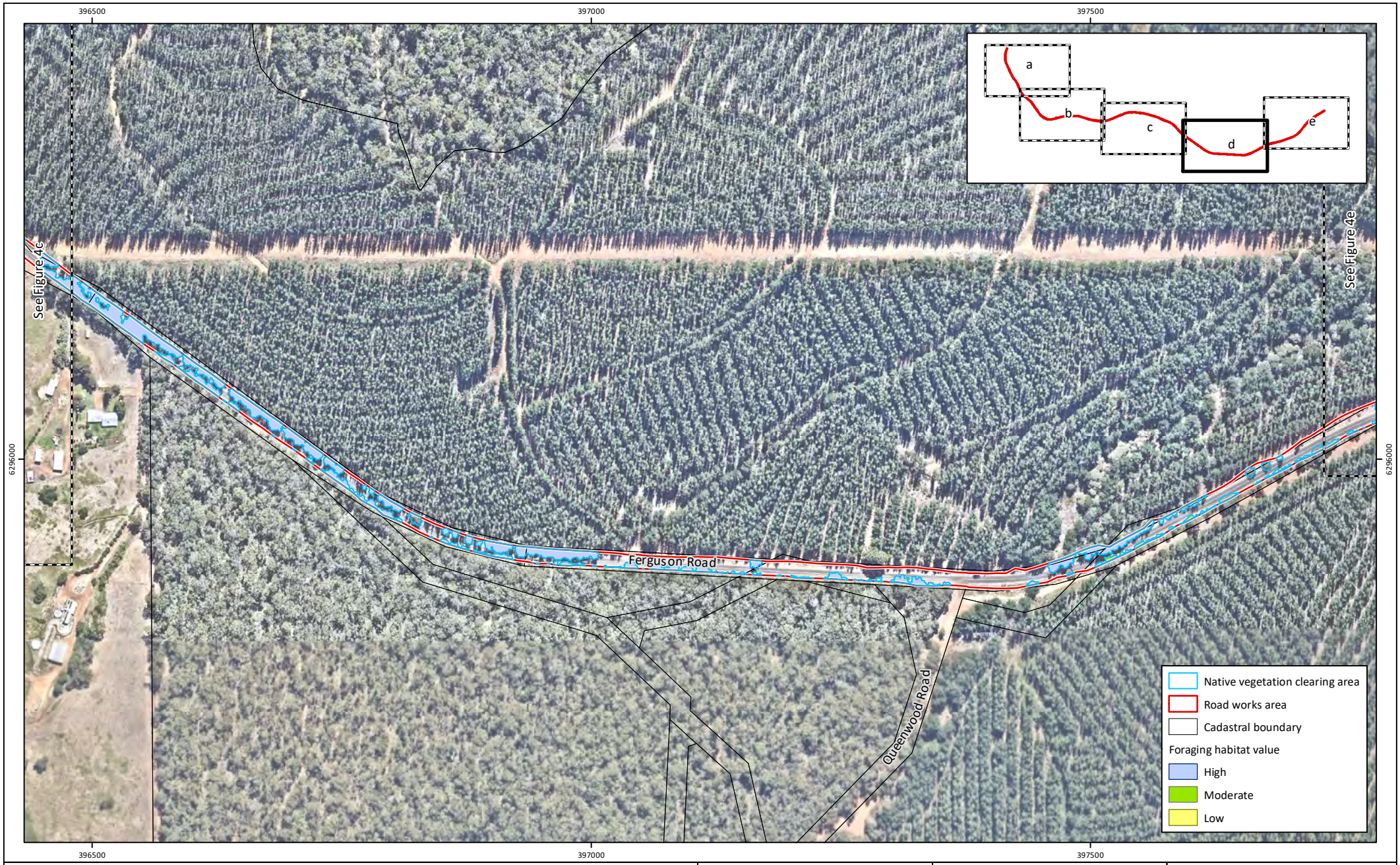

Figure 9d: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F24

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Figure 9e: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F24

Drawn:	GAR
Date:	25/01/2023
Checked:	DVB
Approved:	KK
Date:	11/04/2023

N

0 60 120 180
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

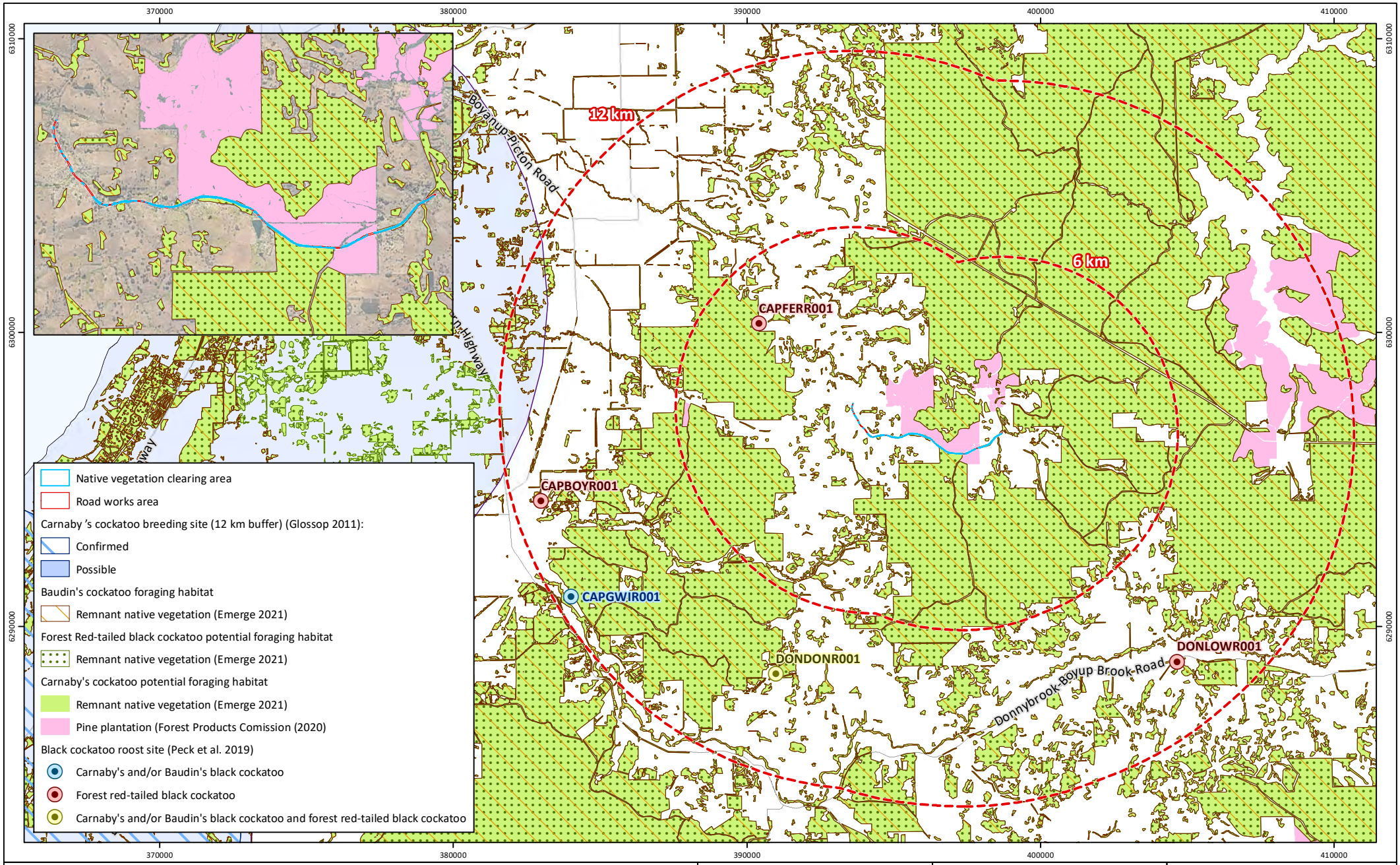

Figure 10: Black Cockatoo Habitat Context

Project:	Clearing Permit Supporting Letter Part Ferguson Road, Ferguson
Client:	Shire of Dardanup

Plan Number:
EP22-044(03)--F25

Drawn:	GAR
Date:	25/01/2023
Checked:	DRAFT
Approved:	DRAFT
Date:	--/--/----

N

0 2 4 6
Kilometers

Scale: 1:170,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES