Supporting Documentation for a Clearing Permit Application For Orange Springs Road

Prepared for the Shire of Gingin
April 2019

Ecoedge

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1 Introduction and background

In August 2018, Ecoedge was engaged by the Shire of Gingin (the Shire) to prepare a clearing permit application and associated supporting documentation for clearing of approximately 2.13 hectares (ha) of native vegetation in the road reserve along Orange Springs Road between the Brand Highway and Cowalla Road in Orange Springs (the 'Survey Area') (**Figure 1.**) The clearing is required in order for the Shire to undertake a significant upgrade to the road which is supported by grant funding.

A flora and vegetation survey and fauna survey were undertaken across all road reserve vegetation of Orange Springs Road in support of this application (Ecoedge, 2019, Harewood, 2019).

The proposed clearing footprint is shown in **Figure 4** to **Figure 26.**

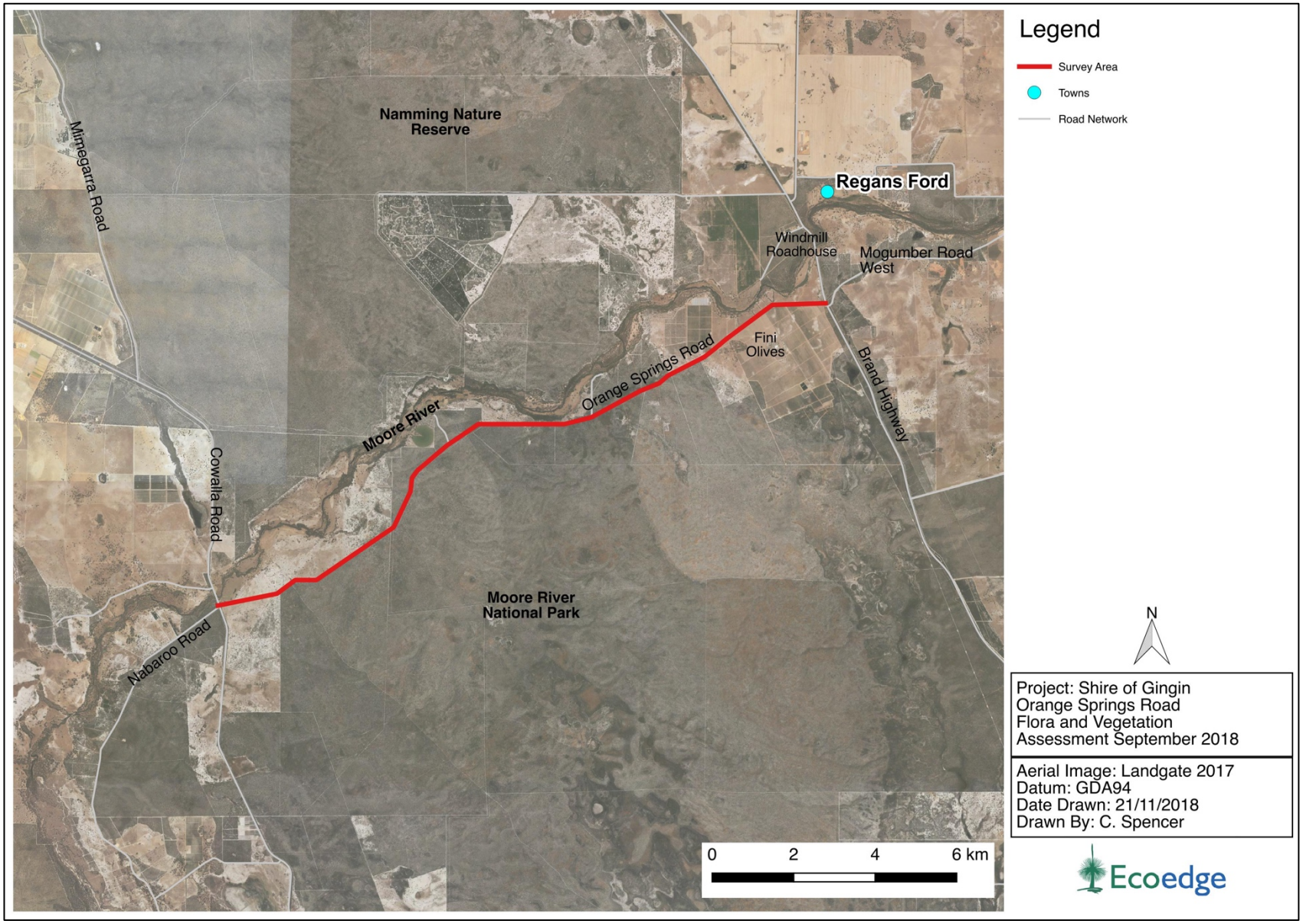

Figure 1. Location of the Survey Area..

1.1 Flora and Vegetation within the Survey Area

1.1.1 Desktop Assessment

The Survey Area is situated within the Perth (SWA2) sub-region of the Swan Coastal Plain biogeographic region, as defined in the Interim Biogeographical Regionalisation for Australia (IBRA) (Commonwealth of Australia, 2016). 41.65% of the vegetation within this sub-region remains (Government of Western Australia, 2018).

The vegetation of the Survey Area was mapped as comprising three complexes; the Bassendean Complex-North, the Bassendean Complex-North Transition and the Moore River Complex. The extent remaining of both the Bassendean Complex-North and the Bassendean Complex-North Transition complexes are well above the Commonwealth government's minimum 30% retention target. The Moore River Complex is only slightly above the retention target (Environment Australia, 2001, EPA, 2000).

The southern part of the Survey Area runs for the most part along the northern boundary of a large tract of native bushland, part of which comprises the Moore River National Park. The northern part of the Survey Area is adjacent to tracts of both agricultural land and remnant vegetation that links to both the Moore River and a large tract of remnant bushland in the north, part of which comprises the Namming Nature Reserve (**Figure 1**).

Whilst the Survey Area does provide a linkage between tracts of bushland, other larger, better condition linkages are also present in the vicinity, such as that associated with the Moore River.

The Survey Area vegetation does not form part of any recognised ecological linkage.

The Survey Area is situated within 50 m of several Conservation category wetlands that are associated with the Moore River. The closest of these is approximately 15 m away from the Survey Area.

The Survey Area passes through and is adjacent to Environmentally Sensitive Areas (ESA) which are associated with the Moore River National Park and Conservation category wetlands associated with the Moore River. Other ESAs are also present in close proximity to the area which are not directly connected to the Survey Area. The closest of these is approximately 45 m to the south of the Survey Area (DER, 2016).

1.1.2 Field Survey

An assessment of vegetation within the Survey Area was undertaken by Ecoedge in September 2018 (Ecoedge, 2019). The total area surveyed was 85.7 ha and this comprised of about 43.2 ha of native vegetation.

One hundred and eighty-five vascular flora taxa were identified within the Survey Area, of which 24 were introduced species and another four appear to have been planted. Three

priority taxa were identified these are listed in the table below (**Table 1**) and demarcated in **Figure 2.** No other flora of conservation significance was found.

Table 1 Priority flora in the Survey Area

Species Name	No.	Priority	Comments
Calytrix ecalycata subsp. *brevis*	1	P3	Represented by 13 records in DBCA databases.
Dodonaea hackettiana	3	P4	Represented by 69 records in DBCA databases.
Isopogon panduratus subsp. *palustris*	1	P3	Represented by 20 records in DBCA databases.

Four vegetation units were identified and mapped within the Survey Area. These are described in **Table 2**.

Table 2. Description of vegetation units within the proposed clearing area.

Unit	Description
A	<u>*Eucalyptus todtiana-Banksia attenuata-B. menziesii*</u> <u>woodland</u> Woodland of *Banksia menziesii* and *B. attenuata* (sometimes with *Callitris pyramidalis* or *B. ilicifolia* in damper areas) over sparse tall shrubland of *Adenanthos cygnorum, Jacksonia floribunda*, *J. sternbergiana*, *Kunzea glabrescens* and *Xanthorrhoea preissii* over low shrubland of *Bossiaea eriocarpa, Eremaea pauciflora, Leucopogon sprengelioides*, *Stirlingia latifolia* and open sedgeland of *Lyginia barbata, Alexgeorgea nitens* and *Mesomelaena pseudostygia* over sparse herbland of *Dampiera linearis*, *Patersonia occidentalis* and *Phlebocarya ciliata.* (On gently undulating sandplain).
B	<u>*Banksia attenuata-B. menziesii*</u> <u>woodland</u> Woodland of *Banksia menziesii* and *B. attenuata* (with scattered *Eucalyptus todtiana*) over sparse tall shrubland of *Adenanthos cygnorum, Jacksonia floribunda* and *Xanthorrhoea preissii* over low shrubland of *Bossiaea eriocarpa, Eremaea pauciflora, Leucopogon sprengelioides*, *Stirlingia latifolia* and open sedgeland of *Lyginia barbata, Alexgeorgea nitens* and *Mesomelaena pseudostygia* over sparse herbland of *Phlebocarya ciliata*, *Drosera erythrorhiza* and *Dampiera linearis.* (On undulating terrain of sandhills and swales).
C	<u>*Eucalyptus rudis-Melaleuca preissiana*</u> <u>woodland</u> Woodland of *Eucalyptus rudis* over *Banksia littoralis* and *Melaleuca preissiana* over tall shrubland of *Acacia saligna*, *Adenanthos cygnorum*, *Jacksonia sternbergiana* over shrubland of *Acacia huegelii*, *Bossiaea eriocarpa*, *Daviesia incrassata* and *Hypocalymma angustifolium.* (Fringing vegetation to seasonal wetlands)
D	<u>Degraded *Banksia*</u> <u>woodland</u> Scattered trees of *Banksia attenuata*, *B. menziesii* or *Eucalyptus todtiana* or open shrubland of *Adenanthos cygnorum*, *Jacksonia floribunda* over grassland dominated by **Eragrostis curvula*. (Note: This mapping unit also includes the road and cleared verge).

Mapping unit A and B are inferred to belong to the floristic community type (FCT) 23b 'Northern *Banksia attenuata* - *Banksia menziesii* woodlands' (Gibson *et al*., 1994). This is listed as a Priority 3 ecological community and is part of the Federally-listed '*Banksia*

Woodlands of the Swan Coastal Plain' Threatened ecological community (DotEE, 2016a, b; 2018b). 34.97 ha of vegetation units A and B satisfies the condition criteria to be classed as the TEC, while 38.03 ha meets the criteria of the State-listed PEC 'Northern *Banksia attenuata* - *Banksia menziesii* woodlands', which may include areas of Degraded condition.

Unit C is similar to floristic community type 11 (Wet forests and woodlands) of Gibson *et al*. (1994) and is not inferred to be a TEC or PEC.

Vegetation unit D contains some floristic elements of unit A in places (as well as cleared areas and the road surface), but it is degraded to a point where it cannot be considered part of the Threatened or Priority ecological community.

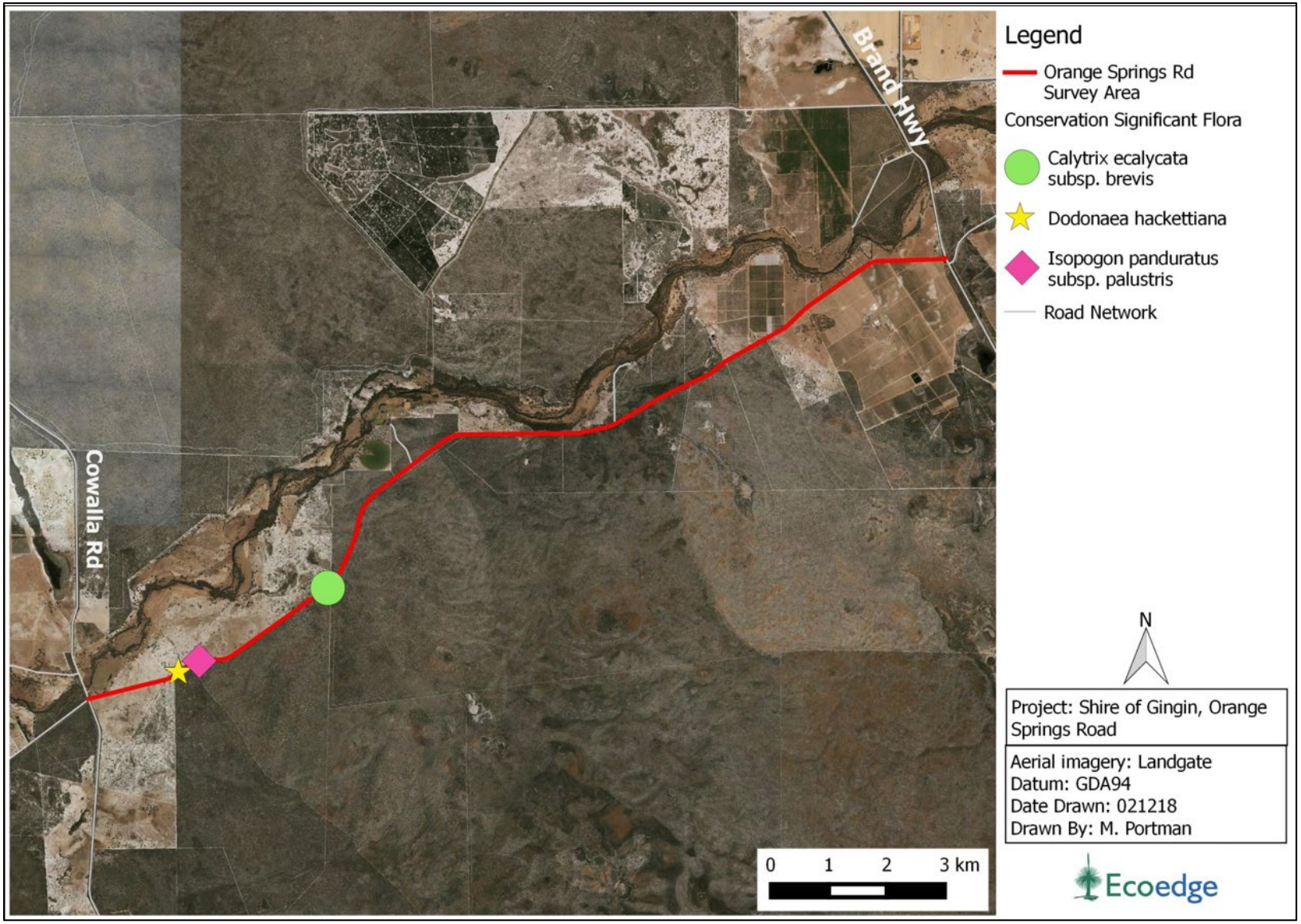

Figure 2. Priority Flora within the Survey Area

1.2 Fauna Survey, habitat for Threatened species

A Level 1 Fauna Survey and Level 2 assessment of the site's significance to Carnaby's Cockatoo (*Calyptorhynchus latirostris*) [1] known to occur in the area was undertaken by Greg Harewood (Zoologist) in September 2018 (Harewood, 2019).

Twenty five fauna species were observed during the field survey. With the exception of foraging debris attributed to the Carnaby's black cockatoo which was observed at several locations, no evidence of any of the conservation significant fauna species identified during the literature review was seen, though this does not eliminate the potential for various species to still be occur, if only infrequently.

In general, it was considered that the 'uncleared' native fauna habitats present are in good condition and are likely to have the capacity to support or be utilised by a high percentage of the listed fauna species and in particular those sections of vegetation directly adjoining larger expanses of similar habitat. In contrast the cleared or partly cleared areas will have a depauperate fauna assemblage and low biodiversity.

An overview of the results relating to Carnaby's Cockatoo is provided below. Carnaby's Black Cockatoo– is listed under S2 of the *Wildlife Conservation Act 1950* (WC Act) and as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2.1 Carnaby's Cockatoo

Breeding habitat

Fifteen "habitat trees" were identified within the Survey Area (**Figure 3**). Thirteen of these did not appear to contain hollows of any size. The hollows observed in the remaining two trees were all assessed as being unsuitable for black cockatoos to use for nesting due to being too small.

Foraging habitat

Foraging evidence attributed to this species was recorded at numerous locations. Almost all the remnant native vegetation within the subject area presents potential foraging habitat for this species. The banksia woodland areas represent the main quality foraging resource making up about 40% of the Survey Area.

Roosting habitat

No evidence of roosting activity within the Survey Area was recorded during the survey period and given the general absence of large trees it in considered unlikely that the area is used for this purpose at any time.

[1] Carnaby's cockatoo (*Calyptorhynchus latirostris*), listed as Endangered under both the WC Act and EPBC Act.

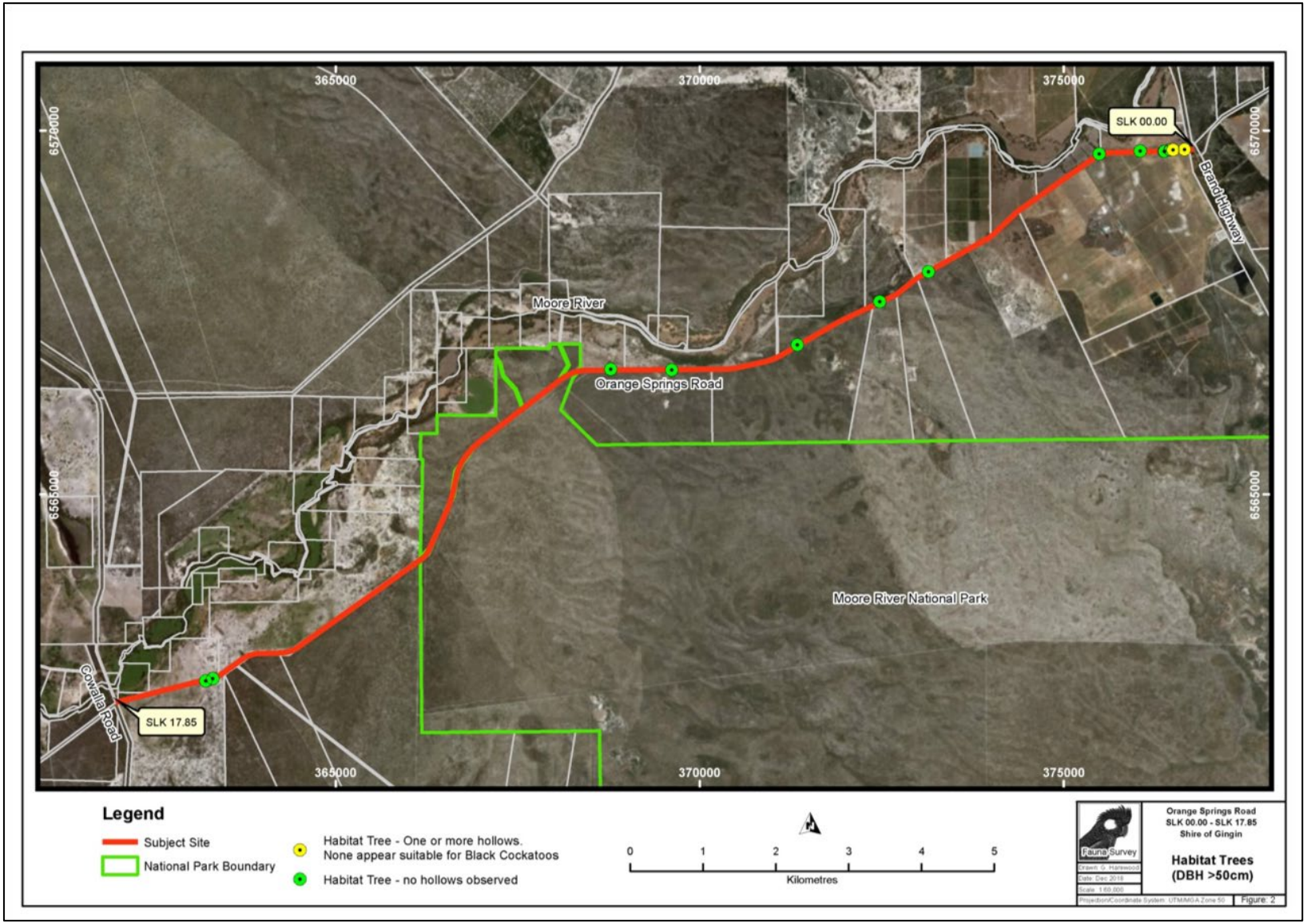

Figure 3. Habitat trees within the Survey Area

1.3 Clearing Proposal

The Shire of Gingin has used the results of both the flora and fauna surveys to mitigate clearing impacts, where possible. As a result, all priority flora known to occur in the area has been avoided and the clearing envelope has been limited to only that which is absolutely necessary for road upgrades.

The proposed clearing will involve clearing of 2.13 ha of native vegetation. 2.11 ha of this comprises of an occurrence of the State listed Priority 3 ecological community - FCT 23b 'Northern *Banksia attenuata* - *Banksia menziesii* woodlands'. Good or better condition portions of this community, which comprises 1.2 ha, is classed as an occurrence of the Federally protected threatened 'Banksia Woodlands of the Swan Coastal Plain 'ecological community. The proposed extent of all clearing is presented in **Figure 4** to **Figure 26** and tabulated in **Table 3**, **Table 4** and **Table 5.**

Table 3. Condition and area of vegetation units within the proposed clearing area.

Unit	Description	Area (ha)	Veg Cond	Area (ha)
A	*Eucalyptus todtiana-Banksia attenuata-B. menziesii* woodland	2.02	E	0.76
			VG	0.22
			G	0.14
			D	0.90
B	*Banksia attenuata-B. menziesii* woodland	0.08	E	0.08
C	*Eucalyptus rudis-Melaleuca preissiana* woodland	0.03	VG	0.03
	Total	**2.13**		**2.13**

Table 4. Condition and area of PEC vegetation, Unit A & B, within the proposed clearing area.

Vegetation Condition	Area (Ha)	%
Excellent (E)	0.84	39.8
Very Good (VG)	0.22	10.4
Good (G)	0.14	6.7
Degraded (D)	0.91	43.1
Total	**2.11**	**100**

Table 5. Condition and area of TEC vegetation (Good or better condition Unit A & B vegetation in the proposed Clearing Area).

Vegetation Condition	Area (Ha)	%
Excellent	0.84	70
Very Good	0.22	18.33
Good	0.14	1.66
Total	**1.2 ha**	**100**

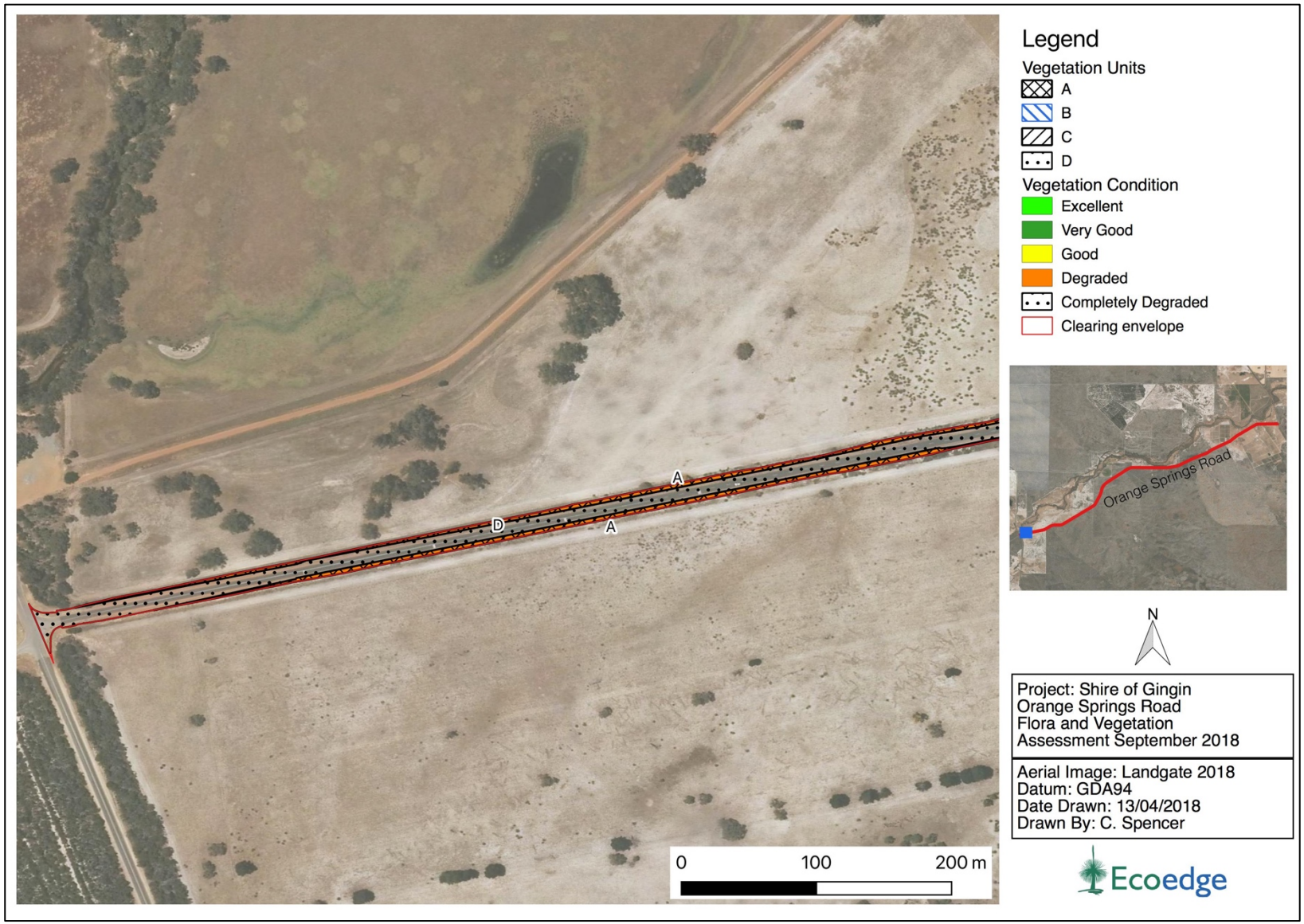

Figure 4. Vegetation units and vegetation condition mapped for the clearing area.

Figure 5. Vegetation units and vegetation condition mapped for the clearing area.

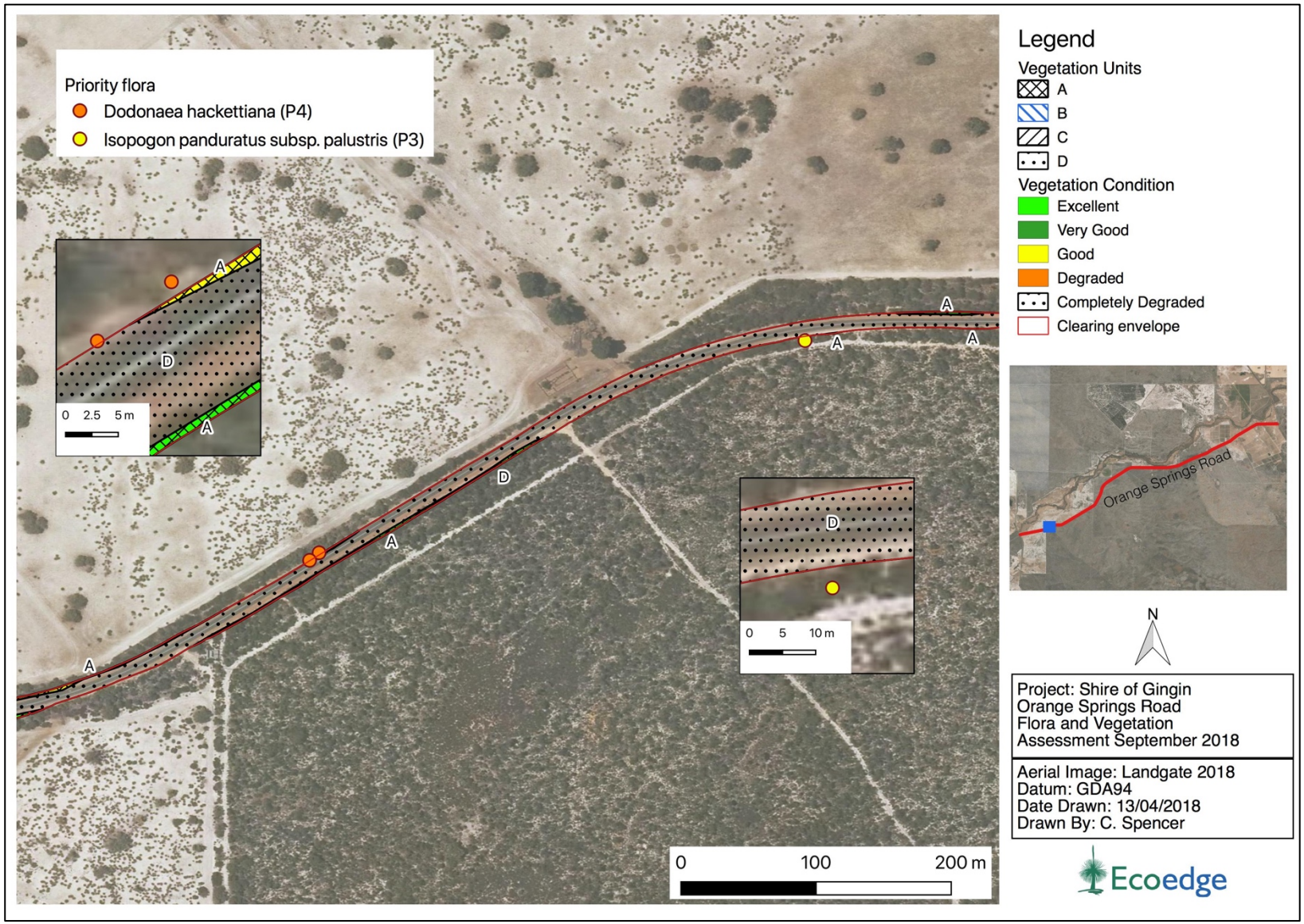

Figure 6. Vegetation units and vegetation condition mapped for the clearing area.

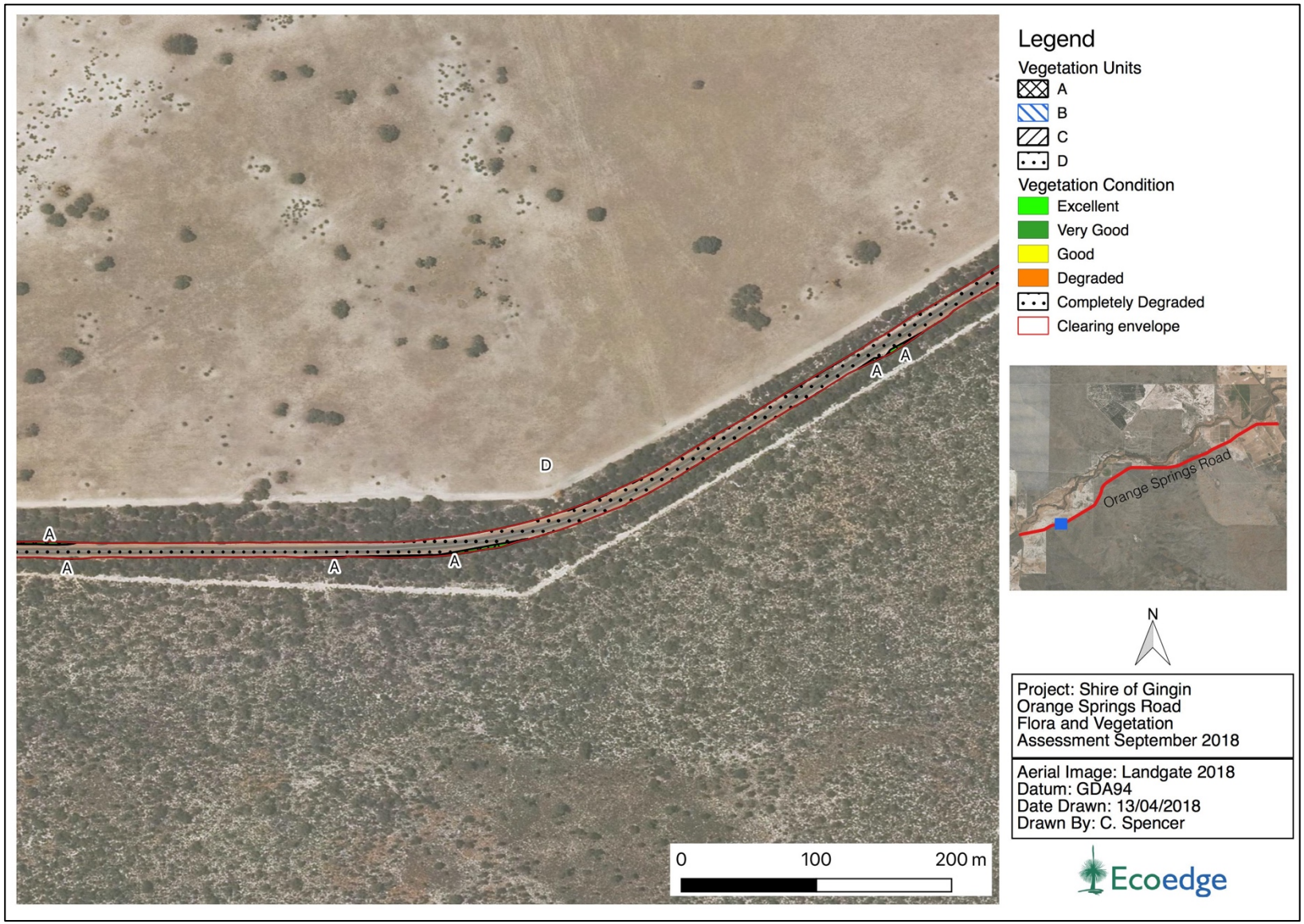

Figure 7. Vegetation units and vegetation condition mapped for the clearing area.

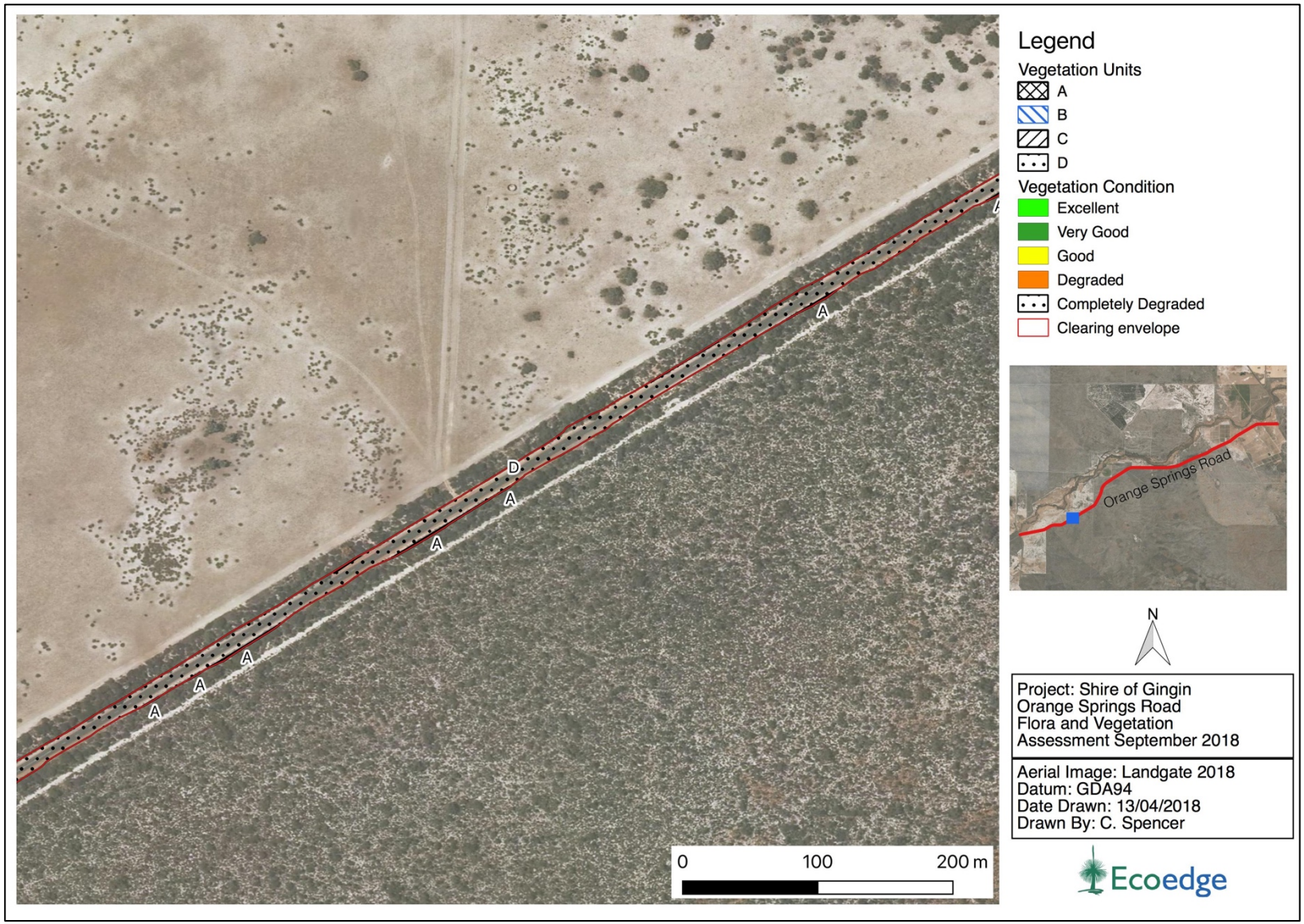

Figure 8. Vegetation units and vegetation condition mapped for the clearing area.

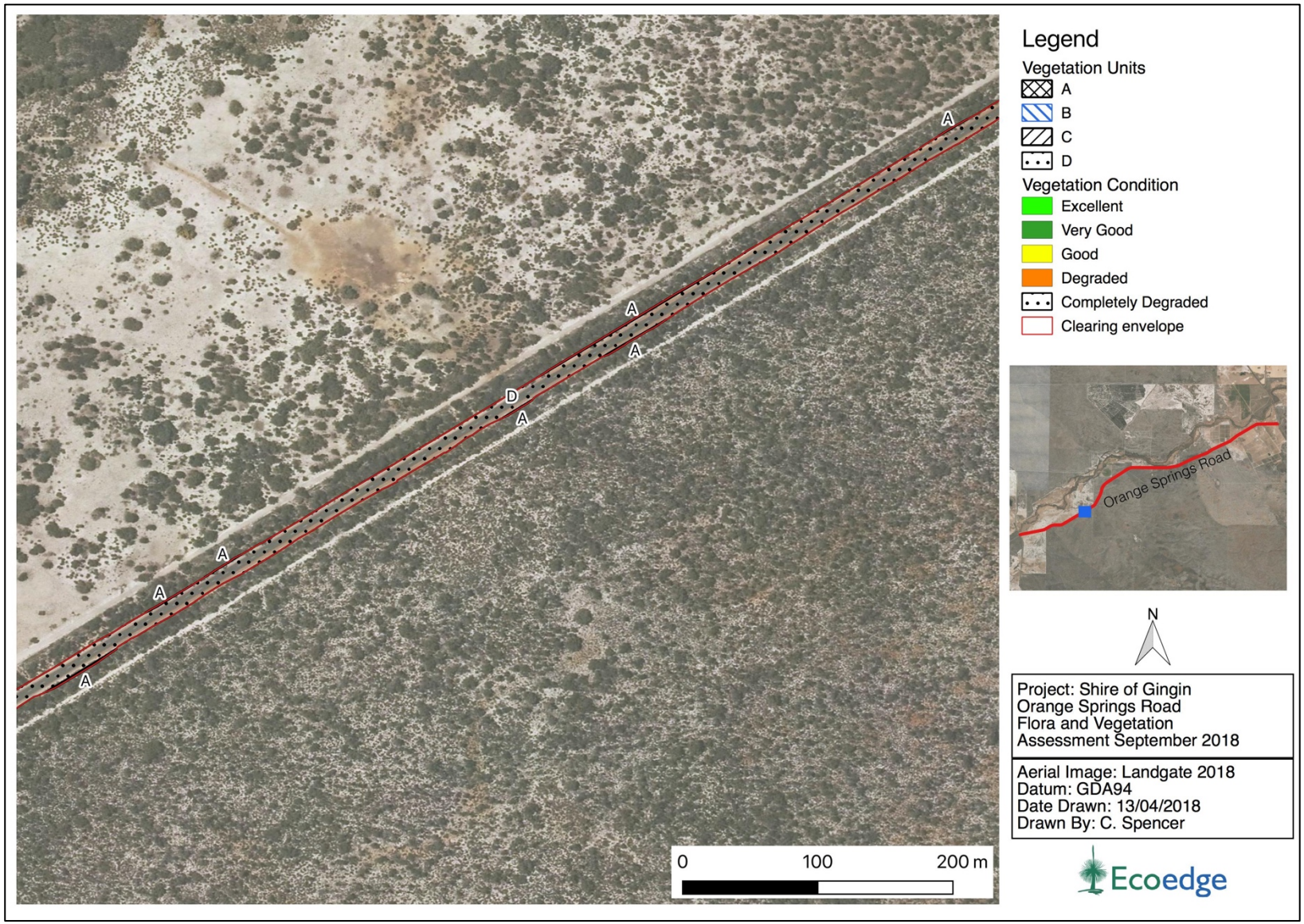

Figure 9. Vegetation units and vegetation condition mapped for the clearing area.

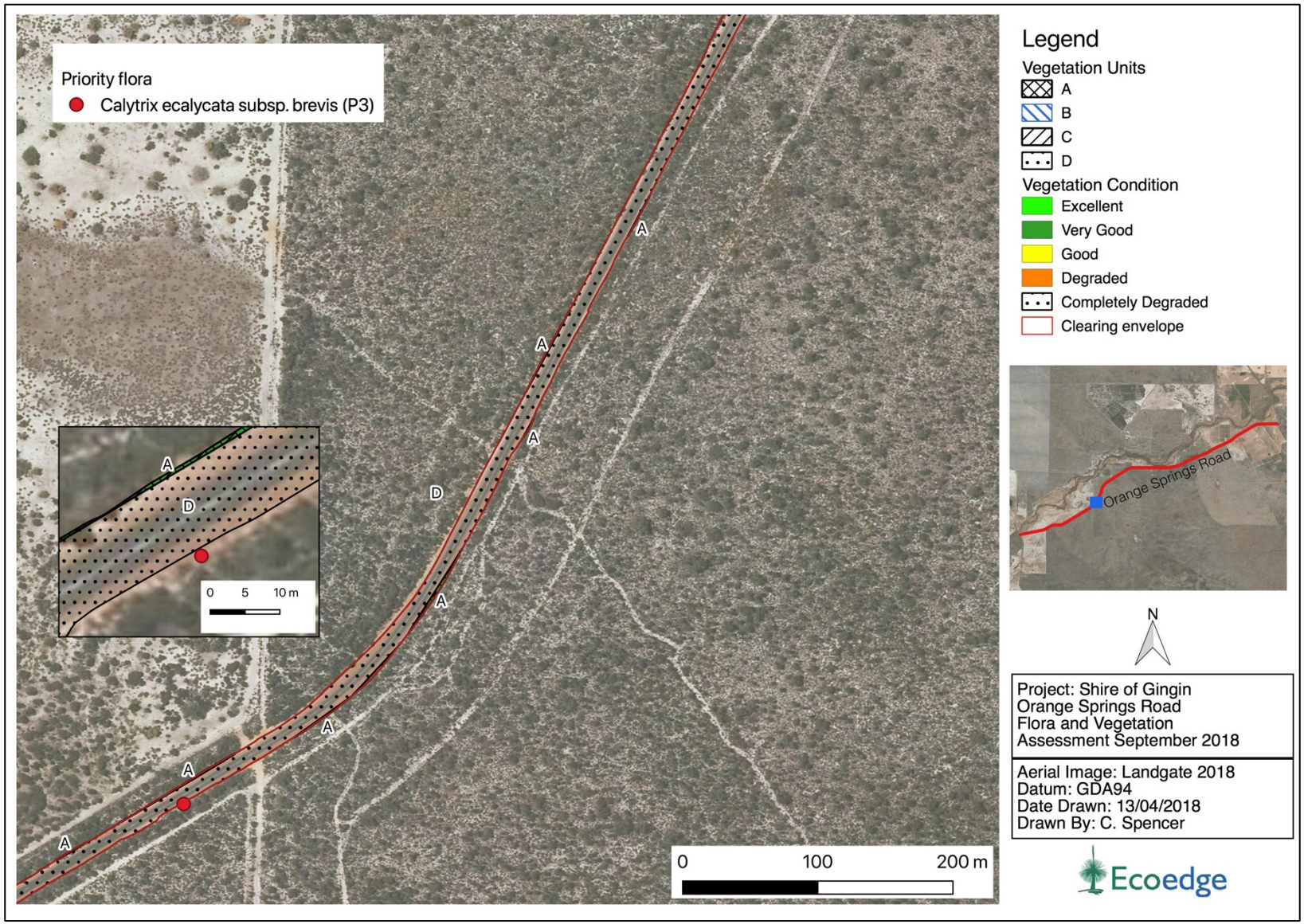

Figure 10. Vegetation units and vegetation condition mapped for the clearing area.

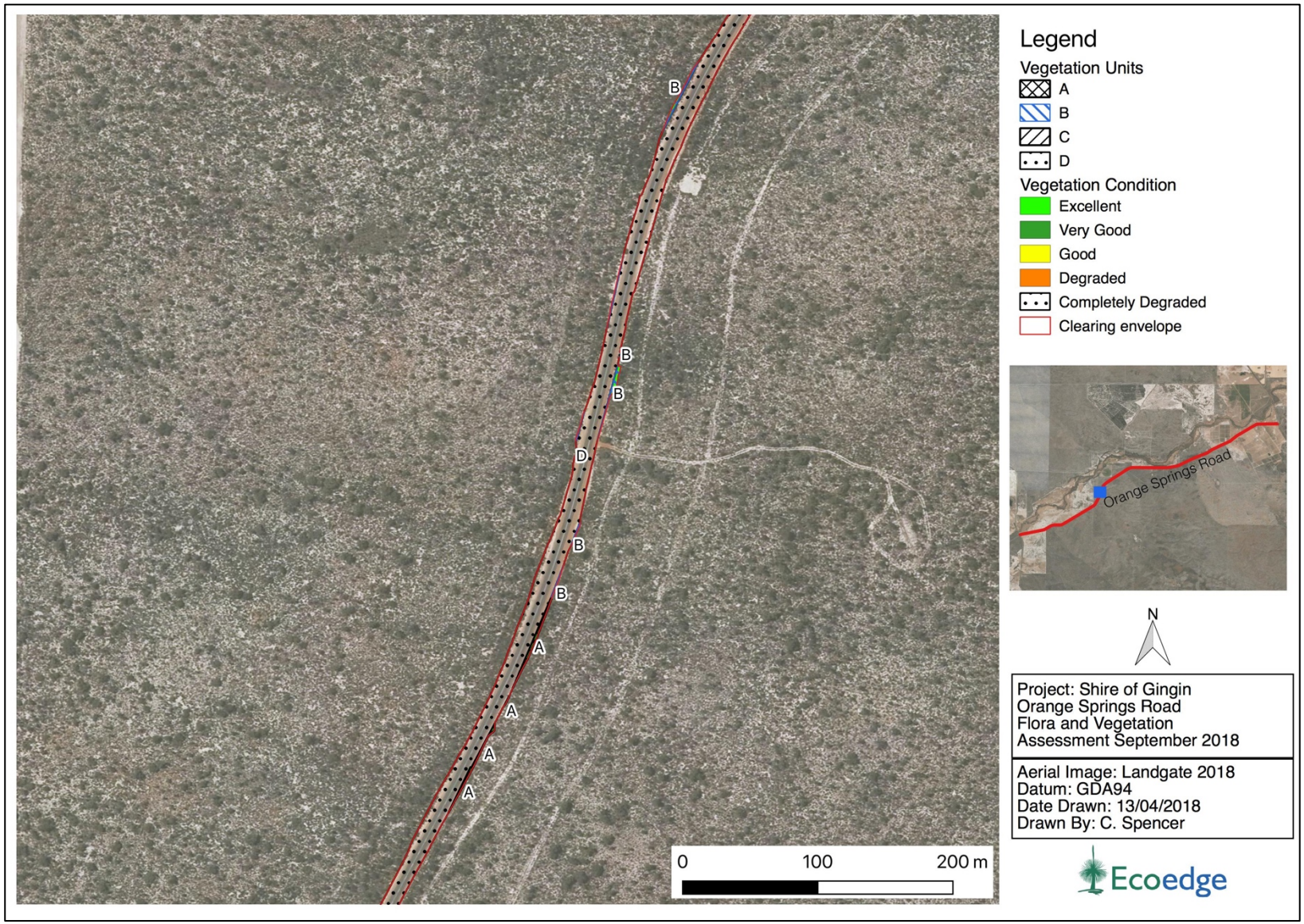

Figure 11. Vegetation units and vegetation condition mapped for the clearing area.

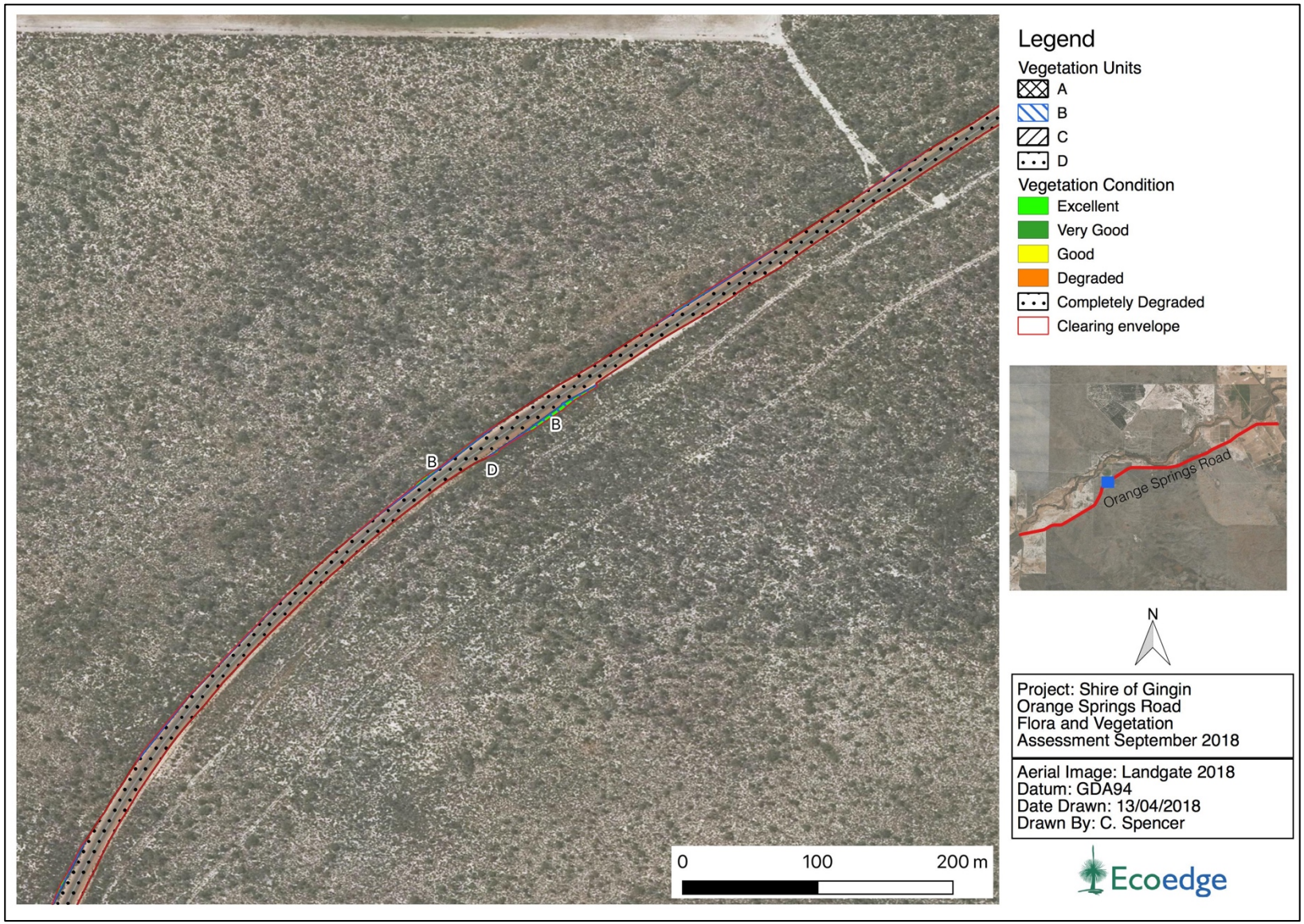

Figure 12. Vegetation units and vegetation condition mapped for the clearing area.

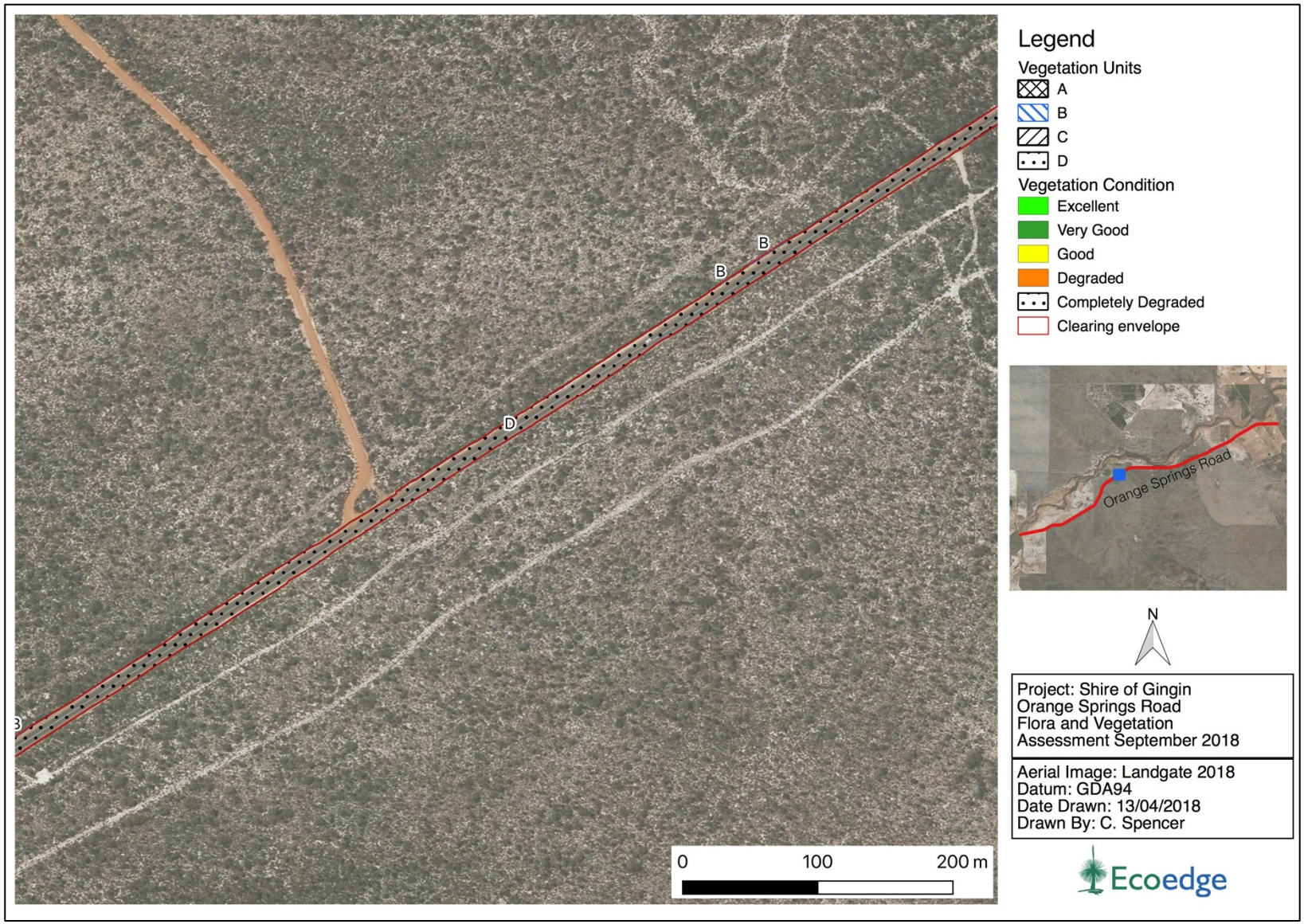

Figure 13. Vegetation units and vegetation condition mapped for the clearing area.

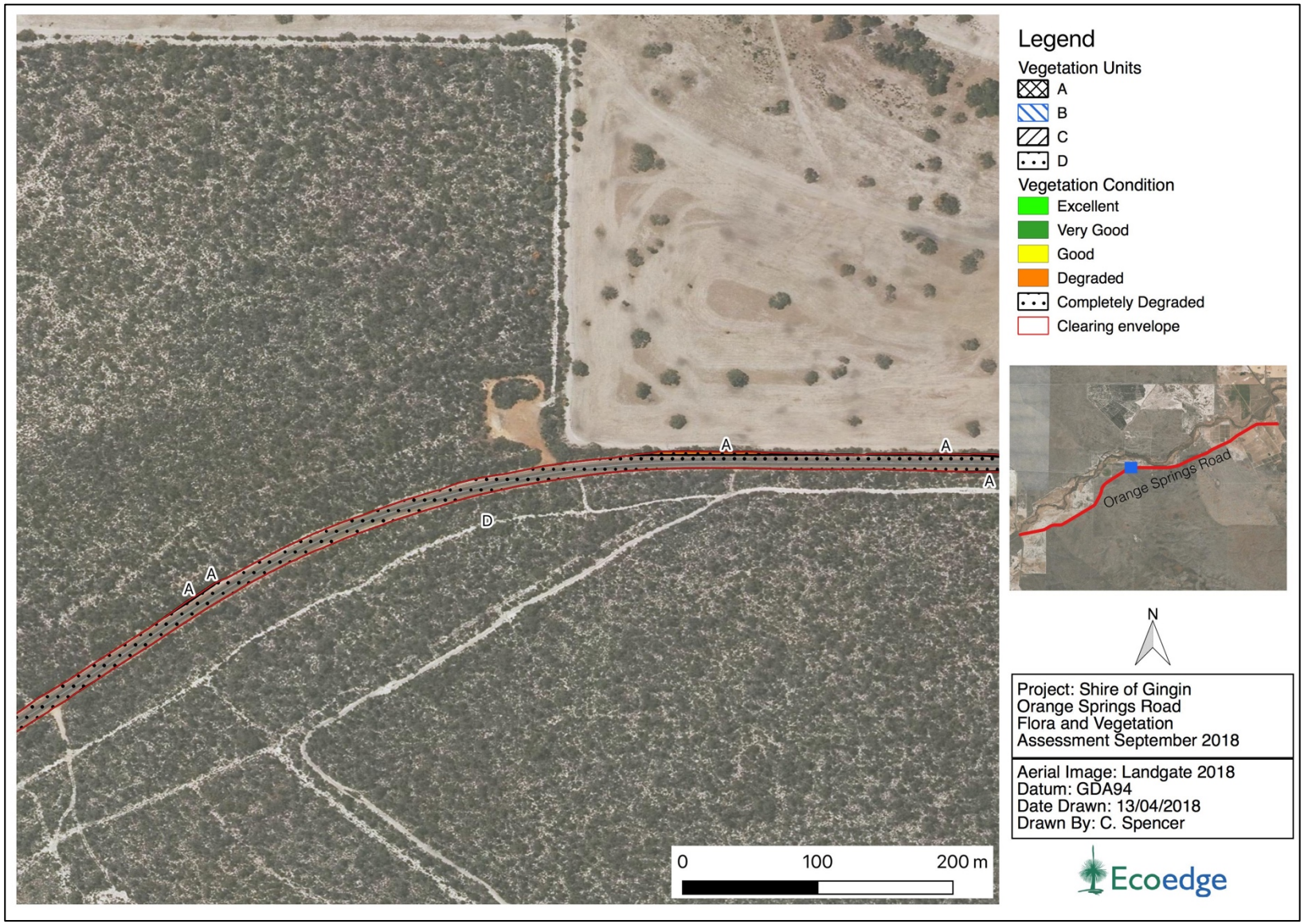

Figure 14. Vegetation units and vegetation condition mapped for the clearing area.

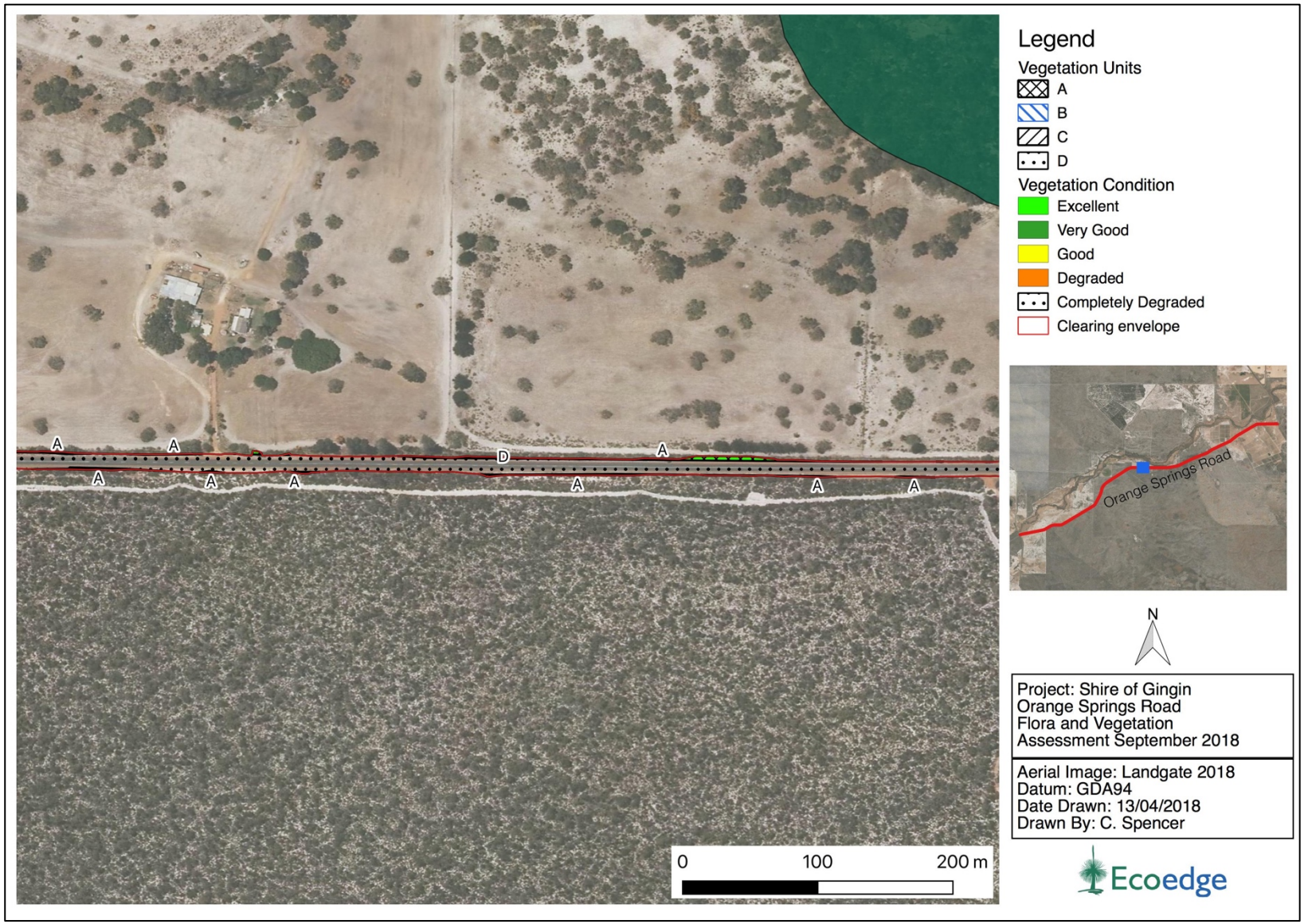

Figure 15. Vegetation units and vegetation condition mapped for the clearing area.

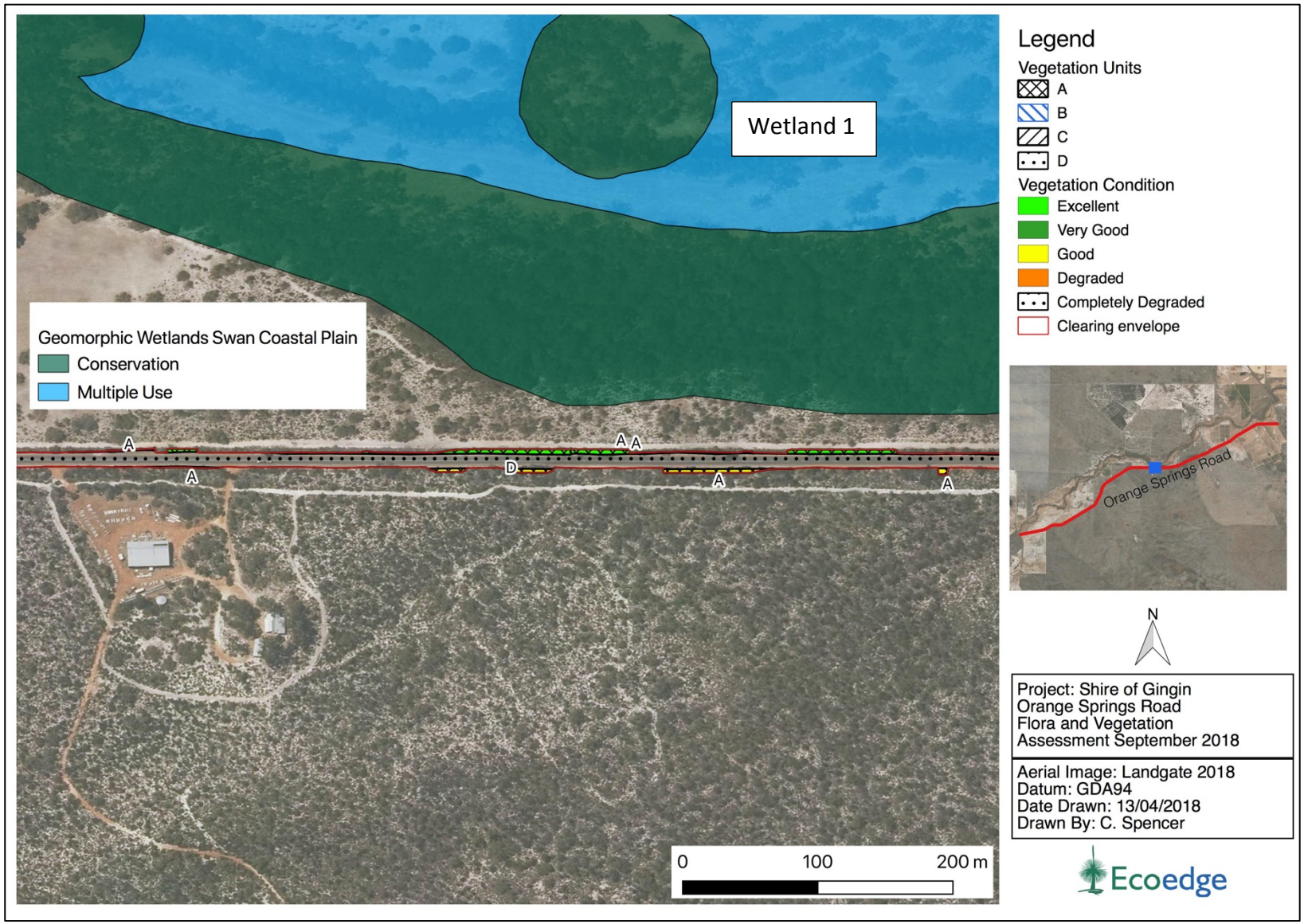

Figure 16. Vegetation units and vegetation condition mapped for the clearing area.

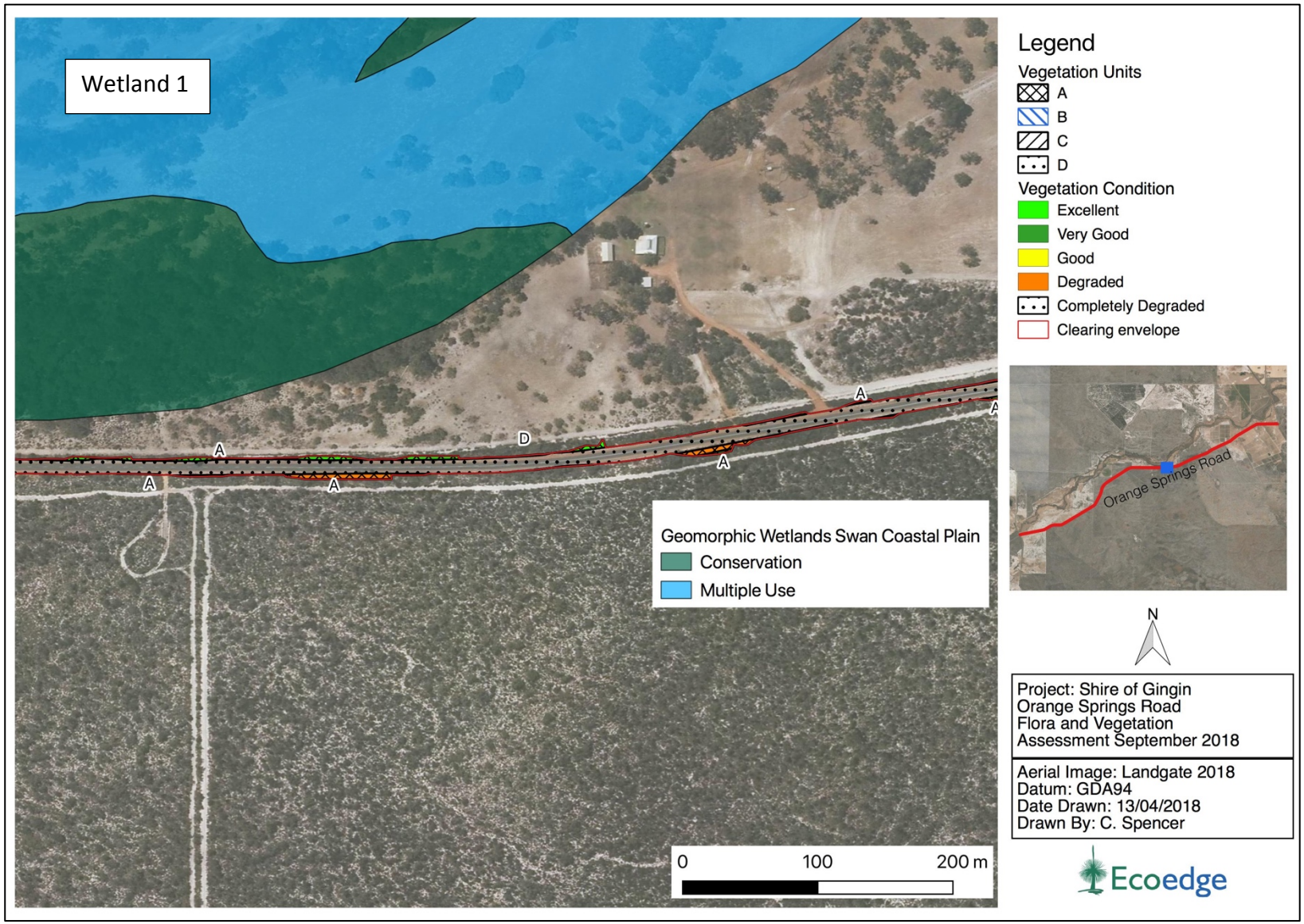

Figure 17. Vegetation units and vegetation condition mapped for the clearing area.

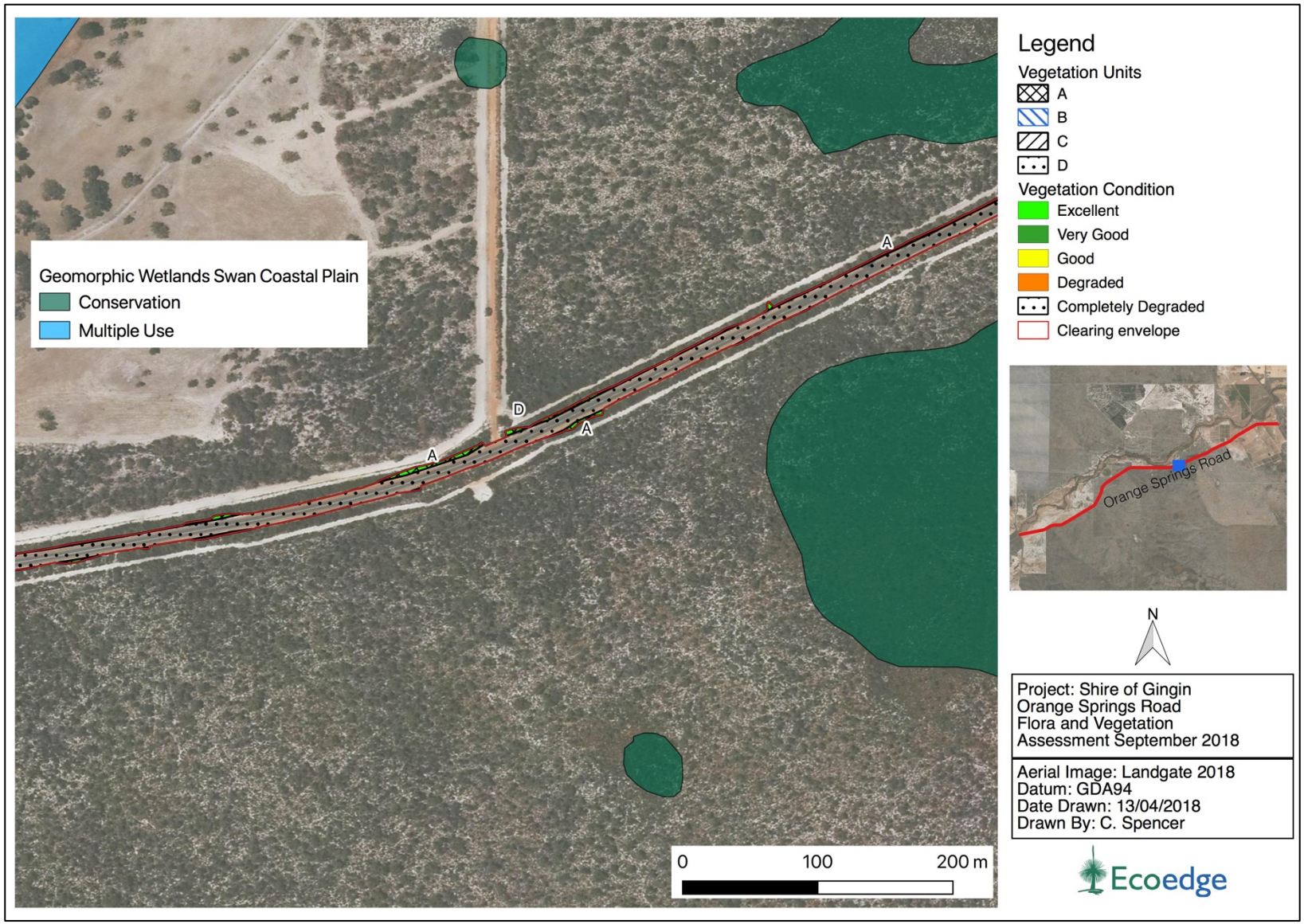

Figure 18. Vegetation units and vegetation condition mapped for the clearing area.

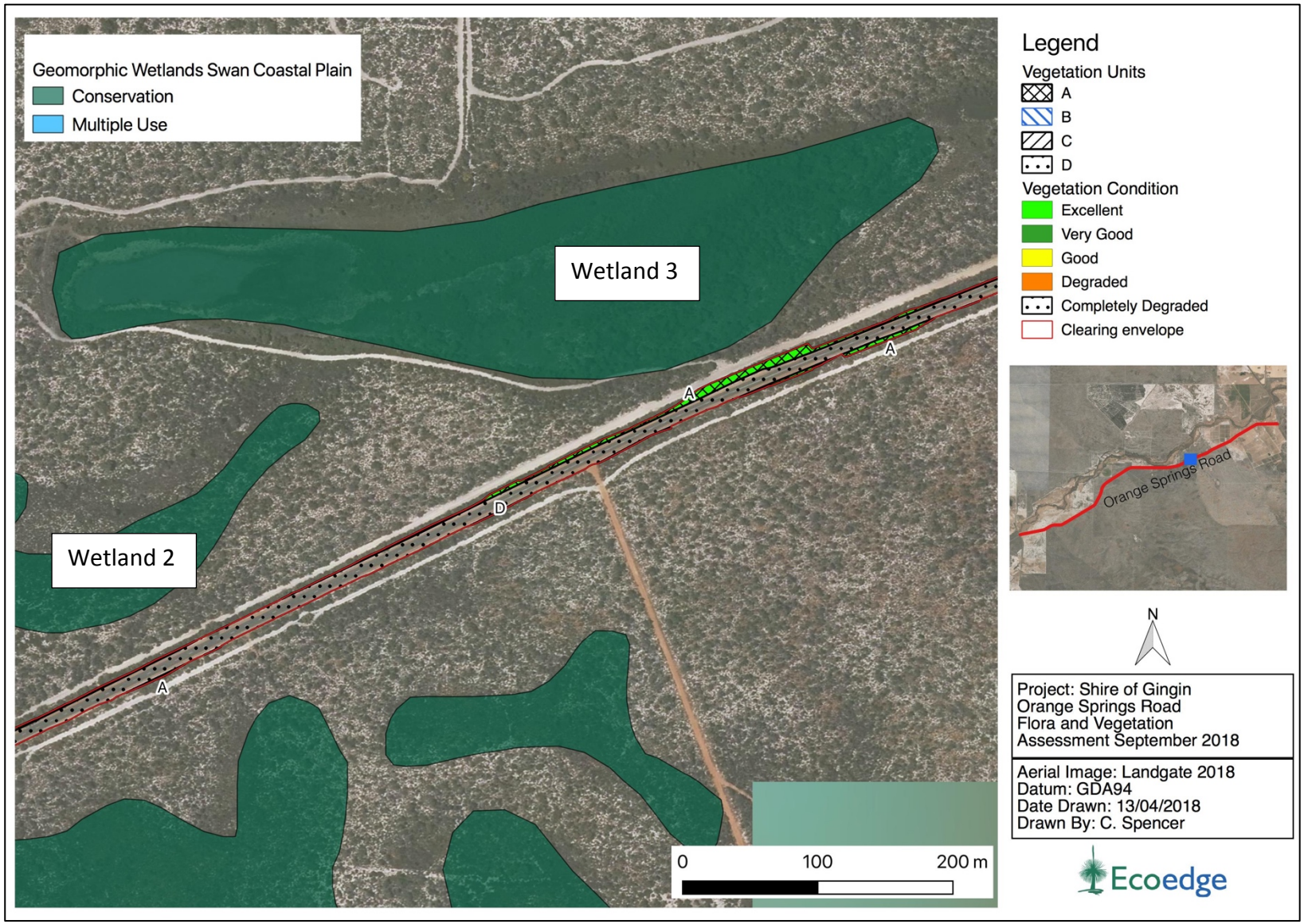

Figure 19. Vegetation units and vegetation condition mapped for the clearing area.

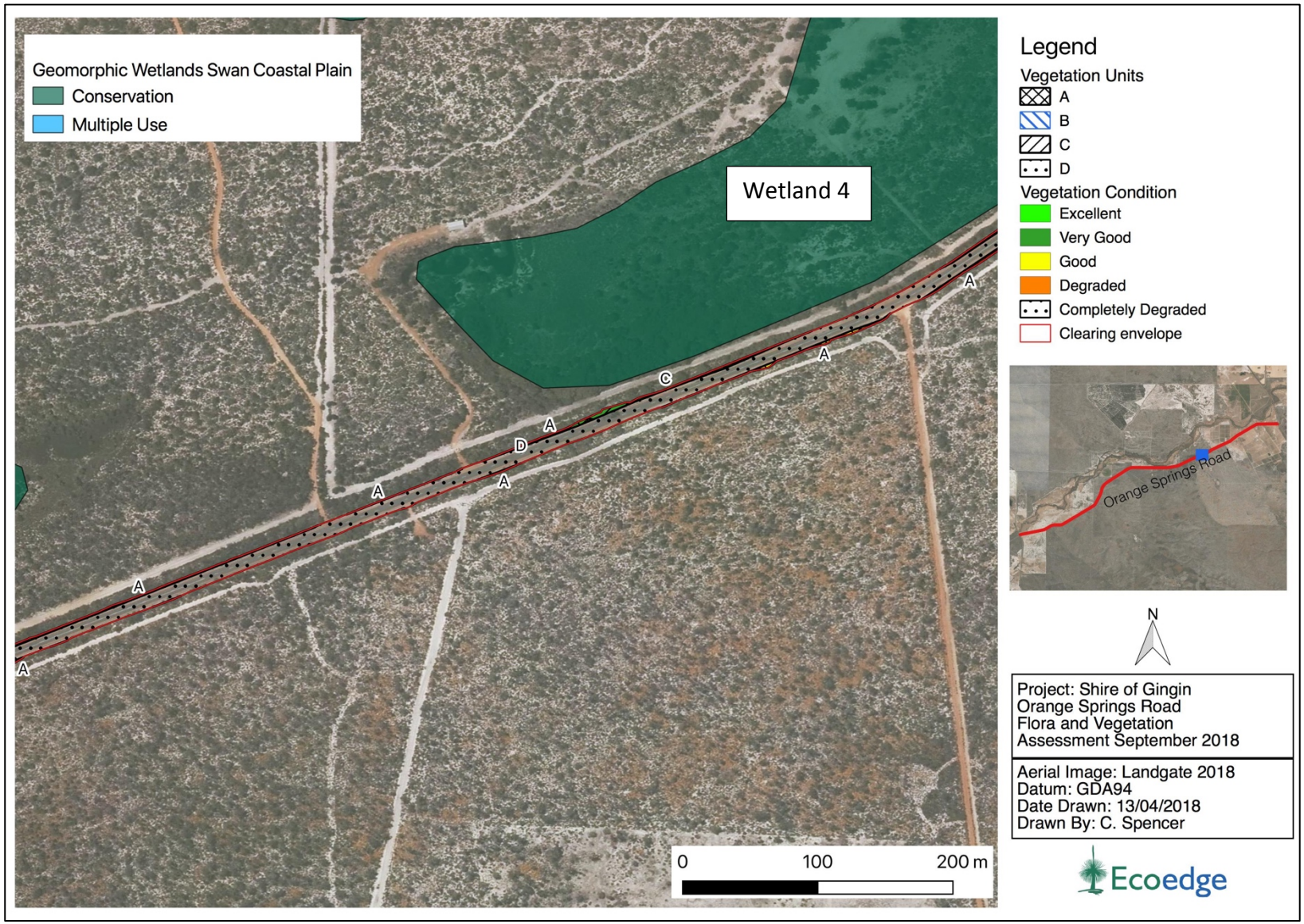

Figure 20. Vegetation units and vegetation condition mapped for the clearing area.

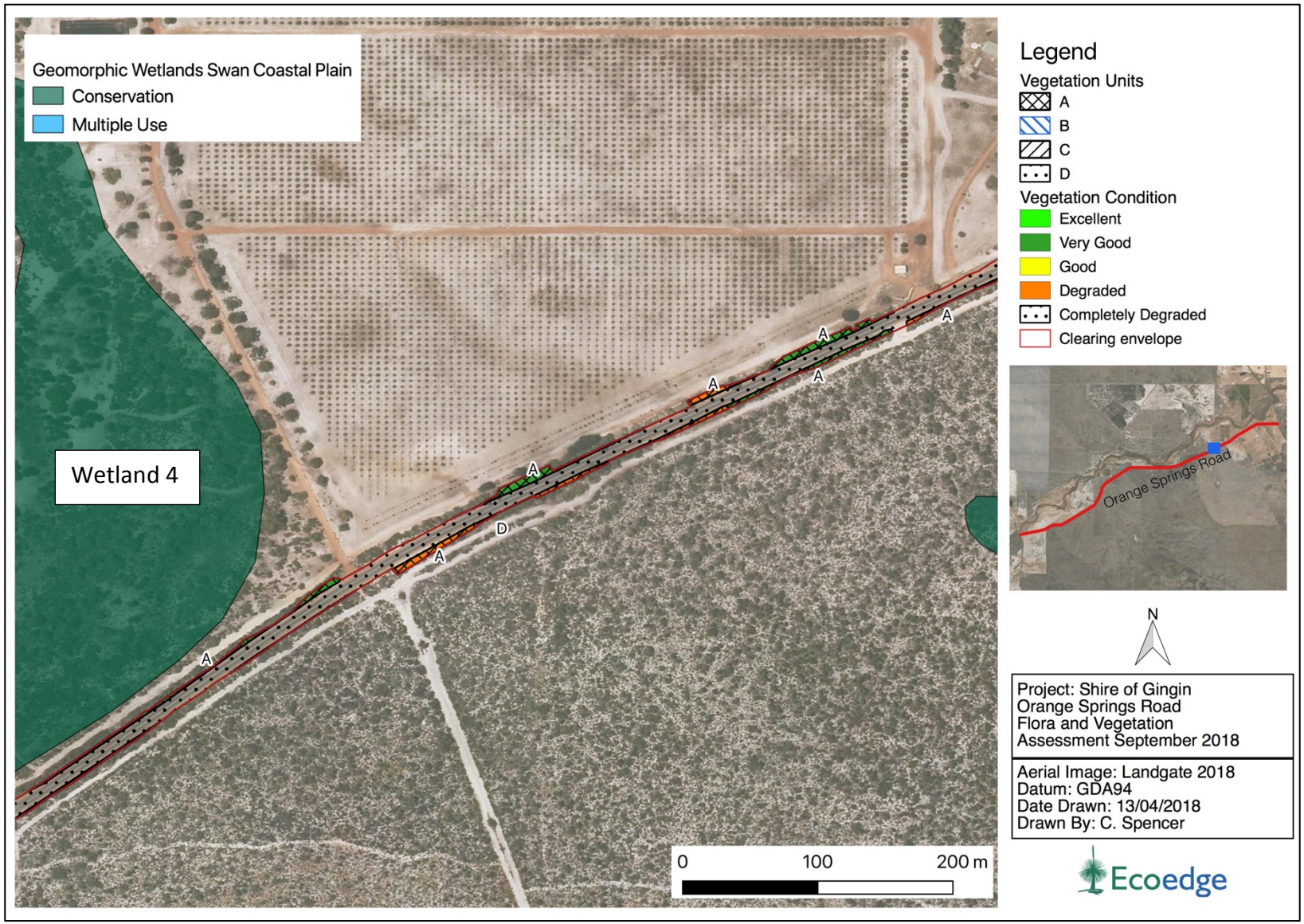

Figure 21. Vegetation units and vegetation condition mapped for the clearing area.

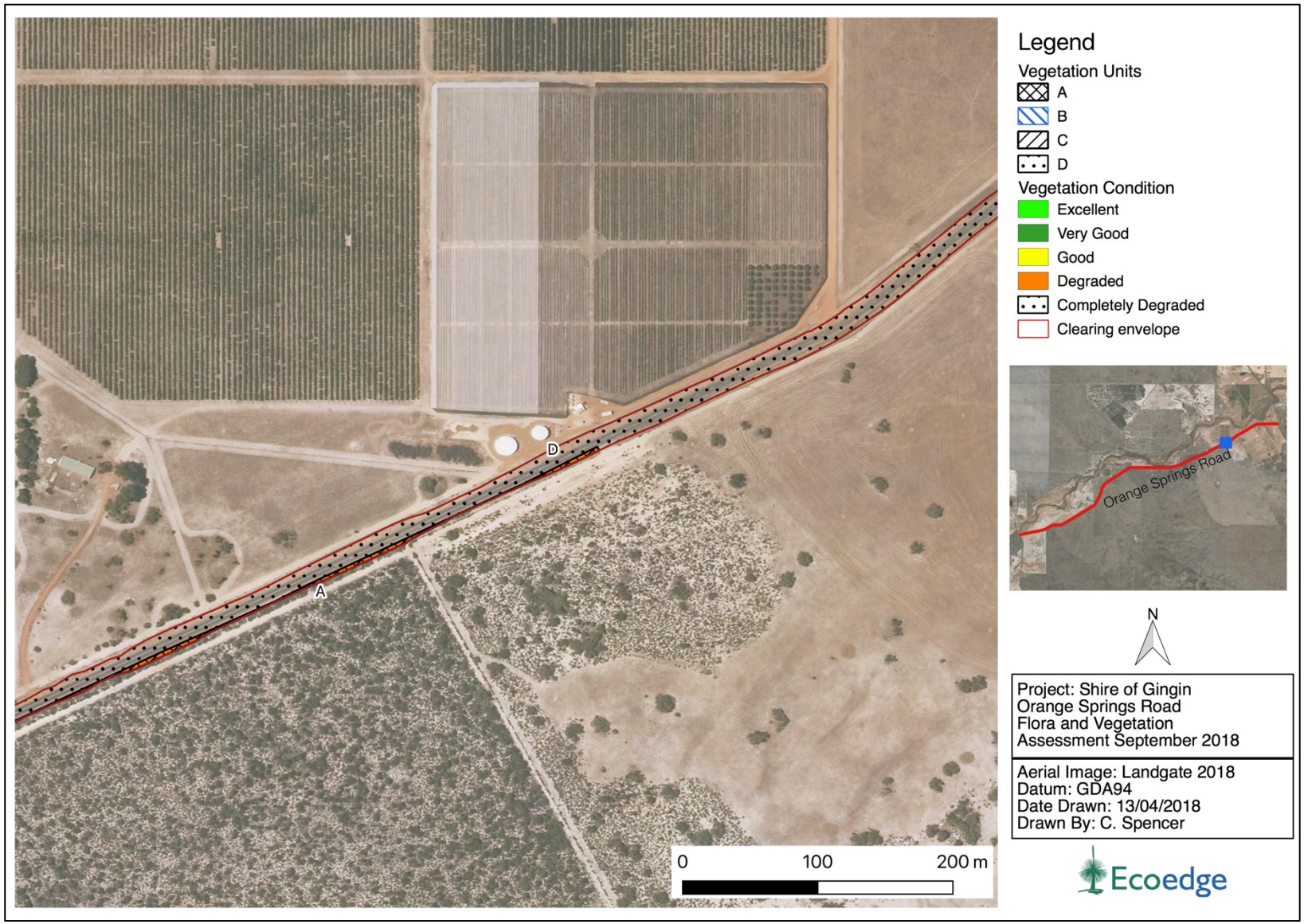

Figure 22. Vegetation units and vegetation condition mapped for the clearing area.

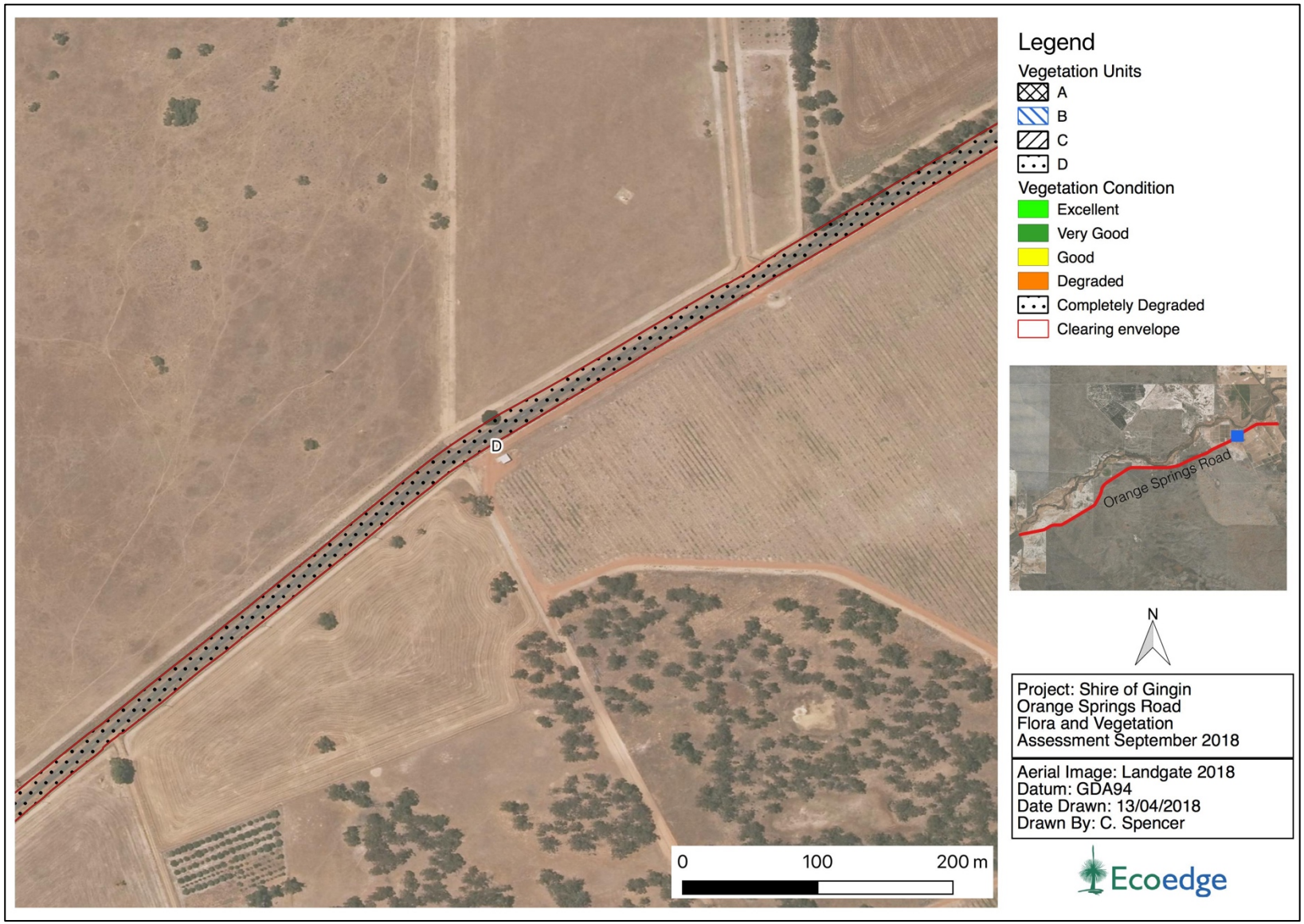

Figure 23. Vegetation units and vegetation condition mapped for the clearing area.

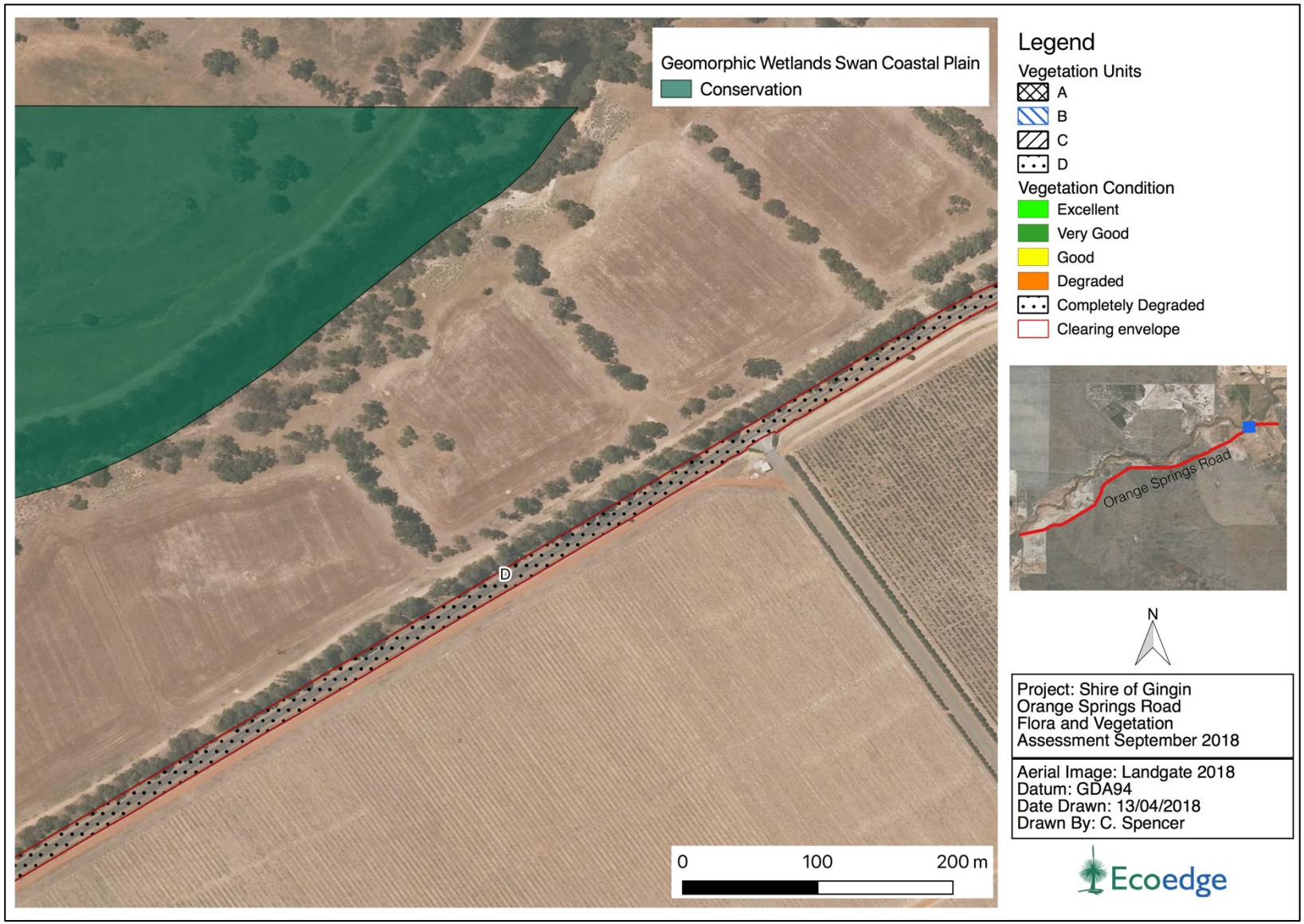

Figure 24. Vegetation units and vegetation condition mapped for the clearing area.

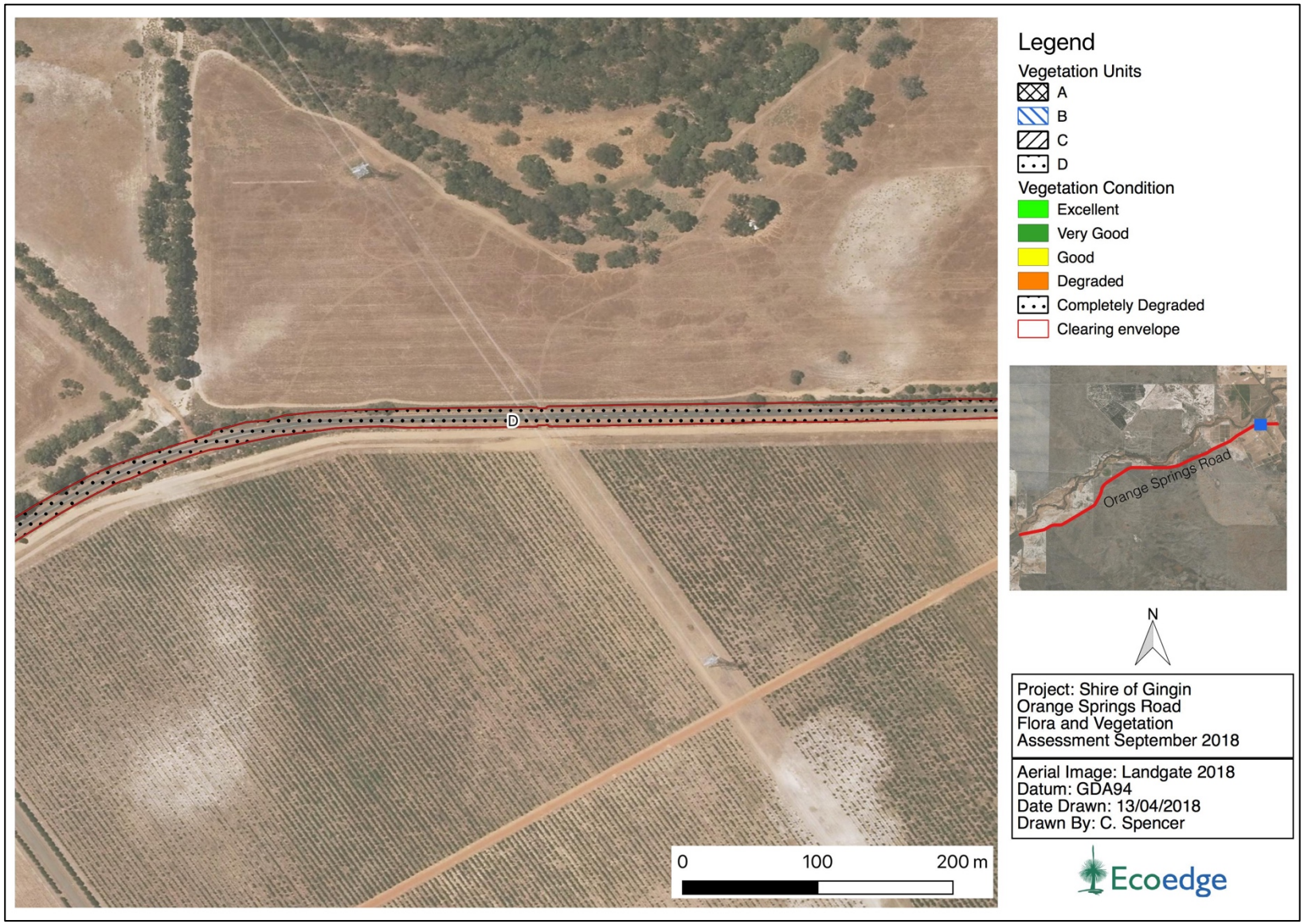

Figure 25. Vegetation units and vegetation condition mapped for the clearing area.

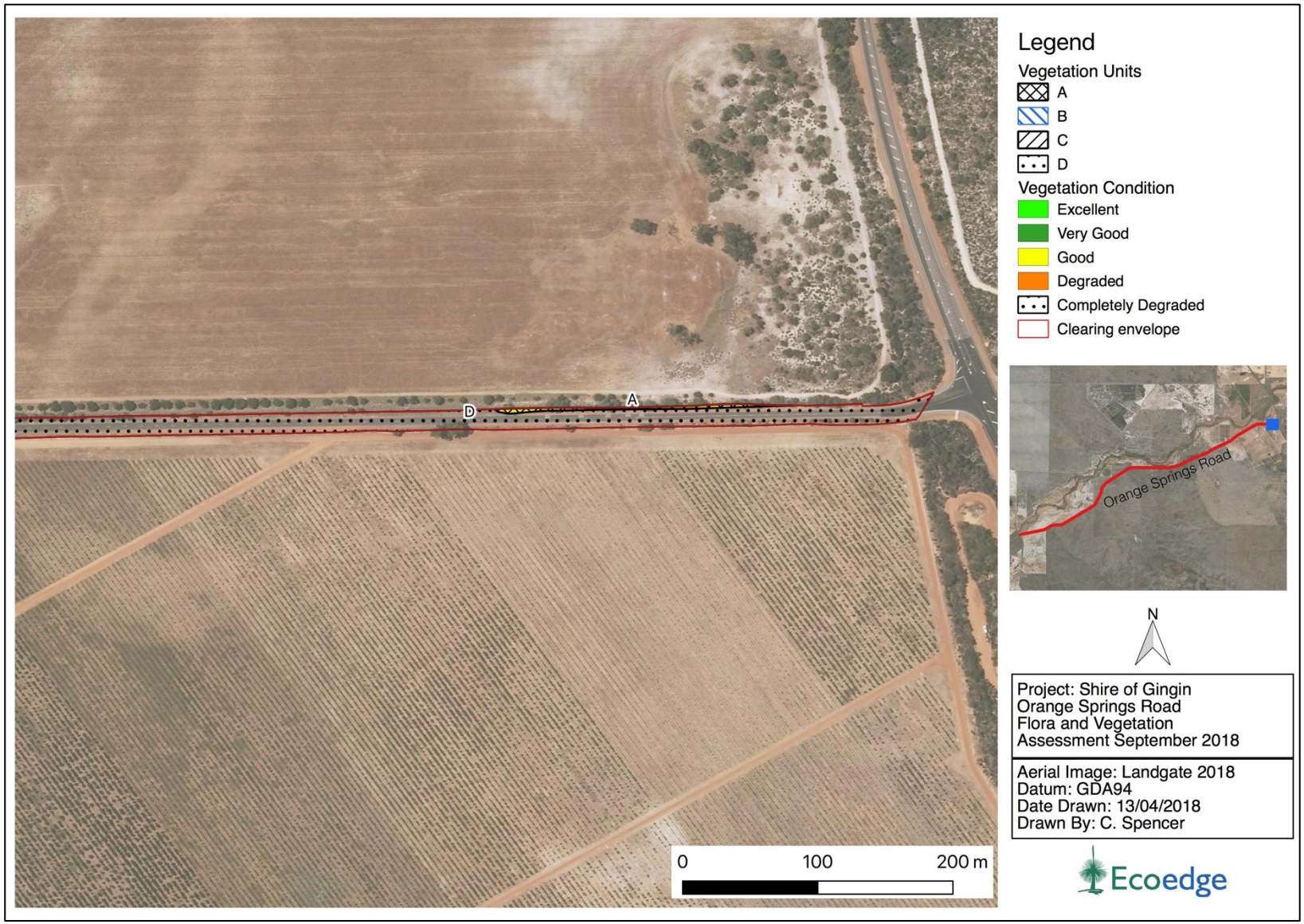

Figure 26. Vegetation units and vegetation condition mapped for the clearing area.

1.4 Requirement for a Clearing Permit

To determine the requirement for a clearing permit, the proposed clearing activities were assessed against the regulations and exemptions under Part V of the *Environmental Protection Act 1986* (EP Act), and against the Principles for clearing native vegetation under Schedule 5 of the EP Act.

It was determined that a clearing permit is required as there is no valid exemption for the proposed clearing under the EP Act or under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations) (DER, 2014).

2 Assessment against Clearing Principles

Information for this assessment in regards to flora values has been taken from Ecoedge (2019), and in regards to fauna values has been taken from Harewood (2019).

Table 6. Assessment of the clearing proposal against the Ten Clearing Principles.

<table>
<tr><th>Clearing Principle</th><th>Response</th></tr>
<tr><td>(a) it comprises a high level of biological diversity ; or</td><td>
May be at variance.

Vegetation proposed to be cleared comprises 2.13 ha of road reserve vegetation spread along both sides of a 17.5 km east-west transect along the Orange Springs Road. It involves clearing of 0.84 ha of Excellent and 0.25 ha Very good vegetation with the balance mostly in degraded condition.

Most of this vegetation was inferred to be the Floristic Community Type (FCT) 23b Northern Banksia attenuata – B menziesii woodland, which has an above average species richness when compared with similar vegetation types, per table 1 below.

Table 1. Typical mean species richness per 100 m2 (Gibson et al. 1994).
<table>
<tr><th>Floristic Community Type</th><th>Mean species richness per 100m2</th></tr>
<tr><td>FCT 11 Wetland forests and woodlands</td><td>27.2</td></tr>
<tr><td>FCT 21c Low lying Banksia attenuata woodlands or shrublands,</td><td>40.5</td></tr>
<tr><td>FCT 22 Banksia ilicifolia woodlands</td><td>32.5</td></tr>
<tr><td>FCT 23a Central Banksia attenuata – B menziesii woodlands</td><td>62.8</td></tr>
<tr><td>FCT 23b Northern Banksia attenuata – B menziesii woodlands</td><td>53.8</td></tr>
<tr><td>FCT 24 Northern Spearwood shrublands and woodlands</td><td>41.8</td></tr>
<tr><td>FCT 28 Spearwood Banksia attenuata or Banksia attenuata – Eucalyptus woodlands</td><td>55.2</td></tr>
</table>

The 185 flora species, including 28 introduced species, that were identified in the
</td></tr>
</table>

Clearing Principle	Response
	broader survey area is a reasonable reflection of the above average floristic diversity that may be expected in the area. This included three species of Priority flora occur within the Survey Area: *Calytrix ecalycata* subsp*. brevis* (P3), *Dodonaea hackettiana* (P4) *and Isopogon panduratus* subsp*. palustris* (P3).
(b) it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia; or	Not at variance. This assessment relates particularly to Carnaby's Cockatoo which was positively confirmed to be present within the proposed Disturbance Area, but it can also reasonably apply to other Conservation significant fauna potentially occurring in the area (Harewood, 2019). Impacts to the Carnaby's Black cockatoo primarily relate to the potential loss of quality foraging habitat. Taking into consideration that clearing is to be at relatively small at select locations along a relatively narrow linear corridor it is considered unlikely that any significant impacts on fauna will occur. The presence of large expanses of reserve bushland of similar character in the immediate vicinity also lessens the significance of the potential impacts.
(c) it includes, or is necessary for the continued existence of, rare flora; or	Not at variance. No rare (threatened) flora were identified in the Survey Area.
(d) it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community; or	At variance. The proposed clearing area contains 1.2 ha of the Federally listed Threatened ecological community 'Banksia Woodlands of the Swan Coastal Plain' and 2.11 ha of the State listed Priority 3 'Northern *Banksia attenuata – Banksia menziesii* woodlands' ecological community. Whilst the proposal is likely to be at variance with this principle the overall impact on the TEC and PEC is likely to only be minor - moderate. The proposed clearing is located within a relatively narrow corridor of road reserve vegetation along the edge of a large

Clearing Principle	Response
	tract of bushland with a large area to boundary ratio. Whilst the corridor of vegetation does provide a linkage between tracts of bushland, other larger "better" linkages are present in the vicinity, such as that associated with the Moore River.
(e) it is significant as a remnant of native vegetation in an area that has been extensively cleared; or	Not at variance. The proposal occurs within a corridor of roadside vegetation in Perth Sub-region of the Swan Coastal Plain Interim Biogeographic. 41.69% of the vegetation within this subregion remains, (Government of Western Australia, 2018). The vegetation of the Survey Area was mapped as comprising three complexes; the Bassendean Complex-North, the Bassendean Complex-North Transition and the Moore River Complex. The extent remaining of both the Bassendean Complex-North (88.83%) and the Bassendean Complex-North Transition (71.56%) complexes are well above the Commonwealth government's minimum 30% retention target. The Moore River Complex (34.46) is slightly above the retention target (Environment Australia, 2001).
(f) it is growing in, or in association with, an environment associated with a watercourse or wetland; or	May be at variance. The Project Area is situated within 50 m of four Conservation category wetlands that are associated with the Moore River. <u>Wetland 1,</u> part of the Moore River (**Figure 16** and **Figure 17**). The proposal will reduce the existing 400 m x 30 m dryland buffer by 4 m over about 150 m and between 0.5 - 3 m over the balance of the 400 m length. This impact is unlikely to be significant give the significant size of this wetland system. <u>Wetland 2,</u> (**Figure 19**). The proposal will reduce the closest point to the wetland (40 m) by approximately 1 m, which is a comparatively insignificant impact. <u>Wetland 3,</u> (**Figure 19**). The existing dryland buffer between the road and wetland is about 30 m, including a fire break. The proposal will reduce this buffer by about 6 m over a 75 m length. This impact is unlikely to significant given that the balance of the

Clearing Principle	Response
	approximately 1500 m wetland boundary is well buffered with existing vegetation. Wetland 4, (**Figure 20** and **Figure 21**). The existing dryland buffer between the road and wetland is about 20 m X 465 m. There will be an average 1-2 m reduction in this buffer for about 220 m. The long and linear nature of this clearing along an already cleared edge is unlikely to contribute a significant impact to the overall function of this wetland.
(g) the clearing of the vegetation is likely to cause appreciable land degradation; or	Not at variance
(h) the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area; or	May be at variance. The Survey Area passes through and is adjacent to ESAs which area associated with the Moore River National Park and Conservation category wetlands associated with the Moore River. Other ESAs are also present in close proximity to the area which are not directly connected to the Survey Area. The closest of these is approximately 45 m to the south of the Survey Area. There is potential for the clearing activities to introduce weeds and or plant pathogens such as Phytophthora dieback in to adjacent conservation areas. This can be mitigated by prior and ongoing management of priority environmental weeds such as Watsonia and Victorian Tea Tree and implementation of Phytophthora dieback hygiene protocols during the construction phase elements.
(i) the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water; or	Not at variance.
(j) the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Not at variance

3 Conclusion

The Shire of Gingin will require a permit to clear approximately 2.13 ha of native vegetation in order to undertake significant improvements to Orange Springs Road between the Brand Highway and Cowalla Road.

The clearing includes both 2.11 ha of a state listed Priority Ecological 3 community and 1.2 ha of Federally listed TEC.

The proposal may be at variance with clearing principles a, f and h and will be at variance with principle d.

However, the overall the impacts from clearing are unlikely to be significant for the following reasons:

- The proposed clearing is relatively small in area, located over a long and narrow corridor of road reserve vegetation which mostly occurs along the edge of large tracts of bushland with large area to boundary ratios. This bushland provides substantial buffers to the conservation category wetlands occurring within 50 m of the project area.
- The clearing will not further fragment bushland and not significantly reduce the adjacent bushland's large area to boundary ratios meaning that edge effect disturbances such as weed invasion and human impacts are similar to that currently in effect.
- Whilst the clearing occurs within a corridor of vegetation which provides a linkage between tracts of bushland, other larger more intact better condition linkages are present in the vicinity, such as that associated with the Moore River.
- Potential introduction and spread of weeds and plant pathogens as a result of the project can be mitigated by prior and ongoing management of priority environmental weeds and implementation of *Phytophthora* dieback hygiene protocols during the construction phase elements.

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