Supporting documentation for a Clearing Permit Application For King Rocks Road West, Kondinin

Prepared for the Shire of Kondinin
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1 Introduction

In June 2018, Ecoedge was engaged by the Shire of Kondinin (the Shire) to prepare a clearing permit application and associated supporting documentation for clearing of approximately 0.71 hectares (ha) of native vegetation within a proposed extension to a gravel pit along the King Rocks Road West. The gravel pit is approximately 0.8 ha in size and is located approximately 7.1 Straight Line Kilometres (SLK) from the Lovering Road Junction (the 'Survey Area') (**Figure 1**). The proposed extension to the gravel pit is required in order to provide for the future ongoing road maintenance works within the Shire.

This document provides a summary of flora, vegetation, and fauna values identified at the site; an over view of measures to mitigate impacts of the proposed clearing; and an assessment of the proposal against the ten principles for clearing native vegetation under Schedule 5 of the *Environmental Protection Act 1986.*

The proposed clearing footprint is shown in **Figure 2**.

2 Flora and vegetation

2.1 Desktop assessment

The Survey Area is situated within the Western Mallee (MAL2) sub-region of the Mallee biogeographic region, as defined in the Interim Biogeographical Regionalisation for Australia (IBRA) (Commonwealth of Australia, 2016). Only 36.94% of the vegetation within this sub-region remains, (Government of Western Australia, 2018).

The vegetation within the Survey Area was mapped by Beard as Association 519 'Shrublands; mallee scrub, *Eucalyptus eremophila'* (Beard, 1972). This vegetation association is mapped as having 61.71% of its original extent remaining and is reasonably represented in the Department of Biodiversity, Conservation and Attractions (DBCA) conservation estate, with 16.95% in formal and informal reserves (Government of Western Australia, 2018). The extent remaining of this association significantly exceeds the desired minimum 30% retention targets stated by the Commonwealth government and the EPA (Environment Australia, 2001; EPA, 2000).

The Survey Area occurs within a relatively narrow corridor of remnant vegetation on the southern side of King Rocks Road West. This corridor of vegetation occurs within a predominantly cleared landscape and provides one of the few linkages between isolated patches of remnant native bushland, including a DBCA managed nature reserve, in the local area. Whilst this linkage is not formally recognised it is may be considered locally significant. The proposed clearing area of 60 – 70 m x 120 m will add to the already cleared adjacent gravel pit of approximately 120 m x 40 m in area, resulting in a 240 m (plus) interruption in this corridor.

There are no Environmentally Sensitive Areas (ESA) recognised under the *Environmental Protection Act 1986* in close proximity to the Survey Area. The closest of these occurs approximately 32 km to the SSW of the site and is associated with Dragon Rocks Nature Reserve.

2.2 Field survey

An assessment of vegetation within the Survey Area was undertaken by Ecoedge in September 2018 (Ecoedge, 2019).

Vegetation units

Two vegetation units were identified and are described below. Both of these units are for the most part in Excellent Condition. The Mallee Woodland unit occupies only a small area at the west and southern extremities of the Survey Area (**Figure 3**). Neither of the vegetation units resembles a Threatened or Priority ecological community.

Mallee woodland

Eucalyptus incrassata, *E. olivina*, *E. rigidula* low open woodland over *Acacia beauverdiana*, *Melaleuca cordata*, *M. uncinata*, *Hibbertia gracilipes* and *Thryptomene kochii* on yellow-brown sandy loam.

Shrubland

Mixed shrubland with emergent *Acacia beauverdiana* and *Allocasuarina spinosissima* over *Alyxia buxifolia*, *Hakea francisiana*, *H. meisneriana*, *Melaleuca* spp., *Pimelea suaveolens* subsp. *flava* and *Thryptomene kochii* over scattered herbs on yellow-brown sandy loam.

The vegetation units correlate reasonably well with Beard's Mapped Association 519 'Shrublands; mallee scrub, *Eucalyptus eremophila'.*

Flora

Thirty-five species of vascular flora were identified in the Survey Area, one of which is suspected to be the Priority 1 taxa *Baeckea* sp. Crossroads (B.L. Rye & M.E Trudgen 241186) (**Figure 4**).

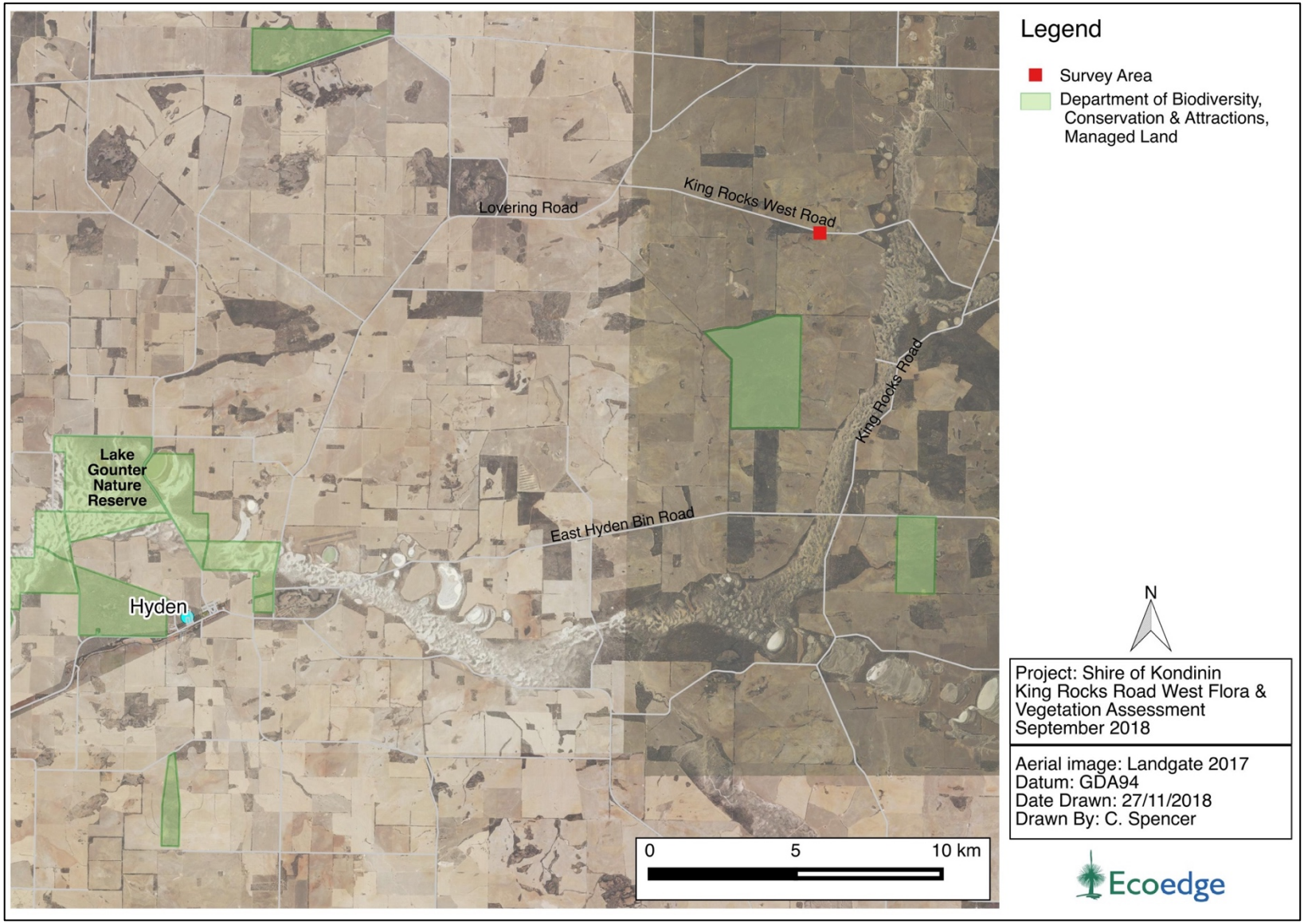

Figure 1. Location of the Survey Area.

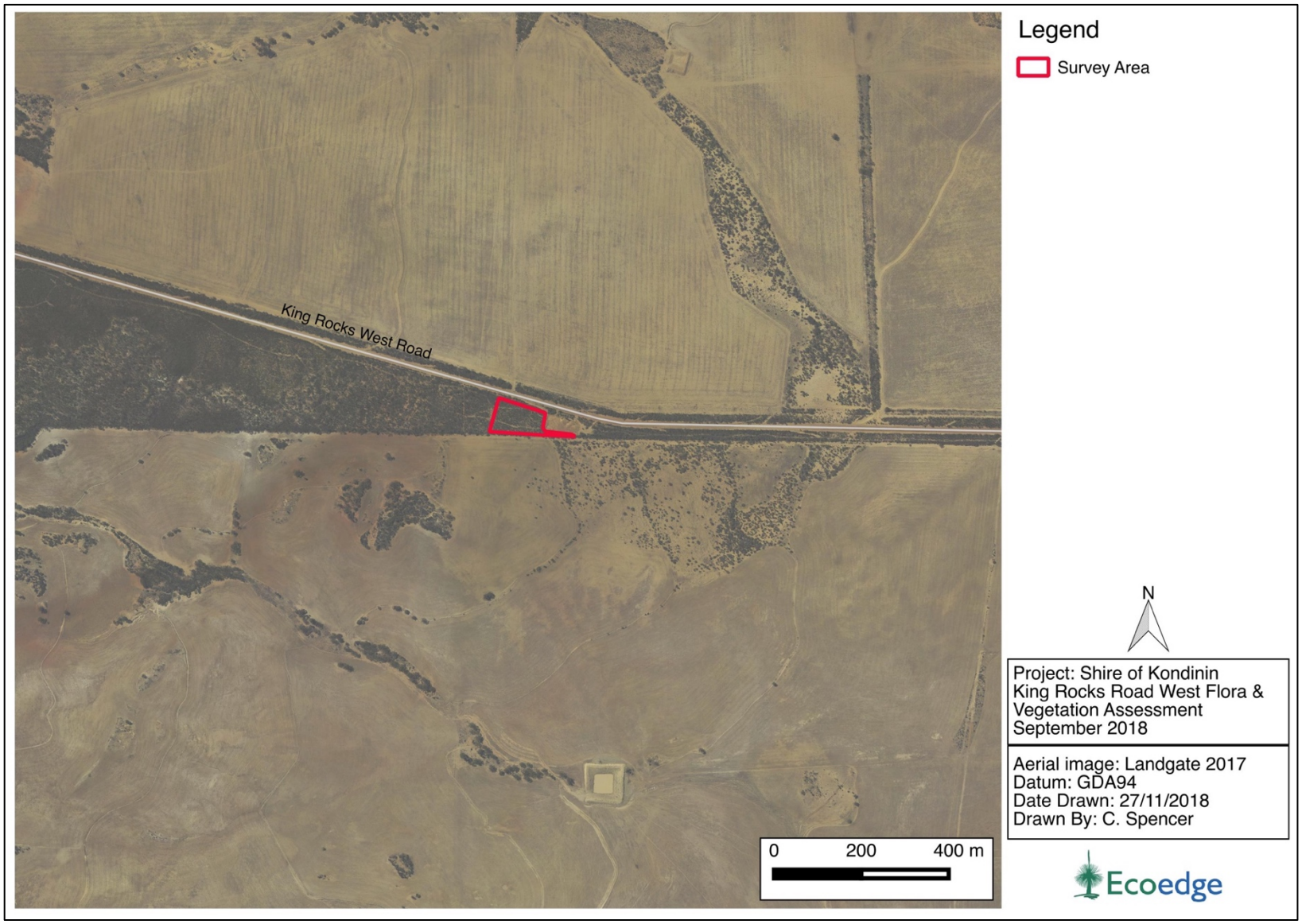

Figure 2. Proposed clearing area.

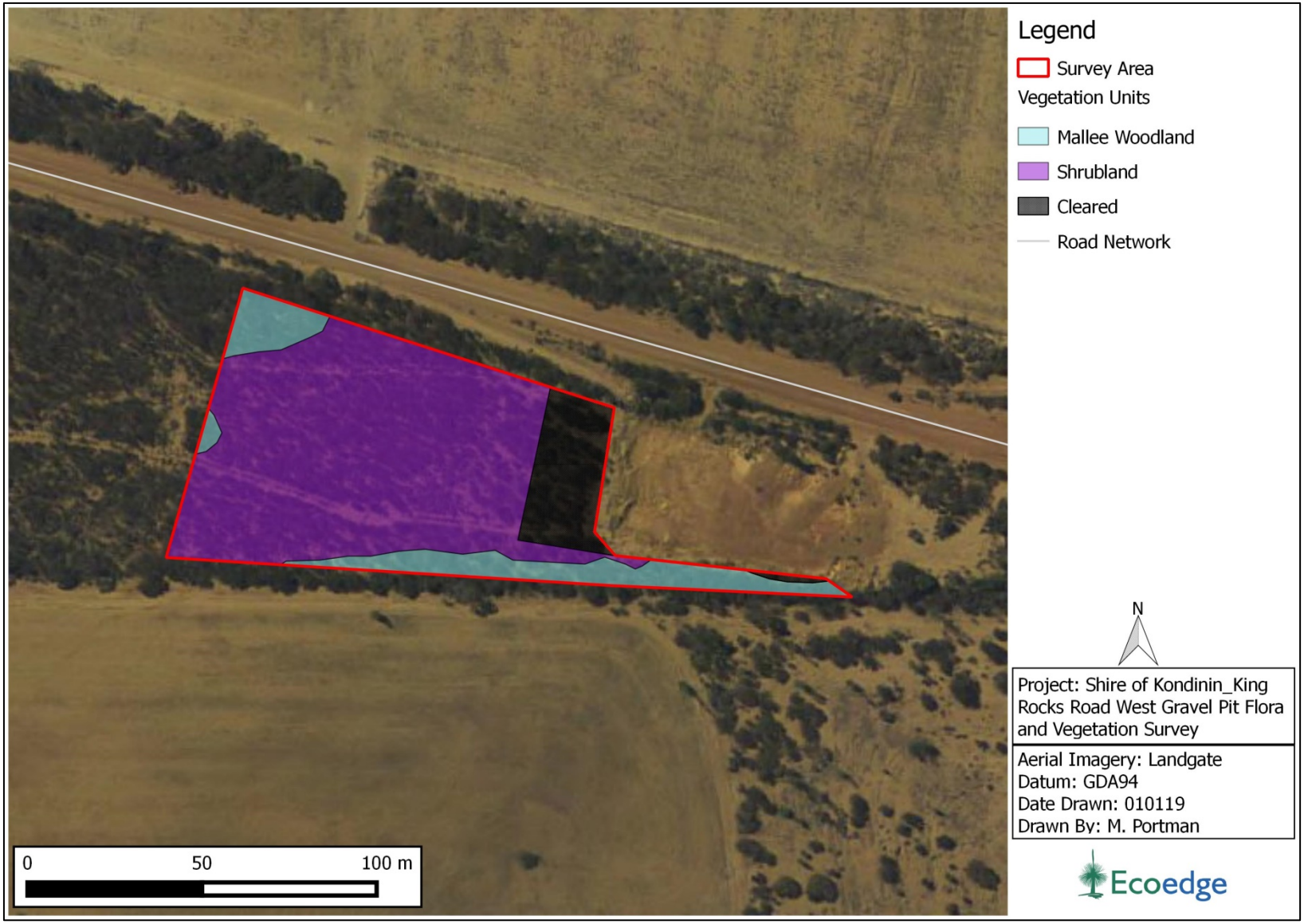

Figure 3. Vegetation units within the Survey Area

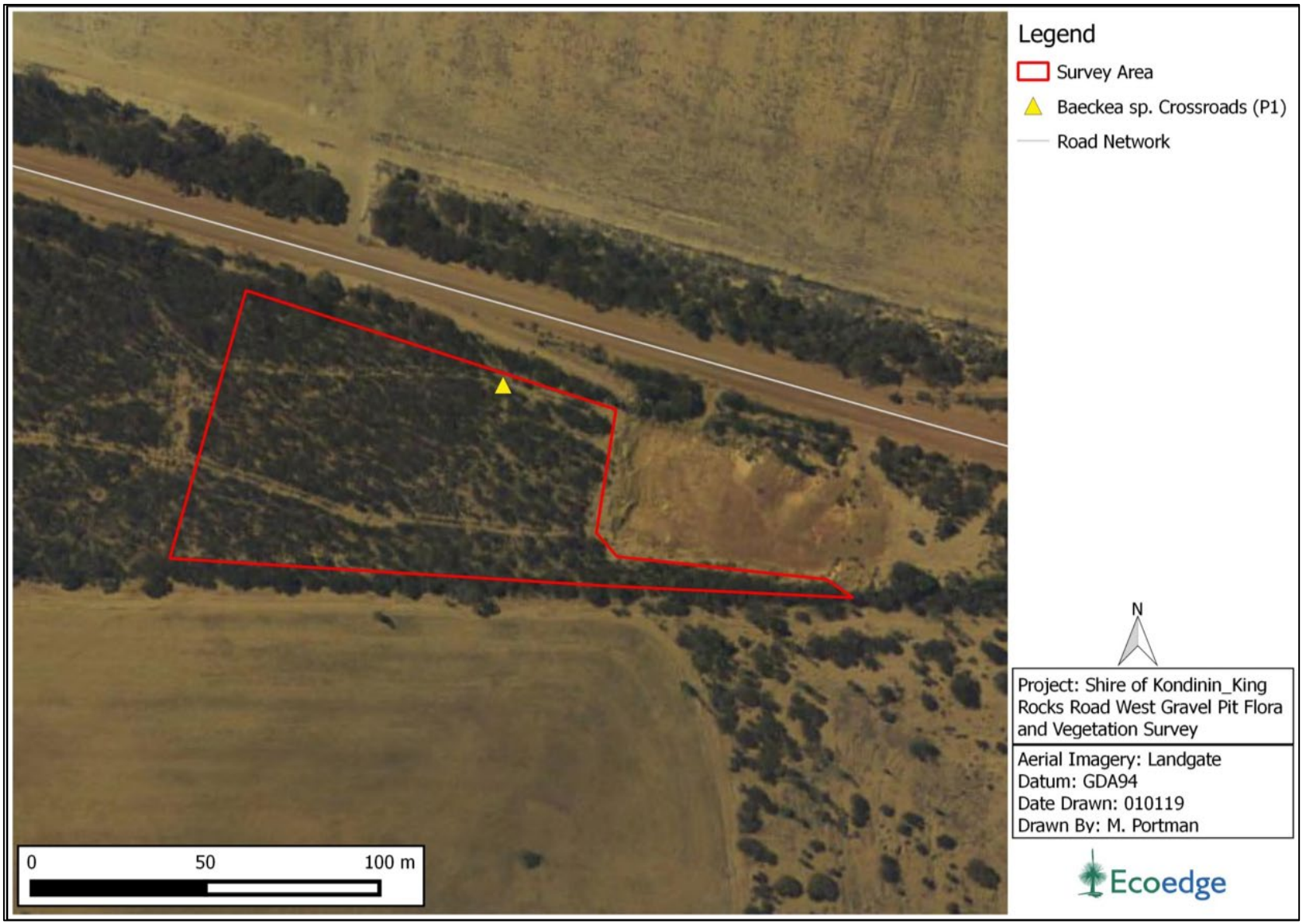

Figure 4. The location of potential Priority-listed flora

3 Fauna

A Level 1 Fauna Survey and targeted search for black cockatoo habitat / site use was undertaken by Greg Harewood (Zoologist) in October 2018 (Harewood, 2019). The species of main concern within the Survey Area was the Carnaby's black cockatoo[1] (CBC). Information pertaining to the fauna survey is summarised below.

3.1 Carnaby's black cockatoo

Breeding habitat

The subject site contained no trees fitting the criteria of being CBC breeding habitat (i.e. suitable trees with a diameter at breast height >30cm and with potential breeding hollows) with almost all the specimens present being relatively small, stunted specimens.

Foraging habitat

No evidence of CBC foraging was observed during the field survey.

Several known and potential foraging habitat flora species were identified within the Project Area. It was estimated that the total quality foraging habitat area comprised no more than 0.5 ha.

Roosting habitat

The subject site contained no habitat suitable for use as a roost site by CBC.

Based on available mapping there is about 5,200 ha of remnant native vegetation within 10 km of the subject site. Much of this is likely to represent CBC foraging habitat of some type, and potential breeding and foraging habitat, though it should be noted that the subject site is located near the inland/eastern limit of the Carnaby's black cockatoo's range and they probably only occur infrequently even in areas of ideal habitat.

3.2 Other conservation significant fauna

No fauna species of conservation significance were positively identified as utilising the subject site. Based on habitats present, several species may possibly occur at times though their current status on-site and/or in the general area was difficult to determine.

4 Requirement for a clearing permit

The proposed clearing activities were assessed against the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing 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.

[1] Carnaby's cockatoo (*Calyptorhynchus latirostris*), listed as Endangered under both the *Wildlife Conservation Act 1950* and *Environmental Protection and Biodiversity Conservation Act 1999*.

A clearing permit is required as there is no valid exemption for the proposed clearing under the EP Act or under the Clearing Regulations.

5 Actions taken to limit impacts from the proposal

5.1 Avoidance

The Shire has sought gravel from alternative sources, including farm based gravel pits, and determined that this approach is the best of the available limited options.

The Shire will avoid clearing of the suspected population of the Priority one listed *Baekea* sp. Crossroads located along the northern boundary of the proposed gravel pit extension. The plants will be clearly demarcated in the field and an appropriate buffer of at least two meters will be provided around the plants.

5.2 Mitigation

The Shire propose to mitigate impacts of the proposal via revegetation of the site following extraction activities in accordance with the attached revegetation plan (Ecoedge, 2019b).

The proposed revegetation activities will mitigate impacts of clearing in the following ways.

- The revegetation activities mean that the proposed clearing will not result in a permanent loss of vegetation at site and that there will be no net loss of vegetated areas.
- The revegetated area will restore the overall functioning of the ecological linkage / corridor for the migration of fauna and flora.
- Revegetation processes will mitigate potential impacts to infiltration and drainage caused by extraction activities. The exposed clay layer will be ripped and covered with overburden, top soil and mulch. This will slow water flow and facilitate localised water infiltration.
- Restored vegetation and proposed weed control activities will impede potential recolonisation of cleared areas by weeds.

An overview of the revegetation approaches and completion criteria revegetation plan is provided herein.

5.2.1 Revegetation plan

The aim of revegetation plan is that vegetation at the site is self-sustaining and broadly representative of the pre-clearing vegetation unit represented at site within five years of the completion of revegetation. Proposed revegetation methods include reuse of topsoil, direct seeding and planting of seedlings to achieve the revegetation targets presented in (**Table 1** and **Table 2, Table 3**).

Table 1. Project Area completion criteria.

Criterion	Baseline floristic data (Table 6)	Five year completion targets	Five year completion criteria	Comments
A	Total species richness • 34 species • 15 most likely to be commercially available	Minimum Project Area species richness is 50% of commercially available species	A minimum of 7 species occurring within the Project Area.	This level of species richness is considered achievable based on current availability of seedlings, seed and general ease of propagation. This fraction is the only part for which the Shire has any control over.
C	Percentage cover environmental weeds both minor and major competitive species • <1%	Total combined weed cover should not exceed 10% baseline data.	The revegetation site should have no more than 10% cover of either minor and major environmental weeds	It is possible that there will be some colonisation of the site by environmental weeds following site works due to the high level of disturbance. The 10% cover target is applied to this criterion as it may be hard to guarantee complete control of all weeds, especially if they cannot be controlled by selective herbicides.
C	Declared Pest Plants • Nil	Total number of Declared Pest plants should not exceed baseline data.	No Declared Pest plants recorded across the Project Area.	A list of Declared Pest plants in the Shire of Kondinin is available on the Department of Primary Industries and Regional Development website.

Table 2. Mallee Woodland vegetation unit completion criteria.

Criterion	Baseline floristic data (Table 6)	Five year completion targets	Five year completion criteria	Comments
A	Mallee Woodland tree species richness • 3 species • 3 commercially available	Minimum Mallee Woodland tree species richness is 66% of total tree species richness.	A minimum of 2 tree species occurring within the Mallee Woodland .	A 66% (2 out of 3) tree species richness is considered achievable. The potentially commercially availability of seedlings is based on an assessment of their current availability of seedlings, seed and general ease of propagation. These can be planted by the Shire as seedlings.

Criterion	Baseline floristic data (Table 6)	Five year completion targets	Five year completion criteria	Comments
B	Tree density 200 stems/ha	Minimum plant density (s/ha) is 50% of commercially available trees	A minimum of 100 s/ha per commercially available tree species established per hectare. 0.129*100 = 12.9 (13) stems	A 50% tree density target is considered achievable. Extraction activities are likely to impact on long-term successful regeneration of eucalypt species. The altered substrate may be both lower in nutrients and shallower making it more suited to development of shrubs.
B	Other plant density (grass, sedge, shrubs etc) 2500 stems/ha	Minimum other plant density (p/ha) is 50 % of baseline data.	A minimum of 1250 native plant stems established per hectare. 0.129 ha x 1250 = 161 stems	A 40% target is considered achievable. The low rainfall combined with long hot summers make the success of planted seedlings hard to predict. The sites isolation makes watering of seedlings impractical.

Table 3. Shrubland vegetation unit completion criteria.

Criterion	Baseline floristic data (Table 6)	Five year completion targets	Five year completion criteria	Comments
A	Shrubland unit species richness • 32 species • 13 commercially available	Minimum Shrubland unit species richness is 50% of commercially available shrubland species	A minimum of 6 species occurring within the shrubland unit area.	This level of species richness is considered achievable based on current availability of seedlings, seed and general ease of propagation. This fraction is the only part for which the Shire has any control over.
B	plant density • 5000 p/ha	Minimum plant density (p/ha) is 20 % of baseline data.	A minimum of 1000 native plant stems established per hectare. (0.585 * 1000 = 585 stems	A 20% target is considered achievable for the Shire. The low rainfall combined with long hot summers make the success of planted seedlings hard to predict. The sites isolation makes watering of seedlings impractical.

6 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 4. Assessment of the Proposal against Clearing Principles

Clearing Principle	**Response**
(a) it comprises a high level of biological diversity ; or	Not at variance. Only 35 native flora species where identified across the 0.76 ha survey area. This species richness is low compared to other comparable areas, for example Wheatbelt woodlands typically have 30+ species per 100 m2 (Harvey & Keighery 2012) and according to one study flora species richness in the Mallee biogeographic region ranges from 17 to 48 species per 1000 m² (Van Der Moezel & Bell, 1989). One plant suspected to be Priority 1 flora species *Baeckea* sp. Crossroads (B.L. Rye & M.E. Trudgen 241186) was identified within the Survey Area on the northern boundary of the proposed gravel pit extension. This population will be buffered from clearing activites and will not be cleared. Not at variance, fauna: The fauna survey concluded that the Project Area does not have what can be considered a high level of biological diversity.
(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. The Project Area is not considered to contain significant habitat for Carnaby's black cockatoo or any other fauna species. Fauna habitats present within the subject site were considered common and widespread in the general area, the extent of clearing is very small and the faunal assemblage present is very unlikely to be different to that found in similar habitats located elsewhere in the immediate vicinity.

(c) it includes, or is necessary for the continued existence of, rare flora; or	Not at variance.
(d) it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community; or	Not at variance.
(e) it is significant as a remnant of native vegetation in an area that has been extensively cleared; or	May be at variance. The proposal occurs within a corridor of roadside vegetation in the Western Mallee Subregion of the Mallee Interim Biogeographic Region which has been predominantly cleared for agriculture. Only 36.94% of the vegetation within this subregion remains, (Government of Western Australia, 2018). The Survey Area is situated within a relatively narrow corridor of remnant vegetation on the southern side of King Rocks Road West. This corridor of vegetation sits within a predominantly cleared landscape and provides one of the few linkages between isolated patches of remnant native bushland, including a DBCA managed nature reserve, in the local area. Whilst this linkage is not formally recognised it is may be considered locally significant.
(f) it is growing in, or in association with, an environment associated with a watercourse or wetland; or	Not at variance
(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	Not at variance
(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

7 Conclusion

The Shire of Kondinin proposes to clear approximately 0.71 ha of native vegetation in order to extend an existing gravel pit along the King Rocks Road West. This gravel pit is required to provide for the future and ongoing road maintenance works within the Shire.

Following an assessment of the proposal against the ten clearing principles it was considered that it may be at variance with only one principle: principle (e). This is due to the proposed clearing occurring within an area largely already cleared for agriculture.

The scale of this impact is difficult to quantify and was beyond the scope of the flora, vegetation and fauna surveys. It is recommended however that the potential impacts of the proposal on this principle will be reasonably mitigated via the implementation of a revegetation plan. The plan entails staged rehabilitation of the cleared area through the timely use of top soil, direct seeding and planting of seedlings.

8 References

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