



# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 8838/1
<b>Permit type:</b>	Purpose permit
<b>Applicant name:</b>	Shire of Kellerberrin
<b>Application received:</b>	09 March 2020
<b>Application area:</b>	0.628 hectares (ha) of native vegetation
<b>Purpose of clearing:</b>	Upgrade and widen road
<b>Method of clearing:</b>	Mechanical Removal
<b>Property:</b>	Doodlakine-Kununoppin Road Reserve (PINs: 11725576 and 11725577),
<b>Location (LGA area/s):</b>	Shire of Kellerberrin
<b>Localities (suburb/s):</b>	Doodlakine

### 1.2. Description of clearing activities

The vegetation applied to be cleared is contained within the road reserve extending for 2.7km along the Doodlakine-Kununoppin Road, see *Figure 1, Section 1.5*.

The application is to clear vegetation within an approximately 17m wide strip following the centre line of the road. A minimum of 17m width is required to allow for a stable road pavement and table drains. The applicant has committed to avoiding trees where possible.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Granted
<b>Decision date:</b>	31 July 2020
<b>Decision area:</b>	0.628 hectares (ha).

### 1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 09 March 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking their assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (see Appendix D), photographs provided by the applicant (see Appendix G) relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (see Sections 3 and 4).

In particular, the Delegated Officer has determined that:

- the clearing is not likely to have a significant impact on populations of conservation significant flora within the local area (10 kilometre radius)
- the clearing is not likely to have a significant impact on the adjacent mapped 'Eucalypt Woodlands of the Western Australian Wheatbelt' (Wheatbelt Woodland) threatened ecological community (TEC) (see Section 3.2.1)

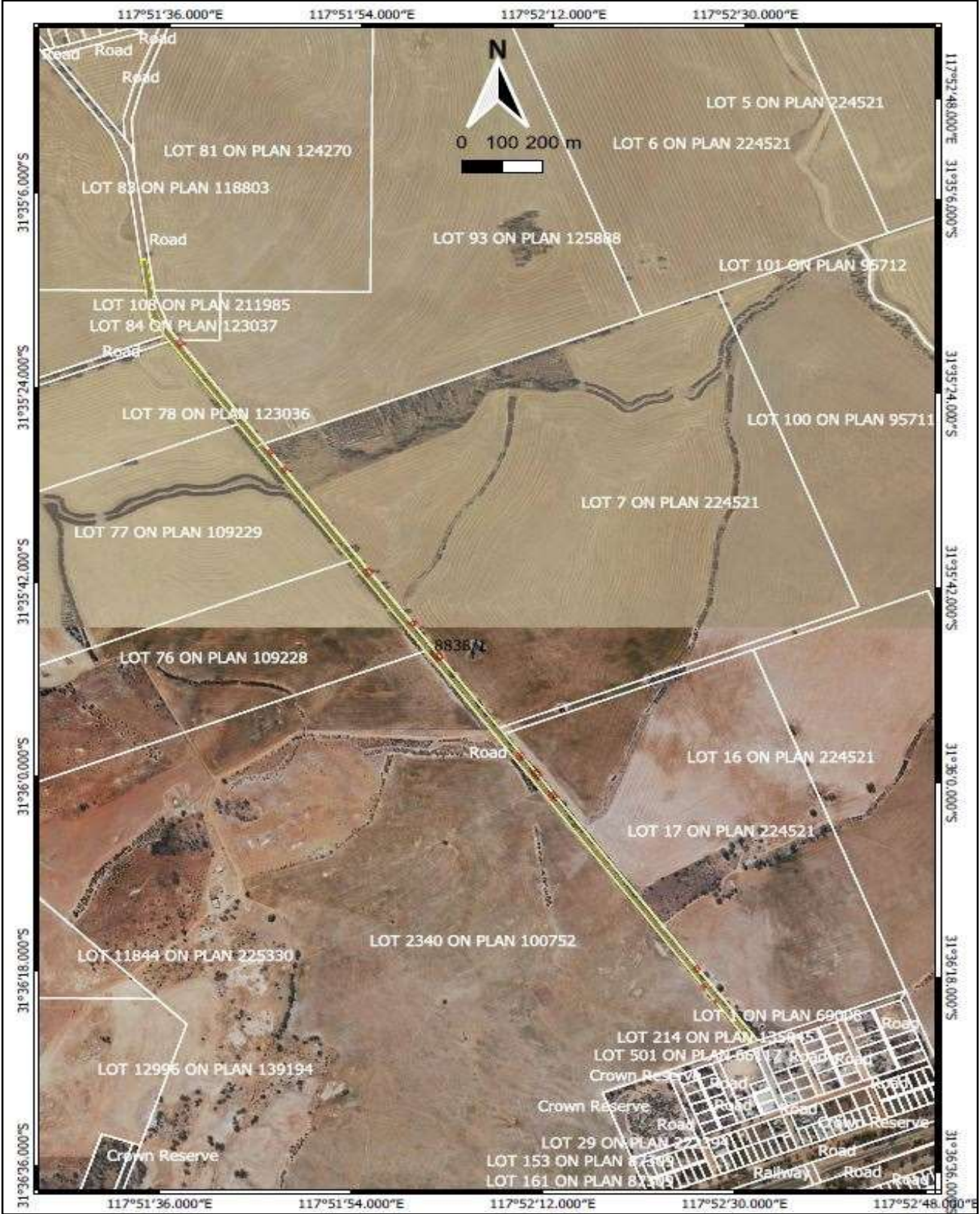
- the implementation of a suitable weed management condition is appropriate to mitigate the impact of spreading weeds into adjacent vegetation (see Section 3.2.1)
- the proposed clearing will impact on vegetation growing in association with three ephemeral watercourses, however impacts to riparian habitat is considered to be minimal
- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1)
- the offset provided counterbalance the significant residual impacts of clearing vegetation in a highly cleared landscape.

Consistent with the WA Environmental Offset Policy (2011) and WA Environmental Offsets Guidelines (2014), and pursuant to section 51I(2)(b) of the EP Act, in order to mitigate the significant residual environment impacts described above, the Permit Holder is required to provide an offset that involves the transfer of the purpose of Crown Reserve 33419 from 'gravel' to 'conservation'. An area of 1.3 hectares from the banked offset will be attributed to CPS 8838/1.

The Delegated Officer also took into consideration the purpose of the clearing is to improve road infrastructure in the great southern region, enhancing freight transport routes and enhancing access to the Kellerberrin Doodlakine community.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

### 1.5. Site map



**Figure 1. Map of the application area CPS 8838/1.**

The area cross-hatched yellow indicates the area within which it is authorised to clear under the granted clearing permit. The area/s cross-hatched red indicates areas within which clearing activities must not be undertaken.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

1. the precautionary principle;
2. the principle of intergenerational equity; and
3. the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment were:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The clearing area was reduced by the avoidance of trees where possible. This reduced the proposed clearing area from 1.056 hectares to 0.628 hectares. The reduction in clearing is a result of the Shire working around trees within the application area. The areas of trees that have been committed to being avoided by the applicant have been demarcated hatched red on the permit plan.

The applicant stated that the width of the clearing area had been reduced from 19 m to 17m (Shire of Kellerberrin 2020c). In addition, the applicant has taken measures to alter drain construction where possible to avoid individual trees within the clearing area. This alteration was feasible for single trees, but over a more extended area would compromise the road construction (Shire of Kellerberrin 2020c).

This adequately demonstrates that all reasonable efforts had been taken to avoid and minimise potential impacts on clearing on environmental values.

### 3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix C) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix D.

This assessment identified that the clearing may pose a risk to the environmental value of significant remnant vegetation, the presence of a Commonwealth listed TEC and watercourses, and that this required further consideration. The detailed consideration and assessment of the clearing impacts against the specific environmental values is provided below. Where the assessment found that the clearing presents an unacceptable risk to environmental values, conditions aimed at controlling and/or ameliorating the impacts have been imposed under sections 51H and 51I of the EP Act. These are also identified below.

#### 3.2.1. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: Historically, Malleefowl were found in the semi-arid mallee shrublands and woodlands across southern Australia in New South Wales, Victoria, South Australia, Northern Territory and Western Australia. Though the species is still found across its range, there have been local extinctions in the NT, northern SA and far south-west WA, and its remaining populations are highly fragmented due to extensive land clearing.

A review of photographs of the clearing area supplied by the applicant (Shire of Kellerberrin, 2020a; See Appendix G) did not indicate the presence of active or historic Malleefowl mounds in the application area. Given the habitat preferences of the above species and the relatively narrow nature of the remnant vegetation corridor occurring within Doodlakine-Kununoppin Road, it is not anticipated that the application area comprises suitable breeding habitat for the Malleefowl. The remnant vegetation corridor associated with the Doodlakine-Kununoppin Road Reserve may be utilised intermittently by Malleefowl to navigate between remnant patches of native vegetation linked by this degraded



vegetation corridor. However, a review of aerial imagery indicated adjoining patches of vegetation occurring on private land adjacent to the road reserve may also function as a corridor.

The database review found that the majority of the recorded occurrences of the Greater Bilby within approximately 100 kilometres of the application area predate 1970 (DBCAs 2007-). Given the age of the recorded occurrences of the Greater Bilby within this distance from the application area, it is considered unlikely this species will utilise the habitats of the application area.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable** in relation to this environmental value.

Conditions: No fauna management conditions required.

### **3.2.2. Environmental value: biological values (flora) – Clearing Principles (a) to (d)**

Assessment: A review of photographs provided by the applicant (Shire of Kellerberrin, 2020a; See Appendix G) indicate that soils and scattered patches of remnant vegetation types were similar to habitat requirements, of *Gastrolobium tenue* (Priority 1), *Acacia yorkrakinensis* subsp. *yorkrakinensis*, *A. sclerophylla* var. *pilosa*, (Priority 2), and *A. merrickiae* (Priority 4). A review of Flora Base records (Western Australian Herbarium 1998-) indicated that the aforementioned priority flora area associated with woodland and heath on well drained yellow sand, sandy loam and clay. It is estimated that approximately 80% of the remnant vegetation within application area is in a degraded to completely degraded condition (Keighery, 1994). Except for a small remnant of woodland intersecting the south east end of the clearing area, understory vegetation in the application area is absent, dominated by introduced grass species, or reduced to scattered shrubs. The small remnant of woodland intersecting the south east end of the clearing area is in degraded to good condition, with portions of this patch devoid of understorey. It is considered this small isolated patch of vegetation is not likely to contain priority flora.

The Priority 2 species *Acacia cowaniana* is associated with rock outcrops (Western Australian Herbarium 1998-) however a review of photographs provided by the applicant did not indicate the presence of rock outcrops, therefore it is unlikely that, *A. cowaniana* is present in the application area. The Priority 3 species *Lepidium genistoides* is associated with salt lakes or salt effected soils (Western Australian Herbarium 1998-). A review of the aerial imagery and photographs did not indicate the presence of any saline landforms or effected soils, therefore it is unlikely that the species *L. genistoides* occurs in the application area.

Noting the condition of the vegetation within the application area, the proposed clearing is not likely to impact priority flora.

The woodland occurring adjacent to the south east end of the application area is considered to be in very good condition (Keighery, 1994) and intersects approximately 100m<sup>2</sup> of the application area. This section of woodland is mapped as the Wheatbelt Woodlands state listed Priority 3 Priority Ecological Community (PEC) and listed under the EPBC Act as a Critically Endangered TEC.

A review of aerial photography focusing on the mapped Wheatbelt Woodland TEC intersecting the application area revealed that this portion of the mapped TEC mostly included cleared road reserve. It is estimated that approximately 45 m<sup>2</sup> of understory vegetation in degraded condition (Keighery, 1994) may be impacted. Adjacent trees overhang the application area with the adjoining tree trunks outside the application area. It was considered that trees occurring in close proximity to the clearing area may have their roots damaged by associated road works. However, correspondence with the Shire of Kellerberrin has confirmed that road works including the construction of table drains will require earth works to a maximum the depth of 400mm (Shire of Kellerberrin, 2020b).

Given the depth and distance of earth works from the central trunk of the aforementioned trees and minimal understory vegetation, the proposed clearing is unlikely to significantly impact the maintenance of the mapped TEC adjacent to the application area.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable subject to relevant conditions** in relation to the above environmental values.

Conditions: Weed management conditions required to mitigate impacts to the adjacent mapped Wheatbelt Woodlands TEC.

### **3.2.3. Environmental value: significant remnant vegetation and conservation areas – Clearing Principles (e) and (h)**

Assessment: The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European

settlement) (Commonwealth of Australia 2001). This is the threshold level below which species loss appears to accelerate exponentially at an ecosystem level.

The Avon Wheatbelt IBRA region retains approximately 18.51 per cent of its pre-European native vegetation extent (Government of Western Australia 2018). The mapped vegetation complex, Mt. Cariline 1049 currently retains approximately 9.47 per cent of its pre-European native vegetation extent (Government of Western Australia 2018). A review of available databases determined the local area retains approximately 9.92 per cent of its pre-European native vegetation extent. Considered alongside the highly cleared nature of vegetation complex 1049 and the Avon Wheatbelt IBRA region, the application area is located within an extensively cleared landscape.

Roadsides often present the only remaining example of the original vegetation types within extensively cleared landscapes, with this especially relevant in the Avon Wheatbelt. Conservation advice from Department of Biodiversity, Conservation and Attractions (DBCA 2019) recognises the importance of native vegetation remnants along road verges and their value as wildlife corridors, particularly if they link to other non-roadside vegetation remnants and habitat for threatened species (DBCA 2019). Noting the local area retains less than 10 per cent native vegetation, the vegetation within the application area represents a significant remnant of native vegetation.

As discussed in section 3.2.1 Mallefowl (*Leipoa ocellata*) have been recorded in the local area. The remnant vegetation corridor associated with the Doodlakine-Kununoppin Road Reserve including the application area, may be utilised by Mallee fowl to navigate between remnant patches of native vegetation. However, a review of aerial imagery indicated adjoined patches of vegetation occurring on private land adjacent to the road reserve may also function as a corridor.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable subject to relevant conditions** in relation to this environmental value.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- Weed management conditions required to mitigate impacts to the adjacent remnant vegetation.
- Implementation of an offset for clearing vegetation with an extensively cleared landscape. This involves changing the vesting of an existing reserve held by the Shire from 'Gravel' to 'Conservation'.

#### **3.2.4. Environmental value: land and water resources – Clearing Principles (f), (g), (i) and (j)**

Assessment: A review of aerial photography and available databases determined the proposed clearing will intercept three ephemeral watercourses (see Appendix C). Vegetation growing in the vicinity of the aforementioned watercourses is consistent with the surrounding vegetation and is not representative of a distinct vegetation community associated with seasonally or intermittently waterlogged soil. Doodlakine-Kununoppin Road Reserve does not represent the only remaining vegetation along the extent of the three surface water features. Although the local area has been extensively cleared, it is not anticipated the clearing of small areas of vegetation adjacent to the watercourses will adversely impact the ecological values and function.

A review of available databases determined that no wetlands occur within the application area.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable** in relation to this environmental value.

Conditions: No management conditions required.

### **3.3. Relevant planning instruments and other matters**

It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Main Roads Western Australia have recognised Doodlakine-Kununoppin Road in the Roads 2030: Regional Strategies for Significant Local Government Roads – Wheatbelt North (published 2013 and amended 2015) (Main Roads Western Australia 2015). This comprises a strategic review of regionally significant Local Government roads and development strategies pertaining to these roads, along with providing an agreed strategic approach to the allocation of limited funding across the extensive road network in the Great Southern region. The Doodlakine-Kununoppin Road provides access for local residents to the Doodlakine Public Passenger Service on the Prospector and Avon Link trains, enhances access to Kellerberrin itself and its associated industries and businesses and facilitates the utilisation of the Great Eastern Highway (Main Roads Western Australia 2015).

## **4. Suitability of offsets**

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- 0.628 hectares of native vegetation that is a significant remnant in an extensively cleared landscape.

The applicant has agreed to an environmental offset consisting of the allocation of a portion of banked offset in Crown Reserve 33419, transferred from 'Gravel' to 'Conservation'. Crown Reserve 33419 is approximately 41 hectares in size, of which 13.87 hectares was attributed to CPS 8253/1. The Reserve occurs 25km to the north east of the application area.

A vegetation condition report of Crown Reserve 33419 provided by the applicant in support of CPS 8253/1 identified 1.3 hectares of vegetation mapped as Mallee jam woodland occurring in very good to excellent condition. This portion of Crown Reserve 33419 was not attributed to the offset under CPS 8253/1.

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the Department of Agriculture, Water and Environment (DAWE) Offsets Assessment Guide 'calculator'. The calculator indicated that the allocation of 1.3 hectares of Very Good to Excellent vegetation mapped as 'Mallee jam woodland', within Crown Reserve 33419 is adequate to counterbalance the significant residual impacts of clearing vegetation within a highly cleared area.

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above.

The justification for the values used in the offset calculation is provided in Appendix F.

### **Appendix A – Additional information provided by applicant**

On 5 June 2020 wrote to the applicant and requested further information to verify the impacts of the proposed clearing, including:

- roughly to what depth from the current level would the soil within the clearing area be removed or graded
- the depth of the proposed drain that runs the length of the road upgrade.

On 10 June 2020, the applicant provided a response including the following information:

- will only be removing the topsoil, so the depth of soil removed, from the natural ground level within the clearing area would be 150mm maximum
- the table drain invert depth along the road would be 350mm to 400mm deep maximum.

On 2 July 2020, DWER wrote to the applicant requesting the identification of appropriate onsite impact mitigation strategies and/or satisfactory environmental offsets. A banked offset approximately 20km to the north east, of the application area was suggested by DWER. This included the area of Crown Reserve 33419 mapped as 'Mallee jam woodland', transferred from 'Gravel' to 'Conservation', may be a suitable offset for the clearing as proposed.

On 7 July 2020, the applicant agreed the above proposed offset.

### **Appendix B – Details of public submissions**

No Public submissions were received.

### **Appendix C – Site characteristics**


The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

#### **1. Site characteristics**

<b>Site characteristic</b>	<b>Details</b>
Local context	The proposed clearing area includes isolated patches of native vegetation within Doodlakine-Kununoppin Road reserve (PINs: 11725576 and 11725577) north of Doodlakine. The application area is surrounded by land cleared for agriculture.  Spatial data indicates the local area (10 km radius of the proposed clearing area) retains approximately 9.92% of the original native vegetation cover.
Vegetation description	Photographs supplied by the applicant (Shire of Kellerberrin, 2020a) indicate the vegetation within the proposed clearing area consists of small remnant patches of Eucalyptus woodland

Site characteristic	Details																										
	<p>vegetation and scattered trees and shrubs, including <i>Eucalyptus salmonophloia</i>, <i>E. aff loxophleba</i>, and <i>E. salubris</i>.</p> <p>This is consistent with the mapped vegetation type Mt. Caroline (Vegetation Association 1049), which is described as medium woodland; wandoo, York gum, salmon gum, morrel and gimlet.</p>																										
Vegetation condition	<p>Photographs supplied by the applicant (Shire of Kellerberrin, 2020) indicate the vegetation within the proposed clearing area ranged in condition from completely degraded to very good.</p> <p>The majority of the application area is in degraded to completely degraded condition. Only a small portion in the south east of the application area is in very good condition.</p> <p>The full Keighery condition rating scale is provided in Appendix E. Representative photos are available in Appendix G.</p>																										
Soil description	<p>The soil is mapped as:</p> <ul style="list-style-type: none"> <li>• Kellerberrin, Merredin Subsystem, described as broad, flat valleys of the eastern wheatbelt containing heavy, red and grey soils.</li> <li>• Kwolyin, Danberrin Subsystem, described as areas of rocky, red and greyish brown loamy sands and sandy loams formed from freshly exposed bedrock. Rock outcropping is common.</li> </ul>																										
Land degradation risk	<table border="1" data-bbox="509 827 1321 1272"> <thead> <tr> <th data-bbox="509 827 797 953" rowspan="2">Risk categories</th> <th colspan="2" data-bbox="805 827 1321 877">Degradation risk</th> </tr> <tr> <th data-bbox="805 884 1057 953">Kellerberrin, Merredin Subsystem</th> <th data-bbox="1065 884 1321 953">Kwolyin, Danberrin Subsystem</th> </tr> </thead> <tbody> <tr> <td data-bbox="509 959 797 999">Wind Erosion</td> <td data-bbox="805 959 1057 999">3%</td> <td data-bbox="1065 959 1321 999">3-10%</td> </tr> <tr> <td data-bbox="509 1005 797 1045">Waterlogging</td> <td data-bbox="805 1005 1057 1045">70%</td> <td data-bbox="1065 1005 1321 1045">70%</td> </tr> <tr> <td data-bbox="509 1052 797 1092">Water Erosion</td> <td data-bbox="805 1052 1057 1092">3%</td> <td data-bbox="1065 1052 1321 1092">3-10%</td> </tr> <tr> <td data-bbox="509 1098 797 1138">Subsurface Acidification</td> <td data-bbox="805 1098 1057 1138">3-10%</td> <td data-bbox="1065 1098 1321 1138">&gt;70%</td> </tr> <tr> <td data-bbox="509 1144 797 1184">Salinity</td> <td data-bbox="805 1144 1057 1184">10-30%</td> <td data-bbox="1065 1144 1321 1184">&lt;3%</td> </tr> <tr> <td data-bbox="509 1190 797 1230">Flood Risk</td> <td data-bbox="805 1190 1057 1230">3%</td> <td data-bbox="1065 1190 1321 1230">3%</td> </tr> <tr> <td data-bbox="509 1236 797 1276">Phosphorous Export Risk</td> <td data-bbox="805 1236 1057 1276">70%</td> <td data-bbox="1065 1236 1321 1276">3%</td> </tr> </tbody> </table>	Risk categories	Degradation risk		Kellerberrin, Merredin Subsystem	Kwolyin, Danberrin Subsystem	Wind Erosion	3%	3-10%	Waterlogging	70%	70%	Water Erosion	3%	3-10%	Subsurface Acidification	3-10%	>70%	Salinity	10-30%	<3%	Flood Risk	3%	3%	Phosphorous Export Risk	70%	3%
Risk categories	Degradation risk																										
	Kellerberrin, Merredin Subsystem	Kwolyin, Danberrin Subsystem																									
Wind Erosion	3%	3-10%																									
Waterlogging	70%	70%																									
Water Erosion	3%	3-10%																									
Subsurface Acidification	3-10%	>70%																									
Salinity	10-30%	<3%																									
Flood Risk	3%	3%																									
Phosphorous Export Risk	70%	3%																									
Waterbodies	<p>No significant water bodies</p> <p>The desktop assessment and aerial imagery indicated that three minor ephemeral water courses, transect the application area, as illustrated below (see a-c).</p>																										



Site characteristic	Details
	 <p data-bbox="402 898 1437 926"><b>Figure 2: Location of small ephemeral watercourses that intersect the application area.</b></p>
Conservation areas	No conservation areas occur within the local area. The nearest conservation area is Mournucking Nature Reserve, located approximately 17.75 kilometers to the southeast.
Climate and landform	Avon Wheatbelt IBRA region (AW1 Ancient drainage subregion). Climate is semi-arid (dry) warm Mediterranean (Beacham 2001). The mean annual rainfall for the local area is 305mm (BOM 2020).

## 2. Flora, fauna and ecosystem analysis

With consideration for the site characteristics set out above, relevant datasets, the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
<b>Fauna</b>					
Greater Bilby ( <i>Macrotis lagotis</i> )	1.3			no	N/A
Australian Little Bittern ( <i>Ixobrychus dubius</i> )	1.3			no	N/A
Malleefowl ( <i>Leipoa ocellata</i> )	6.6	-	-	may utilise to disperse in the landscape	N/A

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
<b>Flora</b>					
<i>Gastrolobium tenue</i>	0.51	yes	no	-	N/A
<i>Acacia yorkrakinensis</i> subsp. <i>yorkrakinensis</i>	1.1	yes	yes	-	N/A
<i>Acacia sclerophylla</i> var. <i>pilosa</i>	1.3	yes	Yes	-	N/A
<i>Lepidium genistoides</i>	6	no	no	-	N/A
<i>Acacia cowaniana</i>	9	no	no	-	N/A
<i>Acacia merrickiae</i>	9.5	yes	yes	-	N/A
<i>Lepidium genistoides</i>	9.1	no	yes		N/A
<b>Ecological Community</b>					
Wheatbelt woodlands	0	yes	yes	-	N/A

### 3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA bioregion					
Avon wheatbelt	9,517,109.95	1,761,187.42	18.5	174,980.68	2.42
Vegetation complex					
Mt. Cariline (1049)	467,759.50	44,288.95	9.47	3,375.83	0.41
Local Area					
10 Kilometre radius	31930.72	3168.93	9.92		

## Appendix D – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> The proposed clearing area is not likely to contain conservation significant flora and fauna. The application area intersects a section of mapped Wheatbelt Woodlands TEC, however the proposed clearing is not likely to significantly impact this occurrence.</p>	May be at variance	Yes Refer to Section 3.2.2 above.
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> The proposed clearing area may function as an ecological linkage for the Malleefowl (<i>Leipoa ocellata</i>) (listed as ‘Vulnerable’ under the BC Act and the EPBC Act).</p>	May to be at variance	Yes Refer to Section 3.2.1 above.
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> The proposed clearing area is unlikely to contain threatened flora species listed under the BC Act.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> “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.”</p> <p><u>Assessment:</u> The proposed clearing area does not contain species consistent with a TEC listed by the Western Australian Minister for Environment.</p>	Not likely to be at variance	Yes Refer to Section 3.2.2 above.
<b>Environmental values: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u> The extent of native vegetation in the local area is below 10% and is therefore inconsistent with the national objectives and targets for biodiversity conservation in Australia. Vegetation in the proposed clearing area is considered to be part of a significant remnant in an area that has been extensively cleared.</p>	Is at variance	Yes Refer to Section 3.2.3 above.
<p><u>Principle (h):</u> “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.”</p> <p><u>Assessment:</u> The nearest conservation area is Mournucking Nature Reserve 17.75 kilometres to the southeast. Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of adjacent and/or nearby conservation areas.</p>	Is not at variance	No
<b>Environmental values: land and water resources</b>		
<p><u>Principle (f):</u> “Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</p>	Is not at variance	Yes

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> A review of available databases determined that three minor ephemeral watercourses intersect the application area. The proposed clearing is not likely to impact on- site hydrology and water quality.</p>		Refer to Section 3.2.4 above.
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The mapped soils are not or moderately susceptible to wind water erosion, nutrient export, salinity. Noting the extent of the proposed clearing and the condition of the vegetation within the application, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	<i>Is not at variance</i>	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u> Noting the extent of the proposed clearing and the condition of the vegetation within the application, the proposed clearing is not likely to impact surface or ground water quality. Impacts to surface water within the three ephemeral watercourses are likely to be minimal and short term at the time of clearing.</p>	<i>Is not at variance</i>	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	<i>Is not at variance</i>	No

## Appendix E – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

### Measuring Vegetation Condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very Good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix F – Offset calculator value justification

Description	Justification for value used
The IUCN (International Union for Conservation of Nature) criteria for the value being impacted.	0.0% - Extensively cleared wheatbelt vegetation has not been given a formal conservation ranking under the <i>Biodiversity Conservation Act 2016</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
The area of habitat/community impacted or number of features/individuals impacted.	Approximately 0.68 hectares of extensively cleared wheatbelt vegetation with no formal conservation ranking to be cleared under this application.
The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability.	3 - Vegetation varies from completely degraded to very good condition. The majority of the application area is in a completely degraded to degraded condition.
This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified.	20 - The offset site will be conserved in perpetuity under a conservation covenant. 20 years is the maximum value associated with this field.
This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised.	1 - The process for changing the vesting of Crown Reserve 33419 from 'Gravel' to 'Conservation' is expected to be finalised within one year.
The area of habitat/community or number of features/individuals proposed to offset the impacts.	1.3 – The area within Crown Reserve 33419 attributed to this offset will cover an area of 1.3 hectares.

The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability.	8 - The vegetation occurs in an excellent condition.
The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset.	8 - It is assumed that the vegetation would remain in the same condition.
The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset.	8 - It is assumed that the vegetation would be maintained at its current quality should it be protected under a conservation covenant.
This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset.	30% - The vegetation of the Wheatbelt region is subject to continuing clearing and grazing pressures. The current vesting of the Reserve as 'Gravel' presents a risk to the native vegetation.
This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	10% - A conservation covenant should reduce the risk of loss to 10%. The risk of catastrophic events such as fire remain.
The capacity of measures to mitigate risk of loss of the proposed offset site	90% - there is a high level of confidence that the change in tenure will mitigate the risk of loss.
The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	90% - there is a high level of confidence that the offset site would not decrease in quality without a change in tenure.
% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100% - Obtained through the input of variables explained above.



**Appendix G– Photographs of the vegetation within the application area**

The below photographs depict examples of vegetation present within the application area, including remnants of Mallee Jam woodland. Photographs provided by the Shire of Kellerberrin (2020a).



## 1. GIS datasets

Main Roads Western Australia (2015) Roads 2030: Regional Strategies for Significant Local Government Roads, Wheatbelt

North. 2013 (Amended 2015). Published by the Government of Western Australia.

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

## 2. References

Beacham Brett. (2001). *Avon Wheatbelt 1 (AW1 - Ancient Drainage subregion)* Department of Conservation and Land management.

Bureau of Meteorology (2020), Climate data on line, accessed May 2020. <http://www.bom.gov.au/?ref=logo>

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.

Department of Biodiversity, Conservation and Attractions (2019) Advice received regarding the 'Eucalypt woodlands of the Western Australian Wheatbelt Priority Ecological Community'. Maintained on DWER's internal achieve system (A1781620).

Department of Biodiversity, Conservation and Attractions (2007-) NatureMap: Mapping Western Australia's Biodiversity.

Government of Western Australia (2018) 2017 State wide Vegetation Statistics (formerly the CAR Reserve Analysis) – Full Report. Current as of December 2017 (based on most recent date of input datasets). Remote Sensing and Spatial Analysis Section. Geographic Information Services and Corporate Records Branch. Department of Biodiversity, Conservation and Attractions. February 2018.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Main Roads Western Australia (2015) Roads 2030: Regional Strategies for Significant Local Government Roads, Wheatbelt North. 2013 (Amended 2015). Published by the Government of Western Australia.

Shire of Kellerberrin (2020a) photographs supplied with application for clearing permit (CPS 8838/1). DWER reference: A1879893.

Shire of Kellerberrin (2020b) Email correspondence. DWER reference: A1904326.

Shire of Kellerberrin (2020c) statement on application form, for clearing permit (CPS 8838/1). DWER reference: A1878911.

Western Australian Herbarium (1998-) FloraBase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/>.