



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	8898/1
Permit Holder:	Shire of Murchison
Duration of Permit:	8 October 2020 – 8 October 2030

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of gravel extraction.

2. Land on which clearing is to be done

Lot 11804 on Deposited Plan 238483 (Pastoral Lease N050667), South Murchison

3. Area of Clearing

The Permit Holder must not clear more than 36.67 hectares of native vegetation within the area cross hatched yellow on attached Plan 8898/1a, Plan 8898/1b, Plan 8898/1c and Plan 8898/1d.

4. Period in which clearing is authorised

The Permit does not authorise the Permit Holder to clear native vegetation within the area cross-hatched yellow on attached Plan 8898/1a, Plan 8898/1b, Plan 8898/1c and Plan 8898/1d for the purpose authorised under this Permit after 8 October 2025.

5. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

6. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

PART II – MANAGEMENT CONDITIONS

7. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

8. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

9. Vegetation management – Priority flora

The Permit Holder must ensure that no clearing of native vegetation occurs within the area cross-hatched red on attached Plan 8898/1a.

10. Fauna management – direction of clearing

The Permit Holder shall conduct clearing in a slow progressive manner from one direction to the other (e.g. east to west) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

11. Retain vegetative material and topsoil, and rehabilitation

- (a) The Permit Holder must retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) The Permit Holder must within 12 months of undertaking the clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land;
 - (ii) ripping the ground on the contour of boreholes and test pits to remove soil compaction; and
 - (iii) laying the vegetative material and topsoil retained under Condition 11(a) on the cleared area.
- (c) The Permit Holder must following the first wet season of laying the vegetative material and topsoil on the cleared area in accordance with condition 11(b) of this permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the vegetation of area revegetated and rehabilitated; and
 - (ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 11(c)(i) of this permit will, without further revegetation, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.
- (d) If the determination made by the *environmental specialist* under condition 11(c)(ii) is that the species composition, structure, and density determined under condition 11(c)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation seeds that will result in a similar species composition, structure, and density of native vegetation to pre-clearing vegetation types in that area.
- (e) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 11(d), the Permit Holder must repeat the activities required by condition 11(c) and 11(d) within 12 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (f) Where a determination is made by an *environmental specialist* under condition 11(c)(ii) that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, that determination shall be submitted to the *CEO* within three months of the determination being made by the *environmental specialist*.

PART III - RECORD KEEPING AND REPORTING

12. Records to be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) in relation to the clearing of native vegetation authorised under this permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) the purpose for which clearing was undertaken;
 - (v) actions taken in accordance with condition 6 of this Permit;
 - (vi) actions taken to avoid, minimise and reduce the impacts and the extent of clearing in accordance with condition 7 of this Permit;
 - (vii) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 8 of this Permit;
 - (viii) activities undertaken in accordance with condition 9 of this Permit; and
 - (ix) actions taken in accordance with condition 10 of this Permit.

- (b) in relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 11 of this Permit:
 - (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (ii) the size of the areas *revegetated* and *rehabilitated* (in hectares);
 - (iii) the date that *revegetation* and *rehabilitation* works began; and
 - (iv) actions taken in accordance with condition 11 of this Permit.

13. Reporting

The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:

- (a) of records required under condition 12 of this Permit;
- (b) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding calendar year;
- (c) if no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this Permit has been carried out, must be provided to the *CEO* on or before 30 June of each year; and
- (d) prior to 15 July 2030 the Permit Holder must provide to the *CEO* a written report of records required under condition 12 of this Permit where these records have not already been provided under condition 13(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

direct seeding means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist;

fill means material used to increase the ground level, or fill a hollow;

local provenance means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

optimal time means the period from June to August for undertaking direct seeding and planting;

planting means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

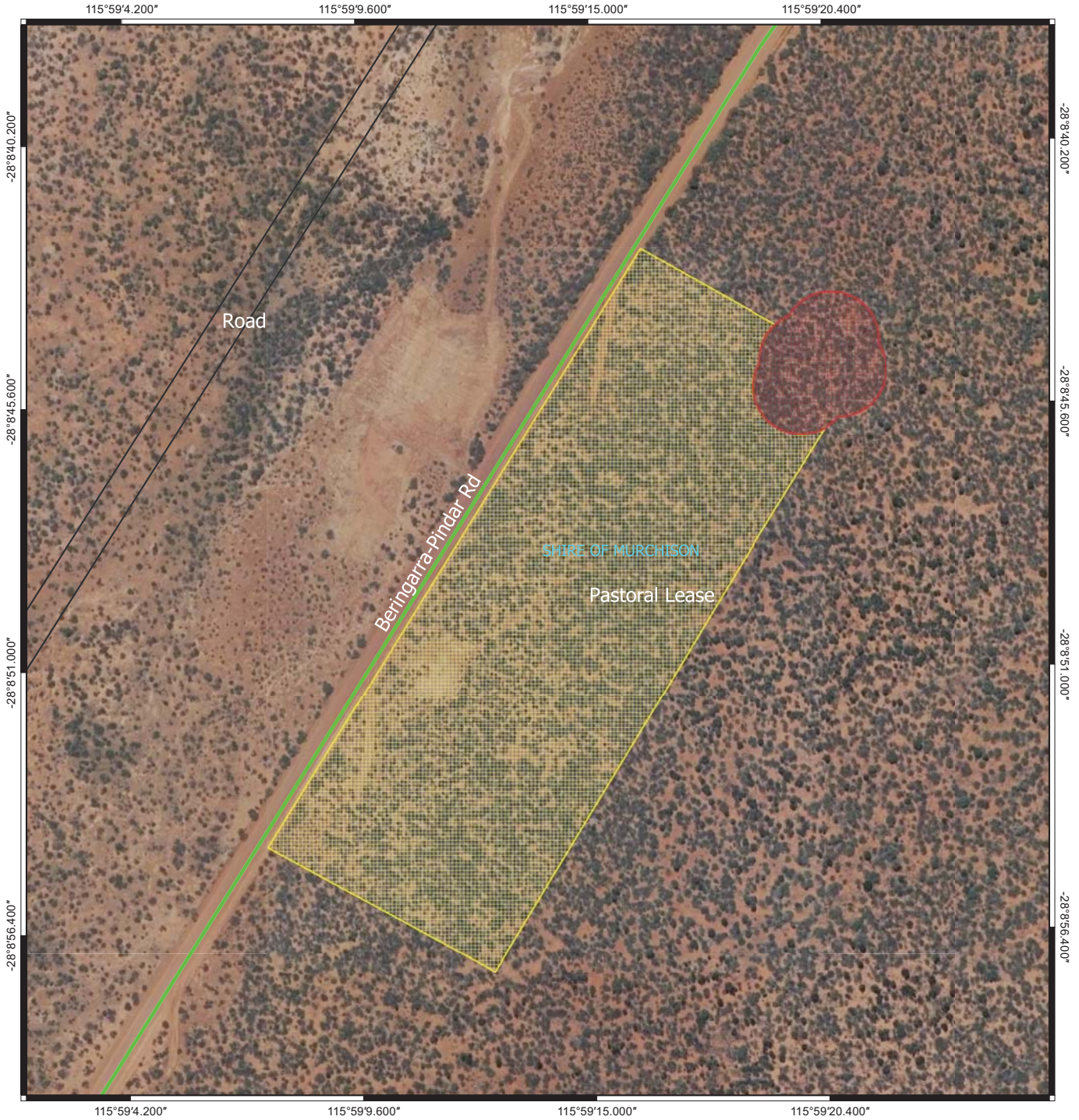


Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION






*Officer delegated under Section 20
of the Environmental Protection Act 1986*

15 September 2020

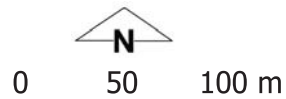
Plan 8898/1a




Legend

-  CPS areas approved to clear
-  CPS subject to conditions
- base layers
-  Local Government Authorities
-  Cadastre - LGATE 218
-  Roads - Landgate 012

Image



MGA 94
Geocentric Datum of Australia 1994

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Officer with delegated authority under Section 20
of the Environmental Protection Act 1986



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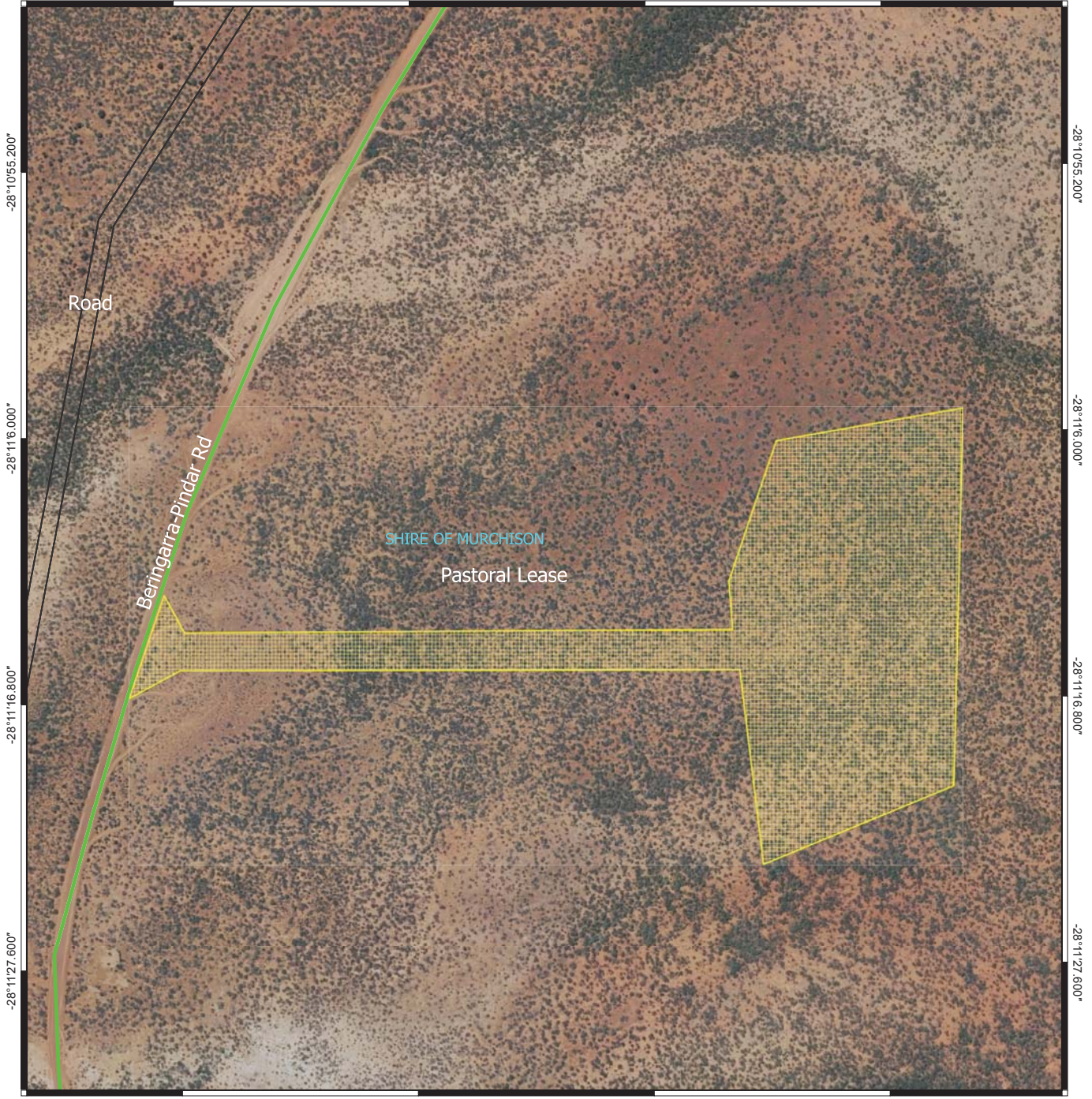
Plan 8898/1b

115°57'32.400"

115°57'43.200"

115°57'54.000"

115°58'4.800"



Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Cadastre - LGATE 218
-  Roads - Landgate 012

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Plan 8898/1c

115°52'40.800" 115°52'46.200" 115°52'51.600"



Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Cadastre - LGATE 218
-  Roads - Landgate 012


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Plan 8898/1d



Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Cadastre - LGATE 218
-  Roads - Landgate 012

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Geocentric Datum of Australia 1994

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Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 8898/1
Permit type:	Purpose Permit
Applicant name:	Shire of Murchison (the Shire)
Application received:	5 May 2020
Application area:	36.67 hectares (ha) of native vegetation to be cleared in the following four locations: Borrow pit 1: 6.84 ha Borrow pit 2: 16.82 ha Borrow pit 3: 6.67 ha Borrow pit 4: 6.34 ha
Purpose of clearing:	Extractive industry
Method of clearing:	Mechanical
Property:	Lot 11804 on Deposited Plan 238483
Location (LGA area/s):	The Shire of Murchison
Localities (suburb/s):	South Murchison

1.2. Description of clearing activities

The application is to expand existing gravel borrow pits in four locations adjacent to the existing Beringarra to Pindar road. Borrow pit 4 surrounds an approximately 0.99 ha gravel extraction site permitted under CPS 7955/1.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	15 September 2020
Decision area:	36.67 ha of native vegetation within four locations as outlined in Section 1.5

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 5 May 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 C), findings of the flora and vegetation survey (Ecologia Environment (Ecologia), 2020) (see Appendix E), advice provided from the Shire in relation to the proposed clearing (2020c, 2020d), relevant datasets (see Appendix F), relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (see Sections 3 and 4). The Delegated Officer also took into consideration that the Shire removed a portion of the application area that contained native vegetation in excellent condition and a priority flora species. In addition, the Delegated Officer noted that the purpose of the clearing is to extend gravel pits to obtain material necessary for road upgrades and maintenance works.

In particular, the Delegated Officer has determined that the clearing:

- May impact fauna utilising the application area at the time of clearing
- May lead to land degradation in the form of wind erosion
- May increase the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicants avoidance and minimisation measures (see Section 3.1), the Delegated Officer has determined that with appropriate management conditions, the proposed

clearing is not likely to lead to an unacceptable risk to the environment. The Delegated Officer decided to grant a clearing permit subject to conditions to:



- avoid, minimise and reduce the impacts and extent of clearing
- take steps to minimise the introduction and spread of weeds to minimise impact to the surrounding vegetation
- slow, directional clearing to allow fauna to escape into the surrounding vegetation
- progressively revegetate all cleared areas within 12 months of the area no longer being required for the purpose of gravel extraction, to minimise wind erosion and long term impacts
- record keeping and reporting requirements.

1.5. Site maps




Plan 8898/1a




Legend

-  CPS areas approved to clear
-  CPS subject to conditions


base layers

-  Local Government Authorities
-  Cadastre - LGATE 218
-  Roads - Landgate 012

Image




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MGA 94
Geocentric Datum of Australia 1994

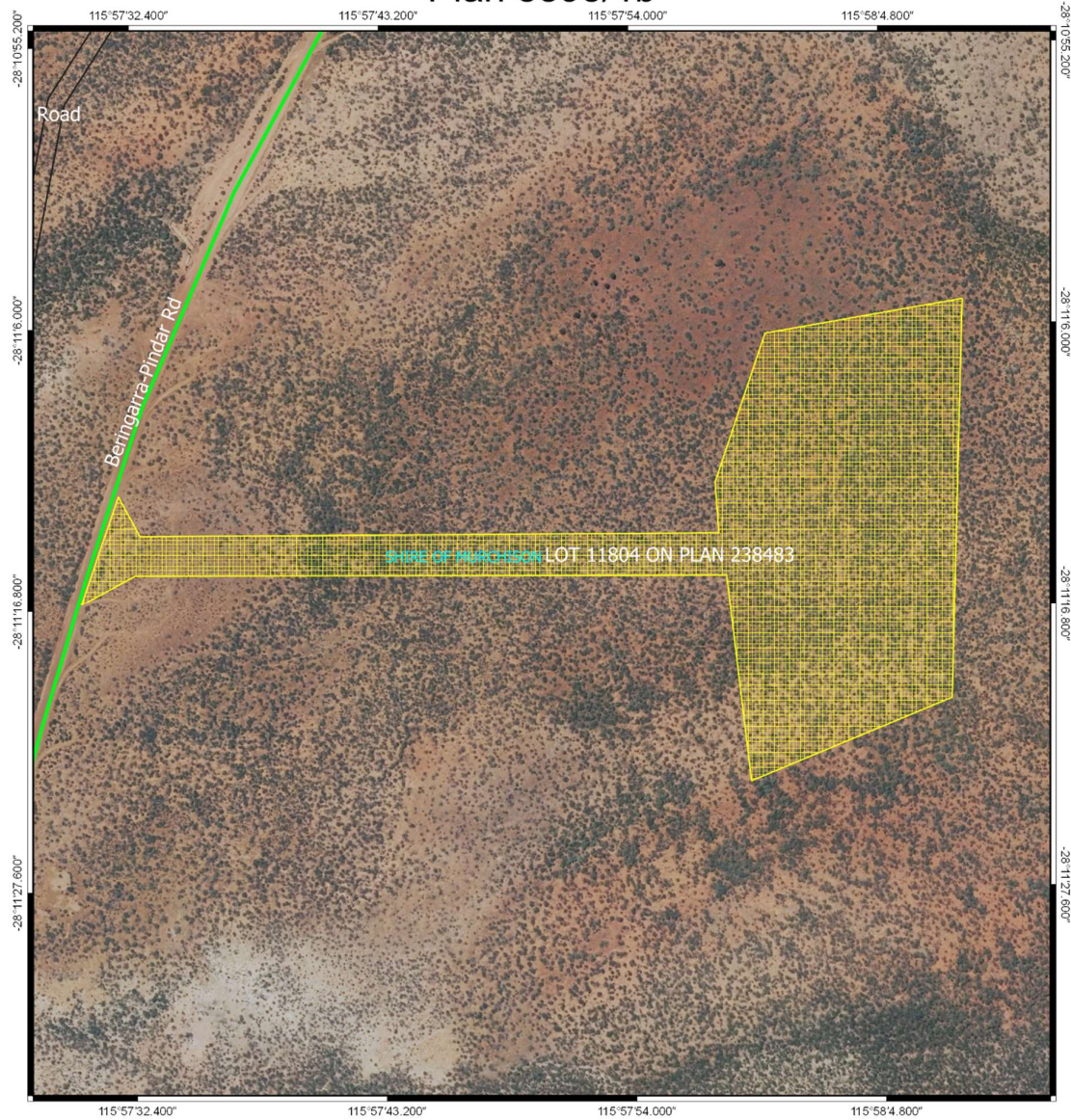
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Figure 1: Map of Borrow Pit 1. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit. The area cross-hatched red indicates area within which clearing activities must not be undertaken.

Plan 8898/1b



Legend


- CPS areas approved to clear base layers
- Local Government Authorities
- Cadastre - LGATE 218
- Roads - Landgate 012

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MGA 94
Geocentric Datum of Australia 1994

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Figure 2: Map of Borrow Pit 2. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

Plan 8898/1c



Legend

- CPS areas approved to clear base layers
- Local Government Authorities
- Cadastre - LGATE 218
- Roads - Landgate 012
- Image

MGA 94
Geocentric Datum of Australia 1994

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Figure 3: Map of Borrow Pit 3. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

Plan 8898/1d



Legend

- CPS areas approved to clear base layers
- Local Government Authorities
- Cadastre - LGATE 218
- Roads - Landgate 012
- Image

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MGA 94
Geocentric Datum of Australia 1994

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

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Figure 4: Map of Borrow Pit 4. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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:

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

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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The application to clear native vegetation is for a total area of 36.67 ha across four proposed borrow pit locations. The applicant will restrict clearing at the four locations to ensure the impacts are restricted to the areas at each location that are permitted to be cleared.

The potential presence of priority species required further identification. A subsequent flora and vegetation survey identified the occurrence of one Priority flora species (Priority 3) within the proposed clearing area of Borrow Pit/Area 1.

Following the confirmation of the presence of a priority species within Borrow Pit 1, the applicant has committed to implementing a 30 meter buffer surrounding the identified locations of the priority species to mitigate any impacts to the population.

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, site characteristics (Appendix B), findings of the flora and vegetation survey (Ecologia Environment (Ecologia), 2020) (see Appendix E) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix C.

This assessment identified that the clearing may pose a risk to the environmental values of conservation significant flora. 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 a 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.

3.2.3 *Environmental value: biological values (flora) – Clearing Principle (a) to (d)*

Assessment:

This project potentially requires the clearing of up to 36.67 ha of native vegetation within areas assessed to be in 'Excellent' condition (Ecologia, 2020). As outlined in Appendix B, the vegetation proposed to be cleared is representative of native vegetation associations Yalgoo 40 (current mapped extent of 284,656 ha) and Yalgoo 404 (current mapped extent of 143,906 ha). These associations are well represented, with 94.35% of Yalgoo 40 and 94.82% of Yalgoo 404 remaining within the Yalgoo IBRA bioregion.

The desktop study (Appendix B) indicates that there are no State or Commonwealth listed threatened species recorded in the four proposed clearing areas/borrow pits or the surroundings areas. Similarly, there are no State or Commonwealth Threatened or Priority Ecological Communities (TEC or PEC respectively) recorded in the four proposed borrow pits. The nearest PEC Eucalypt woodlands of the Western Australian Wheatbelt (Priority 3) is located approximately 10 km to the south east of the most southern clearing area, Borrow Pit 4. As defined by DBCA, this community does not extend into the Yalgoo bioregion (Ecologia, 2020).

The desktop assessment identified the presence of two conservation significant species (Priority 3) in the vicinity of borrow pits 1 and 3. The single records for these two species, *Grevillea granulosa* (borrow pit 1) and *Grevillea globosa* date from 1999 and 1998 respectively. They are the most northern records for the two species which have a typical southern distribution to Jibberding/Watheroo (for *G. granulosa*) and Yalgoo (for *G. globosa*) (NatureMap DBCA 2020). A subsequent flora survey undertaken within the proposed clearing area did not locate either species within or adjacent to the proposed clearing areas.

A survey conducted by Ecologia (2020) identified the occurrence of 19 individual *Dicrasyllis linearifolia* (Priority 3) restricted to the far northern section of Borrow Pit 1. An additional 13 individuals were recorded immediately to the north of Borrow Pit 1. The flora survey report noted that this occurrence of *D. linearifolia* is approximately 30 km north of current records and represents a range extension. This species is relatively widespread, occurring from near Shark Bay in the northwest to Paynes Find in the southeast.

Information provided by the applicant (flora and vegetation survey) indicates that the vegetation and vegetation condition for the areas in which the four proposed borrow pits are located may be described as plains and undulating plains dominated by tall *Acacia ramulosa* and *A. coolgardiensis* shrublands with other isolated tall shrubs, trees, and mallees including *Callitris columellaris*, *Eucalyptus leptopoda* subsp. *arctata*, and *Grevillea obliquistigma* subsp. *obliquistigma* (Ecologia, 2020).

Noting the outcomes of the results of the flora survey (Appendix E) and the desktop assessment (Appendix B), it is considered that the clearing does not occur in an area representative of high biodiversity, will not impact on habitat critical for the survival of listed threatened or conservation significant species nor contain locally or regionally significant flora, fauna, habitats, assemblages of plants. Vegetation within the clearing area is widely distributed and well represented within the local and regional area.

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

Conditions: To minimise impacts to the Priority 3 species *D. linearifolia*, clearing will not be able to occur within the area cross-hatched red on Plan 8898/1a. This provides a 30 metre buffer to the individuals recorded during the survey.

3.2.2 Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment:

Vegetation condition at all sampling sites was assessed as 'Excellent' (Trudgen, 1991). Excluding cleared vehicle tracks and other previously cleared vegetation, vegetation across the entire survey area showed either no obvious evidence of disturbance or only very minor weed invasion

Two (historical) records exist from 1970 of a threatened listed species *Leipoa ocellata* (Malleefowl) approximately 1.3 km and 2.0km to the north of borrow pit 4 (DBCA, 2020). Vegetation condition within the Borrow Pits could represent possible habitat for Malleefowl. However, based on the desktop review and site photographs provided by the applicant (Appendix E) the vegetation present in the four Borrow Pits does not likely represent suitable habitat critical for the survival of this species. In addition, the record is forty years old and may be considered to be an outlier.

Due to the nature and scale of vegetation to be cleared and the amount of remnant vegetation remaining within the local area, it is not considered to be significant at a local or regional scale regarding indigenous fauna habitat. Each of the proposed borrow pits are surrounded by vegetation of similar or possibly better condition.

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

Conditions: To minimise impacts to fauna that may be present at the time of clearing, clearing shall be conducted in a slow, progressive manner from north to south to allow fauna to move out of the clearing area and into adjacent remnant vegetation.

3.2.3 Environmental values: land and water resources – Clearing Principle (g)

Environmental value:

Assessment: Based on the information available from the Natural Resources Information (NRI) (WA) tool (DPIRD 2017) the proposed clearing areas are located across three subsystems within the Irwin River Zone, which are described as:

- Joseph System (borrow pit 4): Undulating yellow sandplain supporting dense mixed Acacia, Melaleuca and Casuarina shrublands with patchy mallees.
- Kalli System (borrow pit 1 and 3): Elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite, supporting Acacia tall shrublands with wanderrie grass understoreys.
- Tindalarra System (borrow pit 2): Near level hardpan wash plains, narrow drainage lines and moderately saline drainage floors; supporting tall mixed acacia shrublands with wanderrie grasses, also minor saltbush/bluebush low shrublands.

Information available from the Commonwealth Government, State of the Environment (SoE) describes the Yilgarn Plateau Province as “Erosional plains with sand plains, lakes and alluvial valley floors; breakaways”. The provinces’ regolith has been classified as “Highly weathered bedrock (> 50%), alluvial sediments (< 20%), residual sand (20 - 50%)” (SoE, 2017-2018).

The Yilgarn Plateau Province has been categorised as having a poor soil erosion grade, which has been defined by the SoE (2017-2018) as the majority of the landscape has been eroded to the extent that plant growth has been affected and, in agricultural systems, yields and returns are compromised. Erosion rates are unsustainable (>5 tonnes/hectare/year).

It is understood that clearing will be completed on an as required basis with cleared vegetation being stockpiled for use in future rehabilitation or for immediate placement on existing cleared areas.

For all borrow pits, surface water drainage control structures will be constructed using excavated natural materials to divert any local stormwater flow around the proposed borrow areas and to prevent flooding of the borrow pits.

Progressive rehabilitation and/or placement of cleared vegetation (as a minimum) of areas where extraction of borrow material has been completed should be undertaken at all borrow pits to prevent long term erosion and land degradation.

The soils across the four proposed clearing locations are moderately susceptible to wind / water erosion. Noting the extent and location of the proposed clearing and operational measures that are to be implemented by the applicant, the proposed clearing is not likely to have an appreciable impact on land degradation.

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 mitigate impacts of wind erosion, the applicant will be required to progressively revegetate all cleared areas within 12 months of the area no longer being required for the purpose of extraction.

3.3. Relevant planning instruments and other matters

The size of the application area has been amended on several occasions during the assessment. This resulted in the increase of the area from the initial 22.4 hectares to 36.67 hectares.

The Shire of Murchison advised DWER that no further local government approvals are required, and that the clearing is consistent with the Shire’s Local Planning Scheme.

No Aboriginal Sites and Heritage Places occur within the application area. It is the permit holder’s responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Appendix A – Additional information provided by applicant

On 24 June 2020, the DWER wrote to the Shire advising that the proposed clearing had the potential to impact on two priority flora species, namely *Grevillea globosa* (P3) and *Grevillea granulosa* (P3) and inviting the applicant to provide additional advice addressing these matters. The applicant was requested to modify the application area to avoid and minimise impacts identified by reducing the area to be cleared which avoided clearing of areas containing priority flora.

On 4 August 2020, the Shire amended the application area to avoid clearing of three individuals of *Dicrasyllis linearifolia* (P3) and provide a 30 metre vegetated buffer for this species (the Shire, 2020d).

Appendix B – 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 C.

1. Site characteristics

Site characteristic	Details
Local context	<p>The proposed clearing of 35.86 hectares (ha) is to be completed inside the boundaries of four existing gravel borrow pits. The four borrow pits are located along the Beringarra to Pindar Road in the Shire of Murchison as follows:</p> <p>Borrow pit 1: 7.13 hectares (0.2 ha disturbed) at SLK 280.8 (where SLK is straight line kilometre).</p> <p>Borrow pit 2: 16.81 ha at SLK 286.0.</p> <p>Borrow pit 3: 6.67 ha (1.16 ha disturbed) at SLK 303.62.</p> <p>Borrow out 4: 5.13 ha (2.12 ha disturbed) at SLK 319.62 (estimated) Wreath Flowers.</p> <p>In more detail the four borrow pit areas may be described as:</p> <ul style="list-style-type: none"> • Borrow pit 1 is located immediately to the south east of the existing Beringarra to Pindar road. The area in which the borrow pit is located is characterised by gently undulating sand plains with undisturbed Acacia shrubland. The borrow pit is rectangular in shape (approximately 158m by 445m). Approximately 0.2 ha of the proposed borrow pit area has been disturbed, possibly to obtain gravel for construction purposes. An existing borrow pit is located immediately to the west of the road. • Borrow pit 2 is located approximately 725m to the east of the existing Beringarra to Pindar road. The area in which the borrow pit is located is characterised by nearly level to gently inclined hardpan wash plains with local narrow drainage lines. The vegetation in the area of the borrow pit is generally undisturbed and comprises Acacia shrubland. The access approach is approximately 50m wide whilst the proposed borrow area occupies an area measuring 470m by 250m. • Borrow pit 3 is located immediately to the west of the existing Beringarra to Pindar road. The area in which the borrow pit is located is characterised by elevated gently undulating red sand plains with localised exposure of laterites and granite (bedrock). The vegetation in the area of the proposed borrow pit is generally undisturbed and comprises undisturbed Acacia shrubland. The borrow pit is almost square and measures 265m by 285m. Approximately 1.16 ha of the proposed borrow pit area has been disturbed, possibly to obtain gravel for construction purposes. The existing gravel borrow pits at this location appear to be active with materials stockpiled for use. • Borrow pit 4 is located immediately to the west of the existing Beringarra to Pindar road. The area in which the borrow pit is located is characterised by undulating yellow sand plains. The vegetation in the area of the proposed borrow pit is generally undisturbed and comprises undisturbed Acacia shrubland. The borrow pit is almost square and measures 265m by 285m. Approximately 2.12 ha of the proposed borrow pit area has been disturbed, possibly to obtain gravel for construction purposes. The existing gravel borrow pits at this location appear to be active with materials stockpiled for use.
Vegetation description	<p>The Yalgoo bioregion is located in the southern rangelands of Western Australia and is characterised by sand and alluvial plains, low ranges and lakes. The region stretches east west and covers approximately 5.087 million hectares. Bowgada shrublands dominate the eastern portion of the region, with the western portion containing sand plains, heathland, and sparse eucalypt shrubland. The primary land use within the bioregion is pastoral lease and sheep grazing (DAWE, 2008). The proposed clearing areas are located towards the centre of the bioregion.</p>

Australia's Interim Biogeographic Regionalisation for Australia subregion

Australia's Interim Biogeographic Regionalisation for Australia (IBRA) describes a system of 89 'biogeographic regions' (bioregions) and 419 subregions covering the entirety of the Australian continent (Department of the Environment and Energy, 2019). Bioregions are defined on the basis of climate, geology, landforms, vegetation and fauna.

The four borrow pits are located in the following IBRA areas:

- Yalgoo IBRA region which covers an area 4,923,840.47 ha (97.46% of pre-European extent remaining).
- Tallering sub-region which covers an area of 3,498,944 ha.

Vegetation system association

Vegetation occurring within the region was initially mapped at a broad scale (1: 1 000 000) by Beard during the 1970s. This dataset formed the basis of several regional mapping systems, including the biogeographical region dataset (Interim Biogeographic Regionalisation for Australia) for Western Australia (DEE 2017), physiographic regions defined by Beard (1981), and Vegetation Complex mapping over the System 6 area undertaken by Heddl et al. (1980).

At a vegetation association level, the four proposed clearing areas/borrow pits are located in the following three vegetation association areas:

- Yalgoo 40: Shrublands; acacia scrub, various species.
- Yalgoo 404: Shrublands; bowgada and *Acacia murrayana* scrub.
- Yalgoo 419: Shrublands; bowgada, jam and *Melaleuca uncinata* thicket.

Borrow pit 1 occupies a total area of 7.13 ha within two larger native vegetation systems (Yalgoo 40, and Yalgoo 404). The proposed clearing area is located within larger areas of native vegetation associations Yalgoo 40 (284,656 ha) and Yalgoo 404 (143,906 ha). The desktop review indicates that the IBRA region retains 94.35% of Yalgoo 40 vegetation association native cover and 94.82% of Yalgoo 404 vegetation association native cover.

Photographs provided by the applicant indicate the vegetation within the proposed clearing areas of borrow pit 1 consists of acacia shrubland with sparse ground cover and absence of overstory. Representative photos are available in Appendix E.

A conservation significant species (Priority 3) has been identified as occurring within the boundaries of Borrow Pit 1. A flora and vegetation survey conducted by Ecologia (2020) identified the presence of 19 individual *Dicrastylis linearifolia* within the proposed clearing area of Borrow Pit/Area 1. The survey also highlighted the presence of an additional 13 individuals of the same species immediately outside the proposed clearing area.

Borrow pit 2 occupies a total area of 16.81 ha within a larger area of native vegetation association Yalgoo 404.

Borrow pit 3 occupies an area of 6.67 ha within a larger area of native vegetation association Yalgoo 419 (289,825 ha). The desk top review indicates that the IBRA region retains 95.74% of this vegetation systems native cover.

Borrow pit 4 occupies an area of 5.13 ha within a larger area of native vegetation association Yalgoo 419.

The survey conducted by Ecologia (2020) identified five broad-scale floristic communities occurring within the proposed clearing areas, they are as follows:

- SH01: *Acacia ramulosa* var. *linophylla*, *Acacia rhodophloia*, *Acacia tetragonophylla* mid open shrubland; *Ptilotus obovatus*, *?Thryptomene* sp. low open shrubland; *?Aristida contorta* low sparse tussock grassland was recorded only from the western end of Area 2 and accounted for 3% (1.1 ha) of the total survey area.
- SH02: *Acacia ramulosa* var. *ramulosa*, \pm *Grevillea obliquistigma* subsp. *obliquistigma* tall open shrubland; \pm *Eremophila forrestii* subsp. *forrestii* low sparse shrubland; *Monachather paradoxus* low sparse tussock grassland was dominant in the northern two areas of the survey area (Area 1 and Area 2), and accounts for over 62% (22.83 ha) of the total survey area.

Site characteristic	Details
	<ul style="list-style-type: none"> • SH03: <i>Eucalyptus leptopoda</i> subsp. <i>arctata</i> low open mallee woodland over <i>Acacia coolgardiensis</i>, <i>Acacia ramulosa</i> var. <i>ramulosa</i> tall open shrubland over <i>Monachather paradoxus</i> low sparse tussock grassland was only recorded from Area 3 and accounted for 8.9% (3.27 ha) of the total survey area. • SH04a: <i>Acacia coolgardiensis</i>, <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> tall open shrubland; <i>Grevillea pityophylla</i> low sparse shrubland was only recorded from Area 3 and accounted for 6.3% (2.32 ha) of the total survey area. • SH04b: <i>Acacia coolgardiensis</i> tall open shrubland over <i>Philotheca deserti</i> subsp. <i>deserti</i> mid open shrubland over <i>Amphipogon caricinus</i> var. <i>caricinus</i> low sparse tussock grassland was only recorded from Area 4 and accounted for 10.6% (3.88 ha) of the total survey area. <p>The survey also identified areas of previously cleared vegetation, representing approximately 9% (3.32 ha) of the total survey area.</p>
Vegetation condition	<p>Vegetation and floristic survey undertaken by Ecologia (2020) assessed the vegetation condition to be in 'Excellent' condition (Trudgen, 1991). With the exclusion of previously cleared areas and existing vehicle tracks the survey area displayed no obvious evidence of disturbance or only very minor weed invasion.</p> <p>The full vegetation condition rating scale is provided in Appendix D. Representative photos (from borrow pits 1 and 2) are available in Appendix E.</p>
Soil description	<p>The general area in which the four proposed clearing areas/borrow pits are located in is dominated by the granite bedrock of the Yilgarn craton. Weathering of the massive underlying bedrock has led to the formation of colluvial, sheetwash and alluvial soils which cover the region with local exposure of granite and laterites.</p> <p>At the four borrow pit locations the soils are mapped as follows:</p> <p>Borrow Pit 1 and 3: Kalli System - elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite.</p> <p>Borrow Pit 2: Tindalarra System - near level hardpan wash plains, narrow drainage lines and moderately saline drainage floors.</p> <p>Borrow Pit 4: Joseph System - undulating yellow sandplains.</p>
Land degradation risk	<p>The soils across the four proposed clearing areas/borrow pits comprise sands with some silts and clays which may be susceptible to localised erosion by wind and water. The soils are typically thin overlying weathered granite bedrock and lateritic materials.</p> <p>It is possible the clearing of native vegetation cover may increase the risk of localised erosion/weathering over time.</p> <p>The DPIRD provides a series of soil degradation risk mapping at the sub-system level. Based on data available from the Natural Resources Information (NRI) (WA) tool (DPIRD 2017) the proposed clearing areas are located within three systems of the Irwin River Zone as follows:</p> <ul style="list-style-type: none"> • Joseph System (borrow pit 4): Undulating yellow sandplain supporting dense mixed Acacia, Melaleuca and Casuarina shrublands with patchy mallees. • Kalli System (borrow pit 1 and 3): Elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite, supporting Acacia tall shrublands with wanderrie grass understoreys. • Tindalarra System (borrow pit 2): Near level hardpan wash plains, narrow drainage lines and moderately saline drainage floors; supporting tall mixed Acacia shrublands with wanderrie grasses, also minor saltbush/bluebush low shrublands. <p>The soils have the following typical and general characteristics:</p> <ul style="list-style-type: none"> • Non acidic and non alkaline risk. • Low risk of salinity. <p>Further assessment of the soils cannot be complete with respect to susceptibility to water and wind erosion as the four proposed locations are located outside the NRI mapping area.</p>

Site characteristic	Details
Waterbodies	<p>The desktop assessment and aerial imagery indicated that there are no water bodies, water courses, or wetlands within the proposed clearing areas or within the vicinity of the proposed clearing areas.</p> <p>The nearest surface water feature to any of the proposed clearing areas is a Minor River located approximately 1.7km south west of borrow pit 3 (DPIRD 2017).</p>
Conservation areas	<p>There are no known conservation areas in the proposed clearing areas or within the vicinity of the proposed clearing areas.</p> <p>The closest conservation area is the Urawa Nature Reserve (R 33466) which is located approximately 22 km to the west of the Beringarra to Pindar Road.</p>
Climate and landform	<p>The nearest Bureau of Meteorology (BoM) weather station is located at Mullewa (Station No 008095). The temperature ranges between a high mean maximum of 36.9 deg in January to a low of 18.9 deg in July. Rainfall ranges between a high of 63.1mm in June to a low of 8.5mm in November with an annual average rainfall of 332.3mm.</p> <p>The region is generally flat to gently undulating characterised by sand plains, wash (or flood) plains with localised laterite ridges/breakaways.</p>

2. Flora, fauna and ecosystem analysis

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

Species / Ecological Community (Conservation Status)	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Surveys adequate to identify? (Y, N, N/A)
<i>Acacia ampliata</i> (P1)	19.3	Possible	Unlikely		Y
<i>Acacia lineolata</i> subsp. <i>Multilineata</i> (P1)	11.0	Possible	Unlikely		Y
<i>Banksia benthamiana</i> (P4)	11.0	Possible	Unlikely		Y
<i>Dicrasyllis linearifolia</i> (P3)	Within Borrow Pit 1	Possible	Recorded		Y
<i>Dithyrostegia gracilis</i> (P1)	18.4	Unknown	Unknown		Y
<i>Grevillea globosa</i> (P3)	0.16	Likely	Unlikely		Y
<i>Grevillea granulosa</i> (P3)	0.18	Likely	Unlikely		Y
<i>Grevillea tenuiloba</i> (P3)	10.4	Possible	Unlikely		Y
<i>Hemigenia</i> sp. <i>Tallering</i> (H. Pringle 3323) (P1)	1.8	Likely	Unlikely		Y
<i>Melaleuca barlowi</i> (P3)i	15.5	Possible	Possible		Y
<i>Prostanthera pedicella</i> (P1)ta	6.6	Possible	Possible		Y
<i>Leipoa ocellata</i> (Malleefowl) (Vu Cth)	1.3		Possible (close to northern extent of known range) (DPaW 2016)	Possible (close to northern extent of known range) (DPaW 2016)	Y

Where P1 to P4 is conservation status as listed by the DBCA, Vu is Vulnerable with reference to the EPBC Act.

3. Vegetation extent

The following table presents the pre-European extent and current remaining extent of the relevant Beard vegetation associations occurring within the proposed clearing area (Government of Western Australia, 2019).

	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)	Area in 10km buffer around NVCP areas (ha)	Area (and %) remaining in NVCP buffer after clearing (ha)
IBRA bioregion							
Yalgoo	5,087,576.66	4,923,840.47	97.36	1,576,718.27	31.18	51,420.11	51,397.71 (99.95)
Beard vegetation association in IBRA bioregion:							
Yalgoo_40	301,712.85	284,656.96	94.35	12,937.65	4.29	25,992.39	25,985.49 (99.97)
Yalgoo_404	151,772.33	143,906.80	94.82	19,815.54	13.06	8,247.14	8,242.84 (99.94)

	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)	Area in 10km buffer around NVCP areas (ha)	Area (and %) remaining in NVCP buffer after clearing (ha)
Yalgo_419	302,707.72	289,825.56	95.74	116,359.63	38.44	17,180.58	17,169.38 (99.93)

Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
<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 does not contain locally or regionally significant flora, fauna, habitats, assemblages of plants. The applicant has avoided the occurrence of Priority 3 flora species <i>Dicrastylis linearifolia</i>.</p>	Not likely to be at variance	Yes. Refer to Section 3.2.3
<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 four proposed borrow pits do not contain or comprise of flora and vegetation that is considered to be foraging, roosting or breeding habitat for any State or Commonwealth listed threatened or conservation significant species.</p>	Not likely to be at variance	Yes. Refer to Section 3.2.3
<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> No Threatened flora species have been identified within proposed clearing/borrow pit areas based on the desktop study and flora and vegetation survey.</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> No State listed Threatened Ecological Communities were recorded in the proposed clearing areas.</p>	Not likely to be at variance	No.
Environmental values: significant remnant vegetation and conservation areas		
<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 the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The extents of native vegetation by IBRA bioregion and vegetation association are currently greater than 94.3%.</p>	Not likely to be at variance.	No.

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area.		
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u> The closest conservation area is the Urawa Nature Reserve (R 33466) which is located approximately 25 km to the west of the Beringarra to Pindar Road. Given the distance to this conservation reserve the proposed clearing is unlikely to have an impact on the environmental values of this reserve.</p>	Not likely to be at variance	No.
Environmental values: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> There are no known wetlands, surface water creeks, channels or rivers within the proposed clearing areas or in the areas immediately adjacent to the proposed clearing areas.</p>	Not likely to be at variance.	No.
<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> Soils mapped within the application area may be susceptible to wind and water erosion. Noting the extent and location of the proposed clearing and operational measures that are to be implemented by the applicant, the proposed clearing is not likely to result in appreciable land degradation.</p>	May be at variance	Yes. Refer to Section 3.2.3.
<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> Given the absence of water courses wetlands within the proposed clearing area, clearing of native vegetation and operation of the borrow pits is unlikely to impact on the quality of surface water and groundwater in the immediate vicinity or region.</p>	Not likely to be at variance	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> Given no water courses are recorded within the proposed clearing area and the proposed operational measures for the borrow pits, the clearing is unlikely to contribute to waterlogging or flooding.</p>	Not likely to be at variance.	No.

Appendix D – 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 Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very Poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E –Biological survey information excerpts / photographs of the vegetation

A detailed flora and vegetation survey, as well as targeted survey for significant plant species were undertaken on 13 and 15 July 2020 within the application area (Ecologia, 2020).

A total of 69 vascular plant taxa (species, infraspecific taxa, and phrase names) representing 27 families and 43 genera were recorded from 10 quadrats and additional opportunistic records within the application area. No EPBC Act or BC Act listed threatened species were recorded. One state listed Priority 3 species (*Dicrastylis linearifolia*) was recorded within the application area. One introduced plant species (*Cuscuta planifolia*) was recorded within the application area. No Weeds of National Significance (WONS) or Declared Pests were recorded.

Seasonal conditions were assessed as suitable for detecting the presence of the significant perennial species. One significant species was recorded during the survey (*D. linearifolia*) and the remaining perennial species were subsequently considered unlikely to occur as the area was sufficiently surveyed and they were not recorded. Dry seasonal conditions at the time of the survey were suboptimal for detecting the presence of annual or ephemeral species. Consequently, the possibility of occurrence of the annual species *Gunniopsis divisa* (Priority 3), which has been recorded from a variety of habitats in the vicinity of the survey area, cannot be excluded.

Hierarchical agglomerative clustering was conducted using floristic data collected from 10 quadrats within the survey area. Based on this classification, four vegetation types (including two sub-types) were described and mapped. Broadly, the survey area consists of plains and undulating plains dominated by tall *Acacia ramulosa* and *A. coolgardiensis* shrublands with other isolated tall shrubs, trees, and mallees including *Callitris columellaris*, *Eucalyptus leptopoda* subsp. *arctata*, and *Grevillea obliquistigma* subsp. *obliquistigma*. Vegetation condition at all sampling sites was assessed as 'Excellent'. None of the vegetation types were assessed as corresponding to any National or State listed TEC or PEC, nor were any considered to be otherwise significant based on available data.

On 28 May 2020 and 11 June 2020, the Shire submitted photographs (Figure 5a – 5d) of the vegetation within the application area (the Shire, 2020a and 2020b).



Figure 5a-5d: Representative photos of the vegetation within the application area (the Shire, 2020a and 2020b)

Appendix F – References

1. GIS datasets

Publicly available GIS Databases used (sourced from 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)

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