



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 8894/1
File Number: DWERVT5710
Duration of Permit: 19 November 2020 to 19 November 2022

PERMIT HOLDER

PMR Quarries Pty Ltd on behalf of the Shire of Chittering

LAND ON WHICH CLEARING IS TO BE DONE

Energy Place road reserve (PINs 11727245, 11727244, 11727243 and 11727242), Muchea

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 1.95 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8894/1.

CONDITIONS

1. 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.

2. Dieback and 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* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *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.

3. Records to be kept

The Permit Holder must maintain the following records in relation to the clearing of native vegetation authorised under this Permit:

- (a) 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;
- (b) the date(s) that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 2 of this Permit.

4. Reporting

The Permit Holder must produce the records required under condition 3 of this Permit when required by the *CEO*.

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*;

dieback means the effect of *Phytophthora* species on native vegetation;

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

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; and

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.



Ryan Mincham

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

27 October 2020

Plan 8894/1

115°57'18.000"E

115°57'36.000"E

115°57'54.000"E

115°58'12.000"E

31°33'36.000"S

31°33'54.000"S

31°34'12.000"S

31°34'30.000"S

31°33'36.000"S

31°33'54.000"S

31°34'12.000"S

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115°57'18.000"E

115°57'36.000"E

115°57'54.000"E

115°58'12.000"E

CPS layers

 CPS areas approved to clear

Legend

 Land TenureLGATE - 226

 Local Government Authorities



0 0.1 0.2 km



Ryan Mincham
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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

MGA Zone 50
Geocentric Datum of Australia 1994



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 8894/1
Permit type:	Area permit
Applicant name:	PMR Quarries Pty Ltd's on behalf of the Shire of Chittering
Application received:	29 April 2020
Application area:	1.95 hectares (ha) of native vegetation
Purpose of clearing:	Road construction
Method of clearing:	Mechanical
Property:	Energy Place road reserve (PINs 11727245, 11727244, 11727243 and 1363474)
Location (LGA area/s):	Shire of Chittering
Localities (suburb/s):	Muchea

1.2. Description of clearing activities

The vegetation applied to be cleared is contained within a single contiguous area (Figure 1, Section 1.5). The application is to clear 1.95 hectares of native vegetation within Energy Place road reserve (PINs 11727245, 11727244, 11727243 and 1363474), Muchea, for the purpose of road construction.

1.3 Decision on application and key considerations

Decision:	Granted
Decision date:	27 October 2020
Decision area:	1.95 hectares (ha) of native vegetation, as depicted in Section 1.5, below.

1.4 Reasons for decision

This clearing permit application was applied for 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 29 April 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking the assessment, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix G), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), supporting information provided by the applicant (including photographs; see Appendix F), and any other matters considered relevant to the assessment.

In determining the impacts to the Ellen Brook floodplain from the proposed clearing, the Delegated Officer noted the historical impacts to the floodplain attributed to the clearing of land for agriculture, roads and housing. Noting this and taking into consideration the size and linear nature of the application area, the proposed clearing is not likely to detrimentally impact the environmental values, or hydrological processes within the floodplain.

The Delegated Officer also considers the proposed clearing could increase the risk of the spread of weeds and dieback into areas outside of the application footprint. These risks have been considered and can be managed appropriately under permit conditions.

In determining to grant a clearing permit subject to conditions pertaining to avoiding and minimising clearing and weed and dieback 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

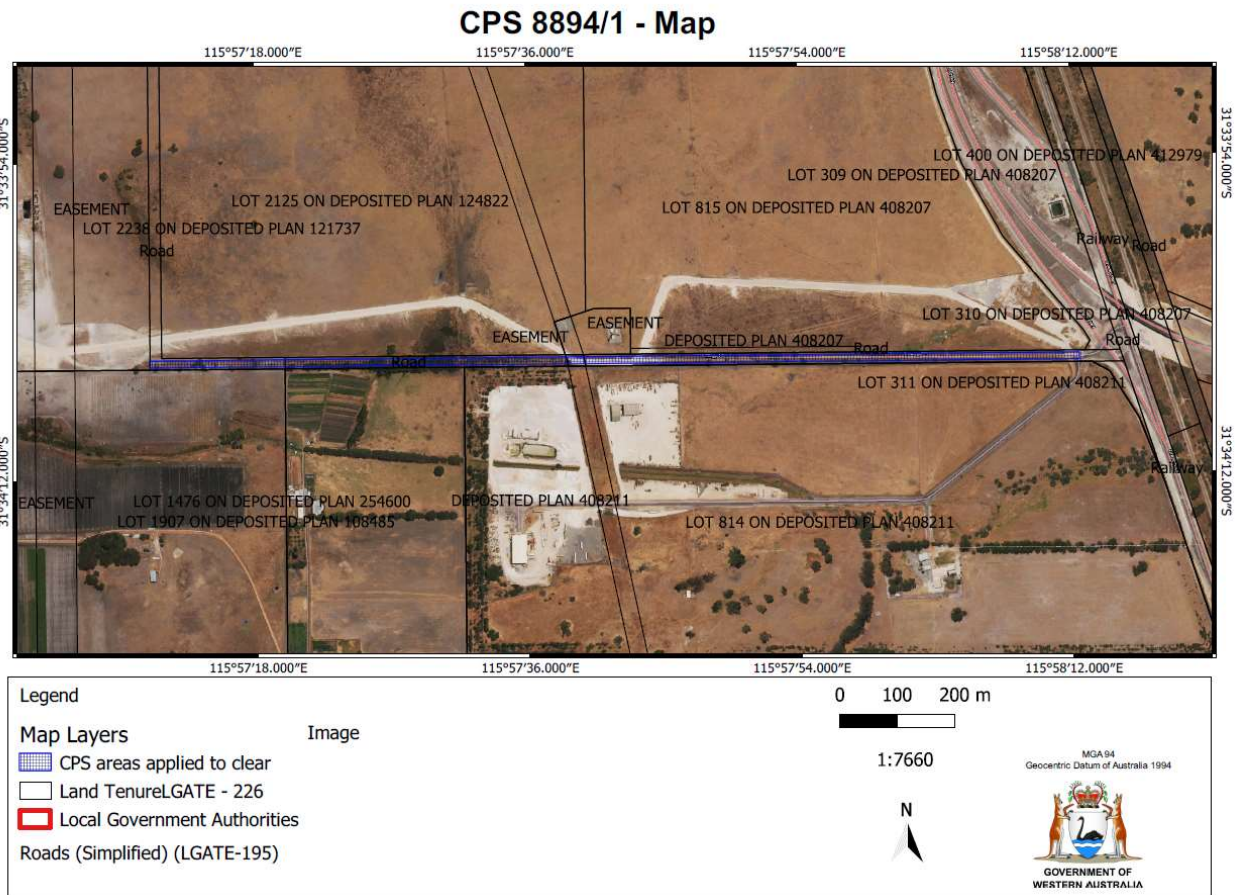


Figure 1. Map of the application area.

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;
3. the principle of the conservation of biological diversity and ecological integrity;

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)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The road design accounted for the minimum amount of clearing required for construction of the road.

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 did not identify any matters likely to substantially impact on the environmental values within and adjacent to the application area. As such, the limited impact of the clearing is considered acceptable.

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

Assessment:

A flora and vegetation report provided by the applicant regards the proposed clearing area as two separate areas, the eastern section where an existing limestone road exists and the western section where vegetation has previously been cleared and vegetation of local and non-local plants has grown on the pasture dominated ground cover (Landform Research, 2020).

As indicated within the flora and vegetation report, the vegetation proposed to be cleared is dominated by kikuyu pasture *Cenchrus clandestinus**, with Couch *Cynodon dactylon**, Veldt Grass *Ehrharta spp** and Lupins *Lupinus spp* among other minor exotic species as the ground cover under occasional scattered *Melaleuca preissiana*, widespread *Acacia saligna* regrowth, and self-seeded, non-local eucalyptus such as *Corymbia maculata*, *Eucalyptus camaldulensis*, *Eucalyptus robusta* as well as some *Kunzea glabrescens* and *Taxandria linearifolia* (Landform Research, 2020). Only one local *Eucalyptus todtiana* occurs at the western end and a *Corymbia calophylla* (Marri) occurs in the central section of the road. On the eastern half there are isolated Paperbark *Melaleuca preissiana* and Marri over pasture and exotics (Landform Research, 2020) (* non native species).

Available aerial imagery and spatial datasets indicate that the vegetation within the application area is not contiguous remnant vegetation connected to other remnant patches of vegetation and is not considered to act as a linkage to facilitate the movement of fauna across the landscape.

According to the available datasets, 11 terrestrial conservation significant fauna species have been recorded within the local area (DBCA, 2007-). Noting that the ground cover within the application area consists of exotics, and the linear nature of the proposed clearing, the application area is unlikely to provide significant habitat for ground dwelling fauna in the local area.

Both Carnaby's cockatoo (*Calyptorhynchus latirostris*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) are known to occur in the local area and within close proximity to the application area. There are three known roost sites within the local area, with the closest approximately 1.9 kilometres south of the application area. There are three known Carnaby's cockatoo breeding sites within the local area, with the closest approximately 2.8 kilometres east of the application area. Given marri trees were identified during the flora and vegetation survey, the application area provides potentially suitable habitat for Carnaby's cockatoo and forest red-tailed black cockatoo. The marri trees identified within the application area are approximately three to five metres in size (Landform Research, 2020). Noting the size of these trees, they are not considered to be of an appropriate size to provide breeding or roosting habitat for both black cockatoo species. Foraging habitat within the application area is limited and unlikely to be significant in the context of available foraging habitat within the local area. Extensive foraging resources which are likely to be of better quality than those found within the application area are present within the large parcel of vegetation (in excess of 9,500 ha) on unallocated crown land located immediately west of the application area, as well as within the Gngangara-Moore River State Forest.

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:

The flora and vegetation report provided by the applicant indicates that no flora, or ecological communities of conservation significance occur within the application area (Landform Research, 2020).

Conservation significant flora

Six threatened and 29 priority flora have been recorded within the local area. In assessing the likelihood of these species occurring within the application area, the preferred habitat types of these species and their recorded proximity to the application area were considered, along with the vegetation/soil types and landforms within the application area. All of the priority flora and four of the threatened flora species are unlikely to occur within the application area due to a combination of proximity and differences in the vegetation/soil types and landforms in which they occur compared to those mapped within the application area.

Two threatened flora species occur in a soil type consistent with that mapped within the application area; *Grevillea curviloba* McGill and *Diuris drummondii*. *Grevillea curviloba* McGill is distinctive and no plants with similar features to this species were observed within the application area (Landform Research, 2020). *Diuris drummondii* was recorded in 1961 within a cleared paddock, however, there are no other known records within 10 kilometres of the application area. This species tends to favour undisturbed areas that are seasonally inundated, such as peat swamps and flood plains. The application area is highly disturbed and based on vegetation types present within the application area, does not resemble habitat which is likely to support this species.

Conservation significant ecological communities

Two threatened and one priority ecological community (TEC and PEC respectively) have been recorded in the local area. In assessing the likelihood of these ecological communities occurring within the application area, the composition and habitat types of these ecological communities and their recorded proximity to the application area were considered, along with the vegetation/soil types and landforms within the application area. Noting the composition and condition of the vegetation proposed to be cleared, it is unlikely to be representative of any of the TECs or PECs recorded within the local 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 flora and/or vegetation management conditions required.

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, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The Environmental Protection Authority (EPA) recommends a minimum 10 per cent representation threshold for ecological communities in constrained areas (Environmental Protection Authority, 2008).

The application area is located outside of the Metropolitan Regional Scheme boundary, therefore the minimum 10 per cent representation threshold for ecological communities does not apply (Environmental Protection Authority, 2008).

The mapped vegetation complex (Yanga Complex) retains less than 30 per cent of its pre-European extent, however, the vegetation type within the application area is not a representation of the Yanga Complex. Noting the vegetation type within the application area is not indicative of the Yanga Complex, the proposed clearing will not impact on vegetation consistent with the Yanga Complex.

The application area does not provide a significant ecological linkage and is unlikely to be required to maintain ecosystem services (such as hydrological processes) or compensate for a high degree of fragmentation. Based on the composition and condition of the vegetation, the application area is not considered to be a significant remnant in an extensively cleared landscape.

According to available datasets, the application area is situated approximately 1.7 kilometres north of the Muchea Nature Reserve. The Gngangara-Moore River State Forest is approximately 4.9 kilometres to the west of the application area.

Noting the distance between the application area and the abovementioned conservation areas, the application area is not likely to function as an ecological linkage between remnants of native vegetation in the local area. The proposed clearing is not likely to adversely impact on the environmental values of any conservation 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.

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

Assessment:

The soil type mapped across approximately 93 per cent of the application area has a greater than 70 per cent high to extreme risk of flooding. Other land degradation risks associated with the application area are shown under Appendix C (1. Site Characteristics).

Noting the linear nature, extent and purpose of the proposed clearing, and that application area has been historically disturbed, the proposed clearing is unlikely to cause appreciable land degradation in the form of flooding or any other risk as shown in the table under Appendix C.

Approximately 79 per cent of the application area is mapped within a Multiple Use wetland. The Ellen Brook Floodplain is a palusplain wetland that covers an area of 13,742 hectares, which includes large areas of cleared land for agriculture, roads and housing.

Multiple use wetlands are wetlands with few remaining important attributes and functions, development and management should be considered in the context of ecologically sustainable development and best management practice (Water and Rivers Commission, 2001). Noting the purpose of the application is for road upgrades in an established and existing track, it is unlikely the impacts associated with the works will further diminish any important attributes and functions of this large multiple use wetland system. It is also noted that a large amount of the mapped wetland has been cleared.

The application area has relatively flat topography, an average rainfall of 800 millimetres per annum and groundwater salinity mapped at 500-1,000 total dissolved solids (milligrams per litre). Noting the area appears highly disturbed and consist of large amounts of non-native vegetation, the proposed clearing is not likely to deteriorate the quality of surface and/or groundwater via increased salinity.

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.

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

Site characteristic	Details
Local context	The proposed clearing area is an isolated remnant of vegetation approximately 1.6 km long and 10 m wide located within a road reserve. The land is flat from Brand Highway to the

Site characteristic	Details
	<p>central parts of the road reserve and then rises slightly to the western end (Landform Research, 2020).</p> <p>Patches of remnant vegetation in the local area range in size from <0.01ha up to 1970 ha, with the average remnant size being 15 hectares. Given this, the area applied to be cleared exists in a fragmented landscape particularly to the north, east and south.</p>
Vegetation description	<p>The application area is mapped as Yanga Complex which is predominantly a closed scrub of <i>Melaleuca</i> species and low open forest of <i>Casuarina obesa</i> (Swamp Sheoak) on the flats subject to inundation. On drier sites, the vegetation reflects the adjacent vegetation complexes of Bassendean and Coonambidgee (Government of Western Australia, 2019)</p> <p>Surveys undertaken by (Landform Research, 2020) identified two vegetation areas, the eastern and western sections.</p> <ol style="list-style-type: none"> 1. Eastern section: has isolated <i>Melaleuca preissiana</i> and <i>Corymbia calophylla</i> over pasture and exotics. 2. Western section: has thicker, denser vegetation dominated by pasture. One <i>Eucalyptus todtiana</i> occurs at the western end and a <i>Corymbia calophylla</i> occurs in the central section of the road. There are scattered <i>Melaleuca preissiana</i> and, widespread <i>Acacia saligna</i> regrowth. The understorey contains <i>Kunzea glabrescens</i> and <i>Taxandria linearifolia</i>. Non-native eucalyptus including <i>Corymbia maculata</i>, <i>Eucalyptus camaldulensis</i>, <i>Eucalyptus robustus</i> are also present. Groundcover consists of Kikuyu pasture <i>Cenchrus clandestinus</i>*, with Couch <i>Cynodon dactylon</i>*, Veldt Grass <i>Ehrharta spp</i>* and Lupins <i>Lupinus spp</i> among other minor exotic species. In the central west of the application area there is a line of planted mixed non-local Eucalypts outside the southern edge of the road reserve. These trees are tall and have self-seeded into the road reserve forming the tree canopy. The tree belt to the south will be retained as they occur on adjoining land, with the road moving to the northern edge of the road reserve at that point to minimise trimming of the tree belt (Figures in Appendix G). <p>The vegetation was originally <i>Banksia</i> Shrubland to Woodland and probably had affinities to FCT 23a, 22, 21c and 21a. The lower elevation in the wet areas probably has affinities to FCT 12 (Landform Research, 2020).</p> <p>With such alteration to the vegetation and paucity of species, it is difficult to determine the original Floristic Community. The vegetation appears to have been slightly different on the lower slopes and the eastern sand ridge compared to the vegetation on the higher western sand ridge (Landform Research, 2020).</p>
Vegetation condition	<p>The vegetation survey (Landform Research, 2020) indicates that the vegetation within the proposed clearing area ranges from Completely Degraded to Degraded condition (Keighery, 1994).</p> <p>The vegetation within the eastern half of the road reserve is “Completely Degraded” with a groundcover of pasture and exotic species and isolated <i>Corymbia calophylla</i> and <i>Melaleuca preissiana</i> (see Figures in Appendix G).</p> <p>The western half of the road reserve ranges from “Completely Degraded” to Degraded”, vegetation condition. The Degraded vegetation is dominated by exotic and non-local species that have self-seeded (Figures in Appendix G).</p> <p>The full Keighery condition rating scale is provided in Appendix E.</p>
Soil-landscape description	<p>Four soil types are mapped within the application area. These include:</p> <p>Yanga 6x Phase: Flat plain with occasional low dunes. Yellowish brown duplex and poorly structured clay soils often with pans underlying. Low woodland with occasional tall <i>E. rudis</i>, <i>Melaleuca spp.</i>, and <i>E. camaldulensis</i> and <i>Casuarina spp</i> (0.96 hectares or 49% of application area)</p>

Site characteristic	Details																																																						
	<p>Yanga 8x Phase: Flat plain with occasional low dunes. Subject to seasonal inundation. Deep white and pale yellow sands interspersed with swamp and generally underlain by siliceous/humic pans at depth (0.54 hectares or 28% of application area)</p> <p>Yanga 13 Subsystem: Drainage depressions in very gently sloping plain. Deep white humic sands overlying siliceous and humic pans. Woodland of <i>E. rudis</i>, <i>E. camaldulensis</i> and <i>Melaleuca</i> spp. (0.304 hectares or 16% of application area)</p> <p>Yanga 14x Phase: Sandy rises on flat to gently sloping plain with occasional low dunes. Pale sands overlying siliceous / humic pans, bog iron and clay. Low woodland of <i>Banksias prionotes</i>, <i>B. illicifolia</i> and <i>B. littoralis</i>, <i>Melaleuca</i> dense shrubbery (0.14 hectares or 7% of application area)</p>																																																						
Land degradation risk	<p>The application area is at risk of acidification, flooding, water erosion, wind erosion and phosphorus loss. Site drainage is poor.</p> <table border="1" data-bbox="418 741 1304 982"> <thead> <tr> <th data-bbox="427 751 621 779">Yanga 6x Phase</th> <th data-bbox="719 751 1230 779">50% of map unit within the application area</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 783 613 810">Acidification risk</td> <td data-bbox="719 783 1154 810">30% presently acid, 45% high, 25% low</td> </tr> <tr> <td data-bbox="427 814 605 863">Sub-surface compaction risk</td> <td data-bbox="719 825 1105 852">20% high, 55% moderate, 25% low</td> </tr> <tr> <td data-bbox="427 867 540 894">Flood risk</td> <td data-bbox="719 867 911 894">95% high, 5% low</td> </tr> <tr> <td data-bbox="427 898 586 926">Water erosion</td> <td data-bbox="719 898 992 926">25% very high, 70% high</td> </tr> <tr> <td data-bbox="427 930 578 957">Site drainage</td> <td data-bbox="719 930 1154 957">25% very poor, 70% moderate, 5% high</td> </tr> <tr> <td data-bbox="427 961 613 989">Phosphorus loss</td> <td data-bbox="719 961 967 989">95% extreme, 5% high</td> </tr> </tbody> </table> <table border="1" data-bbox="418 1045 1360 1287"> <thead> <tr> <th data-bbox="427 1056 621 1083">Yanga 8x Phase</th> <th data-bbox="719 1056 1230 1083">26% of map unit within the application area</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1087 613 1115">Acidification risk</td> <td data-bbox="719 1087 1040 1115">50% presently acid, 50% high</td> </tr> <tr> <td data-bbox="427 1119 605 1167">Sub-surface compaction risk</td> <td data-bbox="719 1129 992 1157">10% high, 90% moderate</td> </tr> <tr> <td data-bbox="427 1171 540 1199">Flood risk</td> <td data-bbox="719 1171 976 1199">80% moderate, 20% low</td> </tr> <tr> <td data-bbox="427 1203 578 1230">Wind erosion</td> <td data-bbox="719 1203 1203 1230">5% very high, 85% high, 10% nil to moderate</td> </tr> <tr> <td data-bbox="427 1234 578 1262">Site drainage</td> <td data-bbox="719 1234 1170 1262">10% very poor, 70% moderate, 20% high</td> </tr> <tr> <td data-bbox="427 1266 613 1293">Phosphorus loss</td> <td data-bbox="719 1266 1154 1293">30% extreme, 60% very high, 10% high</td> </tr> </tbody> </table> <table border="1" data-bbox="418 1339 1360 1581"> <thead> <tr> <th data-bbox="427 1350 683 1377">Yanga 13 Subsystem</th> <th data-bbox="719 1350 1230 1377">17% of map unit within the application area</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1381 613 1409">Acidification risk</td> <td data-bbox="719 1381 1040 1409">73% presently acid, 24% high</td> </tr> <tr> <td data-bbox="427 1413 605 1461">Sub-surface compaction risk</td> <td data-bbox="719 1423 992 1451">64% high, 34% moderate</td> </tr> <tr> <td data-bbox="427 1465 540 1493">Flood risk</td> <td data-bbox="719 1465 992 1493">78% high, 30% moderate</td> </tr> <tr> <td data-bbox="427 1497 586 1524">Water erosion</td> <td data-bbox="719 1497 1203 1524">71% very high, 7% high, 22% nil to moderate</td> </tr> <tr> <td data-bbox="427 1528 578 1556">Site drainage</td> <td data-bbox="719 1528 1268 1556">61% very poor, 10% poor, 7% moderate, 22% high</td> </tr> <tr> <td data-bbox="427 1560 613 1587">Phosphorus loss</td> <td data-bbox="719 1560 976 1587">78% extreme, 22% high</td> </tr> </tbody> </table> <table border="1" data-bbox="418 1633 1360 1854"> <thead> <tr> <th data-bbox="427 1644 638 1671">Yanga 14x Phase</th> <th data-bbox="719 1644 1214 1671">7% of map unit within the application area</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1675 613 1703">Acidification risk</td> <td data-bbox="719 1675 1138 1703">42% presently acid, 55% high, 3% low</td> </tr> <tr> <td data-bbox="427 1707 605 1755">Sub-surface compaction risk</td> <td data-bbox="719 1717 1073 1745">5% high, 93% moderate, 2% low</td> </tr> <tr> <td data-bbox="427 1759 540 1787">Flood risk</td> <td data-bbox="719 1759 1089 1787">9% high, 50% moderate, 41% low,</td> </tr> <tr> <td data-bbox="427 1791 578 1818">Wind erosion</td> <td data-bbox="719 1791 1219 1818">10% very high, 80% high, 10% nil to moderate</td> </tr> <tr> <td data-bbox="427 1822 613 1850">Phosphorus loss</td> <td data-bbox="719 1822 1138 1850">9% extreme, 80% very high, 10% high</td> </tr> </tbody> </table>	Yanga 6x Phase	50% of map unit within the application area	Acidification risk	30% presently acid, 45% high, 25% low	Sub-surface compaction risk	20% high, 55% moderate, 25% low	Flood risk	95% high, 5% low	Water erosion	25% very high, 70% high	Site drainage	25% very poor, 70% moderate, 5% high	Phosphorus loss	95% extreme, 5% high	Yanga 8x Phase	26% of map unit within the application area	Acidification risk	50% presently acid, 50% high	Sub-surface compaction risk	10% high, 90% moderate	Flood risk	80% moderate, 20% low	Wind erosion	5% very high, 85% high, 10% nil to moderate	Site drainage	10% very poor, 70% moderate, 20% high	Phosphorus loss	30% extreme, 60% very high, 10% high	Yanga 13 Subsystem	17% of map unit within the application area	Acidification risk	73% presently acid, 24% high	Sub-surface compaction risk	64% high, 34% moderate	Flood risk	78% high, 30% moderate	Water erosion	71% very high, 7% high, 22% nil to moderate	Site drainage	61% very poor, 10% poor, 7% moderate, 22% high	Phosphorus loss	78% extreme, 22% high	Yanga 14x Phase	7% of map unit within the application area	Acidification risk	42% presently acid, 55% high, 3% low	Sub-surface compaction risk	5% high, 93% moderate, 2% low	Flood risk	9% high, 50% moderate, 41% low,	Wind erosion	10% very high, 80% high, 10% nil to moderate	Phosphorus loss	9% extreme, 80% very high, 10% high
Yanga 6x Phase	50% of map unit within the application area																																																						
Acidification risk	30% presently acid, 45% high, 25% low																																																						
Sub-surface compaction risk	20% high, 55% moderate, 25% low																																																						
Flood risk	95% high, 5% low																																																						
Water erosion	25% very high, 70% high																																																						
Site drainage	25% very poor, 70% moderate, 5% high																																																						
Phosphorus loss	95% extreme, 5% high																																																						
Yanga 8x Phase	26% of map unit within the application area																																																						
Acidification risk	50% presently acid, 50% high																																																						
Sub-surface compaction risk	10% high, 90% moderate																																																						
Flood risk	80% moderate, 20% low																																																						
Wind erosion	5% very high, 85% high, 10% nil to moderate																																																						
Site drainage	10% very poor, 70% moderate, 20% high																																																						
Phosphorus loss	30% extreme, 60% very high, 10% high																																																						
Yanga 13 Subsystem	17% of map unit within the application area																																																						
Acidification risk	73% presently acid, 24% high																																																						
Sub-surface compaction risk	64% high, 34% moderate																																																						
Flood risk	78% high, 30% moderate																																																						
Water erosion	71% very high, 7% high, 22% nil to moderate																																																						
Site drainage	61% very poor, 10% poor, 7% moderate, 22% high																																																						
Phosphorus loss	78% extreme, 22% high																																																						
Yanga 14x Phase	7% of map unit within the application area																																																						
Acidification risk	42% presently acid, 55% high, 3% low																																																						
Sub-surface compaction risk	5% high, 93% moderate, 2% low																																																						
Flood risk	9% high, 50% moderate, 41% low,																																																						
Wind erosion	10% very high, 80% high, 10% nil to moderate																																																						
Phosphorus loss	9% extreme, 80% very high, 10% high																																																						

Site characteristic	Details
Waterbodies	The desktop assessment identified approximately 79 per cent of the application area is within a multiple use wetland (palusplain wetland) and is a part of the Ellen Brook Floodplain. The wetland covers an area of 13,742 hectares. Large areas of the wetland consist of cleared and highly disturbed land.
Conservation areas/linkages	The closest conservation area (Muchea Nature Reserve) lies 1.7km to the south of the application area. The closest mapped ecological linkage is 930 m to the east and forms part of the Gngangara Sustainability Study linkage in associate with Ellen Brook.
Landform	The application area is low lying and flood prone. It exists on the Ellen Brook Floodplain.

2. Flora, fauna and ecological community analysis

With consideration for the site characteristics set out above, relevant datasets (see Appendix G), and biological survey information, 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)
Carnaby's cockatoo (<i>Calyptorhynchus latirostris</i>)	Birds 900m south Confirmed roost 9.9km Breeding area 9.2km and 10.7km	N/A	Marri but limited	Marri in application area for foraging and roosting.	No
Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>)	Confirmed roost 2km south in Muchea NR	N/A	Marri but limited	Marri in application area.	No
Banksia woodland PEC/TEC	610m	Unknown	No		Yes
<i>Grevillea curviloba</i> McGill	170m	Yes (3.2.1 indicates suitable soils)	Unlikely to occur due to the degraded to completely degraded condition of the vegetation.	-	Yes
<i>Diuris drummondii</i>	160m	Yes (3.2.1 indicates suitable soils)	Unlikely to occur due to the degraded to completely degraded condition of the vegetation.		Yes

3. Vegetation extent

2018 South West Vegetation Complex Statistics (Government of WA, 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)
IBRA bioregion					
Swan Coastal Plain	1,501,222	579,814	38.62	222,917	14.85
Vegetation complex					
Yanga Complex: closed scrub and low open forest	26,176	4,268	16.31	522.52	2

Appendix D – 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 area does not contain locally or regionally significant flora, fauna, habitats, assemblages of plants. There were also a number of non-native species within the application area and the vegetation was described as being in a degraded to completely degraded condition.</p>	Not likely to be at variance	No
<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 does contain habitat suitable for Carnaby’s cockatoo and forest red-tailed black cockatoo, however, the habitat is not considered to be significant based on the limited amount to be cleared and that it comprises of isolated marri trees approximately three to five metres high.</p>	Not likely to be at variance	No
<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 flora species listed as threatened 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 indicative of a state listed threatened ecological community.</p>	Not likely to be at variance	No
Environmental values: significant remnant vegetation and conservation areas		

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The extent of the mapped vegetation type is below the national objectives and targets for biodiversity conservation in Australia, however, the vegetation within the application area is a not a representation of the mapped vegetation complex. Vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area. The local area is not extensively cleared.</p>	Not likely to be at variance	No
<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> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of the nearby conservation areas. The application area does not act as an ecological linkage to support movement of fauna to areas of conservation tenure.</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> Approximately 79 per cent of the application area occurs within a multiple use wetland referred to as the Ellen Brook Floodplain.</p>	Is at variance	Yes Section 3.2.4
<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> Noting the extent of the proposed clearing and the condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	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> Based on available mapping, groundwater salinity within the application area is considered low (500-1,000 mg/L total dissolved solids) and the proposed clearing is not likely to increase the threat of salinity. Whilst the 79 per cent of the application area occurs within the Ellen Brook Floodplain, the proposed clearing is not likely to impact on the water quality affiliated with the floodplain noting that large areas have already been cleared for other landuses, including agriculture, which would contribute to impacts on surface water quality.</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> 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>	Not likely to be at variance	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 G –Photographs of the vegetation

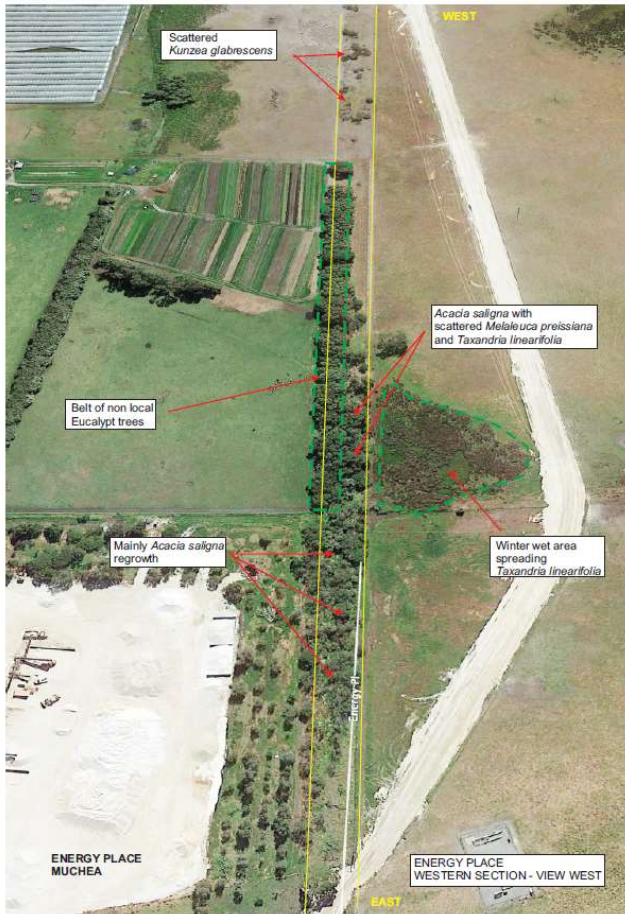


FIGURE 3



FIGURE 4



Degraded *Acacia saligna* regrowth over pasture



Scattered *Melaleuca preissiana* over pasture



Acacia saligna and non local Eucalypt self seeding and regrowth



0 50m



ENERGY PLACE MUCHEA

View from the western end of Energy Place Road reserve



Appendix H – References and databases

1. References

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

Department of Biodiversity Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed August 2020

Government of Western Australia. (2019). 2018 South West Vegetation Complex Statistics. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth, <https://catalogue.data.wa.gov.au/dataset/dbca>

Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

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

Landform Research (2020). Flora and vegetation report - Energy Place Muchea - PMR Quarries (Shire of Chittering) April 2020.

Water and Rivers Commission (2001) Position Statement: Wetlands, Water and Rivers Commission, Perth.

2. 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)