Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	4532/12
Permit type:	Purpose Permit
Applicant name:	Argyle Diamonds Limited
Application received:	6 January 2022
Application area:	416 hectares
Purpose of clearing:	Mineral exploration, mineral production and associated activities
Method of clearing:	Mechanical removal
Tenure:	*Diamond (Argyle Diamond Mines Joint Venture) Agreement Act 1981*, Mining Lease 259SA (AM 70/259)
	Mining Lease 80/114
	Miscellaneous Licence 80/1
	Miscellaneous Licence 80/11
	Miscellaneous Licence 80/24
	Miscellaneous Licence 80/53
Location (LGA area/s):	Shire of Wyndham-East Kimberley
Colloquial name:	Argyle Diamond Mine

1.2. Description of clearing activities

Argyle Diamonds Limited proposes to clear up to 416 hectares of native vegetation within a boundary of approximately 8,170 hectares, for the purpose of mineral exploration, mineral production and associated activities. The project is located approximately 200 kilometres southwest of Kununurra, within the Shire of Wyndham East-Kimberley.

The amendment application is to allow for the completion of rehabilitation activities including the removal of a pipeline, run of mine pad and primary crusher.

Clearing permit CPS 4532/1 was granted by the Department of Mines and Petroleum (DMP) on 13 October 2011. The clearing permit authorised the clearing of 50 hectares of native vegetation within a total boundary of 1,900 hectares.

CPS 4532/1 was amended on 2 August 2012 for the purpose of changing the annual reporting date from 31 July to 30 September each year.

On 27 December 2012, CPS 4532/2 was amended for the purpose of increasing the permit boundary from approximately 1,900 hectares to 2,608 hectares and changing the purpose of the clearing to infrastructure and operational maintenance.

CPS 4532/3 was amended on 6 February 2014, to increase the permit boundary by 18.34 hectares to approximately 2,626 hectares.

CPS 4532/4 was amended on 24 December 2015, to increase the permit boundary from 2,626 hectares to 2,696 hectares.

CPS 4532/5 was amended on 26 May 2016 to amend the purpose of clearing, amend the period in which clearing is authorised to allow for 15 hectares to be cleared each financial year, and increase the permit boundary.

CPS 4532/6 was amended on 20 October 2016 for the purposes of increasing the permit boundary, increasing the permitted amount of clearing to 300 hectares, amending the purpose of clearing and amalgamating eight existing permits into one permit.

CPS 4532/7 was amended on 4 May 2017 for the purpose of increasing the permit boundary by 74.85 hectares.

CPS 4532/8 was amended on 15 March 2018 for the purpose of increasing the permit boundary by 3.26 hectares to allow for rehabilitation trials on a waste rock dump.

CPS 4532/9 was amended on 30 June 2021 to increase the amount of clearing authorised to 416 hectares and increase the clearing permit boundary to approximately 7,423.5 hectares. These changes to the permit were to facilitate rehabilitation activities.

CPS 4532/10 was amended on 2 December 2021 to increase the permit boundary to approximately 8,016.7 hectares. The increase in permit boundary was to facilitate rehabilitation works on the existing waste rock dumps.

The Permit Holder has applied to amend CPS 4532/11 to increase the clearing permit boundary to approximately 8,170 hectares. The increase in permit boundary is to facilitate rehabilitation activities for existing infrastructure.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	14 June 2022
Decision area:	416 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 6 January 2022. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix F), supporting information provided by the applicant (Appendix A, Appendix E), the clearing principles set out in Schedule 5 of the EP Act, proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing to facilitate the closure of the mine site and that the majority of the areas included as part of the amendment have been previously disturbed.

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to vegetation with the potential to support conservation significant flora;
- impacts to a Priority Ecological Community
- clearing of vegetation within a Ramsar listed wetland

The assessment has not changed since the assessment for CPS 4532/11. The Delegated Officer determined that the proposed increase in clearing permit boundary is not likely to lead to an unacceptable risk to environmental values. The Delegated Officer decided to grant a clearing permit with the existing permit conditions.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.

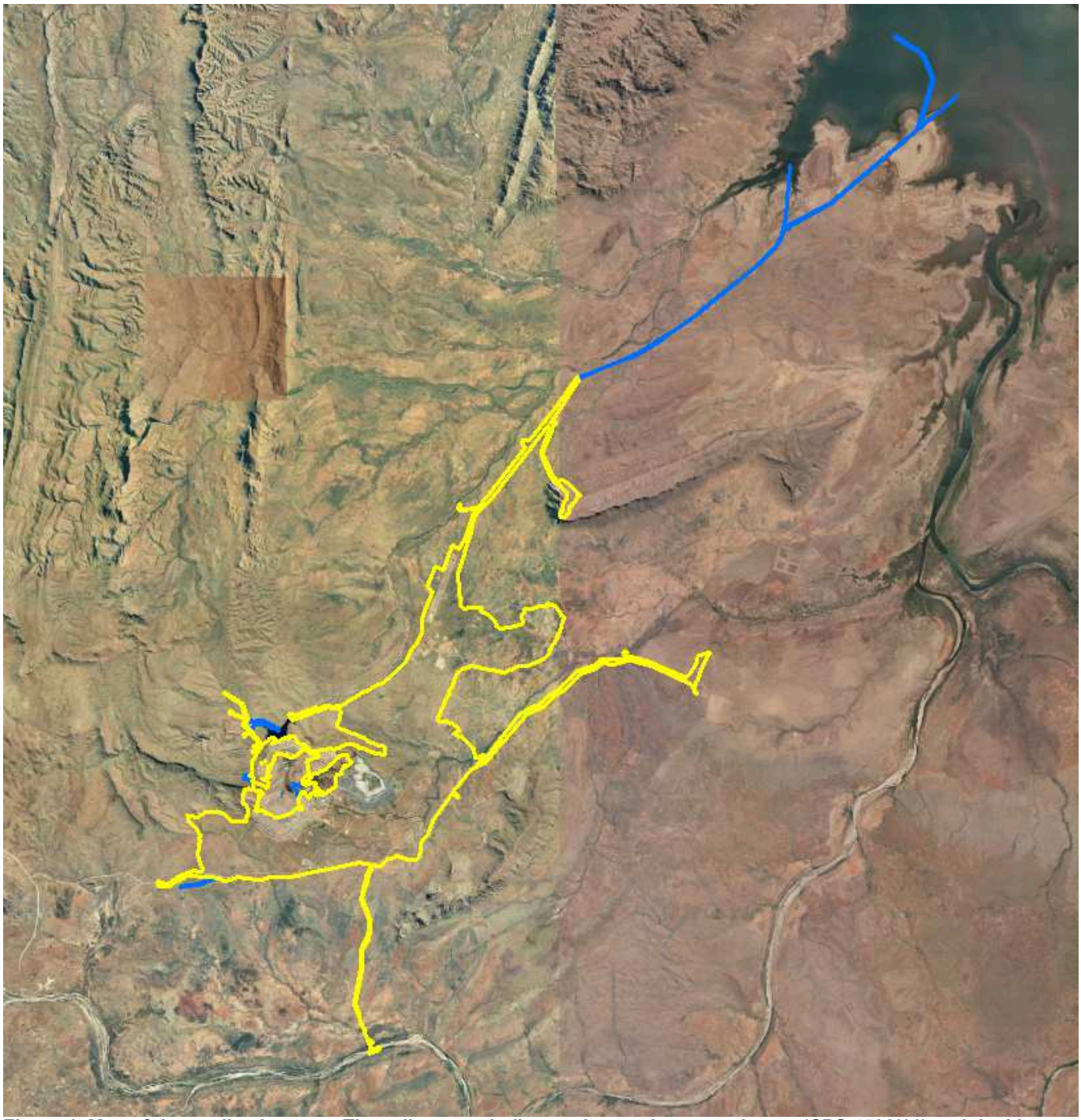

Figure 1. Map of the application area. The yellow area indicates the previous permit area (CPS 4532/11) and the blue area indicates the additional areas included as part of this application.

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 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Diamond (Argyle Diamond Mines Joint Venture) Agreement Act 1981*

Relevant agreements (treatys) considered during the assessment include:

- Ramsar Convention on Wetlands

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values. The proposed activities are to facilitate the closure of the Argyle Diamond Mine and the amount of clearing required will be minimised where possible. The pipeline will be removed from areas of Lake Argyle during the dry season.

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix B) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 4532/11.

3.2.1. Biological values (flora) - Clearing Principles (a)

Assessment

The 'Vegetation Association 833 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)' Priority Ecological Community (PEC) has been mapped over some of the additional areas included in this amendment (GIS Database). This PEC covers a significant portion of the whole permit area. The 'Argyle land system' PEC is also present within the additional area and existing permit area (GIS Database). The major threats to these PECs are extensive threatening processes acting at landscape scales such as over grazing and weed invasion (buffel grass) (DBCA, 2020). Whilst the proposed clearing may remove some of the vegetation associated with these PECs, it is not likely to have an impact on these communities at a landscape level.

No species of Threatened flora have been recorded within the permit area and it is not likely to contain habitat which supports any Threatened flora species (Western Australian Herbarium, 1998-; GIS Database). There are numerous species of Priority flora which have been recorded within the local area (surrounding 20 kilometres) (GIS Database). Given the large size of the permit area there is a diverse range of habitats present and there is the potential for Priority flora species to be present within the application area. The majority of the additional area being included with this amendment (approximately 91 hectares) is associated with a pipeline which runs from Lake Argyle to the mine site. This area was originally cleared over 30 years ago and has not been regularly maintained resulting in vegetation regrowing over the cleared areas (Argyle Diamonds, 2022). The vegetation recruitment has been patchy along the route and in many areas is dominated by weed species (Argyle Diamonds, 2022). Significant areas of the pipeline are covered by water for the majority of the year and are not expected to contain high numbers of native species (GIS Database). It is not expected that the additional area for the pipeline would contain significant habitat for Priority flora species. An area of approximately 37.5 hectares has been added to the permit boundary to facilitate the removal and rehabilitation of the primary crusher, Run of Mine (ROM) pad and other mining infrastructure. This area has been previously disturbed however, some vegetation has regrown over the disturbed areas. The Priority 1 flora species *Triodia cremnophila* has been recorded growing on waste dumps at the Argyle Diamond Mine (Western Botanical, 2018). A targeted survey for this species was undertaken in September 2018 which did not record any records of this species at the site of the primary crusher or ROM pad (Western Botanical, 2018). Given the area has been previously disturbed, it is not likely to represent significant habitat for Priority flora species. The other areas being included to the permit boundary are mostly smaller areas (less than 7 hectares) for the purpose of access tracks to access areas for rehabilitation works. These areas have the potential to support species of Priority flora however, it is not expected that the clearing of tracks for rehabilitation activities will have a significant impact on populations of Priority flora in the local area (20 kilometre radius).

There are numerous species of weed present within the additional areas and the existing permit boundary. Clearing activities should be undertaken in a manner that reduces the risk of further spreading weeds to the surrounding areas.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on Priority Ecological Communities and habitat for Priority flora is not likely to be significant. There are weeds present within the application area and the proposed clearing has the potential to exacerbate the spread of weeds.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- take hygiene steps to minimise the risk of the introduction and spread of weeds.

3.2.2. Water resources - Clearing Principles (f) and (i)

Assessment

Part of the additional area extends into Lake Argyle which is listed as a Ramsar wetland. The proposed activities in this area are the removal of an existing pipeline as part of closure of the mine site. This area is underwater for the majority of the year so there is not likely to be significant amounts of vegetation within the area. The temporary clearing of a narrow strip of vegetation is not likely to have a significant impact on the environmental values of Lake Argyle. Care should be taken to ensure that weeds are not spread into this area. A weed management condition is on the existing permit to minimise the risk of weeds being spread as a result of clearing activities. There are also numerous minor ephemeral drainage lines which intersect the other areas being included as part of this amendment. The proposed rehabilitation activities in these areas are not likely to have a significant impact on riparian vegetation or surface water quality in the local area (surrounding 20 kilometres).

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The groundwater in the application area is of marginal salinity (500-1,000 milligrams/Litre Total Dissolved Solids) (GIS Database). The proposed clearing is not likely to have an impact on groundwater quality in the local area.

Conclusion

Based on the above assessment, the proposed clearing will result in clearing of riparian vegetation of a Ramsar listed wetland. However, given the nature of the proposed activities, it is not likely to have a significant impact on the values of this wetland and the impacts can be appropriately managed by the permit conditions.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 4 February 2022 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one Native Title claim over the area under application (DPLH, 2022). However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are several registered Aboriginal Sites of Significance within the application area (DPLH, 2022). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Additional information was provided by the applicant in relation to the activities being undertaken and the existing environment including photographs of the area.	The information was used to inform the assessment of the amendment.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The application area is located approximately 200 kilometres southwest of Kununurra. The area proposed to be cleared part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. The existing Argyle Diamond mine is located within the application which includes large areas of existing disturbance.
Ecological linkage	According to available databases, the application area does not contain any known or mapped ecological linkages.
Conservation areas	The closest conservation area is the Ord River Regeneration area which is located approximately 36 kilometres southeast of the application area at its closest point.
Vegetation description	Beard vegetation associations have been mapped for the whole of Western Australia. The vegetation of the application area is broadly mapped as the following Beard vegetation associations: **65** - Grasslands, tall bunch grass savanna, sparse low tree, terminalia; mitchell grass (*Astrebla pectinata* and spp.); **126** - Bare areas; freshwater lakes; **808** - Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex; **811** - Grasslands, high grass savanna low tree; Mt House box & bloodwood (*Eucalyptus terminalis*) over white grass on rolling basalt country; **816** – Grasslands, short bunch grass savanna, low tree, Mt House box (*Eucalyptus argillacea*) and bloodwood over arid short grass (*Enneapogon* spp.); **818** - Hummock grasslands, low tree steppe; Snappy Gum over *Triodia inutilis*; **819** - Grasslands, tall bunch grass savanna low tree; cabbage gum and silverleaved box over aristida and ribbon grass on sandy plains; **820** - Grasslands, high grass savanna sparse low tree; snappy gum (*Eucalyptus brevifolia*) over upland tall grass and curly spinifex on granite; **825** - Grasslands, high grass savanna woodland; cabbage gum and *Eucalyptus foelscheana* over upland tall grass and curly spinifex on basalt; **827** - Hummock grasslands, low tree steppe; terminalia over *Triodia wiseana* on limestone; and **833** - Grasslands, short bunch grass savanna sparse low tree; scattered Snappy Gum over arid short grass on plains (GIS Database). Several flora surveys have been previously conducted by Mattiske (2004) which cover approximately half of the permit area. The majority of the permit area has also been covered by previous vegetation mapping undertaken by Dames and Moore (1982). The following vegetation complexes have been identified which were included as part of the previous versions of the permit: **Dames and Moore vegetation associations and complexes:** - Mountain complex - Riverine complex - Hill complex - Plains complex - Cracking clay plains complex - Levee/terrace complex - Frosted bloodwood –steppe woodland association - Kimberley gum – low tree steppe association - Thickets associations

Characteristic	Details
	Hummock Grasslands **HG1** Hummock Grassland of *Triodia bitextura* and *Triodia bynoei* with emergent *Eucalyptus brevifolia*, *Corymbia confertiflora*, *Corymbia opaca*, *Eucalyptus pruinosa*, *Bauhinia cunninghamii* over *Acacia argyraea* and *Acacia hemignosta*; **HG2** Hummock Grassland of *Triodia bitextura* and *Triodia bynoei* with emergent *Corymbia confertiflora*, *Corymbia opaca*, *Eucalyptus brevifolia*, *Eucalyptus pruinosa*, *Bauhinia cunninghamii* and *Terminalia canescens*; **HG3** Hummock Grassland of *Triodia bitextura* and *Triodia bynoei* with emergent denser pockets of *Terminalia canescens* and *Cochlospermum fraseri*, with the occasional *Corymbia confertiflora* and *Eucalyptus brevifolia*; **Woodlands** **Wl** Low Open Woodland of *Terminalia canescens* with *Corymbia confertiflora*, *Eucalyptus brevifolia*, *Terminalia oblongata* subsp. *volucris* and *Eucalyptus pruinosa* over patches of *Triodia bitextura* and *Heteropogon contortus*; **W2** Low Open Woodland of *Melaleuca minutifolia* and *Eucalyptus pruinosa* over *Triodia bitextura*; **W4** Open Woodland and Low Open Woodland of *Terminalia platyptera*, *Terminalia arostrata*, *Adansonia gregorii*, *Buchanania obovata* and *Bauhinia cunninghamii*; **W5** Mixture of Open Woodland and Low Open Woodland of *Adansonia gregorii*, *Buchanania obovata*, *Bauhinia cunninghamii* and *Eucalyptus brevifolia* over patches of *Typha domingensis*, *Heteropogon contortus*, *Cenchrus elymoides* and *Chloris truncata*; **W6** Low Open Woodland of *Melaleuca minutifolia* over patches of *Typha domingensis*; **W7** Low Open Woodland of *Bauhinia cunninghamii* and *Eucalyptus pruinosa* over mixed grasses and herbs; **W9** Low Open Woodland of *Corymbia opaca*, *Eucalyptus brevifolia*, *Eucalyptus pruinosa* and *Cochlospermum fraseri* over *Ptilotus spicatus* subsp. *spicatus*, *Cleome viscosa* and *Phyllanthus maderaspatensis var. angustifolia*.
Vegetation condition	The vegetation survey, aerial imagery and photographs of the site indicate the vegetation within the proposed clearing area is in excellent to degraded condition (Keighery, 1994). The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	The application area is mapped within elevations of 150-550 metres AHD. The annual average rainfall (Argyle Aerodrome) is 734.3 millimetres (BoM, 2022).
Soil description	The soil is mapped as the following soil types (DPIRD, 2022): 312Od: Undulating plains and scattered low hills on granite and gneiss, loamy skeletal soils, supporting snappy gum and bloodwood very open woodlands with arid short grasses and ribbon grass; also minor Mitchell grass grasslands. 316Mc: Gently undulating plains below low granite hills supporting eucalypt woodlands over upland tall grasses. 316Wk: Ridges, hogbacks, cuestas, and structural plateaux of sandstone, siltstone, and shale supporting snappy gum low woodlands over soft spinifex and curly spinifex. 316An: Mesas, buttes, structural benches, and rounded hills on basalt or dolerite supporting bloodwood-southern box and snappy gum sparse low woodlands over arid short grass and hard spinifex 316Wb: Ridges, hogbacks, cuestas, and structural plateaux of sandstone, calcareous sandstone, and conglomerate supporting stringybark-bloodwood woodlands over upland tall grasses. 316Db: Gently undulating plains and low rises on limestone and shale supporting grey box-bloodwood woodlands over Tippera tall grass and upland tall grass. 721Wk: Ridges, hogbacks, cuestas, and structural plateaux of sandstone, siltstone, and shale supporting snappy gum low woodlands over soft spinifex and curly spinifex. 721Wv: Undulating basaltic plains with black cracking clay soils supporting Mitchell grass and blue grass grasslands and bloodwood: southern box sparse low woodlands with mixed grass. 721Ar: Gently undulating plains on limestone and shale with black cracking clay soils supporting Mitchell grass and other mid-height grasslands. 316DbW_DAM: Lake Argyle
Land degradation risk	The application area has been mapped as the following land systems: Antrim land system – Hilly country associated with intermediate and basic igneous rocks; Argyle land system - Gently undulating ‘black soil’ plain;

Characteristic	Details
	Dinnabung land system - Gently undulating limestone; Gordon land system - Low hilly to undulating limestone country; Headley land system - Dissected limestone hills; Macphee land system - Undulating sandy granite country; O'Donnell land system - Stony undulating country with scattered hills and loamy skeletal soils. Wave Hill land system - Gently undulating stony plains on Basalt; Weaber land system - Scattered small areas of rugged sandstone hills, with some gentle lower slopes; and Wickham land system - Rugged plateaux, ridges and hills formed on sedimentary rocks.
Waterbodies	Part of the permit area intersects Lake Argyle which is a Ramsar listed wetland. There are numerous ephemeral drainage lines which also intersect the permit area.
Hydrogeography	The application area is not within any public drinking water source areas. The mapped groundwater salinity is 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	There are records of 23 priority flora species within 20 kilometres, two of which are found within the application area.
Ecological communities	The 'Vegetation Association 833 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)' and 'Argyle land system' PEC have been mapped within the application area.
Fauna	There are records of eight fauna species of conservation significance within the local area (20 kilometre radius) with the most commonly recorded species being the Lakeland Downs Mouse (*Leggadina lakedownensis* - Priority 4).

B.2. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix F.1), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia camptocarpa	Priority 1	Y	Y	Y	<20	5	N
Acacia capillaris	Priority 2	Y	Y	Y	<20	16	N
Acacia claviseta	Priority 3	Y	Y	Y	<20	8	N
Acacia smeringa	Priority 1	Y	Y	Y	<20	5	N
Blumea pungens	Priority 2	Y	Y	Y	<20	9	N
Corymbia cadophora subsp. *polychroma*	Priority 1	Y	Y	Y	<20	6	N
Eragrostis confertiflora	Priority 3	Y	Y	Y	<20	2	N
Eucalyptus ordiana	Priority 2	Y	Y	Y	<20	15	N
Euploca cupressina (Craven) Diane & Hilger	Priority 1	Y	Y	Y	<20		N
Fuirena incrassata	Priority 3	Y	Y	Y	<20	9	N
Goodenia byrnesii	Priority 3	Y	Y	Y	<20	26	N
Ipomoea gracilis	Priority 4	Y	Y	Y	<20	16	N
Ipomoea tolmerana subsp. *occidentalis*	Priority 3	Y	Y	Y	<20	6	N
Jacquemontia sp. Keep River (J.L. Egan 5015)	Priority 1	Y	Y	Y	0	8	N
Kunzea petrophila	Priority 1	Y	Y	Y	<20	5	N
Micraira sp. Purnululu (M.D. Barrett & R.L. Barrett 1507)	Priority 1	Y	Y	Y	<20	11	N
Stylidium prophyllum	Priority 3	Y	Y	Y	<20	9	N

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Tephrosia sp. Mistake Creek (A.C. Beauglehole 54424)	Priority 3	Y	Y	Y	<20	8	N
Trachymene dusenii	Priority 3	Y	Y	Y	<20	12	N
Triodia barbata	Priority 1	Y	Y	Y	<20	3	N
Triodia bunglensis	Priority 2	Y	Y	Y	<20	9	N
Triodia cremnophila	Priority 1	Y	Y	Y	0	6	Y
Triodia racemigera	Priority 1	Y	Y	Y	<20	10	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared contains suitable habitat for several species of Priority flora and conservation significant fauna. A portion of the application area is mapped as The 'Vegetation Association 833 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)' and 'Argyle land system' PECs.	May be at variance (as per CPS 4532/11)	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"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."* Assessment: There are a diverse range of habitats present across the permit area which are likely to support a diverse assemblage of fauna. Several conservation significant fauna species have been recorded in the permit area such as the Gouldian Finch (*Erythrura gouldiae* – Priority 4), Lakelands Downs Mouse (*Leggadina lakedownensis* – Priority 4) and Peregrine Falcon (*Falco peregrinus* – Other specially protected fauna) (GIS Database). Whilst the proposed clearing will reduce the availability of habitat at a local level, the habitats present are still well represented outside of the permit area and the vegetation present is not likely to represent significant habitat for native fauna species. The proposed activities for this amendment are to facilitate mine rehabilitation works which if successful will improve the quality of the habitat across the site.	Not likely to be at variance (as per CPS 4532/11)	No
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act.	Not likely to be at variance (as per CPS 4532/11)	No
Principle (d): *"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."* Assessment: There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).	Not likely to be at variance (as per CPS 4532/11)	No
Environmental value: significant remnant vegetation and conservation areas		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not at variance *(as per CPS 4532/11)*	No
Principle (h): *"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."* Assessment: There are no conservation areas within the application area. The nearest DBCA managed land is the Ord River Regeneration area which is located approximately 36 kilometres southeast of the application area at its closest point (GIS Database). The application area is not part of an ecological linkage to this conservation area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.	Not likely to be at variance *(as per CPS 4532/11)*	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: The proposed clearing will impact on Lake Argyle which is a Ramsar listed wetland. There are also numerous ephemeral drainage lines within the permit area.	At variance (as per CPS 4532/11)	Yes *Refer to Section 3.2.2, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Argyle Diamonds (2011) have identified that the landscape surrounding the Argyle Diamond mine is hilly, with gentle foothills and well defined drainage lines. The clearing permit area is comprised of relatively flat to gently undulating slopes associated with underlying extensively folded and faulted sedimentary units (Argyle Diamonds, 2011). The soils in the Argyle Lease area vary from skeletal to extensive silt and sandy flats (Dames and Moore, 1982). The additional areas have been mapped as the Antrim, Argyle, MacPhee, Weaber and Wave Hill land systems (GIS Database). The Antrim, Argyle, Weaber and Wave Hill land systems are all generally not prone to erosion (Payne and Schoknecht, 2011). Within the MacPhee land system slopes have some susceptibility to gully erosion if vegetative cover is removed (Payne and Schoknecht, 2011). The additional area being included within this land system is a small area for an access track.	Not likely to be at variance (as per CPS 4532/11)	No
Principle (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."* Assessment: The permit area is not located within a Public Drinking Water Source Area (PDWSA). Part of the application area extends into Lake Argyle which contains water for the majority of the year. The majority of the surface water within the application area would only occur briefly following significant rainfall events.	Not likely to be at variance (as per CPS 4532/11)	Yes *Refer to Section 3.2.2, above.*
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The permit area lies entirely within the Ord River catchment, upstream of Lake Argyle which is a Ramsar listed wetland (GIS Database). The additional areas included to the permit boundary extend into Lake Argyle. The proposed activities within this area are the removal of an existing pipeline as part of the closure of the site. The proposed clearing will be undertaken during the dry season when there is no water in the lake. It is not likely that the proposed clearing will lead to an increase or exacerbate flooding within the application area.	Not likely to be at variance (as per CPS 4532/11)	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.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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 E. Photographs of the vegetation

Figure 2. Photographs of the existing pipeline corridor

Appendix F. Sources of information

F.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- 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)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Interim Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)

- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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4. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)

DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**
Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**
Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**
Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX **Extinct species**
Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW **Extinct in the wild species**

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI **Migratory species**
Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD **Species of special conservation interest (conservation dependent fauna)**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS **Other specially protected species**
Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

(b) 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.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

(d) 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.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

(h) 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) 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.

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.