



## 1. Application details and outcomes

### 1.1. Permit application details

Permit number:	9461/2
Permit type:	Purpose Permit
Applicant name:	Northern Star Resources Limited
Application received:	25 August 2023
Application area:	362 hectares
Purpose of clearing:	Haul Road Construction
Method of clearing:	Mechanical Removal
Tenure:	Mining Leases 36/35, 36/462, 36/473, 36/474, 36/504, 36/527, 36/541 Miscellaneous Licence 36/246
Location (LGA area/s):	Shire of Leonora
Colloquial name:	Orelia South Haul Road Project

### 1.2. Description of clearing activities

Northern Star Resources Limited proposes to clear up to 326 hectares of native vegetation within a boundary of approximately 1,258.455 hectares, for the purpose of haul road construction. The project is located approximately 15 kilometres east of Leinster, within the Shire of Leonora.

The application will link the Orelia Mine to the Thunderbox Processing Plant (Northern Star, 2021).

Clearing permit CPS 9461/1 was granted by the Department of Mines, Industry Regulation and Safety (now the Department of Energy, Mines, Industry Regulation and Safety) on 24 February 2022 and was valid from 19 March 2022 to 18 March 2027. The permit authorised the clearing of up to 362 hectares of native vegetation within a boundary of approximately 1,229.951 hectares, for the purpose of haul road construction.

On 25 August 2023, the Permit Holder applied to amend CPS 9461/1 to increase the permit boundary by 28.504 hectares in order to redirect haul road construction around recently discovered heritage sites.

### 1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	4 April 2024
Decision area:	362 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 Energy, Mines, Industry Regulation and Safety (DEMIRS) on 25 August 2023. DEMIRS advertised the application for a public comment for a period of 21 days, and 1 submission was received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix E), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

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;
- the potential impact to riparian vegetation;

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

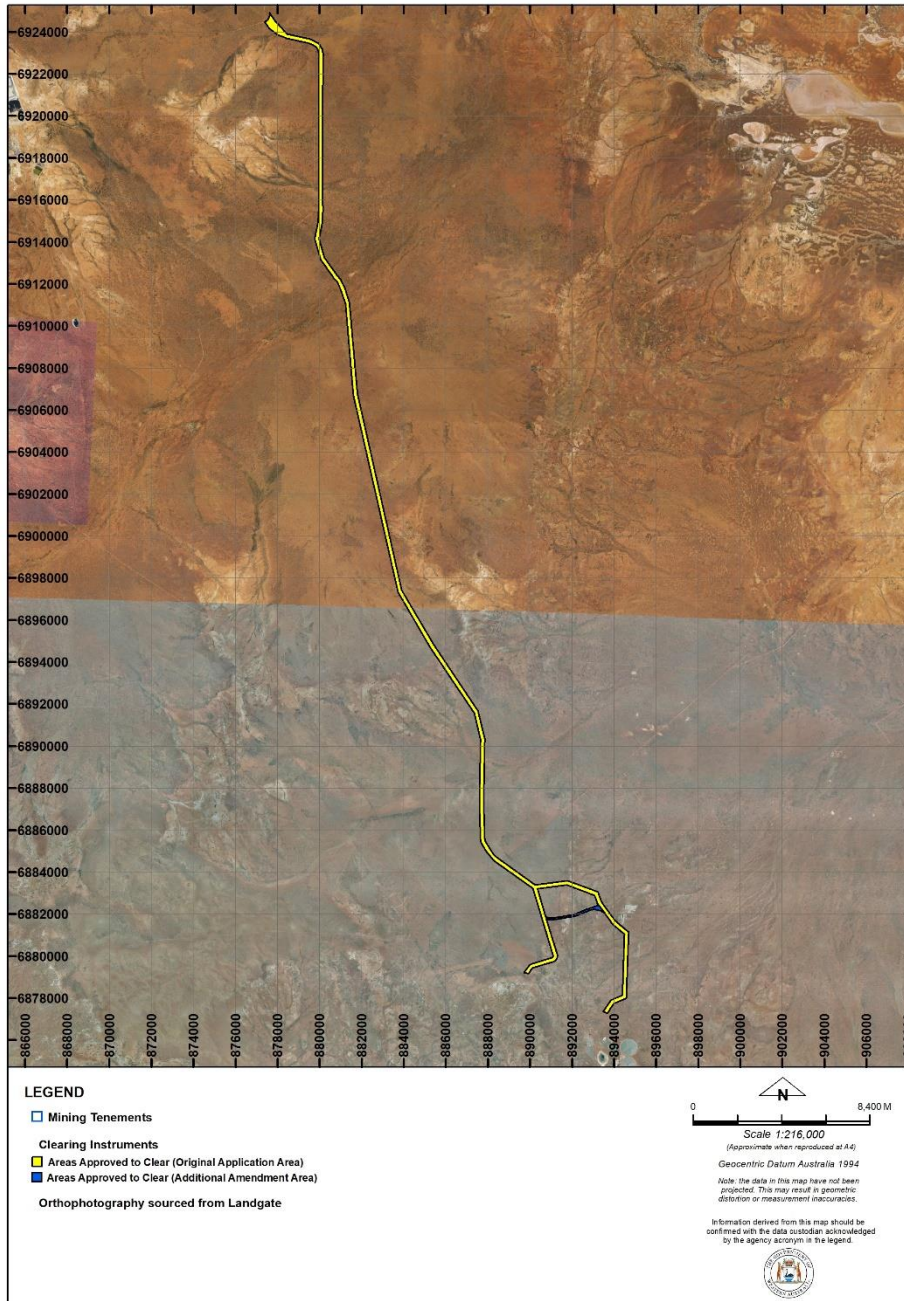
The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds; and
- avoid impacts to riparian vegetation and maintain surface water flows.

The assessment has not changed since the assessment for CPS 9461/1. The Delegated Officer determined that the proposed increase of the permit boundary by 28.504 hectares is not likely to lead to an unacceptable risk to environmental values.

## 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 9461/1) and the blue area indicates the additional area included as part of this application (CPS 9461/2).**

## 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 include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *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, 2020)

### 3. Detailed assessment of application

#### 3.1. Avoidance and mitigation measures

The proponent has provided Clearing Permit Supporting Information - Orelia South Proposed Haul Road (Northern Star, 2021), which states that the proponent is committed to implementing mitigation and management measures for; minimisation of clearing, weed control, soil erosion and surface water management.

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.

#### 3.2. Assessment of impacts on environmental values

The amended area is within 200 metres of a population of Priority three flora species *Thryptomene* sp. Leinster (GIS Database). This population, and two other nearby populations, are all within the Laverton 28 vegetation association, which encompasses the amendment area (GIS Database). Whilst the vegetation and soil types are suitable for the species (Western Australian Herbarium, 1998-), they are widespread throughout the region. The proposed clearing is unlikely to have significant impact as the area to be cleared is utilising a completely degraded area from a pre-existing exploration track and is unlikely to contain any significant flora species (Northern Star, 2023).

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 9461/1.

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

The clearing permit amendment application was advertised on 8 March 2024 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. One submission was received in relation to this application.

There is one native title claim over the area under application (DPLH, 2024). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. 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 no registered Aboriginal Sites of Significance within the application area (DPLH, 2024). There is one recently lodged site of a creation / dreaming narrative quarry within the application area (DPLH, 2024). This has informed the Permit Holders application to amend the permit boundary to avoid this site. 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.

Other relevant authorisations required for the proposed land use include:

- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

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. Details of public submissions

Summary of comments	Consideration of comment
Impacts of the large area of vegetation proposed to be cleared	Impacts from the proposed clearing are addressed in the assessment against the clearing principles (see Appendix C).
Impacts to various flora species, in particular mulga trees ( <i>Acacia aneura</i> )	Impacts to flora species and <i>Acacia aneura</i> are addressed in clearing principles (a) and (c) (see Appendix C).

## Appendix B. Site characteristics

### B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is adjacent to mining developments and surrounded by the vegetation of the Eastern Murchison region. The dominant land uses of the surrounding Eastern Murchison subregion include grazing native pastures (85.47%), unallocated crown reserves (11.34%), conservation (1.4%) and mining (1.79%) (Botanica, 2021). The area is located within the Yandal and Weebo Pastoral Leases (Botanica, 2021).
Ecological linkage	The proposed clearing does not represent a significant remnant of native vegetation in an area that has been extensively cleared, and is unlikely to provide an ecological linkage to surrounding areas (GIS Database).
Conservation areas	There are no conservation areas within the vicinity of the application area. The closest mapped conservation area is the Wanjarri Nature Reserve which is located approximately 30.5 kilometres north of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>18: Low woodland; mulga (<i>Acacia aneura</i>);</p> <p>28: Open low woodland; mulga; and</p> <p>109: Hummock grasslands, shrub steppe; <i>Eucalyptus youngiana</i> over hard spinifex (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Botanica Consulting (Botanica) between 24 March 2021 and 25 March 2021. The following vegetation associations were recorded within the application area (Botanica, 2021):</p> <p><b>CLP-AOW1 – Acacia open woodland</b>  <i>Acacia incurvaneura</i>, <i>Acacia craspedocarpa</i> and <i>Grevillea berryana</i> open woodland over <i>Eremophila forrestii</i>, <i>Eremophila margarethae</i> and <i>Scaevola spinescens</i> open shrubland over <i>Eragrostis eriopoda</i>, <i>Triodia melvillei</i> tussock grassland/ <i>Maireana tomentosa</i> low open shrubland.</p> <p><b>CLP-OMW/AFW1 – Eucalyptus open mallee woodland/ Acacia woodland</b>  <i>Eucalyptus lucasii</i> open mallee woodland/ <i>Acacia incurvaneura</i> and <i>Acacia caesaneura</i> woodland over <i>Acacia effusifolia</i>, <i>Acacia ramulosa</i> and <i>Psyrdrax suaveolens</i> shrubland over <i>Triodia melvillei</i>, <i>Monachather paradoxus</i> tussock grassland.</p> <p><b>DD-AOW1 – Acacia woodland</b>  <i>Acacia incurvaneura</i> and <i>Acacia aptaneura</i> woodland over <i>Eremophila margarethae</i>, <i>Acacia erinacea</i> and <i>Acacia tetragonophylla</i> sparse shrubland over <i>Aristida contorta</i>, <i>Eriachne pulchella</i> tussock grassland/ <i>Ptilotus obovatus</i> var. <i>obovatus</i> low sparse shrubland.</p> <p><b>RP-AOW1 – Acacia open woodland</b>  <i>Acacia incurvaneura</i> and <i>Acacia aptaneura</i> open woodland over <i>Eremophila margarethae</i>, <i>Acacia erinacea</i> and <i>Acacia tetragonophylla</i> sparse shrubland over <i>Aristida contorta</i>, <i>Eriachne pulchella</i> tussock grassland/ <i>Ptilotus obovatus</i> var. <i>obovatus</i> low sparse shrubland.</p> <p><b>RS-AFW1 – Acacia low open forest</b>  <i>Acacia incurvaneura</i>, <i>Acacia mulganeura</i> and <i>Acacia quadrimarginea</i> low open forest over <i>Eremophila georgei</i>, <i>Dodonaea microzyga</i> and <i>Dodonaea viscosa</i> open shrubland over <i>Ptilotus obovatus</i> var. <i>obovatus</i>, <i>Ptilotus schwartzii</i> and <i>Solanum lasiophyllum</i> low open shrubland.</p> <p><b>SP-EW1 – Eucalyptus open woodland</b>  <i>Eucalyptus gongylocarpa</i> open woodland and <i>Acacia caesaneura</i> and <i>Acacia ligulata</i> open woodland over <i>Alyogyne pinoniana</i>, <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> and <i>Seringa velutina</i> open shrubland over <i>Triodia melvillei</i>, <i>Eragrostis eriopoda</i> and <i>Monachather paradoxus</i> tussock grassland.</p>

Characteristic	Details
	<p><b>SP-OMW1 – <i>Eucalyptus</i> open mallee woodland</b>  <i>Eucalyptus lucasii</i>/ <i>E. youngiana</i> open mallee woodland and <i>Acacia incurvaneura</i> woodland over <i>Eremophila forrestii</i>, <i>E. margarethae</i> and <i>E. latrobei</i> subsp. <i>glabra</i> open shrubland over <i>Triodia melvillei</i>, <i>Eragrostis eriopoda</i> and <i>Monachather paradoxus</i> tussock grassland.</p>
Vegetation condition	<p>The vegetation survey (Botanica, 2021) and aerial imagery indicate the vegetation within the proposed clearing area is in good condition with a small amount of areas, less than one percent, that are completely degraded (Keighery, 1994). These vegetation conditions are described as:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul> <p>The full Keighery (1994) condition rating scale is provided in Appendix D.</p>
Climate and landform	<p>The application area is located within an arid zone with an average annual rainfall (Leinster station) of 245.7 millimetres (BoM, 2024).</p>
Soil description	<p>The soil within the application area is mapped as soil units AB14, BE3 and BE6 (GIS Database). These soil units are described by Northcote et al. (1960-68) as:</p> <p><b>AB14:</b> Upland sand plains with occasional dunes and minor inclusions of associated plains units, chief soils are red earthy sands with red sands on the dunes.</p> <p><b>BE3:</b> Broken slopes and ridges characterized by breakaways, generally on gneissic granites and allied rocks; ironstone gravel pavement variably present: chief soils seem to be shallow earthy loams with some shallow soils, both underlain by a red-brown hardpan.</p> <p><b>BE6:</b> Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which redbrown hardpan frequently outcrops: chief soils are shallow earthy loams.</p>
Land degradation risk	<p>Much of the application area falls within the Bullimore system, and additionally in the Ararak, Bevon, Desdemona, Gransai, Jundee, Ranch, Violet and Yanganoo land systems (DPIRD, 2024). These land systems are described by Pringle et al. (1994) as:</p> <p><b>Ararak:</b> Broad plains with mantles of ironstone gravel supporting mulga shrublands with wanderrie grasses. As a result of low slopes, protective soil mantles and very diffuse sheet flow, this land system is generally not susceptible to soil erosion.</p> <p><b>Bevon:</b> Irregular low ironstone hills with stony lower slopes supporting mulga shrublands. Minor areas with texture contrast soils on breakaway footslopes and narrow drainage tracts are susceptible to soil erosion, particularly if perennial shrub cover is substantially reduced or the soil surface is disturbed.</p> <p><b>Bullimore:</b> Extensive sandplains supporting spinifex hummock grasslands. Wind erosion may occur after fire; however, stabilisation is usually rapid following rain and consequent regeneration of vegetation.</p> <p><b>Desdemona:</b> Extensive plains with deep sandy or loamy soils, supporting mulga and wanderrie grasses. Lack of slope, relatively dense vegetation and very diffuse nature of sheet flow renders this system generally not susceptible to soil erosion.</p> <p><b>Gransai:</b> Stony plains and low rises on granite, supporting mainly halophytic shrublands. Breakaway foot slopes and alluvial plains are respectively highly and moderately susceptible to water erosion in areas where perennial shrub cover is substantially reduced. Disturbance of soil surface on these units and on saline stony plains is also likely to initiate soil erosion.</p> <p><b>Jundee:</b> Hardpan plains with ironstone gravel mantles, supporting mulga shrub lands. Impedance to natural sheet flows can initiate soil erosion and cause water starvation and consequent loss of vigour in vegetation downslope. Gravel mantles provide effective protection against soil erosion.</p> <p><b>Ranch:</b> Hardpan plains and prominent, broad drainage tracts, supporting dense mulga shrublands. Wide drainage tracts are mildly susceptible to soil erosion.</p> <p><b>Violet:</b> Undulating stony and gravelly plains and low rises, supporting mulga shrublands. Abundant mantles provide effective protection against soil erosion over most of this land system, except where the soil surface has been disturbed, for example by the construction of tracks and gridline., In such circumstances, the soil becomes moderately susceptible to water erosion. Narrow drainage tracts are mildly susceptible to water erosion.</p> <p><b>Yanganoo:</b> Hardpan plains and sandy tracts with groved mulga shrublands, hard spinifex and wanderrie grasses. This system is generally not susceptible 10 soil erosion. Soil erosion was occasionally encountered on drainage tracts receiving concentrated run-on.</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses transect the area proposed to be cleared (GIS Database).</p>

Characteristic	Details
Hydrogeography	The application area is located within the Goldfields Groundwater Area which is legislated by the <i>RWI Act 1914</i> . The mapped groundwater salinity of the majority of the application area is 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database). Other sections of the application area are 1,000-3,000 milligrams per litre total dissolved solids and 3,000 -7,000 milligrams per litre total dissolved solids which are described as brackish and brackish- to saline respectively (GIS Database).
Flora	No Threatened or Priority flora were recorded within the original application area during a reconnaissance flora survey (Botanica, 2021). There are no previous records of Threatened or Priority flora within the application area (GIS Database). A desktop assessment of available databases identified multiple conservation significant flora species recorded within 20 kilometres around the application area, including: <i>Acacia</i> sp. Marshall pool (P3), <i>Baeckea</i> sp. Sandstone (P3), <i>Eremophila pungens</i> (P4), <i>Grevillea inconspicua</i> (P4), <i>Hemigenia exilis</i> (P4), <i>Korthalsella leucothrix</i> (P1), <i>Lysiandra baeckeoides</i> (P3), <i>Micromyrtus chrysodema</i> (P1), <i>Sauropus</i> sp. Woolgorong (P3), <i>Stenanthemum patens</i> (P1), <i>Thryptomene nealensis</i> (P3), <i>Thryptomene</i> sp. Leinster (P3), <i>Verticordia jamiesonii</i> (P3) (GIS Database).
Ecological communities	There are no mapped Priority or Threatened Ecological Communities within the application area. There are two Priority Ecological Communities (PECs) within 20 kilometres of the application area, Lake Miranda East Calcrete and Yandal Calcrete (GIS Database). These are both P1 PECs and both consist of unique assemblages of invertebrates that have been identified in the groundwater calcretes (DBCA, 2023).
Fauna	No conservation significant fauna were identified during the basic fauna survey or desktop assessment within the application area (Botanica, 2021; GIS Database). Within the regional area (20km) 3 conservation significant fauna were identified; <i>Macrotis lagotis</i> (bilby), <i>Leipoa ocellata</i> (malleefowl) and <i>Falco hypoleucos</i> (grey falcon) (Botanica, 2021; GIS Database). Migratory birds were excluded due to lack of suitable habitat.

## B.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat within amendment area? Y/N?	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia</i> sp. Marshall pool	P3	N	16	10	Y
<i>Baeckea</i> sp. Sandstone	P3	Y	9.9	8	Y
<i>Eremophila pungens</i>	P4	N	11.9	45	Y
<i>Grevillea inconspicua</i>	P4	N	5.8	61	Y
<i>Hemigenia exilis</i>	P4	N	8.8	44	Y
<i>Korthalsella leucothrix</i>	P1	N	6.8	14	Y
<i>Lysiandra baeckeoides</i>	P3	N	16.3	31	Y
<i>Micromyrtus chrysodema</i>	P1	N	1.6	1	Y
<i>Sauropus</i> sp. Woolgorong	P3	N	14.7	36	Y
<i>Stenanthemum patens</i>	P1	N	15.5	11	Y
<i>Thryptomene</i> sp. Leinster	P3	Y	0.2	25	N
<i>Thryptomene nealensis</i>	P3	N	14.6	12	Y
<i>Verticordia jamiesonii</i>	P3	N	16.8	34	Y

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		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u></p> <p>The proposed area to be cleared is unlikely to contain locally or regionally significant flora, fauna, habitats, or assemblages of plants. The additional amendment area proposed to be cleared may contain a conservation significant flora species. A previously unconsidered record of Priority 3 flora species <i>Thryptomene</i> sp. Leinster is within 200 metres of the amendment area (GIS Database). The potential impact to this has been further discussed in section 3.2. Comments were received in regard to the impact of clearing on <i>Acacia aneura</i>, due to this species being widespread and common, it is unlikely that the proposed clearing will have significant impact (Submission, 2024; Western Australian Herbarium, 1998-). Other impacts are as previously discussed in CPS 9461/1 decision report.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9461/1)</p>	<p>Yes</p> <p>(see section 3.2)</p>
<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></p> <p>The area proposed to be cleared may contain suitable habitat for conservation significant fauna. No conservation significant fauna species were identified during the fauna assessment (Botanica, 2021). Malleefowl (<i>Leipoa ocellata</i>, VU) and Grey Falcon (<i>Falco hypoleucos</i>, VU) were identified as potentially utilising the area, however none of the vegetation would provide significant habitat for either of these species (Botanica, 2021). A record of a bilby (<i>Macrotis lagotis</i>, VU) is within 20 kilometres of the amendment area, however confidence in the record is low as it is from 1981 and is well beyond the southernmost point of their known range, therefore unlikely to occur (GIS Database).</p> <p>Given the proposed amended boundary is utilising a previously cleared area, the proposed clearing is unlikely to significantly reduce the extent or availability of any fauna habitats identified within the application area.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9461/1)</p>	<p>No</p>
<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></p> <p>The area proposed to be cleared is unlikely to contain Threatened flora species or habitats that support Threatened flora. There are no records of Threatened flora within the previous application area (GIS Database) and the reconnaissance survey conducted by Botanica (2021) did not record any within the amended area.</p> <p>The vegetation types recorded within the application area are widespread and common throughout the region (Botanica, 2021; GIS Database). Therefore the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 9461/1)</p>	<p>No</p>
<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></p> <p>The area proposed to be cleared does not form part of any known or mapped Threatened Ecological Communities (Botanica, 2021; GIS Database).</p>	<p>Not at variance</p> <p>(as per CPS 9461/1)</p>	<p>No</p>
<p><b>Environmental value: significant remnant vegetation and conservation areas</b></p>		
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u></p> <p>The application area falls within the Murchison bioregion of the Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). Over 99% of the pre-European vegetation still exists in the Murchison bioregion (Government of Western Australia, 2019). The application is broadly mapped as Beard vegetation associations, 18, 28 and 109 (GIS Database). These vegetation associations have not been extensively cleared as at both the bioregional and state level as approximately 98-99% of pre-European vegetation remains (GIS Database).</p>	<p>Not at variance</p> <p>(as per CPS 9461/1)</p>	<p>No</p>
<p><u>Principle (h):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</p>	<p>Not likely to be at variance</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area (30.5km), the proposed clearing is not likely to have an impact on the environmental values of any nearby conservation areas (GIS Database).</p>	(as per CPS 9461/1)	
<b>Environmental value: land and water resources</b>		
<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></p> <p>Several minor ephemeral drainage lines intersect the area (GIS Database). The proposed clearing will impact vegetation growing with these drainage lines. The potential impacts can be managed through the continued implementation of a vegetation management condition to avoid clearing of riparian vegetation where possible and maintain water flows.</p>	At variance  (as per CPS 9461/1)	No
<p><u>Principle (g):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and land systems where the application area is located have variable degrees of susceptibility to soil and water erosion, particularly if perennial vegetation cover is reduced (Pringle et al., 1994) (refer to Appendix D). Noting the purpose of the application area is for haul road construction, a staged clearing condition is not recommended despite potential erosion risk. Potential erosion risk can be adequately minimised through a watercourse management condition requiring existing surface flow be maintained.</p>	May be at variance  (as per CPS 9461/1)	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></p> <p>There are no permanent watercourses, wetlands or Public Drinking Water Source Areas recorded within or in the surrounds of the application area (GIS Database). The drainage lines within the application area are dry for most of the year, only flowing after a significant rainfall event. Given this, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance  (as per CPS 9461/1)	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></p> <p>There are no permanent water courses or wetlands within the application area (GIS Database). The amendment area topographically contains ironstone hills and gently undulating plains with occasional linear dunes (GIS Database). Given the low annual rainfall in the region and the lack of permanent waterbodies, within the application area the proposed clearing is unlikely to exacerbate or cause a significant incidence of flooding (Botanica, 2021).</p>	Not likely to be at variance  (as per CPS 9461/1)	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.



Condition	Description
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. Sources of information

### E.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- 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
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- 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)

### E.2. References

- Botanica Consulting (Botanica) (2021) Reconnaissance flora and basic fauna survey of the proposed Bronzewing to Thunderbox haul road (L36/246). Prepared for Northern Star Resources Ltd, by Botanica Consulting, October 2021.
- Bureau of Meteorology (BoM) (2024) Bureau of Meteorology Website – Climate Data Online, Weather Station. Bureau of Meteorology. <https://reg.bom.gov.au/climate/data/> (Accessed 7 March 2024).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023) Priority Ecological Communities for Western Australia Version 35. Species and Communities Program, 2023.
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: [https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2\\_assessment\\_native\\_veg.pdf](https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf)
- Department of Planning, Lands and Heritage (DPLH) (2024) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 6 March 2024).
- Department of Primary Industries and Regional Development (DPIRD) (2024) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://dpiird.maps.arcgis.com/apps/webappviewer/index.html?id=662e8cbf2def492381fc915aaf3c6a0f> (07 March 2024).
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: <https://dwer.wa.gov.au/sites/default/files/Procedure Native vegetation clearing permits v1.pdf>

- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: [http://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey\\_Dec13.pdf](http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf)
- Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. Available from: [https://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf](https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf)
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
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- Northern Star Resources Limited (Northern Star) (2021) Clearing permit supporting information – Orelia South proposed haul road. Prepared for Department of Mines, Industry Regulation and Safety, by Northern Star Resources Limited, 12 October 2021.
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- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs Resource Management Technical Report No. 280. Department of Agriculture.
- Submission (2024) Public submission in relation to clearing permit application CPS 9461/2, received 28 March 2024.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 8 March 2024).

## 4. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia (now DPLH)
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia (now DPIRD)
<b>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DEMIRS</b>	Department of Energy, Mines, Industry Regulation and Safety
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DEMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DCCEEW)
<b>DoW</b>	Department of Water, Western Australia (now DWER)
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<b>DPIRD</b>	Department of Primary Industries and Regional Development, Western Australia
<b>DPLH</b>	Department of Planning, Lands and Heritage, Western Australia
<b>DRF</b>	Declared Rare Flora (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>TEC</b>	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.