



**Mount Cattlin Operations
Native Vegetation Clearing Permit
Application
Purpose Permit**

October 2022

Prepared by



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1 Scope and Purpose

1.1. Introduction

Galaxy Lithium Australia Pty Ltd (Galaxy) a wholly owned subsidiary of Allkem operates the Mt Cattlin mine, located approximately 2.5 km north of Ravensthorpe in the Goldfields – Esperance region of Western Australia. Mining activities involve open pit mining of pegmatite ore to produce lithium and tantalum. All mining is undertaken on Mining Tenement M 74/244.

Galaxy is proposing to expand operations at the Mt Cattlin mine and requires additional land north east of the existing mining operation (Project Area) to establish a benign waste rock dump (WRD) and ancillary infrastructure.

Tetris Environmental Pty Ltd (Tetris Environmental) has been commissioned by Galaxy to prepare a new application for a Native Vegetation Clearing Permit (NVCP) - Purpose Permit in accordance with the requirements of Part V Division 2 of the *Environmental Protection Act 1986* (EP Act) and consideration of the Department of Water and Environmental Regulation (DWER) draft *Policy: Applications for amendments to clearing permits* (2021). The Purpose Permit will enable Galaxy to clear an ~80 hectare (ha) Footprint within a permit Development Envelope area of ~96 ha, immediately adjacent to clearing associated with CPS 8052/3.

This supporting document present's results of an assessment against the ten clearing principles as outlined in the then Department of Environmental Regulation (now DWER) *Guide to Assessment: Clearing of Native Vegetation under the Environmental Protection Act 1986* (DER, 2014). It identifies the potential environmental impacts associated with the clearing based on the best available data and defines the Galaxy approach to managing the impacts of the clearing to as low as reasonably practicable. This NVCP application will be submitted to the Department of Mines, Industry Regulation and Safety as clearing is to be carried out on *Mining Act 1978* tenure.

Figure 1 presents the current CPS 8052/3 Development Envelope, and the proposed WRD clearing Footprint and Development Envelope. The small portion (8.6 ha) of the proposed WRD within CPS 8052/3 will be accommodated within the current authorised clearing extent permitted under CPS 8052/3. The remaining 79.7 ha of the WRD Footprint is the subject of this new application. **Figure 2** presents the proposed Development Envelope for this new NVCP application area.

Access to the WRD will be via Floater Road and an upgrade to a creek crossing at the Floater Rd / Cattlin Creek crossing may be required. Galaxy have engaged with the DWER regarding the requirement for a Bed and Banks permit under section 21A of the *Rights in Water and Irrigation Act 1914* (RIWI Act).

Floater Road will be closed to allow for mining activities, with traffic diverted onto Old Newdegate Road north of the mine via the Floater Road diversion. The approvals for the road diversion have been received and construction has commenced.



Figure 1: Site Location and Purpose Permit Context



Figure 2: Proposed NVCP Development Envelope

1.2. Proposal Tenure

The *Mining Act 1978* tenure relevant to this clearing permit is M 74/244 held by Galaxy. The Project Area expands into vegetated Unallocated Crown Land to the north east of the existing operations and is wholly contained within granted mining tenure.

1.3. Legislative Context

The principal legislation in Western Australia governing the environmental assessment of the Project is the EP Act. Galaxy has been granted a NVCP under Section 51(E) of the EP Act (CPS 8052/3). Other approvals relevant to this application include:

- *Mining Act 1978* (Mining Proposal and Mine Closure Plan)
- *Rights in Water and Irrigation Act 1914* (Bed and Banks Permit may be required for road widening at stream crossings)

2 Biological Surveys and Assessment Methodology

Previous biological surveys conducted to support the primary approvals of the Mt Cattlin operations were undertaken in 2008 and included:

- Flora and Fauna Survey - ENV Australia Pty Ltd (April 2008)
- Flora and Vegetation Survey - Botanica Consulting (October 2008)
- Level 2 Spring Fauna Survey – Keith Lindbeck and Associates (Spring 2008)
- Subterranean Fauna - Rockwater Pty Ltd (2009)

No significant flora and vegetation communities, or significant fauna, were identified during these surveys. All previous survey work was reviewed as part of the biological investigations done in support of this NVCP application.

Biological surveys to support this NVCP application were undertaken by the following the following consultants:

- Matiske Consulting Pty Ltd (2018)
- Bennelongia Environmental Consultants Pty Ltd (2018)
- Ninnox Wildlife Consulting and Biostat Pty Ltd (2018)
- Terrestrial Ecosystems (2022)

All surveys included a desktop assessment and were supported by field surveys. Surveys were focused on flora and vegetation, terrestrial fauna and Short-Range Endemic (SRE) fauna. All surveys undertaken were done in accordance with published EPA guidance material. The methods and findings of the survey efforts are summarised as follows.

2.1. Desktop Assessment

The desktop assessments involved a review of relevant literature sources and previous survey efforts and relevant database and GIS searches (constraints mapping).

The desktop studies provided background information on the environmental values within the study area. As outlined in **Table 1**, database searches from the Department of Biodiversity Conservation and Attractions (DBCA) using Naturemap and Florabase, and the Department of Climate Change Energy the Environment and Water (DCCEEW) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) were carried-out to compile a list of potential Threatened or Priority species and Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) that may occur in the area.

Table 1: Database Searches undertaken to identify Potential Environmental Constraints

Potential Environmental Constraint(s)	Database Searches
Matters of National Environmental Significance (MNES)	<ul style="list-style-type: none"> • EPBC Act PMST, 10 km radial search flora and vegetation; 5 km terrestrial fauna.
Threatened and Priority species	<ul style="list-style-type: none"> • DBCA NatureMap, 10 km radial search for flora and vegetation 5 km radial search for terrestrial fauna species • Atlas of Living Australia (ALA) database

Potential Environmental Constraint(s)	Database Searches
TECs and / or PECs	<ul style="list-style-type: none"> • DBCA Threatened and Priority Ecological Community database, 10 km radial search • EPBC Act PMST, 10 km radial search.

2.2. Field Assessment

Table 2 outlines the survey work undertaken in support of this NVCP application for the proposed extension to mining operations.

Table 2: Summary of Environmental Studies and Surveys

Consultant/ Survey Name	Study Area, Type and Timing	Study Standard/ Guidance and Limitations	Appendix
Mattiske Consulting Pty Ltd (2018) Flora & Vegetation Assessment – Mt Cattlin Project Area	Project Area (as defined in report – 190 ha) Desktop review and field survey December 2017	EPA Environmental Factor Guideline - Flora and Vegetation 2016 EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment 2016	Appendix A
Ninox Wildlife Consulting and Biostat Pty Ltd (2018) Desktop Assessment of Vertebrate Fauna of the Proposed Ravensthorpe Spodumene Project.	Project Area as used by Mattiske (2018) Desktop review and field survey December 2017	EPA Environmental Factor Guideline - Terrestrial Fauna 2016 EPA Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna	Appendix B
Bennelongia Environmental Consultants (2018) Mt Cattlin Project Level 1 Survey for Short Range Endemics	Within and immediately adjacent to mine expansion area Desktop review and field survey January 2018	EPA Environmental Factor Guideline - Terrestrial Fauna 2016 EPA Technical Guidance: Sampling of Short Range Endemic Invertebrate Fauna 2009	Appendix C
Terrestrial Ecosystems (2022) Site reconnaissance for threatened vertebrate fauna	Site reconnaissance survey to determine the probability of threatened vertebrate fauna in application area. September 2022	EPA Environmental Factor Guideline - Terrestrial Fauna 2016 EPA Technical Guidance: Terrestrial vertebrate fauna surveys for Environmental Impact Assessment 2020	Appendix D

3 Assessment Against Clearing Principles

The proposed clearing for the extension of mining operations has been assessed against the ten clearing principles outlined in the (then) Department of Environmental Regulation's (DER) *Guide to the assessment of applications to clear native vegetation: under the EP Act 1986* (DER 2014), and in consideration of the current extent and condition of the native vegetation on the site.

The assessment is based on all surveys (flora and vegetation, terrestrial fauna and SRE) undertaken within the amended Development Envelope, as discussed in the relevant reports cited and attached as appendices (refer to **Table 2**). The Project Area identified in the consultant reports is fully contained within M 74/244. The Project Area is consistent with the amended Development Envelope for the purposes of the Purpose Permit application. The outcomes of the assessment are presented in **Table 3**.

Table 3: Assessment against the Ten Clearing Principles

*Note all references and figures contained within Table 3 refer to the survey reports that support this application, unless stated otherwise

Principle	Assessment
<p>Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity</p>	<p>Flora</p> <p>The Project Area is located within the Fitzgerald subregion of the Esperance Plains Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (Mattiske 2018, Appendix A). The Fitzgerald subregion primarily consists of dry sclerophyllous woodland, coastal woodlands, and heath (DEE, 2018). The area has a rich diversity of flora and fauna species, with the Fitzgerald Biosphere Reserve containing over 250 rare and geographically restricted plant and animal species (DEE, 2018). Of the 2000 vascular plant species native to the area, approximately 75% are endemic (DEE, 2018).</p> <p>The Flora and vegetation survey determined that a total of 138 flora taxa (including species, subspecies, varieties, and forms) from 85 genera and 35 families are present within the Project Area (Mattiske 2018). The majority of taxa recorded were representative of the Myrtaceae and Fabaceae and Chenopodiaceae families. The majority of the taxa recorded were widespread both locally and more broadly within the associated biogeographical subregion.</p> <p>No threatened flora species pursuant to the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) and/or the <i>Biodiversity Conservation Act 2016</i> (BC Act) were recorded during the field survey.</p> <p>One priority species, <i>Acacia bifaria</i> (P3) was recorded within the Project Area with 462 alive individuals recorded. This species is widespread throughout the region and was also recorded in the previous surveys undertaken for the initial Stage 1 development (Botanica Consulting 2008; ENV 2008). <i>Acacia bifaria</i> (P3) was common throughout the survey area and are also regionally common, being found in Overshot Hill Nature Reserve, Fitzgerald River National Park and many remnant vegetation areas surrounding Ravensthorpe. It has also been identified in rehabilitation of previous mine disturbances such as areas adjacent to the Cattlin Creek diversion.</p> <p>Overall, the vegetation communities mapped and species recorded in the Mt Cattlin Project Extension area were consistent with the historical mapping of Beard (1973; 1990) and the more recent localised surveys (Botanica Consulting 2008; ENV 2008; Mattiske Consulting 2018). Comparison of aerial photography of the survey area and surrounding areas suggests that the area under application is typical of the vegetation throughout the region.</p> <p>Vegetation Condition ranges from Completely Degraded to Excellent condition (Keighery 1994) with the majority of the Survey Area considered to be in Very Good and Excellent condition (refer to Table 3 and Figure 7 of Mattiske 2018).</p> <p>A total of seven introduced species were recorded within the Mt Cattlin Project Extension, these were: <i>*Asparagus asparagoides</i>, <i>*Asphodelus fistulosus</i>, <i>*Chenopodium glaucum</i>, <i>*Lycium ferocissimum</i>, <i>*Marrubium vulgare</i>, <i>*Solanum nigrum</i> and <i>*Trifolium</i> sp. (see Appendix C of Mattiske 2018 August). One of these, <i>*Asparagus asparagoides</i>, was a declared pest organisms pursuant to section 22 of the BAM Act, the remaining six are permitted under section 11 of the BAM Act (DPIRD 2018). <i>*Asparagus asparagoides</i> has a declared pest organism category of exempt, requiring no permit of conditions for keeping (DPIRD 2018). Two species recorded, <i>*Asparagus asparagoides</i> and <i>*Lycium ferocissimum</i>, were listed as WONS (DotEE 2018). All of the weeds</p>

Principle	Assessment
	<p>recorded were listed in the South Coast impact and invasiveness ratings (DPaW 2013). Three, <i>*Asparagus asparagoides</i>, <i>*Lycium ferocissimum</i> and <i>*Marrubium vulgare</i> were listed as having high ecological impacts with rapid invasiveness. The remaining four were listed as having unknown ecological impacts, with <i>*Asphodelus fistulosus</i>, <i>*Chenopodium glaucum</i> and <i>*Trifolium</i> sp. having moderate invasiveness, and <i>*Solanum nigrum</i> having rapid invasiveness (DPaW 2013).</p> <p>There are no ESAs within the Project Area.</p> <p>Considering the survey results, the Development Envelope does not contain high levels of biodiversity. Mattiske (2018) concludes that the vegetation is well represented and that the clearing is unlikely to have a significant impact.</p> <p>Fauna</p> <p>Ninox Wildlife Consulting with Biostat Pty Ltd (2018, Appendix B), undertook a Level 1 desktop assessment and a 3-day reconnaissance survey of the Project Area. A total of 31 conservation significant fauna species were identified during the desktop review, as potentially being within 5 km of the Project Area (Table 1 of Ninox Wildlife Consulting (2018, Appendix B).</p> <p>Of the 31-species identified, 7 conservation significant species are classified as being likely to occur within the Project Area due to suitable habitat or from being recorded outside the boundary. Thirteen habitat types were identified within the Project Area with the most dominant habitats being Tall Woodland on slopes and Mosaic of Woodlands on hilltops (Figure 2 of Ninox Wildlife Consulting 2018). The habitats are well represented outside of the Project Area and are not locally or regionally restricted.</p> <p>A follow-up site reconnaissance survey was completed in September 2022 by Terrestrial Ecosystems (2022) to determine the probability of threatened vertebrate fauna in the extension area. A site inspection was undertaken to determine fauna habitats present in the project area, their quality, and their suitability to support conservation significant species.</p> <p>Based on the site investigation, a review of species listed in the EPBC Act, via the online MNES database, a search of DBCA's threatened species database, a review of local fauna and vegetation surveys in the project area, Terrestrial Ecosystems (2022) consider conservation significant species recorded in adjacent areas will not be significantly impacted by vegetation clearing in the project area. Of the 27 conservation significant species that may occur in the region, 8 are highly unlikely to be present, 13 are unlikely to be present, one species has a low possibility of being present, which one other species has a very low possibility of being present. Three species may infrequently/very occasionally forage in the vicinity (Carnaby's Black Cockatoo, Baudin's Black Cockatoo, Peregrine Falcon), and one species may infrequently fly over the project area (Fork-tailed swift).</p> <p>Habitat assessment of the site by Terrestrial Ecosystems (2022, Appendix D) found that overall, the habitat of the project area was not suitable to support conservation species due to the following factors:</p> <ul style="list-style-type: none"> • Outside the known geographical distribution and/or outside known priority areas (Night Parrot, Western Ground Parrot, Barking Owl, Ravensthorpe Range Slider, Southern Death Adder, Grey Wagtail, Osprey, Fork-tailed Swift) • Lack of appropriate/suitable habitat (Night Parrot, Australasian Bittern, Dibbler, Red-tailed Phascogale, Heath Mouse, Cape Barron Goose, Grey Falcon)

Principle	Assessment
	<ul style="list-style-type: none"> • Trees don't support nesting hollows (Carnaby's Black Cockatoo, Baudin's Black Cockatoo, Forest Red-tailed Black Cockatoo) • Vegetation doesn't not contain high quality feeding resource (Carnaby's Black Cockatoo, Baudin's Black Cockatoo, Forest Red-tailed BC) • Long term presence of predators (Numbat, Malleefowl, Chuditch, Western Brush Wallaby) • Lack of dense patches of heath (long-unburnt), particularly dense thickets of shrubs and tall sedges (Western Bristle Bird, Chuditch, Tamar Wallaby, Western Whipbird, Western Mouse, Quenda) <p>SRE</p> <p>Bennelongia (2018, Appendix C) undertook a Level 1 SRE survey of the Project Area. The survey report concluded that no listed invertebrates, confirmed or potential SREs were recorded. 34 invertebrate species were recorded and almost all species collected are widespread and known from elsewhere. The few species only known from the survey area are unlikely to be SRE and are likely to occur in surrounding woodland. The habitat within the Project Area has low prospectively for SRE and is widespread.</p> <p>In summary, with regards to terrestrial and SRE fauna, the Project Area is not unique in the landscape. The most abundant supporting habitat is not restricted to the Project Area.</p>
<p>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 indigenous to Western Australia</p>	<p>Ninox Wildlife Consulting & Biostat Pty Ltd undertook a Level 1 desktop assessment and a 3-day reconnaissance survey of the Project Area. A total of 31 conservation significant fauna species were identified during the desktop review, as potentially being within 5 km of the Project Area (Ninox 2018, Appendix B).</p> <p>Of the 31-species identified, 7 conservation significant species are classified as being likely to occur within the Project Area due to suitable habitat or from being recorded outside the boundary. Thirteen habitat types were identified within the Project Area with the dominate habitats being Tall Woodland on slopes and Mosaic of Woodlands on hilltops (Figure 2 in Ninox 2018).</p> <p>It is noted that in previous surveys undertaken, Lindbeck (2008), it was determined that the Project Area supported a healthy and diverse range of reptile species but low species diversity of small mammals. This is supported by the Ninox Wildlife Consulting report (Appendix B).</p> <p>Mattiske Consulting Pty Ltd (2018, Appendix A) reported two vegetation communities in the project area, both of which can be described as mid-mallee woodlands over low sparse shrublands and/or low sparse grasses.</p> <p>These vegetation descriptions in conjunction with a site habitat assessment by Terrestrial Ecosystems (2022, Appendix D) suggest that the site does not contain significant habitat for fauna, and is based on the following site characteristics:</p> <ul style="list-style-type: none"> • Long term presence of predators (foxes and feral cats) • Lack of dense heath thickets that offer protection

Principle	Assessment
	<ul style="list-style-type: none"> • Lack of long-unburnt, old growth vegetation • Poor condition of vegetation, due to weed infestation and grazing pressure (high abundance of rabbits) <p>Given the existing degradation of the clearing area and relatively small size of disturbance when considering the presence of larger intact native vegetation in surrounding areas, it is unlikely that the proposed clearing area provides significant habitat for any indigenous vertebrate or invertebrate fauna species. Survey results suggest that habitat within the Project Area is not necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia.</p>
<p>Principle (c) – Native vegetation should not be cleared if it includes or is necessary for the continued existence of rare flora.</p>	<p>From the desktop assessment, five threatened flora species, <i>Acacia rhamphophylla</i>, <i>Conostylis lepidospermoides</i>, <i>Daviesia megacalyx</i>, <i>Eucalyptus purpurata</i> and <i>Eucalyptus steedmanii</i>, listed under the BC Act have the possibility of occurring in the Mt Cattlin Project area. At a Federal level, <i>Acacia rhamphophylla</i>, <i>Conostylis lepidospermoides</i> and <i>Daviesia megacalyx</i> are listed as Endangered and <i>Eucalyptus steedmanii</i> is listed as Vulnerable under the EPBC Act.</p> <p>A total of 138 flora taxa (including species, subspecies, varieties and forms) from 85 genera and 35 families were recorded during the survey.</p> <p>There are no ESAs within the Project Area.</p> <p>No threatened flora species listed under the BC Act or the EPBC Act, were recorded within the Mt Cattlin Project area during recent or any previous surveys.</p>
<p>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 (TEC).</p>	<p>A TEC database search with a 10 km buffer from the Project Area identified one TEC, Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia, listed under the BC Act. However, it does not intersect with the Project Area and its associated vegetation type is not expected to occur within the Project Area (Mattiske 2018)</p> <p>None of the vegetation types recorded in the Proposed Development Envelope are considered to represent a State or Federal Threatened Ecological Community (Mattiske 2018).</p>
<p>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</p>	<p>Mattiske (2018) concluded in their assessment that the area under application is not considered significant as a stand of remnant native vegetation. Overall, the vegetation communities mapped and species recorded in the Mt Cattlin Project area were considered typical of vegetation throughout the region and represented in larger stands of remnant vegetation in proximity to the Mt Cattlin Project Extension.</p> <p>Much of the Project area was in very good condition due to the presence of previous disturbance and tracks, and the presence of some more aggressive weeds.</p> <p>Disturbance to two Vegetation Associations is expected to occur:</p>

Principle	Assessment																																							
	<ul style="list-style-type: none"> Vegetation Association 352 – Medium woodland; York gum. This association has current pre-European extent remaining of 28.8% in the Fitzgerald IBRA subregion (DBCA, 2018). Vegetation Association – 934 - Shrublands; mallee scrub (<i>Eucalyptus nutans</i>). This association has a current pre-European extent remaining of 46.4% in the Fitzgerald IBRA subregion (DBCA, 2018). <p>When considered at a regional scale, the clearing of the proposed additional ~80 ha Footprint represents a ~0.3 % reduction in the current extent of Vegetation Association 352 and a 0.1% reduction in the extent of Vegetation Association 934 (Table inset below).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #92d050;">Aspect</th> <th style="background-color: #92d050;">Veg. Association 352 - Medium woodland; York gum</th> <th style="background-color: #92d050;">Veg. Association 934 - Shrublands; mallee scrub (<i>Eucalyptus nutans</i>)</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="background-color: #92d050;">State-wide</td> </tr> <tr> <td>Pre-European Extent (ha)</td> <td>724,268.7 ha</td> <td>9,282.1 ha</td> </tr> <tr> <td>Current Extent (ha)</td> <td>142,012.2 ha</td> <td>4,243.7 ha</td> </tr> <tr> <td>Percent Remaining (%)</td> <td>19.6 %</td> <td>45.7 %</td> </tr> <tr> <td colspan="3" style="background-color: #92d050;">Fitzgerald Subregion</td> </tr> <tr> <td>Pre-European Extent (ha)</td> <td>22,816.9 ha</td> <td>8,320.5 ha</td> </tr> <tr> <td>Current Extent (ha)</td> <td>6,566.3 ha</td> <td>3,863.2 ha</td> </tr> <tr> <td>Percent Remaining (%)</td> <td>28.8 %</td> <td>46.4 %</td> </tr> <tr> <td colspan="3" style="background-color: #92d050;">Application Area Footprint</td> </tr> <tr> <td>Proposed Footprint Current Extent (79.7 ha) (Reduction in Percent Remaining %)</td> <td>69.8 ha (0.3%)</td> <td>10.0 ha (0.1%)</td> </tr> <tr> <td colspan="3" style="background-color: #92d050;">Application Development Envelope Area</td> </tr> <tr> <td>Proposed Envelope (95.7 ha)</td> <td>81.5 ha (0.4%)</td> <td>14.2 ha (0.2%)</td> </tr> </tbody> </table>	Aspect	Veg. Association 352 - Medium woodland; York gum	Veg. Association 934 - Shrublands; mallee scrub (<i>Eucalyptus nutans</i>)	State-wide			Pre-European Extent (ha)	724,268.7 ha	9,282.1 ha	Current Extent (ha)	142,012.2 ha	4,243.7 ha	Percent Remaining (%)	19.6 %	45.7 %	Fitzgerald Subregion			Pre-European Extent (ha)	22,816.9 ha	8,320.5 ha	Current Extent (ha)	6,566.3 ha	3,863.2 ha	Percent Remaining (%)	28.8 %	46.4 %	Application Area Footprint			Proposed Footprint Current Extent (79.7 ha) (Reduction in Percent Remaining %)	69.8 ha (0.3%)	10.0 ha (0.1%)	Application Development Envelope Area			Proposed Envelope (95.7 ha)	81.5 ha (0.4%)	14.2 ha (0.2%)
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<p>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.</p>	<p>Cattlin Creek is a saline ephemeral drainage line that flows south of the Project Area from the north west and does not intersect the Footprint. This creek is not considered to be of National or International significance (Mattiske 2018).</p> <p>Works may involve a minor upgrade to the creek crossing at the Floater Road / Cattlin Creek intersection. Galaxy have engaged with DWER regarding the requirement for a Bed and Banks permit under section 21A of the RIWI Act, with consultation ongoing.</p>																																							

Principle	Assessment
<p>Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation</p>	<p>The proposed area of disturbance ranges from Completely Degraded to Excellent condition (Keighery 1994). Some areas under application include areas of current and historical mining and agricultural disturbance activities. The proposed clearing is not extensive in a local or regional context and is unlikely to cause appreciable land degradation.</p> <p>Clearing will be undertaken progressively so bare surfaces are not exposed for extended durations, making them less susceptible to erosion.</p>
<p>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.</p>	<p>The Project Area is not located within or adjacent to any conservation reserves. The closest DBCA managed conservation estate is the Overshot Hill, which is located approximately 2 km north west of the Project Area.</p> <p>Pasture exists between the project area and the Overshot Hill Nature Reserve. No impacts on the environmental values of the Overshot Hill Nature Reserve should occur as a result of clearing in the area under application.</p>
<p>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</p>	<p>The Project Area is located within the following <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act) proclaimed groundwater area:</p> <ul style="list-style-type: none"> • Kondinin – Ravensthorpe Groundwater Area <p>Galaxy has existing approvals under s.5C of the RIWI Act to take water.</p> <p>As much of the surrounding area has been largely cleared and utilised for agricultural purposes, it is considered unlikely that the clearing will impact upon the quality of surface or groundwater.</p> <p>It is unlikely that any of the Vegetation Associations within the Project Area are groundwater dependent and therefore impacts to Groundwater Dependant Ecosystems is unlikely.</p>
<p>Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding</p>	<p>The Project Area experiences long-term average rainfall of approximately 430.7 millimetres and an annual evaporation of approximately 1,800 mm (BoM 2018).</p> <p>To support the original proposal, Galaxy commissioned Landform and Soil surveys to be undertaken. The survey determined that the area sits within the Ravensthorpe 2 subsystem and that this subsystem is of low-risk for waterlogging (Keith Lindbeck and Associates 2009). Also noting that no significant drainage lines of significant volume flow through the Project Area, it is unlikely that flooding events would be exacerbated due to clearing activities.</p>

4 Environmental Management Measures and Rehabilitation

Environmental management measures, which will be implemented to avoid, minimise and reduce the impacts of clearing, include:

- Avoid unnecessary clearing by utilising areas devoid of vegetation
- Site Disturbance Permitting procedures will be reviewed prior to clearing
- Weed control programmes will be reviewed prior to clearing and earthmoving activities
- Hygiene management procedures will ensure all earthmoving equipment is inspected (and cleaned if required) for potential weed and pathogen retaining soil and vegetation matter prior to the commencement of clearing works
- No clearing will occur beyond the defined Footprint area
- Land clearing procedures will ensure that areas designated for clearing will be surveyed and boundaries clearly demarcated. Operator personnel will be familiarised with demarcated areas prior to clearing works commencing
- Clearing will be undertaken progressively so only those areas required for immediate operations are disturbed
- Vehicles and equipment will avoid driving over, or parking on, vegetation (including tree roots) not designated for clearing
- Rehabilitation will occur in accordance with the current Mine Closure Plan
- Induction and education of personnel on environmental requirements of the Project.

Rehabilitation of the Mt Cattlin Project will be undertaken in accordance with the current Mine Closure Plan approved under the *Mining Act 1978*. This will detail all closure practices and management measures as required. Broad closure objectives relevant include, but are not limited to:

- Progressive rehabilitation will be undertaken in accordance with established mine plan
- Vegetation will be rehabilitated to meet agreed criteria prior to relinquishment
- Rehabilitation to support self-sustaining, functional ecosystems comprising suitable, local flora species as far as available resources and site conditions allow.

Environmental management plans, procedures and forms developed to assist in the management of potential impacts from the project include:

- Environmental Management Plan
- Dieback and Weed Management Plan
- Vehicle/Equipment Hygiene Checklist
- Native Vegetation Clearing
- Surface Disturbance Permit
- Airborne Material Management Plan
- Noise Management Plan

5 Summary of Assessment and Conclusions

In summary, considering the findings of the surveys and the assessment against the Clearing Principles, the proposed application is unlikely to be at variance with the principles. The key environmental considerations associated with the proposed clearing are as follows:

- Clearing of Priority 3 flora species *Acacia bifaria*
- Clearing of native vegetation within a Vegetation Association that has less than 30% pre-European extent remaining (Vegetation Association 352 represents 28.8% remaining).

However, when taking into consideration:

- That the vegetation is well represented outside of the disturbance area
- That the proposed additional clearing represents only 0.3% of the remaining extent of Vegetation Association 352
- The proposed environmental management measures and application of the mitigation hierarchy
- Commitments to minimise the disturbance of *Acacia bifaria* and its ability to regenerate in mine site rehabilitation
- Rehabilitation of the disturbed area in accordance with the approved Mine Closure Plan.

It is the conclusion of this assessment that the environmental impacts are not significant and can be readily managed through the implementation of the Environmental Management Measures outlined in this application and established Galaxy environmental management systems.

6 Bibliography

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7 Appendices

Appendix A: Flora & Vegetation Assessment

Appendix B: Desktop & Reconnaissance Vertebrate Fauna Survey

Appendix C: Survey for Short Range Endemics

Appendix D: Reconnaissance for Threatened Vertebrate Fauna