Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10813/1
Permit type:	Purpose permit
Applicant name:	Mineral Resources Limited
Application received:	22 October 2024
Application area:	302 ha hectares (ha) of native vegetation within a 2,092-ha clearing footprint
Purpose of clearing:	Expansion of existing mining operations
Method of clearing:	Mechanical
Property:	Lot 105 on Deposited Plan 40396 Lot 94 on Deposited Plan 220400 Lot 301 on Deposited Plan 40373
Location (LGA area/s):	Shire of Coolgardie
Localities (suburb/s):	Londonderry and Karramindie

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5). The application is required to increase the area authorised to be cleared under Clearing Permit CPS 8632/3 and clearing footprint by 200 ha and 185 ha, respectively. CPS 8632/3 authorised clearing of 600 ha within a 1,907-hectare clearing footprint. Of the 600 ha, approximately 498 ha were cleared. Condition 4 of Clearing Permit CPS 8632/3 does not authorise further clearing of native vegetation. The remaining 102 ha is therefore proposed to be cleared under Clearing Permit CPS 10813/1. On this basis, application CPS 10813/1 is to clear 302 ha of native vegetation within a 2,092-hectare clearing footprint.

1.3. Decision on application

Decision:	Granted
Decision date:	26 May 2025
Decision area:	302 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the:

- site characteristics (see Appendix A),
- relevant datasets (see Appendix E.1)

- findings of a series of flora and fauna surveys which did not identify any threatened flora, significant habitat for conservation significant fauna or conservation significant ecological communities within the clearing footprint (see Appendix D)
- clearing principles set out in Schedule 5 of the EP Act (see Appendix B)
- relevant planning instruments and any other matters considered relevant (see Section 3)
- applicant's environmental management system which requires implementation of actions to avoid, minimise and rehabilitate residual impacts of clearing activities, such as avoidance of conservation significant flora, undertaking staged clearing and progressive rehabilitation; and
- the applicant's legal obligations under the *Mining Act 1978*, such as a requirement to develop a mining closure plan to mitigate impacts on the environment.

Noting the above, the Delegated Officer has identified the following:

- the application area does not contain native vegetation representative of threatened or priority ecological communities (TECs or PECs), and no TECs or PECs are mapped within a 50-kilometre radius of the application area
- priority flora listed by the Department of Biodiversity, Conservation and Attractions were identified within the permit area but were excluded from the proposed clearing area
- given the location of the application area adjacent to areas authorised to be cleared, the application area does not act as a significant ecological linkage between areas of remnant vegetation in the region
- a fauna survey targeting malleefowl (*Leipoa ocellata*), chuditch (*Dasyurus geoffroii*) and arid bronze azure butterfly (ABAB) did not identify any active malleefowl mounds in the application area
- the application area does not contain any colonies of sugar ant (*Camponotus* sp. nr. *terebrans*) which are essential for ABAB (*Ogyris substerrestris petrina*) survival. The closest colony was mapped approximately 250 metres from the application area
- although the targeted survey did not identify any individuals of malleefowl, chuditch or ABAB, these species may use the application area for dispersal
- the clearing may increase the risk of appreciable impact on land degradation via wind erosion, if not adequately managed; and
- the clearing may introduce and spread weeds, which could impact on the quality of the adjacent vegetation and habitat values.

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 is unlikely to lead to appreciable land degradation or have long-term adverse impacts on environmental values. The potential impacts listed above can be minimised and managed to unlikely 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
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- commence the project activities within three months of the authorised clearing to minimise the risk of soil (wind) erosions; and
- retain cleared vegetation and topsoil and respread this on a cleared area for the revegetation of areas no longer required for the purpose fir which they were clears to minimise risk of soil erosion
- revegetation of existing disturbance areas; and
- retain all priority flora within the development envelope and their 20-metre buffers.

The Delegated Officer also noted that a mining closure plan under the *Mining Act 1978* will further mitigate potential impacts of the proposed activities on the environment through the progressive rehabilitation of the clearing areas throughout the project's lifespan.

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1.5. Site map

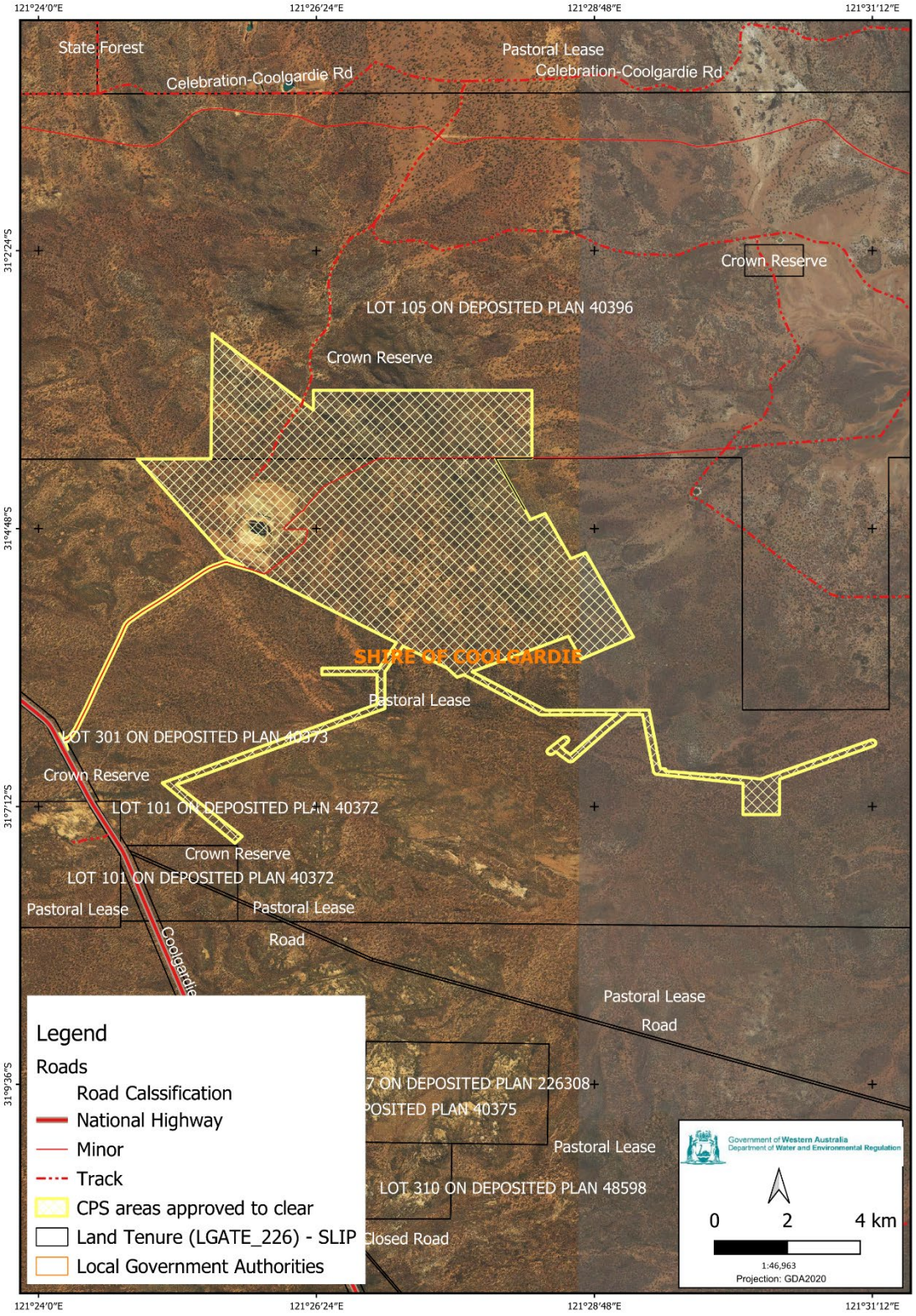

Figure 1: Map of the application area. The area crosshatched yellow indicates the area within which clearing of native vegetation clearing is authorised.

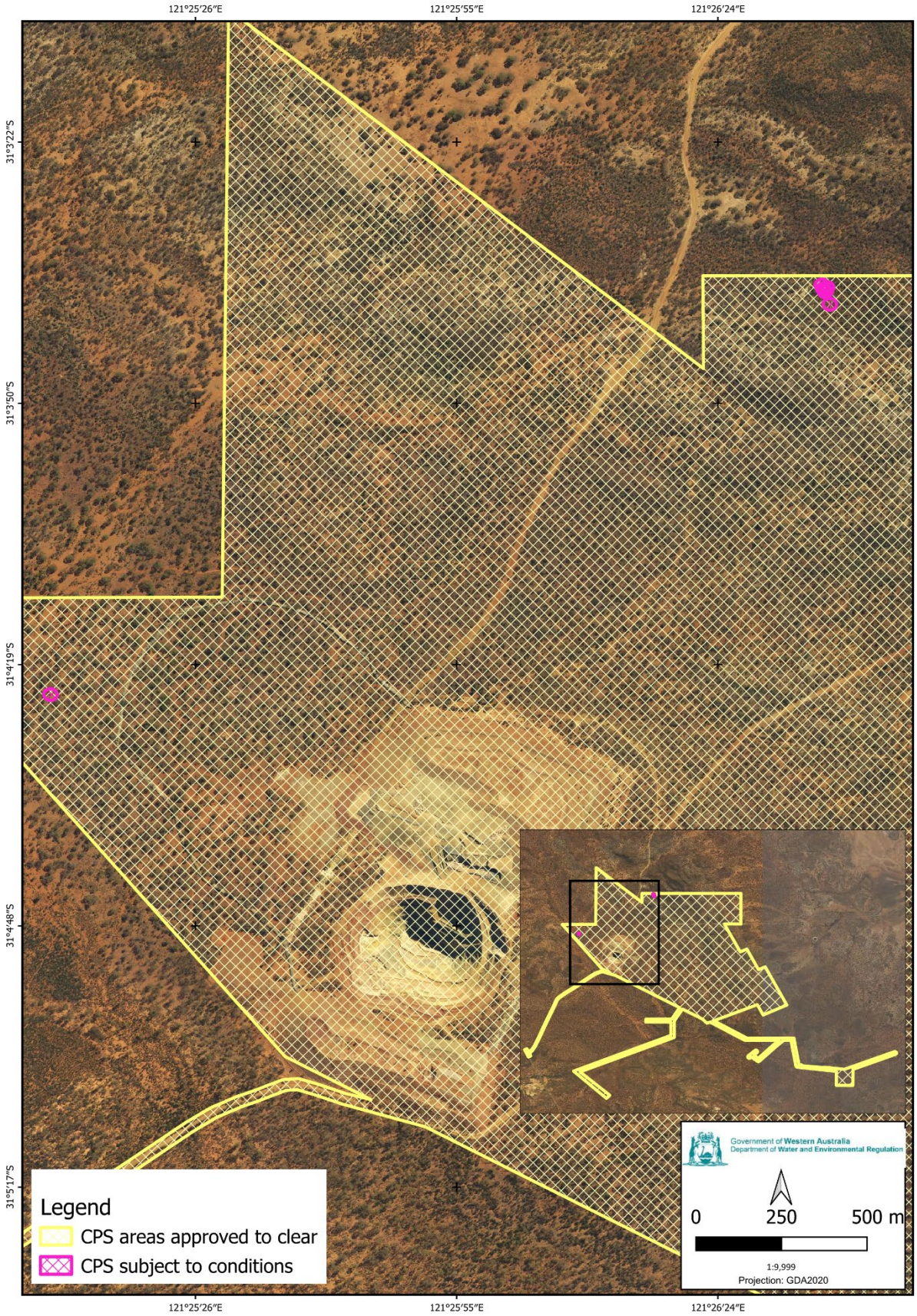

Figure 2: Areas cross-hatched pink indicate areas within which clearing of native vegetation is not authorised.

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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Mining Act 1978 (WA)*
- *Rights in Water and Irrigation Act 1914 (RIWI Act)*
- *Aboriginal Heritage Act (1972)*

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 2019)
- 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

Evidence was submitted by the applicant, demonstrating the applicant's commitment to avoid and minimise clearing and mitigate potential impacts (Mineral Resources Limited, 2024a). The measures include the following:

- ensuring that all clearing and ground disturbance is carried out in accordance with its Land Activity Permit and land clearing procedures, which requires delineation and demarcation of clearing areas with survey pegs and flagging tape, salvaging and stockpiling of topsoils for future use for rehabilitation and revegetation
- construction site drainage infrastructure, including culverts to mitigate the risk of erosion
- where possible, areas of confirmed Priority Flora will be avoided so that these populations are minimally affected.
- monitor local malleefowl populations if present
- undertake staged clearing
- implementation of approved Mine Closure Plan in accordance with the Mine Closure Plan Guidance – How to prepare in accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans (Department of Mines Industry Regulation and Safety, 2020). This incorporates progressive rehabilitation over the life of mine
- undertake progressive rehabilitation at the mine; and
- salvage and stockpile soil and/or habitat features (e.g. vegetation, stumps, logs, boulders) for use in rehabilitation programs. 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 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

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to biological values (flora and fauna) and land resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values – Biodiversity, Flora and Vegetation- Clearing Principles (a) and (c)

Assessment

The application area lies within the Coolgardie region which is botanically characterised by the Eucalypt Woodlands containing high diversity of Eucalypt species. The current vegetation within the Coolgardie vegetation system is secondary regrowth regenerated from seed and coppice. Two vegetation and flora surveys have been conducted within and outside the boundaries of the application area. Within the study area 230 native flora taxa and 9 introduced flora taxa were identified. Within the application area, a total of 13 vegetation groups under 5 vegetation associations were identified (see Appendix A for the description); mostly in very good to pristine conditions (Trudgen, 1991). The composition and vegetation types within the application area are typical of the local region and not considered to be unusually diverse (Spectrum, 2024). The vegetation may provide suitable habitats for fauna species commonly occurring in the Coolgardie region.

No flora species listed as threatened under the EPBC Act or the BC Act, three species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were identified within the application area. The following priority flora species listed below were identified within the larger survey area:

- *Eucalyptus urna* subsp. *xesta* (P3) located 500 m outside of the application area
- *Eucalyptus websteriana* subsp. *norsemanica/websteriana* (P1) located within and immediately north of the application area
- *Ricinocarpos digynus* (P1): Located 1.6 km outside the application area
- *Lepidosperma* sp. Kambalda (A.A. Mitchell 5156) (P2) located within and immediately north of the application area
- *Acacia websteri* (P1) located 1 km outside the application area.

Given the indicative proposed footprint for the proposed clearing avoids areas associated with priority flora the proposed clearing will not have direct impacts to the above species.

No TECs or PECs, Environmentally Sensitive Areas, Nature Reserves, Conservation Areas, or restricted or unique vegetation communities within the application area.

As discussed under principle (b), the application area does not provide significant habitat for conservation significant fauna.

Conclusion

The proposed clearing is unlikely to result in a significant impact on biodiversity at the local and regional extents. Indirect impact of clearing can be minimised and mitigated by imposing management conditions to the permit

Conditions

To mitigate potential impact on biodiversity and flora, the following conditions are required on the permit:

- avoid and minimise clearing
- weed control and management
- stockpiling of topsoils for future rehabilitation; and
- retain all priority flora identified and their 20-m buffers.

3.2.2. Biological values – Fauna- Clearing Principle (b)

Assessment

Available databases indicate that three conservation significant fauna species have been recorded from the local area (20 km radius of the application area). A series of fauna surveys have been performed to confirm the presence/absence of this species within the application area. SLR Consulting (2024) and Bamford Consulting (2022) conducted fauna surveys over an area beyond the application area (see Figure 6). The surveys targeted four fauna species, namely:

- Malleefowl (*Leipoa ocellata*) listed as Vulnerable at both a state and federal level
- Inland Hairstreak Butterfly (*Jalmenus aridus*) listed as Priority 1 under the BC Act –
- Arid Bronze Azure Butterfly (*Ogyris petrina*) listed as Critically Endangered at both a state and federal level
- Carnaby's Cockatoo (*Zanda latirostris*) listed as Endangered at both a state and federal level

The surveys identified three fauna habitat types which represent significant habitat at the local or regional scale:

- Drainage Line. Areas that are often inundated with water after rainfall events, with a mixed *Eucalyptus* overstorey, an open to sparse mid-storey of *Acacia* and *Melaleuca* and a sparse understorey of *Solanum* and *Atriplex* spp. (0.82% of surveyed extent to be disturbed, 27.12 ha)

- Rocky Hill/Outcrop: Granite and greenstone hils with moderate to high levels of outcropping to areas of exposed rock with little to no vegetation, sparse mixed eucalyptus over dense midstorey of *Acacia, Melaleuca* and *Senna,* ground cover consisting mostly of small *Acacia*, *Solanum* and *Atriplex* with occasional herbs and daisies. Caves, crevices and exfoliating rock present important habitat for mammals and reptiles(1.11% of surveyed extent of rocky hill to be disturbed total of 3.83ha, no Rocky Outcrop to be disturbed)
- Shrubland/Heathland: Sandplains of deep alluvial soils with minimal outcropping. No distinct overstorey, predominantly tall, dense Acacia and Myrtaceae with minimal understorey of herbs and forbs. Habitat is important refuge and nesting habitat for Malleefowl (not found within the permit area).

Malleefowl (*Leipoa ocellata*)

Although the targeted fauna survey (Bamford 2022,SLR, 2024) identified suitable habitat for malleefowl in the application area, it did not identify any evidence of this species currently active in the area. Similarly, no recently active malleefowl mounds were identified with a several inactive mounds within the permit area identified as having no signs of new activity. The most recent mound identified displayed no signs of successful breeding attempt and was likely birds making use of freshly opened soils due to nearby the drill pad and sump construction. The conclusion of the survey was that large majority of the mounds were old and unlikely to attract future breeding activity. The vegetation within the application area therefore represents suitable, but not significant habitat for malleefowl.

The findings suggest that malleefowl may use the application area for dispersal. In their previous advice DBCA (2023) suggested that malleefowl uses the local area for breeding, and potentially for foraging purposes. The number of malleefowl records in the local area and the relatively even distribution of the records across the landscape indicate that the population is not presently restricted to certain areas. Noting that malleefowl is a mobile species, the occurrence of the fauna species within the application area at the time of clearing cannot be ruled out. The conditions of the clearing permit will therefore require the applicant to undertake directional clearing to allow malleefowl individuals move into adjacent native vegetation prior to the clearing activities.

Inland Hairstreak Butterfly (*Jalmenus aridus*)(P1)

The most recent survey by SLR (2024) between February and April 2014 opportunistically identified 39 Inland Haistreak Butterfly individuals within the survey areas, but outside of the application area. The closest occurrence is 2.5 km outside the application area. This species prefers habitats of open woodland with stands of mixed young and mature Senna shrubs in an area ≥2000 m2 . They also prefer a variety of flowering shrubs such as *Eremophila, Scaveola*, and *Maireana*. This species is also associated with the ant species *Froggattella kirbii* (Eastwood et al., 2023). The butterfly did not occur within the survey area at the time of survey, even though the survey area contained suitable habitat for this species. Populations of the species host plant, *Senna artemisioides* ssp. *Flifolia* were identified during the terrestrial fauna field survey, although none are located within the application area. SLR suggested that migration between sites of the priority butterfly species is possible but given the absence of the host plant from the application area, the Inland Hairstreak Butterfly is not expected to be directly impacted by clearing activities.

Arid Bronze Azure Butterfly (ABAB) (*Ogyris petrina*)

The species requires the host ant *Camponotus* sp. nr. *terebrans* to be present in large enough colonies (> 40 ha) to support the species within the colony. The most recent survey by SLR (2024) targeting ABAB was performed over *Camponotus* colonies in Mt Marion areas, involving the traversal of a total of 200 kms by foot over 24 days. The survey identified 2588 *Camponotus* spp nests within the survey area. None of these nests were identified within the application area and the survey did not identify any evidence of ABAB (although emergence was affected across known habitats by the extended summer drought). On this basis, the application area does not provide significant habitat for ABAB.

Carnabys Cockatoo (*Zanda latirostris*)

The fauna survey identified suitable foraging habitat for Carnaby's cockatoo in the form of the Eucalyptus woodlands. However, the application area occurs outside the modelled distribution of this species and no evidence of Carnaby's cockatoo within the application area was identified. Given this, the application area does not provide significant habitat for Carnaby's cockatoo.

Conclusion

Noting the findings of fauna surveys undertaken within the development envelope, the application area provides habitat for conservation significant fauna which is not considered significant.

Conditions

To mitigate potential impacts on fauna species, the following conditions are imposed on the permit:

- stockpiling of topsoils for future restoration of fauna habitat
- slow, directional clearing towards adjacent vegetated areas; and
- weed management to minimise the spread of weeds into adjacent fauna habitat.

3.2.3. Biological values – Land and Water Resources- Clearing Principle (g)

Assessment

Sandy loamy soils of the application area may be prone to wind erosion when the ground cover vegetation is removed. Clearing of large areas can exacerbate the risk. Lose soils and dust deposited by wind may impact on the vegetation nearby, reducing their quality and habitat values. Lose soils also transport weed seeds, which may help introduce and spread weeds to nearby areas. Limiting the exposure time of the bare ground to the wind and staged clearing may mitigate this potential impact. Rehabilitation and revegetation of temporary cleared area that are not required for the mining operations for which the clearing permit is proposed for would also mitigate this potential impact.

The rainfall in the area is low that the risk of water erosion is also low. However, after high rainfall events surface water runoff onsite may flow as sheet flows, transporting lose sediments and soils, including topsoils, to adjacent vegetation. Sediment transport may also spread weeds. This, in turn would reduce the quality of nearby native vegetation and waterbodies. This can be mitigated by ensuring that site drainage infrastructure, including culverts are constructed following clearing. The applicant is committed that all runoff and drainage within the mining impact zone is contained within bunded areas and clearing footprints. Stockpiling of topsoils will also mitigate the potential of the material loss due to surface water runoff

The Delegated Officer acknowledged that the approved Mining Closure Plan regulated under the Mining Act contains measures to address this and will further mitigate the potential impacts of wind, water erosion and dust deposition due to the mining operations and clearing.

Conclusion

Based on the above assessment, the proposed clearing will not result in appreciable land degradation if appropriate land management measures are applied.

Conditions

To address the potential impacts on land resources, the following condition will be imposed on the permit:

- Staged clearing allowing the applicant to undertake clearing only if the mineral production and associated activities commence within three months from the clearing being undertaken; and
- revegetation and rehabilitation of the application area post mining operations.

3.3. Relevant planning instruments and other matters

The existing mining operations and associated activities are regulated under the *Mining Act 1978* (WA) via Mining Proposal (MP) REGID 2867 and 120019. The mining activities within the proposed clearing area are regulated under MP REGID 129825 granted by DEMIRS on 26 February 2025.

The applicant holds a valid licence under the *Rights in Water and Irrigation Act 1914*.

It is the proponent's responsibility to liaise with DWER to determine whether a Works Approval, or any other licences or approvals are required for the proposed works.

The application area lies within the Marlinyu Ghoorlie (WC2017/007) Native Title determination. Database available to DWER indicated that there are several Heritage Sites surrounding the application area (see Figure 4). 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.

End

Appendix A. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is within the Woolibar Pastoral Station Leasehold adjacent to Yallari Timber Reserve, separated by the Coolgardie Esperance Highway to the West. The proposed clearing area comprises of vegetation within the Station lease area with an expansion into the private Hamptons leasehold to the north of the site. It is located within the Coolgardie Bioregion and the Eastern Goldfields Subregion (COO03) of Western Australia where land uses comprise of predominately mining, prospecting, forestry and pastoralist activities The local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 90 per cent of the original native vegetation cover.
Ecological linkage	There are no formal ecological linkages recorded for the area.
Conservation areas	Four conservation areas occur in the vicinity of the proposed area: • Yallari Timber Reserve (approximately 8.0 km to the west and southwest) • Karamindie State Forest (approximately 8.3 km to the northwest) • Kambalda • Timber Reserve (approximately 13.1 km to the southeast) • Kambalda Nature Reserve (approximately 6.5 km to the southeast).
Vegetation description	Vegetation survey (Spectrum Ecology 2024) indicate the vegetation within the proposed clearing area consists of Eucalyptus Woodlands of the Coolgardie Bioregion. The full survey descriptions and maps are available in Appendix F. The vegetation associations mapped all have between 70-99% of their post European extents at a State, Bioregional, Subregional and Local Government Area. This is consistent with the pre-European mapped vegetation type(s): • Coolgardie_9, which is described as Woodland other: Wheatbelt; york gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolybush)(Beard *et al*, 2013) • Coolgardie_128 which is described as Rock (Beard *et al,* 2013) • Coolgardie_522 which is described as Woodland other: Wheatbelt; York gum (*Eucalyptus loxophleba*), salmon gum (*E. salmonophloia*) etc. Goldfields; gimlet (*E. salubris*), redwood (*E. oleosa*) etc. Riverine; rivergum (*E. camaldulensis*). Tropical; messmate, woolybush • Coolgartdie_936 which is described as Woodland other: Wheatbelt; york gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa.* Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolybush. • Coolgardie_468 which is described as Woodland other: Wheatbelt; york gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa.* Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolybush. • Boorabbin_1413 which is described as Thicket: Wattle, *Casuarina* and *Acacia-Allocasuarina-Melaleuca* alliance. • Binneringe_9 which is described as Woodland other: Wheatbelt; york gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa*. Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolybush.

Characteristic	Details
	The mapped vegetation type retain approximately between 75 and 99 per cent of their original extents (Government of Western Australia, 2019).
Vegetation condition	Vegetation survey (Spectrum Ecology, 2024 & Native Vegetation Solutions 2019) indicate the vegetation within the 1,975ha purpose permit proposed clearing area is in variable (Keighery, 1994) condition, described as: • 199.19 ha of Pristine condition vegetation • 283.95ha of Excellent condition vegetation • 178.83 ha of Excellent to Very Good condition vegetation • 268.99 ha of Very Good condition vegetation • 979.88 ha of Completely Degraded condition vegetation • 65 ha of Excellent condition vegetation (mapped in 2019 by NVS) The full Keighery (1994) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix D.
Climate and landform	Climate is semi-arid mediterranean with rainfall predominantly occurring in winter with occasional summer thunderstorms ranging from 250-300mm/year. Landform in the local area is hilly transitioning to undulating and gradually into broad drainages and outwash plains to the south
Soil description	The soil is mapped as ranging between 266 Norseman Zone and 265 Kambalda Zone soil landscapes predominantly: • rocky ranges and hills of greenstones-basic igneous rocks • undulating country on acid volcanic rocks and sedimentary materials • gently undulating valley plains and pediments; some outcrop of basic rock • broad flat to undulating valleys with isolated granitic rock outcrops and some low escarpments; some seasonal lakes and clay pans
Land degradation risk	The proposed area has been mapped with: • high to extreme risk for erosion from both wind and water; and phosphorus export. • moderate to high risk for flooding and land instability. • moderate risk for salinity.
Waterbodies	The desktop assessment and aerial imagery indicated that no permanent surface water bodies or wetlands occur in the proposed area
Hydrogeography	Groundwater occurs at 100m ranging to 70m depth in the sites southern area, predominantly occurring in fracture rock and sedimentary aquifers within paleochannels. Sedimentary aquifers are confined with a potentiometric head of 10m below ground level. Water quality is considered poor and hypersaline within the paleochannel. The application area is within the Goldfields Groundwater Area proclaimed under the RIWI Act.
Flora	Surveys over the application area identified a total of three (3) Priority flora species within the application area. Flora species identified are indicative of the local area.
Ecological communities	No Threatened or Protected Ecological Communities have been recorded within or in proximity to the proposed area.
Fauna	There are records of 2 conservation significant species, *Jalemnus aridus* (Priority 1) and *Leipoa ocellata* (Vulnerable) in proximity to the proposed area, 1 species, *Ogyris petrina* (Critically Endangered) recorded as highly likelihood of occurrence and 2, *Zanda latirostris* (Endangered) and *Calidris ferruginea* (Critically Endangered) with a medium likelihood of occurrence.

C.1. Flora analysis table

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]
Pterostylis xerampelina	P1	Y	Y	Y	1	16	Y
Acacia websteri	P1	Y	Y	Y	1	36	Y
Eucalyptus websteriana subsp. norsemanica	P1	Y	Y	Y	0	35	Y
Ricinocarpos digynus	P1	Y	Y	Y	0	10	Y
Lepidosperma sp. kambalda	P2	Y	Y	Y	0		Y
Eucalyptus urna subsp. xesta	P2	Y	Y	Y	.5	17	Y
Styphelia rectiloba	P3	Y	Y	Y	11	6	Y
Phlegmatospermum eremaeum	P3	Y	Y	Y	20	106	Y
Eremophila caerula subsp. merrallii	P4	Y	Y	Y	23	37	Y

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

C.2. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation 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]
Ogyris petrina	CR	Y	Y	19*	2	Y
Dasyurus geoffroi fortis	VU	Y	Y	15		Y
Zanda latirostris	T	Y	Y	30		Y
Nyctophilus major	P3	N	Y	23		N
Leipoa ocellata	VU	Y	Y	1		Y

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

C.3. Land degradation risk table

Risk categories	*Hazard (consistent across local map units)*
Wind erosion	99% of the map unit has a high to extreme hazard
Water erosion	99% of the map unit has a very high to extreme hazard
Salinity	99% of the map unit has a moderate
Subsurface Acidification	0% of the map unit has a high susceptibility
Flood risk	99% of the map unit has a moderate to high hazard
Land Instability	99% of the map unit has a moderate to high to risk
Phosphorus export risk	99% of the map unit has a high to extreme hazard

Appendix B. 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:	Not likely to be at variance	Yes Refer to section 3.2.1

Assessment against the clearing principles	Variance level	Is further consideration required?
The area proposed to be cleared does not contain locally / regionally significant flora, fauna, habitats, assemblages of plants.		
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: The area proposed to be cleared may contain habitat for conservation significant fauna. Malleefowl (*Leipoa ocellata*) have been recorded in the area as both recorded sightings and nest mounds present. Mounds within the proposed area have been surveyed and assessed as no inactive and no longer used with only minor suitable foraging habitat mapped within the proposed area, proposed clearing is not considered significant to the species.	May be at variance	Yes Refer to section 3.2.2
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The indicative area proposed to be cleared is unlikely to contain flora species listed under the BC Act.	Not likely to be at variance	Yes Refer to section 3.2.1
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: The area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
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 native vegetation in the local area 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 likely to be at variance	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: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of adjacent or nearby conservation areas.	Not likely to be at variance	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	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.		
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are highly susceptible to wind and water erosion, phosphorus export, Noting the extent of the application area and the condition of the vegetation, the proposed clearing is likely to have an appreciable impact on land degradation.	Not likely to be at variance	Yes Refer to Section 3.3.2 above
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: Given no water courses, wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.	Not likely to be at variance	No
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 mapped soils and topographic contours in the surrounding area do indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging. The site infrastructure is maintained in order to manage and contain runoff from cleared areas. Soils in the area are permeable sandy and loam soils and a low likelihood of extreme rainfall events.	Not likely to be at variance	No

Appendix C. 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 D. Biological survey information

The applicant commissioned several consulting firms to conduct a series of flora, vegetation and fauna surveys over the application area and surround in support of the clearing permit application and associated project. The surveys undertaken are as below:

- Fauna and Short-Range Endemic (SRE) Surveys
- Mt Marion Hamptons Tenements Terrestrial Fauna Surveys – Basic Fauna and Targeted Malleefowl, Chuditch and ABAB Surveys (SLR Consulting, 2024a).
- Mt Marion Mining Tenements Terrestrial Fauna Surveys – Basic Fauna and Targeted Malleefowl, Chuditch and ABAB Surveys (SRL Consulting, 2024b).
- Round 1 SRE Invertebrate Survey at the Mt. Marion Lithium Project (Bennelongia, 2024) Targeted Survey for the Arid Bronze Azure Butterfly – Supplementary Surveys Mt Marion (SLR Consulting, 2024c).
- Review of Fauna Assessments within the Mt Marion Lithium Project (Bamford Consulting Ecologists, 2019).
- Mount Marion Lithium Project Malleefowl Survey. (Bamford Consulting Ecologists, 2020). Mt Marion Fauna Assessment (Bamford Consulting Ecologists, 2022a) which partially covers the Purpose Permit Area.
- Mount Marion Lithium Project Malleefowl Survey (Bamford Consulting Ecologists, 2022b).

Flora and Vegetation Surveys

- Mt Marion MinRes Tenements: Detailed Flora & Vegetation Assessment (Spectrum Ecology, 2024a).
- Mt Marion Hamptons Tenements: Detailed Flora & Vegetation Assessment (Spectrum Ecology, 2024b).
- Reconnaissance Flora and Vegetation Survey for the Mt Marion Project Area (Native Vegetation Solutions, 2019).
- Mt Marion Project Reconnaissance Flora and Vegetation Assessment (Ecologia, 2022). which covers part of the Purpose Permit Area

The surveys were undertaken in accordance with the EPA requirements for survey timeframes by locally experienced and qualified survey teams. The survey areas covered a larger area encompassing the application area.

Appendix E. Sources of information

E.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)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- 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
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

Bamford Consulting Ecologists (2019) Review of Fauna Assessments within the Mt Marion Lithium Project

Bamford Consulting Ecologists (2022a) Mt Marion Fauna Assessment

Bamford Consulting Ecologists (2022b) Mount Marion Lithium Project Malleefowl Survey

Bennelongia (2024) Round 1 SRE Invertebrate Survey at the Mt. Marion Lithium Project

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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

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Mineral Resources Ltd (2024a) *Clearing permit application CPS 10813/1*, received 22 October 2024 (DWER Ref: DWERDT1072787).

Mineral Resources Ltd (2024b) *Supporting information for clearing permit application CPS 10813/1,* received 22 October 2024 (DWER Ref: DWERDT1025317).

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