Gonneville Nickel-Copper-Platinum Group Element Mine Development Project

Application Number: **02331** Commencement Date: **25/03/2024** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Gonneville Nickel-Copper-Platinum Group Element Mine Development Project

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Other

1.1.4 Estimated start date *

02/01/2027

1.1.4 Estimated end date *

31/12/2057

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Chalice is seeking to develop the Gonneville Project on Chalice owned farmland located approximately 70km north-east of Perth in the Wheatbelt region of Western Australia. The Gonneville Project is centred on the Gonneville deposit; one of the largest recent nickel-copper platinum group element (PGE) sulphide discoveries worldwide, and the largest PGE discovery in Australian history to date.

Construction of the Gonneville Project is proposed to commence in 2027, subject to final investment decision and receipt of required regulatory approvals.

The Proposal includes an open pit and/or underground mine, waste rock landforms, ore stockpiles, topsoil and subsoil stockpiles, tailings storage, haul roads, borrow pits, ore processing, groundwater abstraction infrastructure (for construction purposes only) and associated site infrastructure. Associated site infrastructure includes offices and ablutions, workshops, temporary accommodation for construction, laydown areas, explosive storage, landfill and waste management, wastewater treatment, fuel storage, water supply and storage infrastructure, power supply infrastructure and communications infrastructure. Figure 2 of the attached Supporting Document (see Attachment 1, Figure 2, page18) presents the Mine Development Envelope (MDE) and a conceptual layout for the Gonneville Project.

The Proposal also includes infrastructure corridors for water and power supply to the Gonneville Project from third party suppliers (see Attachment 1, Figure 3, page 19). Supplies and product will be transported to and from site via road and/or existing rail infrastructure.

The process plant design is based on conventional crush-grind-float and leaching technologies, with staged production up to 15 million tonnes per annum (Mtpa) producing a range of products that may include concentrate, Mixed Hydroxide Precipitate and Dore. Final products will be transported off site via road and/or potentially existing rail, for sale to third parties.

Throughput staging options are being considered as part of a Prefeasibility Study (PFS), including different mining methodologies (i.e., both open pit and underground). Underground mine development would potentially include access declines and/or shafts and associated infrastructure. Staging options, (for example, an initial design for 2Mtpa processing throughput with subsequent expansions over the life of mine to a maximum of 15Mtpa), will be assessed as part of the PFS and will be presented during the course of the environmental impact assessment.

There is no existing piped water infrastructure at the Gonneville Project site. Several potential water sources have been investigated to date. At this stage the Gonneville Project does not intend to draw process water from local groundwater sources and will likely procure water from a third-party supplier via new transmission pipeline and pumping station(s) to the Gonneville Project site.

Construction water supply will be partly sourced from on-site groundwater abstraction, where available and sustainable, and/or from a third-party supplier.

Given the proximity to the existing electricity grid, power is likely to be supplied from the Western Power South West Interconnected System (SWIS grid) via a new transmission line (including power substation(s)). Chalice is working with Western Power to secure operational power supply from the SWIS network. Construction power supply is expected to come from the existing local network supplemented by on-site diesel generation as required.

The construction workforce will be largely drive-in, drive-out, though temporary accommodation facilities may be required on site for the construction phase. The operations workforce is proposed to be largely locally based. As such it is unlikely that there will be a permanent accommodation village.

Disturbance and operational elements

The Gonneville Project will occur within an approximate 2,240 ha Mine Development Envelope (MDE) (see Attachment 1, Figure 2, page 18), with a conceptual disturbance footprint of 1,504 ha (which includes clearing of no more than 940 ha of remnant native vegetation). The final amount of clearing will be defined during the engineering phase, which takes into consideration the extent required for safe and adequate construction and operation of the mine, and the use of previously disturbed areas to the extent possible. Clearing will be undertaken progressively as the mine develops over the operational life of mine.

The location of mine landforms and infrastructure within the MDE (which defines the MDE conceptual disturbance footprint) will be determined by further studies and refined during the environmental impact assessment and will be confined to the MDE. Some changes are likely to occur to the conceptual layout (see Attachment 1, Figure 2, page 18), as well as addition of mine components not yet designed (e.g., process plant, water storage dams and associated site infrastructure).

The Proposal also includes water and power transmission infrastructure to the Gonneville Project site from third party suppliers. The Proposal will also involve logistics and transport via roads and potential transport via existing rail. Figure 3 of the supporting document (see Attachment 1, Figure 3, page 19) presents the Infrastructure Development Envelope (IDE) for the water and power infrastructure and site access roads of approximately 1,476 ha.

The IDE total area includes a number of options to be assessed (see Attachment 1, Section 1.7, page 20) which includes two Water Route options, two Power Route options, contingency for both, and site access roads. These options will be further investigated during the pre-feasibility studies and environmental assessment process. Only one Water Route option and one Power Route option will be constructed.

To enable construction of the power transmission infrastructure and water pipeline infrastructure within the IDE, clearing of remnant native vegetation will be required, within a proposed disturbance footprint of up to 514 ha for the options. The total amount of remnant native vegetation clearing within the 514 ha disturbance footprint will be defined during the assessment process.

Across both the MDE and IDE, a total project disturbance footprint of no more than 2,018 ha will be developed within a proposal development envelope of 3,716 ha.

The disturbance activities that are required to undertake the proposed action include:

- Vegetation clearing
- Mining;
- Mineral processing;
- Waste rock stockpiling;
- Disposal of tailings;
- Stormwater management;
- Groundwater abstraction for dewatering and water supply; and
- General construction/operational activities resulting in increased noise, dust and vibration.

Existing on-site activities

The Gonneville Project is a greenfield project, with no existing mining or processing operations within the MDE. Existing land uses include agriculture, mineral exploration and rural land uses.

Existing exploration and agriculture disturbance at the Gonneville Project includes laydown areas, access roads and tracks, core yards, drill pads and sumps, office blocks and temporary accommodation. The exploration disturbance is authorised and managed via Program of Works (PoWs) issued by DEMIRS (Department of Energy, Mines, Industry Regulation and Safety) in accordance with the *Mining Act 1978*. The disturbance will either be rehabilitated in accordance with compliance requirements or used for the proposed mining operation.

The following activities do not form part of the scope of the Project proposal being referred to the EPA:

- Existing, ongoing and future exploration activities and supporting infrastructure.
- Resource definition drilling of the Gonneville deposit.
- Engineering (PFS and Feasibility) related studies including, but not limited to, ongoing test work, geotechnical and geophysical assessments, water monitoring and management trials/activities.
- Heritage, environmental and geotechnical surveys.
- Any rehabilitation associated with existing on-site activities.

Agricultural activities will continue to occur in the area.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The Proposal will be subject to assessment under both the Western Australian (WA) *Environmental Protection Act 1986* (EP Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Environmental Protection Act 1986

The EP Act is the primary environmental legislation governing environmental protection and impact assessment in WA. Part IV of the EP Act provides for the referral and assessment of proposals that may significantly impact the environment. The Environmental Protection Authority Services (EPA Services) division within the Department of Water and Environmental Regulation (DWER) administers the impact assessment process in accordance with the relevant policies and guidelines.

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the primary Commonwealth environmental legislation and is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). The Proposal will be referred to DCCEEW concurrently with referral under the (WA) EP Act. The Proposal has the potential to impact two Matters of National Environmental Significance (MNES) - nationally threatened species and ecological communities, and migratory species.

Land Tenure

The Proposed Action is to be implemented on a mix of freehold farmland, Unallocated Crown Land, and Mining Leases and Licences.

Other Decision-Making Authorities, Approvals and Regulation

Other key approvals and regulations that apply to the Proposed Action are detailed below:

- Mining Proposal and Mine Closure Plan is required under the *Mining Act 1978*
  - all proposed activities on Mining Act tenure;
- Miscellaneous Licence is required under the *Mining Act 1978*
  - Water and Power routes
- 26D Licence is required under the *Rights in Water and Irrigation Act 1914* (WA)
  - exploration for groundwater sources;
- 5C Licence is required under the *Rights in Water and Irrigation Act 1914*
  - groundwater abstraction;
- Bed and Banks Permit is required under the *Rights in Water and Irrigation Act 1914* (WA)
  - To interfere or obstruct a watercourse
- Works Approval and Licence is required under Part V EP Act (WA)
  - ore processing and other prescribed activities;
- Section 18 approval may be required under the *Aboriginal Heritage Act 1972* (AH Act),
  - disturbance of Aboriginal heritage sites
- Dangerous Goods Licence may be required under the *Dangerous Goods Safety Act 2004* (WA)

- Fuel and/or chemical storage (if above prescribed volumes).

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Chalice has a Stakeholder and Community Engagement Plan which identifies key external stakeholders and determines how they will be impacted by the Proposal and what influence that have over its implementation.

Chalice has held pre-referral meetings with DCCEEW, EPA Services and Industry Regulation and Water Licensing at the Department of Water and Environmental Regulation (DWER) regarding the Gonneville Project.

The Department of Jobs, Tourism, Science and Innovation (DJTSI) are currently providing Case Management support through the Green Energy Major Projects team. DJTSI facilitated an intergovernmental case conference pre-referral meeting with DWER, Department of Biodiversity Conservation and Attractions (DBCA), DEMIRS and Department of Planning, Lands and Heritage (DPLH).

Chalice has also consulted with local governments, the Whadjuk Aboriginal Corporation, surrounding landholders and other community stakeholders.

Details of consultation undertaken to date are provided in Table 6 of the supporting document (see Attachment 1, section 3.4, page 31).

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

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Alternatively, email us at privacy@awe.gov.au.

☑ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA

Referring party details

Name	Jocelyn Zimmerman
Job title	Environmental Approvals Manager
Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA

Person proposing to take the action details

Name	Alex Dorsch
Job title	Managing Director and CEO
Phone	08 9322 3960
Email	adorsch@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Chalice Mining Limited (Chalice) is an Australian company listed on the Australian Securities Exchange (ASX:CHN).

Chalice Mining Limited, through its wholly owned subsidiary (CGM (WA) Pty Ltd is the 100% owner of the Gonneville Nickel-Copper-Platinum Group Element (PGE) Project (Gonneville Project, the Proposal).

Chalice set its corporate sustainability strategy in 2021, and it is now integral to the business strategy more broadly, forming one of our four key strategic goals. Chalice's approach to sustainability is based on four pillars, or focus areas, that encompass our material sustainability issues and drive our performance across our activities via ten clearly defined long-term goals and targets.

Environmental management measures are applied proactively through procedures and standards established within our ISO14001-aligned HSEC Management System. Implementing and maintaining an environmental management system that aligns with the ISO14001 standard enables identification and

effective management of potential environmental risks, impacts and opportunities across all our activities.

Chalice has not been (and is not currently) subject to proceedings or actions under any Commonwealth, State or Territory law.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

All environmental management is undertaken in accordance with Chalice's Environment Policy (see Attachment 2 Chalice Mining Limited Environment Policy) with is regularly reviewed and updated by the Board with support of the Risk & Sustainability Committee.

Chalice is committed to achieving excellence in environmental management to minimise the potential short and long-term impacts of our activities on the environment and local communities.

We are committed to:

- Implementing and maintaining an environmental management system that aligns with ISO14001 standard and enables identification and effective management of potential environmental risks, impacts and opportunities across all our activities.
- Applying the mitigation hierarchy to avoid, minimise, mitigate, and/or, where appropriate, offset our impacts to the environment.
- Measuring and continuously improving our environmental performance through setting environmental objectives, performance measures and performance targets and ensuring that management provide clear commitments and leadership on environmental management.
- Understanding and managing land and biodiversity risks, and to contributing to a resilient environment in the areas surrounding our operational activities.
- Efficiently using energy, water and other natural resources and minimising waste and emissions.
- Implementing rehabilitation practices and limiting the potential for erosion and land degradation.
- Providing training to all employees, contractors, and visitors about the potential risks and environmental impacts of our activities and the controls that are necessary to minimise impacts.
- Complying with all applicable legal requirements and other obligations.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

No

1.3.3.2 Is Proposed designated proponent an organisation or business? *

Yes

Proposed designated proponent organisation details

ABN/ACN	47116648956
Organisation name	Chalice Mining Limited
Organisation address	Level 3, 46 Colin Street, West Perth, WA 6005

Proposed designated proponent details

Name	Jocelyn Zimmerman
Job title	Environmental Approvals Manager
Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA
Representative's name	Jocelyn Zimmerman
Representative's job title	Environmental Approvals Manager
Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA
Representative's name	Alex Dorsch
Representative's job title	Managing Director and CEO
Phone	08 9322 3960
Email	adorsch@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

ABN/ACN	47116648956
Organisation name	Chalice Mining Limited
Organisation address	Level 3, 46 Colin Street, West Perth, WA 6005
Representative's name	Jocelyn Zimmerman
Representative's job title	Environmental Approvals Manager
Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

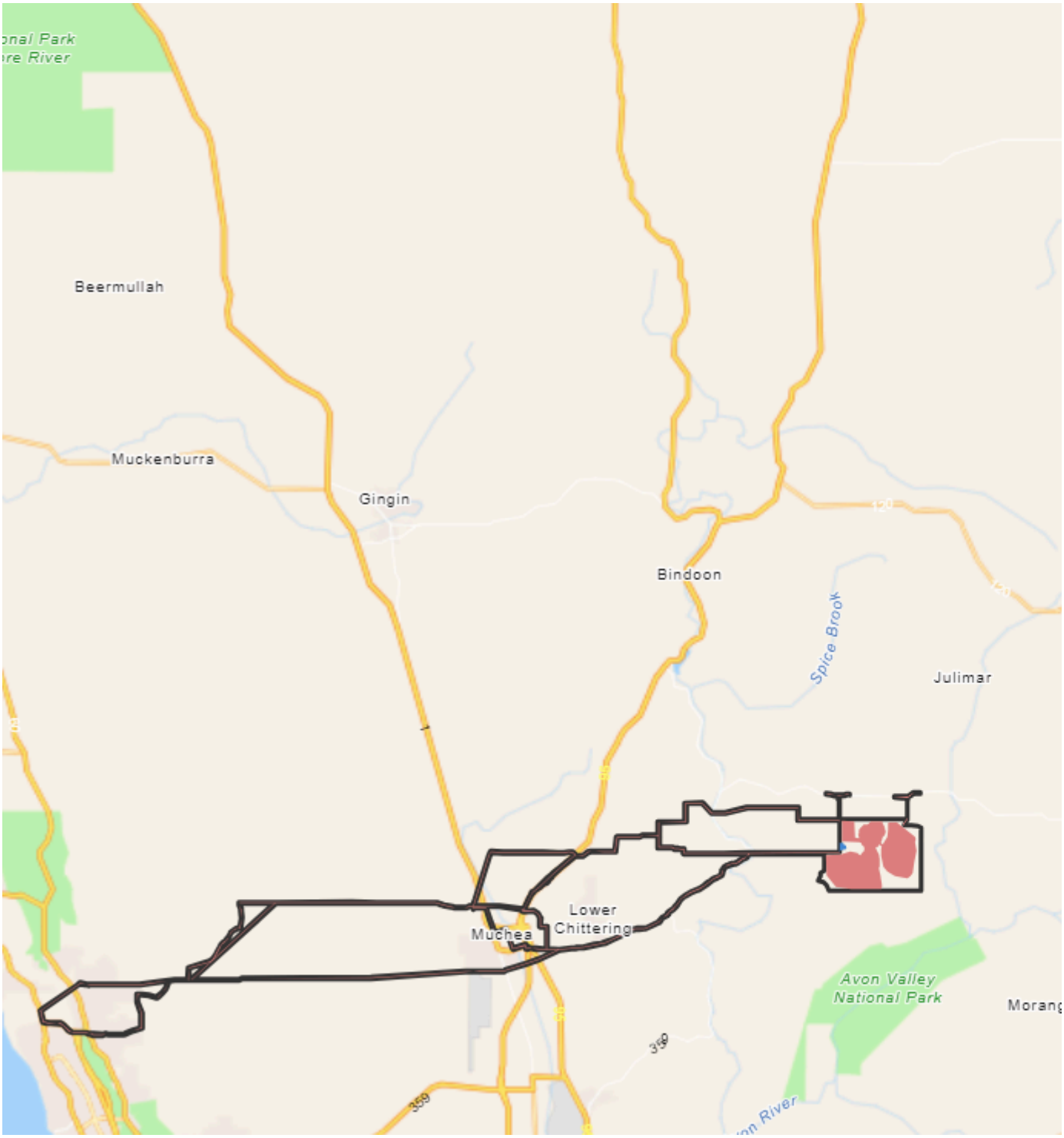
1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Proposed designated proponent

2. Location

2.1 Project footprint



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Project Area: 3716.54 Ha **Disturbance Footprint:** 2018.05 Ha **Avoidance Area:** 13.02 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

229 Keating Road, Moondyne WA 6567

2.2.2 Where is the primary jurisdiction of the proposed action? *

Western Australia

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The Mine Development Envelope (MDE) is contained wholly within freehold land, owned by Chalice.

The Infrastructure Development Envelope (IDE) is located within multiple tenures including crown land and freehold land. Chalice will obtain necessary approvals to access the land for the purposes of the project.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The Mine Development Envelope (MDE) is predominantly (approximately 1916ha or 86%) in a cleared, Completely Degraded or Degraded condition (see Attachment 1, Table 11 page 41), relating to its historic land use for agriculture, with clearing introduced pasture and heavy grazing and a paucity of a native understorey (see Attachment 1, Section 4.2.3.4, page 41). The remainder of the vegetation in the MDE is considered in Good (81 ha (4%)), Very Good (82 ha (4%)) or Excellent (161 ha (7%)) condition.

The Infrastructure Development Envelope (IDE) intersects both cleared and vegetated areas of variable condition. Baseline studies of the IDE are planned for the second half of 2024, with further definition of environmental condition to be provided during the assessment process.

3.1.2 Describe any existing or proposed uses for the project area.

The Gonneville Project is currently subject to exploration tenure granted under the *Mining Act 1978* (WA) (Mining Act), being E70/5118, E70/5119 and E70/5353.

The majority of the MDE (approximately 57%) has been previously cleared and utilised for agriculture,

The IDE dissects various land uses including forested and vegetated areas, rural properties, and urban centres.

Refer to Attachment 1, section 2.2.1, page 26 of the supporting document for additional information.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

The MDE is bounded by Julimar State Forest to the north, Moondyne Nature Reserve to the south, and freehold rural and/or vegetated properties to the west and east.

The IDE traverses both the Northern Jarrah Forest and Swan Coastal Plain regions. In its western extent, it is adjacent to the Neerabup National Park to the north.

No other important or unique values apply to the project area.

Julimar State Forest

Julimar State Forest is located approximately 70km north east of Perth with a total area of approximately 28,000 ha. It comprises a series of gently sloping ridges, draining into the Brockman River. Soils largely comprise lateritic gravels and loams and sandy loams, with alluvial soils present in small stream valleys. Vegetation is dominated by Jarrah-Mari-Wandoo forest/ woodland. The state forest provides habitat for numerous significant fauna species including Chuditch, Woylie, Brush-tailed phascogale and Carnaby's black cockatoo. The historic use for logging has created a network of tracks which are used by bushwalkers and recreational four-wheel-drive users.

Moondyne Nature Reserve

Moondyne Nature Reserve is located approximately 60 km north east of Perth, located directly south of the proposed MDE. It comprises a series of gently sloping ridges, draining into both the Brockman and Avon Rivers. Soils largely comprise lateritic gravels and loams and sandy loams, with alluvial soils present in small stream valleys. Vegetation is dominated by Jarrah-Mari-Wandoo forest/ woodland. The reserve provides habitat for numerous significant fauna species including Chuditch, Woylie, Brush-tailed phascogale and Carnaby's black cockatoo.

Neerabup National Park

Neerabup National Park is located 35 km north of Perth, with its northern extent adjacent to the IDE. Soils largely comprise sand dunes and sand plains representative of the Spearwood System. The vegetation immediately to the north of the IDE is typical of the northern Swan Coastal Plain and is dominated by

Banksia and Tuart woodlands. Neerabup National Park provides habitat for significant fauna species including Carnaby's black cockatoo and Quenda.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The elevation in the MDE ranges from approximately 185 metres Australian height datum (mAHD) to 280m mAHD.

The elevation in the IDE ranges from approximately 12 mAHD in the west to 265 mAHD in the east.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Flora

MDE:

Vegetation and flora surveys that have been undertaken for the MDE are outlined in the attached supporting document (refer to Attachment 1 Table 9, section 4.2.3.2, page 35).

Summary of surveys

A total of 740 vascular flora taxa from 75 families and 272 genera were recorded from database searches as having potential to occur within the Study Area. Based on field survey results, a total of 441 confirmed vascular flora taxa from 68 families and 215 genera have been recorded from the MDE, comprising of 370 native taxa and 71 introduced taxa (Biologic 2024). Annual and geophytic flora made up approximately 31% of the total (equating to 138 taxa), with the dominant families (Fabaceae, Poaceae, Asteraceae and Proteaceae) equating to 30% of the total taxa recorded.

Conservation Significant flora

No threatened listed species under the Cth EPBC Act or WA Biodiversity Conservation Act 2016 (BC Act) were recorded during baseline flora surveys within the MDE.

Introduced species

Baseline surveys recorded a total of 70 introduced taxa from the MDE. None are listed as a Weed of National Significance, three are Declared Pests listed under the *Biosecurity and Agriculture Management Act 2007*:

- *Echium plantagineum* – (Paterson's curse) recorded in 5 opportunistic locations totalling approximately 130 individuals within vegetation types H1, D7 and V12
- *Gomphocarpus fruticosus* – (narrowleaf cottonbush) recorded in minor drainage line vegetation type D7
- *Moraea flaccida*. (one-leaf cape tulip) 10 specimens were recorded during targeted survey and 40 specimens recorded opportunistically.

IDE:

Summary of surveys

A total of 502 native vascular flora taxa from 65 families and 200 genera were recorded from database searches as having potential to occur within the Study Area (Dandjoo 2024). Field surveys of the IDE have yet to be undertaken.

Conservation Significant flora

Desktop investigations indicated that 11 threatened listed species under the EPBC Act or BC Act may possibly occur within the IDE (see Attachment 1, Table 16, section 4.2.4.3, page 68). This list is based on desktop assessment only, and baseline flora and vegetation studies conducted during the assessment period will provide greater certainty of occurrence.

Fauna

Numerous terrestrial fauna surveys have been undertaken for the Proposal (see Attachment 1, Table 22, section 4.4.3.1, page 86).

Summary of surveys

MDE:

A total of 282 species of vertebrate fauna were recorded from database searches as having potential to occur within the MDE. This comprised 42 mammals (12 introduced), 178 birds (eight introduced), 46 reptiles, and 16 amphibians. Based on field survey results, 44 species of vertebrate fauna were recorded from the MDE during the field survey, from both direct and/or secondary evidence (i.e., diggings, scats, burrows) (Biologic 2022). This comprised nine mammalian species (including two introduced mammals), 28 birds, five reptiles, and two amphibians. The fauna species and assemblages recorded were typical of the surrounding region.

IDE:

A total of 113 species of native vertebrate fauna were recorded from database searches as having potential to occur within the IDE. This comprised 15 mammals, 70 birds, 19 reptiles, and 9 amphibians. (Dandjoo 2024). Field surveys of the IDE have yet to be undertaken.

Significant Fauna

Baseline surveys identified six broad fauna habitat types within the MDE (see Attachment 1, Table 23, section 4.4.3.2, page 88). All habitats recorded are considered common and widespread in the surrounding region and therefore likely to support typical fauna assemblages and species of the region.

An assessment of the likelihood of occurrence of conservation significant fauna species within the MDE determined the potential presence of 14 conservation significant fauna species. Following from this, baseline surveys confirmed the presence of the following conservation significant fauna:

- Chuditch (*Dasyurus geoffroii*) (Vulnerable)

- Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable)
- Carnaby's cockatoo (*Zanda latirostris*) (Endangered)

Further information is presented below for the three EPBC listed threatened species recorded within the MDE. (see Attachment 1, section 4.4.3.3, page 89-91)

Chuditch

The Chuditch (Vulnerable EPBC and BC Act) is patchily distributed throughout the jarrah forests and mixed karri, marri, jarrah forest of south west Western Australia. The species also occurs in very low numbers in the Midwest, Wheatbelt and South Coast regions.

Chuditch were consistently recorded within the MDE and likely form part of an broader regional population with the Julimar State Forest and Moondyne Nature Reserve.

Carnaby's Cockatoo

Carnaby's Cockatoo (Endangered EPBC and BC Act) is endemic to south west Western Australia and is distributed from the Murchison River to Esperance and inland to Coorow, Kellerberrin and Lake Cronin. Carnaby's Cockatoo are highly associated with the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community.

Carnaby's Cockatoo has been recorded from all baseline surveys in the MDE and Chalice Exploration Areas in the Julimar State Forest, from direct observation and foraging evidence. No active breeding hollows were identified within the MDE.

Forest Red-Tailed Black Cockatoo (FRTBC)

The forest red-tailed black cockatoo (FRTBC, Vulnerable EPBC and BC Act) is distributed through the southwest of Western Australia inhabiting dense jarrah, marri and karri forests that receive more than 600 mm average annual rainfall and breed between October and November.

This species has been recorded from all previous surveys in the MDE and in the Julimar State Forest in Chalice exploration areas from direct observation and foraging evidence. No active nests have been recorded within the MDE.

Fauna surveys for the IDE are planned for the second half of 2024.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

MDE:

Vegetation

Sixteen native vegetation types from five broad landforms (Hills, Deep Sandplains, Valleys, Drainage Lines, and Wetlands) were mapped across the MDE (see Attachment 1, section 4.2.3.3, page 38 and Figure 4, page 53). The dominant landforms mapped were hills and valleys, with the dominant vegetation being *Eucalyptus marginata* subsp. *thalassica*, *Corymbia calophylla* mid open forests to *Eucalyptus wandoo* subsp. *wandoo*, E. *accedens* mid woodlands. This is consistent with the dominant vegetation complex within the MDE being Yalanbee (Y5 and Y6): Woodland of *Eucalyptus wandoo-Eucalyptus accedens*, less consistently open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* on lateritic uplands and breakaway landscapes in arid and peri-arid zones.

The MDE is predominantly (approximately 1916 ha or 86%) in a cleared, Completely Degraded or Degraded condition (see Attachment 1, Table 11, page 41), due to its historic land use for agriculture, with clearing, introduced pasture and heavy grazing and a paucity of a native understorey.

Ecological Communities

An assessment of the occurrence of Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) within the MDE, based on database searches and the findings of baseline surveys identified one EPBC Act listed TEC (WA listed PEC) identified within the MDE, with no other TECs or PECs occurring within the MDE. The EPBC Act listed Banksia woodlands of the SCP TEC is a WA listed Priority 3 (P3) PEC. The 1.86 ha patch of S1 may also be representative of the Swan Coastal Plain Banksia attenuata – Banksia menziesii woodlands (FCT23b) WA listed P3 PEC, as is has a shared affinity with the floristic community type (FCT) 23b. The FCT23b PEC is a component of the EPBC Act listed TEC.

Soils

Soil landscape mapping (DPIRD-064) indicates that the MDE primarily lies over the Wundowie land system, with the eastern portion of the MDE lying over the Clackline land system and the western portion over the Bindoon land system. These systems are described as follows:

- Wundowie: Intact undulating lateritic terrain with minor rock outcrops in the northeastern Darling Range. "Buckshot" gravels, duricrust and some deep sands.
- Clackline: Moderately dissected areas with gravelly slopes and ridges and minor rock outcrop on the eastern side of the Darling Plateau over weathered granite and granitic gneiss. Loamy gravels, shallow duplexes and pale deep sands common.
- Bindoon: Gentle to steep hills with gentle valleys on metamorphic gneiss and schist, and dolerite. Variable soils.

IDE:

Vegetation

The IDE intersects 14 vegetation complexes within the SCP and six vegetation complexes within the NJF (see Attachment 1, section 4.2.4.1, page 55). Vegetation within the SCP ranges from woodlands and forests of *Eucalyptus gomphocephala* in the western extent, *Banksia* spp. woodlands in the upland areas and closed *Melaleuca* scrub with associated fringing sedgeland in lower lying areas. Within the NJF, vegetation is similar to that within the MDE, with dominant vegetation being *Eucalyptus marginata* subsp. *thalassica*, *Corymbia calo*phylla mid open forests to *Eucalyptus wandoo* subsp. *wandoo*, E. *accedens* mid woodlands. In areas where higher levels of moisture are available, that vegetation is largely a mixture of woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* and low forests of *Casuarina obesa*.

This vegetation is expected to be of varying condition due to the variation in levels of historical disturbance across the IDE.

Ecological Communities

No field surveys have been conducted across the IDE. Occurrence of conservation significant ecological communities and their potential to occur based on desktop assessment was assessed (see Attachment 1, Table 37, page 117). Three TECs are identified as potentially occurring within the IDE:

- Banksia Woodlands of the Swan Coastal Plain IBRA region (Vulnerable)
- Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered)
- Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion (Critically Endangered)

These communities will be the subject of targeted surveys across the IDE to confirm presence or absence.

Soils

Soil landscape mapping (DPIRD-064) indicates that the IDE primarily lies over numerous land systems (see Attachment 1, section 4.3.4, page 77).

The eastern portion of the IDE lying over the two similarly dominant soil landscape systems:

- The Bindoon System, described as gentle to steep hills with gentle valleys on metamorphic gneiss and schist, and dolerite. Variable soils and wandoo woodland with some Casuarina huegeliana in rocky areas and marri woodland on sandy areas, minor York gum woodland
- The Gabbla System, described as the western boundary of the Darling Plateau to the east of the Dandaragan plateau. This system has gentle to moderate slopes with yellow, red and grey loams and clays, and gravel common and sand pockets. E. wandoo and loxophleba on clay

The wester portion of the IDE lies predominantly within the following dominant soil landscape system:

- The Bassendean System, described as sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

The EPBC Act Protected matters Search Tool (PMST) Report was generated for the Project Area. There were no records of Commonwealth heritage places found in the report. There are also no State Heritage Register or Local Heritage Survey sites within 5 km of the MDE (see Attachment 1, section 4.8.3, page 105).

3.3.2 Describe any Indigenous heritage values that apply to the project area.

The Project area lies within the Whadjuk People Indigenous Land Use Agreement Area (Whadjuk People ILUA, WI2017/015).

There are no recorded Aboriginal heritage sites within the MDE. The closest registered Aboriginal heritage site is Site ID: 15979 - Avon River, which includes a portion of Julimar Brook located 800m to the east of the MDE (see Attachment 1, Figure 8, page 112).

The IDE corridor options intersect a total of 12 different registered aboriginal heritage sites (see Attachment 1, Table 31, page 107). Many of these 12 sites occur in multiple or all corridor options. None of the four Routes intersect with any Aboriginal Lands Trust (ALT) areas.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

MDE:

The MDE is located within the catchment of the Avon River. The western portion (38 %) of the MDE is drained by two un-named tributaries of the Brockman River and the eastern portion (62 %) of the MDE drains into Julimar Brook (see Attachment 1, Figure 7, page 99). The Brockman River and Julimar Brook flow to the south through rural properties and discharge into the Avon River.

Julimar Brook has a catchment area of approximately 22,464 ha, including cleared and forested rural land and a portion of Julimar State Forest. Brockman River has a catchment area of approximately 1500 km2, the majority of which is cleared, and includes a portion of Julimar State Forest.

Surface water flows within the MDE are seasonal, with no natural perennial water bodies present. Farm dams comprise artificial perennial and semi-perennial water bodies within the MDE.

Stream flow monitoring has commenced and will be expanded to characterise surface water flows and water quality both within and external to the MDE.

The main aquifer systems found in the Darling Plateau which are relevant to the Project are:

- Quaternary-age deposits along modern drainage lines – groundwater associated with those sediments is low yielding, shallow and unconfined.
- Weathered bedrock producing a vuggy texture and development of secondary calcrete/silcrete minerals dependent on the degree of weathering.
- Fractured bedrock relating to a local network of interconnected structures and structural integrity.

Fresh, unfractured bedrock at the MDE would be expected to have essentially zero potential to act as an aquifer. However, fractured rock aquifers may be important water sources depending on the extent, intensity and connectivity of fractures.

Aquifer recharge is via rainfall infiltration. Most of the rainfall is lost by evaporation or runoff and only a very minor portion of rainfall infiltrates through the soil and recharges the groundwater. The groundwater table of the entire aquifer follows the regional topographic gradient and tends to come closer to the surface in valleys.

Baseline groundwater monitoring has commenced to characterise groundwater levels, groundwater flow direction and groundwater quality within the MDE.

IDE:

Within the NJF, the IDE is located within the catchment of the Avon River. The western portion (95% %) of the IDE is drained by un-named tributaries of the Brockman River and the eastern portion (5 %) of the IDE drains into Julimar Brook. The Brockman River and Julimar Brook flow to the south through rural properties and discharge into the Avon River.

Julimar Brook has a catchment area of approximately 22,464 ha, including cleared and forested rural land and a portion of Julimar State Forest. Brockman River has a catchment area of approximately 1500 km2, the majority of which is cleared, and includes a portion of Julimar State Forest.

Within the SCP, the IDE intersects the Gnangara Underground Water Pollution Control Area, a P1 Groundwater Protection Area (protected under Metropolitan Water Supply, Sewerage, and Drainage Act 1909). And the Perth Coastal and Gwelup Underground Water Pollution Control Area, a P3 Protection Area.

The IDE intersects with a number of mapped geomorphic wetlands of the SCP, including Conservation Category Wetlands. Wetlands on the SCP are generally an expression of groundwater and are responsive to changes in the catchment which can affect soil transmissivity i.e., the rate of water movement through the soil (Water and Rivers Commission 2001).

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	Yes	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no recorded world heritage properties within or adjacent to the Project area, therefore the proposed action is not considered to have direct and / or indirect impacts to world heritage sites.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no recorded National Heritage properties within or adjacent to the Project area, therefore the proposed action is not considered to have direct and / or indirect impacts to National Heritage sites.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no recorded Ramsar Wetlands within, adjacent to, or downstream of the Project area, therefore, the proposed action is not considered to have direct and / or indirect impacts to any Ramsar Wetlands.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Acacia anomala
No	No	Andersonia gracilis
No	No	Anigozanthos viridis subsp. terraspectans
No	No	Aphelocephala leucopsis
No	No	Banksia mimica
No	No	Botaurus poiciloptilus
No	No	Caladenia huegelii
No	No	Caleana dixonii
No	No	Calidris acuminata
No	No	Calidris canutus
No	No	Calidris ferruginea
Yes	Yes	Calyptorhynchus banksii naso
Yes	Yes	Calyptorhynchus latirostris
No	No	Chamelaucium lullfitzii
No	No	Charadrius leschenaultii
No	No	Conospermum densiflorum subsp. unicephalatum
No	No	Darwinia carnea
No	No	Darwinia foetida
Yes	Yes	Dasyurus geoffroii
No	No	Diplolaena andrewsii
No	No	Diuris micrantha
No	No	Diuris purdiei

Direct impact	Indirect impact	Species
No	No	Drakaea elastica
No	No	Eleocharis keigheryi
No	No	Eucalyptus argutifolia
No	No	Eucalyptus leprophloia
No	No	Galaxiella nigrostriata
No	No	Grevillea corrugata
No	No	Grevillea curviloba subsp. curviloba
No	No	Grevillea curviloba subsp. incurva
No	No	Grevillea flexuosa
No	No	Hesperocolletes douglasi
No	No	Hypocalymma sylvestre
No	No	Leipoa ocellata
No	No	Macarthuria keigheryi
No	No	Macroderma gigas
No	No	Melaleuca sciotostyla
No	No	Melaleuca sp. Wanneroo (G.J. Keighery 16705)
No	No	Numenius madagascariensis
No	No	Petrogale lateralis lateralis
No	No	Pristis pristis
No	No	Rostratula australis
No	No	Sternula nereis nereis
No	No	Synaphea sp. Fairbridge Farm (D.Papenfus 696)
No	No	Thelymitra dedmaniarum
No	No	Thelymitra stellata
No	No	Tringa nebularia
No	No	Westralunio carteri
No	No	Zanda latirostris

Ecological communities

Direct impact	Indirect impact	Ecological community
Yes	Yes	Banksia Woodlands of the Swan Coastal Plain ecological community
No	No	Empodisma peatlands of southwestern Australia
No	No	Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion
Yes	Yes	Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Carnaby's Black-Cockatoo (*Zanda latirostris;* Endangered)

Likelihood of Occurrence: Known to occur.

Potential Impacts:

- Impact to breeding and foraging habitat
- Mortality and injury from vehicle strike
- Indirect impacts to retained habitat

Significance of impacts:

- The MDE and surrounding area contains potential Carnaby's Cockatoo breeding trees (not recorded during surveys) as well as foraging habitat for the species. Up to 940 ha of potential breeding and foraging habitat will be cleared as a result of the proposed action.
- The IDE will utilise cleared land were possible. Where vegetation clearing is required, there is potential for disturbance to breeding and foraging habitat.

Potential impacts of the proposed action on this species may be significant given its conservation status.

Forest red-tailed black cockatoo (FRTBC) (*Calyptorhynchus banksii naso;* Vulnerable)

Likelihood of Occurrence: Known to occur.

Potential Impacts:

- Impact to breeding and foraging habitat
- Mortality and injury from vehicle strike
- Indirect impacts to retained habitat

Significance of impacts:

- The MDE and surrounding area contains potential FRTBC breeding trees (not recorded during surveys) as well as foraging habitat for the species. Up to 940 ha of potential breeding and foraging

habitat will be cleared as a result of the of the proposed action.
- The IDE will utilise cleared land were possible. Where vegetation clearing is required, there is potential for disturbance to breeding and foraging habitat.

Potential impacts of the proposed action on this species may be significant given its conservation status.

Chuditch (*Dasyurus geoffroii;* Endangered)

Likelihood of Occurrence: Known to occur.

Potential Impacts:

- Impact to core habitat
- Mortality and injury from vehicle strike
- Indirect impacts to retained habitat

Significance of impacts:

- The MDE and surrounding area contains potential Chuditch habitat for the species. Up to 940 ha of habitat will be cleared as a result of the proposed action.
- The IDE will utilise cleared land were possible. Where vegetation clearing is required, there is potential for disturbance to habitat.

Potential impacts of the proposed action on this species may be significant given its conservation status.

Banksia Woodlands of the Swan Coastal Plain ecological community(Endangered)

Likelihood of Occurrence: Known to occur.

Potential Impacts:

- Direct impact as a result from vegetation clearing
- Indirect impacts to as a result of altered hydrological regimens and/ or dust deposition

Significance of impacts:

- The conceptual disturbance footprint within the MDE has been designed to avoid a patch of EPBC Act listed TEC (WA listed PEC) (Banksia Woodlands of the Swan Coastal Plain). No impacts to this ecological community are proposed within the MDE.
- The IDE will utilise cleared land were possible. Where vegetation clearing is required, there is potential for disturbance to this ecological community.

Potential impacts of the proposed action on this species may be significant given its conservation status.

Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered)

Likelihood of Occurrence: Likely to occur.

Potential Impacts:

- Direct impact as a result from vegetation clearing.
- Indirect impacts to as a result of altered hydrological regimens and/ or dust deposition

Significance of impacts:

- The MDE does not contain this ecological community.
- The IDE will utilise cleared land were possible. Where vegetation clearing is required, there is potential for disturbance to this ecological community.

Potential impacts of the proposed action on this species may be significant given its conservation status.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

Carnaby's Black-Cockatoo (*Zanda latirostris;* Endangered)

The proposed action will result in the clearing of native vegetation that represents foraging and potential breeding and roosting habitat for this species. Surveys to date have not recorded breeding habitat or roosting activity within the MDE, but there is potential that this may occur. Given this direct impact to habitat, the residual impacts are likely to be significant.

Forest red-tailed black cockatoo (FRTBC) (*Calyptorhynchus banksii naso;* Vulnerable)

The proposed action will result in the clearing of native vegetation that represents foraging and potential breeding and roosting habitat for this species. Surveys to date have not recorded breeding habitat or roosting activity within the MDE, but there is potential that this may occur. Given this direct impact to habitat, the residual impacts are likely to be significant.

Chuditch (*Dasyurus geoffroii;* Endangered)

The proposed action will result in the clearing of native vegetation that represents habitat for this species. Given this direct impact to habitat , the residual impacts are likely to be significant.

Banksia Woodlands of the Swan Coastal Plain ecological community(Endangered)

The proposed action will result in the clearing of native vegetation that likely represents occurrences of this ecological community (within the IDE). Baseline studies across the IDE will be conducted to confirm the vegetation values present within the IDE; however, should direct impacts to the ecological community be unavoidable, the residual impacts may be significant.

Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered)

The proposed action will result in the clearing of native vegetation that may represents occurrences of this ecological community (within the IDE). Baseline studies across the IDE will be conducted to confirm the vegetation values present within the IDE; however, should direct impacts to the ecological community be unavoidable, the residual impacts may be significant.

Conservation significant flora species

The proposed action may result in the clearing of native vegetation that supports, or provides habitat for, EPBC Act listed flora species within the IDE. Baseline studies across the IDE will be conducted to confirm the flora values present within the IDE; however, should direct impacts on listed species be unavoidable, the residual impacts may be significant.

Other conservation significant fauna species and associated habitat

The proposed action may result in the clearing of native vegetation that supports, or provides habitat for, other EPBC Act listed fauna species within the IDE. Baseline studies across the IDE will be conducted to confirm the fauna values present within the IDE; however, should direct impacts on listed species be unavoidable, the residual impacts may be significant.

4.1.4.7 Do you think your proposed action is a controlled action? *

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

The proposed action may result in disturbance of native vegetation, which is utilised by Carnaby's Cockatoo, and FRTBC for foraging as well as providing habitat for Chuditch. There is also potential for disturbance to the Banksia Woodlands of the Swan Coastal Plain ecological community and Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community within the IDE.

Impacts related to the Proposed Action are likely to exceed triggers significant impact guidelines for ecological communities and species (DotE, 2013).

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

An environmental impact assessment is currently in preparation for the Proposal. Preliminary proposed measures to mitigate potential impacts are summarised below. Further mitigation measures will be developed during the environmental impact assessment process, which is running in parallel with the Prefeasibility Study. This allows for proactive integration of environmental considerations and stakeholder feedback in the early engineering phases:

Avoid:

- The MDE is contained to Chalice-owned farmland.
- The conceptual disturbance footprint within the MDE has been designed to avoid a patch of EPBC Act listed TEC (WA listed PEC) (Banksia Woodlands of the Swan Coastal Plain)
- The disturbance footprint within the IDE will be refined pending the outcome of baseline flora and vegetation surveys, with avoidance of threatened ecological communities as far as practicable.
- Pre-clearance surveys will be undertaken to ascertain no active nesting Black Cockatoo trees are present.

Minimise:

- Prioritise use of previously disturbed areas to the extent possible.
- Minimise clearing, within the MDE and IDE to the extent required for safe and adequate constriction and operations.
- Clearing will be undertaken progressively to allow fauna to migrate away from clearing activities or machinery movement.
- Implementation of light, noise and vibration measures to minimise indirect impacts to fauna.
- Limit the spread of existing weeds by implementing a Weed Management strategy specific to the MDE and IDE.

Rehabilitate:

- Chalice will prepare and implement a Mine Closure Plan (MCP) in accordance with the Statutory Guidelines for Mine Closure Plans (DMIRS 2020), for the Proposal.

- Inclusion of offsets to mitigate any significant residual impact from the Proposal via restoration and connection of fragmented habitat in the vicinity of the MDE

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

An offset proposal / strategy will be prepared during the assessment of the project once the significant residual impacts have been determined regarding matters protected under the EPBC Act and the EP Act.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	Yes	Actitis hypoleucos
No	Yes	Apus pacificus
No	Yes	Calidris acuminata
No	No	Calidris canutus
No	Yes	Calidris ferruginea
No	No	Calidris melanotos
No	No	Charadrius leschenaultii
No	Yes	Motacilla cinerea
No	No	Numenius madagascariensis
No	Yes	Pandion haliaetus
No	No	Pristis pristis

Direct impact	Indirect impact	Species
No	No	Sterna dougallii
No	Yes	Tringa nebularia

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Potential impacts to migratory species as a result of the proposed action include:

- Potential indirect impacts to habitat health
- Potential indirect impacts to behaviour (from dust, noise, and light)

Given the below species and/ or their habitat have the potential to occur within the proposed action area, there is potential for indirect impacts on these species to occur as a result of the proposed action:

Common Sandpiper (*Actitis hypoleucos*)

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Fork-Tailed Swift (*Apus pacificus*)

- Likelihood of Occurrence: Likely.
- The Fork-tailed Swift is a Migratory species that is thought to be almost entirely aerial when visiting Australia, so the Study Area is not likely to provide important habitat for this species.

Sharp-tailed Sandpiper (*Calidris acuminata*)

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Curlew Sandpiper (*Calidris ferruginea*)

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Grey Wagtail (*Motacilla cinerea*)

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Osprey (*Pandion haliaetus*)

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Common Greenshank (*Tringa nebularia)*

- Likelihood of Occurrence: Possible
- Although likely to occur on occasion, this species is not likely to be present in significant numbers.

Given the below species and their preferred habitat are unlikely to occur within the proposed action area, it is unlikely direct or indirect impacts on these species will occur as a result of the proposed action:

Red Knot (Calidris canutus)

- Likelihood of Occurrence: Unlikely
- Preferred habitat does not occur within the IDE or MDE. This species is not likely to be present.

Greater Sand Plover (*Charadrius leschenaultii*)

- Likelihood of Occurrence: Unlikely
- Preferred habitat does not occur within the IDE or MDE. This species is not likely to be present.

Pectoral Sandpiper (*Calidris melanotos*)

- Likelihood of Occurrence: Unlikely
- Preferred habitat does not occur within the IDE or MDE. This species is not likely to be present.

Eastern Curlew (*Numenius madagascariensis*)

- Likelihood of Occurrence: Unlikely
- Preferred habitat does not occur within the IDE or MDE. This species is not likely to be present.

Roseate Tern (*Sterna dougallii*)

- Likelihood of Occurrence: Unlikely
- Preferred habitat does not occur within the IDE or MDE. This species is not likely to be present.

Freshwater Sawfish (*Pristis pristis*)

- Likelihood of Occurrence: Highly Unlikely
- This species is a shark, and the Proposed Action is terrestrial based.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

There are no recorded Migratory Species that frequent the area within or adjacent to the IDE or MDE. While potentially suitable habitat may occur within the IDE, significant impacts are unlikely to occur due to the small impacts on these potentially suitable habitats (wetlands). The management of potential impacts through implementation of management plans during construction and operations will further reduce impacts to the environment.

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

The proposed action is not likely to have a significant impact on migratory species according to the significant impact guidelines (DotE,2013).

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

An environmental impact assessment is currently in preparation for the Proposal. Preliminary proposed measures to mitigate potential impacts are summarised below. Further mitigation measures will be developed during the environmental impact assessment process, which is running in parallel with the Prefeasibility Study. This allows for proactive integration of environmental considerations and stakeholder feedback in the early engineering phases:

Avoid:

- The MDE is contained to Chalice-owned farmland.

Minimise:

- Prioritise use of previously disturbed areas to the extent possible.
- Minimise clearing, within the MDE and IDE to the extent required for safe and adequate constriction and operations.
- Clearing will be undertaken progressively to allow fauna to migrate away from clearing activities or machinery movement.
- Implementation of light, noise and vibration measures to minimise indirect impacts to fauna.
- Limit the spread of existing weeds by implementing a Weed Management strategy specific to the MDE and IDE.

Maintain existing surface water flow regimes as much as possible with the installation and maintenance of surface water/drainage infrastructure across the IDE.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

No offsets are proposed as significant residual impacts to Migratory Species are unlikely.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action does not involve any nuclear actions.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action does not contain a marine component and does not intersect with a Commonwealth Marine Area.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is wholly located on the western side of Australia.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not large coal mining development or coal seam gas project.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Commonwealth land area
Yes	Yes	Commonwealth Land -
Yes	Yes	Defence - MUCHEA ARMAMENT RANGE

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.10.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The proposed action includes disturbance that intersects Commonwealth Land. The action will require clearing of native vegetation and ground disturbance to install water pipeline infrastructure within the IDE. Up to 48 ha of native vegetation may require clearing within the areas of Commonwealth land to facilitate pipeline construction.

The clearing of native vegetation has the potential to impact vegetation, flora, flora habitat and fauna habitat. During construction, the action also has the potential to directly impact on fauna (mortality) resulting from entrapment.

Given the narrow, linear, and temporary nature of the proposed disturbance, indirect impacts on Commonwealth lands, outside of the IDE are unlikely to occur.

4.1.10.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.10.5 Describe why you consider this to be a Significant Impact. *

The proposed action will result in the clearing of native vegetation that represents habitat for threatened species and represents occurrences of a threatened ecological community as described in section 4.1.4.5 of this referral.

While the area of impact within the Commonwealth Land intersecting the project areas cannot be determined as the boundaries of the Commonwealth Land are not publicly available, the impacts to these species and communities may be significant, if direct impacts to habitat and threatened ecological communities are unavoidable.

4.1.10.7 Do you think your proposed action is a controlled action? *

Yes

4.1.10.8 Please elaborate why you think your proposed action is a controlled action. *

The proposed action may result in disturbance of native vegetation, which is utilised by Carnaby's Cockatoo, and FRTBC for foraging, and habitat for Chuditch as well as vegetation representing a threatened ecological community (within the IDE).

Impacts related to the Proposed Action may exceed triggers within significant impact guidelines for actions taken on Commonwealth land (DotE, 2013).

4.1.10.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

An environmental impact assessment is currently in preparation for the Proposal. Preliminary proposed measures to mitigate potential impacts are summarised below. Further mitigation measures will be developed during the environmental impact assessment process, which is running in parallel with the PFS. This allows for proactive integration of environmental considerations and stakeholder feedback in the early engineering phases:

Avoid:

- Pre-clearance surveys will be undertaken to ascertain no active Black Cockatoo trees are present.

Minimise:

- Prioritise use of previously disturbed areas to the extent possible.
- Minimise clearing, within the MDE and IDE to the extent required for safe and adequate constriction and operations.
- Clearing will be undertaken progressively to allow fauna to migrate away from clearing activities or machinery movement.
- Implementation of light, noise and vibration measures to minimise indirect impacts to fauna.
- Limit the spread of existing weeds by implementing a Weed Management strategy specific to the MDE and IDE.

Rehabilitate:

- Inclusion of offsets to mitigate any significant residual impact from the Proposal via restoration and connection of fragmented habitat in the vicinity of the MDE.

4.1.10.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

An offset proposal / strategy will be prepared during the assessment of the project once the significant residual impacts have been determined regarding matters protected under the EPBC Act and the EP Act.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is confined to Australia.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

- Threatened Species and Ecological Communities (S18)
- Commonwealth Land (S26)

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

The design of the MDE and conceptual disturbance footprint has been influenced by the location of the resource and the initial findings from the baseline surveys and early stages of Prefeasibility Study. Chalice has confined the MDE to Chalice-owned farmland.

The design of the IDE was undertaken through an iterative approach, the final options selection based on the outcomes of a multi criteria evaluation (MCE). This evaluation considered the following:

- Technical Considerations
  - Deliverability
  - Integration with the wider service network
  - Impact on wider development potential
- Environmental and Societal Factors
  - Environmental impact - delivery, operation and closure
  - Social impact (including cultural heritage) – delivery, operation and closure
- Cost and Schedule
  - Capital Expenditure
  - Operational Expenditure
  - Project Schedule Risk

As additional surveys and investigations (both biological and cultural) and PFS progress, the Conceptual Disturbance Footprint will be subject to change to avoid, where possible, and minimise potential impacts to, identified significant environmental and cultural values.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	26/03/2024	No	High

1.2.7 Public consultation regarding the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation’s environmental policy and planning framework

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 2_Chalice Mining Limited _Environment Policy.pdf Chalice Mining Limited - Environment Policy	23/06/2022	No	High

3.1.1 Current condition of the project area's environment

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

3.1.2 Existing or proposed uses for the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

3.2.1 Flora and fauna within the affected area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf	25/03/2024	No	High

Gonneville Project Referral Supporting Document

3.2.2 Vegetation within the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

3.3.1 Commonwealth heritage places overseas or other places that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1_Gonneville Project_ Referral Supporting Document_March 2024.pdf Gonneville Project Referral Supporting Document	25/03/2024	No	High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA
Representative's name	Jocelyn Zimmerman
Representative's job title	Environmental Approvals Manager

Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Jocelyn Zimmerman of CHALICE MINING LIMITED**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	47116648956
Organisation name	CHALICE MINING LIMITED
Organisation address	6005 WA
Representative's name	Alex Dorsch
Representative's job title	Managing Director and CEO
Phone	08 9322 3960
Email	adorsch@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Alex Dorsch of CHALICE MINING LIMITED**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I, **Alex Dorsch of CHALICE MINING LIMITED**, the Person proposing the action, consent to the designation of **Jocelyn Zimmerman of Chalice Mining Limited** as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☐ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

ABN/ACN	47116648956
Organisation name	Chalice Mining Limited
Organisation address	Level 3, 46 Colin Street, West Perth, WA 6005
Representative's name	Jocelyn Zimmerman
Representative's job title	Environmental Approvals Manager
Phone	0893223960
Email	jzimmerman@chalicemining.com
Address	Level 3, 46 Colin Street, West Perth, WA 6005

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Jocelyn Zimmerman of Chalice Mining Limited**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *