Pre-Referral Screening Report

Project: Lei Lithium Project

EcOz Environmental Consultants was engaged by Lithium Plus Minerals Limited to undertake pre-referral screening of their proposal, Lei Lithium Project.

The purpose of the screening is to determine whether the proposal has the potential for significant environmental impact under *the Environment Protection Act 2019*. A significant environmental impact is defined by Section 11 of the *Environmental Protection Act 2019* as:

An impact of major consequence having regard to:

- the context and intensity of the impact; and
- the sensitivity, value and quality of the environment impacted on, and the duration, magnitude and geographic extent of the impact.

Pre-referral screening was undertaken using the tool provided in the *Guideline – Referring a Proposal to the NT EPA* https://ntepa.nt.gov.au/publications-and-advice/environmental-management. The screening records answers to the questions shown in Figure 2.

The following key information sources were referenced to conduct the screening:

- NR Maps: Natural Resource Maps NT (DEPWS, 2024)
- Groundwater Dependent Ecosystems Atlas (GDE Atlas; BoM 2024)
- Aboriginal Areas Protection Authority (AAPA) Abstract of Records
- Consultation with the NT Heritage Branch (search of the Northern Territory Heritage Register and the Heritage Branch archaeological database)
- Ecological Assessment of EL31091 (EcOz, 2024b)
- Supplementary Ecological Assessment (EcOz, 2024c)
- Stakeholder Engagement Plan (Lithium Plus et al 2024)
- Geochemical Characterisation of Proposed Waste and Ore Materials, Lei Lithium Project (EGi, 2024)
- Preliminary Groundwater Assessment (Groundwater Enterprises, 2023)
- Drilling Report – Lei Lithium Deposit – Groundwater Bore Drilling (CDM Smith, 2024)
- Lei Lithium Project – Preliminary Surface Water Assessment (WRM Water & Environment, 2024).

The pre-referral screening results are documented in Table 1 below. The screening indicates that the Project has potential to impact 7 of the NT EPA's 14 environmental factors. The 7 factors require further assessment either because the environmental values associated with the factor may be significantly impacted, or because there was insufficient information available to make a conclusive assessment. Therefore, the Project is being referred under the *Environment Protection Act 2019.*

Project overview

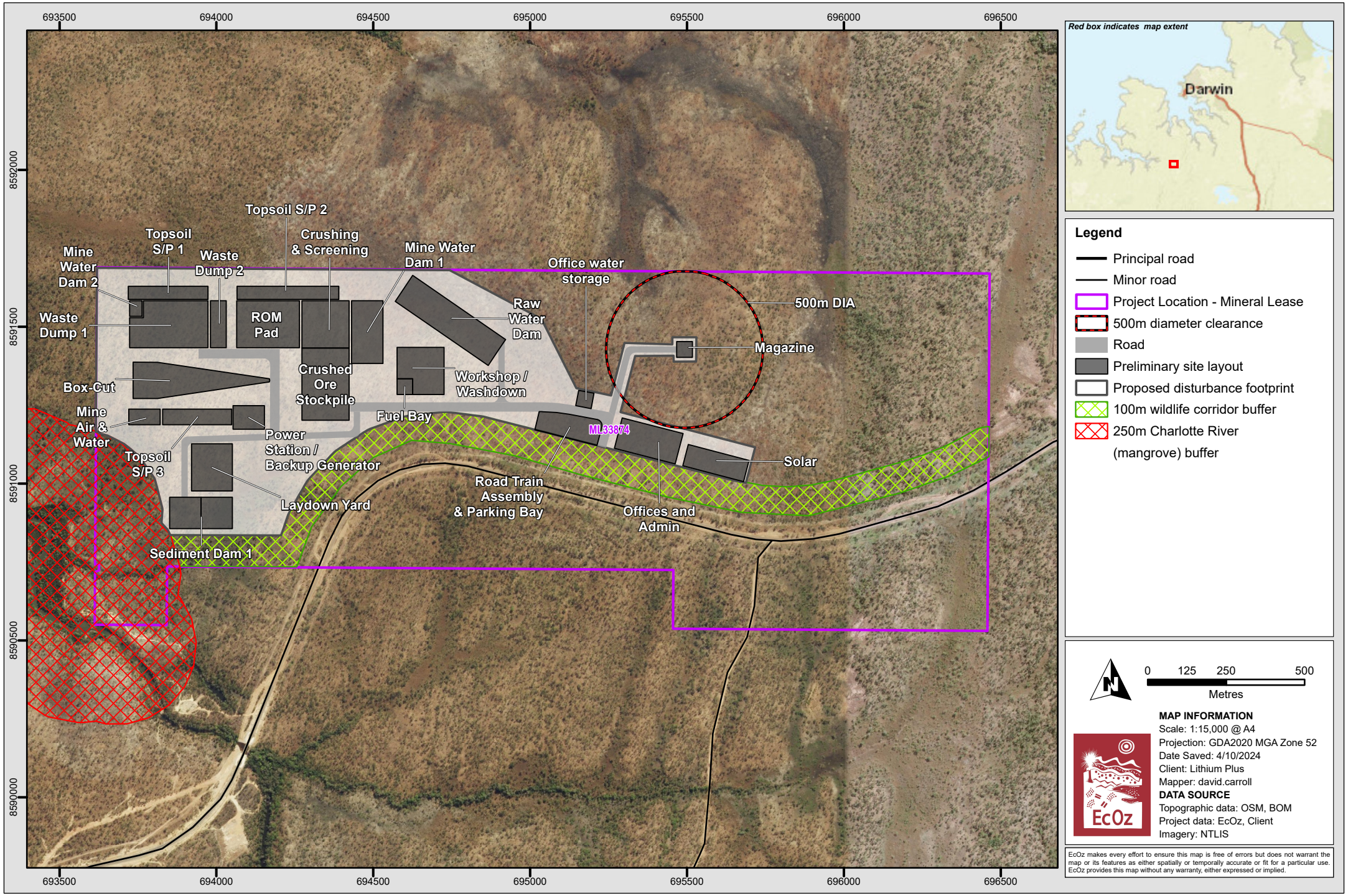
Lithium Plus propose to develop an underground mine at the Project, located in the Northern Territory, 30 km south of Darwin within mineral lease (application) 33874 on Fog Bay Road. The tenement forms a part of the Bynoe Pegmatite Field located on the Cox Peninsula in the Northern Territory, approximately 2 km south of the Lithium Developments (Grants NT) Pty Ltd (Lithium Developments), Finniss Lithium Project BP33 underground mine.

The key components of the Project are summarised below:

- Mining of the pegmatite deposit containing spodumene ore using box cut and portal entry with decline and underground.
- Total depth of the underground workings is approximately 700 m.
- Life of mine is approximately 7 years (inclusive of 12 months of construction, 68 months of operation and 6 months of rehabilitation and closure).

- Transfer of mined material to a Run of Mine (ROM) Pad located adjacent to the box cut/underground portal.
- Crushing and screening to produce Direct Shipping Ore (DSO) at an estimated peak production rate of 600 kilo tonnes per annum (kt pa). Feasibility Studies are currently being undertaken to optimise operation for a 750 kt pa production capacity at peak production.
- Establishment of Waste Rock Dumps (WRDs) for temporary disposal of chemically benign waste rock prior to being used for backfill underground and backfill of the box-cut on closure.
- Transport spodumene as DSO and/or beneficiated product to Darwin Port by road for export overseas.
- Site infrastructure components: Site access road, administration offices, employee facilities, laydown and storage areas, workshop, fuel storage and refuelling areas, internal haul roads; water storages, pumps and pipelines; drainage and sediment basins, run of mine pad, stockpiling areas, waste rock dumps, box cut and safety bund, portal and decline, ventilation, return air raise, explosives storage.

Total proposed disturbance footprint is <100 ha (Figure 1).



Path: Z:\01 EcOz_Documents\05 EcOz M-Files GIS\2024\EZ23203 - Lithium Plus NT EPA referral\1. Project Files\2. Report Maps\EZ23203 Referral\EZ23203 Referral.aprx

Figure 1. Map of preliminary mine design and proposed disturbance footprint

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The pre-referral screening was undertaken with reference to the screening questions shown in Figure 2 and the results are documented in Table 1 below.

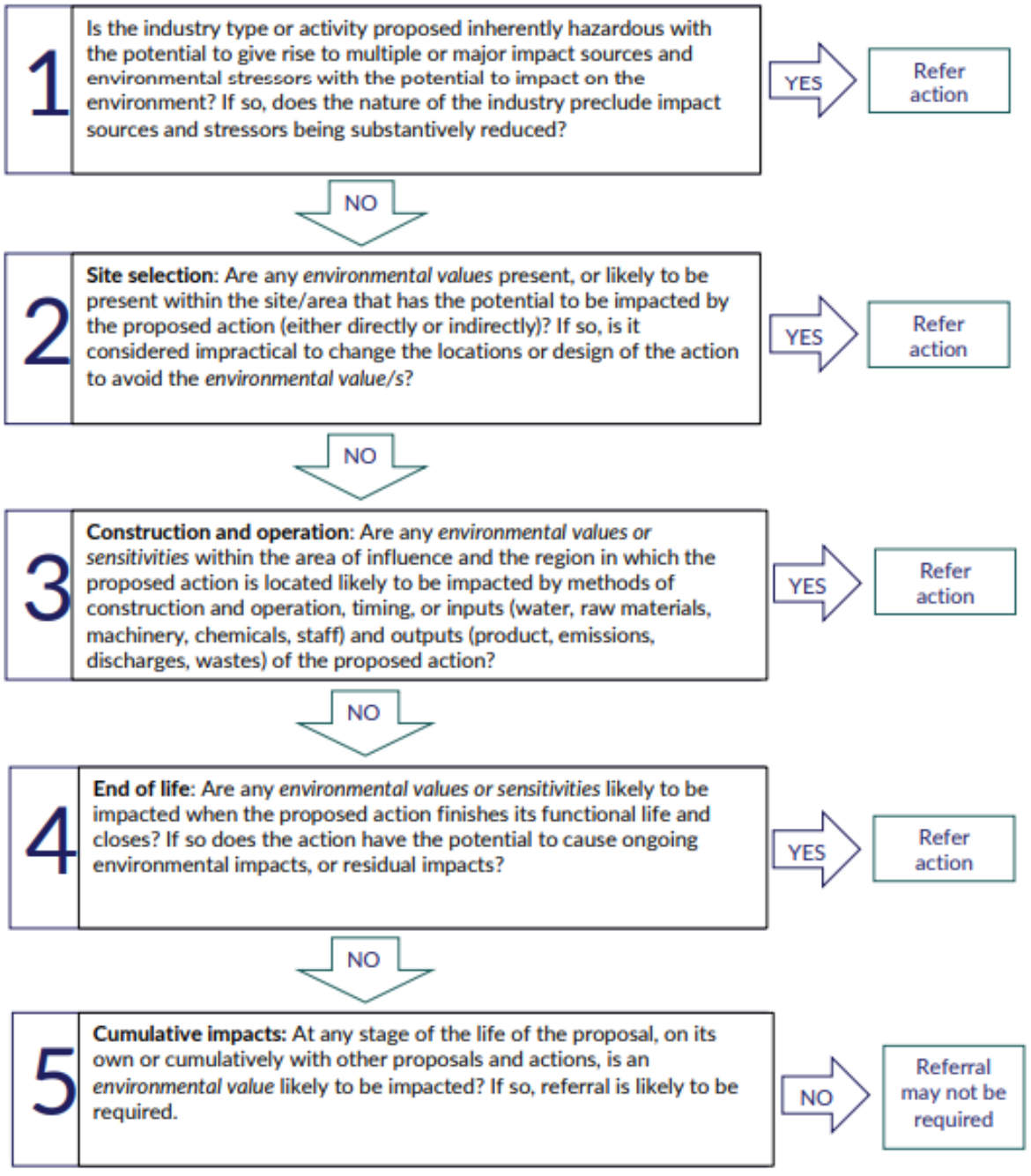

Figure 2. Pre-screening tool screening questions (Source: NT EPA 2021)

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Table 1. Pre-referral screening tool checklist prepared for the Lei Lithium Project

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
			Q1	Q2	Q3	Q4	Q5
Is the industry type or activity proposed inherently hazardous with the potential to give rise to multiple or major impact sources and environmental stressors with the potential to impact on the environment? If so, does the nature of the industry preclude impact sources and stressors being substantively reduced?			No ☒ Yes ☐_____				
LAND	1) Landforms Objective: Conserve the variety and integrity of distinctive physical landforms.	• distinctive features in the landscape, either geological or anthropogenic • subterranean karstic terrain and faults • craters, gorges, ranges, caves, massifs, escarpments, plateaus • monuments • tourism related to landforms	Yes	☐	☐	☐	☐
			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: The Project area is within the sandstone plains and rises of the Bustard land system, characterised by very low ridges and hills on Lower Proterozoic sediment and intervening alluvial flats. Locally, the highest elevations (32 mAHD) occur along a ridge line coincident with the Fog Bay Rd that is situated to the south-east of the deposit. The lowest elevations (4 mAHD) occur along the Charlotte River to the south-west of the Lei deposit (Groundwater Enterprises 2023). **Comments on whether or not a significant impact is likely:** The Proposal will not have a significant impact on landforms because there are no distinct natural landforms within the Project area.						
	2) Terrestrial environmental quality Objective: Protect the quality and integrity of land and soils so that environmental values are supported and maintained.	• high quality soils, including chemical, physical, biological and aesthetic qualities that support life • the biological processes that depend on soil quality	Yes	☐	☒	☐	☐
			No	☒	☐	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: Land and soil integrity: The Proposal will involve small-scale land clearing (<100 ha). Erosion risk: • Locally, the highest elevations (32 mAHD) occur along a ridge line coincident with the Fog Bay Rd that is situated to the south-east of the deposit. The lowest elevations (4 mAHD) occur along the Charlotte River to the south-west of the Lei deposit (Groundwater Enterprises 2023). • Erosion risk is present due to slope greater than 2% (NRMaps: DEPWS 2024) within 42.8% of the proposed disturbance footprint. The predominate land unit within the proposed disturbance footprint is 2a1. Land unit 2a1 has a slope of up to 4% (NR Maps) and covers 46% of the mineral lease. An Erosion and Sediment Control Plan (ESCP) will be developed (specific to construction and operations) in accordance with the International Erosion Control Association Best Practice Erosion Control Guidelines (IECA 2008) and endorsed by a Certified Professional in Erosion and Sediment Control. Construction and operation management plans will be developed that include mitigations for dust. Potential impacts of erosion resulting in sedimentation and increased turbidity in receiving waterways is assessed in inland water quality. Land and soil quality: Hazardous materials: • The Proposal will involve storage and handling of hazardous materials including bulk diesel fuel storage (volume) and explosives (ammonium nitrate). Hazardous material will be managed in accordance with the *Waste Management Pollution Control Act* and managed in accordance with a Safety Management Plan. • There is no processing of ore on-site, thus the operation does not use hazardous materials or chemicals that could contaminate the land and soils. Potential impacts of hydrocarbon contamination to receiving surface and groundwater is assessed in inland water quality. Acid sulfate soil (ASS): • There is no mapped occurrence of ASS within the Project area. ASS mapping (NRMaps: DEPWS 2024) indicates a high probability of occurrence of ASS to the west of the Project area within the tidal reaches of the Charlotte River. The potential impacts of on ASS from reduced groundwater levels (via dewatering activities) is assessed in Inland water quality. Geochemical characterisation of waste rock and ore: Geochemical characterisation of the waste rock and ore material undertaken by EGi (2024) indicates that the material is predominantly categorised barren (NAF) with a low propensity to leach metal(loid)s on contact with water, therefore represents very low to low risk of environmental impact. There is a high degree of certainty that the risk of ARD is low based on the geochemical characterisation undertaken at the Lei Project. Waste rock and ore will be managed in accordance with best practice guidelines and standard measures. The potential impacts of ARD to surface and groundwater are assessed in Inland water quality. On closure, all hazardous material storages will be removed from site, and the site rehabilitated, and any minor soil contamination remediated.						

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Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
	Comments on whether or not a significant impact is likely: The Proposal is considered to trigger referral because of a potential impact to land and soil; • Integrity due to soil erosion, and • Quality due to hydrocarbon contamination and oxidation of stockpiled waste rock and ore materials.						
	3) Terrestrial ecosystems <u>Objective</u>: Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	• 'sensitive or significant' vegetation or buffers (as defined in the NT Land Clearing Guidelines) • listed threatened species and their habitat (NT and Commonwealth) • listed migratory species and their habitat (Commonwealth) • listed threatened ecological communities (Commonwealth) • locally endemic or restricted species and their habitat • species that are data deficient with unknown protection status • protected area or reserve, including Indigenous Protected Area • biosecurity • high quality biological and functional diversity, integrity and services	Yes	☒	☐	☐	☐
			No	☐	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: <u>Vegetation and habitat:</u> Vegetation in disturbance footprint is common and widespread with no unique habitat values. The Proposal will involve small-scale land clearing (<100 ha). Regional scale groundwater dependent ecosystems (GDEs) mapped from a National assessment (GDE Atlas: BOM 2024) suggests a low potential for terrestrial GDE within the Project area, located on a tributary of the Charlotte River, and a moderate potential for terrestrial GDEs more broadly across the Project area, within the disturbance footprint. There will be direct impacts via land clearing of the mapped terrestrial GDEs within the proposed disturbance footprint (<100 ha). <u>Significant or sensitive vegetation:</u> Of relevance to the Project area are three significant vegetation types: riparian vegetation, mangroves and old-growth forest (EcOz 2024a). Within the Project area: • Riparian vegetation edges the creek lines that cross the Project area (tributaries of the Charlotte River) • Some large hollow-bearing trees were noted during an EcOz field surveys; however, the densities observed did not qualify for sensitive vegetation. Further assessment may be required once the footprint is refined. There are two significant vegetation types, south of the Project area, outside of the proposed disturbance footprint: • Riparian vegetation surrounding the Charlotte River (field verified), the Charlotte River is also mapped from a National assessment (GDE Atlas: BOM 2024) as moderate potential aquatic groundwater dependent ecosystems (GDEs). • Mangrove woodlands directly downstream the Project area (field verified). The potential impacts to riparian vegetation, mangroves and groundwater dependant ecosystems (GDEs) in relation to groundwater drawdown and altered surface water flows are assessed in hydrological processes. The potential impacts to riparian vegetation, mangroves and groundwater dependant ecosystems (GDEs) in relation to altered water quality is assessed in inland water quality. <u>Threatened Flora:</u> There is no identified threatened flora species in the Project area. Targeted threatened flora surveys within the study area (North-west portion of proposal area) indicated that two possible threatened flora species in the project footprint – Darwin Cycad (*Cycas armstrongii*) and *Typhonium praetermissum* – are <u>not</u> present. The targeted survey for *Typhonium praetermissum* was undertaken in the NTG moderate and high likelihood modelled habitat for *Typhonium praetermissum*. An updated version of the *Typhonium praetermissum* habitat modelling was released by the NTG following the targeted surveys, which omits previously modelled habitat from the study area (EcOz 2024a). <u>Fauna:</u> • Increased volumes of road traffic, including along the access road will increase the potential for animal mortalities due to roadkill. • Project activities, particularly those that generate noise, vibration, light and dust, may disturb fauna using habitat within and adjacent to the project area. <u>Threatened Fauna:</u> Threatened fauna species (Northern Brushtail Possum and Black-footed Tree-rat) are known to occur within the Project area (EcOz 2024a and 2024b). <u>Weeds:</u> Weed infestations appear to be confined to previously disturbed areas. Weed density is relatively low. Introduction and spread of weeds have potential to increase bushfires and risks to biodiversity. However, weeds are managed and impact not likely significant (EcOz 2024a). **Comments on whether or not a significant impact is likely:** The Proposal is considered to trigger referral because of potential impact to terrestrial ecosystems due to: • Direct loss of vegetation and habitat • Loss of significant or sensitive vegetation types • Fauna disturbance and reduced habitat quality • Direct mortality of fauna • Loss threatened fauna species habitat and disturbance and/or loss of individuals.						

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Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
WATER	1) Hydrological processes Objective: Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.	• the supply and quantity of water in surface water features including rivers, lakes, wetlands, swamps, creeks, billabongs, intermittent streams, floodplains, mangroves and drainage lines • the supply and quantity of water in groundwater features including aquifers, aquitards, water tables and the ecosystems they support (stygofauna, vegetation and groundwater dependent ecosystems) • declared beneficial uses • present and future uses, and users of water • current or potential water supplies, including regional scale aquifers • culturally important water features or other features affected by water level	Yes	☒	☐	☐	☐
			No	☐	☐	☐	☐
			Uncertain	☐	☒	☒	☒
			Not Applicable	☐	☐	☐	☐

Background information and environmental values:

Surface water flow regimes

The Lei Project is located in the Finniss River region and falls within the Bynoe Harbour catchment. The area is drained by the Charlotte River, located 300 m south-west of the Lei pegmatite at its closest point. The Charlotte River is a small, ephemeral water course that drains a sub-catchment of approximately 170 km^2. The Charlotte River rises in land to the south-east and drains south-west flowing into Bynoe Harbour approximately 8 km (direct line) downstream of the Lei Project. Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei deposit. The Lei deposit is situated on the western side of a gentle ridge with the land gradient falling to the south-west toward the Charlotte River. The area to the north of the deposit and proposed box-cut and decline is flatter lying and falls gently to the north-west toward a small, ephemeral drainage line that joins a tributary of the Charlotte River.

There are no permanent surface water features within the Project area. Flooding in the Charolotte River has minimal impact within the mineral lease area. (WRM 2024).

Uncertainties exist with regard to alteration of surface water flows from construction of the mine site infrastructure.

Groundwater conditions

There are no existing registered groundwater bores onsite to inform local groundwater conditions. Six monitoring bores were drilled and constructed at five locations at the Project during November to December 2023 to inform the groundwater model. The drilling of the bores confirmed the following (CDM Smith 2024):

- The geology of the drilled holes is all composed of the Burrell Creek pegmatites.
- The drilled boreholes typically yield an airlift flow rate of around 1 L/s or lower. However, in the LG4 well a fracture zone as intersected which increased the airlift to 2-3 L/s. This indicates that groundwater flow could be assumed to occur in fractures located in the unweathered zone, where the fractures have not been filled with clay.
- The aquifer in the local area exhibits a shallow water table, with depths generally less than 15 meters below ground level. This depth to water decreases (ie water levels rise) closer to the Charlotte River. Although the depth of the groundwater is different from the observations in the BP33 bore location, the depth of weathering in the region ranges from 35 to 55 meters below ground level, consistent with the weathering depth inferred in that bore location.
- The slug tests conducted in unweathered deeper bores have revealed that the hydraulic conductivity ranges between 0.13 to 6.8 m/day. The LG1-S has the lowest hydraulic conductivity, recorded at 0.05 m/day, and is located in the weathered zone of pegmatites. This confirms that weathering in pegmatites can cause a decrease in hydraulic conductivity, which could be interpreted as a potential confining bed to the lower, more permeable profiles.
- Although it cannot be confirmed how hydraulic conductivity changes with different strikes, secondary permeability and anisotropy have been observed during drilling. Flow has been noted to increase in certain depths where fractures are present.
- Water quality measurements indicate the presence of fresh water in the aquifer. The EC ranges from 85 to 210 µS/cm, with the lowest observed in LG3 and the highest in the deep bore of LG1 (LG1-D).
- Available DEM data and measured groundwater depths suggest that the groundwater flows southwest toward the Charlotte River.

Other groundwater users:

The project area is located within the Darwin Rural Water Control District (DRWCD).

The closest registered bore (RN041993) for rural stock and domestic purposes is located 2.6 km south (up gradient) of the Lei deposit. All other registered water supply bores are located over 7 km from the Lei deposit.

There is one surface water extraction licence located ~3.5 km north of the project area (Observation Hill Dam). There are no other water extraction licences within 10 km of the project area.

Groundwater dependent ecosystems (GDEs):

GDEs have been identified using the GDE Atlas, a national data set of Australian GDEs developed by the Bureau of Meteorology (GDE Atlas: BOM, 2024).

Regional scale GDE mapping suggests a low and moderate potential terrestrial GDE within the Project area, and a moderate potential for aquatic GDEs along the Charlotte River to the south/south-west of the Project area. The presence/absence of the GDEs is uncertain.

Dewatering activities (box cut and underground) will result in a lowering of groundwater levels in the aquifer surrounding the mine and may lead to a reduction in groundwater availability to terrestrial/aquatic GDEs (if present) and a groundwater supply bore to the south of the Project. While the Burrell Creek Formation has typically low permeability, there is potential for the mine and the Charlotte River to be connected by fracture networks due to its proximity and location along strike. If this occurs the river may act as a constant source of water to the underground mine and increase dewatering requirements. The zone of impact for groundwater drawdown and recovery of the groundwater level post mining is currently unknown. There is potential or cumulative impacts if neighbouring mines are operational at the same time.

Comments on whether or not a significant impact is likely:

The Proposal is considered to trigger referral because of potential significant impact to the hydrological processes due to uncertainty related to:

- Groundwater drawdown from dewatering activities, reducing groundwater availability and alteration of flows for
    - other consumptive uses
    - mangrove communities, riparian vegetation and GDEs within the Charlotte River and its tributaries.
- Alteration of surface water flows from construction of the mine site infrastructure with potential to cause
    - Mine site inundation

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
	○ Reduced surface water availability to the Charlotte River and its tributaries.						
	2) Inland water environmental quality Objective: Protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.	• the quality of water in surface water features including rivers, lakes, wetlands, swamps, creeks, billabongs, intermittent streams, floodplains, mangroves and drainage lines • the quality of water in groundwater features including aquifers and water tables • declared beneficial uses • present and future uses and users of water • current or potential water supplies, including regional scale aquifers • potability / drinkability • culturally important water features	Yes	☒	☐	☐	☐
			No	☐	☐	☒	☐
			Uncertain	☐	☒	☐	☒
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: Disturbance footprint: Erosion risk is present due to slope greater than 2% (NRMaps: DEPWS 2024) within 42.8% of the proposed disturbance footprint. The predominate land unit within the proposed disturbance footprint is 2a1. Land unit 2a1 has a slope of up to 4% (NR Maps) and covers 46% of the mineral lease. However, the proposed disturbance is small-scale (<100 ha), and an Erosion and Sediment Control Plan (ESCP), will be developed in accordance with the International Erosion Control Association Best Practice Erosion Control Guidelines (IECA 2008), and endorsed by a Certified Professional in Erosion and Sediment Control for implementation onsite during construction and operations. Surface water • The Project lies within two Beneficial Use Declaration areas: ○ Fog Bay Area - beneficial use of aquatic ecosystem protection; and ○ Darwin Rural Water Control District (DRWCD), beneficial use of agriculture, aquaculture, public water supply, environment, cultural, industry, rural stock and domestic, mining activity and petroleum activity. • No known consumptive uses of surface water downstream of mine site. • No known sources of contamination. • The Project area is drained by the Charlotte River, a small, ephemeral water course located 300 m south-west of the Lei Project, flowing into Bynoe Harbour ~8 km downstream (direct line). Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei Project and is influenced by the movement of water from Bynoe Harbour due to tidal activity. • Background surface water quality within the Charlotte River upstream of the mine is freshwater, adjacent to the mine is fresh and brackish/saline, and further downstream is saline. The pH is slightly acidic (>5.5pH) to neutral (<7.5pH). • Surface water quality in the receiving Charlotte River could be affected by discharge of mine impacted water (sediments, hydrocarbon contamination (leaks and spills)) elevated nutrients, metals/metalloids from mined waste and ore, discharge of excess water dewatered from the underground mine) and have impacts on significant vegetation (mangroves and riparian vegetation) and aquatic ecosystems downstream of the mine site. • ASS mapping (NRMaps 2024) indicates a high probability of occurrence of ASS to the west of the Project area within the tidal reaches of the Charlotte River. Groundwater The closest registered bore (RN041993) drilled in 2020 to 42m depth for rural stock and domestic purposes located 2.6 km south of the Lei deposit. All other registered water supply bores are located over 7 km from the Lei deposit. Baseline water quality monitoring indicates that groundwater is fresh, with EC ranging from 85 to 210 µS/cm. There are naturally elevated nutrients (TP and TN) and filtered metals/metalloids (Al, As and Zn) that exceed the ANZG (2018) freshwater and marine water aquatic guidelines. It is anticipated that groundwater inflows dewatered from the box cut and underground mine may contain these elevated concentrations of nutrients and metals and may impact surface water quality in the receiving waters. While the Burrell Creek Formation has typically low permeability, there is potential for the mine and the Charlotte River to be connected by fracture networks due to its proximity and location along strike. If this occurs the river may act as a constant source of water to the underground mine and increase dewatering requirements. Groundwater is potentially of good quality beneath the Lei deposit but may be more saline near the Charlotte River due to tidal influence. There is potential for poorer quality groundwater to migrate towards the underground mine due to changes in groundwater gradients caused by dewatering. **Comments on whether or not a significant impact is likely:** The Proposal is considered to trigger referral because of potential significant impact to the inland water environmental quality due to mining activities impacting water quality through: • Sediment laden runoff and increased turbidity contaminating surface water. • Hydrocarbon contamination (leaks and spills) contaminating surface and groundwater. • Elevated nutrients and metals/metalloids from extraction of groundwater impacting surface water quality • Elevated metals/metalloids from mined waste and ore stockpiles contaminating surface and groundwater • Saline intrusion through dewatering activities and uncertainty related to the connectivity between the Charlotte River and the aquifer • Release of contaminants from exposure of acid sulfate soil (ASS) within Charlotte River due to the lowering of the groundwater from dewatering activities (uncertain).						
	3) Aquatic ecosystems Objective: Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	• threatened species • the health of the biota in inland waterways • the habitats that support the lifecycle of aquatic biota • groundwater dependent ecosystems • Ramsar wetlands • high quality biological and functional diversity, integrity and services	Yes	☐	☐	☐	☐
			No	☐	☐	☒	☐
			Uncertain	☒	☒	☐	☒
			Not Applicable	☐	☐	☐	☐

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Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
	Background information and environmental values: <u>Surface water</u> •The area is drained by the Charlotte River, a small, ephemeral water course located 300 m south-west of the Lei Project, flowing into Bynoe Harbour ~8 km downstream (direct line). Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei Project and is influenced by the movement of water from Bynoe Harbour due to tidal activity. •There are no permanent surface water features within the Project area. <u>Significant vegetation</u> • Riparian vegetation edges the Charlotte River immediately to the south/south-west of the Project its tributaries that cross the Project area. • Mangrove woodlands occur directly downstream (South-east) of the Project area. <u>GDEs</u> • Regional scale GDE mapping suggests a moderate potential for aquatic GDEs along the Charlotte River to the south/south-west. Satellite imagery suggests there may be permanent water in the Charlotte River to the south-west of the Lei deposit, which is often a pre-cursor for GDE presence. **Comments on whether or not a significant impact is likely:** The potential impact to aquatic ecosystems will depend on the duration and extent of groundwater drawdown associated with dewatering, and the extent to which that affects surface flows in the nearby Charlotte River. As there is some uncertainty about impacts to groundwater hydrology, the potential for impacts to aquatic ecosystems is uncertain. The Proposal is considered to trigger referral because of potential significant impact to aquatic ecosystems due to: • Altered surface water and groundwater hydrology reducing habitat quality and biodiversity • Degraded and/or altered water quality and temporal variation of water quality available, impacting habitat quality (including mangroves) and biodiversity. • Decrease in habitat quality from the accumulation of sediments in mangroves from sediment laden runoff.					
SEA	1) Coastal processes <u>Objective</u>: Protect the geophysical and hydrological processes that shape coastal morphology so that the environmental values of the coast are maintained.	• processes that support marine ecosystems such as coral reefs and mangroves • processes that support coastal morphology such as beaches, rock bars, and sandbars • tidal creeks, deltas and river mouths • storm surge protection • unique coastal landforms	Yes	☐	☐	☐	☐
			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: • The Project area is drained by the Charlotte River, a small, ephemeral water course located 300 m south-west of the Lei Project. The Charlotte River flows towards the North-west into Bynoe Harbour, approximately 8 km (direct line) from the western boundary of ML(A) 33874 to the mapped coastline (NRMaps: DEPWS 2024). • Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei Project and is influenced by the movement of water from Bynoe Harbour due to tidal activity. • Significant vegetation - mangrove woodlands occur directly downstream (South-east) of the Project area. The mangrove community is located in the landward zone, where tidal inundation is irregular and infrequent inundation, therefore, potential impacts to mangroves, for the purpose of this assessment, are assessed in hydrological processes, inland water quality and aquatic ecosystems. **Comments on whether or not a significant impact is likely:** Project activities are unlikely to impact coastal processes due to the distance from the coast. For the purpose of this referral, the marine boundary is the mapped coastline (NRMaps) at the mouth of the Bynoe Harbour, approximately 8 km (direct line) downstream of the of the Project area.					
	2) Marine environmental quality <u>Objective</u>: Protect the quality and productivity of water, sediment and biota so that environmental values are maintained.	• quality of the water, sediment and biota • physical parameters that support fishing and aquaculture • physical parameters that support recreation and aesthetics • industrial water supply • cultural and spiritual values	Yes	☐	☐	☐	☐
			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: • The Project area is drained by the Charlotte River, a small, ephemeral water course located 300 m south-west of the Lei Project. The Charlotte River flows towards the North-west into Bynoe Harbour, approximately 8 km (direct line) from the western boundary of ML(A) 33874 to the mapped coastline (NRMaps: DEPWS 2024). • Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei Project and is influenced by the movement of water from Bynoe Harbour due to tidal activity. **Comments on whether or not a significant impact is likely:**						

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	Project activities are unlikely to impact marine environmental quality due to the distance from the Bynoe Harbour. For the purpose of this referral, the marine boundary is the mapped coastline (NRMaps) at the mouth of the Bynoe Harbour, approximately 8 km (direct line) downstream of the of the Project area. The potential impacts to the receiving water quality of the Charlotte River are captured in inland water quality.						
	3) Marine ecosystems Objective: Protect marine habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	• conservation significant marine and coastal fauna and critical habitat such as nesting, breeding or foraging habitat • conservation significant marine and coastal benthos (seagrass meadows, sponge gardens, coral reefs, mangrove communities and salt marshes) • groups of species (species richness and assemblages of species) • ecological functions and processes • high quality biological and functional diversity, integrity and services	Yes	☐	☐	☐	☐
			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: • The Project area is drained by the Charlotte River, a small, ephemeral water course located 300 m south-west of the Lei Project. The Charlotte River flows towards the North-west into Bynoe Harbour, approximately 8 km (direct line) from the western boundary of ML(A) 33874 to the mapped coastline (NRMaps: DEPWS 2024). • Estuary conditions are mapped as extending up the Charlotte River until a point around 300 m south-west of the Lei Project and is influenced by the movement of water from Bynoe Harbour due to tidal activity. • Significant vegetation - mangrove woodlands occur directly downstream (South-west) of the Project area. The mangrove community is located in the landward zone, where tidal inundation is irregular and infrequent inundation, therefore, potential impacts to mangroves, for the purpose of this assessment, are assessed in hydrological processes, inland water quality and aquatic ecosystems. **Comments on whether or not a significant impact is likely:** Project activities are unlikely to impact marine ecosystems due to the distance from the Bynoe Harbour. For the purpose of this referral, the marine boundary is the mapped coastline (NRMaps) at the mouth of the Bynoe Harbour, approximately 8 km (direct line) downstream of the of the Project area.						
AIR	1) Air quality Objective: Protect air quality and minimise emissions and their impact so that environmental values are maintained.	• ambient air quality in the local airshed • the chemical, physical and biological characteristics of quality air • the biological processes that depend on the air quality	Yes	☐	☐	☐	☐
			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: • The Proposal will involve small-scale land clearing (<100 ha) that will generate dust and use of diesel vehicles and machinery; • The closest sensitive receptor is two rural residential properties located 3.3 km (direct line) south of Lei Project. The nearest town is Berry Springs, approximately 25 km (direct line) east of the Project. • There is a high level of confidence that the project will comply with the National Environment Protection (Ambient Air Quality) Measure which will be used to evaluate performance. Project activities have an inherently low risk to air quality as dust management will be implemented on site using standard measures. **Comments on whether or not a significant impact is likely:** Project activities are unlikely to significantly impact air quality.						

	2) Atmospheric processes
	
	Objective: Minimise greenhouse gas emissions so as to contribute to the NT Government's goal of achieving net zero greenhouse gas emissions by 2050.
		• a contribution to the NT's greenhouse gas emissions through nearing or reaching emission thresholds for:
		  ○ industrial projects of 100 000 tCO2-e scope 1 emissions per year not counting emissions generated from land clearing
		  ○ land use projects of 500 000 tCO2-e scope 1 emissions from single or cumulative land clearing actions
			Yes	☐	☐	☐	☐

			No	☒	☒	☒	☒
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐
	Background information and environmental values: • The Proposal will involve small-scale land clearing (<100 ha) that will generate dust and use of diesel vehicles and machinery; • Main source of emissions will be from the project power supply, which is currently from diesel generators (base case). Feasibility of connecting to mains power is currently under consideration. An on-site solar farm will provide low-voltage power requirements to administration, lighting, and water plants. • The Project is a very similar operation to the proposed Lithium Developments BP33 Underground mine. *BP33 proposed activities will not trigger reporting threshold requirements for greenhouse gas emission (Core Lithium NOI 2020).* • There is a high level of confidence that the Lei Project will not trigger reporting threshold requirements for greenhouse gas emission and unlikely to trigger action associated with net zero policy. • The National Environment Protection (Ambient Air Quality) Measure will be used to evaluate performance. A GHG emissions assessment will be undertaken to consider the impacts of climate change and assess potential energy sources (both renewable and non-renewable) and appropriate measures to reduce emissions to as low as reasonably practicable. **Comments on whether or not a significant impact is likely:** Project activities are unlikely to significantly impact atmospheric processes.						

Pre-Referral Screening Report

Project: Lei Lithium Project

EcOz Environmental Consultants

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				

PEOPLE	1) Community and economy
	Objective: Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.
		• communities, towns and suburbs where people live
		• community aspirations for liveable environment and healthy lifestyles,
		  ○ affordable access to food, water, electricity, transport and communication networks.
		  ○ good amenity – air quality, noise, aesthetics
		  ○ access to social infrastructure and services including transport and logistics
		  ○ access to natural resources including bush food
		  ○ recreational use of the natural or built environment (e.g. fishing, cycling, sports, picnics)
		  ○ species of social, cultural, livelihood and or economic importance (terrestrial, aquatic and marine biota)
		• participation in jobs, businesses and education
		• existing industries such as agriculture, pastoralism, tourism, fisheries
		• vulnerable sectors of the community
			Yes	☒	☐	☐	☒

			No	☐	☒	☒	☐
			Uncertain	☐	☐	☐	☐
			Not Applicable	☐	☐	☐	☐

Background information and environmental values:

- The nearest community is Berry Springs, approximately 25 km (direct line) east of the Project.
- The Project is located on vacant crown land.
- Approximately 3.3 km (direct line) south of the Project are two private rural residence located in Parcel 2511 and 2512.
- Fog Bay Road intersects ML(A) 33874, with the mine infrastructure proposed to be located North of the road.
- Haulage of DSO to the Darwin Port will increase traffic along the public roads.
- ~3.5 km on Fog Bay Road and ~36 km of Cox Peninsula Rd will be used to haul ore from the Project to Darwin Port.
- No public access to the Project area.
- No accommodation facilities proposed at the Project, it will be a drive in/out operation with a portion of the workforce to be sourced from Darwin and surrounds.
- The Project has potential to improve livelihood for local people with increased jobs and business opportunities.
- Community previously exposed to Lithium mines in the area.
- Cumulative impacts on the community if the Lithium Developments operations (Grants) and this Project is in operation concurrently.
- Current life of mine proposed to be ~7 years from construction to closure.
- Mine rehabilitation and closure plan will be developed and implemented in accordance with best practice.

Comments on whether or not a significant impact is likely:

The Proposal is considered to trigger referral because of potential significant impact to community and economy due to:

- Reduced sense of safety with increased traffic on local roads
- Potential pressures on emergency and social services
- Boost local economy through employment opportunities and support to local businesses
- Change in community composition, cohesion or character.
- Potential impacts to recreational activities such as fishing.

2) Culture and heritage
Objective: Protect culture and heritage.
	• Aboriginal cultural values
	• sacred sites
	• the Territory's natural and built heritage
	• declared heritage places and objects protected under the Heritage Act 2011 (NT) such as:
	  ○ any Aboriginal or Macassan archaeological place or object (coastal mounds and middens, rock art, stone arrangements, quarries, artefacts, graves, burial sites and ancestral remains)
	  ○ underwater cultural heritage (isolated objects, shipwrecks, plane wrecks, underwater cables and evidence of Aboriginal occupation prior to sea level rise)
	  ○ built heritage (colonial buildings and other historic buildings)
	  ○ defence structures (defensive positions and airfields)
	  ○ natural features (meteorite impact sites, palaeontological sites, springs, trees)
	  ○ world heritage
	• underwater cultural heritage protected under the Underwater Cultural Heritage Act 2018 (Cth)
	• Aboriginal rights and interests, including right of access
		Yes	☐	☐	☐	☐

		No	☐	☒	☒	☒
		Uncertain	☒	☐	☐	☐
		Not Applicable	☐	☐	☐	☐

Background information and environmental values:

A search of the Northern Territory Heritage Register and Heritage Branch archaeological database (July 2024) found that there are no known Aboriginal or Macassan archaeological places within the MLA33874. However, the area is in proximity to known Aboriginal archaeological sites and is in land systems that support the likelihood of further unrecorded sites. The likelihood of possible unrecorded Aboriginal or Macassan archaeological places has been assessed as possible or likely. An archaeological survey will be undertaken within the proposed disturbance area prior to clearing activities being undertaken. The search found that there are no nominated, provisionally declared or declared heritage places or objects within the subject area.

There is no current AAPA Authority Certificate for the ML(A) 33874. A search of the AAPA Abstract of Records in relation to ML(A) 33874 as of 9 August 2024 shows that:

- there are no registered sacred sites located on ML(A) 33874;
- there are no recorded sacred sites located on ML(A) 33874; and

<table>
<tr><th>Theme</th><th>Environmental factor and objective</th><th>Indicative environmental values and sensitivities relevant to each environmental factor</th><th colspan="6">Proponent's answer to screening questions 1-5</th></tr>
<tr><td rowspan="2"></td><td colspan="5">
• there is a restricted work area within ML(A) 33874 which was provided for in a previously issued Authority Certificate to an unrelated entity.
It should be noted that the restricted work area shown to intersect ML(A) 33874 is not associated with ML(A) 33874 and is not relevant to the planned operations on this land (pers comms Lithium Plus 27 August 2024).
While existing information indicates there are no significant sites or features present, further consultation with Traditional Owners, site custodians and the Aboriginal community, and surveys are required to identify previously unrecorded sites and/or other cultural values and uses of the land that could be impacted by the Project.
The project area is not subject to claim or determination under the Native Title Act or Aboriginal Land Rights Act. If a native title claim is lodged and registered in response to the native title notification of ML(A) 33874 then, in the first instance, the intention is to engage directly with registered native title parties to develop protocols as necessary for sacred sites. It is anticipated that the Northern Land Council (NLC) and AAPA will be involved in this process to ensure the relevant traditional owners and/or traditional custodians can make informed decisions about sacred sites and other native title interests. In the event that there are no native title parties following native title notification of ML(A) 33874, an application for authority certificate will be progressed for the proposed development through the AAPA and in consultation with the NLC.

Comments on whether or not a significant impact is likely:
The Proposal is considered to trigger referral due to uncertainty of existing archaeological, heritage and/or sacred sites within the proposal area. Disturbance undertaken within an area where previous survey effort is unknown can result in potential significant impact: to culture and heritage through:
• Direct loss or damage to archaeological sites
• Loss or damage to sacred sites
</td><td></td></tr>
<tr><td>3) Human health
Objective: Protect the health of the Northern Territory population.</td><td>• drinking water
• air quality
• bush tucker
• radiological limits
• biting insects</td><td>Yes</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="2"></td><td>No</td><td>☒</td><td>☒</td><td>☒</td><td>☒</td></tr>
<tr><td colspan="2"></td><td>Uncertain</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td colspan="2"></td><td>Not Applicable</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td></td><td colspan="5">
Background information and environmental values:
• Mine site located 3.3 km (direct line) from nearest residence or other land use. No sensitive land uses present immediately surrounding the Project.
• The nearest community is Berry Springs, approximately 25 km (direct line) east of the Project. Impacts of dust and noise unlikely to be measurable at the nearest community.
• The Project will generate noise and dust emissions from mining activity. Dust and noise emissions will be managed on-site with suitable and proven controls.
• No consumptive uses of surface water or groundwater downstream. Some limited recreational use/fishing in Charlotte River.
• The closest registered bore (RN041993) for rural stock and domestic purposes drilled is located 2.6 km south of the Lei deposit. This bore is up-gradient of the Project area. All other registered water supply bores are located over 7 km from the Lei deposit.
• Haul route along public road passes Berry Springs Primary School. Traffic management plan will be developed to mitigate and manage any concerns.
• The mined material and product is benign and does not contain any components that could pose a health risk to workers or the community.
• There is no processing of ore on-site, thus the operation does not use of hazardous materials or chemicals that could contaminate waters downstream in Charlotte River.
• Groundwater contamination is not expected to occur due to low risk of ARD and small volumes of hydrocarbons in use. If some level of contamination did occur there would be no risk to community health as the contamination would be localised and there are no consumptive users nearby.

Comments on whether or not a significant impact is likely:
Project activities are unlikely to impact human health.
</td><td></td></tr>
</table>

This pre-referral screening checklist was prepared by a suitably qualified and experienced person in environmental impact assessment.

Name / role: Suzanne Barber – EcOz Lead Consultant – Impact Assessment and Approvals

Qualifications: Batchelor of Environmental Science

Signature: 

Date: 10 October 2024

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