Notice of Variation
Grants Lithium Project

April 2020

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This document has been prepared by EcOz using information supplied by Core Lithium Ltd.

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RELIANCE, USES and LIMITATIONS

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ACRONYMS

AAPA	Aboriginal Areas Protection Authority
ABS	Australian Bureau of Statistics
BOM	Bureau of Meteorology
CEMP	Construction Environment Management Plan
DENR	Department of Environment and Natural Resources (Northern Territory) – formerly DLRM
DLRM	Department of Land Resource Management (Northern Territory) – now DENR
DOEE	Department of the Environment and Energy (Commonwealth)
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EL	Exploration Lease
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)* (Commonwealth)
ESCP	Erosion and Sediment Control Plan
MCP	Mine Closure Plan
ML	Mineral Lease (granted)
MLA	Mineral Lease Application
MMP	Mining Management Plan
NOI	Notice of Intent
NT	Northern Territory

1 INTRODUCTION

The purpose of this document is to notify the Northern Territory Environment Protection Authority (NT EPA) of Core Lithium's proposed variation to the activities associated with the Grants Lithium Project. The proposal was previously subject to assessment under the *Environment Assessment Act* (*EA Act*) with Assessment Report 89 handed down by the NT EPA in June 2019. It is a requirement under clause 14A of the *Environmental Assessment Administrative Procedures* that written notification is provided to the NT EPA and the Minister for Environment and Natural Resources of proposed changes to an assessed proposal.

1.1 Proposal Title

Grants Lithium Project (Grants Project)

1.2 Contact Details

Proponent		**Environmental Consultant**	
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1.3 Background

Assessment under the *EA Act* was complete on 17 June 2019 and the NT EPA provided Assessment Report 89 to the Minister for Environment and Natural Resources. The report concluded that, "*subject to implementation of all 17 recommendations, the Proposal can be managed in a manner that is likely to meet the NT EPA's objectives and avoid significant or unacceptable environmental impacts and risks*."

On 28 June 2019, Core submitted a Mining Management Plan (MMP) to the Department of Primary Industry and Resources (DPIR) and on 1 April 2020 received Mining Authorisation 1021-01 under the *Mining Management Act.* The Authorisation is for the project activities associated with open pit mining and processing of the Grants lithium deposit over a period of approximately four years, after which the mine site is to be rehabilitated.

Core is now proposing to extend the operating period of the processing facility to accommodate processing and export of ore mined from a number of nearby ore deposits associated with the Finniss Lithium Project tenements. The feasibility studies, planning and approvals for the proposed mining activities will occur progressively over the next two to three years. Core's intent is that as each ore deposit is exhausted, a new deposit will be developed. There is potential for production from the processing facility to continue for a period of seven years or more depending on how successfully Core can identify new ore deposits and establish the feasibility of continuing the mining operations.

1.4 Document scope

This document describes the proposed changes to the Grants Lithium Project and assesses whether or not these changes alter the significance and acceptability of environmental impacts and risks assessed under the *EA Act*. This document does not consider potential environmental impacts and risks associated with mining each of the 'satellite' ore deposits. As the mine plans are developed for each deposit, Core will assess environmental impact and risks, and will obtain all approvals required for the activities.

2 DESCRIPTION OF CHANGES

This section provides a brief overview of the currently authorised activities and proposed changes. The potential impacts associated with the changes are assessed in Section 3.

2.1 Summary of assessed/authorised activities

The assessed Grants Lithium Project proposal consists of an open cut lithium mine (200 m deep pit) and ancillary infrastructure for processing of mined ore on ML31726. The mine site is located 90 km by road from Darwin CBD, or 25 km south as the crow flies. The site is accessed off the Cox Peninsula Road, approximately 36 km west of Berry Springs and 15 km south-east of Belyuen community. The project location is shown in Figure 2-1.

The proposal includes two water supply dams, Mine Site Dam (immediately to the west of the mine site) and Observation Hill Dam (5 km south-south-east), and associated water pipeline infrastructure. Development of the mining operation will require clearing and/or disturbance of approximately 254 ha of native vegetation. The life of mine is three to four years.

The ore will be mined using drill and blast methods and processed using crushing, primary screening and dense media separation (DMS) to produce lithium oxide concentrate for export. Due to the close proximity to Cox Peninsula Road, brief road closures will be required as safety precaution during blasting activities. Closure periods will be for 15 minutes, two to four times per week.

The processed lithium concentrate will be transported via Cox Peninsula Road and Stuart Highway to Darwin Port, for shipping to China. The transportation plan includes the utilisation of quadruple road trains for up to 10 return trips per 24 hours.

The Mine Closure Plan involves removal of infrastructure, encapsulation of the Tailings Storage Facility (TSF) within the Waste Rock Dump (WRD) landform and re-establishing native vegetation on the site. The open pit will fill with water over time and a pit lake will remain on site in perpetuity. The Mine Site Dam will be decommissioned to allow for return of natural flow regimes. Core will be responsible for ongoing monitoring and maintenance of the site until the closure criteria are achieved and the site relinquished.

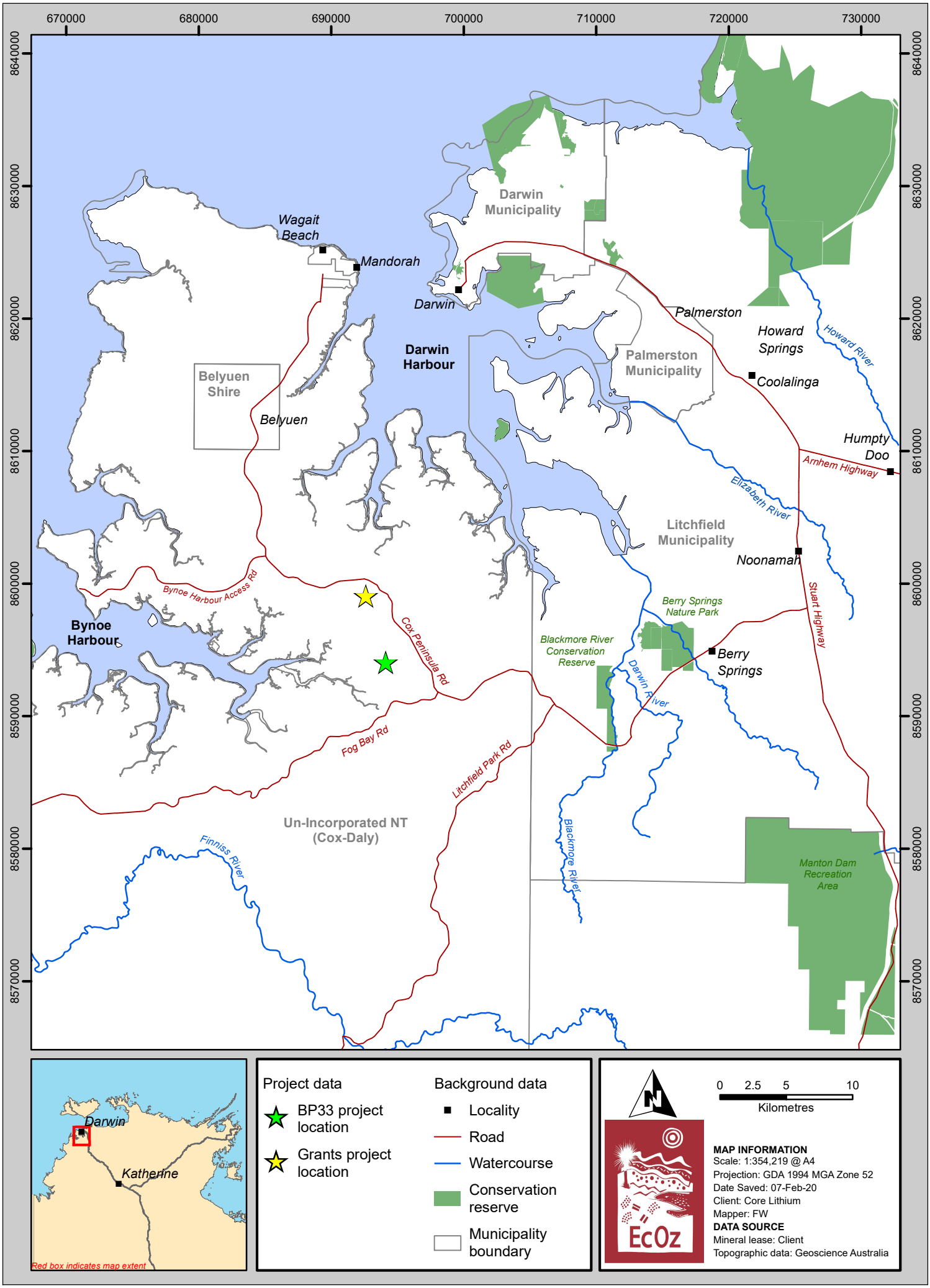
2.2 Overview of proposed changes

Table 2-1 summarises the key aspects of the current project scope and proposed changes. No additional land is required inside or outside the Grants Project mineral lease (ML 31726).

2.3 Stakeholder engagement

Throughout 2017-2018, Core engaged with stakeholders during project planning and as part of the Social Impact Assessment (SIA) process. Engagement has occurred through a variety of means including face-to-face meetings with service agencies and NGO's (i.e. government, councils, Berry Springs School, Environment Centre, Chamber of Commerce, St Johns Ambulance), distribution of project fact sheets and community meetings. Core has made a commitment to ongoing engagement and communication with stakeholders, and as the project moves closer to commencement, will have in place an ongoing Stakeholder Engagement Plan.

It is Core's understanding that the NT EPA will make this notice available for public comment in May 2020 under the requirements of the new *Environment Protection Act*. Prior to this, Core plans to re-engage stakeholders to provide a project update.



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ19171 - BP33 NOI\01 Project Files\Report maps\Figure 1-1. Map of project location and regional setting.mxd

Figure 2-1. Map of project location

Table 2-1. Summary of Grants Lithium Project current scope and proposed changes

PROJECT ASPECT	CURRENT SCOPE	PROPOSED CHANGE
Project footprint	• 217 ha mine site • 38 ha water supply	• No change.
Timeframe	• 35 months for construction, mining and processing of ore from Grants deposit only.	• Operation of the Grants processing plant will continue beyond the current 3-year timeframe to process ore mined from other nearby deposits. • Indicative potential production timeframe is 7+ years.
Operating hours	• 24 hours, 7 days/week	• No change.
Mining	• Open pit drill and blast • Pit depth 200 m	• No change to mining methods or mine design.
Processing	• Crushing, screening and Dense Media Separation. • Period of operation ~2 years • Rate of production 1 Mt/pa	• No change to processing methods • Period of operation will be extended out to 7+ years • No change to rate of production
Tailings disposal	• Tailings solids will be thickened and pumped to two TSF cells located inside the WRD. • Tailings are geochemically benign and no chemical contaminants are added during processing. • The TSF's will be progressively capped as they are filled and consolidated. • An initial 0.5 m cover layer will be spread across each cell. A second layer of 1.0 m thick waste rock will be placed and spread across each cell. • Once covered with initial layers, remaining waste rock will be placed on top of the TSF up to the final height of WRD.	• Tailings will be pumped to TSF cells in current location. • Tailings characterisation undertaken on ore from the BP33 deposit indicates that tailings are geochemically benign. • Additional tailings storage capacity will be achieved by raising the TSF embankments using material won from the Grants WRD. • The TSF has capacity to accept a further three years of tailings at 1 Mt/pa production. • If production is anticipated to continue beyond the capacity of the TSF, an alternative tailings disposal strategy will be developed for approval. Options include in pit disposal or construction of a new TSF.
Rejects disposal	• The coarse rejects from the DMS circuit will comprise rocks with diameter ≥ -6.3 mm to 0.5mm. • Geochemical characterisation results indicate rejects are benign. • The rejects will be placed in the WRD.	• No change
Roads and Traffic	• Haul route to Darwin Port is along Cox Peninsula Rd, Stuart Hwy, Tiger Brennan Drive and Berrimah Rd • 10 return quad road train trips/day. • Road closures (15 minutes, 3 times/wk) for blasting.	• No change to haul route or number of trips/day. • No requirement for ongoing road closures once mining ceases at Grants (i.e. after ~3 years).
Water Supply	• Predicted daily water demand is 2,018 kL for dust suppression, ore processing and mine operations centre • Make-up water supplied from Observation Hill Dam and Mine Site Dam. • Observation Hill Dam capacity will be increased by raising the existing wall. The dam is pre-existing and therefore will not be decommissioned. • Mine Site Dam will be in place for approximately 3-4 years, prior to decommissioning and rehabilitation.	• Predicted daily water demand for ongoing operation of the processing facilities is approximately 1,500 kL • Water will continue to be supplied from Observation Hill Dam and Mine Site Dam. • The timeframe that the Mine Site Dam is in place will be extended from 3-4 years to 10 + years, prior to decommissioning and rehabilitation.
Water Management	• Off-site discharge of water excess to requirements in November to March each year of operations.	• No off-site discharge required once mining ceases at Grants (i.e. after ~3 years). Groundwater inflows to open pit will gradually form a pit lake.

PROJECT ASPECT	CURRENT SCOPE	PROPOSED CHANGE
Greenhouse Gas Emissions	• Transport emissions 55,664 tCO2-e • Stationary emissions 4,489 tCO2-e • Land clearing emissions 18,323 tCO2-e • Portion of NT annual emissions 0.47% over three years. • Over 80% of emissions will occur in year one due to land clearing and construction. • Emissions will cease following mine closure (i.e. after ~3 years).	• Emissions will continue from operation of processing facility and transport of product to Port. • Project share of NT annual emissions will decrease after ~3 years when mining activities cease. • Emissions from processing facility and transport will be less than 0.1% of NT annual emissions.
Employment and economic value	• Operations workforce – 90 • Period of employment up to three years • Tax contribution $37.5 million • Royalties paid to NT ~$32.3 million	• The operational workforce required for continued operation of the processing facility will be 80 personnel. • Mining workforce will also be required at satellite mine sites. • Period of employment 7+ years • Taxes and royalties will increase commensurate with extended production.
Closure and rehabilitation	• Schedule – Months 26-30 • Open pit stabilised, secured and left to form a pit lake. • All above-ground infrastructure will be removed. • TSF cells consolidated and covered. • WRD landform re-profiled to create a stable, non-polluting landform • All disturbed areas revegetated with local native species. • Abandonment bund and signage in place to protect public safety.	• No change to closure strategy. However, timeframes for closure will vary for different parts of the mine site. • Progressive rehabilitation of WRD annulus will still occur as per current plan. • Open pit will be stabilised and secured on completion of mining activities at Grants deposit. • Processing infrastructure will remain on site as long as production continues. • Once all ore deposits are exhausted (i.e. 7+ years), infrastructure will be removed and areas rehabilitated. • Schedule for closure and rehabilitation of the WRD/TSF landform will commence once facility is at capacity and/or production ceases.

3 POTENTIAL IMPACTS & RISKS

The NT EPA's assessment of the Grants Lithium Project proposal considered five 'key environmental factors' that may be significantly impacted as follows:

- Hydrological Processes
- Inland Water Environmental Quality
- Terrestrial Environmental Quality
- Terrestrial Flora and Fauna
- Social, Economic and Cultural Surroundings.

Because the project footprint, processing method and rate of production will remain the same, the proposed changes to the proposal described in Section 2 are not expected to significantly impact any other environmental factors (i.e. Landforms, Aquatic ecosystems, Marine ecosystems, Air quality and greenhouse gases, Human health).

For each of the identified key environmental factors above, EcOz Environmental Consultants has undertaken an assessment to determine if the changes to the proposal are likely to result in any increase in the impacts or any additional/new impacts or risks not already identified through the EIS process. The sections below document the outcomes of the assessment.

3.1 Hydrological processes

Hydrological processes refer to the occurrence, distribution, connectivity, movement and quantity of surface water and groundwater. The NT EPA's objective for this environmental factor is to:

"Maintain the hydrological regimes of groundwater and surface water so that environmental values are protected".

3.1.1 Potential impacts

Assessment Report 89 identified the following potential impacts to surface water and groundwater hydrology:

- Surface water:
    - Changes to surface water flow volumes, regimes and pathways caused by mine site infrastructure including dams and discharge of excess water.
    - Flooding caused by dam failures.
- Groundwater:
    - Mounding underneath the mine site due to seepage.
    - Drawdown and/or alteration of flow directions associated with pit dewatering during mining operations and formation of a pit lake post-closure.

The NT EPA also identified that groundwater level and flow changes may have a significant impact on groundwater dependant vegetation communities. This aspect is further considered in Section 3.4 Terrestrial Flora and Fauna.

3.1.2 Assessment of changes

Table 3-1 documents an assessment of whether the proposed changes to the Proposal will result in an increase in the potential impacts to hydrological processes.

Table 3-1. Potential impacts and risks to hydrological processes

Potential impacts (Assessment Report 89)	Assessment of proposed changes
Changes to surface water flow volumes, regimes and pathways caused by mine site infrastructure including dams and discharge of excess water	The proposed changes to the proposal will require the ongoing use of the Mine Site Dam (MSD) and Observation Hill Dam (OHD) as a water supply, potentially for a period of 7+ years. The MSD dam was originally proposed to be in place for a period of 3-4 years prior to decommissioning to re-establish natural flow regimes downstream. The OHD was proposed to remain in place post-closure; however, ceasing extraction from the dam was predicted to restore flows to an extent. The affected ephemeral creek line downstream of the mine site discharges to West Arm. The modelled reduction in average wet season discharges from the creek to the upper tidal limit ranges 2-24% over the wet season and the impact on monthly flows into West Arm proper is less than 13%. The affected ephemeral creek line downstream of OHD discharges to Charlotte River. Modelled reduction in average wet season discharges from the creek into Charlotte River is 20-30%; however, the impact on flows in the river is less than 3%. In both catchments there are no other water users downstream that would be affected by the dam being in place for an extended period of operations and the modelled reductions would not be noticeable to recreational users. The potential impact to riparian and mangrove habitats associated with an extended period of modified flow are considered in Section 3.4. There is potential for cumulative impacts to downstream flows associated with the OHD and proposed mining activities at the BP33, which are located in the same catchment. These impacts have been considered in the separate referral submitted for the BP33 underground mine There will be no increase in the discharge volumes or duration of discharges. The dewatering of the pit will only occur during mining of Grants, which is 3-4 years. Once mining activities cease, there will be no ongoing requirement to discharge excess water.
Flooding caused by dam failures	The proposed changes to the proposal require ongoing use of the Mine Site Dam and Observation Hill Dam as water supply, potentially for a period of 7+ years. The design, construction and operation of the water dams will comply with ANCOLD guidelines. An independent engineer will monitor compliance as per NT EPA Recommendation 4 (Assessment Report 89). There are no residences downstream and the only public infrastructure is the Cox peninsula Road. The potential impacts of dam failure on the environment are likely to be short term, localised, limited to riparian habitats and are not likely to be significant.
Groundwater mounding underneath the mine site due to seepage	The extended period of processing will require the ongoing operation of the TSF and water holding structures. Seepage from these structures has potential to cause localised groundwater mounding if not adequately controlled. To minimise seepage, all structures have a low permeability base and the TSF design incorporates an under drainage system for collection of seepage and return to the processing facility. In Assessment Report 89, the NT EPA considers that the on-site impacts of groundwater mounding can be managed if the WRD, TSF and other mine site infrastructure are appropriately designed and constructed to account for it.
Groundwater drawdown and/or alteration of flow directions associated with pit dewatering during mining operations and formation of a pit lake post-closure	The extended period of operations does not involve any changes to the open pit and therefore will not would increase drawdown or further alter flow directions.

3.1.3 Conclusion

The changes to the Proposal are unlikely to increase the potential impacts to surface water and groundwater hydrological processes. The main reasons for this conclusion are summarised below:

- The modelled reduction in flows in West Arm and Charlotte River is minor. There are no other water users downstream that would be affected and the reductions would not be noticeable to recreational users. Over an extended period, the modelled reduction is considered unlikely to impact riparian and mangrove habitats in these watercourses; however, there could be localised impacts to the upstream ephemeral watercourses (see Section 3.4).
- There is no increase in downstream flood risks. The dams will be designed, operated and maintained in accordance with ANCOLD guidelines and compliance will be monitored by an independent qualified engineer.
- There is no increased risk of seepage from the TSF or water holding structures. To minimise seepage, all structures have a low permeability base and the TSF design incorporates an under drainage system for collection of seepage and return to the processing facility. Seepage modelling will be undertaken as part of the detailed designs to determine if specific design criteria or other control measures are required to ensure groundwater mounding does not affect the structural integrity of the WRD/TSF landform or water holding structures. This design work will be undertaken by undertaken by an independent and qualified engineer consistent with NT EPA Recommendation 4 (Assessment Report 89).
- There is no change to the pit dewatering requirements or closure strategy that would increase groundwater drawdown or further alter flow directions.

3.2 Inland water environmental quality

Inland waters environmental quality refers to the chemical, physical, biological and aesthetic characteristics of surface water and groundwater. The NT EPA's objective for this environmental factor is to:

"Maintain the quality of groundwater and surface water so that environmental values including ecological health, land uses, and the welfare and amenity of people are protected".

3.2.1 Potential impacts

Assessment Report 89 identified the following potential impacts to inland water environmental quality:

- Contamination of surface water by:
    - Acid Rock Drainage (ARD) from mined materials, including waste rock dumps and tailings
    - Discharge of excess poor quality mine water
    - Uncontrolled discharge of process water, decant water and TSF seepage
    - Fuel and chemical spills
    - Groundwater being used for dust suppression
    - Increased turbidity from mobilisation of soils/sediment in runoff during clearing, mining and closure activities, and from post-closure landforms.
- Contamination of groundwater by:
    - Naturally occurring radioactive materials
    - Tailings seepage
    - Seepage from mine water containment facilities

  Pit void/lake (post closure).

3.2.2 Assessment of changes

Table 3-2 and Table 3-3 document an assessment of whether the proposed changes to the Proposal will result in an increase in the potential impacts to inland water environmental quality.

Table 3-2. Potential impacts and risks to surface water quality

Potential impacts (Assessment Report 89)	Assessment of proposed changes
ARD from mined materials	The proposed changes will not increase the likelihood of AMD (refer Section 3.3). Therefore, there will be no increase in the potential impact to surface water from these contaminants.
Discharge of mine water	There will be no increase in the discharge volumes or duration of discharges. The requirement for discharge of mine water will cease once the Grants resource is exhausted and dewatering of the pit is no longer required. There will be an ongoing requirement to manage TSF decant water and seepage as long as the TSF remains open. The management strategy will remain the same, which involves re-use of decant and seepage water in the processing facility and storage of excess water in Mine Water Dam 2. Once mining has ceased, the open pit will also provide contingency storage if required during the wet season. There will be no release of TSF decant or seepage to surface water. Wet season discharges will continue from the sediment dams, which will remain in place as long as the mine site is operational. The sediment dams will require ongoing maintenance (desilting) to remain effective. The extended period of operations could increase the potential for longer-term accumulation of sediments in the downstream watercourses and mangrove environments, if controls are not effective. The approved Water Management Plan details the monitoring program that will be implemented to evaluate the effectiveness of the onsite erosion and sediment controls. The plan includes monitoring of water quality in sediment dams prior to release and monitoring at locations downstream, and contingency measures for exceedance of turbidity criteria.
Fuel and chemical spills	The types and quantity of fuels/chemicals stored on site will not increase with the proposed changes because the processing methods and annual rate of production will remain the same. Core has committed to managing risks by complying with relevant Australian Standards and NT Dangerous Goods legislation. In accordance with the Mining Authorisation, a Hazardous Waste and Chemical Management Plan will be submitted to DPIR prior to commencement and annually with the MMP. Subject to effective implementation of the plans and procedures, the extended period of operations is unlikely to increase the risk of water quality impacts. The approved Water Management Plan includes monitoring for hydrocarbons in sediment dams, downstream surface water and groundwater, which would allow for detection of contamination associated with leaks and spills. The plan also includes a commitment to ensure that that the monitoring program includes any contaminants of concern in the processing additives and flocculants, once these products are selected.
Groundwater use for dust suppression	There will be an ongoing requirement for dust suppression around the processing facilities and along the haul route/s to satellite ore resources for 7+ years. The overall water demand for dust suppression will not increase because the majority of the demand (1,060kL/day) is associated with the Grants mining activities, which will cease once the Grants resource is exhausted (i.e. after 3-4 years). Water supply for dust suppression associated with ongoing processing operations will come from the surface water dams. Subject to meeting the water quality criteria specified in the approved Water Management Plan, other water sources could be used (i.e. pit water). The extended duration of operations is not anticipated to increase impacts and risks to surface water quality associated with water use for dust suppression. As a further contingency, the Mine Closure Plan includes procedures to assess and treat contamination on site consistent with the *National Environment Protection (Assessment of Site Contamination) Measure 1999* as per Recommendation 8 (*Assessment Report 89*).
Increased turbidity from mobilisation of soils/sediment in runoff during clearing, mining and closure activities, and from post-closure landforms	The proposed changes do not involve any additional land clearing that would increase the erosion risk or turbidity in the downstream environments. However, the extended period of operations could increase the potential for longer-term accumulation of sediments in the downstream watercourses and mangrove environments, if operational erosion and sediment controls are not effective. Erosion and sediment control measures will continue to be implemented for the extended duration of operations as per the approved Primary ESCP. Progressive ESCP's will be prepared and implementation monitored by a suitably qualified third-party auditor. The WRD annulus will be progressively rehabilitated as per the approved Mine Closure Plan. These measures, in addition to the water quality monitoring program detailed in the approved Water Management Plan, are considered to provide for adequate protection of the receiving environment from increased turbidity over an extended period of operations.

Table 3-3. Potential impacts and risks to groundwater quality

Potential impacts (Assessment Report 89)	Assessment of proposed changes
Naturally occurring radioactive materials (NORM)	The proposed changes to the proposal will involve additional tailings disposal in the existing TSF from processing the BP33 ore resource. No NORM's have been identified in geochemical analysis of the Grants and BP33 ore resources and therefore decant and seepage water will not be a potential source of NORM contamination. Geochemical analysis of each satellite ore resource will be conducted as part of future exploration drilling. It is not expected that any NORM's will be present due to the high degree of homogeneity in the regional geology.
Tailings seepage	The proposed changes to the proposal will involve additional tailings being disposed of in the TSF from processing the BP33 ore resource. The management strategy for minimising seepage during the extended period of operations will not change from that detailed in the Grants EIS. The strategy involves construction of a low permeability base, collection of seepage in underdrains and return of seepage to the processing circuit. There will be an ongoing requirement to manage and monitor seepage rates and water quality as long as the TSF remains open, which is captured by the approved Water Management Plan and the Tailings Management Plan to be submitted prior to commencement of operations. Geochemical analysis of nine samples of ore collected from the BP33 deposit indicates that the materials (and therefore also tailings) classify as NAF. Analysis of leachable metals indicates metals concentrations are low in the ore, excepting lithium, which is elevated (2.1 mg/L) compared to the waste rock (0.1 mg/L). As the ore will be processed to extract the lithium, there will be lower concentrations in the tailings. Details of the analysis and results are documented in the technical report *BP33 Lithium Project Geochemical characterisation of waste rock and ore* (Environmental Geochemistry International, 2020). Whilst the Grants ore has not been subject to the same level of geochemical characterisation, based on the exploration assays, it is reasonable to assume that the characteristics are very similar to BP33. The Grants TSF design incorporates low permeability base and underdrainage to limit seepage to groundwater, but does not include a low permeability cover due to the low risk of ARD. The AMD Management Plan recommended by the NT EPA (Assessment Report 89 Recommendation 6) has been developed to the satisfaction of DPIR. The plan addresses information gaps in relation to AMD potential associated with processing wastes and provides for ongoing testing and adaptive management of PAF materials. The plan also includes further kinetic testing to provide a robust assessment of long-term ARD and NMD risks. The Water Management Plan recommended by the NT EPA (Assessment Report 89 Recommendation 5, 7 & 9) has been updated to the satisfaction of DPIR and in accordance with the Mining Authorisation Core will address outstanding information gaps in a further update prior to commencement of mining at Grants. The Water Management Plan will apply to the extended period of operations. Once the Grants TSF is at capacity, then an alternative tailings disposal strategy will be required. This strategy would be referred to DPIR and NT EPA for assessment as required.
Seepage from mine water containment facilities	The proposed changes will require the retention of mine water containment facilities (i.e. Mine Water Dam 1 & 2) on site for an extended period of time. These facilities will store tailings decant and seepage, which will contain a high level of suspended sediments but are not anticipated to contain chemical contaminants. All mine water containment facilities will be designed to contain potential poor quality water, and will be constructed with a low permeability base as per Recommendation 10 Assessment Report 89. The mine water containment facilities will be managed in accordance with the Water Management Plan, including a groundwater monitoring program to provide early detection of any seepage issues. If any additional monitoring requirements are identified the plan will be updated where applicable.
Pit void/lake (post closure)	Once mining activities cease in the Grants open pit, there may be potential to further mine the deeper parts of the deposit using underground mining methods. The feasibility of further mining will be assessed by drilling during the open pit mining operations, and if deemed feasible, approvals for underground mining activities will be sought. Once the ore resource is exhausted at Grants, the pit will be allowed to fill with water and a pit lake will form. NT EPA Assessment Report 89 recommends that tailings from further mining activities should be used to backfill the pit. If the feasibility of mining ore deposits at Carlton and Hang Gong is proven, and these are processed at the Grants processing facility, then an alternative tailings management strategy will be required. The feasibility of backfilling the pit with tailings would be considered at that time and addressed in a separate referral to DPIR and the NT EPA.

3.2.3 Residual impact

The changes to the Proposal are unlikely to increase the impacts to surface water and groundwater quality to an extent that would result in residual impacts to ecological health, land use and the welfare and amenity of people. The main reasons for this conclusion are summarised below:

- Waste rock mined at satellite deposits will not be transported to Grants and so there will be no increased risk of AMD from the Grants WRD.
- The tailings that will be produced from processing BP33 ore have been characterised and the results indicate there is a low risk of AMD and do not contain NORM's. On-going geochemical analysis will be conducted in accordance with the approved AMD Management Plan to verify the material characteristics. If AMD risks are identified, then an alternative tailings management strategy will be developed for approval by DPIR.
- The Grants TSF design incorporates a low permeability base and underdrainage to minimise release of seepage. There will be no release of mine water to surface waters and the mitigation, monitoring and contingency measures detailed in the Water Management Plan and Tailings Management Plan (preliminary) are considered to adequately provide for early detection of seepage issues.
- Once the Grants TSF is at capacity, the facility will be closed as per the Mine Closure Plan. Monitoring of seepage and water quality over an extended timeframe of operations will provide a more robust dataset on which to base the TSF closure design. If monitoring indicates that seepage from the TSF is a potential source of contamination to surface water or groundwater, then Core will install a low permeability cover.
- All mine water containment structures will be constructed with a low permeability base that will ensure seepage is minimised and the design life of the structures will cover an extended period of operations.
- There will be no increase in the discharge volumes or duration of discharges. The requirement for discharge of mine water will cease once the Grants resource is exhausted and dewatering of the pit is no longer required. If dewatering were required in future to allow access to the Carlton deposit from the Grants pit, the environmental risks and mitigation measures would be addressed in a separate referral to DPIR and the NT EPA.
- There will be no additional fuel or chemical substances stored on site.
- There will be no additional land clearing or increased erosion risk. Erosion and sediment control measures will continue to be implemented for the extended duration of operations as per the approved Primary ESCP. The WRD will be progressively rehabilitated and progressive ESCP's for all aspects of the site operations will be prepared and implementation monitored by a suitably qualified third-party auditor. The approved Water Management Plan details the monitoring program that will be implemented to evaluate the effectiveness of the onsite erosion and sediment controls and detect any increased turbidity in the downstream surface waters.
- Water supply for dust suppression associated with ongoing processing operations will come from the surface water dams. Other sources may only be used subject to meeting the water quality criteria specified in the approved Water Management Plan (i.e. pit water).
- The Water Management Plan includes a detailed surface and groundwater monitoring program. The plan is considered to adequately provide for protection of downstream water quality over an extended period of operations.

3.3 Terrestrial environmental quality

Terrestrial environmental quality refers to the chemical, physical, biological and aesthetic characteristics of land and soils. NT EPA's objective related to terrestrial environmental quality is to:

Maintain the quality of land and soils so that environmental values are maintained.

3.3.1 Potential impacts

Assessment Report 89 identified the following potential impacts to terrestrial environmental quality:

- Loss of soil structure and seedbank due to long-term storage of topsoil
- Soil erosion by:
  - Alteration of surface water flows and increased run-off from exposed soils
  - Post-closure landform instability.
- Contamination of land and soils by:
  - Chemicals
  - Acid Rock Drainage (ARD).

3.3.2 Assessment of changes

Table 3-4 documents an assessment of whether the proposed changes to the Proposal will result in an increase in the potential impacts to land and soil values.

Table 3-4. Potential impacts and risks to terrestrial environmental quality

Potential impacts (Assessment Report 89)	Assessment of proposed changes
Loss of topsoil, seed bank and soil function	Topsoil that is stored for 7+ years is unlikely to contain a viable seed bank for rehabilitation and loss of soil structure is likely to occur. There is likely to be increased requirement for soil ameliorants, seeding and planting of tube stock to maximise rehabilitation success as the quality of the stockpiled topsoil resources diminishes. Details of Core's approach to mine closure and rehabilitation are provided in the Mine Closure Plan, a further revision of which is required to be reviewed and approved by DPIR and the NT EPA prior to commencement of activities at Grants. Previously, the short life of mine was a key concern raised by the NT EPA in relation to mine closure. The proposed extended period of operations will allow for longer term rehabilitation trials to inform the mine Rehabilitation Plan. It will also allow for progressive rehabilitation of the mining disturbances and monitoring of rehabilitation success whilst the processing facilities continue operation.
Erosion of exposed soils from alteration of surface water flows	The proposed changes do not involve any additional land clearing and will not increase the surface area of exposed soils. Erosion risks will be managed in accordance with the Primary ESCP submitted with the MMP. The ESCP was prepared be a Certified Professional in Erosion and Sediment Control consistent with the Best Practice Erosion and Sediment Control Guidelines (IECA 2008). The ESCP will require review and update prior to the commencement of construction, and regular review throughout the operation and closure. Potential water quality impacts associated with erosion and sedimentation are considered in section 3.2.
Post-closure landform instability and erosion	The closure strategy detailed in the Mine Closure Plan will remain the same; however, the scheduling of the works will change. Progressive rehabilitation of the WRD annulus will occur as per the current schedule and stabilisation of the open pit will still occur on completion of mining activities as per the current plan. Closure and rehabilitation of the WRD/TSF landform will now take place once the TSF is at capacity i.e. 4+ years later than planned. Removal of infrastructure and rehabilitation of disturbed areas will now only occur when all satellite ore resources are exhausted and/or the processing facility is no longer required i.e. 7+ years. The extended duration of operations is not expected to increase post-closure risks as the final landform design criteria will remain the same and progressive rehabilitation of the WRD annulus will still occur following year one of mining. Mitigation measures will be unchanged and will be implemented as per the approved Mine Closure Plan. The finalised plan is to be authorised by the DPIR under the *Mining Management Act* prior to commencement of activities.
Contamination by ARD	There will be no increase in impacts or risks of AMD from the Grants WRD as waste rock produced at the satellite ore resources will not be stored at Grants. Whilst the exploration drilling across the Finniss Lithium Project indicates similar geologies across the deposits, the geochemical characteristics will be

Potential impacts (Assessment Report 89)	Assessment of proposed changes
	assessed at each deposit as part of future exploration drilling and mitigation measures provided for any identified AMD risks. Details will be provided to the NT EPA in separate referrals for future mining proposals. The proposed changes will require lifting the walls of the Grants TSF to increase the capacity of the facility to accept tailings produced from processing ore mined from the BP33 deposit. Geochemical analysis of nine samples of ore collected from the BP33 deposit indicates that the materials (and therefore also tailings) classify as NAF. Analysis of leachable metals indicates metals concentrations are low in the ore, excepting lithium, which is elevated (2.1 mg/L) compared to the waste rock (0.1 mg/L). Details of the analysis and results are documented in the technical report *BP33 Lithium Project Geochemical characterisation of waste rock and ore* (Environmental Geochemistry International, 2020). Whilst the Grants ore has not been subject to the same level of geochemical characterisation, based on the exploration assays, it is reasonable to assume that the characteristics are very similar to BP33. As the ore will be processed to extract the lithium, there will be lower concentrations in the tailings. Core has committed to taking a precautionary management approach, which will involve further tailings characterisation prior to mining and ongoing materials characterisation. The Waste Rock/AMD Management Plan recommended by the NT EPA (Assessment Report 89 Recommendation 6) has now been developed to the satisfaction of DPIR. The plan provides details of the testing that will be undertaken and contingency measures for PAF materials. No changes are required to the plan to accommodate the extended period of operations; the measures will provide for early identification of any AMD risks associated with storage of tailings from both the Grants and BP33 deposit. Once the Grants TSF is at capacity, then an alternative tailings disposal strategy will be required. The risk of AMD contamination from tailings and required mitigation measures will be dependent on the results of the materials characterisation work undertaken for each new ore deposit. This scenario is not covered by this notice and would be referred to DPIR and NT EPA for assessment when required.
Contamination by release of chemicals	The types and quantity of fuels/chemicals stored on site will not increase with the proposed changes because the processing methods and annual rate of production will remain the same. The extended duration of operations will increase the risk of chemical contamination to land and soils caused by leaks and spills that are not detected and/or adequately cleaned up over an extended period. Core has committed to managing risks associated with the storage and use of hydrocarbons and chemicals by complying with relevant Australian Standards and NT Dangerous Goods legislation. In accordance with the Mining Authorisation, a Hazardous Waste and Chemical Management Plan will be submitted to DPIR prior to commencement and annually with the MMP. These measures are considered adequate to reduce the risk of land and soil contamination and manage the potential impacts to terrestrial environmental quality over the extended period of operations. Further discussion of potential water quality impacts is provided in section **Error! Reference source not found.**.

3.3.3 Residual impact

The proposed changes to the Proposal are unlikely to increase the residual impact to environmental values that depend on land and soil. The main reasons for this conclusion are summarised below:

- There will be no increase in the area of land disturbance or associated erosion risk. The approved Primary ESCP provides a management framework that will minimise impacts of erosion and sedimentation associated with an extended period of operations.
- Geochemical characterisation of ore samples from BP33 indicate the tailings are NAF and pose a low risk of ARD. There is no requirement to change the TSF design, operational management or closure strategy.
- There will be no change to the mine closure strategy. The extended period of operations provides an opportunity to conduct longer-term rehabilitation trials and progressive rehabilitation monitoring to inform the Rehabilitation Plan. The land and soil conservation measures detailed in the Mine Closure Plan are considered to provide for adequate protection of land and soils over the extended period of operations and post-closure. In accordance with Recommendation 12 of Assessment Report 89, an appropriately qualified and experienced independent technical expert will oversee design, construction, management and closure of the integrated WRD/TSF. As a condition of the Mining Authorisation, prior to commencement of mining at Grants, the information and knowledge gaps identified in the plan (including final landform designs) will be addressed to the satisfaction of DPIR and the NT EPA.

- There will be no change to the types or quantity of chemicals stored on site. The management plans and commitments made in the MMP are considered adequate to minimise the risk associated with long-term contamination from storage and handling of fuels and chemicals.

3.4 Terrestrial flora & fauna

Terrestrial flora and fauna refers to vegetation communities, plants and animals that occur on land. The NT EPA's objective for this environmental factor is to:

"Protect the NT's flora and fauna so that biological diversity and ecological integrity are maintained".

3.4.1 Potential impacts

NT EPA Assessment Report 89 concluded that the Proposal is not likely to result in a significant impact on fauna. As the proposed changes do not involve any additional land clearing or other activities that will result in habitat loss of degradation, it is unlikely that there would be an increase in the impact to terrestrial fauna values.

NT EPA Assessment Report 89 identified the following potential impacts to terrestrial flora values:

- Loss of native vegetation
- Habitat degradation from:
    - Altered surface water flows
    - Weed introduction
    - Changed fire regimes.

3.4.2 Assessment of changes

Table 3-5 documents an assessment of whether the proposed changes to the Proposal will result in an increase in the potential impacts to terrestrial flora values. As stated above, the proposal is unlikely to significantly impact terrestrial fauna, and so this aspect is not considered further.

Table 3-5. Potential impacts and risks to terrestrial flora

Potential impacts (Assessment Report 89)	Assessment of proposed changes
Loss of native vegetation, in particular loss of *S. ensatum* habitat and *T. praetermissum* habitat	The proposed changes to the proposal do not involve any additional land clearing and so will not increase the loss of native vegetation or impact on any threatened species habitats.
Habitat degradation from altered surface water flows and water quality	The proposed changes to the proposal will require the ongoing use of the Mine Site Dam and Observation Hill Dam as a water supply, potentially for a period of 7+ years. The MSD dam was to be in place for a period of 3-4 years prior to decommissioning to re-establish natural flow regimes downstream. The NT EPA Assessment Report 89 states that, "significant impacts on downstream vegetation communities from the predicated changes in surface water flows are unlikely due to the short duration of the proposal." The OHD was proposed to remain in place post-closure; however, ceasing extraction from the dam was predicted to restore flows to an extent. The resilience of the downstream riparian and mangrove habitats to longer-term modification of surface water flows and cumulative water quality impacts is unknown. The persistence of mangroves along the creeks and shorelines in Darwin Harbour and riparian rainforest along Rapid Creek, where the flow regimes and water quality have been altered over long periods, indicates that the habitats have a level of resilience. Longer term site-specific monitoring will be required to detect any downstream impacts to these communities associated with the mining and processing activities at Grants Lithium Project. The modelled reduction in flows was discussed in Section 3.1. Assuming the modelling is accurate, the likelihood of impacts to mangroves associated with reduced flows is considered to be low.

Potential impacts (Assessment Report 89)	Assessment of proposed changes
	The affected ephemeral creek line downstream of OHD discharges to Charlotte River. Modelled reduction in average wet season discharges from the creek into Charlotte River is 20-30%; however, the impact on flows in the river is less than 3%. The riparian rainforest habitat along the section of creek between the OHD and Charlotte River appears to have some resilience to reduced surface water flows as the habitat has persisted with the OHD being in place since the 1980's. The resilience of the habitat to further flow modification over an extended period is unknown and will need to be monitored. There is not expected to be any impact on the riparian values in the Charlotte River proper. There is potential for cumulative impacts to the downstream habitats associated with the OHD and proposed mining activities at the BP33, which are located in the same catchment. These impacts are considered in the separate referral submitted for the BP33 underground mine. In terms of water quality, the changes do not involve any increased risk of chemical contamination. However, the extended period of operations could increase the risk of longer-term accumulation of sediments in the downstream watercourses and mangrove environments, if the site-specific water quality objectives are not met.
Habitat degradation from weeds	The proposed changes to the proposal do not involve any additional land disturbance or import of materials that would increase the risk of weed introduction and spread. Core will be required to control weeds in accordance with a Weed Management Plan for the duration of operations and post-closure until relinquished.
Habitat degradation from changes to fire regimes	The proposed changes to the proposal do not involve any activities that would increase the risk of bushfires.

3.4.3 Residual impact

The changes to the Proposal are unlikely to increase potential impacts to terrestrial flora and fauna to the extent that would alter the residual impacts to biodiversity and ecological integrity. The main reasons for this conclusion are summarised below:

- There will be no additional land clearing or other activities that are likely to result in loss of native vegetation or degradation of habitat values beyond the immediate area of the mine site. The plans and procedures included in the approved MMP provide for avoidance, management and monitoring of potential impacts to flora and fauna associated with weeds and changes to fire regimes over an extended period of operations.
- The reduction in flows caused by the extended duration of operating MSD and OHD is considered unlikely to impact the ecological integrity of the downstream riparian and mangrove communities in West Arm and the Charlotte River. However, the potential for localised impacts to these communities cannot be discounted. The approved Water Management Plan for Grants Lithium Project will be updated to incorporate monitoring of downstream impacts, which will include monitoring of flows and habitat condition in both the West Arm and Charlotte River catchments.
- The potential for longer-term accumulation of sediments in the downstream watercourses and mangrove environments will be minimised by implementing Progressive ESCP's, which will be audited by a Certified Practitioner. The approved Water Management Plan details the monitoring program that will be implemented to evaluate the effectiveness of the onsite erosion and sediment controls and detect any increased turbidity in the downstream surface waters. Contingency measures in the plan are considered to provide for adequate protection of downstream water quality over an extended period of operations.

3.5 Social, economic & cultural surroundings

The definition of 'environment' in the *Environmental Assessment Act (NT)* encompasses "all aspects of the surroundings of man including the physical, biological, economic, cultural and social aspects". The NT EPA's objective for this environmental factor is to:

"Protect the rich social, economic, cultural and heritage values of the Northern Territory."

3.5.1 Potential impacts

The NT EPA Assessment Report 89 concluded that the Proposal is not likely to result in a significant impact to the social, economic, cultural and heritage values. As the impacts are manageable through the implementation of a Community and Stakeholder Engagement Plan, Community Benefits Plan and obtaining the relevant clearances and authorities under the *Heritage Act 2011* and *NT Aboriginal Sacred Sites Act 1989*.

The NT EPA identified the following potential impacts to social, economic, cultural and heritage values associated with the Proposal:

- Social and economic:
    - Opportunities for employment and increased economic activity.
    - Traffic delays, and congestion.
    - Road pavement degradation due to increased heavy traffic.
    - Reduced community amenity due to increase in noise and/or dust especially from increased traffic and road trains.
    - Environmental impacts associated with water use, mine closure and rehabilitation.
    - Public access and hazards following closure.
    - Loss of future land use opportunities.
    - Dam failure causing downstream flooding.
- Cultural and heritage:
    - Potential impacts to any sacred sites under the NT *Aboriginal Sacred Sites Act 1989*.
    - Reduced access to traditional cultural activities and to Declared Heritage Area 'site 5'.
    - Degradation of the significance of cultural values associated with Declared Heritage Area 'site 5'.
    - Loss of historic values of tin mine sites which are not listed under the *Heritage Act 2011*.

3.5.2 Assessment of changes

Table 3-6Table 3-5 documents an assessment of whether the proposed changes to the Proposal will result in an increase in the potential impacts to social, economic and cultural values.

Table 3-6. Potential impacts and risks to social, economic and cultural surroundings

Potential impacts (Assessment Report 89)	Assessment of proposed changes
Social and economic	
Opportunities for employment and increased economic activity.	Indicative potential life of mine is 7+ years. This overall extends the opportunities for employment and increases economic activity associated with the Finniss Lithium Project.
Traffic delays, and congestion.	The proposed changes to the proposal will not change the quantity of haul trucks utilising haul route to Darwin Port. A total of 20 truck trips (return) operating along the haul route. The Traffic Impact Statement prepared is based on this capacity and indicated that the increase in peak traffic volumes was be small (1.3%) and therefore it was not expected to cause congestion or increase risk of collision. Liaison will continue with the DIPL regarding road usage, and truck movements will be planned to minimise impacts to people and communities. Ongoing communication and engagement with stakeholders will be undertaken by Core to inform motorists of traffic movements, with the approval of nearby satellite ore resources and continued use of the Grants Project processing facility.

Potential impacts (Assessment Report 89)	Assessment of proposed changes
	The requirement of temporary road closure of Cox Peninsula road for blasting activities will not change, and will cease when mining of the Grants ore resource is exhausted.
Road pavement degradation due to increased heavy traffic.	The proposed changes to the proposal will extend the timeframe the haul route will be utilised. Core will repair any damage to the road pavement attributable to the Proposal.
Reduced community amenity due to increase in noise and/or dust especially from increased traffic and road trains.	The proposed changes to the proposal do not involve any additional traffic and road trains on Cox Peninsula road, however will require ongoing use, for a period of 7+ years. The Traffic Management Plan and proposed mitigation measures, including speed restrictions through Berry Springs, a process for public feedback and complaints and ongoing liaison with DIPL regarding road usage and truck movements, will continue unchanged.
Environmental impacts associated with water use, mine closure and rehabilitation.	The proposed changes to the proposal in terms of hydrological process are discussed above in Section 3.1. The implementation of the Mine Closure Plan will be delayed until the near satellite ore resources are mined.
Public access and hazards following closure.	The proposed changes to the proposal will not change the public access and hazards following closure, in accordance with the Mine Closure Plan. The implementation of the Mine Closure Plan will be delayed until the near satellite ore resources are mined.
Loss of future land use opportunities.	The proposed changes to the proposal will not change the loss of future land use opportunities. The Mine Closure Plan will be implemented to the satisfaction of DPIR, however will be delayed until near satellite ore resources are mined.
Dam failure causing downstream flooding.	The design and construction of the two water supply dams will not change and will be conducted in accordance with ANCOLD guideline specifications as per Recommendation 4 (NT EPA 2019).
Cultural and heritage	
Potential impacts to any sacred sites under the *NT Aboriginal Sacred Sites Act 1989*.	The proposed changes to the proposal do not require any additional land. There are no known or registered or recorded Aboriginal sacred sites in the Proposal area. An AAPA certificate will be obtained.
Reduced access to traditional cultural activities and to Declared Heritage Area 'site 5'.	The mine footprint will not change due to the proposed changes. Core will implement measures to protect this site from disturbance during operations.
Degradation of the significance of cultural values associated with Declared Heritage Area 'site 5'.	
Loss of historic values of tin mine sites which are not listed under the *Heritage Act 2011*.	The approved water pipeline route will not change due to the proposed changes. Core will implement measures to protect identified listed and unlisted heritage sites during operations.

3.5.3 Residual impacts

It is considered unlikely that the changes in the proposal will increase the residual impacts to social, economic and cultural surroundings. Potential impacts will continue to be managed through the Social Impact Management Plan as referenced in the MMP. Ongoing engagement with stakeholders and local communities will continue and Condition 17 of the Mining Authorisation requires that "The Operator (Core) must develop and implement a Stakeholder Engagement Plan prior to commencement of works.

4 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Under the NT Environment Protection Authority Act (*NT EPA Act*), in providing advice or a report the NT EPA must have regard to the principles of ecologically sustainable development (ESD). The NT EPA used the four principles contained in the Intergovernmental Agreement on the Environment (IGAE) to demonstrate its consideration of ESD in the assessment of the Grants Lithium Project (refer Appendix 2 Assessment Report 89). For the variation described in this document, the sections below document consideration of each ESD principle.

Table 4-1. Consideration of ESD principles

ESD Guiding Principle	Assessment of variation
The precautionary principle	The investigations and monitoring documented in the EIS and MMP are considered to provide sufficient certainty to enable assessment of the majority of the potential and risks associated with the variation. In Assessment Report 89, the NT EPA considered that there remained some uncertainty in relation to the following aspects: • Cumulative impacts and risks associated with the mine closure phase. • Resilience of riparian vegetation to recover from reduced water flows. These uncertainties remain for the variation and therefore, adopting the precautionary principle, require further consideration prior to commencement of mining. Previously, the short life of mine was a key concern raised by the NT EPA in relation to mine closure. The proposed extended period of operations will allow for longer term rehabilitation trials to inform the mine Rehabilitation Plan. It will also allow for progressive rehabilitation of the mining disturbances and monitoring of rehabilitation success whilst the processing facilities continue operation. To ensure that residual risks are adequately accounted for in closure planning, Core will revise the Mine Closure Plan prior to commencement of mining. The plan will be reviewed by the NT EPA and subject to approval by DPIR. To address the uncertainty in relation to the resilience of riparian and mangrove vegetation to an extended period of reduced flows, prior to commencement of mining, the Water Management Plan will be revised to incorporate a monitoring program that will ensure that any impacts to surface water flows are monitored, measured, reported and managed. The above measures were recommended by the NT EPA in Assessment Report 89 and when implemented by Core in relation to the variation are expected to ensure that significant or unacceptable of environmental impacts and risks are avoided.
Intergenerational equity	Intergenerational equity requires that the health, diversity and productivity of the environment be maintained for future generations. The investigations documented in the EIS, indicate that the open pit lake and WRD are unlikely to result in significant legacy issues/costs that would be borne by future generations. This assessment is based on the assumption there are no Acid Metalliferous Drainage issues associated with the waste rock, groundwater drawdown will be localised and the pit will not overtop when full. These predictions are not altered by the proposed variation to the activities and will be verified by monitoring programs implemented during mining. The monitoring programs are expected to ensure that prior to and post closure, there is an increased level of certainty with respect to the residual impacts of mining that will be borne by future generations. The NT EPA's assessment of the proposal identified potential for the open pit void to have ongoing management costs that would be borne by the community and government. The variation does not involve any change to the mine closure concept, in that once the ore resource is exhausted, the pit will be left to fill and form a pit lake. The NT EPA has recommended that unless Core can demonstrate that leaving a pit lake would still allow the closure objectives and principles of ESD to be met, the pit void should ultimately be backfilled. The monitoring programs implemented during mining, in particular the ongoing geochemical characterisation of waste rock, water quality monitoring and monitoring of groundwater levels, will provide for a robust assessment of post-closure risks to be undertaken prior to cessation of mining to inform final decision-making with respect to acceptable closure criteria. In relation to power supply, the NT EPA encouraged Core to take a longer term view of future power supply alternatives including renewables to be more compatible with the principle of intergenerational equity. The extended mine life proposed by this variation allows for Core to consider such alternatives. Alternatives currently under consideration include solar and connection to mains power, or a combination. If these options are deemed feasible, there would still be some requirement for back-up diesel power generation.

ESD Guiding Principle	Assessment of variation
Conservation of biological diversity and ecological integrity	The variation is unlikely to increase potential impacts to terrestrial flora and fauna to the extent that would alter the residual impacts to biodiversity and ecological integrity. It is noted that there is some uncertainty with respect to the potential impacts to riparian and mangrove vegetation downstream associated with an extended period of reduced flows. As it is not possible to reliably predict the level of impact, adopting the precautionary principle, the impacts will be monitored and contingency measures implemented in response to any detected impacts. These measures could include releasing water from the Mine Site Dam to maintain flows, or remediation of impacted areas. Core has made a commitment in the MMP that prior to commencement of mining, the Water Management Plan will be revised to incorporate a monitoring program that will ensure that any impacts to surface water flows are monitored, measured, reported and managed. Monitoring is expected to ensure that impacts to flora and fauna are localised, and biodiversity and ecological integrity are not compromised.
Principles relating to improved valuation, pricing and incentive mechanisms	The monitoring programs proposed during operations, as documented in the MMP, will allow for verification and improved understanding of residual impacts and risks associated with the mining operation. These programs will inform final government decision-making with respect to acceptable closure criteria, taking into account the costs of the residual risks that may be borne by the community and government.

5 SUMMARY & CONCLUSION

The variation proposed to Grants Lithium Project involves extending the operating period of the processing facility for a period of 7+ years. There is no change proposed to the open pit mining operations.

As the project footprint remains the same, the variation addressed in this document will not result in any new or additional areas being impacted. It is noted; however, that this variation is related to a separate proposal (BP33 underground mine) that will impact a new area 3.5 km south-east of the Grants mine site. The BP33 proposal has been separately referred to the NT EPA for determination of whether it will require assessment under the *Environment Protection Act*. The variation outlined in this document is contingent on Core obtaining approval for the BP33 proposal.

The total production output from the processing facility will increase; however, the rate of production will remain the same at 1 Mt/pa. This means that the intensity of impacts associated with water extraction (reduced flows) and traffic along the haul route to the port (public nuisance and safety) will not increase, but the duration of some impacts will be extended. Of note is that the variation does not include an ongoing requirement for road closures beyond year three because there is no change to the open pit mining activities. There also will be no increase in the discharge volumes or duration of discharges because these are associated with dewatering of the pit, which will cease once the Grants deposit is exhausted.

This document has considered the potential impacts to hydrological processes, water quality, environmental quality, flora and fauna and social, economic and cultural surroundings associated with the extended duration of operations. The assessment concludes that the variation is unlikely to have a significant impact on the environment that differs in a material way from the impacts identified in the assessment process. It is acknowledged that that there is some uncertainty with respect to the environmental risks associated with the post-closure pit lake landform and the resilience of the downstream riparian and mangrove habitats to longer-term modification of surface water flows that would occur with the Mine Site Dam remaining in place for a period of seven years or more. To address these uncertainties, the Mining Authorisation requires that prior to commencement of operations, the Mine Closure Plan and Water Management Plan, are revised to address information gaps and detail the site-specific monitoring programs that will be undertaken during the mining operations.

The mitigation measures and monitoring programs detailed in the EIS and subsequently in the MMP, are considered suitable for managing the risks associated with an extended period of operations without causing an unacceptable level of environmental impact. The MMP and associated plans will be subject to annual review and approval by DPIR in accordance with the Mining Authorisation for the duration of operations.

6 REFERENCES

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