SEC Technical Report Summary

Mt Cattlin Lithium Project

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1. EXECUTIVE SUMMARY

1.1 Introduction

Allkem Limited (Allkem or the Company) engaged Mining Plus to prepare, alongside an employee of Allkem set forth herein, this Technical Summary Report for its 100% owned Mt Cattlin Lithium Project (the Project) in Western Australia.

This report provides all the supporting details for the Mt Cattlin S-K 1300 Technical Report, the first report lodged for this property.

This report supports Mineral Resources and Mineral Reserves estimates using the standards and definitions in the S-K 1300 requirements. It presents the Mineral Resource and Mineral Reserve estimates, capital and operating costs, and an economic assessment based on open pit mining operations with on-site processing to produce spodumene and tantalite concentrates as of 30 June 2023.

The report is compiled from a Feasibility Study conducted into the mining of resource extensions of the existing operations which complimented the NI-43101 compliant Mineral Resource and Ore Reserve Estimate with an effective date of 30 June 2023. All units of measurement within this report are metric unless otherwise stated. Monetary Units are in US dollars, unless stated otherwise. The Registrant for this report is Allkem Limited.

Mining Plus has compiled this report with an Allkem employee from various sources, dominantly the Mt Cattlin Stage 4 Feasibility Study and NI 43-101 report that support the reserve study which were supplied to Mining Plus by Allkem.

The Mining Plus employees that prepared this report and the Allkem employee set forth herein are each Qualified persons as set out in Chapter 2. Mining Plus has been engaged by Allkem in a number of studies related to Mineral Resource Estimates and Ore Reserve Estimates that contributed the Feasibility Study and has visited site.

The report is solely concerned with the Mt Cattlin Operation and is the first SK-1300 report on the project.

This report was amended to include additional clarifying information in October 2023. The basis of the report is unchanged. The summary of the changes and their location in the document are summarized in the introduction of Section 2.

1.2 Property Description, Mineral Rights and Ownership

The Mt Cattlin operations is located 2km south of the township of Ravensthorpe, 450km southwest of Perth, Western Australia. There is established access to the site via major road networks (Figure 1-1).

Mt Cattlin was commissioned in 2010 and has been operated since, except for approximately three years between 2012-2016 when the operation was placed into care and maintenance due to market conditions.

The operation comprises a 1.8Mtpa capacity processing plant, an open pit (the 4th developed on the site) and onsite supporting infrastructure of power generation, water supply, tailings storage facilities and various administration buildings.

Processing operations are managed by Mt Cattlin employees and mining is conducted by contract services.

The operation produces spodumene concentrate, that is trucked to the nearby port of Esperance and sold into the international lithium market, and tantalite concentrate which is sold to a nearby purchaser.

Figure 1-1 - Location map of Mt Cattlin.

The project is situated on the Mining lease M74/244 which covers 1830 Ha and was granted on 24 December 2009 and is due to expire in December 2030. There are an additional 20 Exploration Licenses, Prospecting Licenses and Miscellaneous Leases totaling 2001 Ha. The Mining Lease is wholly owned by Allkem who also holds freehold title of the land subject to the current mining operations.

Royalties are payable to the Western Australian State Government of 5% of the revenue realized from the spodumene concentrate, and an additional royalty of US$1.05 per tonne of crushed ore is paid to Lithium Royalty Corp.

1.3 Accessibility, Climate, Local Resource, Infrastructure and Physiography

As an existing operation, Mt Cattlin is service by established infrastructure, including sealed roads to site and a highway network to Perth and the nearest regional centers of Albany and Esperance, both of which support heavy industry and have regional airports, as well as an export port located at Esperance.

Ravensthorpe has a Mediterranean climate, featuring moist, mild winters and hot, dry summers. The area receives an average annual rainfall of 113mm with annual average minimum and maximum temperatures at 10.5^{o}C and 22.8^{o}C, respectively.

The local topography is undulating, with the maximum elevation at 265m above sea level. The Cattlin Creek passes through the project area and separates the Eastern and Western Mining Areas. The region has largely been cleared for livestock and grain production.

1.4 History

Mt Cattlin is owned by Galaxy Lithium Pty Ltd, a wholly owned subsidiary of Allkem Limited, the current ownership structure is illustrated in Figure 1-2

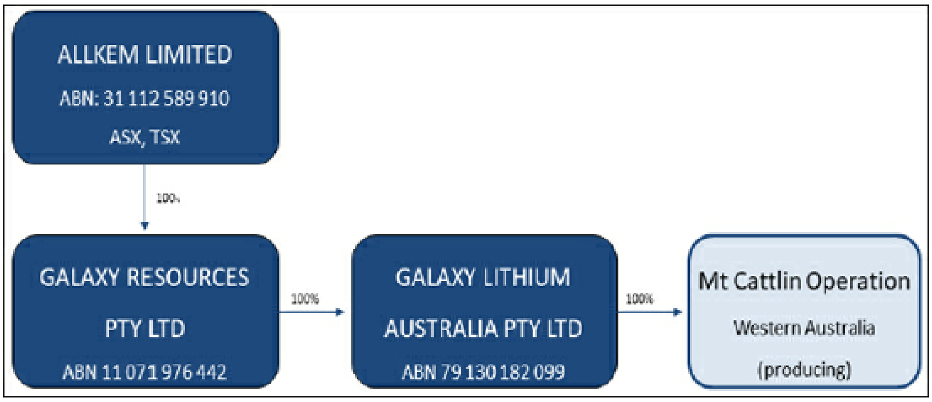


Figure 1-2 - Mt Cattlin Corporate Ownership Structure.

The tenements were held by numerous companies since the 1960's until Galaxy Resources acquired the mining Lease M74/12 from the administrators of Sons of Gwalia Limited in 2006. Each of these companies conducted exploration activities through both reverse circulation (RC) drilling and diamond drilling exploration methods.

Extensive test work was carried out by WMC, who completed an internal feasibility study on mining the deposit in the 1960's.

Galaxy Resources established the mining operation, and a processing plant was commissioned in 2010 and was in production until 2012 when the operation was placed into care and maintenance due to market conditions. The operation was re-commissioned in 2016 and has been in continuous production since (Table 1-1).

Table 1-1 - Concentrate Production by year.

Year	Concentrate Produced (dmt)
Q 1 2023	38,915
2022	107,417
2021	230,065
2020	108,658
2019	191,570
2018	156,689
2017	155,679
2016	9,700
2015	-
2014	-
2013	-
2012	54,047
2011	63,863
2010	1,645

A maiden Mineral Resource Estimate for Mt Cattlin by Galaxy Resources was released in 2007 prior to the company listing on the ASX.

1.5 Geological Setting, Mineralization and Deposit

The Mt Cattlin deposit is a spodumene-rich tantalite-bearing pegmatite within the Ravensthorpe Terrane, with host rocks comprising both the Annabelle Volcanics to the west and the Manyutup Tonalite to the east. The contact between these rock types transects the deposit area.

The pegmatites host the lithium-rich mineralization and are of the albite-spodumene sub-type (Wells et al, 2020) and occur as a series of gently dipping sub-horizontal sills surrounded by both volcanic and intrusive rocks. Several dolerite or quartz gabbro dykes trending roughly east-northeast and north cut all the lithologies including the pegmatite units. A significant sub-vertical fault with a north-northwest trending orientation transgresses the western side of the currently defined orebody and offsets the pegmatite as well as the main east-northeast trending dolerite dyke. Displacement across this fault appears to be oblique, with a west block down sinistral movement. The weathering profile across the Mt Cattlin area is typically shallow, with fresh rock encountered sometimes at depths of less than 20 meters below the surface.

Lithium and tantalum mineralization occurs within the pegmatites. In places, the pegmatite occurs as stacked horizons that overlap in cross-section. The current extent of mineralization covers an area of around 1.6 km east-west and 1 km north-south. The main pegmatite units drilled to date generally lie between 30 m and 60 m below the surface, although in some locations they can be found as surface outcrops. Pegmatite units have been noted to occur up to 140 m below the surface to the northwest of the main orebody and may have the potential to be mined from underground.

The pegmatites have a diverse mineralogy hosting a rich array of minerals with spodumene as the dominant lithium ore mineral. Several types of spodumene are observed, which include light green and white varieties. Tantalum occurs as the manganese-rich end members of the columbite-tantalite series, including manganotantalite and microlite (Sweetapple, 2010).

Based on apparent mineral assemblages and textures, Mt Cattlin has been categorized as an albite-spodumene type with the LCT classification. Moreover, the relatively highly coarse nature of spodumene at Mt Cattlin compared to that of other LCT pegmatites in WA suggests that these pegmatites crystallized from a high-fluxing agent melt (Wells et al., 2022).

A geometallurgical approach to modelling the deposit geology at Mt Cattlin has been adopted. This approach aims to integrate the information required to ensure that the produced spodumene concentrate meets product specifications including requirements for a minimum lithia grade, plus upper limits of deleterious elements.

1.6 Exploration

Mt Cattlin's has acquired several tenements and has an active exploration program that includes surface geology mapping, rock chip and soil sampling, remote sensing, and airborne and ground geophysics.

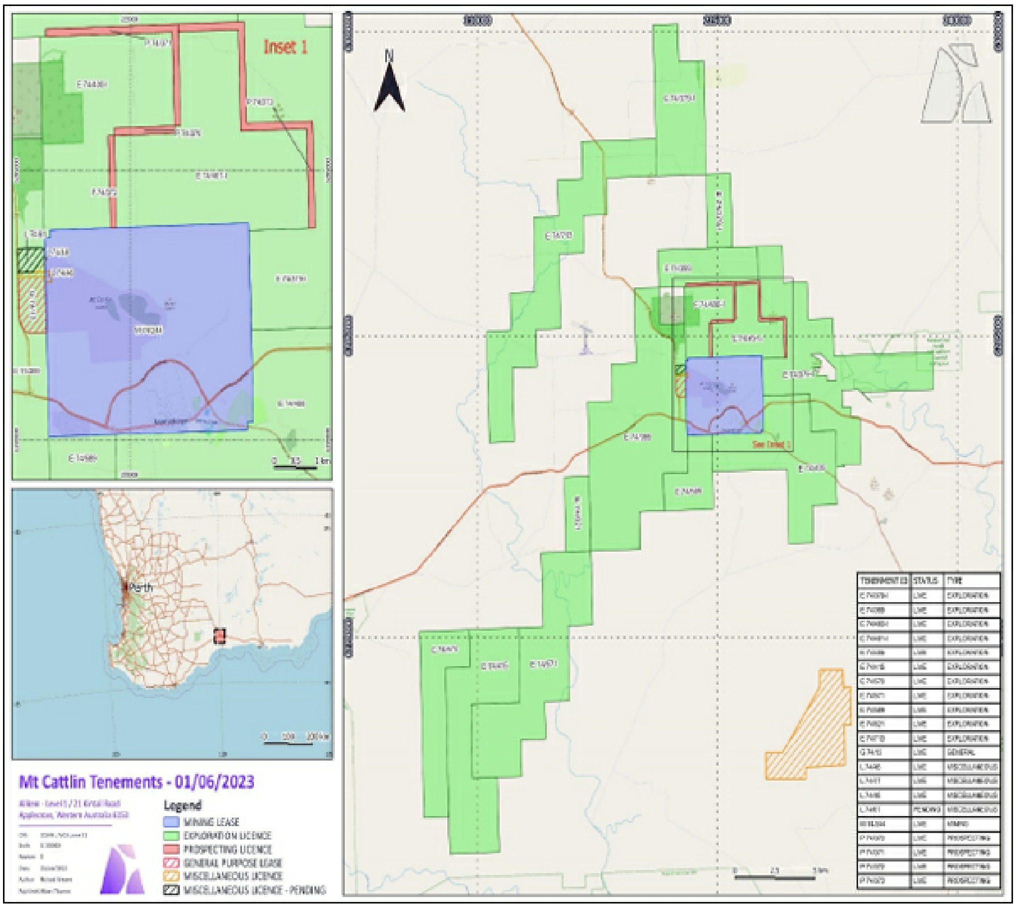


Figure 1-3 - Location of granted exploration licenses, prospecting licenses, and mining leases in the Ravensthorpe area.

Tenements to the east of Ravensthorpe comprising the West Kundip and McMahon Projects contain manganese and copper gold targets. To the north of Mt Cattlin, rock chip sampling of outcropping pegmatites returned highly anomalous tantalum values and elevated lithium values at the Enduro

Prospect. Further evaluation and drilling returned the best intercept of 2 m at 1.45% Li_2O. Further drilling is planned.

Projects to the west and south of Mt Cattlin, which have been explored for pegmatite-hosted lithium and tantalum mineralization include the Bakers Hill, Floater and Sirdar projects. Programs of mainly surface sampling and geological mapping have been carried out over these tenements in addition to airborne geophysics.

This report does not include the estimate or disclosure of any exploration targets.

1.7 Drilling

The drillhole dataset within the Mineral Resource estimate extents contains 4,158 drillholes for a total of 218,506 m.

Summary drillhole details have been provided for all drilling inside the resource limits in Table 1-2 and for all other Mt Cattlin tenements in Table 1-3.

Table 1-2 - Summary drillhole data within the resource extents.

Hole Type	Avg (m)	Count	Total (m)
RC	59.1	3,953	205,207
RABR	61.2	52	3,182
DDH	79.4	95	7,544
RC_DD	107.4	18	1,933
PC	16	40	640

Table 1-3 - Summary drillhole data for all Mt Cattlin tenements.

Hole Type	Avg (m)	Count	Total (m)
RC	54.6	4,389	239,669
RAB	32.6	176	5,739
DDH	67.1	167	11,204
RC_DDT	137.9	22	3,034
PC	16	40	640

From 2017 onwards, field geological logging data has been predominantly captured using the Maxwell LogChief logging program, which is then transferred directly to the main SQL database. LogChief logging templates are consistent between exploration and GC drilling programs, with the exception of quality control sampling for which there are slightly differing methodologies.

In 2023, 105 new vertical grade control drillholes were completed for 6,457 m to reduce data spacing to approximately 20 x 20 m spacing to support operational ore selectively and material dispatch. These do not inform the January 2023 Mineral Resource Estimate.

Campaigns of Geotechnical drilling have been completed for the project, including 3 specifically for the extension of open pits in Stage 4.

1.8 Sample Preparation, Analyses and Security

At Mt Cattlin, the host pegmatite is visually distinguishable from the surrounding country rock; therefore, sampling is taken selectively within RC chips and diamond core. Currently, 3 m of waste rock is sampled adjacent to the pegmatite to characterize the waste likely to be encountered during mining.

QAQC samples have been submitted routinely into all sample batches sent to the assaying laboratories.

Mt Cattlin QAQC protocols have undergone several improvements since 2016. QAQC frequencies since 2017 are provided in Table 1-4.

Table 1-4 - Galaxy Phase 2 QC policies by year pre-2022.

Grade Control	2017	2018	2019	2020	2021
Standard		approximately 1 in 60 to 70	1 in 25	1 in 25	1 in 25
Blank		approximately 1 in 60 to 70	1 in 25 (approximate)	1 in 25	1 in 25
Duplicate		approximately 1 in 60 to 70	1 in 25	1 in 25	1 in 25
Exploration	2017	2018	2019	2020	2021
Standard	1 in 50	1 in 50	1 in 50	1 in 50	1 in 25
Blank	1 in 50	1 in 50	1 in 50	1 in 50	1 in 25 or one per mineralized interval minimum
Duplicate	1 in 20	1 in 20	1 in 20	1 in 20	1 in 20

QAQC controls continued in 2021 and 2022, the field duplicate frequency was 1 per 14 samples, blind, 1 per 19 samples and blind blanks 1 per 24 samples, in line with 2021 frequency rates.

Multiples campaigns of bulk density determinations from diamond drill core for the project have been undertaken. These have been analyzed by standard immersion method on site and also a campaign of laboratory analysis by hydrostatic weighing methods.

The sample preparation methods, security, assaying and QAQC control measures are appropriate for the type and style of mineralization at Mt Cattlin.

1.9 Data Verification

An inspection of the property was made between 11-13 April 2022, 11-13 July 2022, 21-23 September 2022, and 12-14 December 2022. Chapter 9: Data Verification summarizes the observations made, plus associated recommendations.

1.10 Mineral Processing and Metallurgical Testing

Mt Cattlin utilizes conventional processing techniques to generate spodumene and by-product tantalite concentrates from open pit mining of the pegmatite ore deposit.

The plant has capacity to process up to 1.8 Mt of ore, having been subject to a series of upgrades since the original 1 Mt capacity facility was commissioned in 2010. Campaigns of test work have led to improvements in the processing circuit, including the addition of Optical sorting.

Plant recovery estimates used in the economic assessment of reserves are based on grade-recovery curves that were derived from historical plant performance and reflect a range of plant feed grades and concentrate grades. Periods of production affected by un-representative ore feed was excluded from analysis.

Since February 2023, when ore feed has been from the NW Stage 3 pit, recoveries have been in line with or exceeded expectations.

Metallurgical test work for the NW pit area conducted in 2021 consisted of a heavy liquid separation (HLS) program on two drill composites to determine the materials amenability to dense media separation. Mineralized core sections were selected with no additional waste dilution, generating head grades of 1.85% and 1.02% Li_2O respectively.

Additional work in 2022 tested geometallurgical properties of the pegmatites in the NW pit area.

An additional four (4) metallurgical drillholes have been drilled into the Stage 4 resource, test work results were not available at the time of reserve update, which will test the continuity of mineralization and recovery expectations for the bulk of the Stage 4 resource.

The history of production, geometallurgical understanding and some metallurgical testing of the pegmatites in the NW pit area support the use of the recovery curves.

The now completed initial tailings facility (TSF1) are included in resources and ore reserves, a modest 900kt @ 0.8% Li_2O of the reserves, and subject to further study, floatation testing has shown the potential to recover 30% of the contained metal to a saleable concentrate.

1.11 Mineral Resource Estimate

The spodumene mineralization at Mt Cattlin is entirely hosted within the numerous flat-dipping pegmatite sills which are cross-cut and offset by late-stage faults. The geological interpretation exercise resulted in a total of 13 individual pegmatite domains and one intrusive dolerite modelled and used to control the block model estimation process. Interpretations for weathering surfaces that differentiate the fresh rock from partially weathered or transitional material, and the transitional material from completely oxidized rock, were supplied by Allkem personnel.

The Li_2O grade distributions within the pegmatite geological domains indicate the presence of mineral zonation and differentiation into high and low-grade lithia zones. Modelling of the Li_2O mineralization was completed utilizing a combination of Leapfrog Geo software to explicitly model the internal coarse-grained, mineralized spodumene using a 0.3% Li_2O cut-off, 4% Na_2O cut-off at the peripheries, and geological logging of coarse-grained pegmatite.

Ordinary kriging was used to estimate Li_2O , Ta_2O_5 and Fe_2O_3 grades into both the mineralized and un-mineralized pegmatite domains, with domains sub-divided further into oxidized and transitional/fresh domains where applicable.

Dynamic anisotropy was used in the block model estimation to accommodate the highly variable dip of the pegmatites. Dynamically adjusting the search ellipse and variogram orientation, the dynamic anisotropy process attempts to capture the maximum amount of composite data within the search ellipse.

The estimation process for the Mineral Resources was completed in January 2023.

Continuing mining operations have resulted in waste rock backfill and tailings backfill being stored in completed open pits. Backfill volumes have been coded into the block model using survey wireframes provided by Allkem. The Mineral Resource block model has been depleted using the surveyed as-built surface as of 30 June 2023.

A thorough series of statistical validation and visual model checks have been completed, indicating that the MRE block model is within the error of the informing composite samples.

Classification has been applied on the basis of the data spacing, geology and grade continuity, and the estimation quality parameter of slope of regression. Only areas drilled by Grade Control (GC) methods have been classified as Measured Resources. The Indicated Resource areas are typically drilled at 40 m by 40 m spacing and have been estimated in passes one or two. The Inferred Resource areas are typically drilled at 80 m by 80 m spaced drilling or greater and have been estimated in passes two and three.

The Mineral Resource has been depleted for mining to the 30th of June 2023 and reporting includes within an optimized Whittle pit shell (US$1500/t concentrate) that meets the requirement for Reasonable Prospects of Eventual Economic Extraction (RPEEE).

The Mineral Resource includes surface stockpiles which comprise interim direct feed mined material, a low-grade stockpile, secondary floats, and pre-2018 tailings. The stockpiles have been classified based on the level of confidence in the grade and tonnage.

The Mt Cattlin Mineral Resource, reported at a cut-off grade (COG) of 0.3% Li_2O, as of 30 June 2023, is detailed in Table 1-5.

Table 1-5 - Mt Cattlin Mineral Resource as of 30 June 2023, COG >= 0.3% Li_2O.

Class	M Tonnes	Li_2O %	Ta_2O_5 ppm	Fe_2O_3 %	Li_2O tonnes	LCE
Global Insitu Resource as of 30 June 2023, Cut -off grade Lithia 0.3%						
Measured	0.2	1.00%	172	2.00%	2,000	5,000
Indicated	8.8	1.40%	165	2.00%	121,000	300,000
Stockpiles	1.8	0.80%	95	2.10%	13,000	32000
Inferred	1.3	1.30%	181	2.10%	17,000	42,000
Total	**12.1**	**1.30%**	**167**	**2.00%**	**153,000**	**379,000**
Insitu Mineral Resource as of 30 June 2023, Cut -off grade Lithia 0.3%, US$ 1,500 Shell						
Measured	0.2	1.00%	171	2.00%	2,000	5000
Indicated	7.2	1.40%	147	2.00%	98,000	242000
Inferred	0.2	1.10%	133	2.10%	2,000	5000
Total	**9.4**	**1.20%**	**137**	**2.10%**	**115,000**	**284000**
Stockpiles	1.8	0.80%	95	2.10%	13,000	32000
Mineral Resource exclusive of Mineral Reserves, as of 30 June 2023, Cut -off grade Lithia 0.3%						
Measured	0.1	1.00%	179	2.10%	1,000	2,000
Indicated	3.2	1.40%	201	2.20%	46,000	114,000
Inferred	0.64	1.10%	207	2.20%	7,000	17,000
Total	**3.94**	**1.40%**	**201**	**2.20%**	**54,000**	**133,000**

Notes:

1) Mineral Resource is estimated as of 30 June 2023 and depleted for production through to 30 June 2023

2) Mineral Resources are reported at a cut-off grade of 0.3% Li_2O

3) Estimate have been rounded to a maximum of two significant figures

4) Totals may appear different from the sum of their components due to rounding.

5) LCE tonnes are estimated by applying conversion factor of 2.473 to the contained Li_2O.

1.12 Mineral Reserves Estimate

A Mineral Reserve estimate was completed based on the Mineral Resource Estimate and modifying factors including processing inputs determined from analysis of actual operating performance at the Mt Cattlin site, a competitive mining cost tendering process, and a feasibility level study for the Mt Cattlin Stage 4 Expansion.

The reserves comprise the remaining reserves at the currently mined Stage 3, the prospective Stage 4-1 and Stage 4-2 and stockpiles.

The reserves are based on open pit mining of Stage 4-1 and Stage 4-2, a feasibility study was commenced in May 2023 to consider the alternate underground mining of Stage 4-2.

Based on these modifying factors and the geological block models, pit optimizations were run to select the optimum pit shell which formed the basis of the mine design.

A full mine design was completed to a feasibility study level including a detailed geotechnical study and ore loss and dilution study. The design was based on the optimization taking into consideration other factors such as ore boundaries, haul roads, infrastructure and key processing and economic parameters at final feasibility level to support an economic evaluation and produce a Mineral Reserve Estimate.

The Mt Cattlin Mineral Reserve estimate as of 30 June 2023 was finalized as set out in Table 1-6.

Table 1-6 - 2023 Ore Reserve Update. Effective Date June 30, 2023

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb. Ta_2O_5
Proven	In-situ	0.2	0.9	120	1.4	45
Probable	In-situ	5.2	1.3	130	69	1,500
	Stockpiles	1.8	0.8	95	13	390
Total Mineral Reserves		**7.1**	**1.2**	**120**	**84**	**1,900**

1) Ore Reserve is estimated as of 30 June 2023 and depleted for production through to 30 June 2023

2) Ore Reserves are reported at a cut-off grade of 0.3% Li_2O

3) Estimate have been rounded to a maximum of two significant figures

4) Totals may appear different from the sum of their components due to rounding.

Mt Cattlin has sustainable mining reserves for the next four to five years, with the underlying resource drill constrained and warranting continued exploration. The increasing stripping ratio with the greater depths to access ore via open pit mining methodology is being evaluated against the option of underground mining.

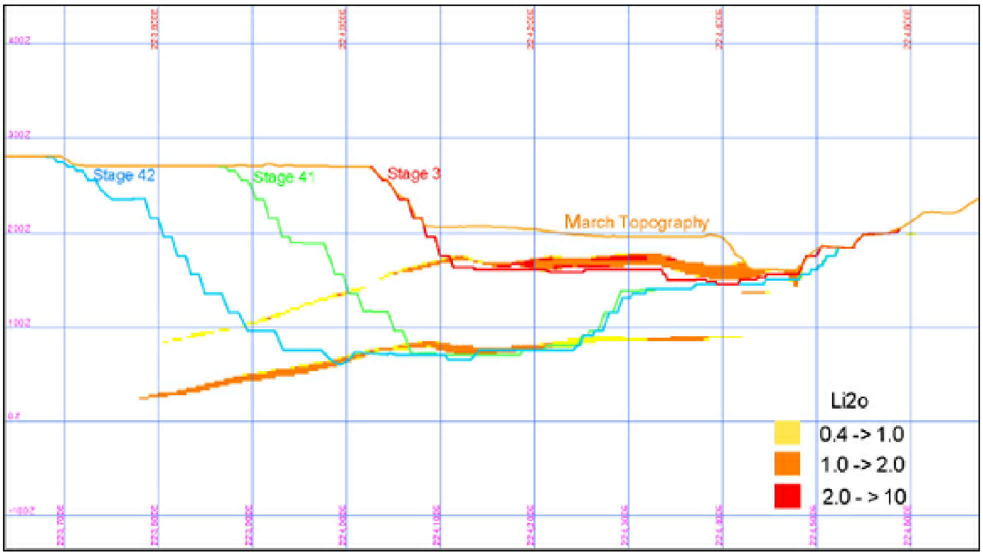


Figure 1-4 - Proposed pit staging.

The pit staging, shown in Figure 1-4 as applied in the economic assessment (Stage 3, Stage 4-Phase 1, Stage 4-Phase 2) individually have quite different stripping ratios and risk characteristics to the overall project average. Stage 3 is very low risk and generates the 72% of the overall cashflow, whilst Stage 4-1 which generates 5% of the overall cashflow and Stage 4-2 which generates 18% of overall cashflow have higher stripping ratios and lower returns. The End of Project Stockpiles generate 5% of overall cashflow.

1.13 Mining Method

Mt Cattlin is a conventional hard rock truck and shovel open pit mine used to extract and transport ore to the processing plant. The mine uses drill and blast methods of rock breakage to advance the pit in 10m high benches with mining and load and haul 2.5m horizontal flitches.

Allkem utilize mining contractors for drill and blast as well as load and haul operations with the contractor providing a primary excavation fleet and ancillary support equipment including grader, water cart, service trucks, light vehicles, and lighting plants.

Ore mining rates are based on a plan to provide continuous feed to the plant at a rate of 1.8Mtpa. However, waste stripping requirements have resulted in the plant feed of 1.8Mpa only being achieved in the first year, Figure 1-5. Waste rock is stored on pre-designed waste dumps or where practical used to back fill completed pits.

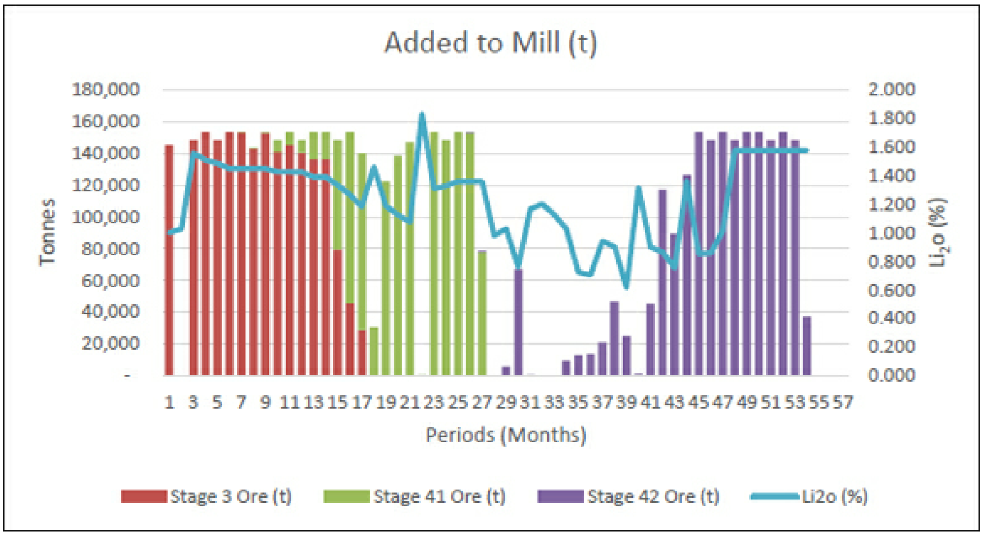


Figure 1-5 - Proposed plant feed sent to the mill based on initial production plan.

The mining method and mine design parameters were selected based on geotechnical properties of the rock, hydrological and hydrogeological factors as well as the economic ore boundaries provided to Mining Plus by Allkem.

Mt Cattlin has commenced an underground feasibility study in May 2023 into mining the resource outside of Stage 4-1.

1.14 Processing and Recovery Methods

The Mt Cattlin processing plant is located immediately to the west of the mining area and utilizes conventional processing techniques to generate spodumene and by-product tantalite concentrates.

The plant has capacity to process up to 1.8 Mt of ore, having been subject to a series of upgrades since the original 1 Mt capacity facility was commissioned in 2010. The processing plant has operated on a continuous basis since restarting after a care and maintenance period between 2013-2016 and consists of a multi-stage crushing, screening, optical ore sorting, dense media separation and gravity concentration.

Spodumene concentrate produced is trucked to the Port of Esperance for loading and shipment to customers predominantly located in China. Tantalite by-product concentrate is bagged on site and freighted to the nearby Global Advanced Metals (GAM) Greenbushes operation.

Recent plant recoveries have been in line with expectations and consistently exceeded 60%.

1.15 Infrastructure

Access to the Mt Cattlin site is via sealed road from Ravensthorpe, which is connected to Perth, Albany, and Esperance centers via a well-maintained highway network. Concentrate is trucked to the Port of Esperance via the South Coast Highway. The port has capacity for 45,000 tonnes of concentrate storage prior to ship loading.

Mt Cattlin site has internal unsealed roads suitable for mining operations and transport requirements.

Site process water is currently sourced as return water from the current South East In Pit Tailings Storage Facility (SE IPTSF) and "make up" water is sourced from the mined out Northeast pit and . In order to utilize the current NE pit as an in-pit tailings storage facility, bore pumps will be established in the proposed in pit tailings to access "return water", rock back fill around the bores is expected to protect the bores from tailings infiltration. A new source of "make up" process water will be required.

Raw water for other site purposes is sourced from nearby boreholes.

Drilling is currently underway to identify alternative sources of water in the area for use once the Northeast pit is used for tailings storage. Ongoing process water availability and permitting is considered to be a key risk for the project expansion post-cessation of the NE pit for a source of water.

Power is supplied to site via a 7MW diesel generation power plant with onsite power reticulation servicing the site power requirements.

The administration and ancillary buildings are already on site and in place.

The processing plant is onsite at Mt Cattlin and consists of a crushing circuit, optical beneficiation circuit, dense media separation (DMS) circuit, product handling facilities and a tailings storage facility (TSF).

There is an explosives magazine on site which is owned and managed by Allkem, and bulk explosives are provide via a contractor.

Tailings were initially deposited in the above ground Tailings Storage Facility (TSF) situated 500m north of the processing plant until 2019. From 2019 until early 2022 tailings were deposited into the "mined out" 2SW pit. From early 2022 tailings have been deposited into the 2SE.

The capacity of the 2SE pit is expected to be exhausted in early 2024, thereafter it is planned to deposit tailings into the 2NE pit which will be sufficient to store tailings from the Reserves.

The tailings within the 2SW pit will require relocation to mine the Stage 4 NE pits studied in this report, it is currently planned that these tails will be dry stacked on the initial above ground tailings facility.

1.16 Market Studies & Contracts

Lithium has traditionally been used for applications such as ceramic glazes and porcelain enamels, glass ceramics for high-temperature applications, lubricating greases, and as a catalyst for polymer production, however rechargeable batteries represent the dominant application of lithium today, representing more than 80% of global lithium demand in 2022. Within the rechargeable battery segment, 58% was attributed to automotive applications, which has grown at 69% annually since 2020. This segment is expected to drive lithium demand growth in future.

Spodumene is the most mined mineral for lithium, with historical and active deposits exploited in China, Australia, Brazil, the USA, and Russia. The high lithium content of spodumene (approximately 8% lithia), its well-defined extraction process, and spodumene typically occurring in more extensive pegmatite deposits make it an essential mineral in the lithium industry.

Wood Mackenzie forecasts a short period of supply volatility in the years to 2030, moving from surplus to deficit and oversupply before entering a sustained deficit beyond 2031. Reflecting this dynamic, prices are expected to align with market imbalances. Wood Mackenzie forecasts a long-term price between US$2,000 per tonne and US$3,000 per tonne (real US$2023 terms) (Figure 16-9).

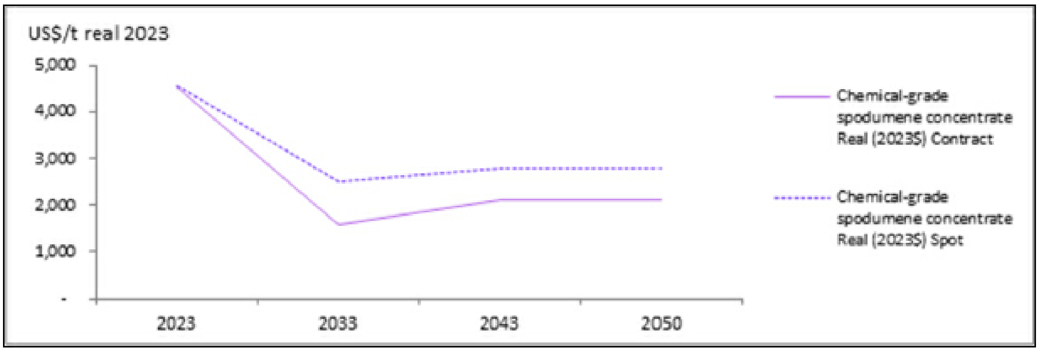


Figure 1-6 - Chemical-grade Spodumene Price Outlook, 2023 - 2050 (Wood Mackenzie).

Allkem's shipments of spodumene concentrate are contracted on a spot basis as required to meet customers under existing off-take agreements.

1.17 Environmental Studies, Permitting and Social Community impact, Negotiations, Contracts with Local Communities and Groups

1.17.1 Environmental Studies and Permits

Allkem have completed numerous baseline environmental studies (during and prior to operations) and all key studies have been completed and there are no ongoing constraints preventing ongoing development and mining. Additional baseline studies will be required for waste dumping space to the Northeast (Waste Dump 4) if required.

Allkem has obtained all relevant permits required to operate as current and understands the future permitting requirements and believe that there are no constraints that will prevent permitting.

Key Permits listed below in Table 1-7.

Table 1-7 - Mt Cattlin permits and key legislation.

Governing Agency	Permit and Governing Legislation
Aboriginal Heritage Act 1972 (Department of Planning, Lands and Heritage - DPLH)	Section 18 permits
Environmental Protection Act 1986 (Department of Water and Environmental Regulation - DWER)	Part V Prescribed Premises License: L 8469/2010/2, Part V Clearing Permits: CPS 3045/5, CPS 8052/2, CPS 8049/1
Mines Safety and Inspection Act 1994 (Department of Mines, Industry Regulation and Safety)	Project Management Plan
Rights in Water and Irrigation Act 1914 (Department of Water and Environmental Regulation)	Groundwater License: GWL 167439(5)

To ensure compliance, Allkem submits Annual Environmental Reports to the relevant government agencies. To date there have been no material non-compliance issues with any permit conditions or legislative requirements at Mt Cattlin.

The regulatory approval request is submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in a Mining Proposal, the Mining Proposal provides detailed information on the identification, evaluation, and management of the environmental impacts. All Mining Proposals must include a mine closure plan.

A Mining Proposal has been lodged with the regulator (DMIRS) for the development of Stage 4-1 NW pit and additional waste dumping. Approval was considered routine and was expected in August 2023.

A new Mining Proposal will need to be submitted following the receipt of the approval for the currently lodged proposal, to permit the use of NE pit IPTSF. The new TSF will be the third similar style of TSF at Mt Cattlin and therefore is not a novel concept. Whilst the approval should be relatively straightforward and non-controversial, the time remaining to design and gain the approval, inclusive of any intermediate delays or required changes of scope, be a risk to production schedule given the expected exhaustion of tailings capacity in the SE pit IPTSF in mid-2024.

A further Mining Proposal process will commence upon the successful receipt of the currently lodged Mining Proposal discussed above, to provide optionality for the project whilst the technical, economic, and social trade-offs of a pit cut-back for Stage 4-2 NW and/or an underground operation are assessed as the most appropriate mining methodology. Should open pit mining of Stage 4-2 be decided on by

Allkem and further waste dumping space to the Northeast be required then an Environmental Protection Agency (EPA) referral will be required. The EPA referral is required as the area being considered for extra waste dumping would require clearing a significant area of native vegetation.

Other Stage 4 capital projects, such as the development of a dedicated staff village on freehold, a new and modernized power supply, and groundwater abstraction will require a series of new and/or altered Works Approvals or modifications to Licenses, issued by the WA State Department of Water and Environmental Regulation (DWER).

Allkem has no known environmental liabilities other than rehabilitation/ closure obligations.

Allkem is required to pay a per hectare unit rate for land disturbance as part of the Mining Rehabilitation Fund Regulations 2013.

The closure and rehabilitation of the site post operations is prescribed in the Mine Closure Plan prepared in accordance with the Department of Mining, Industry, Regulation and Safety and outlines the closure obligations. The Mine Closure Plan identifies and sets out management of any potential closure issues and defines and outlines the site rehabilitation requirements.

Mt Cattlin has focused on mine scheduling that allows for progressive rehabilitation to all disturbed land during operations. Annual rehabilitation monitoring is conducted on site and a detailed Closure Cost Estimate (CCE) is completed annually. An updated Mine Closure Plan has been submitted with the current Mining Proposal which estimates a closure cost of US$12.3m.

Mt Cattlin has built up social credit with the local community over the past decade through local employment, operating without major incident, and initiatives such as the Community Consultation Group (CCG) and site Open Days.

1.17.2 Land Disturbance

Prior to mining development, the site was privately owned and cleared agricultural land.

The current total area of land disturbance approved for all mining and exploration activities is approximately 380 Ha, sufficient for the expected life of mine, with proposed expansions on previously disturbed agricultural land.

For all land disturbance activities, Allkem conduct baseline environmental and heritage surveys, obtain the relevant approvals, and then clear vegetation and stockpile the topsoil/sub soil away from drainage for use in rehabilitation activities.

1.17.3 Dust, Noise and Blast Vibrations

Mt Cattlin is proximal to the Ravensthorpe township, increasing sensitivity to noise and dust emissions. These aspects are monitored and managed via the Operational Noise Management Plan and the Airborne Material Management Plan respectively as part of their licensing, which includes monitoring and management and protocols for incidents and complaints made.

Allkem has developed a Blast Management Plan along with long term vibration and air blast monitoring programs to manage impacts due to blast vibrations.

1.17.4 Stakeholders and Community Engagement

Allkem has committed to ongoing consultation with its stakeholders, currently listed in Table 1-8.

Table 1-8 - Identified Key Stakeholders and their Interest in the Project.

Organization	Interest
• Department of Water and Environment Regulation (DWER) • Department of Mines, Industry Regulation, and Safety (DMIRS) • Department of Planning, Lands, and Heritage (DPLH)	• Licensing and closure planning • Contaminated site identification and remediation • Water supply and groundwater licensing, usage monitoring and aquifer sustainability • Disturbance management • Evidence of rehabilitation standards • Performance securities • Closure provisioning • Transfer of mine infrastructure to local landowners at closure Indigenous heritage sites and agreements.
• Shire of Ravensthorpe	• Community support programs • Infrastructure use including potential transfer and management of former mine infrastructure.
• Southern Noongar and Wagyl Kaip traditional owners • South-West Aboriginal Land and Sea Council	• Protection of Aboriginal heritage sites • Preservation of the natural landscape.
• Mt Cattlin Community Consultation Group (MTCCCG) representing the broader Ravensthorpe community	• Conserving the amenity and aesthetic value of Ravensthorpe township and surrounds • Community involvement in rehabilitation and closure activities • Post mining land use.
• Ravensthorpe business community • Surrounding Property Owners	• Land access • Exploration activities • Post mining land use • Infrastructure transfer/retention • Weed management.

Allkem has created a Community Consultation Group, a joint forum between Allkem and the Ravensthorpe community to provide a platform for the community to communicate directly with the company, who meet regularly with the aim to improve the social well-being of individuals and organizations within the community.

1.18 Capital and Operating Costs

The operating costs, being based on site budgets and operating history, or in the case of mining, a negotiated tender and detailed schedule, are at a Feasibility level of confidence.

From the NI-43101 and the Mt Cattlin Stage 4 Feasibility study it has been noted that overall capital costs are at a Pre-feasibility level of confidence. Similarly, the overall cost estimation is judged to have an accuracy range of ±15% which is reflective of the level of development of the Project and is typical of a Feasibility Study.

1.18.1 Capital Costs

Being an operating mine capital costs are relatively modest, <10%, of the overall cost structure.

The Life-of-mine capital expenditure has been calculated to total US$80.3m, as listed below in Table 1-9. These costs are discussed in more detail in Chapter 18.

Table 1-9 - Life of mine capital expenditure summary.

Capital Type	US$m
Site Capital	41.1
Closure	12.3
Mining	5.6
Sustaining	21.5
Total Capital Costs	**80.3**

Variances in totals may exist due to rounding.

Key Capital items are an allowance for:

- US$1.4m (included in Site Capital) for a new NE In-Pit Tailings Storage Facility (IPTSF) as the current SE IPTSF will reach capacity in 2024,
- US$35m (included in Site Capital) has been allowed for the construction of a flotation circuit attached to the existing DMS processing plant, to facilitate the retreatment of the 900,000 t of pre-2018 tailings at the end of the mine life.
- US$17.7m (included in Sustaining Capital) for removing tailings from the 2SW pit that was previously used for in pit tailings disposal, as it lies adjacent to the proposed pit development.

1.18.2 Operating Costs

Operating costs were derived from operating experience, and Mt Cattlin's budget forecasts, in the case of Processing, and General and Administration costs. In respect of Mining costs, these were sourced from a detailed negotiated tender for the mining activities. Operating costs for processing and general and administration are shown in Table 1-10.

Based off historical actual operating data the operating costs is US$29.12/t of ore processed when operating at nameplate capacity of 1.8 Mtpa. For the purposes of breakeven cut-off grade determination, a process operating cost of US$36.96/t at a process capacity of 1.17 Mtpa was assumed.

Table 1-10 - Key processing cost assumptions.

Assumption	Unit	Value
Concentrate Transport		
Surface Haulage Costs	US$/wmt concentrate trucked	25.57
Port Costs	US$/wmt concentrate shipped	14.06
Moisture	%	2
Processing		
Fixed	US$/month	2,184,000
Variable	US$/t ore processed	14.56
General and Administration (G&A)		
Fixed	US$/month	1,018,500
Royalty		
LRC Royalty	US$/t ore processed	1.05
Western Australian State	%	5

Direct mining costs are from the negotiated schedule of rates from the preferred tenderer (of five submissions) for the Stage 4 mining works.

The operating costs are based on the following assumptions:

- Ramp up to a maximum 12 M BCM a year mining rate.
- Open pit mining services provided by the selected mining contractor.
- Fixed and variable contract. Variable costs are calculated as a function of the relevant variable.

Resourcing levels vary as new deposits come online in the project. Mining maintenance, staff and safety personnel numbers change with each phase of the operation.

The open pit load and haul cost (ore plus waste) averaged US$6.27/BCM of total pit production.

The overall drill and blast unit cost across all volume moved equated to US$2.94/BCM using rates generated by the open pit contractor.

Total operating expenditure over the life of the project is US$$899 m. The annual expenditure by year, including Capex and Royalties is shown in the chart below, Figure 1-7.

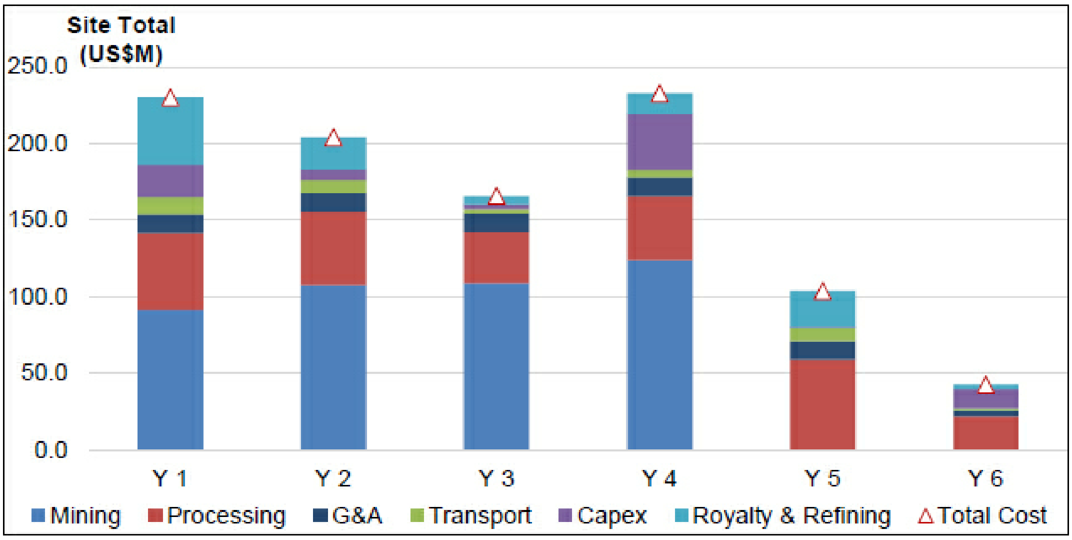


Figure 1-7 - Annual expenditure by year.

1.19 Economic Analysis

Mt Cattlin produces spodumene and tantalite concentrates for sale. The concentrate revenue in this analysis has been modelled on a Realized Price basis (i.e., net of all penalties and/or grade discounts, Free-on-board Esperance, WA) using a table of prices provided by Allkem for this assessment.

The price assumptions used in the analysis are at a discount to Li_2O forecasts by Wood Mackenzie and forecasts are shown in Table 1-11.

Table 1-11 - Pricing forecast by year.

Period	Realized Li_2O	Exchange rate	Realized Li_2O	Realized Ta_2O_5
	US$/dmt	AUD: USD	A$/dmt	A$/dry lb.
H2 CY23	4,048	0.7	5,783	34.72
CY24	2,074	0.7	2,963	34.72
CY25	1,425	0.7	2,036	34.72
CY26	2,375	0.7	3,393	34.72
CY27	2,103	0.7	3,004	34.72
CY28	1,762	0.7	2,517	34.72

Modelling was conducted on a real (non-escalated) ungeared basis.

The majority of Mt Cattlin's costs are incurred in Australian Dollars (AUD), the analysis is shown in US$ with an exchange rate of 0.70 AUD/USD used.

Taxation has been modelled as the Australian corporate tax rate of 30% and state royalties applied to the economic analysis.

The economic analysis and NPV10 is estimated from 1 July 2023 and a summary of the economic analysis is provided in Table 1-12 below.

Table 1-12 - Summary of economic analysis.

Description	Value
Revenue from concentrate (US$m)	2,092
Total operating costs over the LOM (life of mine US$m)	899
Total site costs over LOM (US$m)	979
C1 cash operating cost (US$m)	788
All in sustaining cash cost (US$m)	932
LOM net cash flow (undiscounted US$m)	1,113
LOM post tax cashflow (undiscounted US$m)	760
The pre-tax NPV using a discount rate of 10% (US$m)	947
The post-tax NPV using a discount rate of 10% (US$m)	614
The pre-tax NPV using a discount rate of 8% (US$m)	975
The post-tax NPV using a discount rate of 8% (US$m)	638
Average Spodumene price over LOM (US/dmt)	2,271
Average Tantalite price over LOM (US/lbs.)	24.3

Operations are modelled from July 2023 through to November 2028 and produce 916kt of Li_2O concentrates and 1.6Mlbs of Ta205 in concentrates which are sold for US$2,092m. Spodumene concentrate sales account for 99.5% of the revenues.

All in cash costs are US$979m, free, before tax, cashflows total US$1,113m, post-tax cashflows US$760m.

The pre-tax NPV of the project, using the supplied economic assumptions from 1 July 2023 is US$947m. Post tax NPV is US$614m.

As an existing operation, the project has no construction or pre-production period.

All pit stages and years of operation are cashflow positive, the final year of operations treating the stockpiles is also cashflow positive.

The summary annual cashflows are shown below in Table 1-13.

Table 1-13 - Summary of annual cashflows.

Annual Cashflow (US$m)	Total LOM	1	2	3	4	5	6
Capex	80.3	20.7	6.9	2.9	36.6	0.7	12.5
Mining	431.4	91.3	107.4	108.7	124	0	0
Transport	37	11.5	8.7	2.8	4.6	8.3	1.1
Processing	254.5	50.2	47.9	33.4	41.9	59	22
G&A	65.2	12.2	12.2	12.2	12.2	12.2	4.1
Royalty & Refining	110.4	43.9	20.8	5.7	13.4	23.5	3
Total Costs	**978.9**	**229.9**	**204**	**165.8**	**232.7**	**103.8**	**42.7**
Gross Revenue	**2,092.10**	**843.8**	**385.5**	**103.1**	**246.3**	**452.9**	**60.5**
FCF	1,113.20	613.9	181.5	-62.7	13.5	349.1	17.8
Corporate Tax @ 30%	352.8	184.2	54.5	0	4.1	104.7	5.4
Post-Tax Cashflow	760.4	429.7	127.1	-62.7	9.5	244.4	12.5

The third year of operations, being year ending June 30, 2026, is the only year showing a negative cashflow, resulting from low revenues and ore feed during the year whilst high waste movement continues in NW Stage 4-2. The negative cashflows in this year could be comfortably funded by high cashflows from prior years and the total Stage 4-2 is demonstrated to have a positive overall cashflow.

Sensitivity testing shows that the project NPV remains positive under testing, including:

- 20% increases in mining or processing costs.
- 20% decline in revenues (prices), or processing recovery.
- 20% adverse move in the AUD:USD exchange rate.

Being an operating mine capital costs are modest, being less than 10% of the overall cost structure, and relatively immaterial to the overall project economics.

1.20 Adjacent Properties

Mt Cattlin is the major lithium and tantalum deposit in the Ravensthorpe region and Allkem hold the immediate adjacent exploration tenements surrounding the current mining lease. There are no other lithium operations within the Ravensthorpe area. Bulletin Resources is exploring for lithium 12km SW of Mt Cattlin and has successfully delineated newly documented spodumene bearing pegmatites.

Numerous companies are actively exploring the area for copper-gold mineralization or nickel sulfide mineralization and there is an open pit nickel mine and processing plant operated by First Quantum Minerals to the South of Ravensthorpe.

1.21 Interpretations and Conclusions

Detailed financial modelling performed for the feasibility study, including operating and capital cost updates during 2023 to reflect the current market conditions, were used to demonstrate the viability of the Project. As a brownfields operational site, Mt Cattlin has historic operating performance parameters which were referenced, along with updated geological and metallurgical data in the reserve evaluation documented by this report in the evaluation of this Report. The result of the economic modelling demonstrates that the Project's financial viability is robust. Therefore, the Mineral Reserves have reasonable economic viability under S-K 1300 guidelines.

The reserves have been generated within three pit stages in the NW area: Stage 3, Stage 4-1 and Stage 4-2 open pits, and Stockpiles.

The Project is at advanced-staged production and has demonstrated operational performance history, tenure and permitting within the project area and the majority of the required infrastructure in-situ.

A series of permits will be required to access the reserves, a Mining Proposal has been submitted to DMIRS for Stage 4-1, a further Mining Proposal will be required to permit the use of IPTSF at the NE Pit and another A further Mining Proposal and EPA approval would be required for Stage 4-2 due to expansion of the NE waste dump and consequent vegetation clearing, requiring additional base line surveys.

Presently the permitting of, and preparation of, the Northeast Pit for receiving tailings, and provision of water for processing once this source of water is affected are considered risks to the production schedule.

Allkem commenced an underground feasibility in May 2023 to examine alternate access to the resources outside of the Stage 4-1. Limited metallurgical test work has been conducted on the NW pit areas, however the operating history, including recent history in NW Stage 3 pit, combined with geometallurgical understanding supports using historic recovery assumptions for the Stage 4 reserves A further program involving the drilling of a further four holes has been completed, however results were not available at the time of the feasibility study.

The only environmental liability associated with the project is closure costs, these are estimated at US$12.3M.

1.22 Recommendations

The following recommendations have been made to Allkem with respect to the Mt Cattlin project.

- Complete drilling to source alternative water supply and subsequent permitting for processing operations to provide alternate processing to water to that currently sourced from the NE Pit, which is scheduled for use as IPTSF in 2024. This source of water remains a key project risk. until alternate source of water is available.

- Evaluate the results of the 4 additional metallurgical drillholes and associated testing to quantify the continuity of the mineralization and recovery expectations for the bulk of the Stage 4 expansion.
- Conduct further metallurgical and geotechnical drilling to enhance understanding and support an underground studies.
- Continue permitting works to ensure the planned access to pit stages, waste rock storage and tailings storage facilities does not impede planned operations.
- Continue to evaluate the Mining Model performance against site reconciliation results.
- Continue to develop geo-metallurgical grade control techniques to define and segregate fine grained spodumene for future processing. Further resource estimation work, incorporating the 2023 grade control drilling should investigate fine grade pegmatite with lithia grade above cut-off, for either end of mine processing or blending into ore grade stockpiles to maintain process plant nameplate run rates while meeting product specifications.
- Continue resource drilling to further expand the resource and define the limits of mineralization.
- Investigate underground mining methods as an alternative to open pit mining as the strip ratio increases and analyze a tradeoff between open pit and underground mining transition.
- Examine the potential to re-commission the crushing circuit, given the mine life supported by the feasibility, and discontinue the use of contract crushing currently being used.
- Develop program for routine grade control programs in place ahead of mining activities.
- Progress the business case for processing the potential low grade fine grained spodumene.
- Further expand the current study level of the tailings re-treatment to sure up processing and support forecast capital expenditure of additional floatation cells to process the tailings.
- The current site power supply of multiple diesel fueled generators, while fit for purpose, is relatively expensive and has comparatively large carbon emissions compared to similar sized alternative fuel power sources. A project to replace or supplement the current plant with a hybrid natural gas / renewable energy installation is underway, with an expected timeline of 12-15 months.
- To consolidate the Mt Cattlin workforce and reduce the reliance on multiple third-party accommodation sources, Allkem have commenced the process of constructing their own accommodation village for Allkem staff and primary contractors. The village has had a Development Approval application submitted, a tender for the accommodation and central facility modules let, and planning for utilities and construction has commenced.
- Finalize the methodology and time required, and then schedule the extraction and redeposition of tailings from the 2SW pit to not impact on the NW Stage 4 pits schedule.
- The current tax model within the economic analysis is high level, and if additional economic analysis is required development of a more detailed tax model should be considered.
- Future economic modelling should consider the opportunity to process Stockpile Reserves when there is mill capacity available.

The remainder of the program is to be carried out as per normal operational execution.

2. INTRODUCTION

Allkem Limited (Allkem or The Company) is dual listed on the Australian Stock Exchange (ASX) and the Toronto Stock Exchange (TSX). Allkem has previously reported its operations under the Australasian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the JORC Code) published by the Australian Joint Mineral Reserve Committee (the JORC Committee) as well as to the National Instrument 43-101 (NI 43-101) the Standards and Disclosure for Mineral Projects within Canada.

In addition to its reporting obligations pursuant to the Australian and Canadian jurisdictions, Allkem has commissioned Mining Plus Pty Ltd. (Mining Plus), alongside an Alkem employee, to prepare an S-K 1300 Technical Report Summary (this Report) on the Mt Cattlin Lithium Project (the Project) in Western Australia, an operating lithium mine and processing operation. This Report will comply with sub-part 229.1300 - Disclosure by Registrants engaged in Mining Operations of Regulation S-K (S-K 1300) as required for registrants with the United States Securities and Exchange Commission (SEC).

The Mt Cattlin Project is 100% held by Galaxy Lithium Australia Pty Ltd (Galaxy) a wholly owned subsidiary of Allkem.

The report was amended to include additional clarifying information in October 2023. The basis of the report is unchanged. The changes and their location in the document are summarized as follows:

- Title page: Added amended date
- Section 10.3.3: Added QP’s opinion on the adequacy of metallurgical data and statement on final forecasted recovery
- Section 11.7: Added QP’s opinion on whether all issues related to technical and/or economic factors influencing economic extraction can be resolved with further work
- Section 11.5, 12.5 & 12.3.2: Processing cost has been modified
- Sections 13.5: Disclosed the annual numerical values and totals for Life of Mine (LOM) production (Table 13-14)
- Sections 17.20: Added (1) QP’s opinion on the adequacy of current plans for environmental compliance, permitting and addressing issues with local individuals or groups and (2) closing and reclamation costs
- Minor typos and non-material fixes

2.1 Terms of Reference and Purpose of the Report

This Report was prepared by Mining Plus and the Allkem employee set forth herein.

This report supports Mineral Resources and Mineral Reserves estimates using the standards and definitions in the S-K 1300 requirements. It presents the Mineral Resource and Mineral Reserve estimates, and capital and operating costs. An economic assessment is based on open pit mining operations with on-site processing to produce spodumene and tantalite concentrates.

The Report covers the extent of the Mt Cattlin Operation, owned by Galaxy Resources a wholly owned subsidiary of Allkem and is solely concerned with the Mt Cattlin asset.

All units of measurement in this Report are metric unless otherwise stated.

The monetary units are US dollars, unless listed otherwise. Where not stated US dollars should be assumed.

An exchange rate of AUD 1.0:USD 0.7 has been used in any conversions which were required to be made.

2.2 Qualified Persons

Table 2-1 lists the individuals who acted as Qualified Persons (QPs) in preparing this Report.

Table 2-1 - Lists the individuals who acted as Qualified Persons (QPs) in preparing this Report.

Qualified Person	Report Responsibilities	Report Sections
Employees of Mining Plus Pty Ltd.	Property Description & Location, Project History, Mineral Reserve Estimate, Mining Methods, Mine Design, Production Scheduling, Mining Cost Estimates, Metallurgical Testwork and Mineral Processing.	• Chapters 1, 2, 10, 12, 13, 14, 16, 18, 19, 22, 23, 24 and 25.
Albert Thamm, F.Aus.IMM	History, Geology & Mineralization, Exploration, Sample Preparation/Analysis and Security, Data Verification, Mineral Resource Estimate and Adjacent Properties.	• Geological, Mineral Resource and environmental aspects of chapters 1, 2, 10, 21, 22, 23, 24 and 25. • Chapters 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 15, 17, 20 and 21

Mining Plus has been involved with the Project since 2021. It has been the consulting geologists and mining engineers for the Project through the delivery of the 2021 Mineral Resource Estimate and the 2023 Mineral Resource Estimate. Mining Plus, and its personnel, have extensive experience in lithium and similar mineralization styles, the proposed and operational mining operations at the project and other similar projects. All Mining Plus QPs to this report are full-time employees of Mining Plus and are not employees of or otherwise affiliated with Allkem.

Mr. Thamm, B.Sc. (Hons)., M.Sc. F.Aus.IMM, a is a full-time employee of Allkem Limited and has sufficient experience that is relevant to the style of mineralization and type of deposit under consideration and to the activity being undertaken to qualify as a QP.

Allkem is satisfied that the QPs meet the qualifying criteria under 17 CFR 229.1300.

2.3 Site Visits

A Mining Plus QP visited the site in July 2022. During this visit, the engineer inspected the property, surface topography, areas proposed for the open pit, waste rock dumps, and mine infrastructure.

Additionally, a Mining Plus QP visited the site in June 2022, who during this visit examined drill cores across a range of lithologies, including ore and waste rock.

Mr. Thamm has visited the site numerous times since 2006, being involved with and present for the drilling programs associated with developing the Mineral Resource Estimates for the Project. Mr. Thamm has personally inspected much of the core and RC chips from the Project. In addition, Mr. Thamm oversaw the logging and assaying of the geological samples.

2.4 Currency of Report

The report is current for work completed until 30 June 2023, when Allkem released the Mt Cattlin Ore Reserve to the Australian Stock Exchange and the current Stage 4 Expansion Feasibility Study Technical Report, dated June 2023 provided to Mining Plus by Allkem.

2.5 Sources of Information

Mining Plus and the Allkem employee set forth herein have compiled this report from information provided by Allkem in which the key data sources include:

- Mt Cattlin Stage 4 Expansion Feasibility Study where Allkem engaged Entech to prepare a feasibility study into the open pit mining of resources in the NW area. The feasibility was dated 09 August 2023, effective 30 June 2023.
- The NI 43-101 Technical Report on Mt Cattlin Spodumene project compiled by Entech dated 16 August 2023 and reporting on the resources and reserves as 30 June 2023. Report Effective Date 30 June 2023
- NI 43-101 report on Mt Cattlin Spodumene project compiled by Mining Plus reporting resources and reserves as of 31 March 2023.
- Clarifications and Information updates provided to Mining Plus in respect of Environmental Summary, Metallurgical testwork from Allkem, Strategic Metallurgy and Mining and Economic Modelling from Entech. This information was relied upon by Mining Plus to complete the Mineral Reserve evaluation with respect to environmental permitting and water availability, the metallurgical testwork and processing sections and the economic analysis sections respectively.

Reports and documents listed in Chapter 24.0 were used to support the preparation of the Report. Source information was provided by Allkem where required, which was prepared by the range of consultants and companies listed in Chapter 24.0.

2.6 Previous Reports

Previous reports published on the ASX platform by Allkem and relevant to the current iteration of the Mt Cattlin Operation can be found at www.allkem.co and include those listed in Table 2-2.

Table 2-2 - ASX Reports.

Date	Title
16-Jun-23	Mt Cattlin Ore Reserve update confirms mine life extension
17-Apr-23	Mt Cattlin Resource Update with Higher Grade
21-Feb-23	Mt Cattlin Production Update
05-Oct-22	Mt Cattlin Resource Drilling Update
25-Aug-22	Mt Cattlin Resource, Reserve and Operations Update

2.7 Abbreviations and Acronyms

A list of unit abbreviations used in this Report is provided in Table 2-3. Chemical and elemental symbols and associated acronyms are described in Table 2-4 and all other acronyms and abbreviations used in this report, along with their meanings are provided in Table 2-5.

Table 2-3 - Units of Measure.

Unit of Measurement	Description
%	Per cent
µm	Micrometer (one millionth of a Meter)
BCM	Banked cubic meter
CY	Calendar Year
dmt	Dry metric tonne
g/t	Grams per tonne
H1	1st half of year 1
Ha	Hectares (area)
kg/m^3	Kilograms per Meter cubed
kL	Kiloliter (thousand liters)
km	Kilometer
Km/hr.	Kilometer per hour
l/s	Liters per second
lb.	Pound
m	Meter
m^3/d	Cubic meter per day
mg/L	Milligram per liter
mm	Millimeter (one thousandth of a meter)
Mt	Million metric tonnes
Mtpa	Million tonnes per annum
MW	Megawatt (Power)
°C	Degrees Celsius
p.a.	Per annum
t	Metric tonne
tpa	Tonnes per annum
wmt	Wet metric tonne

Table 2-4 - Chemicals, elements, and associated abbreviations.

Abbreviation	Mineral or Element
Al	Aluminum
H	Hydrogen
K	Potassium
LFP	lithium-iron-phosphate
Li	Lithium
Li_2O	Lithium oxide
$LiAl(F,OH)PO_4$	Amblygonite
$LiAl(SiQ_3)_2$	Spodumene
Mg	magnesium
MHO	mixed hydroxide
Na	Sodium
NCA	Nickel-cobalt-aluminum oxide
NCM	Nickel-cobalt-manganese oxide
O	Oxygen
SI	Silica
Ta	Tantalum
Ta_2O_5	Tantalum oxide
TaO_5	Tantalite

Table 2-5 - Acronyms and Abbreviations.

Abbreviation	Unit or Term
US$B	Billion US dollars
US$m	Million US dollars
AEP	Annual Exceedance Probability
AHD	Above Height Datum
ASX	Australian Stock Exchange
AUD	Australian Dollars
BG	Battery grade
BH	Bore Hole
CAGR	Compound annual growth rate
Capex	Capital expenditure
CCE	Closure cost estimate
CCG	Community Consultation Group
CIM	Canadian Institute of Mining
CRM	Certified reference material
CV (processing)	Conveyor
CV (geology)	Coefficient of variation
DMIRS	Department of Mines, Industry Regulation and Safety
DMS	Dense media separation
DWER	Department of Water and Environmental Regulation
EFL	Esperance Freight Line
EMP	Environmental Management Plan
ENE	East Northeast
ESE	East Southeast

Abbreviation	Unit or Term
EV	Electric vehicles
FCF	Free cash flow
FOB	Fine Ore Bin
FOB (shipping)	Free on board
FOS	Fine Ore Stockpile
FPB	Flood protection bund
FS	Feasibility Study
FX	Foreign exchange rate (AUD:USD)
G & A	General and Administration
GST	Goods and Services Tax
IPTSF	In pit tailings storage facility
JORC	Joint Ore Reserve Committee
LCE	Lithium Carbonate Equivalent
LOM	Life of Mine
mE	Meters east
mN	Meters north
MRE	Mineral Resource Estimate
mRL	Meters Relative Level
NE	Northeast
NI 43-101	National Instrumentation Standard 43-101
NPV	Net Present Value
NW	northwest
Opex	Operating Expenditure
OREAS	Ore Research and Exploration
PMF	probable Maximum Flood
PMP	probable Maximum precipitation
ppm	parts per million
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
QP	Qualified Person
RC	Reverse circulation
ROM	Run of Mine
RPEEE	Reasonable Prospect of Eventual Economic Extraction
SE	southeast
TDS	Total dissolvable solids
TG	Technical grade
TSF	Tailings Storage Facility
TSX	Toronto Stock Exchange
UFSMS	Ultrafine dens media separation
USA	United States of America
US$	US Dollars
VSI	Vertical shaft impactor

Abbreviation	Unit or Term
W.A.	Western Australia
WD	Waste dump
WIMS	Wet high intensity magnetic separator
WMC	Western Mining Corporation
WNW	west northwest
WRL	Waste Rock Landform
WSW	West southwest
XRD	X-ray diffraction

3. PROPERTY DESCRIPTION

3.1 Property Location

The Mt Cattlin operation is located two kilometers north of the town of Ravensthorpe in the Great Southern region of Western Australia approximately 450km southeast of Perth (Figure 3-1). The nearest regional centers proximal to Ravensthorpe are Albany, 255 km to the southwest and the port of Esperance is 175 km to the east.

Mt Cattlin operation was commissioned in 2010 and operated for three years before being put into care and maintenance in 2013. The operation re-started in 2016 and has been operating continuously since, providing spodumene concentrate into the international lithium market.

Figure 3-1 - Location map of Mt Cattlin.

3.2 Mineral Rights

The current operation is situated on M74/244 as shown Figure 3-2 along with Allkem's greater regional tenement suite, shown in Figure 3-3.

Mt Cattlin is an operating mine, and the NW pit development is the fifth separate open pit to be developed. The underlying land ownership tenure in the district is a mixture of freehold title and Crown Land.

The greater project area comprises one mining lease, one general purpose lease, four miscellaneous licenses, four prospecting licenses and eleven exploration licenses. In Western Australian tenements are permitted by the Department of Mines, Industry, Regulation and Safety (DMIRS). Mining leases are issued for 21 years, then renewable, as are miscellaneous and general-purpose licenses.

Prospecting licenses are generally issued for 8 years. Exploration licenses are issued for 5 years, renewable once, thereafter 2-year extension of terms if justified by reasonable progress.

Allkem is the freehold title owner of several Torrens title land lots that underly the mine site or are adjacent to it. In areas of freehold ownership, Native Title is extinguished. All tenements are subject to an existing Indigenous Land Use Agreement in terms of the Noongar Boodja settlement between the West Australian government and the Noongar native title claimants which applies to the South-Western part of Western Australia.

The operating site holds as a Prescribed Premises License for the processing facility of 2.0 million tonne design capacity, as well as other permitted discharges, issued by the Department of Water and Environment Protection (DWER). Other licensed infrastructure, (site power, water bores, tails dams) are licensed by other WA government agencies.

The local government area is the Shire of Ravensthorpe.

Tenement titles, area, and expiry dates tabulated in Table 3-1.

Table 3-1 - Tenement titles including area and expiry dates.

Tenement ID	Current Area	Area Unit	Expiry Date
E74/0379	25	SB	3/10/2025
E74/0399	23	SB	4/28/2025
E74/0400	3	SB	3/13/2024
E74/0401	4	SB	3/13/2024
E74/0406	10	SB	8/11/2023
E74/0415	11	SB	3/9/2025
E74/0570	6	SB	6/26/2026
E74/0571	13	SB	6/26/2026
E74/0589	3	SB	11/6/2026
E74/0621	2	SB	8/15/2023

Tenement ID	Current Area	Area Unit	Expiry Date
E74/0713	14	SB	4/26/2027
L74/0046	10	HA	3/17/2031
L74/0047	1,580	HA	12/13/2032
L74/0048	5	HA	3/15/2033
M74/0244	1,830	HA	12/23/2030
P74/0370	20	HA	3/21/2025
P74/0371	67	HA	3/21/2025
P74/0372	24	HA	2/22/2025
P74/0373	95	HA	3/21/2025
G74/13	63	HA	5/24/2044
L74/61	23	HA	27/07/2044

HA: Metric Hectares

SB: Sub Block - 2,892 m3

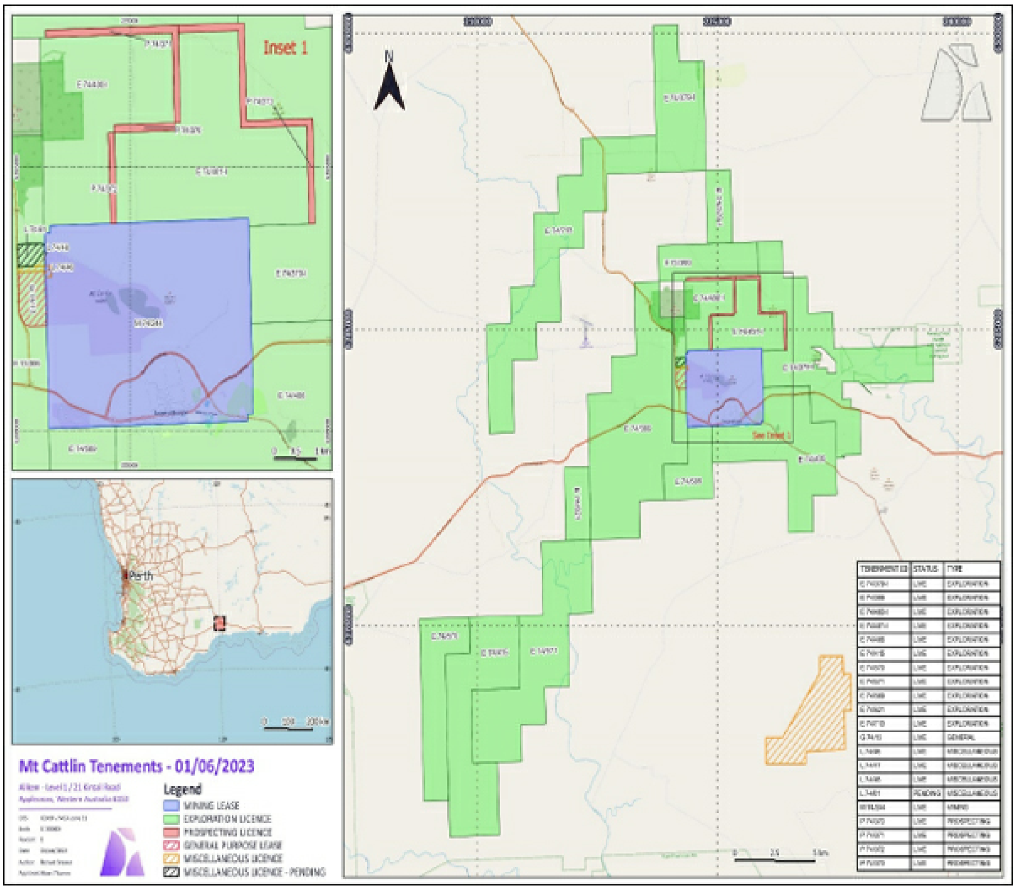


Figure 3-2 - Location of granted exploration licenses, prospecting licenses, and mining leases in the Ravensthorpe area.

Allkem maintains an active portfolio of exploration and prospecting licenses that surround the main mining lease M74/244 which incorporates all the company's current Mineral Resources, mining, and processing facilities in the Ravensthorpe region.

In 2006 Galaxy acquired mining tenement M74/12 from the administrators of Sons of Gwalia Limited. In early 2009, Galaxy was granted Mining Leases M74/155 and M74/182 which adjoin Mt Cattlin. The two new mining leases were contiguous with M74/12 and enabled the company to proceed with further exploration, extension drilling and infrastructure development of the original pegmatite resource base.

In 2010, Galaxy consolidated several mining and prospecting leases into a single mining lease nominated as M74/244. The M74/244 tenement has a lease area of 1830 Ha and was granted on 24 December 2009 and will expire on 23 December 2030. Allkem owns 100% of M74/244 and maintains freehold title of land subject to current mining operations and the plant site.

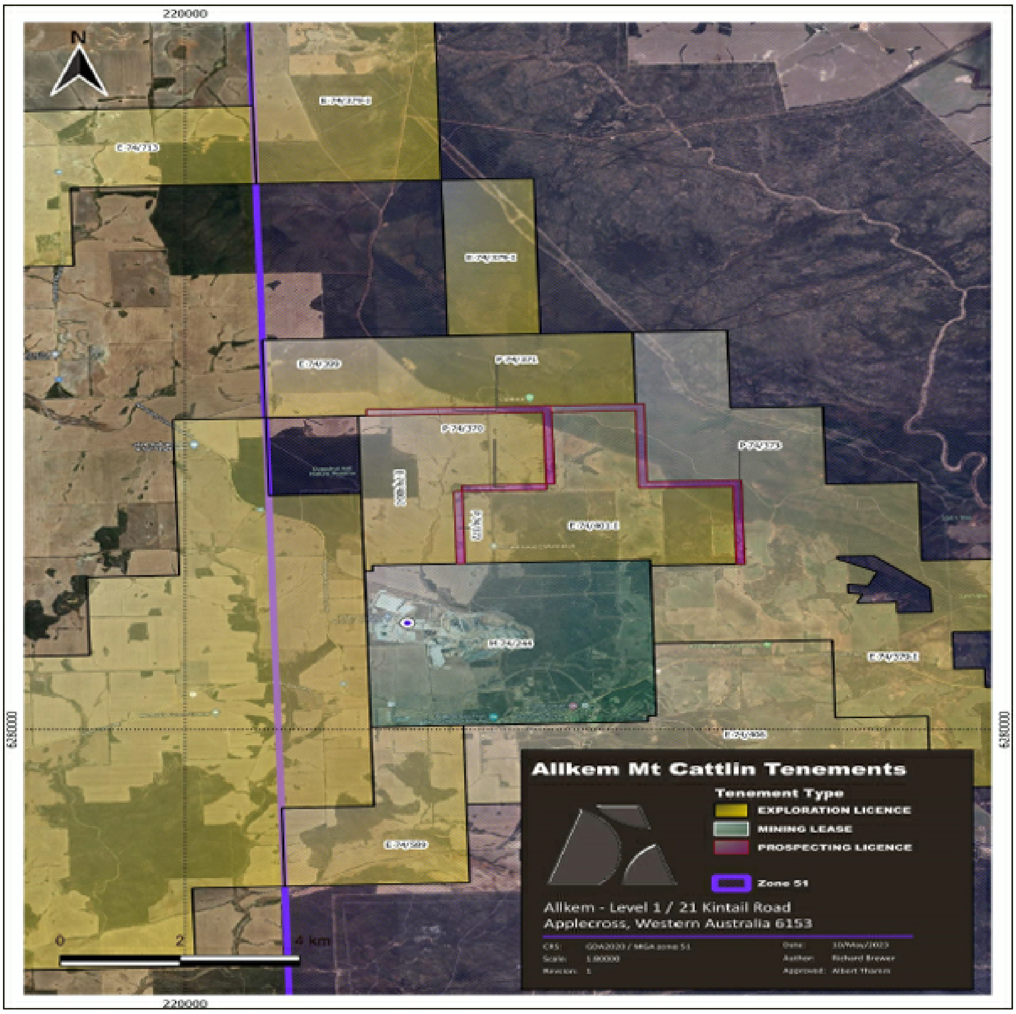


Figure 3-3 - Location of granted exploration licenses, prospecting licenses, and mining leases in the Ravensthorpe area.

In 2020 Galaxy entered into an agreement with former joint venture partner Traka Resources regarding exploration access to specific tenements north of Mt Cattlin. Traka Resources had previously held a 20% free carried interest in tenements E74/401, P74/370 and P74/373, however under a revised agreement, Traka Resources hold 100% of the gold and copper rights, whereas Allkem hold the lithium and tantalum rights.

3.3 Description of Operations

3.3.1 Project History

The Cattlin Creek pegmatites have been the subject of several drilling, sampling and metallurgical test campaigns, as well as feasibility studies dating back to the 1960s. From 1962 to 1966, Western Mining Corporation (WMC) carried out an extensive drilling program and established a resource of 'green' and 'white' spodumene.

Extensive mineralogical and metallurgical testwork was carried out as part of this program, culminating in WMC preparing an internal feasibility study on the mining and production of 10,000 t/y to 15,000 t/y of spodumene from the deposit. Since the 1960s, the tenements were owned by several companies, all of which have viewed them as a prospective tantalite resource and conducted drilling and metallurgical testwork accordingly. Galaxy acquired the tenure from the Administrators of Sons of Gwalia in November 2006 (via a predecessor company) and in 2009, construction began of mining and plant facilities at the site and in June 2010 mining activities started.

The mine was placed into care and maintenance in 2013, production was restarted in March 2016 and has been continual since then.

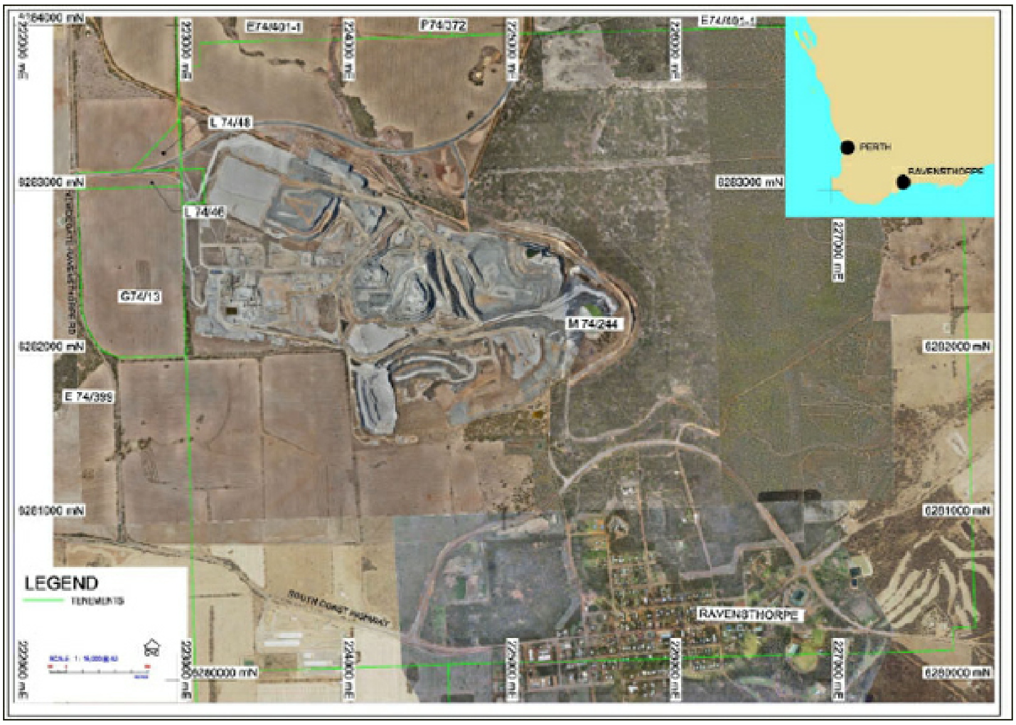


Figure 3-4 - Mt Cattlin and the Town of Ravensthorpe.

Figure 3-4 shows the site and proximity to the Town of Ravensthorpe, as well as the key Mining Tenement M74/244, and the main South Coast Highway.

3.3.2 Operating Model

Mt Cattlin utilizes a contract miner to carry out all the drilling, blasting, excavating and load and haul, and ancillary functions at site. The Mt Cattlin mining owner's team supply the management and technical direction to the mining contractor, as well as the statutory Senior Site Executive and Quarry Manager function.

3.3.3 Infrastructure

3.3.3.1 Administration building

The site has a suitable permanent administration building which the Mt Cattlin staff are based in.

3.3.3.2 Processing Plant

The processing plant is nearby and consists of a crushing circuit, Optical beneficiation circuit, Dense Media Separation plant, magnetic waste separator, product handling facilities, and tailings storage facilities.

The original Mt Cattlin crushing circuit has been largely superseded by a contract crushing circuit. This was a pragmatic capital refurbishment cost choice when the operation emerged from care and maintenance in 2016. A study evaluating the business case returning to an Mt Cattlin owned crushing circuit is independently underway at the moment.

3.3.3.3 Mining Contractor

The mining contractor has Mt Cattlin supplied workshop and administration building located adjacent to the pit area.

3.3.3.4 Power Supply

The power supply is provided on a contract basis by Pacific Energy via six diesel fueled Cummins 1.25MW diesel gensets. An independent study is underway to evaluate the business case of upgrading the station to include a meaningful renewables energy penetration and switch the thermal fuel source to natural gas.

3.3.4 Operational Overview

3.3.4.1 Workforce

The Mt Cattlin operation is structured similarly to other medium sized Western Australian mines. The site is independently managed by a Senior Site Executive who will hold dual roles as the senior site company representative as well as the senior regulatory position of Senior Site Executive.

Head office / corporate support is provided in the form of:

- Corporate management via the Executive Australia and Exploration Manager
- Senior support functions such as Exploration Manager, Principal Mining Engineer, Human Resources, Marketing, and Legal, and
- Cost accounting - accounts payable, accounts receivable, and month-end cost analysis & reporting).

Exploration activities operate out of site and incorporate off mining tenement activities as well as on tenement and provide input into in-mine exploration.

The workforce and contracting strategy is to:

- Directly employ and manage:
  - All administration, compliance roles, and departmental management, including General Manager, Health & Safety, Environmental, and stores/procurement/shipping.
  - All management, technical, operating and maintenance staff associated with the processing function, including the site laboratory.
  - All technical functions - geology, mining, and processing
- Contractor supplied:
  - Surface mining includes all supervisory, operating and maintenance personnel and associated light and heavy equipment.
- Specialist sustaining services such as shutdown and campaign maintenance support.

The Mt Cattlin workforce are employed on a variety of rosters, and includes a number of local residential roles, which are encouraged by the local shire.

3.3.4.2 Site Organizational Structure

The site organizational structure is shown in Figure 3-5.

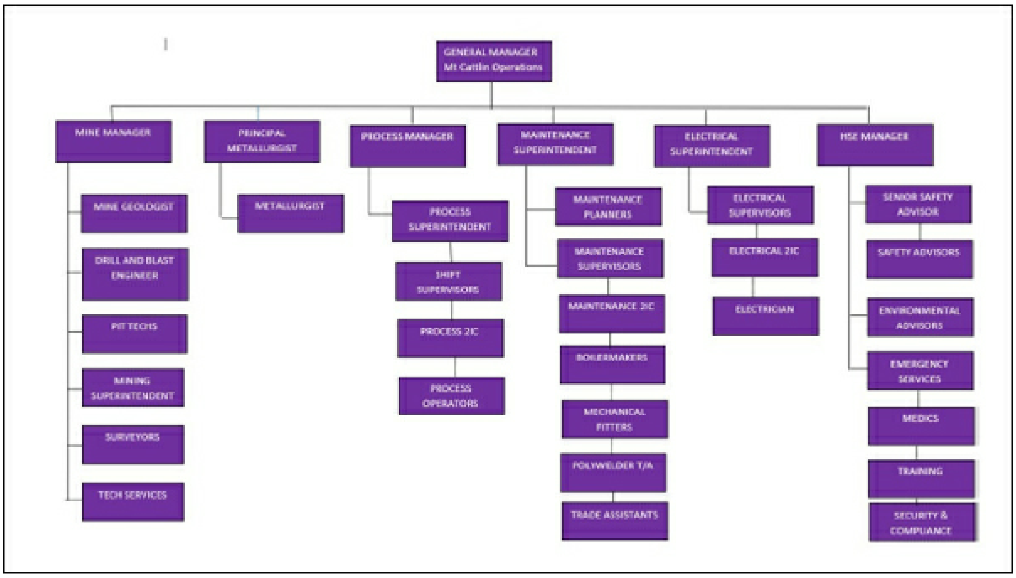


Figure 3-5 - Site organizational structure.

3.3.4.3 Site Management

The operations workforce is under the control of the Senior Site Executive (SSE), who is supported by department heads for the various site functions.

3.3.4.4 Administration

Site administration duties, including flight bookings, contracts, accommodation logistics and various procurement services are handles by a small team led by a Senior Administrative Assistant who reports to the SSE.

3.3.4.5 Health, Safety, Environment and Compliance

The Health, Safety and Environment (HSE) functions are managed by a HSEC Manager with senior environmental and safety advisors as functional leaders, plus emergency response and security roles. The HSE Manager reports to the SSE on site.

3.3.4.6 Mining

The Mining Manager is responsible for managing the mining contractor and Mt Cattlin's technical team, including the mine planning and site geology function. The Mining Manager also fulfills the statutory role of Quarry Manager.

3.3.4.7 Processing

The Processing and Metallurgy group is responsible for the operational and technical management of the process plant and quality control of the processing facility. The organizational chart shows the position of Process Manager reporting directly to the SSE, supported by a Process Superintendent, as well as a Principal Metallurgist reporting directly to the. SSE. The Process Plant is manned by crews on a four-panel rotating roster, as well as an onsite laboratory team.

3.3.4.8 Exploration

The Exploration activities are managed by the Exploration Manager who is based out of the Perth head office. He is responsible for managing the exploration geologists, as well as planning and coordinating the various ongoing drilling programs.

3.4 Environmental Liability

The only environmental liability that Allkem is aware of in relation to the property are closure and rehabilitation costs, a substantive part of rehabilitation requirements will to be met during operations where possible, but otherwise closure costs are estimated at US$12.3M in the currently submitted Mining Proposal. Mt Cattlin's Closure Plan for the current work has been approved by Department of Mines, Industry Regulation and Safety ("DMIRS").

3.5 Royalty Payments

Royalties apply to the production of spodumene and are payable to the Western Australian (WA) State Government. The royalty is applied at a rate of 5% on the revenue realized from the sale of spodumene concentrate.

A royalty payment of US$1.05 per tonne of ore crushed is paid to Lithium Royalty Corp.

4. ACCESSIBILITY, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES, AND INFRASTRUCTURE

4.1 Accessibility and Infrastructure

The Mt Cattlin site is serviced by existing infrastructure, including sealed roads to site. Albany and Esperance, the two nearest major centers of population, both have heavy industry support including construction, engineering and manufacturing and production services.

4.1.1 Road Access

The Mt Cattlin site is serviced by Main Roads highways to Perth via the Brookton Highway and Albany Highway and is accessible to both Albany and Perth via the South Coast Highway. The South Coast Highway crosses the southern section of the Mt Cattlin Mining Lease M74/244. The road network is a sealed highway and suitable for both heavy and light vehicles to enable servicing of the site.

4.1.2 Air Access

Albany and Esperance have regional airports serviced by regular commercial flights to Perth, a major international airport. Ravensthorpe also has a 1.6km long all weather airstrip.

4.1.3 Port Access

Perth, Albany, and Esperance each have export and import port facilities, with Mt Cattlin spodumene product currently shipped through Esperance. The location of Mt Cattlin is shown in Figure 4-1 relative to regional population centers.

Spodumene concentrate from Mt Cattlin is trucked by a haulage contractor (Qube Logistics) to Esperance Port, owned by Southern Ports, where it is stockpiled at a Qube facility prior to ship loading. Ships are contracted on a spot basis as required via shipping agent who coordinates shipping activities with Mt Cattlin, the vessel's owner, and the Esperance Port.

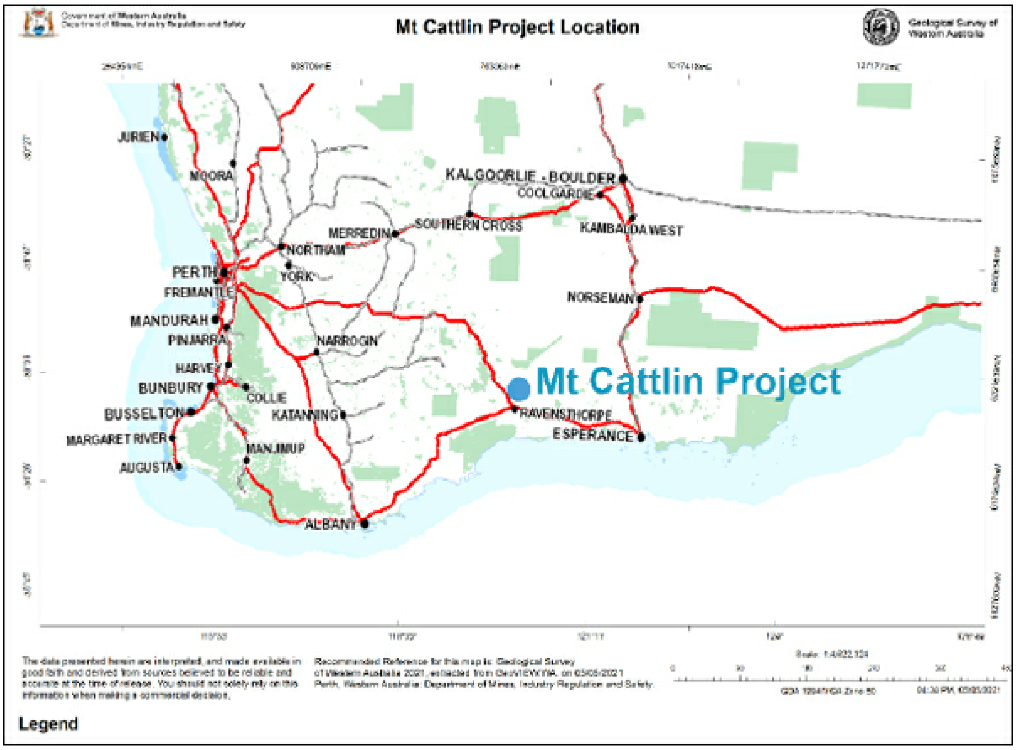


Figure 4-1 - Mt Cattlin location map.

4.2 Climate

The Ravensthorpe area has a Mediterranean climate featuring moist, mild winters and hot, dry summers. The mean annual rainfall is 429 mm, and around 75% of the rainfall occurs between March and October. The highest daily recorded rainfall is 112.8 mm and there are on average 74 rain days per year.

The mean annual maximum daily temperature is 22.8°C and mean annual minimum daily temperature is 10.5°C. Daily maximum above 30°C are common from December to February. There are notable diurnal temperature variations that occur throughout the year.

The average wind speeds vary throughout the year from 10.2 to 19.3 km/h in the morning and from 12.1 to 16.3 km/h in the afternoon. In this climatic region, the annual evaporation greatly exceeds the mean annual rainfall.

The climate is typical of the southwest portion of Western Australian and there are no significant operational constraints from the climate at Mt Cattlin.

4.3 Physiography

The Mt Cattlin pegmatite deposit is located 2 km north of the township of Ravensthorpe. The has an undulating topography, with a maximum elevation within the mining footprint of 265 m above sea level.

The Mt Cattlin Creek passes through the project area and separates the deposit into the eastern and western mining areas. Approved work on diverting the creek has been completed to enable mining access to the northeast and southeast areas of the deposit.

In the region, much of the land has been cleared for grain and livestock production, including most of the land at Mt Cattlin. An area of remnant vegetation has been previously cleared to facilitate mining of the eastern sections of the Mt Cattlin deposit.

4.4 Availability of Key Supplies

4.4.1 Personnel

Western Australia has a large mining community on which draw skilled employees, Mt Cattlin's work force including key contractors draws predominantly from this pool, including a number who are resident in the nearby area including the Ravensthorpe town.

4.4.2 Power

The power supply is provided on a contract basis by Pacific Energy via six diesel fueled Cummins 1.25MW diesel gensets. An independent study is underway to evaluate the business case of upgrading the station to include a meaningful renewables energy penetration and switch the thermal fuel source to natural gas.

4.4.3 Major Supplies

Diesel (fuel) supply is transported by trucks from Albany or Esperance. Explosives and related supplies transported from Perth or Kalgoorlie).

Water for dust suppression in the mining operation is sourced from bores at site.

Site process water is currently sourced from the "mined out" North-East Pit, an alternate water source will be required when the pit is converted to tailings storage. A drilling testing program to identify this source is currently underway. Availability and Permitting of the water supply is a recommendation and risk for the project.

5. HISTORY

5.1 Current Ownership

The Mt Cattlin operation is wholly owned by Allkem Limited, via subsidiaries Galaxy Resources Pty Ltd and Galaxy Lithium Australia Pty Ltd.

Allkem Ltd is a public company with dual listings on the Australian Stock Exchange (ASX) and the Toronto Stock Exchange (TSX) (ticker AKE).

The corporate headquarters are in Argentina and Australian headquarters are in Brisbane. A regional Western Australian head office is in Applecross, Perth. Allkem are operating and development projects in Argentina, Australia, Japan, and Canada. The corporate structure relevant to Mt Cattlin is show in Figure 5-1.

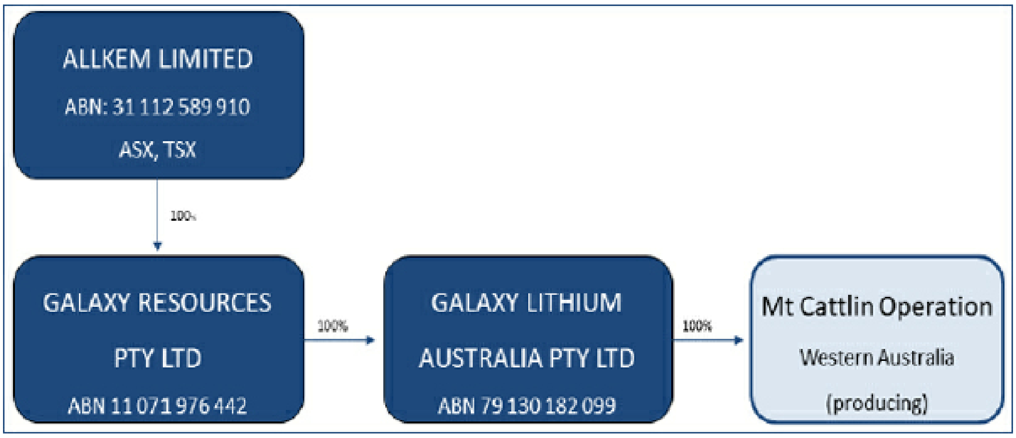


Figure 5-1 - Mt Cattlin Corporate Ownership Structure.

5.2 Ownership History

The tenements that incorporate Mt Cattlin have been held by numerous companies since the 1960's, including Western Mining Corporation (WMC), Pancontinental Mining Limited, Greenstone Resources NL, Haddington Resources Limited (Haddington) and Sons of Gwalia Limited. Galaxy Resources NL acquired M74/12 from the administrators of Sons of Gwalia Limited in November 2006.

Allkem Ltd acquired Galaxy Resources in 2021.

5.3 Mining History of the Area

The pegmatites which host the Mt Cattlin orebody were first reported in 1843. The Ravensthorpe area was originally known as the Phillips River Goldfield following the discovery of small quantities of gold in association with copper and pyrite. The township of Ravensthorpe was surveyed in 1900 and gazetted in 1901 at which time 15 mines were operating. A total of 53 mines were listed as operating in 1903 by which time it was realized that much of the gold occurred with copper.

The first government smelter was built in 1904 on the east side of the town and a larger smelter was later erected on the Hopetoun Road in 1906, but later closed in 1918. At that time, the Phillips River Mineral Field was Western Australia's principal copper mining center with 19,000 tonnes being produced. Gold was also recovered in the mining center, a total of 83,942 ounces of gold was recovered from copper mines with 88,220 tonnes of ore recovered from auriferous quartz reefs.

The population of the Ravensthorpe goldfield peaked in 1911 when there were more than 2,000 people in the area.

The Cattlin Creek pegmatites have been the subject of several drilling, sampling, and metallurgical test campaigns as well as feasibility studies dating back to the 1960s. During the period 1962 to 1966, WMC carried out an extensive drilling program and established a resource of green and white spodumene, which is the lithium bearing mineral associated with the pegmatite.

Extensive mineralogical and metallurgical test work was carried out as part of this program, culminating in WMC preparing an internal feasibility study on the mining and production of 10,000 tpa to 15,000 tpa of spodumene concentrate from the deposit on Mining Lease M74/12.

Since the 1960s, the tenements have been owned by several companies, all of whom have viewed them as a prospective tantalite resource and conducted drilling and metallurgical test work accordingly. Major evaluation programs included the following:

- Pancontinental Mining Limited, July 1989, 101 Reverse circulation (RC) drillholes,
- Pancontinental Mining Limited, 1990, additional 21 RC drillholes,
- Greenstone Resources NL, 1997, 3 diamond drillholes, 38 RC drillholes and soil sampling, which comprised 23 by 44-gallon drums of freshly blasted mineralized material that was sent to the Nagrom mineral processing facility (based in Kelmscott, W.A.) for crushing, screening, and gravity separation testing,
- Haddington Resources Limited, 2001, 9 diamond drillholes for metallurgical test work, and additional RC drillholes for in-fill and sterilization.

Galaxy Resources acquired M74/12 from the administrators of Sons of Gwalia Limited in November 2006. By 2010, Galaxy had established an open pit mine and processing facilities to exploit the 12 million tonnes of ore at a grade of 1.0% Li_2O over a planned 13-to-14-year mine life.

The mine was placed under care and maintenance in 2013. Galaxy restarted mine production during March 2016. In 2021 Galaxy merged with Orocobre and formed Allkem, who wholly owns Galaxy Lithium and Mt Cattlin.

Records of the spodumene concentrate production at Mt Cattlin are presented in Table 5-1.

Table 5-1 - Spodumene concentrate production from 2010 to 2022.

Year	Concentrate Produced (dmt)
2022	107,417
2021	230,065
2020	108,658
2019	191,570
2018	156,689
2017	155,679
2016	9,700
2015	-
2014	-
2013	-
2012	54,047
2011	63,863
2010	1,645

The 2020 production year was moderated due to market conditions and a total of 1,086,364 wet metric tonnes (wmt) of ore was processed at a head grade of 1.1% Li_2O to produce 108,658 dry metric tonnes (dmt) of spodumene concentrate at a grade of 5.95% Li_2O. In early 2021, operations at Mt Cattlin were again ramped up to full rate (2019 rate) in response to improving spodumene prices. Galaxy is now targeting the annual production of 185,000 dmt to 210,000 dmt of spodumene concentrate. Improved prices for spodumene concentrate have prevailed from January 2022 onwards.

Mining at Mt Cattlin is conducted by conventional drill, blast, truck, and shovel methods. Processing is by conventional crushing, optical sort, multi-pass dense medium separation (DMS), de-sliming and mica removal. Spodumene is concentrated to greater than 5.5% Li_2O. The DMS pre-screen undersize (-0.5 mm) is treated by gravity and spiral classifiers to produce a tantalite concentrate. Optical sorters are utilized post crushing to preferentially sort and remove dark contaminant country rock to produce a cleaner feed for subsequent spodumene recovery. A magnetic sorter, to further improve and remove waste meta-basalt was constructed and deployed in 2022.

5.4 Historical Mineral Resource Estimates

During the 1960s WMC completed drilling campaigns, metallurgical studies, and feasibility studies to establish an initial spodumene resource covering part of the eastern portion of the current orebody. The completed WMC internal feasibility study was based on operations producing 10,000 to 15,000 tpa of spodumene concentrate.

In 2001, consultant's Hellman and Schofield completed a resource estimate for the tantalum mineralization which covered a small portion in the northeast of the current orebody. This work was completed for Galaxy Resources NL, before the company listed on the ASX. The first significant published Galaxy Mineral Resource estimate that included an estimate of the Li_2O resources was reported to the ASX in December 2007.

The tabulated maiden Mineral Resource is provided in Table 5-2.

Table 5-2 - Mt Cattlin Mineral Resource, Hellman & Schofield (December 2007).

Mineral Resource December 2007			
Resource	Tonnes	Li_2O%	Ta_2O_5 ppm
Measured	1,090,066	1.07	177
Indicated	6,417,133	1.02	125
Inferred	4,797,911	0.96	140
Total	**12,305,110**	**1.00**	**135**

Note: Li_2O cut-off grade - 0.4% Li_2O. Mineral Resource Estimate compiled by Mr. Rob Spiers of Hellman & Schofield.

Mineral Resource updates were also completed in May 2009 and December 2009. The December 2009 results are detailed in Table 5-3.

Table 5-3 - Mt Cattlin Mineral Resource, Hellman & Schofield (December 2009).

Mineral Resource December 2009			
Resource	Tonnes	Li_2O %	Ta_2O_5 ppm
Measured	2,672,000	1.17	150
Indicated	9,629,000	1.09	171
Inferred	3,575,000	1.00	145
Total	**15,875,000**	**1.08**	**161**

Note: Li_2O cut-off grade - 0.4% Li_2O. The Mineral Resource Estimate was compiled by Mr. Rob Spiers of Hellman & Schofield.

Galaxy commissioned Mining Plus to prepare an updated Mineral Resource estimate toward the end of 2017, which was reported to the ASX in March 2018, (Table 5-4).

Table 5-4 - Mt Cattlin Mineral Resource, Mining Plus (December 2017).

MRE December 2017					
Material	Tonnes	Li_2O%	Ta_2O_5 ppm	Fe_2O_3%	Li_2O Metal Tonnes
Measured In situ	1,740,000	1.21	196	1.26	21,000
Indicated In Situ	6,210,000	1.26	127	1.19	78,200
Inferred In Situ	2,350,000	1.25	181	1.31	29,400
Total In Situ	**10,300,000**	**1.25**	**151**	**1.23**	**128,600**
Measured Stockpiles	140,000	0.98	NA	NA	1,400
Indicated Stockpiles	1,180,000	0.81	NA	NA	9,600
Total Stockpiles	**1,320,000**	**0.83**	**0**		**11,000**
Grand Total	**11,620,000**	**1.20**			**139,600**

Note: Fresh material has been reported at a cut-off grade of 0.4% Li_2O. All tonnages are reported as dry metric tonnes. Minor discrepancies may occur due to rounding.

Galaxy published an updated Mineral Resource undertaken by Mining Plus in August 2018, which was depleted for mining to 1 June 2018, (Table 5-5).

Table 5-5 - Mt Cattlin Mineral Resource, Mining Plus (June 2018).

MRE June 2018					
Material	Tonnes	Li_2O%	Ta_2O_5 ppm	Fe_2O_3%	Li_2O Metal Tonnes
Measured In situ	1,300,000	1.28	241	1.32	16,700
Indicated In Situ	7,000,000	1.34	177	1.40	93,700
Inferred In Situ	1,400,000	1.44	264	1.27	20,100
Total In Situ	**9,700,000**	**1.35**	**198**	**1.37**	**130,500**
Measured Stockpiles	200,000	0.78	131	NA	1,500
Indicated Stockpiles	1,900,000	0.81	54	NA	15,500
Total Stockpiles	**2,100,000**	**0.81**	**61**		**17,000**
Grand Total	**11,800,000**	**1.25**	**174**		**147,500**

Note: Fresh material has been reported at a cut-off grade of 0.4% Li_2O. All tonnages are reported as dry metric tonnes. Minor discrepancies may occur due to rounding.

Galaxy published an updated Mineral Resource undertaken by Mining Plus in January 2019 that was depleted for mining to 31 December 2018, (Table 5-6).

Table 5-6 - Mt Cattlin Mineral Resource, Mining Plus (December 2018).

MRE December 2018					
Material	Tonnes	Li_2O%	Ta_2O_5 ppm	Fe_2O_3%	Li_2O Metal Tonnes
Measured In Situ	2,200,000	1.32	208	1.17	29,000
Indicated In Situ	7,200,000	1.43	165	1.48	103,000
Inferred In Situ	4,600,000	1.30	156	1.67	60,000
Total In Situ	**14,000,000**	**1.37**	**169**	**1.49**	**192,000**
Indicated Stockpiles	2,700,000	0.82	110	NA	22,000
Grand Total	**16,700,000**	**1.28**	**159**		**214,000**

Note: Fresh material has been reported at a cut-off grade of 0.4% Li_2O and Transition material at 0.6% Li_2O. All tonnages are reported as dry metric tonnes. Minor discrepancies may occur due to rounding.

Subsequent published Mineral Resources, including in 2020 and 2021, have not involved re-estimation of the Mineral Resource, but have been adjusted for depletion by mining. These tabulations are not included as part of this report. An updated MRE was completed in early 2023, dated December 2022, which included drilling completed in 2022.

5.5 Historical Mineral Reserve Estimates

Galaxy has reported Mineral Reserves for the Mt Cattlin Property from 2009 to 2020. These estimates have been superseded by the current Mineral Reserve estimate which is detailed in this report.

In August 2009 Allkem engaged Mining Resources Pty Ltd who completed an initial Mineral Reserve based on the May 2009 Mineral Resource estimate (Table 5-7).

Table 5-7 - Mt Cattlin Mineral Reserve (August 2009).

Mineral Reserve August 2009			
Material	Tonnes	Li_2O%	Ta_2O_5 ppm
Proven	2,333,400	1.09	130
Probable	6,949,600	1.02	140
Total	**9,283,000**	**1.04**	**138**

Note: Li2O cutoff grade - 0.4% Li_2O. Mineral Reserve Estimate compiled by Mr. Glenn Williamson of Mining Resources Pty Ltd.

In March 2010, an updated Mineral Reserve estimate was completed by Croeser Pty Ltd which appears in Table 5-8.

Table 5-8 - Mt Cattlin Mineral Reserve (March 2010).

Mineral Reserve March 2010			
Material	Tonnes	Li_2O%	Ta_2O_5 ppm
Proven	2,683,000	1.08	135
Probable	8,684,000	1.04	151
Total	**11,367,000**	**1.05**	**147**

Note: Li_2O cut-off grade - 0.4% Li_2O. Mineral Reserve Estimate compiled by Mr. Roselt Croeser of Croeser Pty Ltd.

Galaxy released an updated Mineral Reserve estimate in March 2018, completed by Mining Plus, which included mining depletion to end December 2017 (Table 5-9).

Table 5-9 - Mt Cattlin Mineral Reserve, Mining Plus (December 2017).

Mt Cattlin Mineral Reserve December 2017			
Material	Tonnes	Li_2O %	Contained Li_2O Metal
Proven	1,950,000	1.03	20.4
Probable	5,690,000	1.06	60.1
Total	**7,640,000**	**1.05**	**80.5**

Note: Reported at a cut-off grade of 0.4% Li_2O. All figures rounded to reflect the relative accuracy of the estimates. Includes mining dilution and mining recovery. Mineral Reserve includes surface inventory. Pits include 315kT of diluted and recovered Inferred Resource not included in this Table. Mineral Reserves are not additional to Mineral Resources.

Subsequent published Mineral Reserve estimates, including in 2020 and 2021, have not involved re-estimation, but have been adjusted for depletion due to mining. These tabulations are not included as part of this report.

6. GEOLOGICAL SETTING, MINERALIZATION AND DEPOSIT

6.1 Regional Geology

The Mt Cattlin deposit is a spodumene-rich tantalite-bearing pegmatite located in the Phillips River Mineral Field, within the Ravensthorpe Terrane, which forms part of the Archaean Ravensthorpe greenstone belt.

The Ravensthorpe greenstone belt has been subdivided into three distinct tectonostratigraphic terranes by Witt (1998), shown in Figure 6-1.

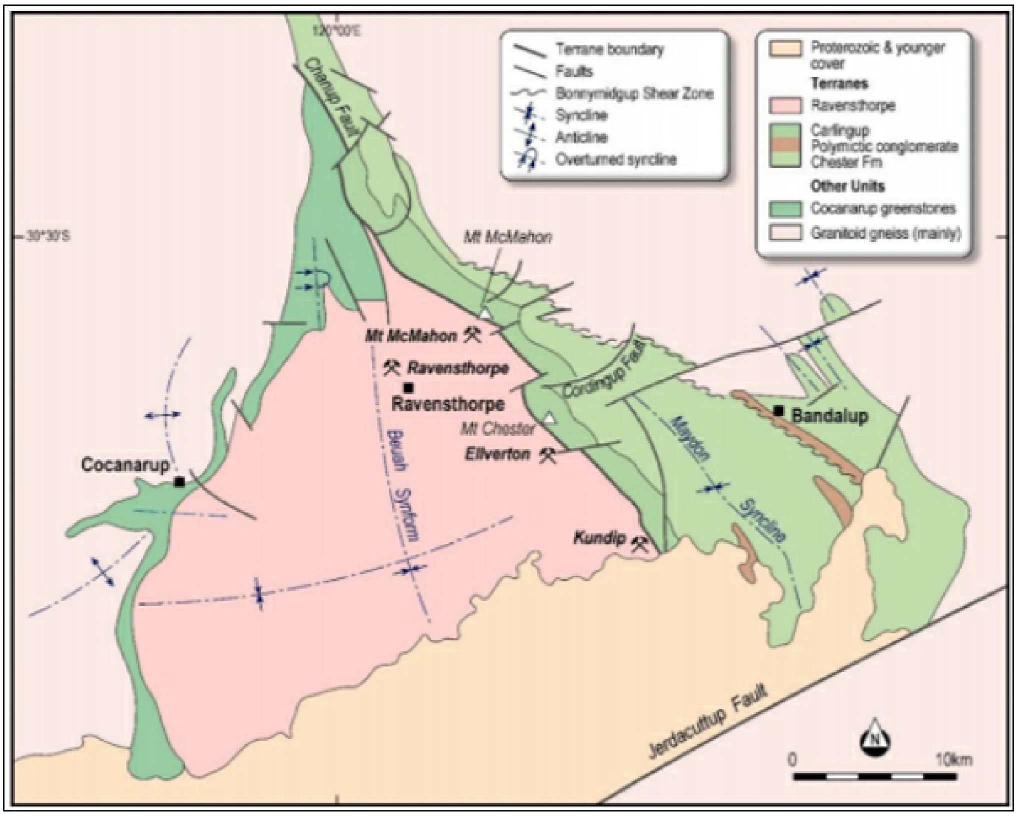


Figure 6-1 - Geological plan showing the location and geological setting of the Mt Cattlin Deposit.

The Carlingup Terrane (c. 2,960 million years) lies to the east and comprises metamorphosed mafic, ultramafic, and sedimentary rocks with minor felsic volcanic rocks. The Ravensthorpe Terrane (c. 2,990 to 2,970 million years), which hosts Mt Cattlin, forms the central portion of the belt, and comprises a tonalitic complex, together with a volcanic association with predominantly andesitic volcaniclastic rocks.

The Cocanarup greenstones to the west consist mainly of metasedimentary rocks, with lesser ultramafic and mafic rocks.

The Ravensthorpe Terrane is dominated by an approximately 25 km diameter, oval-shaped calc-alkaline complex, which is subdivided into an intrusive core comprising the Manyutop Tonalite which is flanked by the Annabelle Volcanics. Both sequences show similar chemical and age characteristics.

The Annabelle Volcanic sequence is dominated by volcaniclastic rocks with minor lavas. The sequence comprises roughly 10% to 20% basalt, 50% to 70% andesite and 20% to 30% dacite (Witt, 1998). Witt interprets the Terrane as fault-bounded accreted domains, with subsequent deformation producing the major south-plunging Beulah Synform. The metamorphic grade indicated by metamorphic mineral assemblages varies from greenschist to amphibolite facies.

6.2 Local and Property Geology

Mt Cattlin lies within the Ravensthorpe Terrane, with host rocks comprising both the Annabelle Volcanics to the west and the Manyutup Tonalite to the east. The contact between these rock types transects the project area.

The Annabelle Volcanics at Mt Cattlin includes intermediate to mafic volcanic rocks comprising pyroclastic material and lavas. Several phases of the Manyutup Tonalite were recognized by Witt (1998) in the Ravensthorpe Terrane, but in the Mt Cattlin area, this unit is dominated by tonalite (quartz diorite).

Both the Annabelle Volcanics and the Manyutup Tonalite are intruded by numerous fine to coarse-grained metamorphosed dolerite dykes. A north-northwest trending gabbro, described as a pyroxenite in earlier reports, crosses the eastern edge of the Mt Cattlin pegmatite orebody.

The Archean age Annabelle Volcanics, a sequence of metamorphosed ultramafic, mafic, and felsic rocks (Wells et al 2022), with dating of rhyolite in the Annabelle Volcanics at 2989 ± 11 Ma. To the east, another swarm of north-trending pegmatites intrude both the Annabelle Volcanics and the adjoining Archean calc-alkaline Manyutup Tonalite. Nearby some 8 km SW of Ravensthorpe, coarse-grained tonalite was dated at 2965 ± 12 Ma (U-P. In the same area, a tonalite porphyry dyke was dated at 2989 ± 7 Ma identical to the reported age of the Annabelle Volcanics. It has been speculated that the pegmatite swarms may be genetically related to a late-phase, Archean quartz-monzonite located some 7 km to the NE.

Metamorphism of the Annabelle Volcanics and Manyutup Tonalite country rocks grades up to amphibolite facies at Mt Cattlin. While the metamorphism of the country rocks up to amphibolite facies grade is evident, the pegmatites remain unmetamorphosed.

A detailed local geology map of the Mt Cattlin Project area was compiled by Dr Mike Grigson of ARC Minerals and has been presented in Figure 6-2.

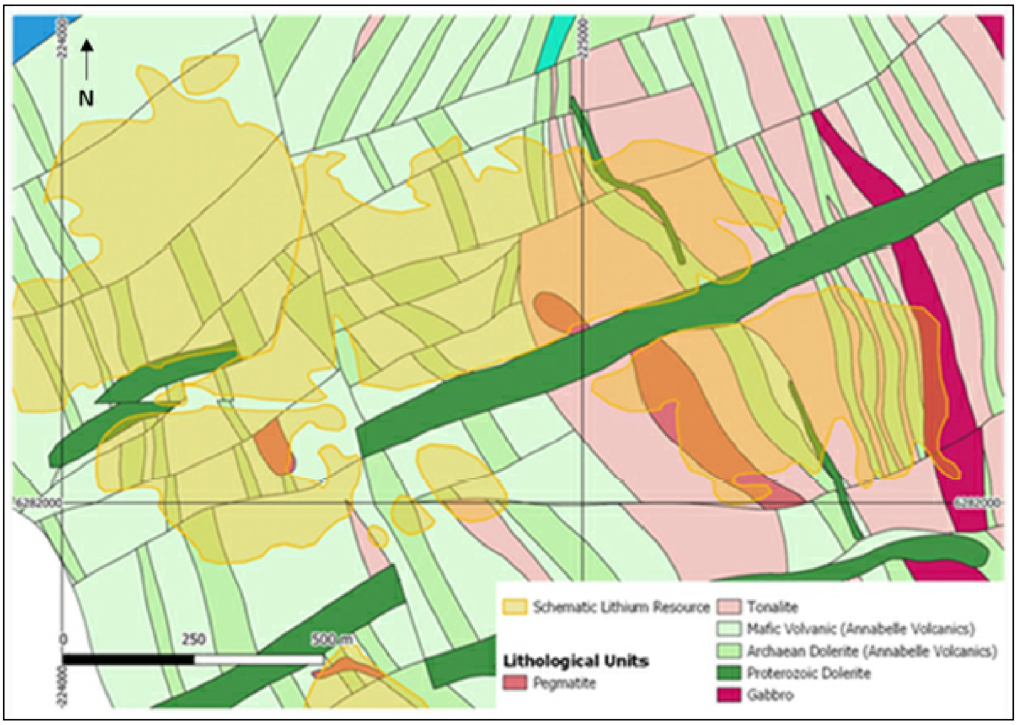
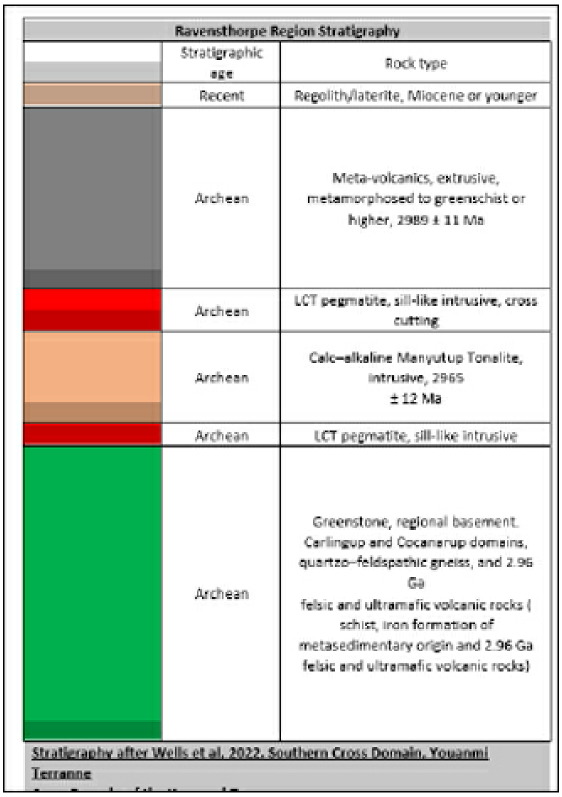


Figure 6-2 - Mt Cattlin local interpreted surface geology map showing lithology sequences and the spatial extent of the lithium resource (compiled M. Grigson, ARC Minerals).

A Stratigraphic column of the local geology is shown below (Figure 6-3).



Ravensthorpe Region Stratigraphy		
	Stratigraphic age	Rock type
	Recent	Regolith/laterite, Miocene or younger
	Archean	Meta-volcanics, extrusive, metamorphosed to greenschist or higher, 2989 ± 11 Ma
	Archean	LCT pegmatite, sill-like intrusive, cross cutting
	Archean	Calc–alkaline Manyutup Tonalite, intrusive, 2965 ± 12 Ma
	Archean	LCT pegmatite, sill-like intrusive
	Archean	Greenstone, regional basement. Carlingup and Cocanarup domains, quartzo–feldspathic gneiss, and 2.96 Ga felsic and ultramafic volcanic rocks (schist, iron formation of metasedimentary origin and 2.96 Ga felsic and ultramafic volcanic rocks)

Stratigraphy after Wells et al, 2022. Southern Cross Domain, Youanmi Terranne

Figure 6-3 - Mt Cattlin Stratigraphic Column.

The pegmatites which comprise the orebody occur as a series of sub-horizontal sills hosted by both volcanic and intrusive rocks. These are of the albite-spodumene subtype (Wells et al, 2020). Several dolerite or quartz gabbro dykes trending roughly east-northeast and north-south crosscut all lithologies including the pegmatite sills and are believed to be Proterozoic in age.

The drilling cross-section depicted in Figure 6-4 and the perspective view in Figure 6-5 illustrates the flat-lying nature of the pegmatite horizons and the relationship to the later cross-cutting dolerite dyke.

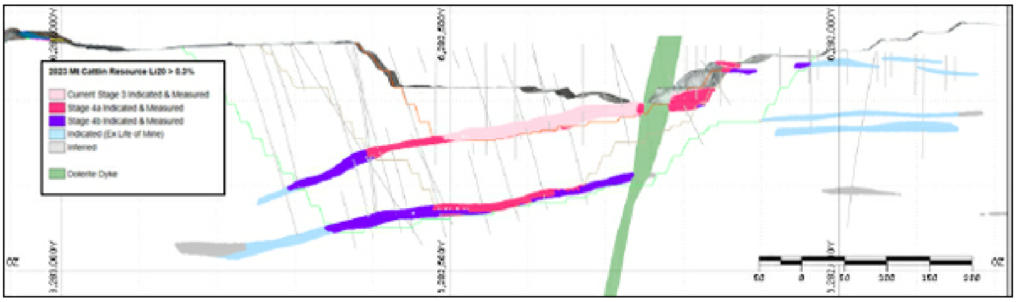


Figure 6-4 - Cross-section showing deeper NW zone pegmatite horizon.

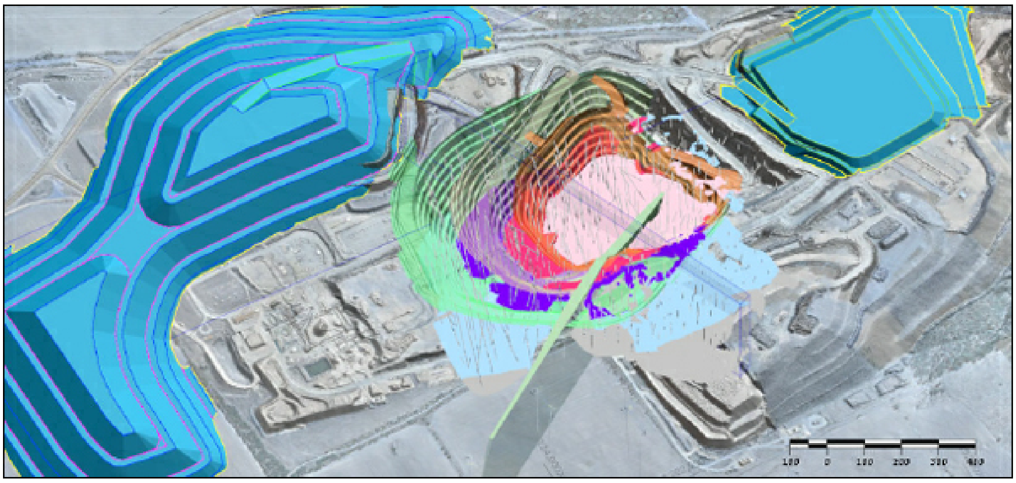


Figure 6-5 - Perspective view looking NE and Cross-section showing deeper NW zone pegmatite horizon.

A significant sub-vertical fault with a north-northwest-trending orientation has been confirmed on drilling cross-sections and aeromagnetic data. This fault transgresses the western side of the currently defined orebody and offsets the pegmatite as well as the main east-northeast trending dolerite dyke. Displacement across this fault appears to be oblique, with the west block down and with a sinistral component.

The weathering profile across the Mt Cattlin area is typically shallow, with fresh rock generally being encountered at depths of less than 20 meters below the surface.

6.3 Deposit Type

Pegmatites form the host rock to the Li_2O and Ta_2O_5 mineralization at Mt Cattlin. It is generally accepted that pegmatites form by a process of fractional crystallization of an initially granitic composition melt. The fractional crystallization concentrates incompatible elements, such as light ion lithophile elements and volatiles (such as B, Li, F, P, H_2O, and CO_2) into the late-stage melt phase. The volatiles lower the viscosity of the melt and reduce the solidification temperature to levels as low as 350°C to 400°C. This permits fractional crystallization to proceed to extreme levels, resulting in highly evolved end-member pegmatites. The fluxing effect of incompatible elements and volatiles allows rapid diffusion rates of ions, resulting in the formation of very large crystals characteristic of pegmatites.

The less dense pegmatitic magma may rise and accumulate at the top of the granitic intrusive body. However, typically the more fractionated pegmatitic melt phases escape into the surrounding country rock along faults or other structures to form pegmatites external to the parent intrusive, which is the case at Mt Cattlin.

Highly fractionated pegmatites can occur many kilometers from the parent intrusion and are classified as LCT (lithium, cesium, tantalum) pegmatites (Wells et al, 2022). The fractionation trend with distance from the granitic source is shown diagrammatically in Figure 6-6 (London, 2008).

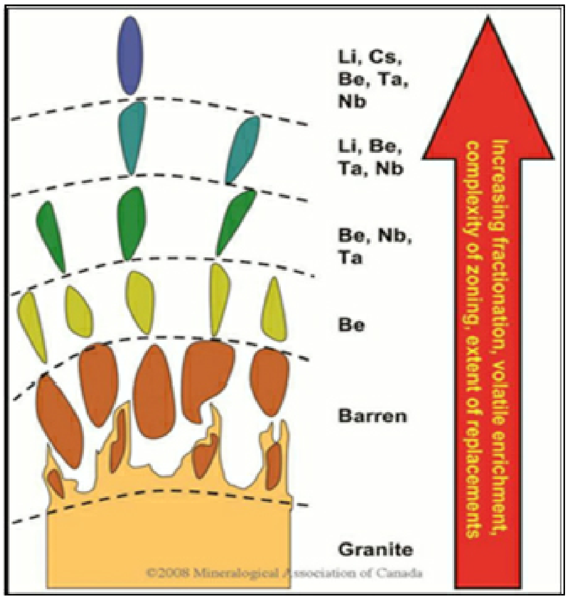


Figure 6-6 - Chemical evolution through a lithium-rich pegmatite group with distance from granitic source intrusion (London, 2008).

Based on apparent mineral assemblages and textures, Mt Cattlin has been categorized as an albite-spodumene type with the LCT classification. Moreover, the relatively highly coarse nature of spodumene at Mt Cattlin compared to that of other LCT pegmatites in WA suggests that these pegmatites crystallized from a high-fluxing agent melt (Wells et al, 2022). The whole rock geochemistry and mineralogy at Mt Cattlin indicate a broad fractionation trend to the northeast. The broad change in mineralogy from spodumene only to spodumene + lepidolite towards the northeast may represent a residual concentration of volatile and incompatible elements in this direction (Sweetapple, 2010).

Various types of internal zonation from the footwall to the hanging wall of the pegmatites, based on variations in mineralogy, grain size and fabric, are reported in the literature (London, 2008). While zonation is not strongly developed in the Mt Cattlin pegmatites, changes in mineralogy and grain size are recognized across the pegmatite in places. In addition, the characteristics of the Mt Cattlin pegmatites vary to some extent laterally and between the different pegmatite sheets. Late stage metasomatism of lithia, in proximity to both the later dykes and post-emplacement faults is recognized.

6.4 Mineralization

Mt Cattlin hosts spodumene-rich, Ta-bearing pegmatites. They occur as a series of sub-horizontal to shallowly dipping horizons (Figure 6-7) that have intruded both the Annabelle Volcanics and the Manyutup Tonalite in areas close to the contact between these two sequences.

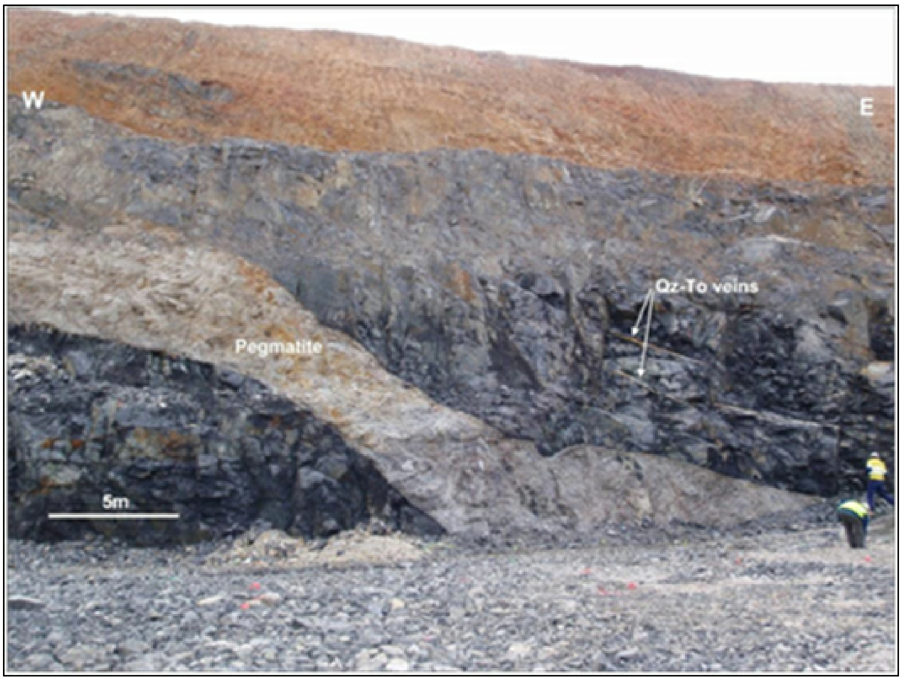


Figure 6-7 - Mt Cattlin Pit 1A north wall showing pegmatite and quartz tourmaline veins.

In places, the pegmatites occur as stacked horizons that overlap in section. Pegmatite mineralization defined to date covers an area of around 1.6 km east-west and 1 km north-south. The main pegmatite units are generally between 30 m and 140 m below the surface, and outcrop in some locations.

The Mt Cattlin pegmatites have diverse mineralogy with major minerals comprising quartz, albite, cleavelandite (platy albite), microcline, perthite, spodumene, muscovite and lepidolite. Minor minerals include tourmaline, schorlite, elbaite, beryl, microlite, columbite-tantalite, sphalerite, amblygonite-montebrasite, triphylite, apatite, spessartite and fluorite (Grubb, 1963, Sweetapple, 2010). Spodumene is the dominant Li_2O ore mineral.

Several varieties of spodumene are recognized including light green and white varieties. Ta_2O_5 occurs as the manganese-rich end members of the columbite-tantalite series including Ta-rich manganotantalite, and as microlite (Sweetapple, 2010). An open pit exposure with spodumene crystals in pegmatite is shown in Figure 6-8.

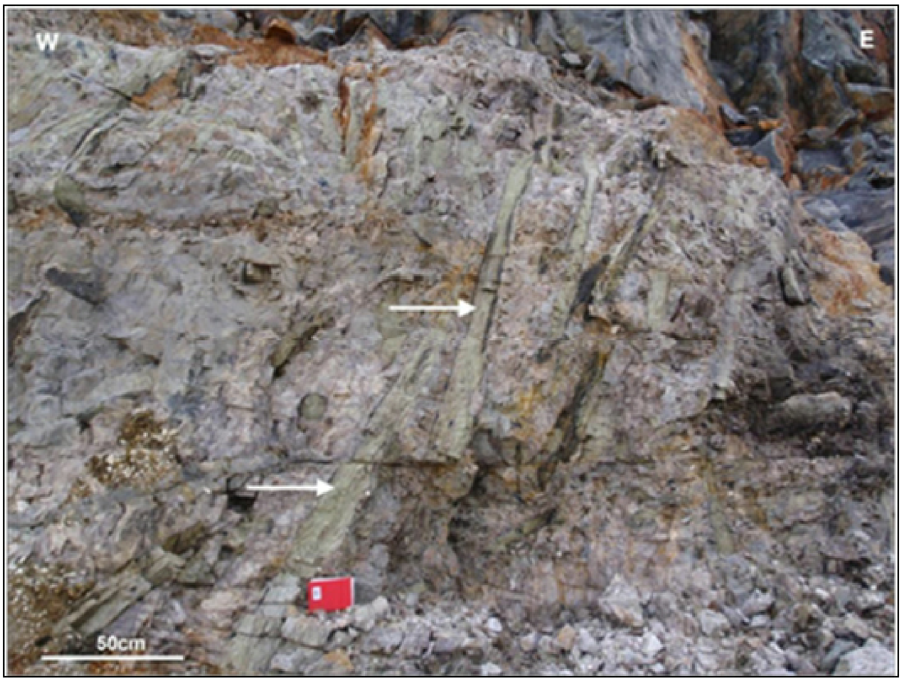


Figure 6-8 - Spodumene crystals in pegmatite (arrowed), Mt Cattlin Pit 1A north wall.

Various lithium minerals have been observed within the pegmatites and include the following:

- Spodumene $LiAl(SiO_3)_2$ containing 4% to 8% Li_2O,
- Amblygonite, $LiAl(F,OH)PO_4$, contains 8% to 10% Li_2O,
- Lepidolite, (lithium mica) contains 2% to 4% Li_2O,
- Cookeite, (lithium chlorite).

The mineralogy within the pegmatites varies laterally and displays a crude zonation oriented perpendicular to the margins, which are identified by changes in mineralogy and grain size.

Northeast portions of the deposit contain the Li_2O-bearing mica lepidolite. The lepidolite-rich zones contain higher Ta_2O_5 grades, which are mainly microlite, and display more pronounced zonation perpendicular to the margins of the pegmatite. Zonation within the pegmatites include an aplitic rock comprising mainly quartz-albite-muscovite near the contacts with the country rocks, and zones of predominantly light green, and predominantly white spodumene. Lepidolite is generally associated with white spodumene. Quartz-tourmaline veins related to pegmatite emplacement are observed in the country rock up to tens of meters away from the pegmatite.

6.5 Alteration

Mt Cattlin displays zones of high-grade, unaltered spodumene through to zones of low-grade, highly altered spodumene, which post-date pegmatite emplacement. Two distinct styles of alteration in which spodumene is replaced by finely crystalline micas are observed within altered regions of the deposit and comprise the following:

6.5.1 Symplectic / Graphic Textured Alteration

Presents as microscopic intergrowths of spodumene and quartz and is abundant on the margins of the pegmatites. Typically occurs where spodumene is proximal to increased amounts of albite.

Graphic textured alteration is generally more abundant where the pegmatites contact the host rock, and rapid cooling has occurred.

6.5.2 Pseudomorphic alteration

Ranging from minor replacement at the crystal margins to complete replacement comprised of a complex assemblage of pumpellyite, cookeite, sericitic mica and secondary feldspars (dark green spodumene). Predominant in coarse-grained, megacrystic (+20 cm) spodumene. The progressive darkening of spodumene is positively associated with the degree of observed alteration. With increases in alteration, lithium content decreases as spodumene crystals are pseudo-morphically replaced by black-green lithium-bearing micas.

Although lithium content within spodumene at Mt Catlin is negatively correlated with post-emplacement alteration (Wells et al, 2022), high degrees of alteration are interpreted to be more limited in occurrence and often connected with fractures or faults cutting through the pegmatite (Sweetapple, 2010).

A sample of drill core displayed in Figure 6-9 is a typical example of the dark green spodumene alteration type which is associated with prehnite-rich veins.

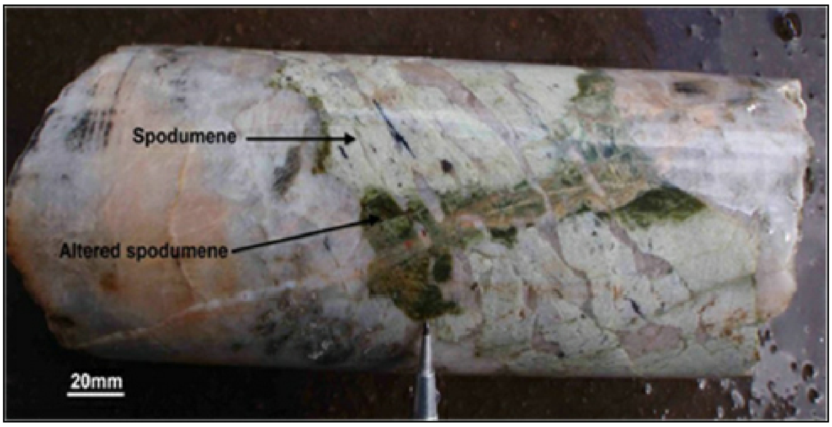


Figure 6-9 - Alteration of light green spodumene to a dark green mineral on the margins of a vein composed predominantly of prehnite (Drillhole GXMCMTD03, 22.5m).

6.6 Geometallurgical Model

A geometallurgical approach to modelling the deposit geology at Mt Cattlin has been adopted. This approach aims integrate the information required to ensure that the produced spodumene concentrate meets product specifications including requirements for a minimum lithia grade, plus upper limits of deleterious elements Figure 6-10.

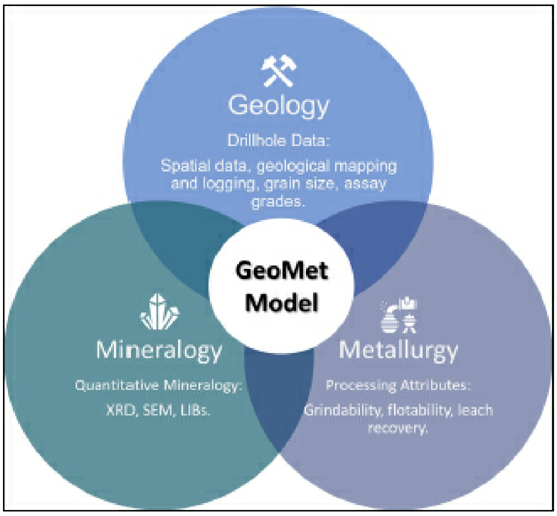


Figure 6-10 - Geometallurgical ("GeoMet") Model Venn diagram.

Metallurgical processing methods call for distinct physical properties of the pegmatite material, which varies at the regional and deposit scale. Due to the nature of its emplacement and associated magmatic fractional crystallization, the skin of a pegmatite contacting the host rock is often physically and chemically unique to that of the coarse-grained spodumene-rich core. This finer-grained and often mineralogically variable material at the margins can lead to reduced recoverability of the spodumene compared to the coarser-grained spodumene in the interior of the pegmatite.

The local and regional chemical variation affects the deportment of lithium and associated deleterious elements. Lithia-bearing minerals such as petalite and/or lepidolite necessitate alternative treatment techniques to that of spodumene. In addition, the post-emplacement alteration of spodumene may impact processing performance and quality due to the pseudo-morphic replacement of spodumene with micaceous mineral assemblages.

Additional HQ diameter diamond drilling was undertaken in 2023 to further understand the results obtained in 2021 diamond drilling. Generally fine grained spodumene bearing pegmatites have a higher Na_20 content than the metacrystic spodumene and in general, if Na_2O > 4% by assay, then Li_2O is < 0.4%. This relationship has been used to domain out the finer-grained spodumene, which from test work on 2021 samples, has recoveries between 30-40%. This is approximately half of that considered normal in the process plant-scale dense media separation process to upgrade spodumene to a commercial concentrate.

The 2023 geometallurgical drilling that was completed to inform the domains of the geometallurgical model is illustrated in Figure 6-11.

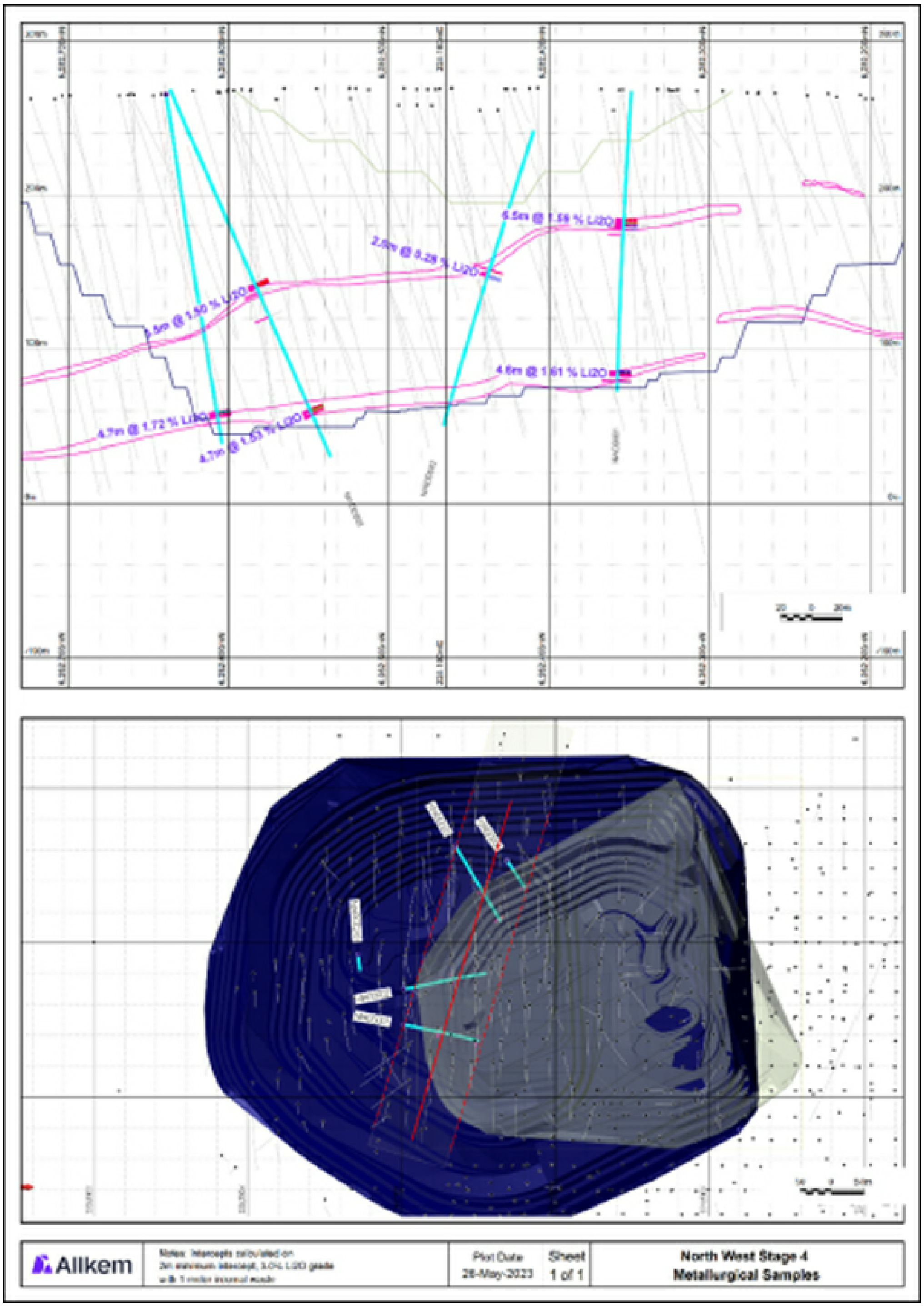


Figure 6-10 - Cross-Section looking east showing modelled upper and lower pegmatites and 2023 metallurgical drilling.

The geometallurgical model at Mt Cattlin sub-domains the physically and mineralogically unique areas within each pegmatite. This includes areas of varying lithia deportments, such as petalite-rich domains, plus the finer-grained material at the margins of the pegmatites (Figure 6-11).

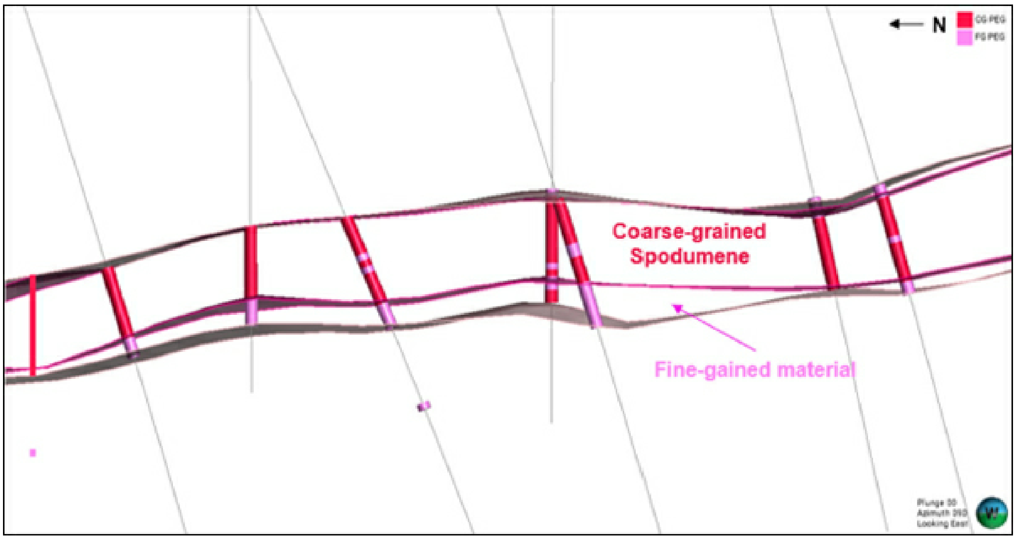


Figure 6-11 - Cross-section looking east showing modelled pegmatite plus sub-domained, spodumene-rich core.

7. EXPLORATION

7.1 Exploration Work

Mt Cattlin's exploration activity is currently focused on the Mt Cattlin mine lease north of Ravensthorpe in Western Australia. Other exploration has processed a regional understanding of lithia mineralization in an extensive mature exploration package. Of these the Enduro and Baker Hills tenements and surrounds show the best proposition for lithia in spodumene as and exploration target. The district as a whole is prospective for lode hosted gold and copper mineralization. Selective areas may be prospective for massive sulfide hosted Nickel mineralization, to the east.

In addition to drilling, various programs of surface geological mapping and sampling, remote sensing, airborne and ground geophysics have been carried out over the Mt Cattlin mining lease and surrounding exploration leases.

7.2 Geological Exploration and Drilling

7.2.1 Geological Exploratory Work

7.2.1.1 Geological Mapping

Various campaigns of geological mapping of the Mt Cattlin pegmatites and surrounding lithologies have been undertaken, including by Sofoulis (1958), WMC (Cameron and Ross, 1963), and by Pancontinental (Broomfield, 1990).

Dr. Mike Grigson of Arc Minerals conducted a regional mapping program of the Mt Cattlin area in 2010. The interpretative mapping was accompanied by rock chip sampling, which succeeded in identifying several sub-cropping pegmatite units in the area surrounding Mt Cattlin.

This regional mapping work has also been supported by various phases of petrological work by consultant Dick England and detailed costean mapping and ongoing mineralogical work completed by Dr Marcus Sweetapple, from 2010 to 2022. Results of this work have been used to develop the interpretative geological and metallurgical models which are currently being used by Galaxy at Mt Cattlin.

7.2.1.2 Surface Mapping and Sampling

Various campaigns of surface rock chip and soil sampling have been carried out over the area, undertaken by WMC in the 1960s and Pancontinental in the late 1980s (Broomfield, 1990).

Haddington Resources Ltd ("Haddington") collected 84 soil samples in 2005 which were on a 200 m by 100 m grid pattern using a -1.5 mm sieve and collecting approximately 200 g of fine soil from around 20 cm below surface (Young, 2005). The Haddington program defined a Li_2O soil anomaly over the area of sub-cropping pegmatite located to the east of Floater Road, in addition to the largely concealed pegmatite to the west of Floater Road. The Li_2O anomaly was further supported by anomalous results in elements Be, Sn, Rb and Cs, Ta, and Nb.

Several surface sampling campaigns have been conducted over the Galaxy tenure since the recommencement of operations in 2016. A total of 3,725 surface samples with Li_2O and/or Ta_2O_5 assays have been recorded in the Galaxy exploration database and are displayed on the map presented in Figure 7-1. A total of 2,956 samples have been collected since January 2016, which included rock chip sampling, light vehicle-mounted auger sampling, handheld auger sampling, traditional surface soil sampling and mobile metal ion ("MMI") soil sampling.

Even though the regolith is disturbed by decades of broad acre cropping and fertilizer application, loam geochemical sampling provides good target generation and focus.

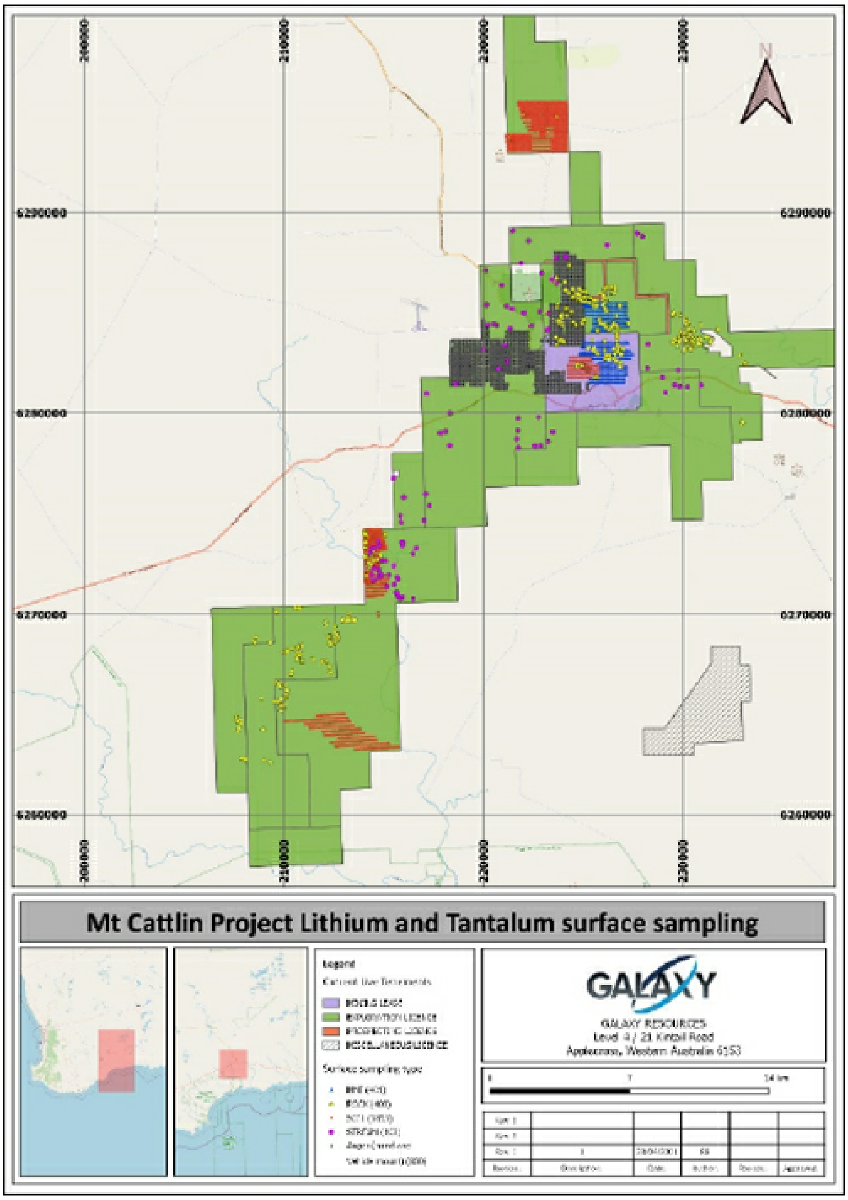


Figure 7-1 - Regional map showing various surface samples collected across the Mt Cattlin tenements.

Auger drilling systems were utilized where the surface soil had been disturbed by farming activities, with the samples collected at blade refusal, which ranged from 0.5 m to 1.5 m below surface. Approximately 300 g of un-sieved soil was collected from the end of the drillhole. The light vehicle mounted auger samples were collected on a 200 m by 200 m grid pattern. with the locations presented in Figure 7-2.

Figure 7-2 - Light vehicle-mounted auger sample locations.

Traditional soil sampling techniques and MMI soil sampling were conducted over areas with an undisturbed regolith. Soil sampling grids were 200 m by 100 m for MMI and 100 m by 100 m for traditional soils. MMI samples were collected between 10 cm and 25 cm below surface, with the sample representing a composite over the 15 cm interval. Approximately 250 g to 350 g of unsieved material was collected. Traditional soil samples were collected at an approximate sample depth of 20 cm below the surface. A -2 mm sieve was used to collect around 200 g of soil material.

Soil sampling in 2019 defined a moderate Lithium and Tantalum soil anomaly on tenement E74/379 and enabled a contour map of the calculated fractionation index to be developed (Figure 7-3). The anomaly was subsequently named Mt Short Prospect. The company has planned a future drilling program to test the anomaly in 2023/4.

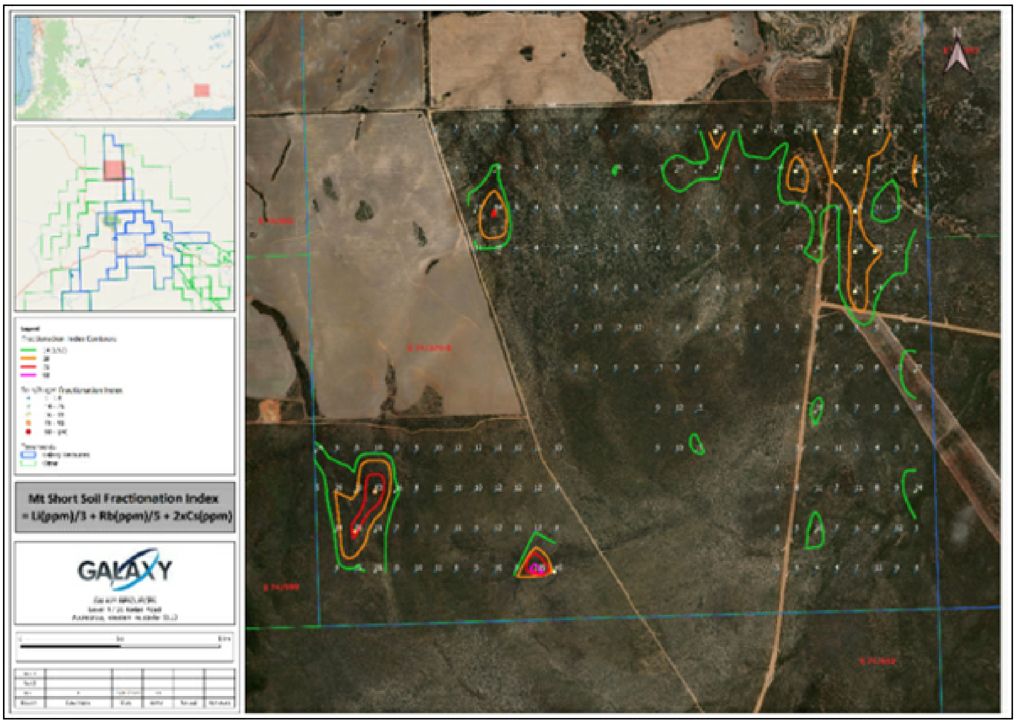


Figure 7-3 - Mt Short contours of calculated fractionation index from soil sample assays.

Rock chip sampling of outcropping pegmatites, 2 km north of Mt Cattlin, has returned highly anomalous tantalum values and elevated lithium values. Low to very low K/Rb element ratios indicated a highly fractionated pegmatite body (Figure 7-4).

Figure 7-4 - Enduro Prospect location map and K/Rb ratios.

This anomalous area was given the name Enduro Prospect and the target was further evaluated with drill testing. The completed drilling identified a quartz, albite spodumene muscovite pegmatite at depth. The best intercept recovered in the maiden program was 2 m at 1.45% Li_2O. Galaxy had plans for further drilling at the Enduro Prospect. In 2022/3, 14 new RC drillholes were completed over the Enduro prospect for 1,785m. The best intercept recorded was from ENRC 026 from 53 t0 54m at 1.59 % lithia. Whilst mineralized with typical LCT assemblages, Enduro is dominated by fine-grain size and alternation mineralogy.

7.2.1.3 Hydrologic and Stream Sediment Sampling

Mt Cattlin does not utilize stream sediment sampling for exploration purposes.

Mining operations do not utilize surface water courses for water supply. Detailed discussion on water sampling and monitoring is provided in Chapter 17.

7.2.1.4 Remote Sensing

Galaxy has acquired various types of remote sensing imagery over the Mt Cattlin tenements, including Landsat, Quickbird, and Pleiades. The Pleiades satellite Imagery was acquired in May 2018, and captured in July and August 2017 at a 50 cm resolution. The Pleiades image with overlying Galaxy tenements is shown in Figure 7-5.

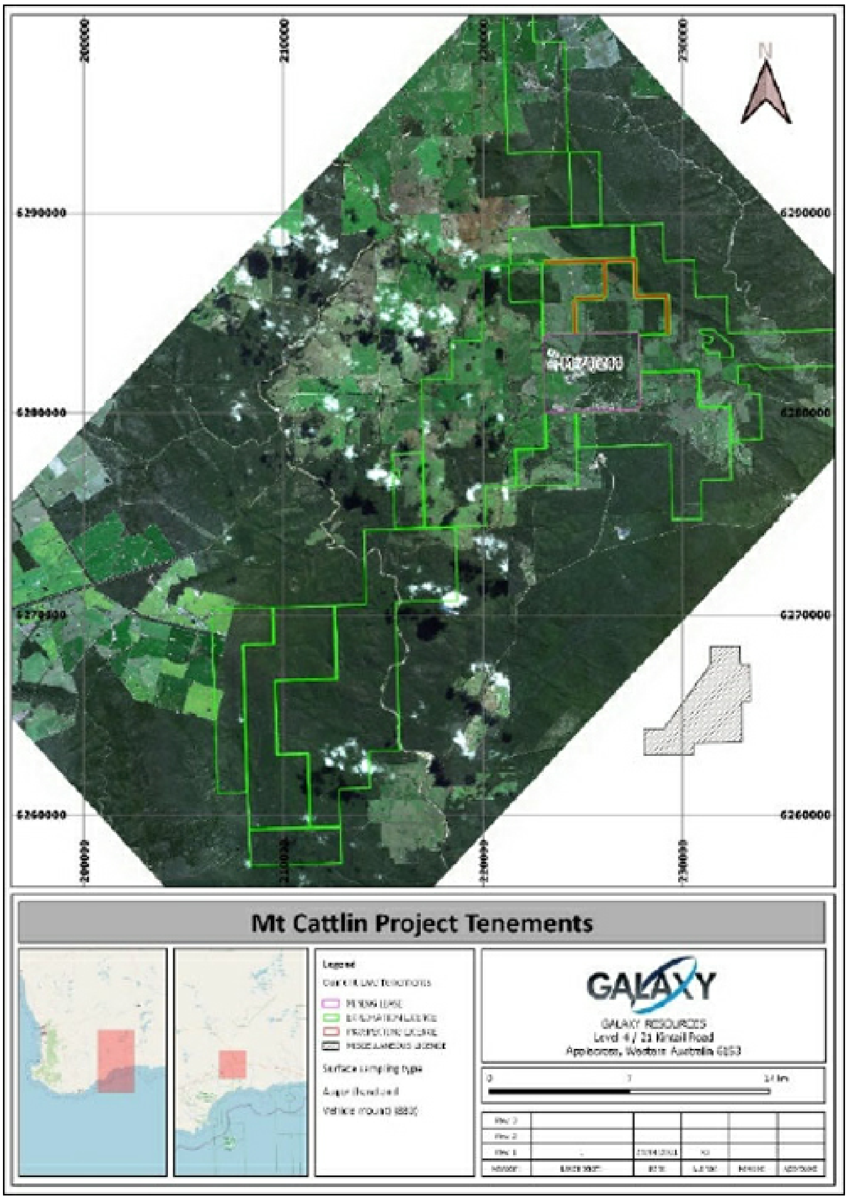


Figure 7-5 - Pleiades satellite image with overlying Mt Cattlin tenements.

7.2.1.5 Airborne Geophysics

Various airborne geophysical surveys have been flown over Mt Cattlin, including airborne magnetics, radiometrics and Versatile Time Domain EM ("VTEM"). In 2007, an airborne radiometric and magnetic survey was flown over a large area including Mt Cattlin by UTS Geophysics in conjunction with Pioneer Nickel, at a sensor height of 30 m on east-west lines at 50 m spacing.

A helicopter borne VTEM survey was also flown in 2007, by Geotech Airborne Ltd, also in conjunction with Pioneer Nickel. An image showing total magnetic intensity covering the Mt Cattlin area is shown in Figure 7-6.

These surveys did not directly detect lithium/tantalum mineralization but assisted in the lithological and structural interpretation of the geology of the area.

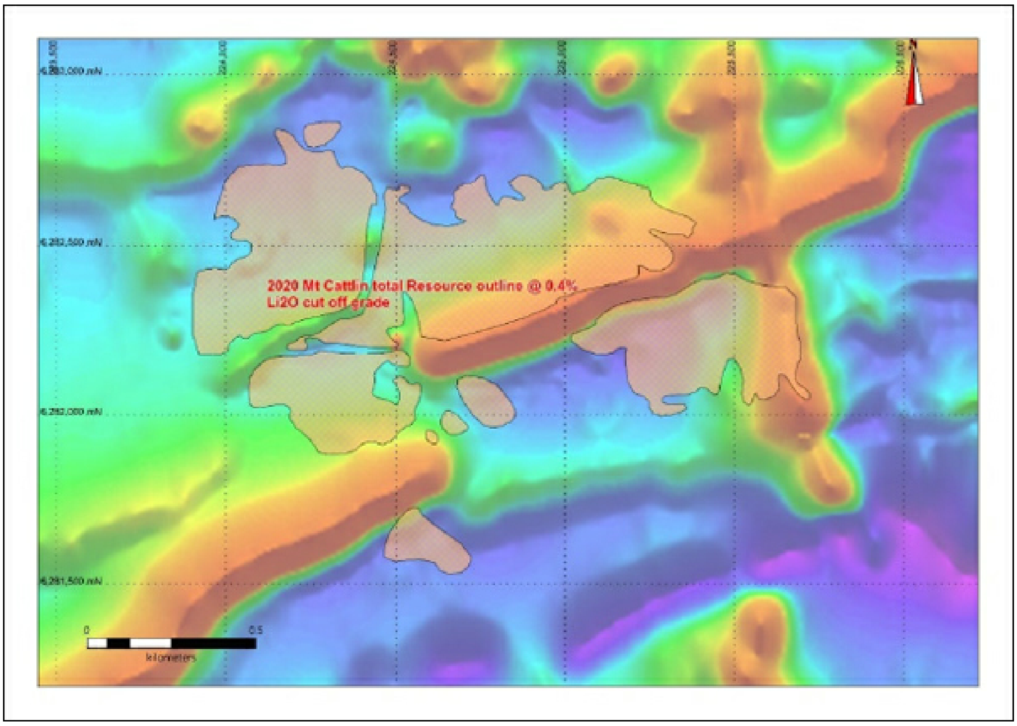


Figure 7-6 - Aeromagnetic image of the Mt Cattlin area (TMI).

7.2.1.6 Ground Geophysics

In late 2010 Galaxy trialed 2D seismic reflection using HiSeis as a contractor. The seismic work crystallized the 2021-2022 resource infill program, when two of the reflectors could be clearly correlated with the two pegmatite orebodies in the Stage 4 development.

In October 2017, Galaxy conducted several ground geophysical surveys over their tenure including ground penetrating radar ("GPR") and electrical resistivity imaging. In 2018 a large GPR survey was undertaken by Ultramag Geophysics (Figure 7-7).

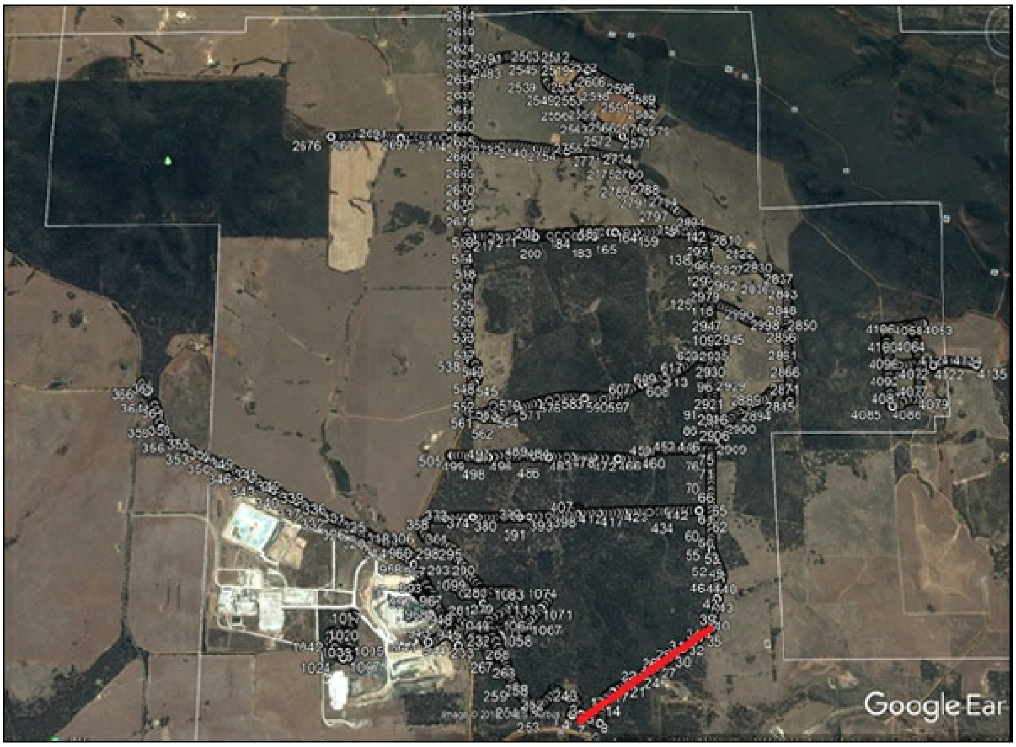


Figure 7-7 - Ground penetrating radar survey location plan with profile location shown in red.

Several anomalies were identified from the GPR geophysical survey but drill testing of the of these anomalies has not identified any mineralised pegmatites to date. The technique has had moderate success in identifying pegmatites under cover, these are then routinely tested for lithia and associated geochemistry.

Core Geophysics ("CORE") was contracted to complete an electrical resistivity imaging survey ("ERI") at the Enduro Prospect and around the Mt Cattlin spodumene operation. The survey was completed in December 2020. The objective of the geophysical work was to image near-surface vertical variations in resistivity to aid the geological understanding. The survey was expected to map changes in resistivity across known pegmatites as a possible means for electrical discrimination.

7.2.1.7 Other Exploration

In 2010, Galaxy Resources consolidated several mining and prospecting leases at Mt Cattlin into a single mining lease, M74/244 which has a total area of 1,830 hectares.

Although Mt Cattlin is the only known major lithium/tantalum deposit in the Ravensthorpe region, other metal occurrences of copper and gold mineralization are known within the Mt Cattlin mining lease and on adjacent properties. These occurrences have been the subject of historic, small-scale mining. The most important of these are the Mt Cattlin gold-copper in which is located approximately 1 km east-southeast of Mt Cattlin, Marion Martin 1.5 km south, Floater 1.5 km north and Maori Queen 3.5 km northeast (Witt, 1998).

Various open file Department of Mines and Petroleum reports have shown that some small volume, potentially copper-gold resources remain for these properties. They are currently not the subject of any active exploration or mining.

In 2016 Galaxy acquired Exploration leases E74/406, E74/399 and E74/379 from ACH Minerals (now Medallion Metals) where ACH retained the gold and copper rights over the tenure.

Projects to the west and south of the Mt Cattlin project, including Bakers Hill, Floater and Sirdar to the north of Mt Cattlin have been explored by Galaxy for pegmatite-hosted lithium/tantalum mineralization. Various programs of predominantly surface sampling, geological mapping and airborne geophysics have been carried out over the Floater, Sirdar, and Bakers Hill tenements. Bakers Hill remains the locus of active exploration.

An RC program testing an outcropping pegmatite unit lying mainly on the Sirdar project was completed in 2009. This work followed up results from significant pegmatite rock chip samples with assays up to 2.04% Li_2O. While the program encountered subsurface pegmatite, it was not successful in intersecting economic widths of mineralization.

7.2.2 Geological Drilling

With regards to this Chapter, all commentary, figures, and data refer to the drilling within the extents of the Mineral Resource modelling export unless otherwise stipulated. The extents of the Mineral Resource modelling are mapped in various exports (Figure 7-8) in the Map Grid of Australia (“MGA”), 1994 co-ordinate system.

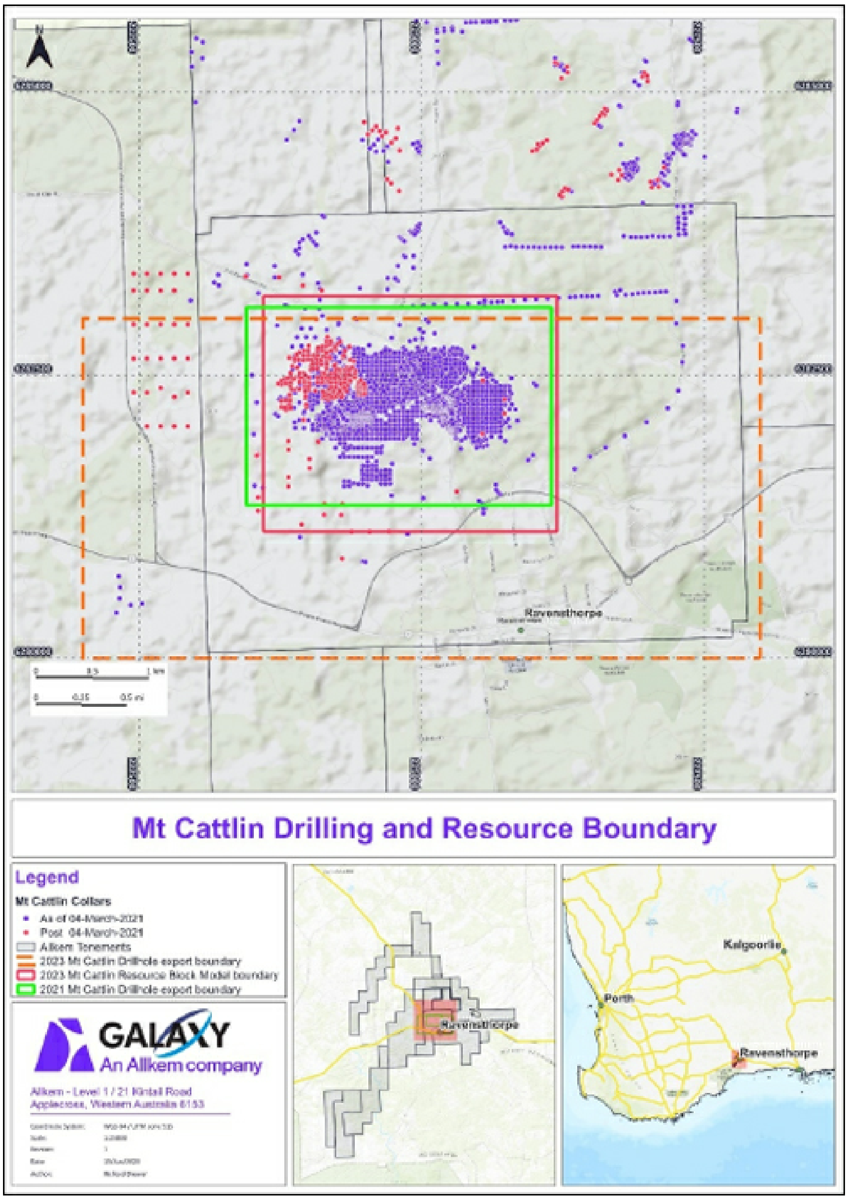


Figure 7-8 - Map of the resource modelling export extents.

Samples in the drilling database have been collected using a combination of diamond core ("DD"), reverse circulation ("RC"), reverse circulation with diamond drill tails (RC-DD), rotary air blast ("RAB") and unspecified open-hole ("OH") drilling methods. Data from previous owners has been incorporated into the Mineral Resource database, however the vast majority of data has been generated during Galaxy drilling programs, (Table 7-1).

Table 7-1 - Details on drilling database data within the resource export extents.

Company	Years	Type	Hole-ID	# of Drillholes	Total Meters
Greenstone	1996	DD	GD018-GD020	3	699
Pancon	1988-1990	RC/O H	CCP040/000- CCP720/860	120	2627
Greenstone	1996?	RC	GRC060-GRC091,GRC247-GRC254	38	947
Metana	1998?	DD	RR0095 - RR0131	12	422
Haddington	2001	RC	CCC10-CCC58	49	1042
Haddington	2001	DD	CCM1-CCM9	9	119
Galaxy	2001	RC	GX001-GX141	126	7803
Galaxy	2001	RAB	GX220-GX241, GX297-GX299	23	402
Galaxy	2001	DD	GXD01-GXD06	6	336
Galaxy	2007	RC	GX450-GX799	341	13994
Galaxy	2007	DD	GXD09-GXD13	5	196
Galaxy	2008	RC	GX800-GX909	110	6502
Galaxy	2008	DD	GXMCMTD01-06, GXMCGTD01-04	11	433 .7
Galaxy	2009	RAB	MB01 - MB06 (Water Monitoring Bores - no assays)	6	284
Galaxy	2009	RC	GX910-GX1065(ex GX952,GX953)	154	9225
Galaxy	2008-2017	RAB	WTD01 - WTD11,WTD13 - WTD17, 'WTD20- WTD20C,WTD21 - WTD23, WTD25, WTD28-WTD31, WTD34 (water related holes, no assay data)	26	2428
Unrecorded	Unrecorded	RC	MISC4 - MISC9	9	710
Galaxy	2010-2011	RC GC	G0050 - G1392	1,219	45178
Galaxy	2010	RC	GX1066, GX1076 - GX1128	55	4867
Galaxy	2010	DD	GXD014-GXD018	5	390
Galaxy	2010	RC GC	G1A238001 - G1A238048	99	2551
Galaxy	2010	RAB	TS1	1	17
Galaxy	2012	RC	GX1129 - GX1168	40	3258
Galaxy	2016	DD	MTCDD1 - MTCDD6, and MTCDD1W1	7	3852
Galaxy	2017	RC GC	GC1A001 - GC1A022	6	324
Galaxy	2017	RC	GX1169 - GX1191	23	1332
Galaxy	2017	DD	NEGEO001 - NEGEO002; NEHQ001;NEMT001 - NEMT003	6	335
Galaxy	2017	RC	NWST001 - NWST012	13	969
Galaxy	2017	RC	PITST001 - PITST005; PITST006 - PITST0010	9	450
Galaxy	2017	DD	SEHQ001 - SEHQ003	3	122
Galaxy	2017	DD	SWMET001 - SWMET004	4	269
Galaxy	2017	RC	SWRC001 - SWRC072	54	3919
GXY	2018	RC	FBRC001 - FBRC014	14	1400

Company	Years	Type	Hole-ID	# of Drillholes	Total Meters
Galaxy	2017-2018	RC GC	1EGC001-1EGC084	41	1145
Galaxy	2017-2018	RC	NERC005 - NERC170	94	6806
Galaxy	2017-2018	RC-DD	NERCDD020 - NERCDD168	9	561
Galaxy	2017-2018	RC GC	SWGC001 - SWGC742	384	8993
Galaxy	2017-2018	RC	GXY060 - GXY259	47	2326
Galaxy	2018-2019	RC,RC-DD	NWRC001 - NWRC086	87	14760
Galaxy	2018-2020	RC GC	SEGC0003 - SEGC0615	343	9504
GXY	2018	RC	STRC011	1	174
Galaxy	2018	RC GC	1FGC0001 - 1FGC0145	138	6707
Galaxy	2018	DD	DIV-H01 - DIV-H02	2	60
Galaxy	2018	RC	DPSTRC001 - DPSTRC007	7	570
Galaxy	2018	RC-DD	GXYDD254	1	69
Galaxy	2018	DD	NEMT003 - NEMT005	2	92
Galaxy	2018	DD	SEDD081 - SEDD274	16	367
Galaxy	2018	DD	SEMT001	1	29
Galaxy	2018	RC	SERC002 - SERC254	133	7799
Galaxy	2019	RC	SWRC073 - SWRC083	13	2227
Galaxy	2019	RC	GPRC029	1	44
Galaxy	2020	RC GC	NEGC0001 - NEGC0019	19	769
Galaxy	2021	RC-DD	GTNW01-GTNW06	6	747
Galaxy	2021	RC,RC-DD	NWRC087 - NWRC0114	28	3363
Galaxy	2022	RC-DD	GTNW07-GTNW09	3	651
Galaxy	2022	RC,RC-DD	NWRC115 - NWRC252	246	49249
Galaxy	2022	DD	NWDD001 - NWDD004	4	1031
Galaxy	2022	RC	NWGC001-NWGC069	47	2288
Galaxy	2023	RC	NWGC079-NWGC145	58	4169
Galaxy	2022	RC	MB13-MB20 (Water Monitoring)	8	800
Galaxy	2022	RC	WTD 21A (Water Related)	1	100
Galaxy	2022	RC	SWRC089	1	314
Galaxy	2023	RC	SWRC091-SWRC105,SWRC107	16	3942

Details of the drilling completed outside the resource modelling export are provided in Table 7-2.

Table 7-2 - Details for other Exploration drilling external to the resource export extents.

Company	Years	Type	Hole-ID	# of Drillholes	Total Meters
AMOCO	1978	DD	KRP-78-4,WA-78-D5,WA-78-D6,WA-78-D8,WA-78-D10-WA-78-D12	7	1,469.76
NORSEMAN	1982	RC,RC-DD	NFED-H1 - NFED-H8	9	873.7
Metana	1998	RC	RR0001 - RR0050	50	1334
Metana	1998	DD	RR0051 - RR0153	88	4,501.30
GXY	2009, 2010	RAB	WTD11,WTD12, WTD18, WTD19 , WTD24, WTD26- WTD27	7	695
GXY	2009	RC	GSC001 - GSC021	19	919
GXY	2010	RAB	MB1-MB3 (Water monitoring bores)	3	134
Galaxy	2009	RC	GX952,GX953	2	89
GXY	2010	RC	GX1067 - GX1075	9	356
Metana	2010	RC	MMC002 - MMC068	56	5,038
GXY	2016	RAB	GX262	1	9
KINGSTON	2017	RC	KRRC001-KRRC019	19	1,044
GXY	2018	RC	244M001 - 244M013	13	1,303
GXY	2018	RC	400EX001 - 400EX008	8	800
GXY	2018	RC	401EX001 - 401EX038	41	4,037
GXY	2018	RC	BHRC001 - BHRC019	19	1,024
GXY	2018	RC	FBRC015 - FBRC068	54	5,453
GXY	2018	RC	GPRC001 - GPRC024	25	3,122
GXY	2018	RC	STRC001 - STRC010,STRC012 - STRC016	15	1,833
GXY	2019	RC	ENRC0001 - ENRC0015	15	1,366
GXY	2019	RC	GPRC025 - GPRC028	4	480
GXY	2019	RC	OSRC0001 - OSRC0006	6	630
GXY	2019	RC	RFRC0001 - RFRC0006	6	558
GXY	2019	RC	SWRC084 - SWRC088	5	630
GXY	2019	RC	WEBRC001 - WEBRC003	3	127
TRAKA	2020	RC	RAGC031 - RAGC036	7	378.3
Galaxy	2023	RC	MCRC001-MCRC028	28	3,330
Galaxy	2023	RC	SWRC090-SWRC090A,SWRC106	3	793
Galaxy	2023	RC	DVRC001-DVRC003	3	465
Galaxy	2023	RC	ENRC016-ENRC029	14	1,785
Unrecorded	Unrecorded	RC	SRC001 - SRC015	15	737
TRAKA	Unrecorded	RC	RAGC001 - RAGC030	55	2,406
Unrecorded	Unrecorded	RAB	MSR092 - MSR178	15	192
GXY	Unrecorded	RAB	GX160 - GX281	86	1,545

7.2.2.1 RC Drilling

Drilling from 2001 onwards has been undertaken by Galaxy, however a prolonged period of care and maintenance from 2012 to 2017 has led to two distinct phases of exploration/resource drilling and grade control drilling. Phase 1 drilling was completed prior to 2016, while Phase 2 drilling was completed during and after 2016.

Mineralised pegmatite lenses at Mt Cattlin are generally sub-horizontal with gentle undulations and are largely isotropic in the horizontal plane. Drill traverses are generally aligned perpendicular to the mineralised trend, with mostly vertical drillholes completed.

7.2.2.2 Prior to 2016 - Phase 1

Drilling completed by Galaxy prior to 2016 was dominated by RC drillholes. In general, samples for assay analysis were collected using a riffle splitter, with a cone splitter used for later drilling programs.

During the 2007 field season, samples were collected from the RC drilling via a conventional rig mounted cyclone and bag system, and subsequently split in this instance through a 25/75 two stage riffle splitter for final sample separation in the field. Samples were collected at one meter intervals.

During the 2008 drilling campaign, samples were collected at one meter intervals in plastic bags via a conventional rig mounted cyclone and bag system, and subsequently split. Samples were triple-tier riffle split directly from the cyclone into calico bags which reduced the sample size to approximately 2 kg to 4 kg, suitable for laboratory submission.

From 2009 a cone splitter was used on the RC rig, with samples split directly from the cyclone into calico sample bags where the sample size was reduced to 12.5% of the original size producing a 2 kg to 4 kg sub-sample.

RC chips were geologically logged and pegmatite intervals, together with an additional one to two meter zone of country rock either side of the logged pegmatite, dispatched for assay analysis.

RC drilling carried out by Galaxy in 2001 and 2007 to 2008 was completed using a 4 5/8-inch conventional face-sampling hammer. During 2009 and 2010 the hammer diameter decreased slightly to 5 1/4 inch.

Sample recovery estimates of RC drilling from the start of 2008 to 2011 was routinely recorded using the measured weight of the split sample, which was collected in a calico bag, however during the period 2007 to 2009, the entire sample from selected drillholes was weighed. Sample recovery from the 2001 RC drilling was reported by Hellman (2001) to be generally average to good, with greater than 80% recovery except when high flow rates of water were encountered.

Historical sample recovery for Pancontinental RC drilling was also reported to have been acceptable at around 80% (Broomfield, 1990).

7.2.2.3 Post 2016 - Phase 2

RC drilling has typically been undertaken using a 5 ¼ inch diameter bit. RC chips have been geologically logged and representative samples stored in chip trays for later validation against assays and general reference.

Samples selected for assay comprise all pegmatite intervals and extends a minimum of 3 meters into the adjacent waste rock, both above and below the pegmatite intersection. Oxidation horizons and water tables are also logged using the Galaxy standard lithological and mineralogical observations codes.

A review of the geological logging and sampling procedures was completed by the Allkem employee set forth herein, while drill rigs were onsite at the time of the various on-site inspections. The Standard Operating Procedures (SOPs) for RC geological logging and sampling have also been reviewed.

Since 2016, sample recovery has been recorded for selected exploration and resource drillholes using a qualitative estimation method. Recovery is routinely accepted to be very good and is reflected in the fact that 98.5% of recorded intervals are noted to have very good recovery at greater than 80%.

7.2.2.4 Diamond Drilling

Diamond drilling has been undertaken sporadically throughout the life of the project, typically drilled for metallurgical and geotechnical purposes in addition to geological requirements. Much of the Galaxy diamond core has been drilled at HQ or PQ size, with several NQ sized diamond drillholes completed in 2016, testing the deepest extents of the pegmatites.

Within the Mt Cattlin Mineral Resource estimate data extent, diamond core samples comprise approximately 3% of all samples.

In total, 46 diamond drillholes have been historically geotechnically logged by either in-house geologists or external geotechnical consultants.

7.2.2.5 Prior to 2016 - Phase 1

Diamond drilling was carried out for metallurgical and geotechnical purposes, in addition to geological purposes, and all Galaxy drill core was either HQ or PQ size. All angled diamond holes drilled by Galaxy were orientated, using either the Ezy-Mark tool or more recently the Reflex ACT electronic orientation tool.

Diamond core drilled by Galaxy was collected from the rig by Galaxy personnel, then orientated and marked with meter marks. The core was then photographed both wet and dry before being geologically logged.

Core was sampled on an average interval of around 1 m to geologically consistent boundaries. Pegmatite intervals and an additional 1 m to 2 m of waste above and below the pegmatite were sampled. Quarter core samples were collected from HQ and PQ core after being cut with a diamond saw, whilst half-core was occasionally sampled.

Prior to cutting, drillholes GXMCGTD01-04 and GXD014-018 were also geotechnically and structurally logged by Geologists from the Geotechnical consultancy Dempers and Seymour Pty Ltd. (Dempers & Seymour, 2008).

7.2.2.6 Post 2016 - Phase 2

Diamond core drilled by Galaxy has been collected from the drill rig by Galaxy personnel, orientated and marked with meter marks. Bottom of drillhole orientation lines have been marked up on the diamond core of angled drillholes, using the orientation marks provided by the drillers. Detailed geological and lithological logging of the diamond core was undertaken before the core has been photographed, both wet and dry, and sampled.

Between 2016 and 2019, core samples have been typically sampled as 1 m half-core samples, however after 2019 diamond core was typically sampled as whole core and the sample length reduced to 0.5 m to keep the weight of the sample to between 2 kg and 4 kg.

The 2021 geotechnical drillholes have been geotechnically logged by an external consultant from Mine Geotech Pty Ltd.

The 2022 geotechnical drillholes have been geotechnically logged by an external sub-consultant and test work completed as reported elsewhere in this document.

7.2.2.7 Grade Control Drilling

All recorded Grade Control (“GC”) drilling is of the RC type. Drillhole depths are predominately in the 12 m to 50 m range in depth.

The vast majority of GC drilling has been undertaken as vertical drillholes since this is the most appropriate orientation for the predominately sub-horizontal pegmatites, however more recent GC programs have incorporated angled drillholes, designed to drill orthogonal to the pegmatite body in line with best practice.

7.2.2.8 Prior to 2016 - Phase 1

Grade control logging practices prior to 2016 were not documented and it has been assumed that these programs were run in accordance with industry standard practices. This GC drilling consisted entirely of RC drilling and was completed by either InterCept Drilling or TDS Drilling.

7.2.2.9 Post 2016 - Phase 2

After 2017, grade control practices have largely been in line with the routine resource development and exploration drilling practices employed by Galaxy. Logging templates and logging codes are consistent across all groups with some differences in Quality control procedures which are documented in Chapter 11. Cone splitters have been in use throughout all GC drilling on site.

To aid ore categorization for mining and processing, the lithium mineralization has been categorized by mineralogy and color during logging. Spodumene abundance has been separated into the color categories dark green, medium green, green, pink, and white. Lepidolite abundance has been logged separately, while the presence of holmquistite, a lithium bearing waste mineral, and cookeite, a green altered spodumene with low-lithium content, have been individually recorded.

GC drillhole spacing has been variable over time ranging from 10 m by 10 m and 15 m by 15 m patterns, in the early years.

After 2018, the GC drillhole spacing increased to 20 m x 20 m in the majority of areas, however some areas of complex geology have been drilled at 10 m by 15 m or 10 m by 10 m in order to obtain more close-spaced geological information for mining (Figure 7-9).

At the end of 2022, the drill program had infilled earlier drilling to a 40 x 40 m spacing, with minor 20 x 20 m spacing in the undepleted parts of the SW zone.

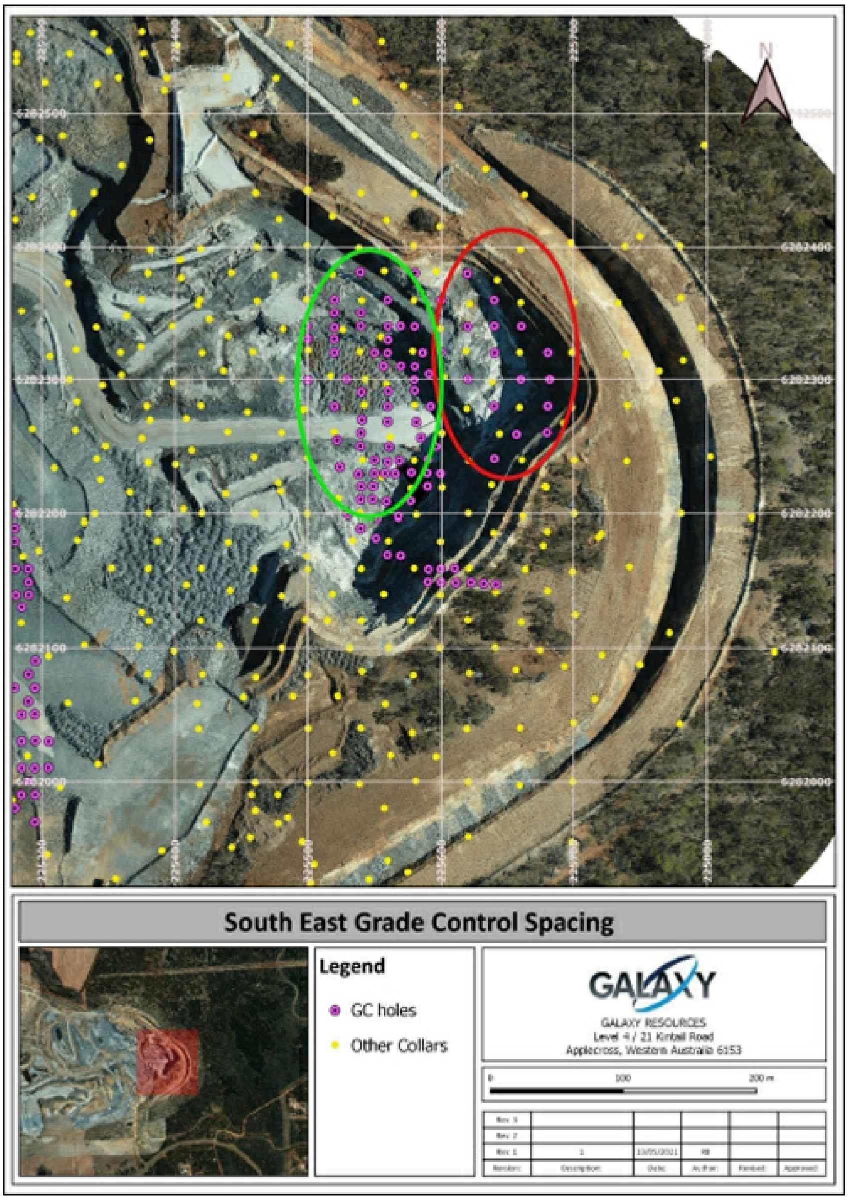


Figure 7-9 - Map of Variable Grade Control Drillhole Spacing in the SE Pit.

To June 2023, 105 new vertical grade control drillholes were completed for 6,457 m, post the 2022 MRE estimate, to reduce data spacing to approximately 20 x 20 m spacing to support operational ore selectively and material dispatch.

7.3 Hydrological Drilling and Sampling

Prior to 2018, Galaxy had completed 32 water bores for 2,712m meters of vertical drilling related to water bores, water table monitoring of tails storage facilities and or water quality monitoring.

In 2022 a further 9 vertical monitoring bores for 900m where developed. Groundwater at Mt Cattlin is hyper-saline and developed in an extensive fracture controlled un-confined aquifer. Limited proportions of this are treated by reverse osmosis to potable water standards and subject to regular regulatory checks.

7.4 Geotechnical Drilling

A geotechnical assessment for the NW Stage expansion was undertaken as part of the Feasibility Study. The geotechnical assessment evaluates the potential for slope instabilities and derives slope design parameter recommendations for the proposed open pit mining of the NW Stage 4 pit at Mt Cattlin.

A geotechnical drilling program was undertaken to investigate ground conditions specific to the NW Stage 4 cutback. In addition, a geotechnical material properties testing program was designed to capture information pertinent to characterizing and understanding the mechanical behavior of the different materials expected to be encountered.

A total of three dedicated geotechnical diamond drill holes, totaling 651 m, were drilled in the vicinity of the Stage 4 pit walls as seen in Figure 7-10 (which used a preliminary version of the Stage 4 design for drillhole planning) with hole details listed in Table 7-3. Detailed geotechnical data, including rock mass and structure characterization, and oriented structure data were collected from these drill holes and used in the analysis. In addition to these holes, photogrammetric modelling of the current pit, structure digitization, in-pit mapping and data from previous studies was utilized.

More details on drilling, discussion on testwork, and interpretation of geotechnical parameters is provided in Chapter 12.3 Pit Optimization and 13.4 Mine Design.

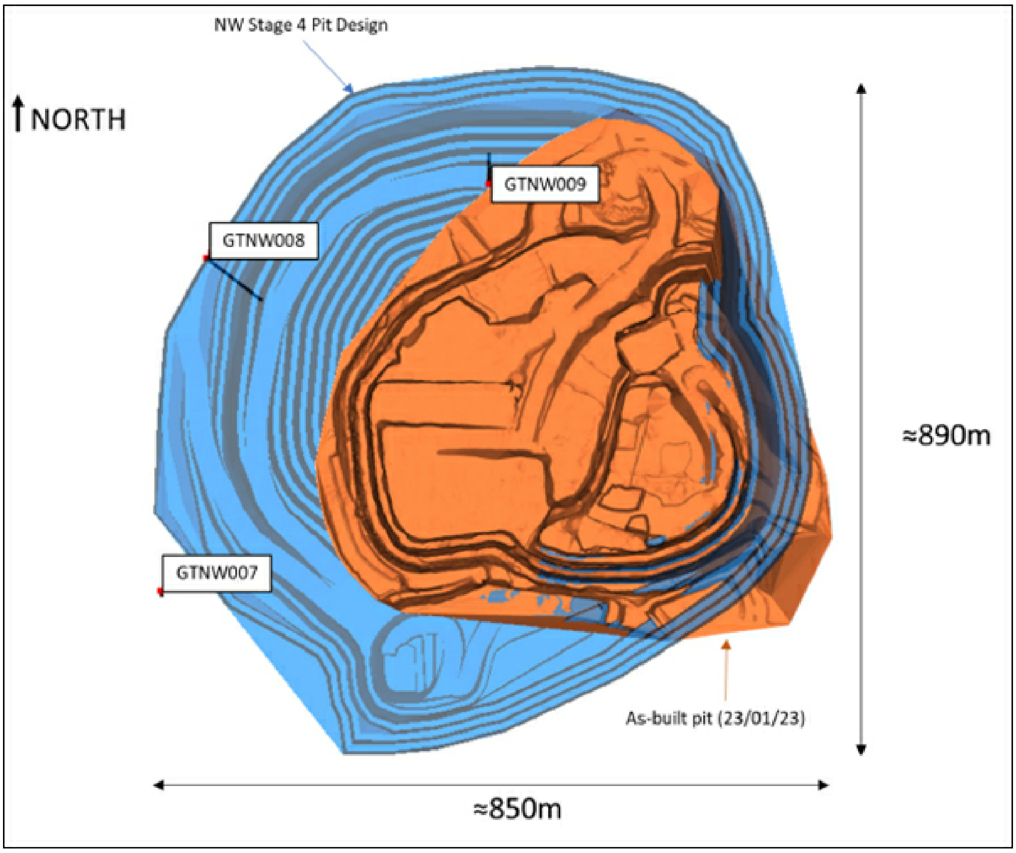


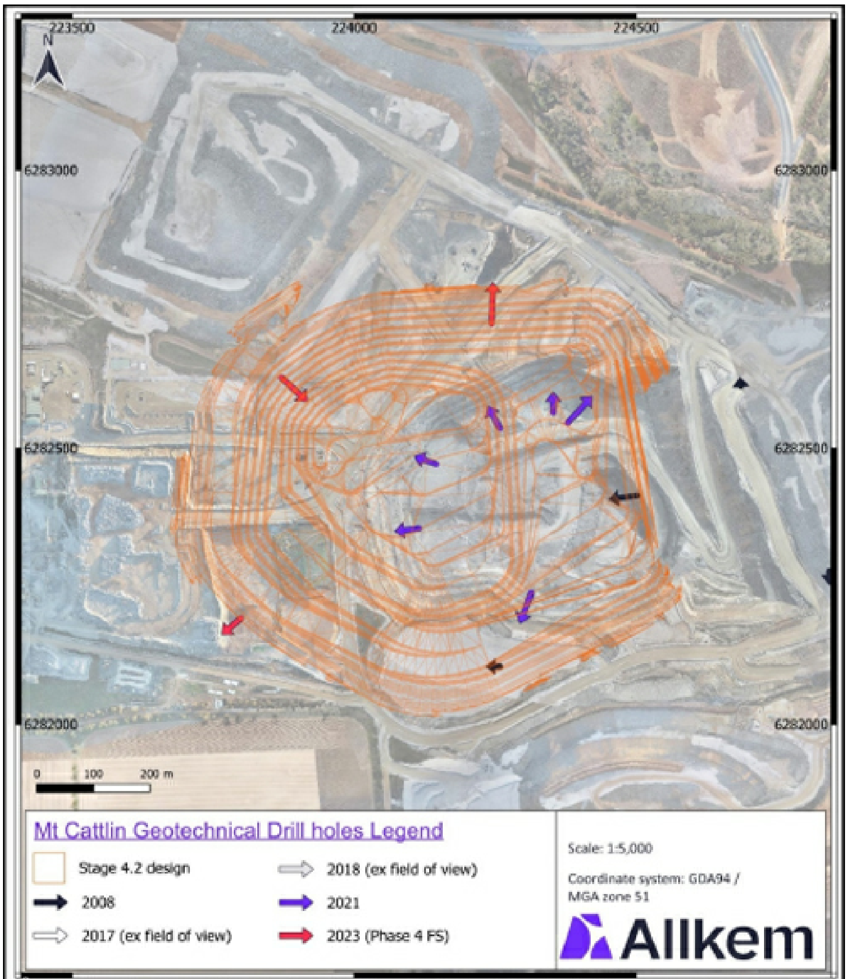
Figure 7-10 - Plan view of Mt Cattlin, with the location of the geotechnical drill holes and basic pit dimensions.

Table 7-3 - Summary of the dedicated geotechnical diamond drill holes used for the project.

DHID	X	Y	Z	Depth1	Dip	Dip-Dir
GTNW007	223,799	6,282,192	271	200	-78	229
GTNW008	223,861	6,282,628	270	249	-75	133
GTNW009	224,231	6,282,724	260	202	-70	2

[1]Downhole depth.

Figure 7-11 below, including table, summarizes the geotechnical drilling phases by year highlighting recent holes noted in the geotechnical study for the Stage 4 feasibility study.



Hole ID	Depth	Year	MGA94_51 E	MGA94_51 N	Elevation	Dip	Azimuth
GXMCGTD01	50.00	2008	224259	6282105	262	-59.14	271
GXMCGTD02	115.00	2008	224503	6282414	255	-63.13	262
GXMCGTD03	30.30	2008	224685	6282612	248	-60.09	355
GXMCGTD04	50.00	2008	224842	6282278	243	-60.00	180
NEGEO002	60.70	2017	225220	6282560	237	-70.00	360
NEGEO001	61.91	2017	225180	6282561	237	-70.00	360
DIV-BH01	24.70	2018	225334	6282708	246	-70.00	132
DIV-BH02	35.00	2018	225782	6282314	248	-70.00	246
GTNW04	90.30	2021	224314	6282238	262	-50.00	200

Hole ID	Depth	Year	MGA94_51 E	MGA94_51 N	Elevation	Dip	Azimuth
GTNW01	153.40	2021	224378	6282546	256	-64.83	42
GTNW02	135.60	2021	224258	6282536	265	-70.22	332
GTNW03	105.55	2021	224115	6282355	269	-65.72	263
GTNW05B	141.60	2021	224353	6282565	257	-75.00	0
GTNW06	120.10	2021	224146	6282471	268	-69.91	290
GTNW007	200.00	2023	223799	6282192	269	-77.06	229
GTNW008	249.00	2023	223871	6282627	268	-75.36	133
GTNW009	201.70	2023	224244	6282725	259	-69.17	2

Figure 7-11 - Summary of the geotechnical drilling phases by year, highlighting recent holes.

7.5 Survey Grid Details

All the location data presented in this report has been supplied by Galaxy in MGA94 Zone 51 projection coordinates, based upon the GDA94, Geodetic Datum of Australia, with elevations relative to the Australian Height Datum (“AHD”).

7.6 Drillhole Collar Surveys

Drillhole collars from companies prior to Galaxy were surveyed by various companies. Elevations were not available for some of the historical drilling, have been estimated from an accurate surface elevation model for use in the corporate drillhole database.

Since 2008, all planned drill collars have been pegged in the field using a handheld GPS. After drilling, collars have been routinely surveyed using more accurate techniques.

In 2021 and 2022 collars were pegged by Mine Site surveyors using RTK precision survey equipment.

7.6.1 Prior to 2016 - Phase 1

Collars from the 2008 Galaxy RC and diamond drill programs were picked up by Cardno Spectrum Survey, using a Real Time Kinematic (“RTK”) GPS instrument, with accuracy to ±0.025 m.

From 2008 to February 2010, collar surveying was completed by Dave MacMahon Surveys Pty Ltd, using an RTK GPS instrument, with an accuracy to +/- 50 mm.

From February 2010 to closure, all resource drilling collars were surveyed by Galaxy survey staff from the Mt Cattlin operation, using a Trimble R6 GPS system which is accurate to +/- 20 mm or an RTK GPS instrument.

7.6.2 Post 2016 - Phase 2

Once Mt Cattlin reopened in 2016, all drillhole collars have been surveyed by Galaxy Survey personnel exclusively, using either a Trimble R6 GPS system, which is accurate to +/- 20 mm or an RTK GPS accurate to +/- 3 mm.

Galaxy’s exploration drillhole collars were typically surveyed with Hand-Held GPS or DGPS units, with accuracies of +/- 10 m and +/- 50 cm, respectively.

All 2021-2013 exploration and development drillholes have been surveyed by an on-site mine surveyor using an RTK GPS upon request by the Exploration Manager. Detailed topography by 3D photogrammetry was flown by drone aerial survey to support collar and site landform elevation determination by Rocketmine WA Pty Ltd in February 2023.

7.7 Downhole Surveys

Most resource drillholes at Mt Cattlin are vertical and relatively shallow, with an average depth of 46 m. Within the resource modelling export extent, 3,480 drillholes have no recorded downhole surveys, of which 100 drillholes have a collar dip between -85° and -53°.

7.7.1 Prior to 2016 - Phase 1

During 2009 and early 2010, Surtron Technologies Australia Pty Ltd of Welshpool completed downhole surveying of selected RC and DD drillholes to investigate drillhole deviation. The program surveyed a total of 71 drillholes using an electronic multi-shot instrument. As a cross-check on the electronic multi-shot surveys, 25 of the same drillholes were also surveyed with a gyroscope. The investigation concluded there was minimal deviation to a depth of 50 m, with the results being generally within 2 m horizontally of the planned location at the bottom of drillhole. At depths greater than 100 m, drillhole deviation was seen to increase up to 4 m horizontally. The outcome of the project was the recommendation that downhole surveying continue to be used in all future drilling programs.

The majority of drillholes greater than 100 m in depth, and all Galaxy DD drillholes within the resource modelling export extent were surveyed using either a multi-shot instrument or gyroscope.

7.7.2 Post 2016 - Phase 2

Following the recommencement of activities at Mt Cattlin in 2016, the majority of inclined drillholes, other than GC drillholes, have been downhole surveyed by either a multi-shot instrument or gyroscope, undertaken by the respective drilling companies.

The majority of drillholes in the Northwest Area (NW) drilled since 2016 have been gyroscopically surveyed by Gyro Australia, Kinetic Surveys, or the relevant drilling company.

In 2022 Devicloud methodologies were used for all the RC drilling, while Reflex downhole tools were used in diamond and RC pre-collar/diamond hole drillholes, by the relevant drilling company.

No downhole surveying has been undertaken in GC drillholes, due to their short length.

7.8 Drillhole Data and Database

The drillhole dataset within the Mineral Resource estimate extents contains 3,956 drillholes for a total of 181,895.45 m. Summary drillhole details have been provided for all drilling inside the resource limits in Table 7-4 and for all other Mt Cattlin tenements in Table 7-5.

Table 7-4 - Summary drillhole data within the resource extents.

Hole Type	Avg (m)	Count	Total (m)
RC	79	2,825	223,197
RABR	56	5651	3,131
DDH	87	9697	8,319
RC_DD	115	4718	5,390
PC	**22**	**120**	**2,627**

Table 7-5 - Summary drillhole data for all Mt Cattlin tenements.

Hole Type	Avg (m)	Count	Total (m)
RC	81	494	40,037
RAB	23	112	2,575
DDH	63	63	5,971
RC_DDT	97	9	874

7.8.1 Drillhole database

Prior to 2017, drillhole data was collated and stored in a Microsoft Access Database and later in a Microsoft SQL database as a Micromine GBIS database.

In 2017, a new Microsoft SQL database was built using the Maxwell Geoservices (Maxwell) DataShed database and associated software. The compilation was performed and managed by Maxwell until January 2019 when Galaxy employed an in-house database administrator.

From 2017 onwards, field geological logging data has been predominantly captured using the Maxwell LogChief logging program, which is then transferred directly to the main SQL database. LogChief logging templates are consistent between exploration and GC drilling programs, apart from quality control sampling for which there are slightly differing methodologies.

Site surveyed collar pickups and drillhole downhole survey data have been loaded and validated by an individual data file for each drillhole started into the offsite database by the database administrator.

8. SAMPLE PREPARATION, ANALYSES AND SECURITY

Drilling from 2001 onwards has been undertaken by Galaxy however, a prolonged period of care and maintenance from 2013 to 2017 has led to two distinct phases of exploration, resource development and grade control drilling. The historic drillholes, included in the drillhole database and utilized in current and past Mineral Resource estimations, have drilling, sampling and assaying techniques undertaken by several different entities and various representatives within each entity over time. The continuity of industry-standard techniques and procedures prevailing at that time cannot be confirmed and is assumed. To this end, information on the years before 2016 has been sourced from the previous Galaxy Resources technical report published in 2011 and compiled by Spiers et al (2011). The historical drilling phase is defined as Phase 1.

At Mt Cattlin, the host pegmatite is visually distinguishable from the surrounding country rock; therefore, sampling is taken selectively within RC chips and diamond core. Currently, 3 m of waste rock is sampled adjacent to the pegmatite to characterize the waste likely to be encountered during mining.

8.1 On-site Sample Preparation Methods and Security

8.1.1 Phase 1 - Sampling Methods and Approach

Historical drilling was completed using a combination of reverse circulation (RC) and diamond drilling (DD) techniques.

8.1.1.1 Phase 1 - RC Sampling Protocols

RC samples were split and collected in calico bags from a splitter at the drill rig. Sample bags were individually numbered, and sample numbers and drillhole details were recorded at the drillhole site. Dispatched samples were inserted into plastic bags, generally five calico bags per plastic bag, and sealed with cable ties.

The plastic bags were dispatched directly from Mt Cattlin to Esperance Freight Line's ("EFL") Ravensthorpe depot by the Field Supervisor or Geologist and transported by EFL to SGS Laboratories ("SGS"), WA. Upon receipt of the samples, SGS sorted and reconciled the samples compared to the provided paperwork. Reconciliation advice was provided to Galaxy detailing any missing or extra samples.

All sampling was conducted under the supervision of Galaxy senior personnel, either the Exploration Manager or Senior Geologist.

All drill core and RC samples were geologically and structurally logged, sampled, photographed, and stored at the core farm at Mt Cattlin or a storage facility in Perth.

Umpire check samples were submitted to Ultratrace and Genalysis Laboratories in Perth, WA.

8.1.1.2 Phase 1 - DD Sampling Protocols

Diamond drilling was carried out mainly for metallurgical, geotechnical, and geological purposes. The drill core size was typically HQ or PQ diameter. All angled diamond holes drilled by Galaxy were orientated using either an Ezy-Mark tool or, more recently, the Reflex ACT electronic orientation tool.

The drill core was collected from the rig site by Galaxy personnel and was orientated and meter marked. The core was then photographed both wet and dry before geological logging.

The drill core was sampled at an average interval of approximately 1 m to geologically consistent boundaries (pegmatite intervals), and an additional 1 m to 2 m of waste above and below the pegmatite was sampled. Samples collected from the drill core were predominantly quarter core with occasional half-core intervals.

Before cutting, drillholes GXMCGTD01-04 and GXD014-018 were also geotechnically and structurally logged by geologists from the geotechnical consultancy (Dempers & Seymour, 2008).

8.1.2 Phase 2 - Sampling Methods and Approach

Phase 2 involves Galaxy drilling from 2016 to current. A combination of RC and DD drilling methods has been utilized during the recent drilling programs.

8.1.2.1 Phase 2 RC Sampling Protocols

Most drilling at Mt Cattlin has used RC drilling methods, with the diamond drilling intervals assayed for Li_2O representing 2.3% of the drillhole samples dataset.

RC samples have been collected from the cyclone at the drill rig using a cone splitter that feeds the sample into two calico bags, primary Sample A, and a duplicate Sample B (for QAQC or re-assaying purposes). Drillhole and depth information has been captured on the exterior of the sample bags.

The primary and QAQC samples selected for analysis have been placed into a second uniquely pre-numbered calico bag, ensuring all samples are double bagged. These samples are then placed into poly weave bags, typically 7-10 per bag, with information on the contents written on the outside. The poly weave bags are transported to the core yard and placed in large bulk bags, typically containing 200 samples. Each bulk bag has only one (1) sample submission, and batches are not split between bags. The bulk bags are dispatched by freight truck to the assay laboratory. Upon arrival at the assay laboratory, the samples are sorted, and reconciliation advice is provided to Galaxy detailing any missing or extra samples.

All sampling has been carried out under the direction of Galaxy senior personnel comprising either the Exploration Manager or Senior Geologist.

The B Samples not utilized for assay analysis are stored in the sample farm for later analysis if further or repeat analysis is required.

8.1.2.2 Phase 2 DD Sampling Protocols

Samples have been taken to the pegmatite host lithological boundaries, and sample intervals do not cross these boundaries. Mineralization sample intervals vary from a minimum of 0.25 m to a maximum of 1.25 m, but sample interval lengths are adjusted to respect geology. Three meters of non-mineralized sample intervals are taken on either side of the pegmatite horizon.

Between 2016 and mid-2018, diamond drill core samples were sawn, predominately into half core but with some into quarter core. Since 2019, diamond sampling has been whole-core and used primarily for metallurgical testing.

Sample information has been recorded onto the field Toughbook laptop logging system using LogChief logging software which controls data input via a pick list, ensuring adherence to logging legends. The diamond drilling sampling information has been synced directly to the database.

Upon arrival at the assay laboratory, the samples are sorted, and reconciliation advice is provided to Galaxy detailing any missing or extra samples. The Geologist is responsible for the secure shipment to the laboratory of the samples at all times. All sampling has been carried out under the supervision of Galaxy senior personnel comprising either the Exploration Manager or Senior Geologist.

8.2 Laboratory Sample Preparation and Analytical Methods

8.2.1 Phase 1 - Sample Preparation

All samples sent to SGS were sorted, dried, crushed and pulverized to 90% passing 75 µm in a Labtech Essa LM5 pulveriser. Samples weighing over 3.5 kg were riffle split to 50% of the original weight. An approximately 200 g sub-sample was scooped from the entire pulverized sample.

The laboratory stored the sample pulps and coarse reject material. It returned them to Galaxy upon request, only after completing the initial sample analysis, and any additional checks Galaxy may have requested.

8.2.2 Phase 1 - Analytical Methods

Samples from 2007 through to 2012 were analyzed at SGS Laboratories, WA, with check assaying undertaken by Ultratrace and Genalysis Laboratories in WA. Samples were routinely analyzed for Li_2O by 4-Acid Digest with AAS measurement. Samples over the Li_2O upper limit were re-analyzed using method AAS42S.

Additional elements were analyzed from selected diamond core samples including Cs, Rb, Ga, Be, and Nb by digesting samples using 4-Acid Digestion and element concentration determined by Inductively Coupled Plasma Mass Spectrometry ("ICP-MS") method.

SGS undertook routine internal QAQC analyses and reported the internal laboratory pulp duplicate/repeat sample results to Galaxy.

8.2.3 Phase 2 - Sample Preparation and Analytical Methods

Since 2016, three laboratories have been used to analyze samples from Mt Cattlin.

8.2.3.1 SGS Perth, WA (NATA Accreditation 1036)

SGS Perth was initially used to conduct an analysis of samples from a small drilling program consisting of six (6) diamond drillholes. The sample preparation and analytical methods adopted are as follows:

- Diamond drill core samples were crushed to produce less than 3 kg samples which were pulverized to 90% passing 75 µm using an LM5 mill.
- Several methods have been used to determine Li_2O grades including:
- Li_2O analytical technique 4 acid Digest AAS:
    - Samples have been digested using Mixed 4-Acid Digest method with AAS Finish to determine Li_2O concentration, with lower and upper detection limits of 5 ppm and 20,000 ppm, respectively.
    - Li_2O and Ta_2O_5 (also Cs, Nb and Rb) Mixed 4-Acid Digest analytical technique, ICP-MS:
    - Samples have been digested using Mixed 4-Acid Digest method with ICP-MS Finish to determine Li_2O concentration with lower and upper detection limits of 5 ppm and 20,000 ppm respectively.
    - Li_2O and Ta_2O_5 (also Cs, Nb and Rb) Sodium Peroxide Fusion analytical technique:
    - Samples are digested using the sodium peroxide fusion method with ICP-MS Finish to determine Li_2O concentration.
    - Multi-element analysis for Fe_2O_3, K_2O, MgO, Mn, Na_2O, P_2O_5, S, SiO_2, SnO_2, TiO_2, V_2O_5, Nb, Rb, Ta using XRF:

- Samples are fused into glass beads and analyzed for the suite of elements Fe_2O3, K_2O, MgO, Mn, Na_2O, P_2O_5, S, SiO_2, SnO_2, TiO_2, V_2O_5, Nb, Rb and Ta.

8.2.3.2 Intertek Perth WA (NATA Accreditation 3244)

Intertek Perth, WA ("Intertek") was used from 2017 to 2018 for both exploration and grade control sample preparation and analysis. The sample preparation and analysis comprised of:

- RC samples were dried and pulverized in an LM5 to produce less than 3 kg at 85% passing 75 µm. Samples greater than 3 kg were dried and pre-split with a rotary splitting device prior to pulverizing.
- Diamond drill core samples were dried, crushed 10 mm and less than 3 kg pulverized to 85% passing 75 µm using an LM5 mill.
- Li_2O and Ta_2O_5 were analyzed by subjecting samples to sodium peroxide fusion in a zircon crucible with ICP-MS/OES instrument finish.

8.2.3.3 Nagrom Perth WA (ISO9001 certified)

Nagrom Perth WA laboratory ("Nagrom") is the current analytical laboratory and has been used since 2018 for both exploration and grade control drilling programs.

The sample preparation and analytical techniques adopted by Nagrom are as follows:

- RC chips are dried to 105C° and crushed to a nominal top size of 2 mm in a Terminator Jaw crusher. Subsamples up to 3 kg are pulverized in an LM5 mill to 80% passing 75 µm. If samples are greater than 3 kg, they are dried and split with a rotary splitting device before analysis.
- Diamond core is dried, crushed in a Terminator Jaw crusher to top size 6.3 mm, and pulverized in an LM5 mill up to 2.5 kg. If a sample is greater than 2.5 kg, the sample is riffle split after drying to reduce the sample size.
- For resource development drillholes sample pulverization is undertaken using an LM5 fitted with a tungsten carbide bowl to minimize iron contamination. Crushed materials are split to 0.5 kg prior to pulverizing using a stainless-steel riffle splitter.
- The analysis of Li_2O and Ta_2O_5 was undertaken using method ICP004 or ICP005 and was completed as follows:
    - Samples are digested using a sodium peroxide fusion digest in an alumina crucible (ICP004) or zirconium crucible (ICP005),
    - Analysis by ICP-MS/OES.

8.2.3.4 Genalysis/Intertek (NATA Accreditation 3244)

Both Intertek Perth and Intertek Kalgoorlie were used to speed up sample turnaround during 2022-2023:

- RC chips are dried at 105 °C, crushed to nominal top-size of 2 mm in a Boyd or Orbis Jaw crusher (Code CRF01). Samples less than 1.2 kg are pulverized in an LM2 type mill with various bowls depending on the sample mass, at 85% or better passing 75 µm. Samples 1.2 k to 3 kg in a LM5 pulveriser mill at 85% or better passing 75 µm. If the sample mass exceeds 3 kg, the crusher product is split with a rotary splitter prior
- The analysis was completed as follows, the samples were digested in a sodium peroxide fusion within a Ni crucible with a MS, OES finish. The package is FP6-Li/OM19 for 19 elements (Lithium is the OES finish, all others are MS).

8.3 Quality Assurance and Quality Control Procedures

8.3.1 Phase 1 QAQC Procedures

The exact Quality Assurance and Quality Control ("QAQC") methodologies of some of the early protocols are not well documented, however, their approximate frequencies have been provided in Table 8-1.

8.3.2 Phase 2 and later QAQC Procedures

QAQC samples have been submitted routinely into all sample batches sent to the assaying laboratories. Mt Cattlin QAQC protocols have undergone several improvements since 2016. QAQC frequencies since 2017 are provided in Table 8-1 and Table 8-2.

Table 8-1 - Galaxy Phase 2 QC policies by year pre-2022.

Grade Control	2017	2018	2019	2020	2021
STANDARD		approx. 1 in 60 to 70	1 in 25	1 in 25	1 in 25
BLANK		approx. 1 in 60 to 70	1 in 25 (approx.)	1 in 25	1 in 25
DUPLICATE		approx. 1 in 60 to 70	1 in 25	1 in 25	1 in 25
Exploration	**2017**	**2018**	**2019**	**2020**	**2021**
STANDARD	1 in 50	1 in 50	1 in 50	1 in 50	1 in 25
BLANK	1 in 50	1 in 50	1 in 50	1 in 50	1 in 25 or one per mineralised interval minimum
DUPLICATE	1 in 20	1 in 20	1 in 20	1 in 20	1 in 20

Table 8-2 - Galaxy QA-QC by year -2022/33.

Laboratory	Samples	Field Duplicates	Field Duplicate Frequency	Blind CRM	Blind CRM frequency (inc. Filed Duplicates)	Blind Blank (OREAS 27d) (inc. Filed Duplicates)	Blind Blank Frequency	Lab Internal CRM	Grand Total CRM/ BLANKS
Intertek Kalgoorlie	4,794	364	13	287	18	224	23	226	737
Intertek Perth	50	2	25	2	26	-	-	-	2
Nagrom	1,216	77	16	54	24	43	30	140	237
Grand Total	6,060	443	14	343	19	267	24	336	976

For 2022 two laboratories were used, Intertek/Genalysis (Kalgoorlie) and Nagrom (Perth). Overall field duplicate frequency was 1 per 14 samples, blind, 1 per 19 samples and blind blanks 1 per 24 samples, in line with 2021 frequency rates.

8.3.3 Certified Reference Materials

Since 2016, matrix-matched certified reference material ("CRM") supplied by African Mineral Standards ("AMS") has mostly been used in the determination of the underlying accuracy of the laboratory's assaying procedures of exploration and resource development drilling. The CRMs were submitted with routine samples at the frequency indicated in Table 8-3 below, for 2022 drilling.

Table 8-3 - Galaxy QA-QC CRM 2022-3.

LAB	Submitted by Allkem	Lab Standards
Intertek Kalgoorlie	AMIS0339	MAIS0341
	AMIS0340	MAIS0342
	Blink Blank (OREAS 27d)	OREAS 146
	OREAS 147	OREAS 147
	OREAS 148	OREAS 148
	OREAS 750	OREAS 753
	OREAS 751	
Intertek Perth	OREAS 750	
	OREAS 751	
Nagrom	AMIS0339	OREAS 147
	AMIS0340	OREAS 751
	Blink Blank (OREAS 27d)	OREAS 999
	OREAS 148	

Ore Research and Exploration ("OREAS") CRMs were used for monitoring drilling analytical accuracy. The OREAS CRMs used are Li_2O and Ta_2O_5 bearing standards sourced from the Greenbushes mine in WA.

Not all CRM standards utilized are certified for Li_2O analysis via by sodium peroxide fusion. Some of the CRMs were assigned only provisional values by AMS and were not relied on in assessing the analytical laboratory's performance.

8.3.4 CRM Standard Transcription Errors

Since 2016, 376 CRM transcription errors have occurred. Investigations confirmed the errors to be due to the misallocation of CRMs with Blanks. The remaining errors are attributed to either typographic errors or standard swaps.

All transcription errors have been rectified in the database and a record kept for all the remediation actions.

8.3.5 Nagrom Li_2O Results

A total of 237 Li_2O CRMs were submitted with routine samples to Nagrom for analysis, at a rate of approximately one per 24 routine samples. The overall performance of this CRM is considered satisfactory and indicates no significant bias or precision issues with the underlying assays reported by Nagrom.

8.3.6 Nagrom Ta_2O_5 Results

A total of 237 CRMs have been used to monitor the accuracy and precision of Ta_2O_5 of samples submitted to Nagrom for analysis, at an insertion rate of one per 24 routine samples.

The overall performance of the CRM is considered satisfactory, revealing no significant issues with the bias and precision of the underlying Ta_2O_5 assays reported.

8.3.7 Intertek Li_2O Results

A total of 739 CRMs have been submitted with routine samples over the period to monitor the accuracy of reported Li_2O results by Intertek. CRMs were submitted at a rate of one per 23 routine samples. Analysis of QAQC results indicates the satisfactory performance of Intertek laboratory with no significant grade bias underlying the assays.

8.3.8 Intertek Ta_2O_5 Results

To assess the accuracy of the reported Ta_2O_5 assays from Intertek, 739 CRMs were included with routine samples at a rate of one CRM per 23 routine samples. Analysis of the results received indicated satisfactory standard performance revealing no significant issues with the accuracy underlying the Ta_2O_5 assays.

8.3.9 SGS Li_2O Results - pre-2022

A total of 60 CRMs have been used to monitor the accuracy of the SGS laboratory over the period. The CRMs were inserted at a rate of approximately one CRM per 9 routine samples. All but 13 of the CRM's returned assays within the expected range of ± thrice the standard deviation of the certified CRM value.

The QPs consider the performance as acceptable as the risk to the Mineral Resource Estimate is minimal, since SGS has only been used for the analysis of only six (6) drillholes over a short period of time.

8.3.10 SGS Ta_2O_5 Results

A total of 60 CRM was submitted with routine samples for the analysis of Ta_2O_5 at SGS at a rate of approximately one (1) CRM per nine (9) routine samples.

Like the Li_2O performance, all but 17 of the CRM's returned values that were outside the expected range.

8.4 Field Duplicates

8.4.1 Field Duplicates - RC

The Sample B samples have been submitted as blind field duplicates from RC drillholes, at a rate of approximately one (1) per14 samples. During 2022 drilling, a total of 443 field duplicates were submitted with routine RC samples for assaying.

Analysis of field duplicate samples indicates satisfactory agreement between the original assay and the duplicate assay.

8.4.2 Field Duplicates - DD

Blind field duplicates are collected from diamond drillholes as quarter core samples and submitted at a rate of approximately one (1) per 16 routine samples. A total of 77 diamond core blind field duplicates were submitted for analysis during last phase of drilling.

Analysis of the diamond core field duplicate samples indicates that the original assay and the duplicate assay are in acceptable agreement.

8.5 Field Blanks

Two different blanks have been included in batches submitted to Intertek to monitor contamination during sample preparation. From 2016 to December 2022, a coarse blank of unknown source and Li_2O content was used, along with certified OREAS and AMIS coarse blanks. Two OREAS coarse blanks certified for 4 acid digests have been used at Mt Cattlin since April 2018.

Assays returned for blanks are generally satisfactory indicating no routine contamination during the sample preparation at any of the participating laboratories.

8.6 Bulk Density Determinations

Most drilling at Mt Cattlin has been completed using RC drilling which limits the opportunity to complete bulk density measurements. Bulk density determinations have been completed on the available diamond core to determine values using the water immersion method for use in Mineral Resource estimates.

The selection of bulk density samples is determined by the logging Geologist and the interval selected for bulk density measurement is dictated by material types. The diamond drill core is competent and does not display evidence of voids or vugs.

The method used for determining the bulk densities was the water immersion method. A coherent segment of diamond core, around 10 cm in length and representative of the meter interval, was selected for analysis. The weight of the segment of core was measured dry in air, and then measured when submerged in water. The bulk density values have been calculated using the formula from this data:

$$BD = \frac{Wair}{(Wair - Wwater)}$$

Where W_{air} = dry weight in air and W_{water} = weight submerged in water

Samples in the weathered zones were wrapped in plastic wrap before being analyzed.

8.6.1 Site Bulk Density Determinations

Several phases of bulk density determinations have been undertaken in the past. Five density determinations were completed in 2001 and 2002 on un-waxed 10 cm lengths of HQ diamond core dried at 110°C for 2 hours, using the water immersion method. The samples were all from Ta_2O_5 mineralised pegmatite intervals.

In 2009, 270 bulk density measurements were completed on the diamond core from each meter of diamond drillholes GXMCMTD01 to GXMCMTD05, and GXD009 to GXD013. Using this data, Tornatora (2009) recommended values of 2.05 kg/m³ for soil/weathered material, down to a depth from 0 m to

7 m, (in the absence of a regolith model), 2.65 kg/m³ for fresh pegmatite, and 2.8 kg/m³ for fresh un-mineralised material.

During 2009/2010 bulk density measurements were completed on every meter of all additionally available diamond drill core, including the recently completed diamond drillholes. This work included drillholes GXD01 to GXD06, GXMCGTD01 to GXMCGTD04, and GXD014 to GXD018, and the data was added to the existing database of 270 readings, for a total of 963 measurements.

Results from the combined bulk density determination programs for the various regolith units and main rock types are summarized in Table 8-4.

Table 8-4 - Bulk density details by regolith and lithology.

Regolith	Rock Type	Min Density (kg/m³)	Max Density (kg/m³)	Average Density (kg/m³)	Number of Readings	Approximate depth range of geological unit
TPD+SAP	All	1.745	3.018	2.098	67	0 m - 7 m
FR	Pegmatite	2.427	3.082	2.693	369	>10 m
FR	Waste	2.419	3.105	2.892	467	>10 m

Regolith type descriptions:

TPD = Transported - transported surficial material.
SAP = Saprolite - in situ material, mostly weathered to clay minerals, (generally after basalt) FR = Fresh - un-weathered, can include some staining along fractures

8.6.2 Nagrom Bulk Density Determinations

Two (2) drillholes, NWRC064D and NWRC067D drilled in 2018, were submitted to Nagrom and tested using the Specific Gravity by hydrostatic weighing method - uncoated. The results of 95 pegmatite samples resulted in an average of 2.716 kg/m³. One single basalt reading returned a result of 2.84 kg/m³.

Non-mineralized lithology densities ranged from an average of 2.76 kg/m³ for felsic and intermediate volcanic rock to 3.00 kg/m³ for the Proterozoic dolerite. The predominant lithologies in the western portion of the orebody are basalt and dolerite, which average 2.88 kg/m³ and 2.94 kg/m³ respectively, while tonalite, with a bulk density of 2.82 kg/m³ is more common in the eastern portion of the project area.

8.7 Adequacy of Sample Preparation and Analytical Procedures

The sample preparation methods, security, assaying and QAQC control measures are appropriate for the type and style of mineralization at Mt Cattlin. The assay QAQC results, when taken together, demonstrates sufficient accuracy and precision for use in estimating Mineral Resource. Sampling and analysis have occurred within a chain of custody from the drill site to site dispatch and to laboratory receipt.

The historic sampling, assaying and QAQC data, which is related to a small portion of the data within the drillhole database, has not been reviewed in detail or verified since a large portion cannot be located. This is not considered this a risk to the Mineral Resource or operation since most areas with large volumes of historical drillholes have already been mined.

9. DATA VERIFICATION

9.1 Data Verification Procedures Used by the Qualified Person.

An inspection of the property was made between July 11- 13, 2022, September 21-23, 2022, and December 12-14, 2022. This Chapter summarizes the observations made, plus associated recommendations.

9.1.1 Geological Data Review

The following prior activities have been completed at Mt Cattlin:

- Verified seven (7) NW Area drillhole collars on the surface against the database entries, using the Allkem Survey department RTK GPS,
- Checked approximately 6% of the NW Area database entries against the csv and PDF certificates received directly from the assay laboratory, with no errors identified,
- Performed a review of the database entries against the downhole surveys noted in the driller's logs and provided by external surveying companies, with three (3) errors identified in one (1) drillhole,
- Undertook check-logging to confirm database entries in 11 NW Area drillholes, with no errors identified,
- Observed sample storage and chain-of-custody procedures,
- Discussed the geological interpretation with key people on site.
- Maintained an active drilling tracker during the 2022 program that monitored the progress of drilling, logging and assay dispatch and receipt.

A review of the geological logging and sampling procedures was not completed since no drill rigs were onsite at the time of the inspection. However, the Standard Operating Procedures (SOPs) for RC geological logging, drillhole establishment and sampling have been reviewed.

The data verification checks were completed on pre-2022 drillholes located in the NW Area since the majority of drillholes located in the other portions of the deposit have been impacted by surface disturbance and/or mining.

The following observations have been made:

- Checking the collar coordinates between the RTK GPS resurvey collar locations and the database entries did not reveal any inconsistencies, with all results within 10 cm of the original survey, (Table 9-1),
- Cross-checking of the assays between the database and original PDF certificates did not reveal any database errors, however the source data for one drillhole could not be located, (Table 9-2),

- Checking the downhole survey source data files against the database was completed on five of the eleven selected drillholes, since the source data files for several drillholes could not be located or the drillhole had not been downhole surveyed. The audit identified three inconsistencies in one drillhole (Table 9-3).
- Drillhole RC chip trays were reviewed for logging in the 11 NW Area audit drillholes. No issues were identified (Table 9-4).

Table 9-1 - NW Area collar resurvey results.

Database				Re-survey				Difference (m)			
Hole ID	East	North	RL	Hole ID	East	North	RL	Hole ID	East	North	RL
NWRC085	224,120.20	6,282,340.12	268.191	NWRC085	224,120.21	6,282,340.17	268.26	NWRC085	-0.01	-0.05	-0.07
NWRC091	224,207.66	6,282,399.09	267.894	NWRC091	224,207.60	6,282,399.02	267.95	NWRC091	0.05	0.07	-0.06
NWRC100	224,219.87	6,282,518.49	266.851	NWRC100	224,219.85	6,282,518.55	266.90	NWRC100	0.02	-0.07	-0.05
NWRC101	224,222.25	6,282,578.99	265.351	NWRC101	224,222.27	6,282,579.04	265.42	NWRC101	-0.02	-0.05	-0.07
NWRC106	224,202.12	6,282,487.56	267.775	NWRC106	224,202.13	6,282,487.59	267.73	NWRC106	0.00	-0.02	0.04
NWRC108	224,356.81	6,282,465.85	260.381	NWRC108	224,356.87	6,282,465.92	260.45	NWRC108	-0.05	-0.08	-0.07
NWST003	223,898.98	6,282,834.78	259.16	NWST003	223,898.98	6,282,834.82	259.16	NWST003	-0.01	-0.04	0.00

Table 9-2 - Drillhole assay audit results.

Hole ID	Hole Type	Max Depth	Date Started	Date Completed	Assay data status	Audit Outcome
GX1097	RC	135	24/02/2010	24/02/2010	supplied	No errors identified
GX1113	RC	120	20/04/2010	20/04/2010	source file could not be located	NA
NWST012	RC	84	19/09/2017	19/09/2017	supplied	No errors identified
NWST003	RC	84	23/09/2017	24/09/2017	supplied	No errors identified
NWRC022	RC	225	26/08/2018	28/08/2018	supplied	No errors identified
NWRC051	RC	180	5/10/2018	6/10/2018	supplied	No errors identified
NWRC066	RC	186	20/10/2018	22/10/2018	supplied	No errors identified
NWRC071	RC	222	30/10/2018	31/10/2018	supplied	No errors identified
NWRC085	RC	228	5/02/2019	6/02/2019	supplied	No errors identified
NWRC100	RC	130	23/02/2021	23/02/2021	supplied	No errors identified
NWRC108	RC	170	8/03/2021	8/03/2021	supplied	No errors identified

Table 9-3 - Drillhole downhole survey audit results.

Hole ID	Hole Type	Max Depth	Date Started	Date Completed	Survey Data Status	Audit Outcome
GX1097	RC	135	24/02/2010	24/02/2010	source file could not be located	NA
GX1113	RC	120	20/04/2010	20/04/2010	source file could not be located	NA
NWST012	RC	84	19/09/2017	19/09/2017	source file could not be located	NA
NWST003	RC	84	23/09/2017	24/09/2017	source file could not be located	NA
NWRC022	RC	225	26/08/2018	28/08/2018	supplied	No errors identified
NWRC051	RC	180	5/10/2018	6/10/2018	supplied	3 errors identified
NWRC066	RC	186	20/10/2018	22/10/2018	source file could not be located	NA
NWRC071	RC	222	30/10/2018	31/10/2018	supplied	No errors identified
NWRC085	RC	228	5/02/2019	6/02/2019	not surveyed	NA
NWRC100	RC	130	23/02/2021	23/02/2021	supplied	No errors identified
NWRC108	RC	170	8/03/2021	8/03/2021	supplied	No errors identified

Table 9-4 - Drillhole geological logging audit results.

Hole ID	Chip Trays Present	Chips Match Database Geology
GX1097	yes	yes
GX1113	yes	yes
NWRC022	yes	yes
NWRC051	yes	yes
NWRC066	yes	yes
NWRC071	yes	yes
NWRC085	yes	yes
NWRC100	yes	yes
NWRC108	yes	yes
NWST003	yes	yes
NWST012	yes	yes

9.1.2 Adequacy of the Data Used for the Purpose of the Technical Report Summary

The geological data used to inform the Mt Cattlin Mineral Resource estimate was largely collected, validated, and stored in line with industry best practice as defined in the CIM Mineral Exploration Best Practice Guidelines (CIM, 2018) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (CIM, 2019), with some minor issues identified, which are not considered material. It is of the opinion of the Albert Thamm (QP) that the CIM best practice guidelines comply with the S-K 1300 regulations. Therefore, the data is deemed suitable for use in the estimation of Mineral Resources.

10. MINERAL PROCESSING AND METALLURGICAL TESTING

10.1 Processing Plant

The Mt Cattlin processing plant was originally designed and constructed based on the Definitive Feasibility Study metallurgical test work completed in 2009. The constructed plant effectively processed mined ore to produce saleable spodumene product until entering a period of care and maintenance due to depressed lithium prices in 2013. Following the recommencement of operations in 2016, the Mt Cattlin operation has demonstrated the ability to produce saleable spodumene concentrate from fresh pegmatite ore at recoveries in the range of 55-60% as per Table 10-1 Periods of lower plant recoveries have been attributable to processing weathered mineralization from the early phases of the SW pit in (Q3/4 2018) and processing predominantly contaminated ore stockpiles through the majority of 2022 prior to processing fresh ore from the NW pit in late 2022.

Table 10-1 - Mt Cattlin Spodumene Concentrate Production and Recovery Data.

Period	Concentrate Tonnes	Grade Li_2O	Recovery %
CY 2017	155,679	5.7	55.7
CY 2018	156,689	5.8	50.2
CY 2019	191,660	5.9	55.3
CY 2020	108,658	5.9	54.3
CY 2021	230,065	5.7	59.8
CY 2022	107,417	5.3	47.6
Q1, 2023	38,915	5.3	60.0

Since 2017, several metallurgical test work programs and plant optimization projects have been undertaken to optimize plant throughput, recovery, and product quality. These testwork programs are broken into two groups in the remainder of this Chapter. Firstly, programs supporting plant optimization programs, and secondly programs supporting the recovery forecasts used in the NW pit area for the Stage 4 pit reserves and economics.

10.2 Plant Optimization Projects

10.2.1 Yield Optimization Project

In 2017, heavy liquid separation (HLS) test work was initiated at the Nagrom commercial laboratory to study the potential to recover spodumene from the secondary DMS floats reject material through additional liberation and reprocessing of fines, which is where the majority of spodumene losses occur. Samples of crushed ore and secondary floats were collected from the plant in July 2017 and submitted to Nagrom for testing. HLS test work was performed on the +5.6 mm and 1 mm to 5.6 mm fractions of the crushed ore, the secondary floats material as received and after further crushing to 0.5 mm to 4.0 mm and 1.7 mm to 3.0 mm size fractions. The HLS results are shown in Figure 10-1 and demonstrate the improvement in recovery from the secondary floats material after crushing.

The re-liberation circuit was consequently implemented in the processing plant in 2018 and featured a Vertical Shaft Impactor (VSI) crusher to crush the secondary floats stream and recycle the resulting material through the DMS circuits. This circuit contributes up to 2-3% additional plant recovery.

The second component to the yield optimization project (YOP) was the addition of the ultrafine dense media separation circuit (UFDMS), to recover material below -1.8 mm previously reporting to tailings after the Tantalite recovery process. Since commissioning, the UFDMS has run when operationally beneficial adding approximately a further 2-3% recovery overall, often at slightly lower product grades to the main DMS at approximately 4.5% Li_2O%. The UFDMS circuit provides most benefit when the plant is processing clean, high-grade ore, and is less effective on basalt contaminated low-grade plant feed.

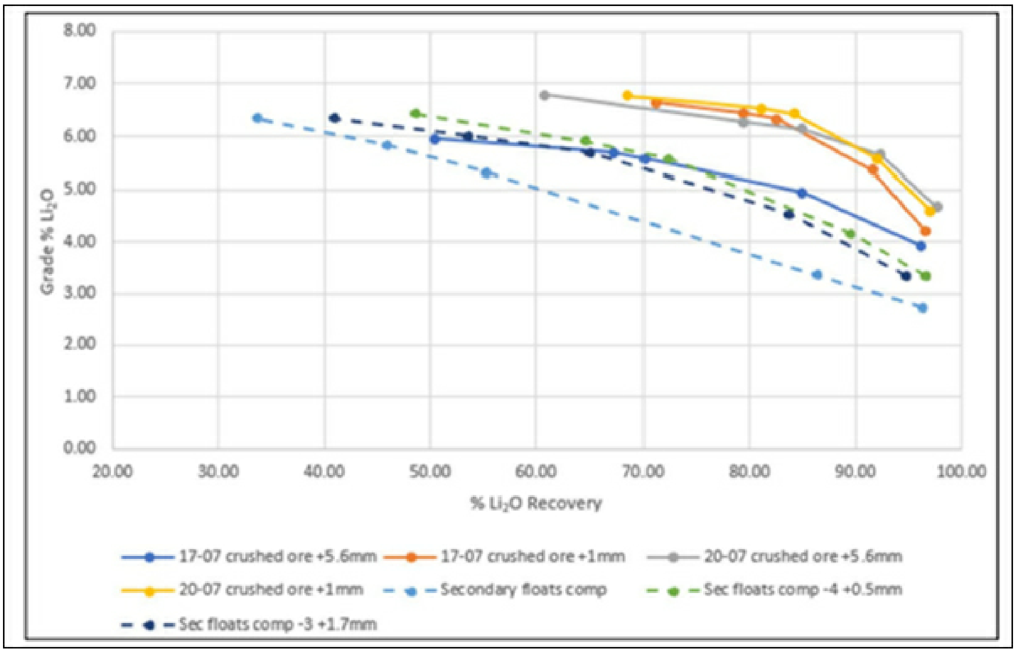


Figure 10-1 - 2017 HLS Test Work Results.

10.2.2 Recovery Improvement Project

In early 2020 it was determined that mined contaminated ore stockpiles and other ore sources stockpiled would need to be processed due to the size of the stockpiles and restrictions in the mining sequence for fresh ore. A program of laboratory test work was conducted to evaluate the optimum DMS plant settings for processing this material. Once the optimum recovery parameters were established, batch tests were conducted to determine the spodumene recovery that could be achieved as a function of Contaminated ore blend composition. Results of these evaluations are shown in Table 10-2. The Project allowed the subsequent economic processing of stockpiled material that was previously defined as waste or unrecoverable. In CY 2022 the high basalt contaminated ore and oxidized ore were processed economically either through the optical sorter (more description in 10.2.3) or where possible directly feed to the plant.

Table 10-2 - Feedstock and Plant Samples - HLS and DMS Results.

Material	Feed Grd	BP Feed	d50	% Yield	% Recov	Prod Grd HLS	BP Prod	Prod Grd Plant
Feed Stock HLS results								
OSPFS			2.98	12	78	6.0		
COFS			3.01	9	58	6.0		
SF DST FS			2.98	5	35	6.0		
OSPFS			2.90	13	88	5.0		
COFS			2.90	14	81	4.5		
SF DST FS			2.90	10	56	4.8		
DMS Feed D/S HLS results								
4OS/1SF/5ROM	0.99	7.5	2.9	14.5	73.2	5.0	10.9	
4OS/1SF/SROM	1.03	7.9	2.9	16.5	79.9	5.2	11.6	
4OS/1SF/5ROM	1.02	10.1	2.9	16.0	77.5	5.0	11.4	
4OS/1SF/5ROM	1.06	8.3	2.9	18.1	86.3	5.3	9.5	
4OS/1SF	1.01	6.7	2.9	16.9	76.1	4.7	11.8	
OS only	1.00	12.3	2.9	16.1	72.9	4.7	16.3	
DMS Feed D/S Plant results								
4OS/1SF/SROM	1.05			9.1		5.9		5.6
4OS/1SF/5ROM	1.06			8.8		5.8		5.6
4OS/1SF/5ROM	0.92			9.7		5.5		5.8
4OS/1SF/5ROM	0.92			9.7		5.5		5.9
4OS/1SF (D/S average data)	1.22			9.1		6.0		5.6
OS only (D/S average data)	1.22			9.1		6.0		5.4

10.2.3 Optical Sorting

A significant portion of the ore mined at Mt Cattlin contains basalt content between 10% and 24%. A basalt head grade of higher than ~3% to the process plant presents major processing challenges, as it has a similar SG to spodumene and is therefore not effectively separated by DMS.

Optical sorter test work was undertaken by Optosort in Austria in 2017 on Mt Cattlin ROM crushed product and final product. The test work results indicated the basalt material could be rejected to produce a final stream sufficiently low in basalt to feed to the processing plant. Two crushing optical sorter units and a single Product Quality Upgrade (PQU) sorter were purchased during 2018 for Mt Cattlin.

A series of test programs on the crushing optical sorter application through 2018 and 2019 demonstrated the design throughput and basalt rejection could not be achieved in a single stage of sorting. This led to the revision of the design basis from two sorters in parallel to two sorters operating in series, as summarized in Table 10-3.

Table 10-3 - Crushing Ore Sorter Design Basis.

	t/h	Feed % Basalt	Product Yield %	Product Stream % Basalt	Total Basalt Rejection %	% Product/Spodumene Loss to Reject Stream
Coarse -75+25mm						
Stage 1	80	19.0	78.0	6.6	73.0	10.0
Stage 2	62.4	6.1	90.4	1.8	75.0	5.0
Overall Product	56.4	-	70.6	1.8	93.3	14.5
Midds -25 +14mm						
Stage 1	30	22.6	78.3	11.0	62.0	10.0
Stage 2	23.5	10.4	88.4	4.3	65.0	5.0
Overall	20.8		69.2	4.3	86.7	14.5

The front-end optical ore sorters were commissioned in early 2020 and by Q3 had consistently achieved targets of contributing 1 ktpd of ore sorted and up to 30% of total plant throughput.

Due to the requirement to process a large stockpile of basalt contaminated ore that had been accumulated over several years, further test work was conducted with a TOMRA laser sorter and in October 2021 Mt Cattlin commissioned a hire unit to significantly increase ore sorting capacity. The TOMRA laser sorter performed above expectations consistently producing below 3% basalt with less than 5% spodumene loss. This significant improvement led to the replacement of the parallel optical sorters with a single TOMRA laser unit in February 2022.

10.3 Recovery Forecasts and NW Pit Metallurgical Test work

Plant recovery estimates used in the economic assessment of reserves are based on grade-recovery curves that were derived from historical plant performance and reflect a range of plant feed grades and concentrate grades.

Theoretical grade recovery curves were established from actual daily plant data of yields in a 2021, these curves are shown in Figure 10-2 below.

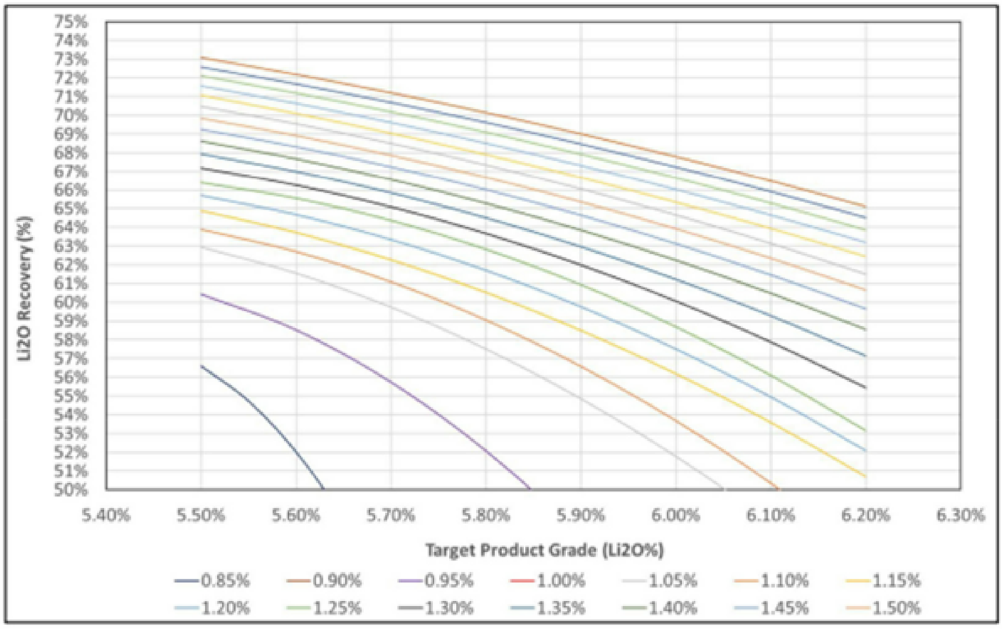


Figure 10-2 - Theoretical grade recovery curves, using actual daily plant data from 2021.

These curves were then used as a base for establishing forecast grade recovery curves with adjustments made from actual plant recovery results, a 2-5% discount was generally seen against the theoretical curves and incorporated in the forecasts.

The example chart below, Figure 10-3shows the actual curves used, at 5.4% concentrate grade, for the reserves update and economic study. Note that the curves are re-presented on a feed grade/ recovery basis below.

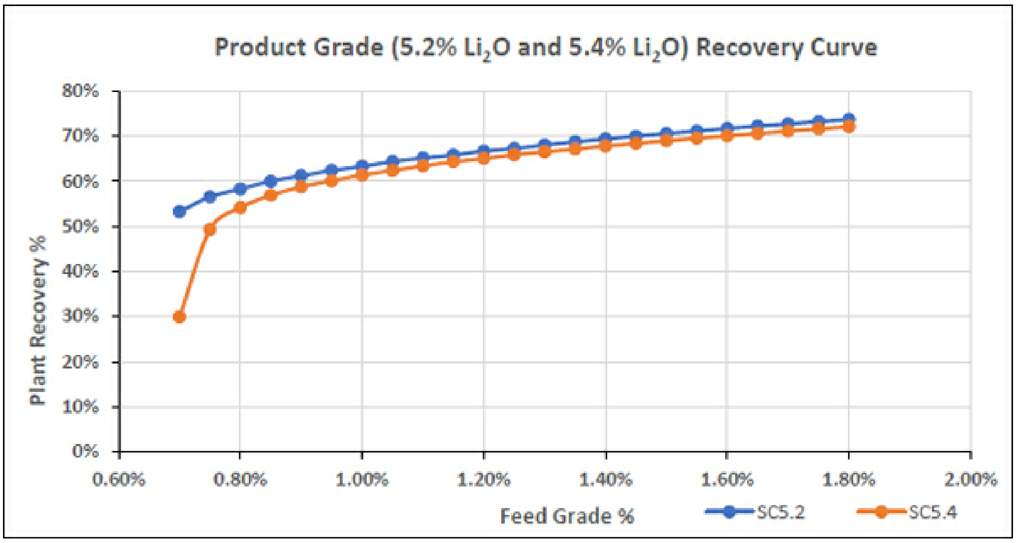


Figure 10-3 - Mt Cattlin Grade-Recovery Curves.

Certain periods were excluded from the study, notably the period from April 2022 through to January 2023 were not considered in the analysis as plant performance during this period was heavily impacted by delays to the NW pit ore delivery schedule which impacted the "representivity" of ore deliveries.

During this time, the process plant initially treated primarily contaminated (high basalt) feed stocks, resulting in low plant recoveries ranging from 20-50%, and in December 2022 and January 2023 fine-grained mineralization was processed also impacting recoveries during this period. These issues materially impacted plant recoveries until more typical (deeper lens) feed material was delivered from stage 2 and Stage 3, as the pit progressed deeper in February 2023 onwards.

Since that time plant recoveries have been in line with expectations and consistently exceeded expectation and 60% recoveries

A target concentrate grade of 5.4% Lithia was used in the economic evaluations of the pit reserves.

10.3.1 NW Pit HLS Test Work

10.3.1.1 2021 Metallurgical Testing

In April 2021, HLS test work was performed on drill core samples from the NW Pit, which was intended to become the primary plant feed source from mid-2022. Mineralised sections of drill core consisting of spodumene-containing pegmatite were selected for testing. This is the only mineralization being targeted for mining and processing, and it is comparable to material which has already been successfully processed through the processing plant as well as the remaining mineralization in the NW Pit.

Analysis was undertaken by Nagrom Perth (ISO9001 accreditation) and comprised XRD, and head assay as well as HLS.

Heavy liquid separation (HLS) is a technique used to separate materials of different specific gravity (SG) through the effects of buoyancy. A mineral sample is added to a liquid with a very high SG such as bromoform, tetrabromoethane or a tungsten-based heavy liquid. Particles with an SG lower than that of the liquid will float to the surface, whereas particles with an SG higher than that of the liquid will separate and sink to the bottom. HLS is used in metallurgical test work to determine a sample's amenability to dense medium separation (DMS), which is the principal method in use in the Mt Cattlin processing plant.

The samples were crushed to -14 mm and wet screened at 1.8 mm. The oversize material was separated at specific gravities of 2.7, 2.8 and 2.9 using HLS. The 2.9 SG results are shown in Table 10-4 and demonstrate the mineralised ore upgrades well with high sinks grades achieved (6.0-6.5% Li_2O). The recoveries observed in the test work were higher than likely plant recoveries due to the absence of dilutant material in the test work samples. Nonetheless the results were deemed to demonstrate the NW pit ore was likely to demonstrate comparable metallurgical performance to historical Mt Cattlin operations.

Table 10-4 - NW Pit HLS Results Summary (2.9 SG).

Sample	Head Grade % Li_2O	Yield %	Sinks Grade % Li_2O	Sinks Grade % Fe_2O_3	Recovery %
NWRCD090	1.85	22.1	6.46	1.24	77.1
NWRCD102	1.05	12.7	6.06	1.34	72.8

10.3.1.2 2022 Geometallurgical Testwork

Geometallurgical studies undertaken in 2022 included HLS testing and supported the understanding of metallurgical responses of the pegmatites in the Stage 4 area. The testwork was completed at Nagrom in Perth WA.

Samples were taken from drilling conducted in 2021 for geotechnical studies, the hole locations are provided in the geotechnical section of this report. Chapter 7 shows the hole locations the holes identifiers and metallurgical sample number are listed in Table 10-5 below.

Table 10-5 - 2022 Metallurgical Samples and Hole Identifiers.

2022 Geometallurgical Testing		
Hole ID	Headgrade	Hole ID's
FPEG 10	0.25%	GTNW05B, GTN01, GTNW03
FPEG 12	0.27%	GTN05B
FPEG 20s	1.69%	GTNW05B, GTNW01, GTNW03
FPED >30	0.94%	GTN05B, GTN01, GTN03

The metallurgical samples were selected to reflect major geometallurgical domains, targeting fine-grained mineralization (FPEG10/FPEG12 domains) and coarse-grained mineralization represented by the FPEG20 and FPEG>30 domains. Noting the grades of FPEG 10 and FPEG12 were below the cut-off used to determine resources and reserves.

The results of the HLS work are shown in Table 10-6, which presents combined grade and recovery from the HLS sinks at a specific gravity of 2.9 to allow direct comparison with the 2021 results. Concentrate grade and recovery values also combine results received for individual HLS analysis of the coarse (-14 mm / +6.3 mm) and fine (-6.3 mm / + 2.0 mm) fractions, providing further consistency with the results reported in Table 10-6.

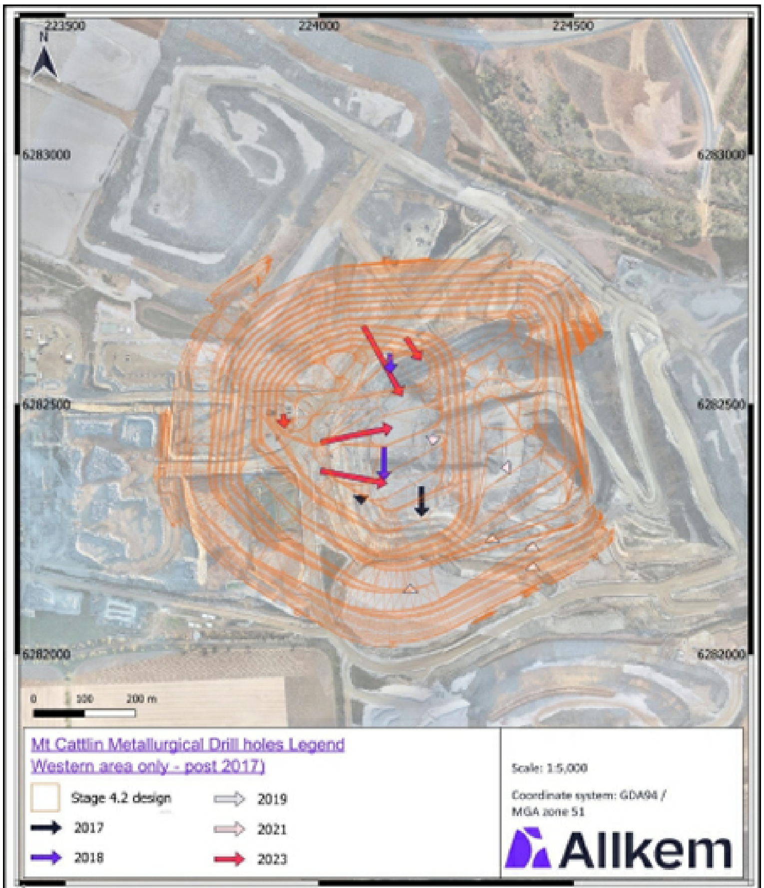
Table 10-6 - NW Stage 4 HLS Results.

Sample	Head Grade (% Li_2O)	Yield (%)	Sinks Grade (% Li_2O)	Sinks Grade (% Fe_2O_3)	Recovery (%)
FPEG10A	0.26	2.2	5.86	1.17	49.6
FPEG12B	0.19	1.5	5.5	1.47	43
FPEG20S	1.81	22.6	6.33	1.29	79.1
FPEG>30	0.88	9	6.34	0.9	65

The 2022 HLS results are consistent with the expected metallurgical performance of the deposit, with HLS sinks grades and recoveries at a specific gravity of 2.9 demonstrating typical grade-recovery responses. Specifically fine grained, low grade (<0.3% Li_2O) samples demonstrated reduced HLS sinks grade and recovery (5.5-5.8% Li_2O at 43-49% recovery), with sinks grades exceeding 6% Li_2O and recoveries of 65-79% achieved on higher grade (0.9-1.8% Li_2O), coarse grained mineralization.

10.3.1.3 2023 Metallurgical Testing and Drilling

Figure 10-4 below, shows the location of drill holes and list of hole identifiers for metallurgical testwork in the NW pit area including the 2023 holes for which metallurgical results were not available at the time of reserves estimation.



Hole ID	Depth	Year	MGA94_51 E	MGA94_51 N	Elevation	Dip	Azimuth
SWMET001	80.00	2017	224341	6282240	264	-90	0
SWMET002	47.00	2017	224380	6282139	263	-90	0
SWMET003	62.00	2017	224420	6282224	261	-90	0
SWMET004	80.00	2017	224421	6282184	261	-90	0
NWRCD64D	222.61	2018	224140	6282681	268	-80	188
NWRCD67D	216.30	2018	224128	6282415	269	-72	188
NWRCD78D	207.90	2019	224083	6282318	268	-85	188
NWRCD82D	197.48	2019	224202	6282596	267	-72	188

Hole ID	Depth	Year	MGA94_51 E	MGA94_51 N	Elevation	Dip	Azimuth
NWRCD090	114.79	2021	224225	6282437	268	-81	183
NWRCD102	102.79	2021	224360	6282373	263	-89	264
NWDD003	285.98	2023	224088	6282656	270	-56	152
NWDD004	237.68	2023	224171	6282633	265	-77	147
NWDD002	264.48	2023	224003	6282424	270	-57	78
NWDD001	343.58	2023	224003	6282367	269	-57	105
NWRCD249	255.79	2023	223930	6282481	271	-84	175

Figure 10-4 - Location of drillholes for metallurgical testwork in the NW pit area.

Five (5) drill core intervals have been selected from the NW Stage 4 pit resource and submitted to Nagrom for HLS testing in 2023. The drillhole locations are shown on the preceding image. The core intervals are illustrated in Figure 10-5.

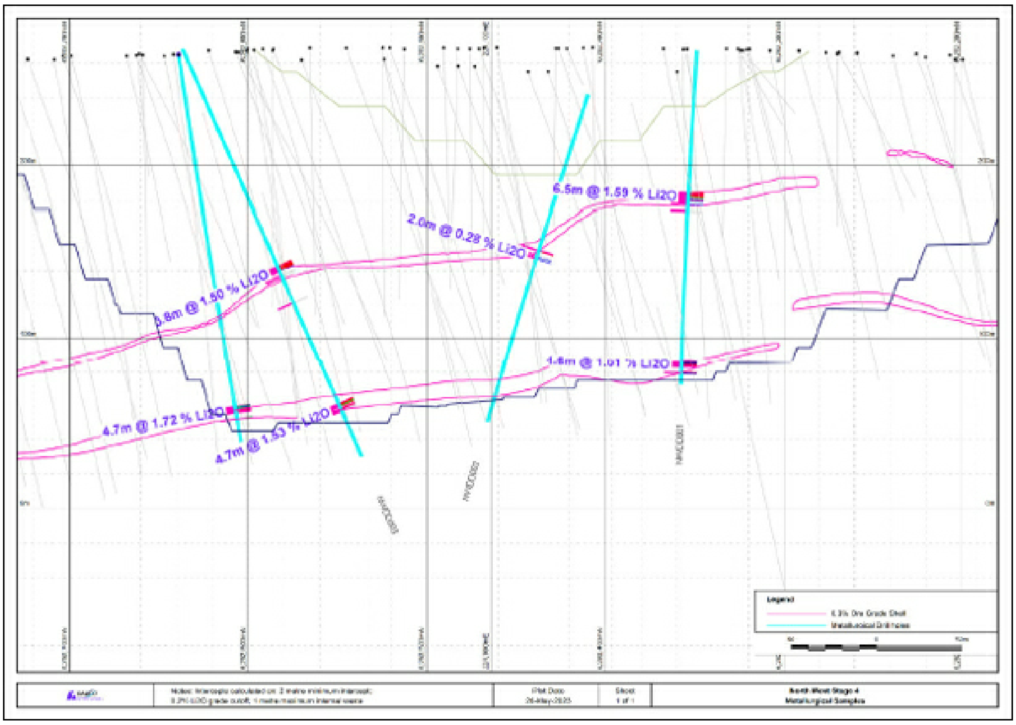


Figure 10-5 - NW Pit Stage 4 Metallurgical Samples.

10.3.2 Tailings Recovery Test Work

Early test work programs have been undertaken to evaluate the potential to recover spodumene from the -1.5 mm component of the Mt Cattlin tailings. These programs have evolved to target a more economically viable solution than conventional flotation, which is the typical approach to fine spodumene recovery. The use of coarse particle flotation, such as the Eriez HydroFloat® technology, has the potential to substantially reduce capital and operating costs by eliminating conventional grinding and multiple stages of flotation from the flowsheet. Results from HydroFloat® test work performed on Mt Cattlin tailings samples has demonstrated the potential to produce a saleable spodumene concentrate grade as shown in.

Table 10-7.

Two samples, noted as Stages 1 and 2 in the table were tested. The economic analysis inputs are supported by the +212um results in the testwork. A 30% recovery at 4.5% Li_2O was assumed for economic analysis.

Table 10-7 - HydroFloat Results, Mt Cattlin Tailings.

Process	Size Class	Stage 1 Program (Grade + Recovery)	Stage 2 Program (Grade + Recovery)
HydroFloat	+ 710 µm	2.6% Li_2O @ 3.7%	4.7% Li_2O @ 27.4%
HydroFloat	+ 500 µm	4.6% Li_2O @ 11.8%	4.3% Li_2O @ 18.2%
HydroFloat	+ 212 µm	5.4% Li_2O @ 46.7%	4.4% Li_2O @ 43.7%
Conventional Flotation	- 212 µm	2.7% Li_2O @ 49.3%	2.6% Li_2O @ 59.9%

Ongoing test work is evaluating the combination of the CrossFlow® separator technology to remove ultrafine ahead of the HydroFloat stage, and to replace deslime cyclones in the tailings treatment flowsheet.

10.3.3 Summary of Metallurgical Testwork and Recovery Forecasts

Since the restart in 2016, Mt Cattlin has produced and exported more than 1Mt of Spodumene concentrate via the Port of Esperance. The current NW pit is the 5^{th} separate open pit taken into production. Product specification (with target SC grades 5 - 6% lithia) has changed from time to time and this has allowed the Process plant to develop empirical and specific statistical regression curves based on Mt Cattlin lithia head grade and desired product lithia grade. Bench scale HLS test work is not an exact proxy for plant recovery, HLS test work is a reliable predictor of mineral separation, based on density, which is a good indicator of DMS plants cyclone performance although cyclones are less efficient than HLS separation.

- The significant processing experience together with more recent advances in geometallurgical understanding has improved Mt Cattlin's definition of poorly performing (Fine grained) ore types in the reserves. Grain size of the spodumene in the pegmatite is a very good indicator of fine-grained problematic ores that show high lithia values but very few large grains of spodumene. The 2022 geometallurgical test work, (~350 kg mass), by pegmatite mineralization type, confirmed recoveries and head grades for the main ORE types at Mt Cattlin. Although there is relatively limited testwork performed on the NW pit area, (note that was no specific sampling of the of lower pegmatite at the time of the reserve generation) the understanding of ore types provides support for the assumption that Stage 4 reserves will be similar to historic.
- The forecast recoveries have been built up from operating experience, considering the understanding of the causes of poor recovery in some mineralization types.
- Recent mining experience in 2023, in the Stage 3 pit has shown recoveries in line with, at times exceeding, the forecasts.

Additional test samples had been selected from new drilling conducted across the Stage 4 pit in early 2023 however results were not available at the time of reserve generation. The results of this testwork are expected to be available to assess before the Stage 4 mining advances.

The recovery forecasts of the Stage 3 and 4 ores average 62.9% (5.4% concentrate) in the LOM plan. In the responsible QP's opinion the recent (consistently over 60%) recoveries in Stage 3, the geometallurgical understanding and the test work performed on high grade mineralisation in the Stage

4 area are adequate to support the recovery model used in the LOM plan forecasts. The ability of the operation to achieve these recovery levels is largely dependent on the identification of fine grained mineralisation occurring throughout the deposit, and its exclusion from the mill feed, the delineation and management of the fine grained mineralisation is further described in Section 6.6 Geometallurgical Model and Section 12 Mineral Reserves Estimates.

11. MINERAL RESOURCE ESTIMATES

The Mt Cattlin 2023 Mineral Resource Estimate (MRE) update represents the combination of two Mineral Resource Estimate updates completed at different times by Mining Plus in 2021 and 2022. The updates were made to the Northwest ("NW" or "Area 6") and Southwest ("SW" or "Area 3") region of the deposit which have then been merged with the pre-existing block model and supporting data.

The "combined" MRE has been depleted by mining as of June 30, 2023, for the reporting of Mineral Resources in this document.

This Chapter documents the work undertaken to support the MRE update released on 1 August 2023 to the ASX, bringing the MRE effective to 30 June 2023 and reported in the August 2023 NI 43-101.

11.1 Key Assumptions, Parameters, and Methods

11.1.1 Drillhole Data

The drillhole database provided for the Mt Cattlin Mineral Resource update contains 4,158 drillholes, many of which are historical drillholes.

The drillhole dataset for the NW and SW areas contains 3,232 drillholes, for 175,950 meters, comprised of a combination of RC, DD, and RC with a diamond tail ("RC_DDT") drillholes.

The dominant drillhole type is RC, representing over 95% of the drill meters being from RC drillholes (Table 11-1).

Table 11-1 - NW and SW Area drillhole details.

Hole Type	Count	Meters	% Drillholes	% Meters
DDH	45	5,437.80	1.40%	3.10%
RC	3,173	169,037.80	98.20%	96.10%
RC_DDT	14	1,474.40	0.40%	0.80%
TOTAL	**3,232**	**175,950.00**	**100.00%**	**100.00%**

A high-level validation of this data, including checking for overlapping intervals, non-matching end-of-hole records, obvious downhole survey discrepancies and obvious collar location issues was undertaken.

All below-detection assay results have been set to half the detection limit and set to positive.

The drillhole spacing for the NW and SW areas has been predominantly a 40 mE by 40 mN grid (Figure 11-1).

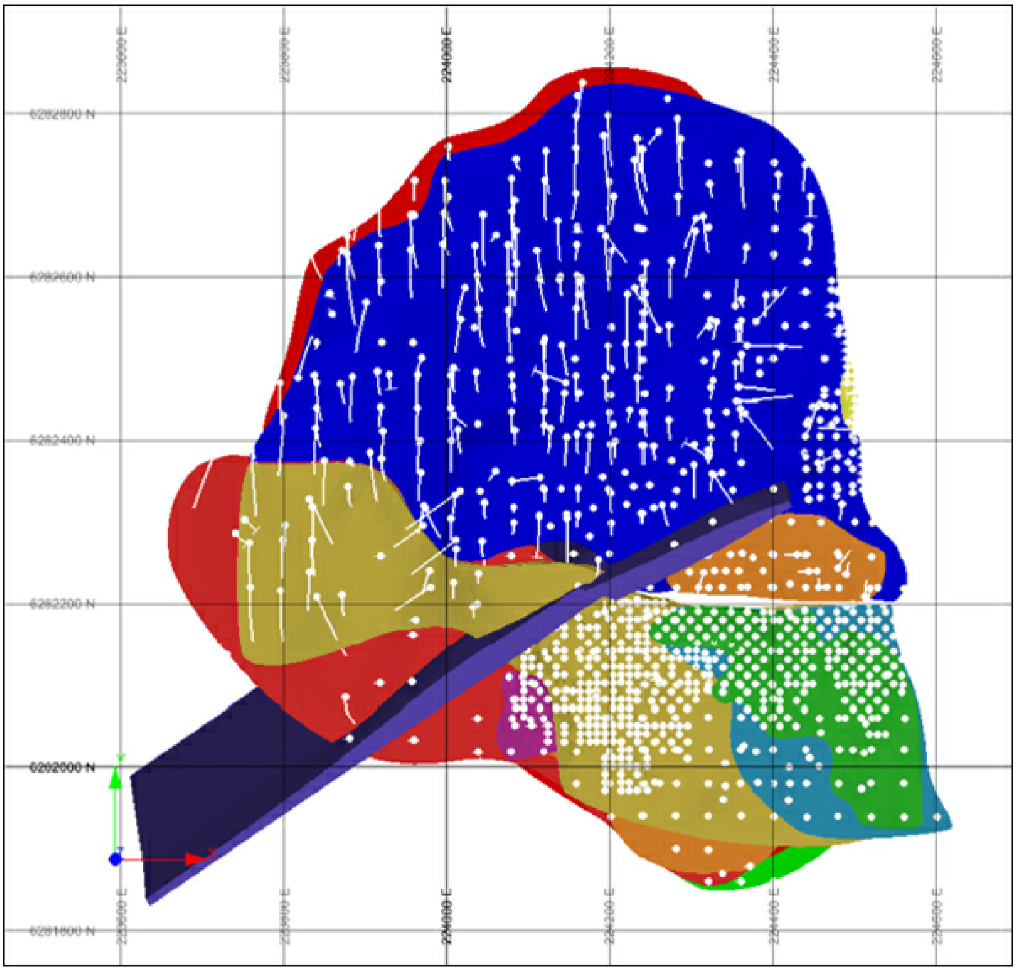


Figure 11-1 - Plan view of the drillhole collars and updated Pegmatite wireframes.

11.1.2 Interpretation and Modelling

11.1.2.1 Geological Domains

the pre-existing geological wireframe interpretations incorporating the additional drillholes within the NW and SW areas and improved geological understanding of the region were updated for the 2023 estimations.

As the size of the spodumene crystals within the pegmatites can cause issues during processing, these were differentiated as coarse and fine-grained spodumene zones within the NW and SW areas by creating separate wireframe domains to delineate the coarse-grained mineralized spodumene within the pegmatite wireframes.

The geological interpretation exercise resulted in a total of 13 individual pegmatite domains and one intrusive dolerite modelled and used to control the block model estimation process.

11.1.2.2 Weathering Surfaces

Two weathering wireframe surfaces, to delineate fresh rock, partially weathered or transitional material and completely oxidized rock horizons.

11.1.2.3 Mineralized Domains

The Li_2O grade distributions within the pegmatite geological indicate the presence of mineral zonation and differentiation into high and low-grade lithia zones. Mining Plus utilized the following indicators to generate wireframes that capture the internal mineralized portion of the pegmatite:

- Na_2O less than 4% excluded on the periphery,
- Geology logging of coarse-grained pegmatite,
- Li_2O less than 0.3% excluded on the periphery.

The modelling of these zones has been completed utilizing Leapfrog Geo software and explicitly modelling the internal coarse-grained and mineralized spodumene (Figure 11-2).

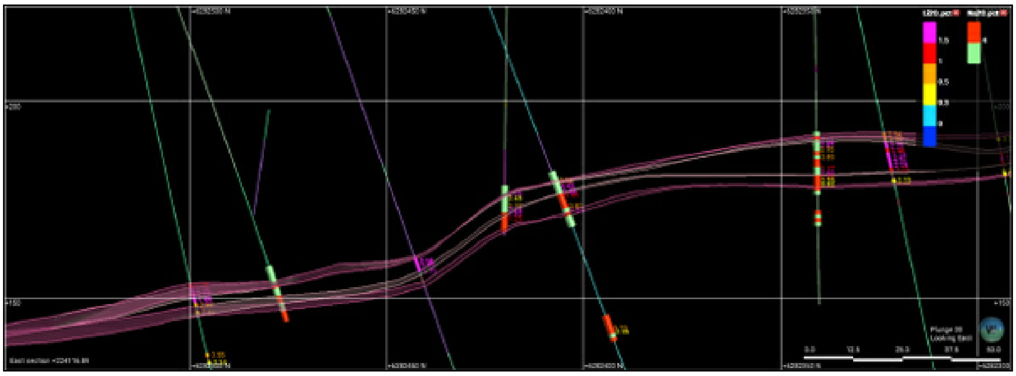


Figure 11-2 - Cross-section showing an example of Na_2O grades informing the boundary between the mineralized pegmatites and the fine-grained skins.

The mineralization modelling exercise resulted in a total of 13 individual pegmatite mineralization domains for the Northwest and Southwest area MRE Update.

11.1.2.4 Domain Coding

The wireframes and surfaces have been used to code the drillhole database and block model by pegmatite, mineralization, and weathering.

Coding was applied to the drillhole data and block model to define the following:

- Pegmatite flag - modelled pegmatite domain code,
- Mineralization -low-grade Li_2O and high-grade Li_2O domains,
- Weathering - oxidized, transitional, or fresh material.

11.1.2.5 Statistical Analysis and Variography

A contact boundary analysis has been undertaken to confirm the treatment of samples across the weathering zones during estimation for each element estimated. In domains where there is no statistical difference across the weathering boundaries, domains have been grouped for estimation purposes.

A grouped code flag has been generated to enable domains to be grouped by weathering profile and pegmatite domains to analyze and estimate Li_2O%.

Boundary analysis on Ta_2O_5 and Fe_2O_3 showed no requirement to control the estimation by weathering profile.

11.1.2.6 Data Compositing

Analysis of the raw drillhole sample intervals indicates the predominant sampled length is 1 m, with more than 99% of the total samples being 1 m or less.

A composite sample length of 1 m was considered appropriate for use in the Mineral Resource estimate update. Domain-flagged 1 m downhole composites have been extracted for all mineralised domains in the compositing process with a 0.1 m residual.

A comparison between the raw and composite sample statistics for the estimation domains by element are provided in Table 11-2, Table 11-3 and Table 11-4. Highlighted cells indicate domains with high coefficients of variation (CV).

Table 11-2 - Comparison statistics between raw and composite samples for the Li_2O estimation domains.

Element	Code	No. Samples		Mean Grade			Std Dev		Coeff Variation	
		Raw	Comp	Raw	Comp	% Diff	Raw	Comp	Raw	Comp
Li_2O	3103	216	203	0.42	0.40	4.00%	0.60	0.57	1.63	1.41
	3113	295	276	1.25	1.24	0.20%	0.87	0.87	0.75	0.70
	3203	72	71	0.33	0.33	-0.90%	0.42	0.42	1.27	1.26
	3213	35	31	1.09	1.06	2.50%	0.65	0.66	0.60	0.62
	3301	51	49	0.55	0.54	1.30%	0.72	0.73	1.31	1.35
	3302	452	428	0.27	0.27	1.10%	0.46	0.46	1.70	1.70
	3303	455	435	0.35	0.35	-2.00%	0.48	0.49	1.39	1.39
	3311	99	95	1.44	1.44	0.10%	0.67	0.68	0.47	0.47
	3312	419	389	1.01	1.01	-0.50%	0.68	0.67	0.67	0.67
	3313	778	736	1.19	1.18	0.60%	0.78	0.77	0.65	0.65
	3401	51	51	0.38	0.38	0.80%	0.57	0.57	1.51	1.51
	3402	393	378	0.20	0.20	-0.50%	0.36	0.36	1.84	1.81
	3403	6	6	0.03	0.03	0.00%	0.03	0.03	0.92	0.92
	3411	14	14	0.87	0.87	0.00%	0.42	0.42	0.49	0.49
	3412	144	138	1.09	1.10	-0.80%	0.71	0.70	0.65	0.64
	3502	140	130	0.27	0.29	-4.20%	0.52	0.54	1.91	1.88
	3503	69	65	0.12	0.11	4.50%	0.14	0.14	1.24	1.26
	3512	85	84	0.82	0.82	0.90%	0.59	0.59	0.72	0.72
	3513	42	42	0.91	0.91	0.00%	0.67	0.67	0.74	0.74
	3603	16	15	0.32	0.32	-1.60%	0.43	0.44	1.37	1.38
	3613	7	6	0.68	0.73	-6.80%	0.50	0.53	0.74	0.73
	3703	104	101	0.61	0.61	-0.20%	0.64	0.65	1.05	1.07
	3713	119	115	1.25	1.26	-0.30%	0.82	0.81	0.65	0.64
	3803	24	23	0.35	0.36	-1.90%	0.39	0.40	1.11	1.11
	3813	24	23	1.81	1.76	2.70%	0.86	0.85	0.48	0.48
	3903	15	15	0.19	0.19	0.00%	0.22	0.22	1.15	1.15
	3913	9	8	1.02	1.14	-10.60%	0.87	0.84	0.85	0.74
	6103	1,000	902	0.39	0.38	1.60%	0.54	0.52	1.39	1.37
	6113	1,602	1,463	1.39	1.39	-0.40%	0.88	0.87	0.63	0.63
	6203	696	615	0.48	0.50	-3.00%	0.66	0.68	1.38	1.37
	6213	751	685	1.57	1.56	0.80%	1.10	1.10	0.67	0.70
	6303	100	91	0.81	0.75	7.50%	0.80	0.75	1.00	1.00
	6313	147	139	1.46	1.47	-0.70%	0.77	0.78	0.53	0.53
	6403	23	16	0.30	0.27	8.40%	0.49	0.49	1.64	1.79
	6413	9	8	1.68	1.78	-5.30%	0.73	0.71	0.43	0.40
	33023303	907	863	0.31	0.31	-0.60%	0.47	0.48	1.53	1.53
	33123313	1,349	1,125	1.13	1.13	0.20%	0.75	0.74	0.67	0.66
	34023403	399	384	0.19	0.20	-1.00%	0.36	0.36	1.86	1.82
	35023503	209	195	0.22	0.23	-3.10%	0.44	0.46	2.00	2.00

Table 11-3 - Comparison statistics between raw and composite samples for the Ta_2O_5 estimation domains.

Element	Code	No. Samples		Mean Grade			Std Dev		Coeff Variation	
		Raw	Comp	Raw	Comp	% Diff	Raw	Comp	Raw	Comp
Ta_2O_5	3103	215	202	155.2	156.0	-0.50%	143.6	146.8	0.9	0.9
	3113	293	274	183.8	183.4	0.20%	181.2	174.0	1.0	0.9
	3203	71	70	121.8	123.5	-1.40%	85.8	85.3	0.7	0.7
	3213	34	30	130.7	134.3	-2.70%	80.2	83.6	0.6	0.6
	3301	47	45	105.8	104.0	1.70%	68.1	67.4	0.6	0.6
	3302	732	409	144.9	142.9	1.40%	131.1	130.5	0.9	0.9
	3303	446	426	155.1	156.5	-0.90%	111.2	112.3	0.7	0.7
	3311	98	94	107.4	109.1	-1.60%	89.5	90.9	0.8	0.8
	3312	416	387	199.3	201.6	-1.10%	375.7	384.1	1.9	1.9
	3313	767	726	188.4	190.5	-1.10%	296.0	303.2	1.6	1.6
	3401	50	50	193.2	193.2	0.00%	165.6	165.6	0.9	0.9
	3402	388	373	244.4	243.9	0.20%	246.6	248.5	1.0	1.0

	3403	6	6	328.1	328.1	0.00%	252.6	252.6	0.8	0.8

Element	Code	No. Samples		Mean Grade			Std Dev		Coeff Variation	
		Raw	Comp	Raw	Comp	% Diff	Raw	Comp	Raw	Comp
	3411	14	14	251.6	251.6	0.00%	168.6	168.6	0.7	0.7
	3412	143	137	263.9	265.0	-0.40%	148.4	150.8	0.6	0.6
	3502	132	123	176.1	178.9	-1.60%	169.0	173.1	1.0	1.0
	3503	68	64	182.3	185.3	-1.60%	130.4	132.9	0.7	0.7
	3512	82	81	214.5	213.1	0.70%	146.2	144.1	0.7	0.7
	3513	43	43	248.3	248.3	0.00%	128.9	128.9	0.5	0.5
	3603	15	14	167.9	173.2	-3.10%	68.4	67.8	0.4	0.4
	3613	7	6	222.3	228.8	-2.80%	87.7	83.4	0.4	0.4
	3703	103	100	169.4	168.1	0.80%	89.6	90.1	0.5	0.5
	3713	113	109	157.4	158.9	-0.90%	73.3	74.0	0.5	0.5
	3803	24	23	160.4	164.1	-2.30%	80.4	80.1	0.5	0.5
	3813	22	21	145.9	150.9	-3.30%	93.3	92.6	0.6	0.6
	3903	14	14	148.9	148.9	0.00%	93.6	93.6	0.6	0.6
	3913	9	8	166.3	164.0	1.40%	62.7	65.8	0.4	0.4
	6103	938	843	131.9	131.3	0.50%	92.0	94.2	0.7	0.7
	6113	1,439	1,314	113.7	116.0	-2.00%	214.6	222.8	1.9	1.9
	6203	689	609	151.0	150.6	0.30%	101.9	103.2	0.7	0.7
	6213	747	681	215.5	221.2	-2.60%	699.9	731.6	3.2	3.3
	6303	97	88	227.5	226.0	0.70%	120.2	123.5	0.5	0.5
	6313	146	138	205.3	203.9	0.70%	72.6	73.6	0.4	0.4
	6403	19	12	155.9	145.5	7.10%	60.7	62.5	0.4	0.4
	6413	8	7	122.1	109.4	11.60%	59.9	36.2	0.5	0.3

Table 11-4 - Comparison statistics between raw and composite samples for the Fe_2O_3 estimation domains.

Element	Code	No. Samples		Mean Grade			Std Dev		Coeff Variation	
		Raw	Comp	Raw	Comp	% Diff	Raw	Comp	Raw	Comp
	0	277,225	19,838	7.70	7.49	2.80%	4.05	4.12	0.53	0.55
	98	37	31	9.04	8.68	4.10%	3.36	3.52	0.37	0.41
	3103	216	203	2.64	2.66	-0.80%	2.51	2.56	0.95	0.96
	3113	295	276	1.87	1.87	0.00%	1.15	1.16	0.61	0.62
	3203	72	71	2.54	2.56	-0.80%	2.21	2.22	0.87	0.86
	3213	35	31	2.06	2.11	-2.40%	1.23	1.29	0.60	0.61
	3301	51	49	2.02	2.02	0.00%	1.82	1.85	0.90	0.92
	3302	452	428	2.07	2.08	-0.50%	2.14	2.16	1.04	1.04
	3303	455	435	2.76	2.81	-1.80%	2.79	2.86	1.01	1.02
	3311	99	95	1.51	1.52	-0.70%	0.76	0.77	0.50	0.51
	3312	419	389	1.36	1.36	0.00%	1.00	0.99	0.74	0.73
	3313	778	736	1.49	1.50	-0.70%	1.26	1.28	0.85	0.85
	3401	51	51	2.54	2.54	0.00%	1.97	1.97	0.77	0.77
	3402	393	378	3.07	3.09	-0.60%	2.79	2.79	0.91	0.91
	3403	6	6	2.55	2.55	0.00%	1.59	1.59	0.62	0.62
	3411	14	14	3.15	3.15	0.00%	2.67	2.67	0.85	0.85
Fe_2O_3	3412	144	138	1.55	1.57	-1.30%	1.45	1.48	0.94	0.94
	3502	140	130	3.43	3.41	0.60%	2.90	2.90	0.85	0.85
	3503	69	65	2.28	2.20	3.60%	2.10	2.01	0.92	0.91
	3512	85	84	2.66	2.68	-0.70%	2.11	2.12	0.79	0.79
	3513	42	42	1.52	1.52	0.00%	0.84	0.84	0.56	0.56
	3603	16	15	4.33	3.97	9.10%	3.32	3.12	0.77	0.79
	3613	7	6	2.80	2.56	9.40%	1.11	1.02	0.40	0.40
	3703	104	101	2.46	2.51	-2.00%	2.65	2.67	1.08	1.07
	3713	199	115	1.76	1.75	0.60%	1.23	1.23	0.70	0.71
	3803	24	23	1.85	1.87	-1.10%	1.48	1.51	0.80	0.81
	3813	24	23	1.94	1.98	-2.00%	1.31	1.33	0.67	0.67
	3903	15	15	3.69	3.69	0.00%	3.22	3.22	0.87	0.87
	3913	9	8	2.76	2.72	1.50%	1.93	2.02	0.70	0.74
	6103	1,000	902	2.33	2.38	-2.10%	2.62	2.60	1.12	1.09
	6113	1,602	1,463	1.67	1.70	-1.80%	1.23	1.23	0.73	0.73
	6203	696	615	2.37	2.37	0.00%	2.02	1.90	0.85	0.80

Element	Code	No. Samples		Mean Grade			Std Dev		Coeff Variation	
		Raw	Comp	Raw	Comp	% Diff	Raw	Comp	Raw	Comp
	6213	751	685	1.84	1.86	-1.10%	1.07	1.05	0.58	0.56
	6303	100	91	2.38	2.55	-6.70%	2.91	3.00	1.22	1.18
	6313	147	139	1.51	1.55	-2.60%	0.80	0.80	0.53	0.52
	6403	23	16	3.35	4.39	-23.70%	4.22	4.68	1.26	1.07
	6413	9	8	1.79	1.82	-1.60%	0.49	0.51	0.27	0.28

For all the domains, the compositing process has resulted in either no change or a minor decrease to the element grade and CV.

11.1.2.7 Top Cutting

Composites within the various estimation domains have been analyzed to ensure that the grade distributions are indicative of a single population, with no requirement for additional sub-domaining, and to identify any extreme values which could have an undue influence on the estimation of grade within these domains.

For Li_2O domains that have a coefficient of variation ("CV") greater than 1.8, log histograms, log probability and mean-variance plots have been used to assess the influence of extreme values and to determine the appropriate top cut where applicable. Where the top cut is applied, all grade values greater than the top cut grade was set to the top cut value (grade cap).

Top cut analysis indicated capping was only required for two Li_2O estimation domains, and three Ta_2O_5 domains (Table 11-5).

Table 11-5 - Summary statistics for the Li_2O estimation domains.

Element	Domain	Number of Samples		Mean Grade			Top-Cut Value	Standard Deviation		Coeff of Variation	
		Un-Cut	Top-Cut	Un-Cut	Top-Cut	% Diff		Un-Cut	Top-Cut	Un-Cut	Top-Cut
Li_2O	34023403	374	1	0.20	0.20	0%	2.0	0.36	0.35	1.81	1.78
	35023503	183	4	0.24	0.22	-7%	1.8	0.47	0.36	1.99	1.69
Ta_2O_5	3312	385	1	201.20	195.70	-3%	3,800	385.00	310.20	1.91	1.59
	6113	1,313	2	115.90	112.60	-3%	2,000	222.90	150.90	1.92	1.34
	6213	681	1	221.20	201.80	-9%	4,300	731.60	347.00	3.31	1.72

11.1.2.8 Variography

Variographic analysis has been undertaken using the top-cut composite data for the various estimation domains for Li_2O, Fe_2O_3 and Ta_2O_5. The variogram study was integrated with mineralized domain models. The resulting variogram continuity directions have been checked against the pegmatite wireframes to ensure that they are geologically robust such that the orientation of strike, dip and plunge directions of the ellipsoid are compatible with known mineralization or structural orientations. Where variogram rotations were found to not be compatible with the modelled pegmatite orientations, the rotations were adjusted to fit the appropriate variogram to the pegmatite.

11.1.3 Block Model and Grade Estimation

Mining Plus undertook the update of the NW and SW areas, using the same drillhole/block model coding logic and estimation methodology as that utilized in the April 2021 MRE. The NW and SW areas have been updated to include additional drillholes completed in the area since the April 2021 MRE update (Figure 11-3).

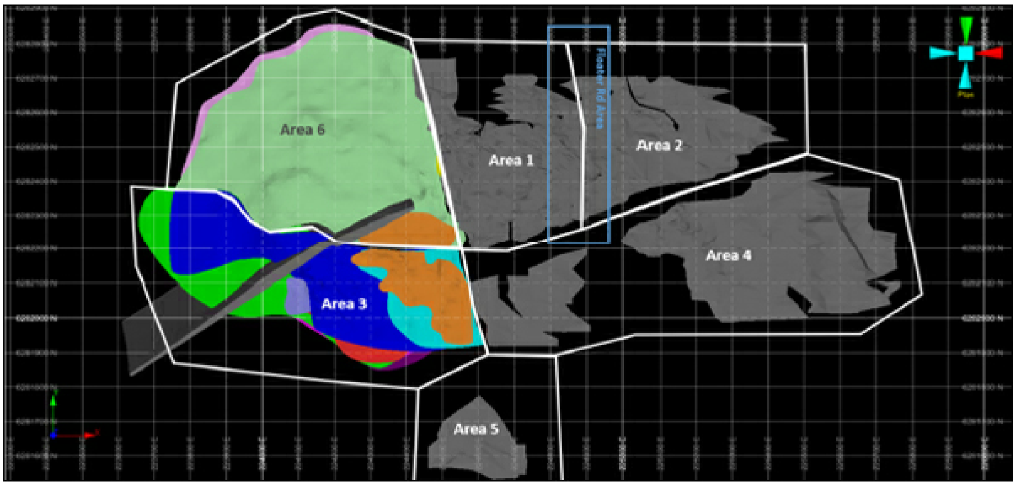


Figure 11-3 - Plan view of the NW and SW Areas and updated wireframes in the Jan 2023 MRE update.

11.1.3.1 Block Model Construction

The block model construction applied to Mineral Resource estimation has been completed within Datamine™ Studio RM software. A three-dimensional non-rotated block model was constructed to cover the limits of the deposit into which the estimate was completed. The block model extents and block sizes are also presented for the mineralization and non-mineralized areas.

The parameters used for the construction of the block model are summarized in Table 11-6.

Table 11-6 - Block model construction parameters.

Scheme	Block Model Origin			Block Model Maximum			Parent Block Size			Number of Cells		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Parent	223,600	6,281,800	-125	224,700	6,283,200	300	20	20	5	55	70	85
Subblock	223,600	6,281,800	-125	224,700	6,283,200	300	2.5	2.5	0.625			

The parent block sizes selected are approximately half the dominant drillhole spacing within the NW and SW area and are sub-celled to account for the variable thicknesses of the pegmatites.

Sub-celling has been used to accurately represent the wireframe volumes. Parent block estimation has been undertaken and therefore, all sub-cells within a single parent block have the same estimated grade as the parent cell.

The block model is coded with mineralized domain attributes that correspond with a geological and mineralization domain as defined by the wireframe solids.

11.1.3.2 Grade Estimation

The variogram models were used for the Li_2O, Ta_2O_5, and Fe_2O_3 estimations using ordinary kriging estimation methods into both the mineralized and un-mineralized pegmatite domains.

The grade estimations have generally been completed in three passes, although some of the more sparsely drilled domains have required a fourth interpolation run to estimate a grade.

The search ellipse ranges applied have been based on the grade continuity within each domain or grouped domain.

Fe_2O_3 has been estimated in the pegmatites, external waste, and dolerite domains. Li_2O and Ta_2O_5 have only been estimated in the pegmatites. The estimation parameters are summarized in Table 11-7.

Table 11-7 - NW and SW Area estimation parameters.

Estimation Pass	Distance	# Samples	Drillhole Limit
First Pass	Approximates half of the variogram range	7 - 27	4
Second Pass	Approximates the variogram range	7 - 27	4
Third Pass	4 x the approximate variogram range	2 - 24	-

Due to the variable dips of the pegmatites, the dynamic anisotropy method was utilized in the block model estimation. The dynamic anisotropy process allows the orientation for the search ellipsoid to be defined individually for each cell in the model so that the search ellipsoid is aligned with the orientation of the mineralization in an attempt to ensure optimum search of composite data for the estimation.

11.1.3.3 Bulk Density

A bulk density data review has been undertaken by Mining Plus during the estimation of the entire Mt Cattlin MRE in November and December 2018 (Mining Plus, 2018).

No additional bulk density data have been collected in the NW and SW areas since the review was completed in 2018, therefore the bulk density values determined in 2018 have been applied to the NW and SW area for this MRE update (Table 11-8).

Material within the waste dumps, haul roads and bunds above the topographic surface has been assigned a bulk density of 1.8 g/cm^3 within the block model.

Table 11-8 - Summary of bulk density data by geology and weathering domain.

Lithology Group	Weathering	Bulk Density Assigned (g/cm^3)
Waste Lithologies	Oxide	2.50
	Transitional	2.70
	Fresh	2.86
Unmineralized Pegmatite	Oxide	2.42
	Transitional	2.62
	Fresh	2.78
Mineralized Pegmatite	Oxide	2.47
	Transitional	2.71
	Fresh	2.72

11.1.4 Block Model Validation

Validation checks have been undertaken at all stages of the modelling and estimation process. The final grade estimates of all three elements have been validated using:

- A visual comparison of block grade estimates and the input drillhole data,
- A global comparison of the average composite and estimated block grades,
- Moving window averages comparing the mean block grades to the composites.

11.1.4.1 Visual Validation

Visual comparison of composite sample grade and block grade has been conducted in cross-section and in plan view. In general, there is a reasonable consistency between high/low-grade blocks and drillholes. The block grades show no gross grade smearing (Figure 11-4).

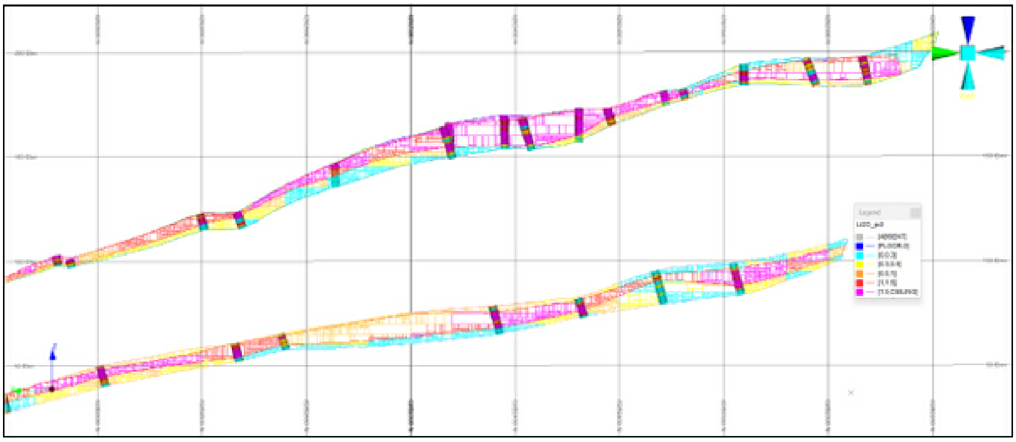


Figure 11-4 - Cross section looking North at 224,202 E, through Pegmatite 61 and 62.

11.1.4.2 Global Comparisons

The global block estimated mean grade was checked against de-clustered composite data. The estimates show an acceptable reproduction of the mean, reasonable to support Mineral Resource classification applied.

A comparison of the estimated grades compared to the input grades within each pegmatite are provided in Table 11-9 to Table 11-10.

Table 11-9 - NW and SW Area block model Li_2O global validation statistics, by estimation domain.

Element	Pegmatite	Code1	Estimated Tonnes	Estimated Grade (cut)	No. Composites	Composite Grade (cut)	Tonnes per composite	% Diff Est vs Comp	Comments
Li_2O	31	310	2,570,082	0.37	252	0.39	10,199	-4.30%	
	31	311	1,916,306	1.16	276	1.22	6,943	-4.50%	
	32	320	825,067	0.27	71	0.33	11,621	-19.30%	Low sample support.
	32	321	353,709	1.11	31	1.06	11,410	5.50%	
	33	330	1,142,341	0.25	863	0.27	1,324	-8.60%	
	33	331	718,912	1.09	1,220	1.13	589	-4.20%	
	34	340	349,951	0.20	435	0.23	804	-15.20%	Non-mineralized pegmatite. Rescat 0.
	34	341	76,612	1.09	152	1.13	504	-3.60%	
	35	350	304,206	0.16	195	0.18	1,560	-9.60%	
	35	351	137,609	0.81	126	0.82	1,092	-1.80%	
	36	360	28,028	0.33	15	0.30	1,869	11.30%	Low sample support. Non-mineralized. Rescat 0.
	36	361	6,086	0.70	6	0.75	1,014	-6.40%	
	37	370	66,513	0.56	101	0.62	659	-9.30%	
	37	371	56,297	1.29	115	1.26	490	1.70%	
	38	380	798,389	0.33	23	0.35	34,713	-4.60%	
	38	381	258,128	1.77	23	1.76	11,223	0.60%	
	39	390	783,633	0.16	15	0.17	52,242	-7.50%	
	39	391	218,511	1.20	8	1.01	27,314	18.30%	Low sample support. Rescat 3.
	61	610	3,393,765	0.38	902	0.36	3,762	7.10%	
	61	611	4,293,816	1.40	1463	1.38	2,935	1.10%	
	62	620	4,400,746	0.54	615	0.51	7,156	6.10%	
	62	621	3,949,229	1.51	685	1.54	5,765	-1.60%	
	63	630	169,706	0.66	91	0.72	1,865	-8.80%	
	63	631	150,411	1.42	139	1.49	1,082	-4.80%	
	64	640	82,929	0.23	16	0.31	5,183	-26.60%	
	64	641	30,658	1.77	8	1.82	4,029	-2.80%	

Table 11-10 - NW and SW Area block model Ta_2O_5 global validation statistics, by estimation domain.

Element	Pegmatite	Code1	Estimated Tonnes	Estimated Grade (cut)	No. Composites	Composite Grade (cut)	Tonnes per composite	% Diff Est vs Comp	Comments
Ta_2O_5	31	311	2,570,082	155	247	152	10,405	1.60%	
	31	310	1,916,306	182	274	185	6,994	-1.70%	
	32	321	825,067	122	70	128	11,787	-4.60%	
	32	320	353,709	135	30	137	11,790	-1.50%	
	33	331	1,142,341	151	835	151	1,368	0.00%	
	33	330	718,912	176	1207	178	596	-0.90%	

Element	Pegmatite	Code1	Estimated Tonnes	Estimated Grade (cut)	No. Composites	Composite Grade (cut)	Tonnes per composite	% Diff Est vs Comp	Comments
	34	340	349,951	242	429	248	816	-2.40%	
	34	341	76,612	284	151	276	507	3.10%	
	35	350	304,206	220	187	211	1,627	4.40%	
	35	351	137,609	282	124	251	1,110	12.20%	Low sample support.
	36	361	28,028	173	14	168	2,002	3.20%	
	36	360	6,086	222	6	214	1,014	3.90%	
	37	371	66,513	171	100	168	665	1.80%	
	37	370	56,297	147	109	158	516	-7.00%	
	38	380	798,389	167	23	165	34,713	1.20%	
	38	381	258,128	147	21	151	12,292	-2.60%	
	39	390	783,633	147	14	142	55,974	3.10%	
	39	391	218,511	161	8	141	27,314	14.30%	Low sample support.
	61	611	3,393,765	131	843	131	4,026	0.60%	
	61	610	4,293,816	110	1314	111	3,268	-1.10%	
	62	621	4,400,746	152	609	150	7,226	1.20%	
	62	620	3,949,229	220	681	200	5,799	10.20%	Non-mineralized pegmatite. Rescat 0.
	63	631	169,706	234	88	221	1,928	6.10%	
	63	630	150,411	203	138	205	1,090	-1.10%	
	64	640	82,929	139	12	141	6,911	-1.00%	
	64	641	30,658	113	7	101	4,605	12.50%	Low sample support.

Table 11-11 - NW and SW Area block model Fe_2O_3 global validation statistics, by estimation domain.

Element	Pegmatite	Code1	Estimated Tonnes	Estimated Grade (cut)	No. Composites	Composite Grade (cut)	Tonnes per composite	% Diff Est vs Comp	Comments
Fe_2O_3	0	0	1,031,998,450	7.84	25782	7.75	40,028	1.20%	
	98	98	16,240,271	6.66	35	8.86	464,008	-24.80%	
	310	310	2,570,082	2.64	252	2.54	10,199	3.70%	
	311	311	1,916,306	1.93	276	1.87	6,943	3.50%	
	320	320	825,067	2.54	71	2.56	11,621	-0.90%	
	321	321	353,709	1.83	31	2.11	11,410	-13.50%	
	330	330	1,142,341	2.75	863	2.45	1,324	12.40%	
	331	331	718,912	1.60	1220	1.46	589	9.80%	
	340	340	349,951	3.08	435	3.02	804	1.90%	
	341	341	76,612	1.80	152	1.72	504	4.60%	
	350	350	304,206	3.29	195	3.01	1,560	9.40%	
	351	351	137,609	2.27	126	2.29	1,092	-1.10%	
	360	360	28,028	3.71	15	3.97	1,869	-6.50%	
	361	361	6,086	2.07	6	2.56	1,014	-19.10%	

Element	Pegmatite	Code1	Estimated Tonnes	Estimated Grade (cut)	No. Composites	Composite Grade (cut)	Tonnes per composite	% Diff Est vs Comp	Comments
	370	370	66,513	2.30	101	2.51	659	-8.30%	
	371	371	56,297	1.74	115	1.75	490	-0.80%	
	380	380	798,389	1.81	23	1.87	34,713	-3.20%	
	381	381	258,128	1.88	23	1.98	11,223	-5.00%	
	390	390	783,633	3.37	15	3.69	52,242	-8.50%	
	391	391	218,511	1.54	8	2.72	27,314	-43.50%	
	610	610	3,393,765	2.52	902	2.38	3,762	5.90%	
	611	611	4,293,816	1.74	1463	1.70	2,935	2.10%	
	620	620	4,400,746	2.41	615	2.37	7,156	1.60%	
	621	621	3,949,229	1.95	685	1.86	5,765	4.70%	
	630	630	169,706	2.53	91	2.55	1,865	-0.70%	
	631	631	150,411	1.62	139	1.55	1,138	4.40%	
	640	640	82,929	3.91	16	4.39	5,184	-11.00%	
	641	641	30,658	1.68	8	1.82	4,029	-7.70%	

11.1.4.3 Swath Plots

Sectional validation graphs have been created to assess the reproduction of local means and to validate the grade trends in the block model by Easting, Northing and Elevation.

The swath plots show satisfactory correlation between the estimated and actual drillhole grades and indicate the absence of significant global bias.

11.1.4.4 Un-estimated Blocks

Un-estimated blocks have been assigned grades as outlined in Table 11-12. Un-estimated blocks are typically located at the furthest extents of each of the domains.

Table 11-12 - Grades assigned to un-estimated blocks, by element and domain.

Element	Domain	Grade Assigned
Li_2O	Waste Domains	0%
	Pegmatites	0.01%
Ta_2O_5	Waste Domains	0 ppm
	Pegmatites	0.01 ppm
Fe_2O_3	Waste Domains	0.01%
	Pegmatites	0.01%

11.2 Mineral Resource Classification

The Mineral Resource has been classified as Measured, Indicated, and Inferred primarily based on the drilling data spacing, grade and geological continuity, and quality of the estimation as indicated by the geostatistical slope of regression (Table 11-13).

Table 11-13 - Resource classification criteria.

Category	Rescat	Drill Density		Pass	SOR	Other
		X (m)	Y (m)			
Measured	1	GC @ 20 by 20		1, 2	>0.8	
Indicated	2	40	40	1, 2	> 0.5	
Inferred	3	40	40	all	< 0.5	remaining blocks estimated in passes 1 to 3
Unclassified	4	>40	>40	all	any	blocks estimated in pass 4

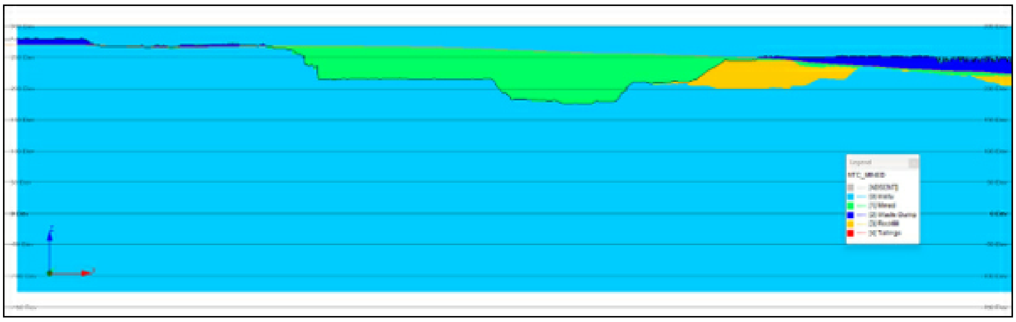
The Mineral Resource has been classified on the following basis:

- Areas of the in-situ Mineral Resource that have been defined by grade control drilling on a 20 m by 20 m pattern and have a high level of confidence in the estimation quality have

been classified as Measured Mineral Resources. The mined areas of each pegmatite have also been classified as Measured Resources.
- Pegmatites which have been defined by drillholes spaced less than 40 m by 40 m, estimated on the first two passes, up to the range of the variograms, and have returned a slope of regression value above 0.5 have been classified as Indicated Mineral Resources. To avoid the generation of a ‘spotted dog’ classification, each pegmatite domain has been individually assessed and wireframes have been created to black flag the block model and classify the Indicated blocks.
- The blocks that have been populated with a grade on either the first, second or third pass and have been defined by drillholes spaced greater than 40 m by 40 m with lower levels of confidence in the quality of the estimate and hence in the continuity of the grade have been classified as Inferred Mineral Resources.
- Blocks that have not been estimated within three passes or have an assigned grade have remained unclassified.

11.3 Depletion

The Mineral Resource has been depleted using the surveyed as built surface as of 30 June 2023, which has been coded into the model. Previously coded tailings and rockfill from below the depletion surface remain within the updated model, Figure 11-5.



Model displayed as “mined” with depletion surface (black) and natural topography (orange) displayed.

Figure 11-5 - Cross-Section 6282329N.

11.4 Basis for Establishing the Reasonable Prospects of Eventual Economic Extraction for Mineral Resources

As part of the evaluation for a Mineral Resource, and in line with NI-43101reporting standards, Reasonable Prospects of Eventual Economic Extraction (“RPEEE”) was also completed. The RPEEE analysis was completed using Whittle optimizations to determine an optimized resource pit shell determined by applying the following parameters in Table 11-14:

Table 11-14 - Optimization Parameters used.

Parameter	Value
Mining Recovery	93%
Mining Dilution	17%
Li_2O % Price/tonne 6% concentrate	US$1,500
Li_2O % recovery	75%
Ta_2O_5ppm Price/pound concentrate	US$40
Ta_2O_5ppm recovery	25%
Transport and port Cost/tonne	US$34.76
State Royalty	5%
Processing Cost/tonne	US$23.21
Mining Cost/tonne	US$3.00
US$ exchange rate	0.7

11.4.1 Cut-off Grade

A cut-off grade of 0.3% Li_2O has been applied to the fresh material in the Whittle optimization. The optimization captures fresh material only, therefore there has been no cut-off grade applied to material from other weathering domains.

The cut-off grade applied to the Mineral Resources is higher than the economic cut-off grade. An economic cut-off calculation and inputs is shown Section 12.3.2.

11.5 Mineral Resources Statement

Surface stockpiles surveyed as of 30 June 2023 have been included in the Mineral Resource and have been classified based on the level of confidence in the grade and tonnage assigned to surface stocks Table 11-15.

The Mineral Resource is reported below, both within the US$1,500 RPEEE pit shell at a cut-off of 0.3% Li_2O as of 30 June 2023, and also globally without the shell, and in this case both inclusive and exclusive of reserves.

Table 11-15 - Mt Cattlin Mineral Resource as of 30 June 2023, COG >=0.3% Li_2O.

Class	Tonnage	Li_2O	Ta_2O_5	Fe_2O_3	Li_2O	LCE
	Mt	%	ppm	%	tonnes	tonnes
Global Insitu Resource as of 30 June 2023, Cut -off grade Lithia 0.3%						
Measured	0.2	1.00%	172	2.00%	2,000	5,000
Indicated	8.8	1.40%	165	2.00%	121,000	300,000
Stockpiles	1.8	0.80%	95	2.10%	13,000	32,000
Inferred	1.3	1.30%	181	2.10%	17,000	42,000
Total	**12.1**	**1.30%**	**167**	**2.00%**	**153,000**	**379,000**
Insitu Mineral Resource as of 30 June 2023, Cut -off grade Lithia 0.3%, US$ 1,500 Shell						
Measured	0.2	1.00%	171	2.00%	2,000	5,000
Indicated	7.2	1.40%	147	2.00%	98,000	242,000
Inferred	0.2	1.10%	133	2.10%	2,000	5,000
Stockpiles	1.8	0.80%	95	2.10%	13,000	32,000
Total	**9.4**	**1.20%**	**137**	**2.10%**	**115,000**	**284000**

Mineral Resource exclusive of Mineral Reserves, as of 30 June 2023, Cut -off grade Lithia 0.3%						
Measured	0.1	1.00%	179	2.10%	1,000	2,000
Indicated	3.2	1.40%	201	2.20%	46,000	114,000
Inferred	0.64	1.10%	207	2.20%	7,000	17,000
Total	**3.94**	**1.40%**	**201**	**2.20%**	**54,000**	**133,000**

Notes:

1) Mineral Resource is estimated as of 30 June 2023 and depleted for production through to 30 June 2023.
2) Mineral resources are reported considering a set of assumptions for reporting purposes:
• A cut-off grade of 0.3% Li_2O was utilized for a spodumene concentrate (6.0% Li_2O) price of US$1,500 per metric ton, tantalum concentrate price of US$20 per pound and an A$/US$ exchange rate of 1.43 over the entirety of the LOM.
• Processing costs of US$36.96/t of ore.
• Mining costs of US$3.00/t of ore.
• Transport costs of US$34.74/t of spodumene concentrate.
• State royalty of 5%.
• Li_2O% metallurgical recovery of 75%.
• Ta_2O_5 ppm metallurgical recovery of 25%.
• Inherent mining dilution and recovery of 17% and 93%, respectively.
3) Estimates have been rounded to a maximum of two significant figures.
4) Totals may appear different from the sum of their components due to rounding.
5) LCE tonnes are estimated by applying conversion factor of 2.473 to the contained Li_2O.

11.6 Mineral Resource Uncertainty Discussion

Allkem is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, or political factors that could materially influence the Mineral Resources other than the modifying factors already described in other Chapters of this report.

11.7 Factors that are Likely to Influence the Reasonable Prospect of Eventual Economic Extraction

Mt Cattlin is an operating mine and the 2NW open pit is the fifth and final open pit to be developed. Options for underground extraction are under study. The most likely factors to influence RPEEE are input concentrate price assumption and foreign exchange conversion to US$. Further permitting by the WA State Government is required to progress the2NW open pit development beyond Stage 3 to stages 4 -1 and 4-2. The responsible QP has the opinion that all issues related to technical and /or economic extraction can be resolved with further work. This in particular involves bench scale test work on mineral recoveries using flotation methods.

The assessment of the Mineral Reserves is based on consideration of:

- An update of the Mineral Resource Estimate described in Chapter 11,
- The modifying parameters, pit designs and stockpile inventories described herein,
- The life of mine plan and financial modelling relating to the production plan described herein and in Section 18 and 19. The Mineral Reserves have been estimated as of 30 June 2023 and are a subset of the Mineral Resource Estimate of the same date.

12.1 Summary and Mineral Reserve

Mt Cattlin is an existing open cut operation using crushing, ore sorting, and heavy media separation to beneficiate mined ore into saleable products. The operation began in 2010 before low prices forced a three-year hiatus between 2013 and 2016. The site has operated continuously and expanded in capacity since restarting in 2016.

Pit optimizations have been carried out using a fixed spodumene concentrate sale price of US$1,500/t and an exchange rate of 0.7 AUD:USD. Whittle pit optimization software has been used to identify the preferred pit shell on which the pit design was based.

The target design shells were selected to provide a logically phased mine life that maintains future optionality to further evaluate the trade-off between the larger second phase cutback compared to, or in conjunction with, underground mining.

The current mine sequence is based on:

- Continuing to mine the current Stage 3 NW pit to provide near-term ore supply.
- Phasing of Stage 4 into two separate cutbacks to manage the strip ratio and provide smoother ore supply to the processing plant.
- Estimated permitting approval timelines for both cutbacks.

All material was subjected to an economic evaluation in a financial model (with pricing supplied by Allkem). The mine plan is shown to be technically and financially feasible. A suitable cashflow positive buffer exists below the assumed product prices to provide confidence that the Mineral Reserve estimate will be financially viable within a reasonably expected range of possible product prices.

A variety of surface stockpiles exist on site from current and past works which have been financially evaluated and shown to be economically viable. The stockpiles include current stocks such as Run of Mine (ROM) pad ore and semi-processed crushed ore, as well as lower grade, lower return stockpiles that are scheduled for processing just prior to closure.

A Mineral Reserve estimate (MRE) has been reported and tabulated below (Table 12-1).

Table 12-1 - 2023 Mineral Reserve Update (Allkem, 2023).

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb. Ta_2O_5
Proven	In-situ	0.2	0.9	120	1.4	45
Probable	In-situ	5.2	1.3	130	69	1,500
	Stockpiles	1.8	0.8	95	13	390
Total Mineral Reserves		**7.1**	**1.2**	**120**	**84**	**1,900**

1) Mineral resources are reported considering a set of assumptions for reporting purposes:

• A cut-off grade of 0.3% Li_2O was utilized for a spodumene concentrate (6.0% Li2O) price of US$1,500 per metric ton, tantalum concentrate price of US$20 per pound and an A$/US$ exchange rate of 1.43 over the entirety of the LOM.

• Processing costs of US$36.96/t of ore.

• Mining costs of US$3.00/t of ore.

• Transport costs of US$34.74/t of spodumene concentrate.

• State royalty of 5%.

• Li_2O% metallurgical recovery of 75%.

• Ta_2O_5 ppm metallurgical recovery of 25%.

• Inherent mining dilution and recovery of 17% and 93%, respectively.

2) Estimates have been rounded to a maximum of two significant figures.

3) Totals may appear different from the sum of their components due to rounding.

This MRE shows the total Mineral Reserves have increased despite the mining depletion and the increase in operating costs that has occurred since the previous estimate record date.

Mineral Resource conversion from Inferred to Indicated classification, and the improved economic environment around Lithium supply have been the major contributors to the increase in Mineral Reserves.

The studies presented in this report are based on an updated Mineral Resource estimation for the Mt Cattlin deposit, which incorporates additional geological, drilling, and reconciliation data to revise the geological interpretation and update the Mineral Resource estimate. Additionally, depletion for mining as of 30 June 2023, is also incorporated in the updated Mineral Resource estimate upon which this work is based (refer to Item 14).

This MRE is depleted for mining as of 30 June 2023, and incorporates updated cost inputs, product pricing and other study assumptions to reflect the current project operating status.

12.2 Geology and Mineral Resources

The regional, local, and site geology and Mineral Resources are discussed in Chapter 11. For mine planning purposes, a diluted, regularized block model was created from the MRE and provided to Mining Plus by Allkem, which is described in more detail in Section 12.4.

Pit optimization of the Mt Cattlin deposit was undertaken using the following workflow:

1) Model Net Value Calculation; followed by
2) Pseudoflow pit optimization; and
3) Shell scheduling for discounted cash flow.

The Model Net Value calculation was performed using GEOVIA Surpac software, consistent with the native format of the supplied Mining Model. Pit optimization and shell scheduling were undertaken with GEOVIA Whittle software.

12.3 Evaluation Factors

12.3.1 Evaluation Models

The resource models used in for the evaluation were provided by Allkem in Surpac format before conversions as follows:

- Conversion of the Mining Plus Datamine model:
  - o "mtc_jan23_nwsw_engmod_v3_alisami_230308.mdl," (March 2023)
- Regularized, diluted Mining Model:
  - o "mt_cattlin_jan2023_v3_diluted.mdl," (May 2023)

12.3.2 Cut-Off Grades

The Ore Reserve estimate is reported at 0.3% given that this is a practical lower limit of processing recovery and geological interpretation, 0.3% is also used for reporting of Mineral Resources.

The economic assessment and cutoff grade calculation resulted in a lower potential economic cut-off grade, however the higher 0.3% Li_2O has been maintained.

The economic test of the cut-off grade is shown below, prices as low as US$1,500/t concentrate (FOB equivalent) were chosen as these were lower than forecast information and a range of prices were tested, which were generally lower than the Allkem provided prices for the Economic Analysis.

Key prices considered were US$1,500/t and US$2,271/t (being the average price used in the economic assessment). These prices and unit operating costs over the remaining LOM of 5 to 6 years were used for cut-off grade estimation.

A recovery of 60% was applied to reflect a conservative average expected from the mineral inventory above 0.3%.

Cut-off Grades were calculated for Marginal and Full Process costs (including G+A) in the test. The theoretical economic cut-offs ranged up to 0.2% Li_2O (0.24% Li_2O at 3 significant figures) at US$1,500/t shown in Table 12-2.

Table 12-2 - Theoretical Economic Cut-Off Grade Calculation.

Parameter	Units	1	2	3	4	5	Comments
Revenue 5.4% Con (FOB) US$/t	US$/t	1,500	2,000	2,500	3,000	4,000	US$ FOB
Revenue US$/t lithia in Con	US$/t	27,778	37,037	46,296	55,556	74,074	5.4% concentrate grade assumed.
Port and Road Transport	US$/t Lithia	734	734	734	734	734	5.4% concentrate grade, US$25.6/t concentrate trucking and US$14.1/t port
Revenue US$/% Li_2O	US$/%	270	363	456	548	733	
Met Recovery %	%	60	60	60	60	60	variable
State Royalty %	%	5	5	5	5	5	WA State
Net Revenue US$/% Li_2O	US$/%	154	207	260	312	418	
Royalty US$/t	US$/t	1	1	1	1	1	Lithium Royalty Corp.
F+V Process Cost US$/t	US$/t	37	37	37	37	37	
Marginal COG % Li_2O	%	0.1	0.1	0.1	0.0	0.0	**NB Basement COG 0.3% in line with MRE**
F+V Processing COG % Li_2O	%	0.2	0.2	0.1	0.1	0.1	**NB Basement COG 0.3% in line with MRE**

12.3.3 Depletion

The Mining Model used for reporting of this MRE has been depleted to the site supplied topography as of 30 June 2023.

12.3.4 Revenue Factors

A Realized Price of US$1,500/dmt Li_2O spodumene concentrate was used for the optimization, inclusive of discounts and penalties, making the pricing used effectively a net A$ FOB rate. The US$1,500/dmt Li_2O is considered a conservative view of the forward pricing given the sale prices achieved in the open market (and market price linked contracts) over the past year, and the continuing strong price forecasts. The optimization price assumption conservatism also provides protection against high market volatility seen recently and is forecast to continue.

Tantalite concentrate is a by-product that contributes meaningful, but not material, revenue to the Project. A flat sale price based on existing contracts has been applied to expected production.

A flat forward exchange rate forecast of 0.7 AUD:USD was provided by Allkem for use in this analysis, and an annual discounting rate of 10% was used for Net Present Value calculations.

Table 12-3 - Product pricing.

Period	Realized Li_2O	Exchange rate	Realized Li_2O	Realized Ta_2O_5
	US$/dmt	AUD:USD	A$/dmt	A$/dry lb.
Average	1,500	0.7	2,143	34.72

12.3.5 Mining Factors

The Net Value modelling and optimization process uses modifying factors and processing inputs determined from analysis of actual operating performance at the Mt Cattlin site, a competitive mining cost tendering process, and an FS level geotechnical study. No external mining recovery or mining dilution factors are applied as the designs are evaluated by a regularized, diluted mining model that has dilution and metal loss consistent with historical values incorporated into the re-blocked models.

12.3.6 Geotechnical Factors

Overall slope angles were estimated based on the geotechnical design parameters provided to Mining Plus. Allowance in the optimizing slope angles was made for the positioning of the ramp.

As part of the Feasibility Study (FS) a geotechnical assessment for the NW Stage expansion ("Mt Cattlin" and "the Project"). The geotechnical assessment evaluates the potential for slope instabilities and derives slope design parameter recommendations for the proposed open pit mining of the NW Stage 4 pit at Mt Cattlin.

Detailed discussion on Geotechnical Analysis is found in Chapter 13.4 Mine Design.

12.3.7 Mining Dilution and Ore Loss

A dilution study was completed to determine the appropriate methodology to create a Mining Model that incorporated dilution and ore loss and could be readily used in General Mine Planning (GMP) software. This study was provided to Mining Plus by Allkem and has been relied upon for evaluation and reporting of the block model and verifying the Ore Reserves as completed within the S-K 1300 Statement.

The key steps and outcomes from the dilution study and modifications to create the Mining Model were:

- Regularizing the block size into Selective Mining Unit (SMU) dimensions of 5.0 m x 5.0 m x 2.5 m (East, North, Elevation) (the smallest sub-blocks within the original model were 0.5 m x 0.5 m x 0.625 m), as shown in below Figure 12-1.

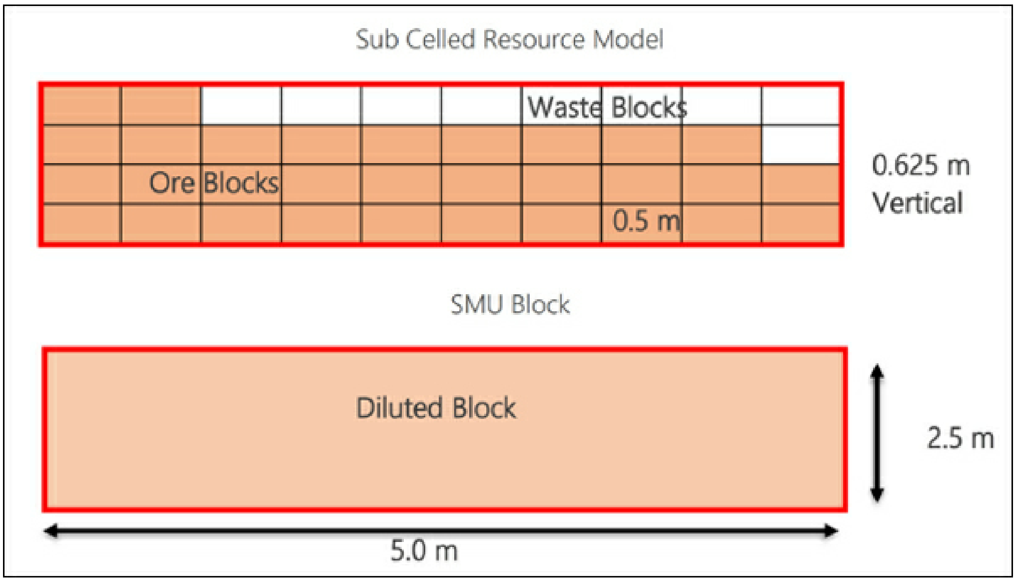


Figure 12-1 - SMU Re-Blocking Process.

- The SMU size was selected based on the size of the equipment, the parent and sub cell block sizes in the resource model, and as it matched the existing mining bench height to the vertical dimensions of the block.
- The regularization results in a single SMU diluted block containing a single diluted value that honors the average grade of the constituent smaller ore and waste blocks.
- The incorporation of waste grades with lower grade blocks can result in the new SMU block having an average grade now below the cut-off value, and thus not reporting to the model inventory, resulting in an overall metal loss.
- The number of blocks within the regularized model was decreased dramatically from ~150 M blocks to ~37 M blocks which improved the efficiency of mine planning activities.
- The ore blocks were flagged as either “Clean” (minimal contamination with mining dilution) or “Contaminated” (significant mining contamination with basalt country rock and requiring beneficiation by optical sorting prior to being processed) ore types depending upon the proportion of clean ore within the SMU block. Historical mining reconciliation data showed 17% of ore mined was classified as Contaminated, so the Clean / Contaminated flag was manipulated to mimic that result. It was found that if at least 55% of the SMU block contained clean ore, then the entire block was flagged as clean, otherwise the block was flagged as contaminated ore type. Figure 12-2 shows a typical east-west section through the Mount Cattlin deposit with the orebody colored by Clean (blue) or Contaminated (colloquially known as Dirty) (red) ore types.

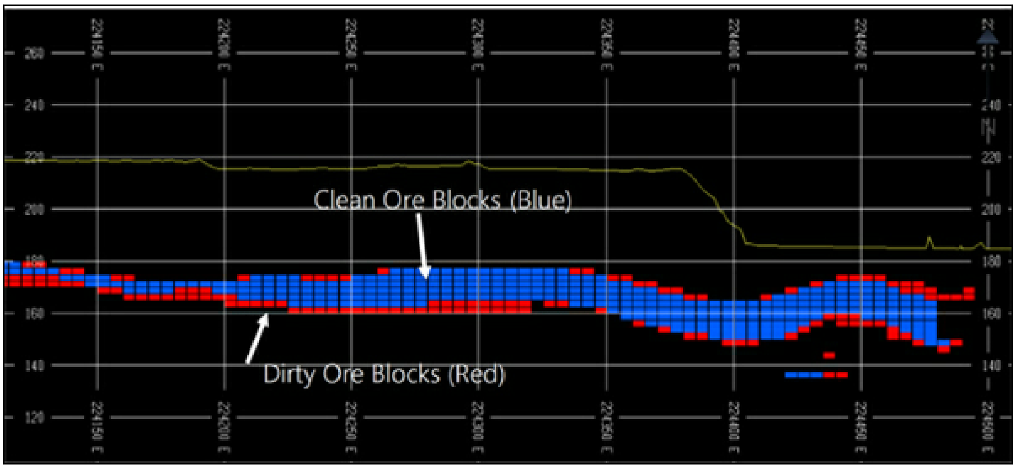


Figure 12-2 - Clean and Contaminated Ore Blocks After Re-Blocking.

- The overall model reports 82% of the ore to the clean category and 18% to the Contaminated category
- The overall model has a back calculated metal loss factor of 5.7% and a dilution factor of 16%.

12.3.8 Cost Factors

12.3.8.1 Contract Mining Costs

Mining is conducted using backhoe configuration hydraulic excavators and medium sized rigid trucks (Caterpillar 785, 777, and equivalent), supported by a typical ancillary fleet. This fleet is considered appropriate for the geometry of the deposits at Mt Cattlin, providing both flexibility and cost efficiency. The fleet is owned and operated by mining contractors with employees drawn from local residential and Fly In - Fly Out (FIFO) commute sources.

Mining costs are calculated on rates supplied in a competitive market tender which were estimated based on a scheduled mine plan. The rates are incremented for weathering type, material type, and the haul profile (e.g., excavating bench depth and dumping location). Comparison to the recent actual mining costs confirms these rates are appropriate. Table 12-4 summarizes the contractor mining input rates used.

Table 12-4 - Contractor Mining Costs.

Parameter	Unit	Material Type	Rate (from)	Rate (to)
Drill and Blast	US$/BCM	Ore	$2.28	$2.72
		Waste	$2.28	$2.72
Load and Haul	US$/BCM	Ore	$7.80	$8.66
		Waste	$7.08	$8.49

12.3.8.2 Owners' Costs

The non-contractor mining costs such as Mt Cattlin's technical services and management, compliance, dewatering, and grade control are wrapped into the site-wide General and Administration (G&A) costs which are shown in Table 12-5.

Site G&A costs, whilst largely fixed in character, are conveniently expressed as a unit rate denominated by processed tonnes and grouped with other similarly denominated costs. G&A captures all Mt Catlin's non-mining contractor costs required to operate the site, and includes general management, departmental management, employee costs (excluding processing staff), accommodation and commuting, compliance, safety, environmental, community relations, power generation.

A third-party royalty is payable on a "per dry metric tonne processed" basis. This means this royalty is better represented as a 'processing' cost rather than a 'selling' or post-processing cost.

These processing denominated costs are applied only to blocks that are selected for processing in the optimization process.

Table 12-5 - Processing Costs.

Parameter	Unit	Rate
Processing	US$/t	29.12
General and Administration	US$/t	6.79
Third Party Royalty	US$/t	1.05

After processing of ore, additional costs are incurred upon the sale of the product. These costs include the transport of product to port, port costs including ship loading, sea freight and business administration (Sea Freight is included in the net concentrate prices used for the analysis). Western Australian State royalties are applied on the total revenue available from the product (in the form it is first sold), less reasonable transport costs to get the product to the point of sale. These costs are summarized in Table 12-6.

Table 12-6 - Post Processing Costs.

Parameter	Unit	Rate
Surface Haulage	US$/t	25.57
Port Costs	US$/t	14.06
State Royalty	%	5

12.3.9 Metallurgical Factors

Table 12-7Table 12-7 summarizes the processing rates and recoveries applied to the optimization, and further detail on metallurgical recovery forecasts can be found in Chapter 10:

Table 12-7 - Process Rates and Recoveries.

Parameter	Unit	Rate
Mining Dilution	%	Incl. in Mining Model
Mining Recovery	%	Incl. in Mining Model
Processing plant capacity	tpa	1.8 M
Spodumene concentrate recovery	%	By regression formula based on 5.4% concentrate grade.
Tantalite concentrate recovery	%	20

Ore processing is carried out through a crushing, ore sorting, screening, and heavy media separation (HMS) plant with a nominal capacity of 1.8 Mt per annum, although the processing rate may be reduced at sustained high feed grades (>1.3% Li_2O) to avoid overloading the wet plant and reducing plant recovery.

Plant recovery is calculated from regression formulas that have been developed on site from historical performance data, with examples for 5.2% Li_2O and 5.4% Li_2O concentrate grades shown in Figure 12-3. The regression formula inputs are plant head grade and target concentrate product grade, with unique curves (and data tables) generated for a specific concentrate grade.

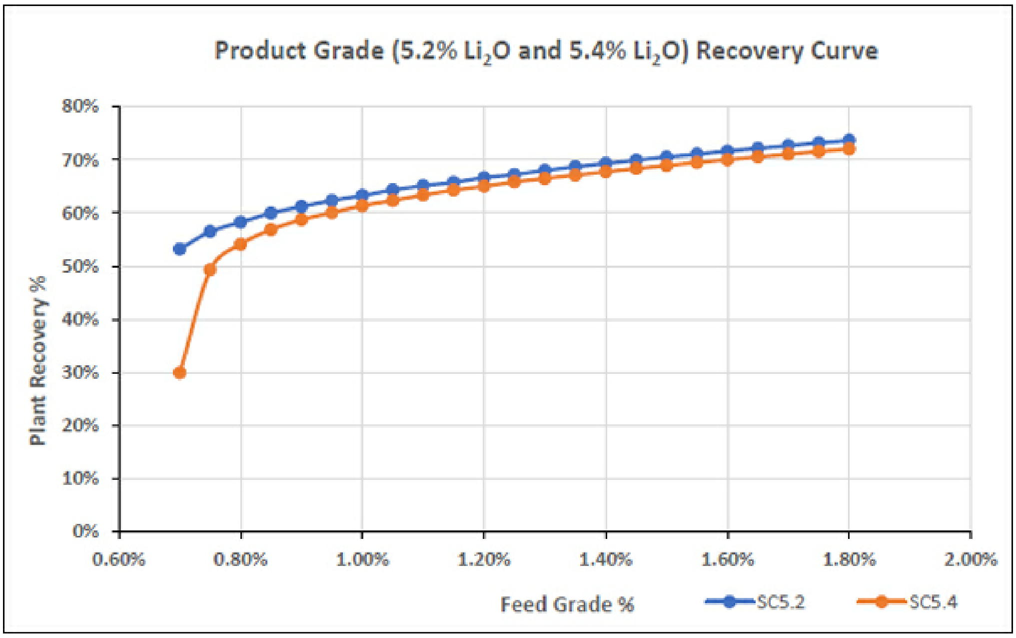


Figure 12-3 - Product Grade - Recovery Curve (SC5.2 and SC5.4).

The Whittle optimizing software calculates a metal recovery, and then the yield (final tonnage) of the product on a block-by-block basis, which then allows revenue, and a dollar value (revenue - costs) to be derived for that block. The value of the block is then used to optimize a pit shell by evaluating the cost of removing waste blocks above that ore block. If value of the block exceeds the cost of removing those above it (as well as honoring other rules including pit wall angles), then the software will mine that block, and progress on.

A small volume of tantalite concentrate by-product is produced, bagged, and transported offsite for sale. From historical performance, tantalite metal recovery is assigned an average plant recovery of 20%.

12.4 Optimization Results

The significant rise in the price of lithium over the past year means the pit optimization can produce very large, high stripping ratio potential pits, to the point where the optimization process becomes resource constrained at prices substantially below the current spot price.

Analysis of the pit shell progression allows selection of the appropriate ultimate shell in relation to the revenue factor and, importantly, consideration of the ‘fit’ of the potential excavation within existing site infrastructure, associated wasted dumps, and company strategy. This has meant that a shell smaller than the Revenue Factor 1 was chosen as the ultimate shell to take into the design process.

A significant step up in strip ratio was identified between two shells, revenue factor 0.735 and revenue factor 0.74, during the analysis of the optimization results. These shells were selected based on their inventory and geometry for progression to pit design. Whilst these shells yield less potential cashflow compared to the optimum Revenue Factor 1 shell, they meet Allkem's strategy of delivering a reasonable mine life and a more practical footprint than a RF1 shell-based design. Optionality remains to consider larger shells in the future should it be considered appropriate.

Figure 12-4 shows the shell progression chart. These progression charts are used to determine the appropriate shell along with geo-spatial validation to align the selected shell with minimum mining widths. The chosen shell 45 is highlighted in orange with the smaller shell (44) chosen as an interim stage as part of an overall strategy to manage the large strip ratio associated with shell 45.

Figure 12-5 shows the C1 Cost and Incremental Ore Tonnes by Shell.

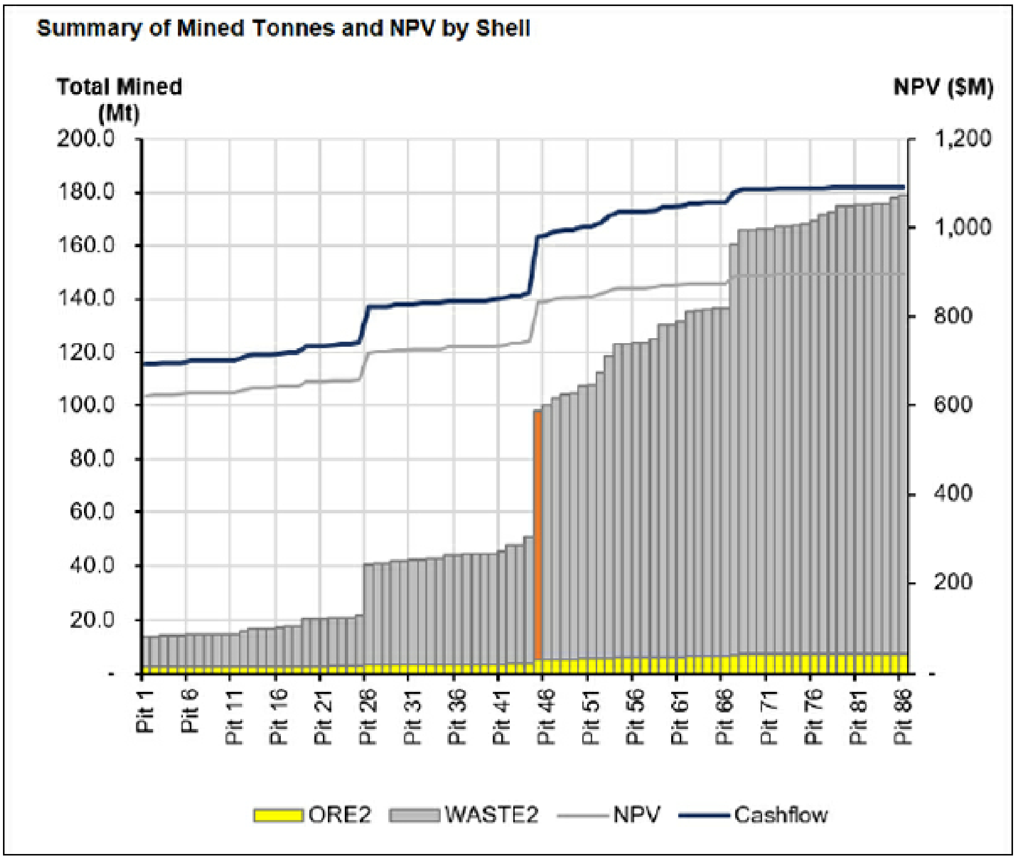


Figure 12-4 - Summary of Mined Tonnes, Cashflow, and NPV by Shell (NB reported in Australian Dollar currency).

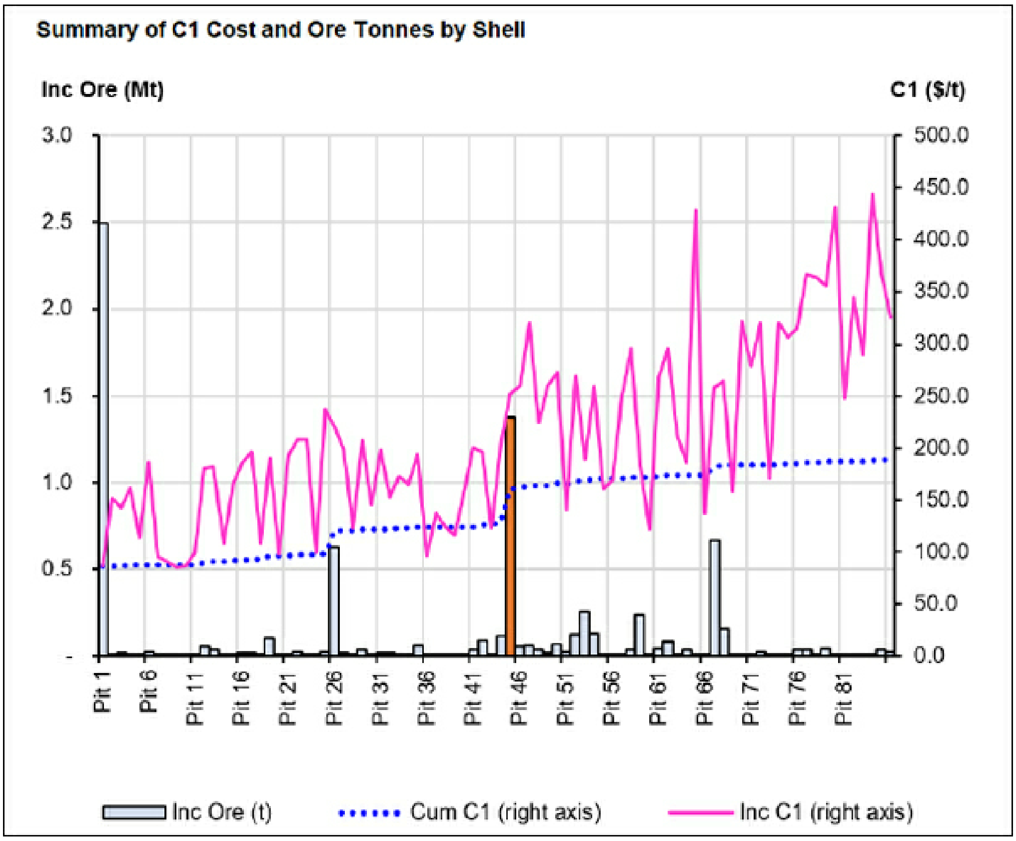


Figure 12-5 - Summary of C1 Cost and Ore Tonnes by Shell (NB reported in Australian Dollar currency).

Table 12-8 compares key data from the selected shells to the RF1 shell.

Table 12-8 - Optimization Shell Summary.

Shell Number	Revenue Factor	Ore (kt)	Undiscounted Cashflow (US$M)
44	0.735	3,900	600
45	0.74	5,300	690
86	1	7,600	760

12.5 Pit Design

The mine design was provided by Allkem and completed by Entech using GEOVIA Surpac software. Optimization shells and the existing mining plan (Stage 3 pit) were used as a guide to identify a practical design for economic extraction.

A Feasibility Study level geotechnical assessment evaluated the potential for slope instabilities and derived slope design parameter recommendations for the Stage 4 pit designs. Pit designs were generated for each of the three stages, Figure 12-6.

Using the selected shells (44 and 45) as a guide to economic extraction limits, detailed designs of each shell were conducted, tying into the existing Stage 3 pit design and ramp strategy. A minimum mining width of 50 m is used based on equipment with a final cut width of 25 m where trucks are not required to enter.

Ramp width and gradients were chosen to match the existing pit and the existing/proposed mining fleet. The ramp system has been designed to minimize waste haulage costs while maintaining easy access to the ROM pad.

The pit design process as described above and using the various criteria detailed above produced practical layouts that can be seen in Chapter 13.4 which also covers inputs and inventories.

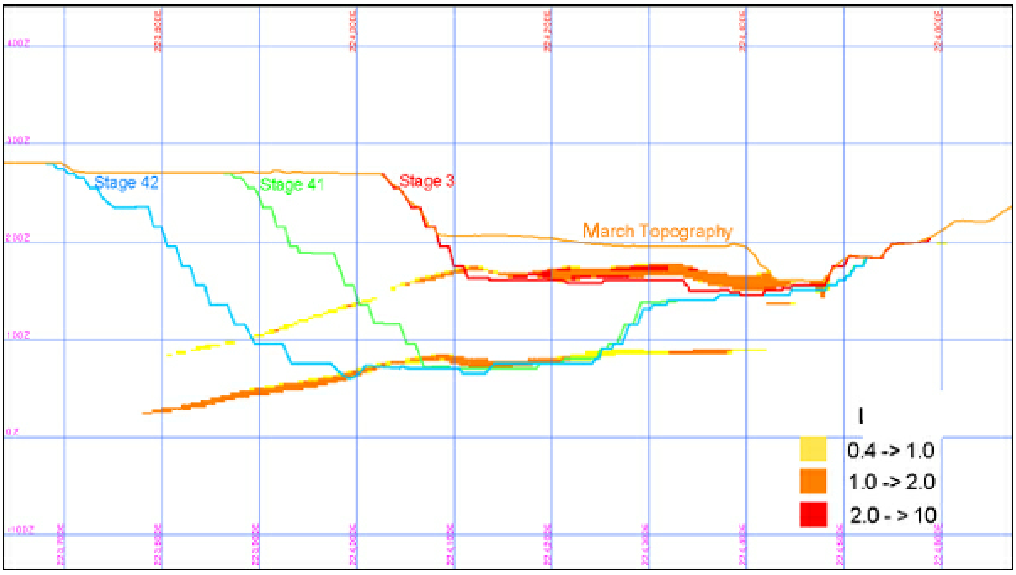


Figure 12-6 - Cross section showing the Pit Design Stages Including Ore Zones Colored by Li_2O Grade, and 31 March 2023 Topography.

12.6 Stockpiles

The site stockpiles are a mix of immediate plant feed such as Run of Mine (ROM) pad ore and crushed ore, as well as ores that will be treated at the end of mine life, pre-closure, or when plant capacity is available such as low-grade ore, fine grained ore, and tailings suitable for retreatment. Final product stocks onsite on 30 June 2023 have been ignored from the cashflow as they have already been processed and are attributable to a period prior to this study, however they are shown in the tabulation below for completeness.

Each stockpile has been assigned a specific grade and recovery, and tested to ensure economic viability at a forecast price appropriate to the likely time the product would be sold into market (Table 12-9).

Table 12-9 - Stockpile Summary at End of June 2023.

Stockpiles	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
	Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb Ta_2O_5
Ore	0.15	1	110	1.5	36
Fine grained ore	0.13	0.9	150	1.2	44
Product	0.01	5.2	680	0.5	13
Low grade ore	0.59	0.5	67	3.2	87
Tailings	0.9	0.8	103	7.5	200
Total	**1.8**	**0.8**	**95**	**14**	**385**

12.6.1 Run of Mine Stockpiles

The Run of Mine (ROM) stockpiles are sourced from end of month survey data. Detail is shown in Table 12-10. Recovery was assigned as per the plant recovery regression curve for the applicable head grade.

Table 12-10 - ROM Stockpile Balance 30 June 2023.

Material	Run of Mine Pad		Crushed (kt)		Total	
	(kt)	% Li_2O	(kt)	% Li_2O	(kt)	% Li_2O
Clean Ore	24,000	1.20	16,000	1.05	39,000	1.13
Contaminated Ore	61,000	0.99	45,000	0.90	106,000	0.95
Total	**85,000**	**1.04**	**61,000**	**0.94**	**150,000**	**1.00**

12.6.2 Fine Grained Stockpiles

Fine grained spodumene has a poorer recovery in the DMS plant than the usual coarse-grained ore. In late 2022 when an unexpected amount of fine grained was mined when first exposing the Stage 3 pit ore, and it was stockpiled rather than treated, with preference given to 'normal' ore. The stockpile, with approximately 134,000 t of ore has been modelled with a conservatively low (assumed) 20% recovery to be treated at the end of the mine life.

12.6.3 Low Grade Stockpile

The low-grade stocks form the base of the RoM pad and will be treated on mine closure. The tonnage and grade data has been sourced from historical records and the economic test has applied a 40% plant recovery to produce a SC5.2 concentrate.

12.6.4 Pre-2018 Tailings

Testwork has been ongoing developing a flowsheet for treating the tailings in TSF #1, which were deposited up until 2018, prior to recovery enhancements being made to the plant, and as such have a material amount of recoverable lithia. It is likely the flowsheet will include a flotation circuit, so an assumed capital amount of US$35M has been modelled prior to treatment. There is potential for the flotation circuit to be brought on-stream earlier in the mine life if other sources of applicable feed are available, or if current feeds could undergo improved recovery.

12.7 Mineral Reserve Estimate

The Mt Cattlin Mineral Reserve estimate (as of 30 June 2023), expressed to a maximum of two significant figures, is provided in Table 12-11.

Table 12-11 - Mineral Reserve Estimate June 2023.

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb. Ta_2O_5
Proven	In-situ	0.2	0.9	120	1.4	45
Probable	In-situ	5.2	1.3	130	69	1,500
	Stockpiles	1.8	0.8	95	13	390
Total Mineral Reserves		**7.1**	**1.2**	**120**	**84**	**1,900**

12.7.1 Comparison to Previous Estimates

The previous Mineral Reserve Estimate for the Mt Cattlin operation is provided in Table 12-12 and the absolute and relative comparisons to this estimate, expressed to a maximum of two significant figures, are shown in Table 12-13 and Table 12-14.

Table 12-12 - June 2022 Mineral Reserve Estimate (Allkem), 30 June 2022.

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb Ta_2O_5
Proven	-	-	-	-	-	-
Probable	2NW only	3.3	1.1	105	37	750
	Stockpiles	2.4	0.8	120	19	650
Total		**5.8**	**0.98**	**110**	**56**	**1,400**

Notes:

1) Reported at a cut-off grade of 0.4 % Li_2O.

2) All tonnages reported are dry metric tonnes.

3) Reported with a 17% dilution and 93% mining recovery.

4) Revenue factor US$650/tonne applied. Minor discrepancies may occur due to rounding to appropriate significant figures.

Notes: Reported at a cut-off grade of 0.4 % Li_2O. All tonnages reported are dry metric tonnes. Reported with a 17% dilution and 93% mining recovery. Revenue factor US$650/tonne applied. Minor discrepancies may occur due to rounding to appropriate significant figures.

Table 12-13 - Comparison between 30 June 2023 and 30 June 2022 ORE.

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb. Ta_2O_5
Proven	In-situ	0.2	0.9	120	1.4	45
Probable	In-situ	1.9	0.2	25	32	750
	Stockpiles	-0.6	-0.05	-27	-5.7	-270
Total		**1.4**	**1.05**	**120**	**28**	**520**

Table 12-14 - Relative comparison between 30 June 2023 and 30 June 2022 ORE.

Category	Location	Tonnage	Grade	Grade	Cont. Metal	Cont. Metal
		Mt	% Li_2O	ppm Ta_2O_5	('000) t Li_2O	('000) lb. Ta_2O_5
Proven	In-situ	∞	∞	∞	∞	∞
Probable	In-situ	58%	19%	24%	87%	101%
	Stockpiles	-26%	-6%	-22%	-30%	-42%
Relative Increase		**31%**	**13%**	**1.90%**	**57%**	**59%**

A comparison has been made between the 2022 Mineral Reserve and this updated estimate. Figure 12-7 illustrates the sources of changes in the Mineral Reserve from 2022 to 2023. In general, this Mineral Reserve estimate shows an increase in the ore tonnage with the key drivers being the greater inventory of Indicated material available and the higher optimization price. Offsetting those increases were mining depletion and an increase in operating costs.

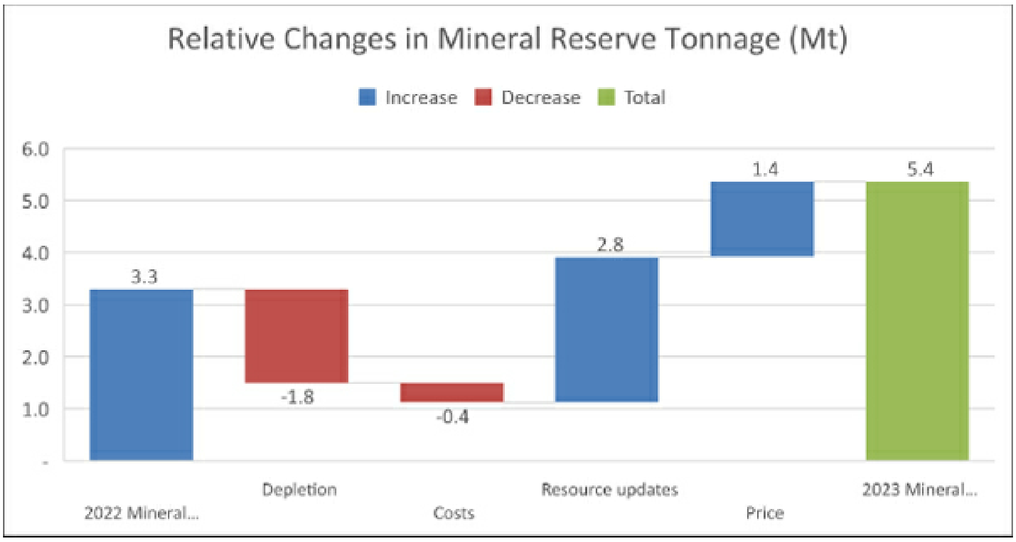


Figure 12-7 - Key Changes in Ore Tonnage Waterfall Graph.

12.8 Risk Factors that could Materially Affect the Mineral Reserve Estimates

The 2023 Reserve Estimation was completed by Entech, provided to Mining Plus by Allkem, which was reviewed by Mining Plus. This Ore Reserve Estimation was read in conjunction with the Mt Cattlin Stage 4 Expansion Feasibility study, both of which have been relied upon in Mining Plus' evaluation of this Mineral Reserve estimate.

The review included the following:

- Reconciliation of the Volumes, Tonnes, Grade and contained metal between the three main stages of the geological block models:
    - The Original Mining Plus Datamine Resource block model
    - The Converted Mining Plus Datamine resource block model into a Surpac model
    - The regularized, diluted Mining Model
- Reconciliation of the Volumes, Tonnes, Grade as estimated against the designed pit shell and the mining schedule.
- A review of the modifying factors and costs, mining method, production rates and resultant operational schedule and operational cash flow.

Mt Cattlin has sustainable mining reserves for the next four to five years, with the underlying resource drill constrained and warranting continued exploration. The increasing stripping ratio with the greater depths to access ore via open pit mining methodology is being evaluated against the option of underground mining.

Compared to 2022, the total Ore Reserves have increased despite the normal depletion as a result of mining activities. The increase is attributed to Mineral Resource conversion of Inferred material to Indicated classification from recent infill drilling, and a significant increase in revenue pricing for spodumene concentrate.

The pit staging as applied in this assessment (Stage 3, Stage 4-Phase 1, Stage 4-Phase 2) individually have quite different stripping ratios and risk characteristics to the overall project average. Stage 3 is very low risk and generates the 72% of the overall cashflow, whilst Stage 4-1 which generates 5% of the overall cashflow and Stage 4-2 which generates 18% of overall cashflow have higher stripping ratios and lower returns. The End of Project Stockpiles generate 5% of overall cashflow.

Mt Cattlin will require a series of regulatory permits for the development proposed, including the availability of waste dumping, to achieve the reserves, these are discussed further in Chapter 17.

Historically, disproportionate amounts of fine-grained ore in the ROM feed negatively affected plant recovery in the second half of 2022. This has since been identified in the Mineral Resource and domained out of the new MRE which underpins this ORE.

The Probable ore stockpiles include 900 kt @ 0.8% Li_2O of tailings from early project life that are planned to be retreated at mine closure. The economic analysis test has used conservative metal recovery (30%) and product grade specifications (4.5% Li_2O) indicated from metallurgical test work to date. Test work and flowsheet development is ongoing and will be required to advance the study level, which has a current accuracy level of pre-feasibility. The contribution of the tailings retreatment at mine closure is not material to the overall project.

Project economics were tested at a range of input sensitivities and showed robustness to 20% adverse moves in a number of key assumptions.

In summary, the planned Mt Cattlin operational schedule for the existing and ongoing mining operation is determined to be technically feasible and profitable within the applied economic assumptions.

12.9 Recommendations

It has been recommended that Mt Cattlin consider the following areas for enhancing future Ore Reserve updates:

- Strengthen the QA/QC processes with the Mining Models.
- Continue to evaluate the Mining Model performance against site reconciliation results.
- Continuing permitting works to ensure the planned access to cut-backs, waste rock storage and tailings storage facilities does not impede planned operations.
- Progress geotechnical trials of pit wall control techniques e.g., pre-splitting to demonstrate the case for safer and steeper wall angles.
- Investigate underground mining methods as an alternative to open pit mining as the strip ratio increases.
- Continue to develop geo-metallurgical grade control techniques to define and segregate fine grained spodumene for future processing.
- Progress the business case for processing the potential low grade fine grained spodumene.
- Consider routine grade control programs ahead of ore mining.

- Undertake business case analysis of new crushing circuit, power station facilities with at least 40% renewable penetration, and an accommodation village.
- Continue progressing the tailings re-treatment flowsheet and economics to build a robust business case, and
- Continued resource drilling to further expand the resource and define the limits of mineralization.

13. MINING METHODS

13.1 Current Mining Methodology

A conventional hard-rock truck and shovel mining method is employed at Mt Cattlin to mine and deliver ore from a series of open pits to the processing plant.

The ore is delivered to a conventional crushing and dense medium separation (DMS) circuit. During mining operations, a portion of the mined ore is diluted with basalt which is considered a contaminant. The processing plant includes a separate circuit during crushing and screening that utilizes optical sorters to remove basalt material from the process stream.

Earthmoving operations use a mining contractor to conduct all drilling, blasting, load, haul, and ancillary work for the open-cut mining operation.

An underground mining feasibility study was commenced in May 2023 to study the economics on extracting ore via underground method outside of the Stage 4-Phase 1 pit. The outcomes of this study will be used to consider the size of surface waste dumps and whether permitting of Stage 4-Phase 2 open pit and waste dump will be required. There are no underground reserves in the current reserve statement.

13.2 Mining Equipment and Current Operation

A conventional hard-rock truck and shovel mining method is currently employed at Mt Cattlin to mine and deliver ore to the processing plant. This mining method is assumed to be continued for the life-of-mine described in this study.

Mining operations involve drilling and blasting the competent ore and waste rock on 10 m high benches, and then mining 2 - 2.5 m high horizontal flitches.

Mining contractors are utilized for all drill and blast, excavate, load, and haul operations. Three main excavating fleets are generally utilized:

- One (1) 360 t class backhoe configuration excavator with 140 t and 90 t trucks
- One (1) 200 t class backhoe configuration excavators matched with 90 t trucks.
- One (1) 150 t class backhoe configuration excavators matched with 90 t trucks.

An additional excavation fleet will be used as required, and ancillary support equipment includes grader, water cart, service trucks, light vehicles, and lighting plants.

The drilling and blasting fleet comprise of:

- Five (5) Atlas Copco D65 down the hole hammer drills
- One (1) Atlas Copco L8 down the hole hammer drill

- One (1) Multi-Purpose Unit explosives truck.

Two additional large excavators have also been available on site to provide back-up, undertake ancillary work, and bolster production as needed. The mining fleet configuration is influenced by the production rate, mill throughput, strip ratio and the extents of the proposed pit designs.

Table 13-1 - Load and Haul Equipment Fleet.

Equipment Type	Equipment Model	Quantity	Class
Excavator	Hitachi EX3600 excavator	1	360t
Excavator	Hitachi EX1900 excavator	1	200t
Excavator	Leibherr 9150 excavator	2	150t
Truck	Caterpillar 785C	4	140t
Truck	Caterpillar 777	14	90t
Truck	Komatsu 785	5	90t
Blasthole Drill Rig	Epiroc Atlas Copco D65/T45	6	
Water Cart		1	
MPU Charge Unit		1	
Service Truck		1	

The 360-t excavator fleet will remove the majority of the bulk waste in each stage, assisted by the smaller fleets when working area allows. The smaller fleets will focus on selective ore mining, and waste removal in the more constrained working areas of the lower benches.

Ore is contained within the gently dipping white pegmatite intrusions which are visually distinct from the dark volcanic waste rocks. Grade control is undertaken by visual geological inspection of blast hole chips, and visual geological control of the excavator when mining ore (“ore spotting”). Ore mining rates are based on providing continuous feed to the nominal 1.8 Mtpa processing plant.

The current North-West pit (Stage 3 NW) mines only one pegmatite at the base, whilst the Stage 4 NW extension will deepen to capture a second lower pegmatite, as well as progressing down dip to further access both ore zones. The current pit depth of approximately 100 m below surface will extend to approximately 220 m below surface in the ultimate pit which has a 20:1 stripping ratio.

Waste rock is deposited in pre-designed Waste Rock Landforms or is used to backfill retired pits where practical.

Ground water is relatively scarce, and approximately 5 l/s of overall seepage is captured in floor sumps and pumped to the process water circuit for use in the plant.

13.3 Mine Services and Infrastructure

As an existing operation, Mt Cattlin has in place all the required services and infrastructure to cater for the Stage 4 mine expansion as detailed in this study.

The pit rim cutbacks for Stages 4-1 and 4-2, and establishment of Waste Dump 3 (WD3) will require clearing and grubbing of the expanded footprints, and retention of vegetation and topsoil for rehabilitation use. A new site access road including a gatehouse facility for site security will be required to be developed around WD3.

Mining supporting infrastructure is further discussed in Chapter 15.1.

13.4 Mine Design

A detailed Feasibility Study level geotechnical assessment was carried out as part of the Stage 4 Expansion Feasibility Study. This study evaluated the potential for slope instabilities and derived slope design parameter recommendations for the Stage 4 expansion.

Using the selected shells (44 and 45) as a guide to economic extraction limits, detailed designs of each shell were conducted, tying into the existing Stage 3 pit design and ramp strategy. A minimum mining width of 50 m is used based on equipment with the final cut width of 25 m where trucks are not required to enter ("goodbye cut").

Ramp width and gradients were chosen to match the existing pit and the existing/proposed mining fleet. The ramp system has been designed to minimize waste haulage costs while maintaining easy access to the ROM pad.

13.4.1 Geotechnical

Rock mass conditions encountered to date are relatively uniform with minor variation between the dedicated geotechnical diamond drill holes. However, relatively poorer rock mass conditions are encountered in the highly weathered zones and locally within proximity to dykes and faults. Joints make up the major rock mass structure at Mt Cattlin encountered during logging. Structural data indicates that the major structure set present is related to a sub-horizontal joint set.

As part of the Feasibility Study a geotechnical assessment for the NW Stage expansion ("Mt Cattlin" and "the Project") was undertaken. The geotechnical assessment evaluates the potential for slope instabilities and derives slope design parameter recommendations for the proposed open pit mining of the NW Stage 4 pit at Mt Cattlin.

13.4.1.1 Data Availability

A geotechnical drilling program was designed to investigate ground conditions specific to the NW Stage 4 cutback. In addition, a geotechnical material properties testing program was designed to capture information pertinent to characterizing and understanding the mechanical behavior of the different materials expected to be encountered.

A total of three dedicated geotechnical diamond drill holes, totaling 651 m, were drilled in the vicinity of the Stage 4 pit walls as seen in Figure 13-1 (which used a preliminary version of the Stage 4 design for drillhole planning) with hole details listed in Table 13-2. Detailed geotechnical data, including rock mass and structure characterization, and oriented structure data were collected from these drill holes and used in the analysis. In addition to these holes, photogrammetric modelling of the current pit, structure digitization, in-pit mapping and data from previous studies was utilized.

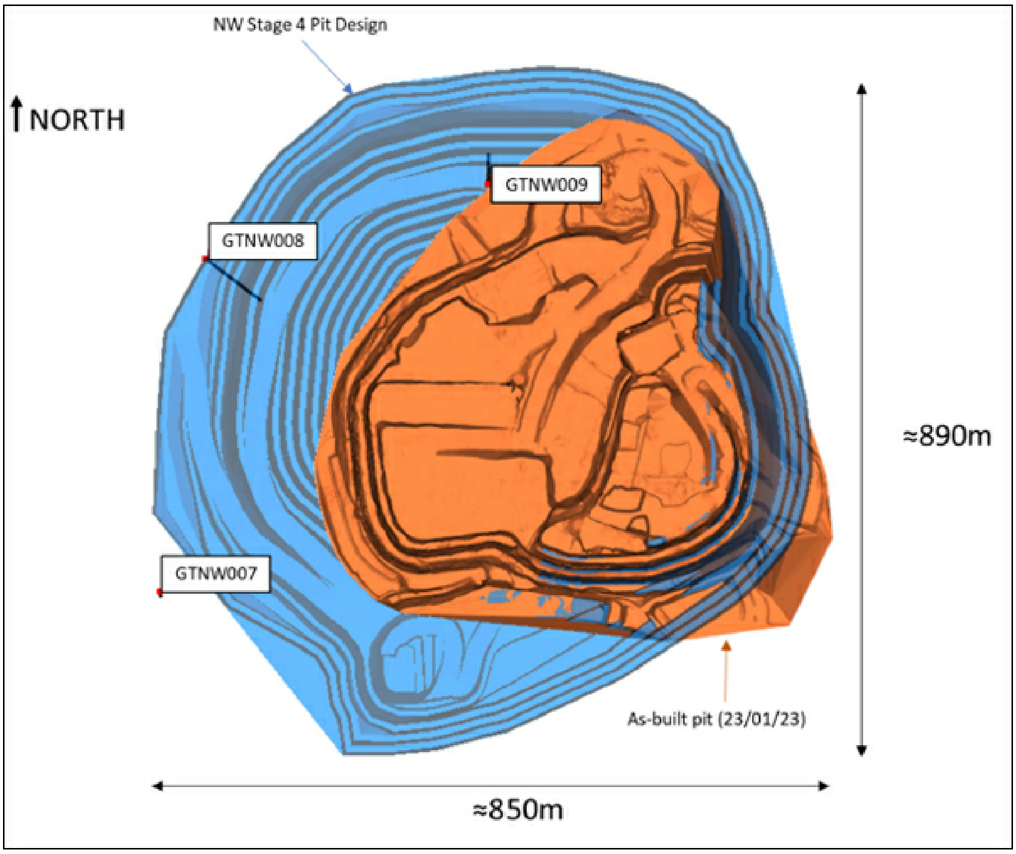


Figure 13-1 - Plan view of Mt Cattlin, with the location of the geotechnical drill holes and basic pit dimensions.

Table 13-2 - Summary of the dedicated geotechnical diamond drill holes used for the project.

DHID	X	Y	Z	Depth[1]	Dip	Dip-Dir
GTNW007	223,799	6,282,192	271	200	-78	229
GTNW008	223,861	6,282,628	270	249	-75	133
GTNW009	224,231	6,282,724	260	202	-70	2

[1] *Downhole depth.*

According to Bieniawski's Rock Mass Rating 1989, the major rock types encountered can be summarized as shown in Table 13-3.

Table 13-3 - Major Rock Types.

Rock Type	Weathering	RMR-89 Classification
Andesite	Transitional	Good rock
	Fresh	Good rock
Basalt	Transitional	Fair rock
	Fresh	Good rock
Dacite	Fresh	Good rock
Dolerite	Fresh	Good rock
Intermediate volcanic	Transitional	Good rock
	Fresh	Good rock
Pegmatite	Fresh	Good rock
Tonalite	Fresh	Very good rock

Rock mass conditions encountered are relatively uniform with minor variation between the dedicated geotechnical diamond drill holes. However, relatively poorer rock mass conditions are encountered in the highly weathered zones and locally within proximity to dykes and faults.

Samples were selected from the drill core of the dedicated geotechnical diamond drill holes to perform material properties testing. This program included the following (as shown in Figure 13-2 and Figure 13-3):

- Six (6) particle size distributions
- Six (6) Atterberg Limits
- Five (5) multi-stage consolidated undrained triaxial tests
- 34 uniaxial compressive strength tests
- 35 uniaxial tensile strength tests
- 28 elastic constant (Young’s Modulus and Poisson’s Ratio) test
- One (1) ring shear test
- 18 direct shear tests of natural defects

The following color coding has been applied in Figure 13-2 and Figure 13-3:

- Red = UCSE, Uniaxial Comprehensive Strength and Uniaxial Tensile Strength test
- Orange = Direct Shear test
- Light blue = Atterberg Limits, Particle Size Distribution and consolidated Undrained Triaxial test sample
- Dark blue = Ring Shear test.

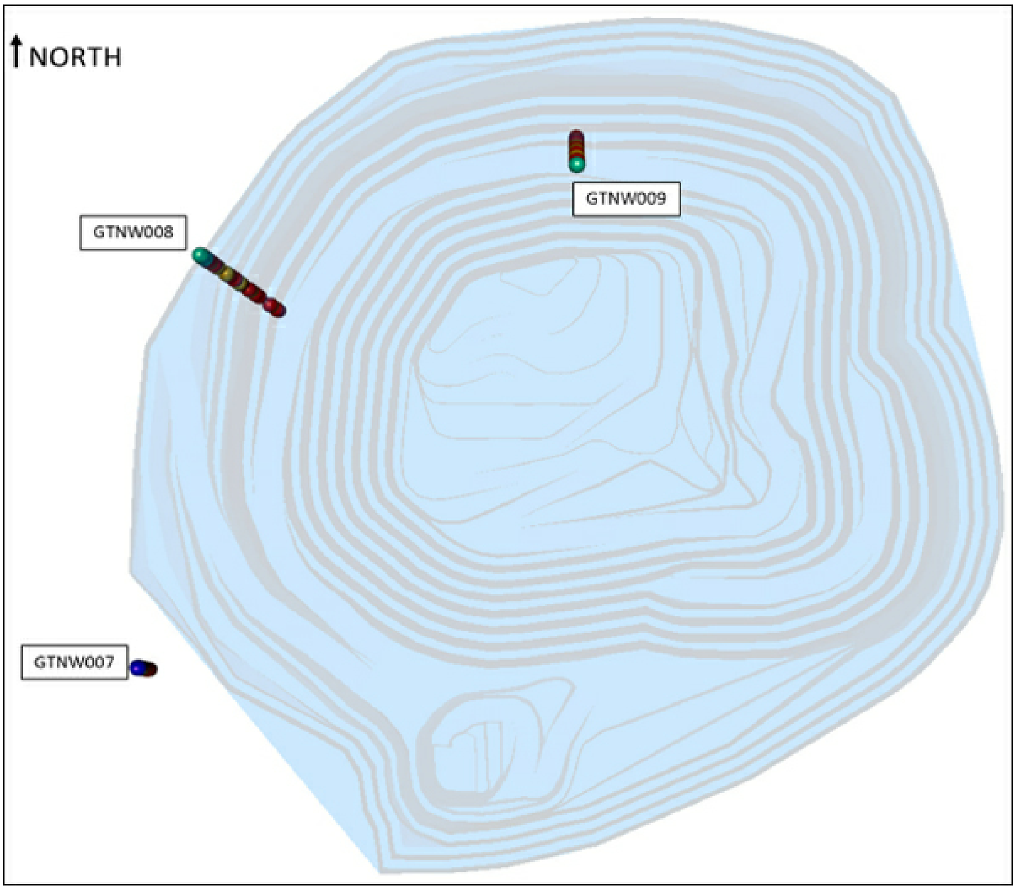


Figure 13-2 - Plan view of preliminary Stage 4 pit design, with the location of laboratory test samples along each drill hole.

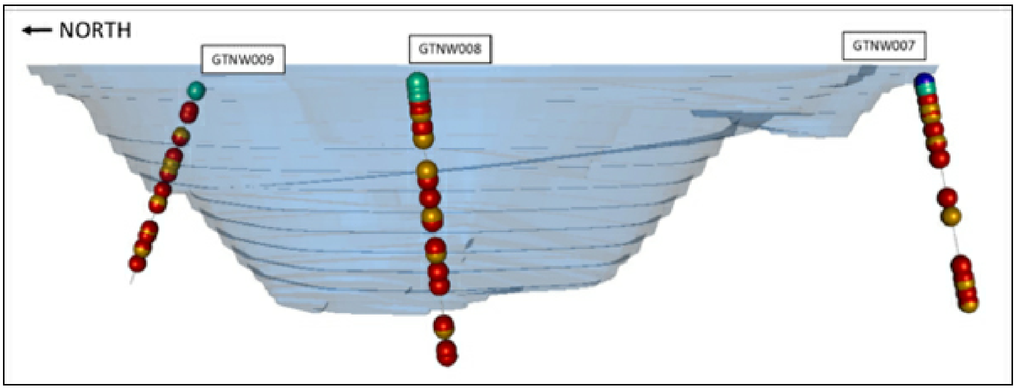


Figure 13-3 - Long-section view of preliminary Stage 4 pit design (looking east), with the location of laboratory test samples along each drill hole.

13.4.1.2 Geotechnical Conditions

Volcanic rockmass dominates the local geology, with a high portion represented as andesite, basalt, and dacite rock types. This sequence is locally known as the Annabelle volcanic sequence with the relative proportions of rock types, according to Witt (1998), being approximately as follows:

- 5% dolerite
- 10-20% basalt
- 50-70% andesite
- 20-30% dacite (Witt, 1998).

The lithium rich mineralization is hosted within the pegmatite and occurs as a series of sub-horizontal sills overlapping in sections and surrounded by both volcanic and intrusive dolerite dykes. Two major faults have been modelled as steeply dipping and striking north north-west and east south-east, respectively.

The depth to the Base of Complete Oxidation (BOCO) wireframe at the Mt Cattlin pit walls is on average 6.5 meters below surface (mbs). The geotechnical logging encountered the BOCO at an average depth of 5 mbs at Mt Cattlin. The depth to the Top of Fresh Rock (TOFR) wireframe at the Mt Cattlin pit walls is on average 25 mbs. The geotechnical logging encountered the TOFR at a depth of 43 mbs at Mt Cattlin. It is noted that the geological TOFR wireframe has been modelled shallower than the interpretation of the drill core data. The likely cause of this difference is due to the weathering classification system used during the geotechnical logging which is based on the International Society of Rock Mechanics (ISRM) classification system (1982). The interpretation of 'Fresh Rock' under the ISRM method requires no visible signs of weathering, perhaps slight discoloration on major discontinuity surfaces. This is often not possible to distinguish from reverse circulation drilling chips.

The structural model contains structures that were observed at a drill core scale (Figure 13-4), as well as structures that were digitized on a 3D photogrammetric model (Figure 13-5). A total of 812 structure measurements were collected from drill core, with an additional 1,123 structure measurements collected from photogrammetric model digitization and 42 structures from pit wall mapping (total of 1,977).

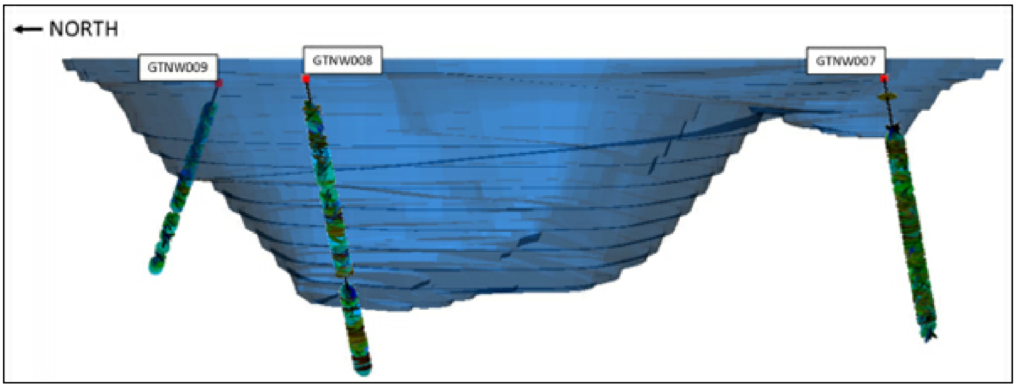


Figure 13-4 - Long-section view of a preliminary Stage 4 pit design (looking east).

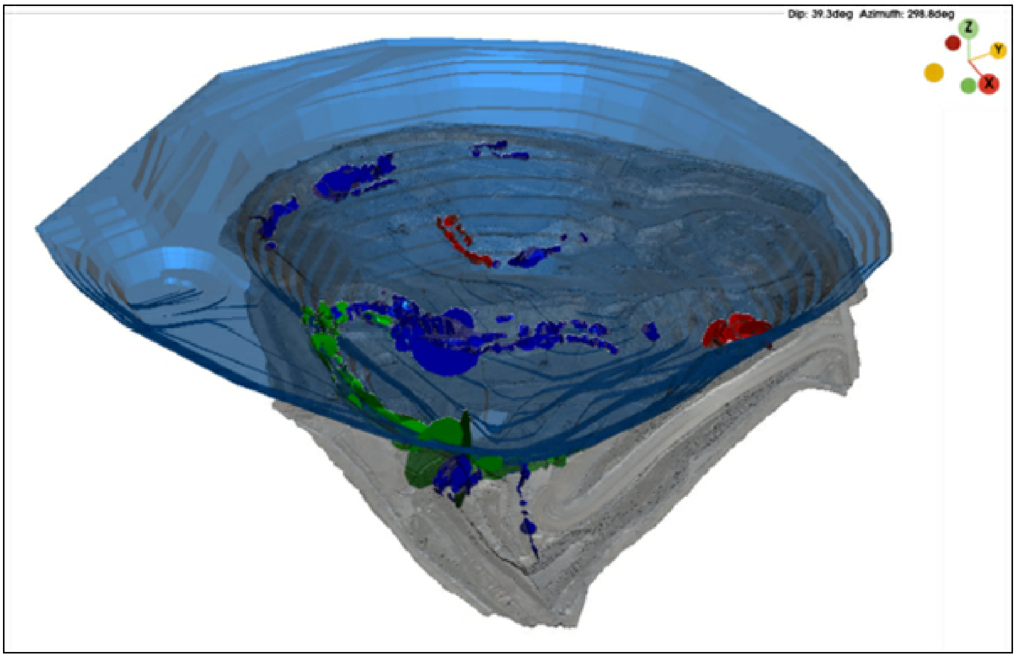


Figure 13-5 - Photogrammetric model and digitized structures in the Stage 4 pit.

All structure data has been grouped together (Figure 13-6), with the assumption that it is possible for any structure set to be able to occur anywhere within the given pit. This is a simplification and conservative approach. However, the structure sets are largely represented spatially throughout the deposit. Ongoing geotechnical mapping of the pit walls during mining will be required to confirm and improve the structural model.

Joints make up the major rock mass structure at Mt Cattlin. Various joint sets were identified within the data gathered, these have been analyzed and presented below.

The structure data is deemed to be a good indication of the structure sets present. The drill holes were orientated in varying directions; ~90° variation between the dip direction of each hole.

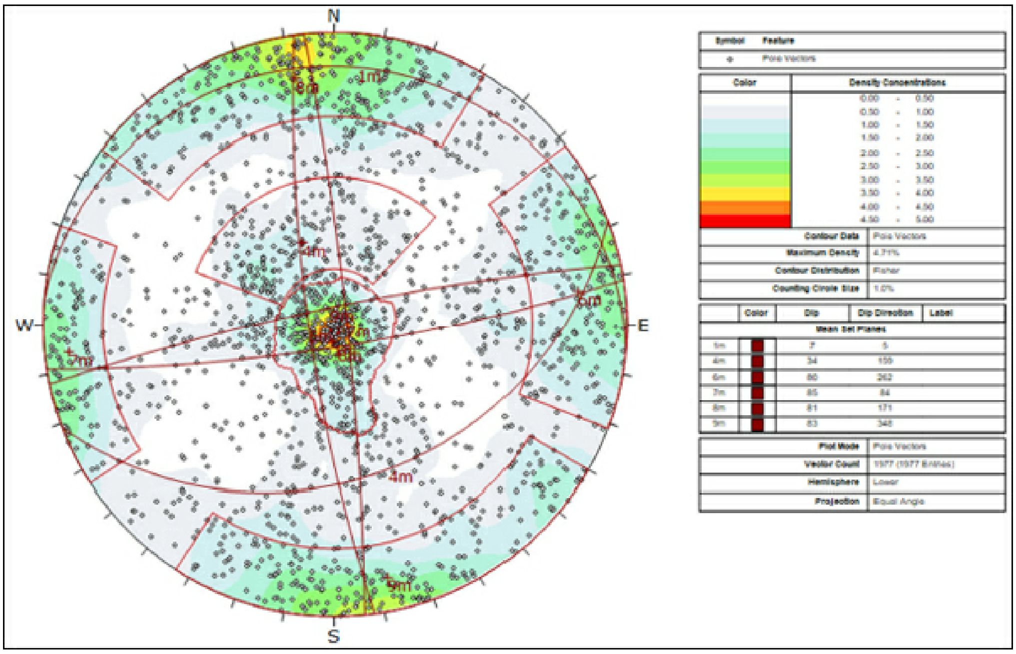


Figure 13-6 - Stereonet plot generated in Dips 8.0 displaying all major structures at Mt Cattlin (based on all data sources combined).

The structure sets defined at Mt Cattlin are summarized as follows:

1) 07 / 005
2) 34 / 159
3) 80 / 262
4) 85 / 84
5) 81 / 171
6) 83 / 348.

13.4.1.3 Geotechnical Model

Geotechnical input parameters for intact rock and rock mass strength have been developed based on information gathered from the geotechnical logging and laboratory testing programs. Lithological and structural wireframes utilized in the geotechnical model created can be seen in Figure 13-7.

The suite of geotechnical logging and material properties testing provides a robust overview of the variable nature of rock types encountered and prior experience.

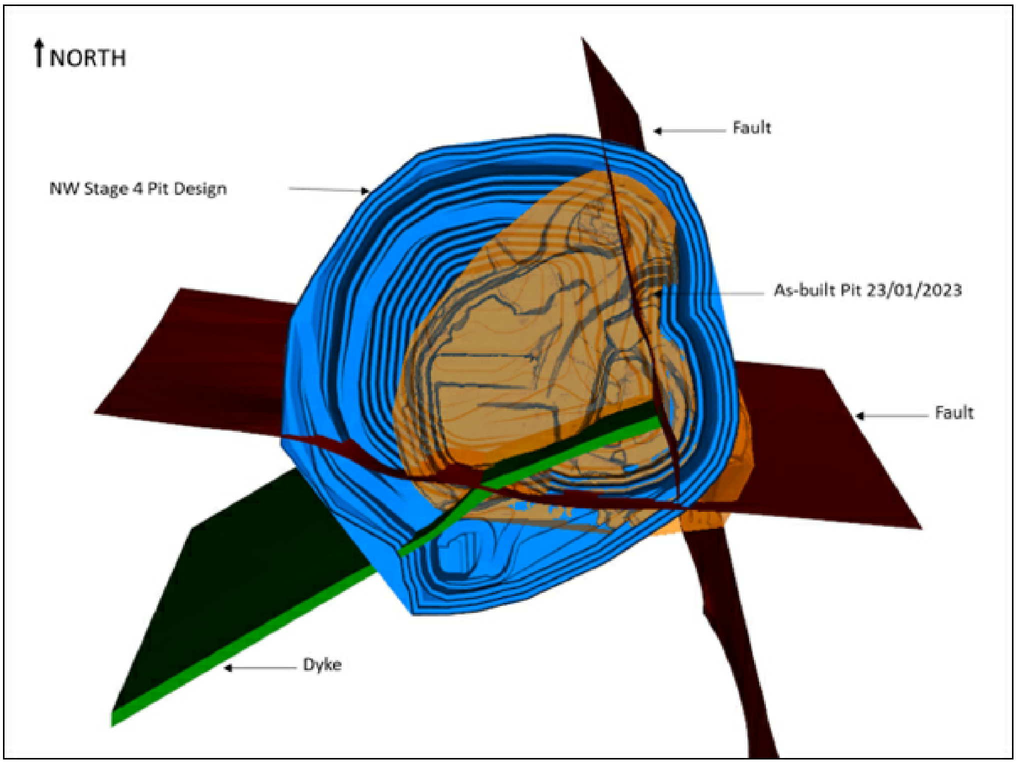


Figure 13-7 - Plan view of a preliminary Stage 4 pit design with related dyke and fault models provided by Allkem.

13.4.1.4 Geotechnical Domains

The geotechnical domains created for the purpose of the stability analysis have been expressed in terms of material type and weathering state, with a "likely" (average) condition and a "lower bound" (average less one standard deviation) condition to capture the range of potential materials encountered. The parameters for each of these cases have been displayed in Table 13-4.

Due to the varying material types identified during logging within the oxide and transitional zone, simplified domains were created. The oxide domain has considered rock types classified as completely weathered or extremely weathered, and the transitional domain has considered rockmass classified as highly weathered, moderately weathered, and slightly weathered. This is to ensure the input parameters for the analysis completed below accounts for all rock types within the domain.

Andesite was used as the primary host rock within the fresh domain. This is due to Andesite material being the most frequently occurring rock type during the logging of the three (3) geotechnical holes, slightly ahead of Basalt. It is also noted that Andesite is deemed to be the more conservative material type in relation to Basalt when considering the laboratory testing data.

The geotechnical domains for Mt Cattlin are described as:

- Oxide - lower bound

- Oxide - likely
- Transitional - lower bound
- Transitional - likely
- Andesite (Fresh) - lower bound
- Andesite (Fresh) - likely
- Pegmatite (Fresh) - lower bound
- Pegmatite (Fresh) - likely
- Dolerite Dyke - lower bound
- Dolerite Dyke - likely

Table 13-4 - Summary of the 'likely' and 'lower bound' geotechnical input parameters for slope stability analysis.

Geotechnical Domain	Unit Weight (kN/m3)	Hoek-Brown					Mohr-Coulomb	
		UCS (MPa)	GSI	mi	E (GPa)	D	C' (kPa)	Φ' (°)
'Likely'								
Oxide	18	-	-	-	-	-	52	31
Transitional	27.6	172	58	12	84	1	1,602	40
Fresh - Andesite	28.2	261	70	12	96	1	3,839	49
Fresh - Pegmatite	25.9	102	71	17	58	1	2,122	47
Dolerite Dyke	18.5	-	-	-	-	-	60	43
Fault	28.2	-	-	-	-	-	50	20
'Lower bound'								
Oxide	17	-	-	-		-	21	24
Transitional	26.6	67	46	12	57	1	669	26
Fresh - Andesite	26.3	223	62	10	87	1	2,137	43
Fresh - Pegmatite	25.6	59	64	9	47	1	1,075	33
Dolerite Dyke	18.5	-	-	-	-	-	60	43
Fault	26.3	-	-	-	-	-	50	20

13.4.1.5 Design Analysis

Slope design modelling and analysis was undertaken, including kinematic and limit equilibrium slope stability analysis, to develop the slope design parameter recommendations.

The Slope Design Acceptance Criteria outlined within the publication, Guidelines for Open Pit Slope Design (Read and Stacey, 2009) were adopted and can be seen below in Table 13-5.

Table 13-5 - Typical design Factor of Safety (FoS) and Probability of Failure (PoF) acceptance criteria for open pit mining (Read and Stacey, 2009).

Slope Scale	Consequence of Failure	Minimum FoS - Static Conditions	Minimum FoS - Dynamic Conditions	Maximum PoF (that FoS < 1)
Low-high	Low-high	1.1	NA	25-50
Bench Stack or	Low	1.15-1.2	1	25
Inter-Ramp	Medium	1.2	1	20
	High	1.2-1.3	1.1	10
Overall	Low	1.2-1.3	1	15-20
	Medium	1.3	1.05	5-10
	High	1.3-1.5	1.1	≤5

Geotechnical input parameters for intact rock and rock mass strength were developed based on information gathered from the geotechnical logging and material properties testing programs and prior case studies.

The kinematic analysis was conducted on slope directions ranging from 0° to 360° to cover all major pit wall exposures. The results indicated the probability of any of the three batter-scale failure modes (planar, wedge and toppling (flexural and direct)) occurring on the major pit walls at a bench face angle between 40° and 75° is generally low with results being within 0.2% and 12.36%. This is deemed to be within the acceptable limits of design. A failure mode type of “wedge sliding failure” reported the highest percentage of failures across the three batter-scale failure modes, particularly in the north-east wall sector within fresh material. Planar sliding recorded the lowest percentage failures with all Batter Face Angles (BFA) and slope direction combinations recording below 5.16%.

Bench and berm configurations developed in the kinematic and spill berm width analysis in conjunction with experience in similar settings and review of similar geotechnical engineering literature, were used when creating the inter-ramp and overall slope angles in the limit equilibrium slope stability models. The limit equilibrium analysis indicated slope instability at an inter-ramp or overall (pit) scale is unlikely within the designed pit.

Stability analysis was undertaken using the software package Slide 9.0 (Rocscience, 2022). Slide is a 2D limit equilibrium slope stability program for evaluating the FoS of circular or non-circular failure surfaces in soil or rock slopes. Slide analyses the stability of slip surfaces using vertical slice or non-vertical slice limit equilibrium methods. Stability sections were analyzed at an inter-ramp and overall scale. Dry conditions, as well as cases including a water table (phreatic surface), were analyzed. Seismic cases were ignored.

The highest/steepest slopes for the major pit walls were chosen for analysis. The sections for the stability analysis are shown in Figure 13-8.

Design slope angles have been used when creating the Slide model. The geotechnical input parameters for intact rock and rock mass strength have been developed based on information gathered from the geotechnical logging and material properties testing programs. Due to lithological wireframes for Mt Cattlin being unavailable, andesite was selected as the major rock type within the fresh domain. Andesite was the highest percentage logged rockmass in the geotechnical drilling program completed as part of this Project and it has been stated that the Annabelle volcanics (the primary host rock) are made up of 5% dolerite, 10-20% basalt, 50-70% andesite and 20-30% dacite (Witt, 1998).

To understand the effect of the modelled faults on the proposed open pit design, scenarios for both the “likely” and “lower bound” material properties were investigated. However, it should be noted that the effect of faults on pit slope stability is expected to be very spatially limited, and results with fault planes modelled should be viewed with this in mind.

Numerous search and analysis methods for circular and non-circular failure surfaces were computed to determine the global/critical minimum failure surfaces. Cuckoo search and Janbu analysis methods for non-circular failure surfaces are reported in the results, which generally compute the lowest global/critical minimum failure surfaces.

Results for the stability analysis are presented in Table 13-6, and indicate the current design will be stable for inter-ramp and overall slope scales. An example of a Slide analysis for the major pit walls is shown in Figure 13-9 (Section A) and Figure 13-10 (Section B).

The results from the Slide analysis indicate:

- For all cases, the FoS values achieved acceptance criteria.
- The lower bound critical path for the south-west wall (in both the dry and wet scenario) achieved a FoS of 1.24, with the failure path occurring across multiple benches. This failure is primarily driven by the interaction with the modelled fault; however, the results sit within the minimum acceptance criteria.
- As this failure is solely driven by the interaction with the modelled fault, it is recommended that further investigative works are completed to confirm the presence and potential impact of the fault to ensure the pit wall does not interact with this structure unfavorably. This may include (but is not limited to) bench by bench pit wall mapping, further investigative drilling (where appropriate), re-interpretation of the fault (if/where ground-truthing has occurred) and update of the pit design accordingly.
- The slopes are largely not sensitive to water. However, this may in part be due to over-simplification of the model and lack of available hydrogeological information. The drawdown of the water table with mining should be closely monitored to confirm this, and remodeled if it deviates significantly from assumptions contained in this report.
- Failure mechanisms influencing slope stability that cannot be captured in 2D Slide analysis, including geometry, structure, time-dependence, and reactivity to water, must be factored into the design in other ways.

To determine the appropriate design parameters for all walls of the pit, the Stage 4 NW pit was divided into four geotechnical pit design sectors. These sectors are known as North, East, South and West and are illustrated in Figure 13-8. As a result of the testing completed utilizing various scenarios and material property parameters, the slope design parameters deemed suitable for each pit sector have been provided in Table 13-6.

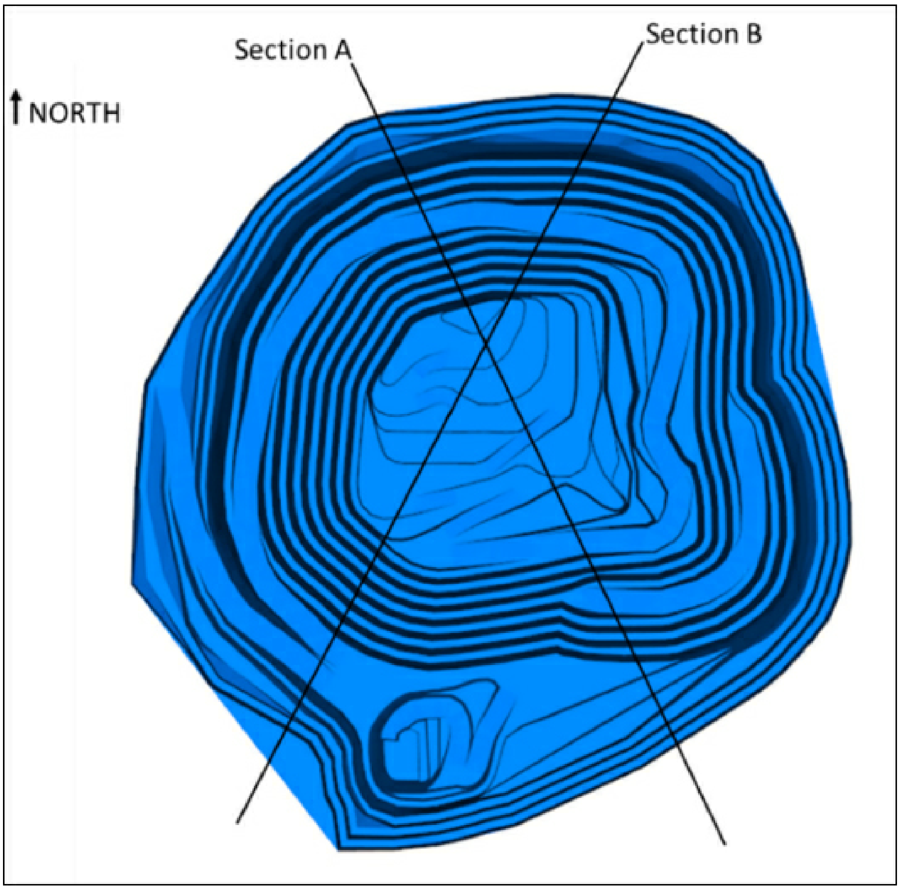
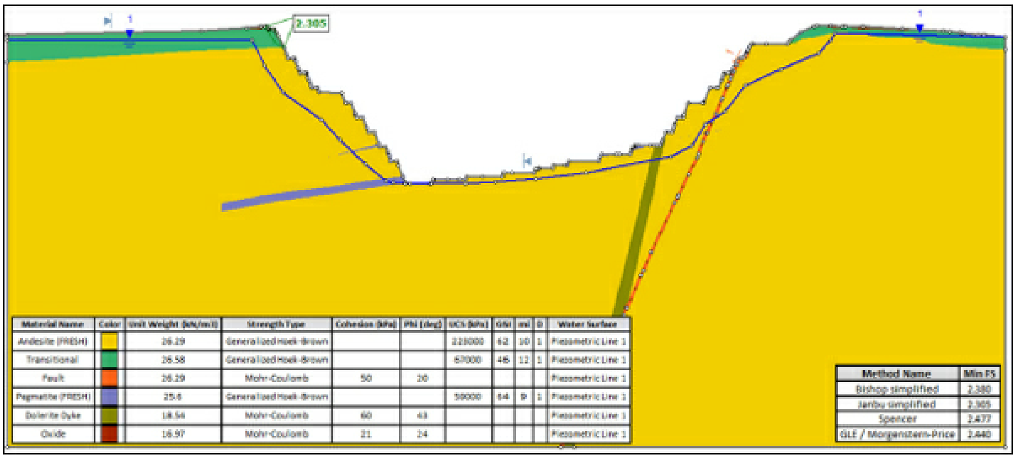


Figure 13-8 - Plan view of the preliminary Stage 4 pit design, with the location of Section A and Section B for stability analysis.

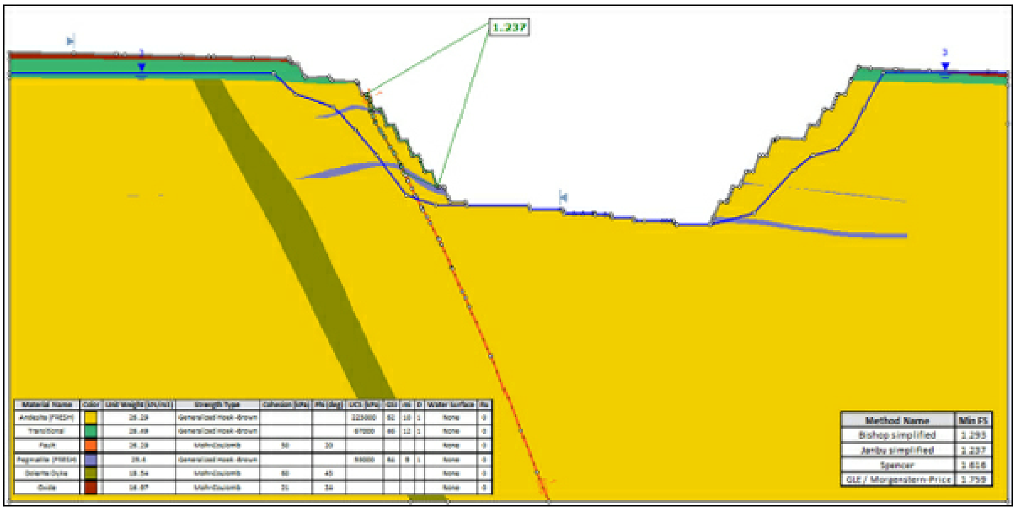
Table 13-6 - Summary of Stability Analysis Results.

Section	Material Properties	Water	FoS	
			Critical Path	Overall
Section A (North-west wall)	Lower bound	Dry	2.3	3.06
Section A (North-west wall)	Lower bound	Wet	2.31	2.39
Section A (North-west wall)	Likely	Dry	4.82	4.82
Section A (North-west wall)	Likely	Wet	4.04	4.05
Section B (South-west wall)	Lower bound	Dry	1.24	3.22
Section B (South-west wall)	Lower bound	Wet	1.24	3.22
Section B (South-west wall)	Likely	Dry	2.32	4.27
Section B (South-west wall)	Likely	Wet	2.3	4.11
Section A (North-west wall)	Lower bound (no faults)	Dry	2.3	3.06
Section A (North-west wall)	Lower bound (no faults)	Wet	2.31	2.39
Section A (North-west wall)	Likely (no faults)	Dry	4.82	4.82
Section A (North-west wall)	Likely (no faults)	Wet	4.04	4.05
Section B (South-west wall)	Lower bound (no faults)	Dry	2.79	3.22
Section B (South-west wall)	Lower bound (no faults)	Wet	2.78	3.22
Section B (South-west wall)	Likely (no faults)	Dry	4.27	4.27
Section B (South-west wall)	Likely (no faults)	Wet	3.55	4.11



Condition: North-west wall - critical failure - lower bound material properties - wet.

Figure 13-9 - Slide section for Section A, looking north-east.



Condition: south-west wall - critical failure - lower bound material properties - wet.

Figure 13-10 - Slide section for Section B, looking north-west Slope Design Parameters.

The design analyzed within the feasibility report was a preliminary design based upon design parameters developed. The only material variation in pit geometry was the final design utilizing switch back ramps predominantly on the southern side, creating a western highwall more than 150 m vertical, which in the preliminary design was bisected by a wrap-around ramp. Without the ramp, the highwall was required to be modified by the inclusion of a 12 m wide berm to geotechnically decouple the upper and lower portions of the slope.

From the analysis conducted; it was identified that the modelled steeply dipping faults interact with the designed pit wall in the south sector of the pit. This interaction may cause local instability which will inevitably reduce the overall stability of the pit wall. It is recommended that further investigative works are completed to confirm the exact presence of the faults to ensure the pit wall does not interact with this structure unfavorably.

13.4.1.6 Design Parameter Recommendations

Slope design modelling and analysis was undertaken, including kinematic and limit equilibrium slope stability analysis, to develop the slope design parameter recommendations. The Stage 4 NW pit was divided into four geotechnical pit design sectors with the slope design parameters deemed suitable for each pit sector shown in Table 13-7 with slope terminology illustrated in Figure 13-11.

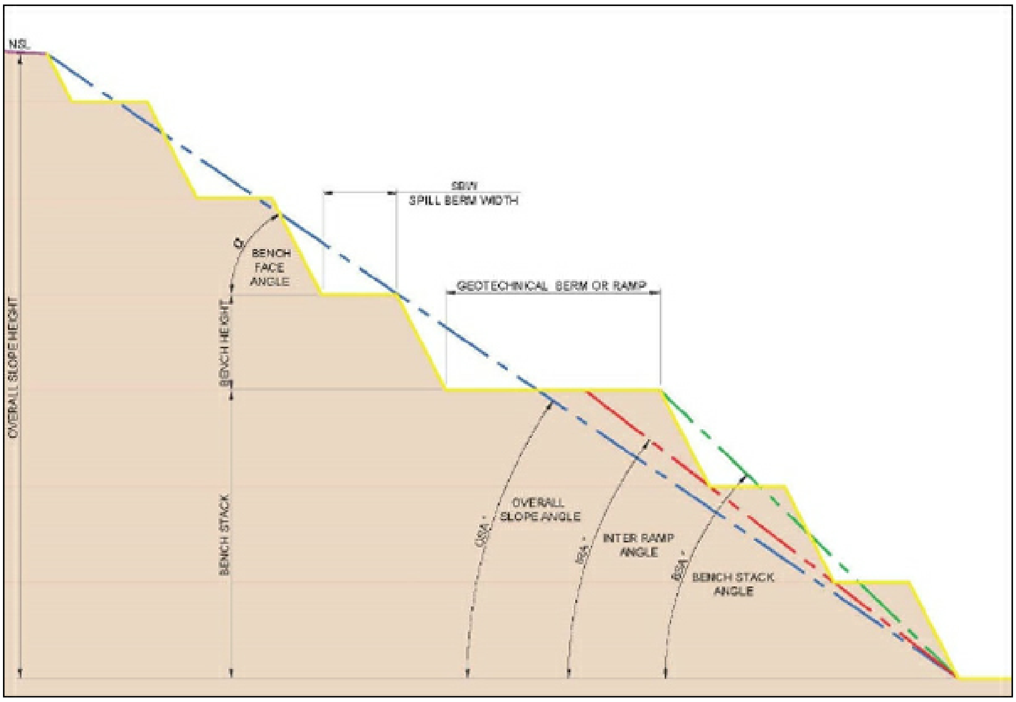


Figure 13-11 - Pit slope design elements, geometries, and terminology.

The design criteria for the various pit sectors and domains are shown in Table 13-7.

Table 13-7 - Slope Design Parameter Recommendations for Mt Cattlin NW Stage 4.

Sectors	From/To	Domains	Bench Height (m)	Bench Face Angle (°)	Spill Berm Width (m)	Inter-Ramp Angle (°)
North	Surface to 5mbs	Oxide	10	50	6.5	33.9
	5mbs to 40mbs	Transitional	20	60	8.5	44.9
	40mbs to Base of Pit	Fresh	20	70	8.5	51.7
East	Surface to 5mbs	Oxide	10	50	6.5	33.9
	5mbs to 40mbs	Transitional	20	60	8.5	44.9
	40mbs to Base of Pit	Fresh	20	70	8.5	51.7
South	Surface to 5mbs	Oxide	5	50	6.5	33.9
	5mbs to 40mbs	Transitional	20	60	8.5	44.9
	40mbs to Base of Pit	Fresh	20	70	8.5	51.7
West	Surface to 5mbs	Oxide	5	50	6.5	33.9
	5mbs to 40mbs	Transitional	20	60	8.5	44.9
	40mbs to Base of Pit	Fresh	20	70	8.5	51.7

13.4.2 Hydrological

Hydrological data from the Stage 4 Expansion study was considered in the future mine designs, including topography and catchment areas surrounding the site as well as current and future modelled groundwater quality and impacts of mining.

Further information on surface and groundwater are found in Chapter 17 Environmental.

13.4.3 Haul Road Parameters

Haul road width is determined by the safe operating procedures in addition to efficiency trade-offs related to single/double lanes and the impact this has on overall pit strip ratio. Haul road width sizing is based on a multiple of the largest truck used (in this case the Caterpillar 785 or equivalent) allowing for a drain, sufficient clearance on both sides, and a safety berm constructed to axle height as visualized in Figure 13-12 and further detailed in Table 13-8 . The total haul road design width used was 20 m for single lane, and 35 m for double lane. These widths have been used for all the in-pit haul road designs.

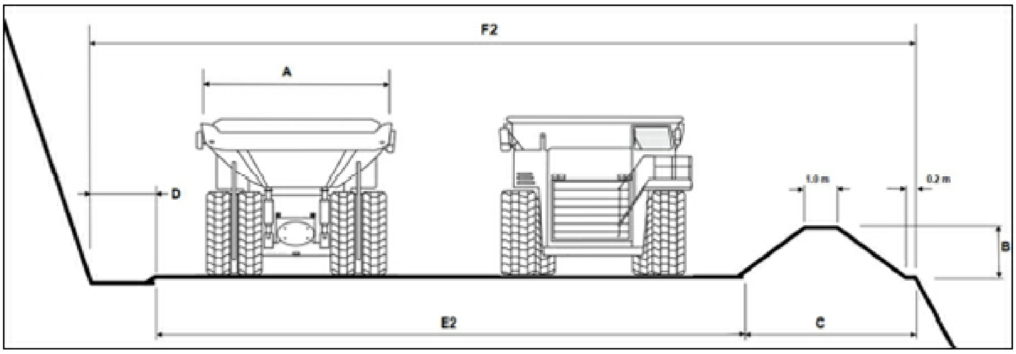


Figure 13-12 - Haul Road Schematic.

Table 13-8 - Haul Road Parameters.

Model - Caterpillar 785		Unit	Value
A	Operating Width	m	8
B	Bund Height	m	1.2
C	Bund Width	m	3.8
D	Drain Width	m	1
E1	Minimum Pavement (2.0 x A) - Single Lane	m	16
E2	Minimum Pavement (3.2 x A) - Dual Lane	m	25.6

13.4.4 Pit Design

The pit design process as described above and using the various criteria detailed above produced practical layouts that can be seen in the section below in plan view and long section and illustrated with ore blocks colored by grade.

The Stage 3 open pit design is per the current pit being excavated onsite which aligns with the 2022 Mineral Reserve. The remaining Stage 3 inventory as of 30 June 2023 is reported in Table 13-9

Table 13-9 - Stage 3 Inventory as of 30 June 2023.

Summary	Units	Pit Design
Ore	Mt	1.9
Waste	Mt	6.7
Strip Ratio	w:o	3.5
Grade	% Li_2O	1.5
Yield	%	0.19
Concentrate	kt	340

The Stage 4-1 open pit design utilizes a double lane ramp at the pit crest entry on the north-eastern wall, ramping down to the west then south before continuing to circle around to the south wall, where the dual ramp system ends at the 130 m RL. A single lane ramp system starts again at the 130 m RL on the north wall before circling down to the 70 m RL.

The Stage 4-1 open pit design is approximately 650 m long (WSW-ENE), 580 m wide (ESE-WNW) and 210 m deep mining a total of 60 Mt of material, inclusive of Stage 3 as shown in Figure 13-13 and Figure 13-14.

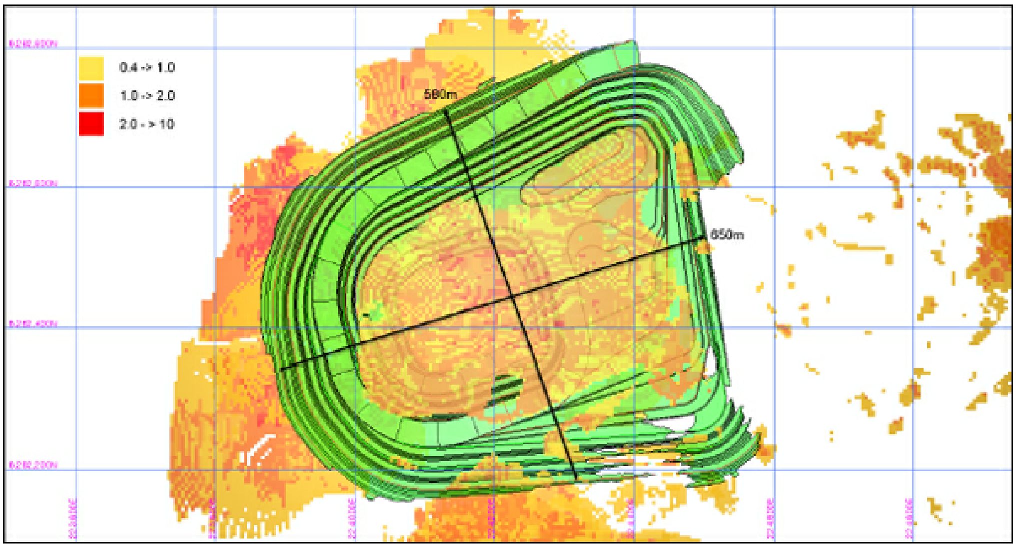


Figure 13-13 - Stage 4-1 Showing Dimensions in Plan View with Ore Blocks Colored by Li_2O Grade.

The Stage 3 pit is currently mining ore at approximately 155 m RL. The pit extends to the base of the orebody contact but the guiding optimization shell did not carry the additional waste required to access the higher-grade material to the west at depth (seen as ore blocks outside the pit in Figure 13-14). Conversely the lower grade material to the south (below old workings) does not have the grade required to be cash flow positive and is therefore ignored in the shell and resultant design. The Stage 3 inventory is listed in Table 13-10

A comparison of the Stage 4-1 designed pit (inclusive of Stage 3) to the optimization shell metrics are listed in Table 13-10.

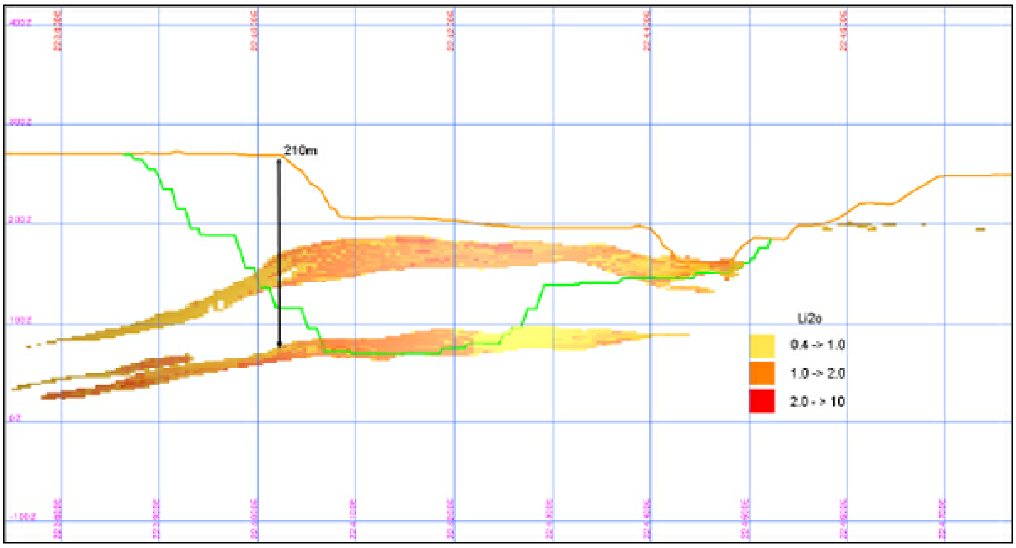


Figure 13-14 - Stage 4-1 Long Section 6,282,520 mN showing Pit Depth.

The pit design captures 3% less ore at a similar grade when compared to the optimized shell due to practical constraints honored by the design, table 13-10.

Table 13-10 - Stage 4-1 Inventory and Whittle Shell. Values include Stage 3 below June Topography.

Summary	Units	Pit Design	Whittle Shell #44	Delta
Ore	Mt	3.4	3.4	87%
Waste	Mt	53.3	43.1	124%
Strip Ratio (overall)	w:o	15.8	12.8	123%
Grade	% Li_2O	1.37	1.37	100%
Yield	%	0.18	0.18	100%
Concentrate	kt	546	681	98%

The Stage 4-2 pit design utilizes a double lane ramp at the pit crest entry on the north-western wall, ramping down the west wall then to the south before switching backing at the 175 m RL and again at the 135 m RL and 100 m RL. At this point, the ramp switches to a single lane ramp which continues down to the 40 m RL as can be seen in Figure 13-15.

The Stage 4-2 design is approximately 850 m long (WSW-ENE), 760 m wide (SSE-NNW) and 245 m deep mining a total of 131 Mt of material, inclusive of Stage 3 and Stage 4-1. The design captures 15% more ore at a 4% lower grade than the optimized shell and the lower grade additional ore has reduced the overall head grade slightly Table 13-11.

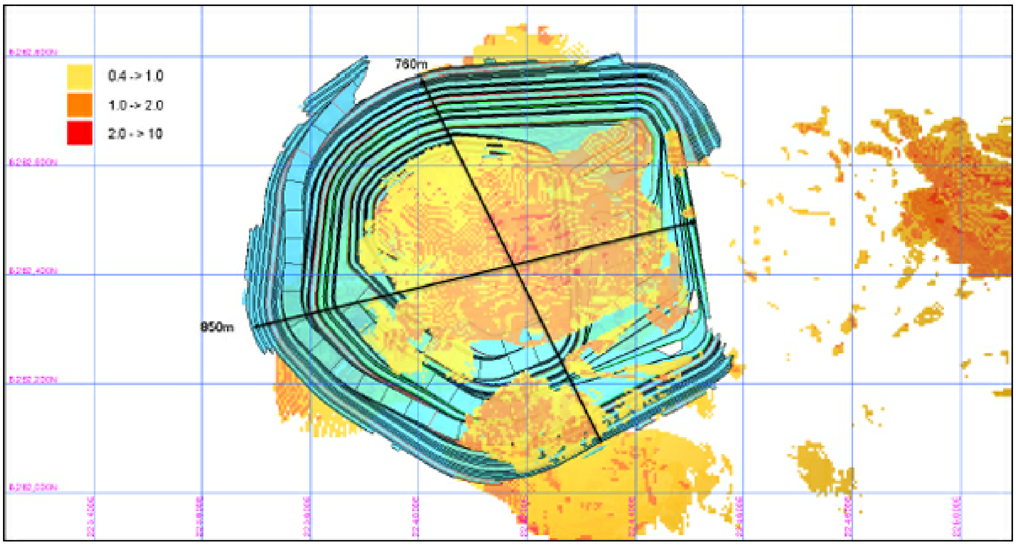


Figure 13-15 - Stage 4-2 Showing Dimensions in Plan View with Ore Blocks Colored by Li_2O Grade.

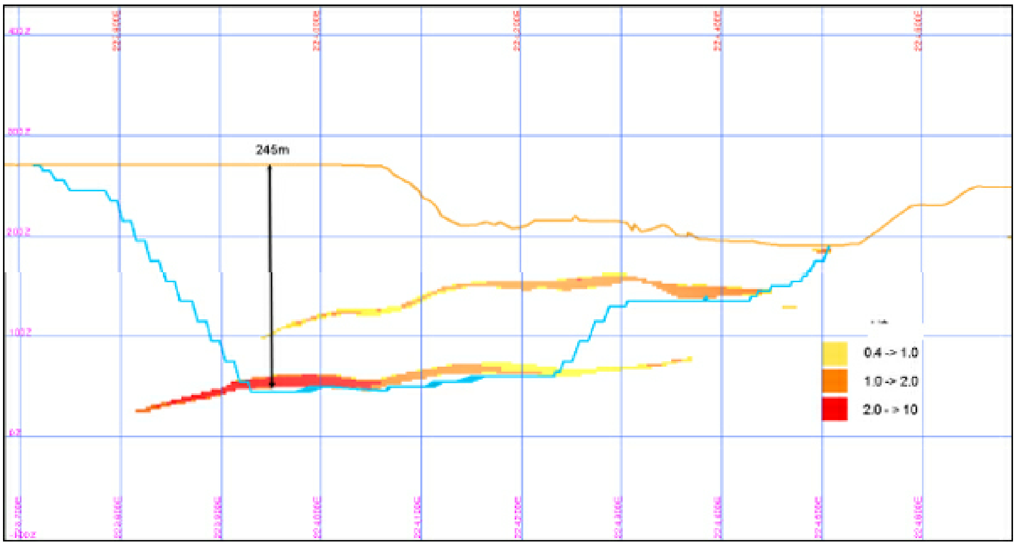


Figure 13-16 - Stage 42 Long Section 6,282,520 mN.

Table 13-11 - Stage 4-2 Inventory and Whittle Shell. Values include Stage 4-1 and Stage 3 below June Topography.

Summary	Units	Pit Design	Whittle Shell #45	Delta
Ore	Mt	5.4	4.6	117%
Waste	Mt	121	84	144%
Strip Ratio (overall)	w:o	22.6	18.1	125%
Grade	% Li_2O	1.32	1.37	96%
Yield	%	0.17	0.17	100%
Concentrate	kt	823	734	110%

Figure 13-17 and Figure 13-18 show an overview of the interaction between the pit design Stage 4-1 and Stage 4-2 in plan view and long section.

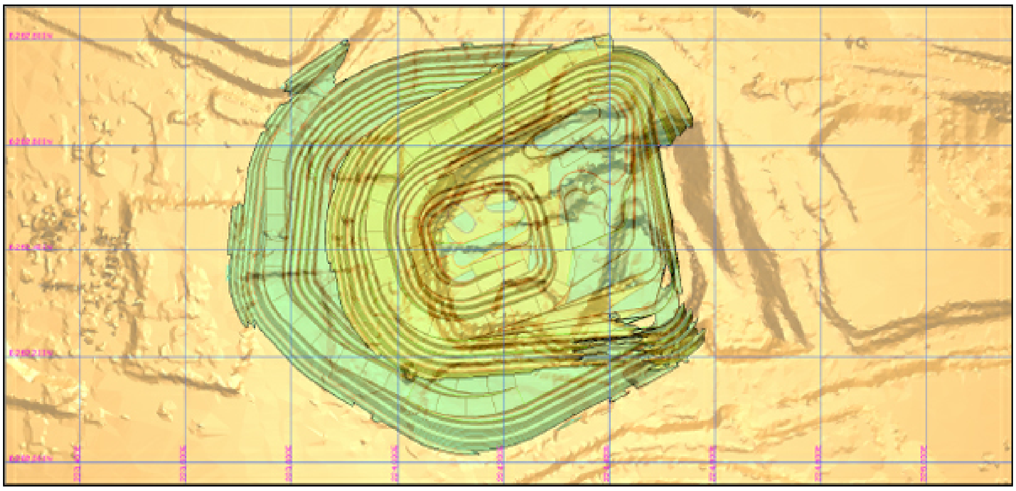


Figure 13-17 - Interaction of Stage 4-1 and Stage 4-2 Designs in Plan View.

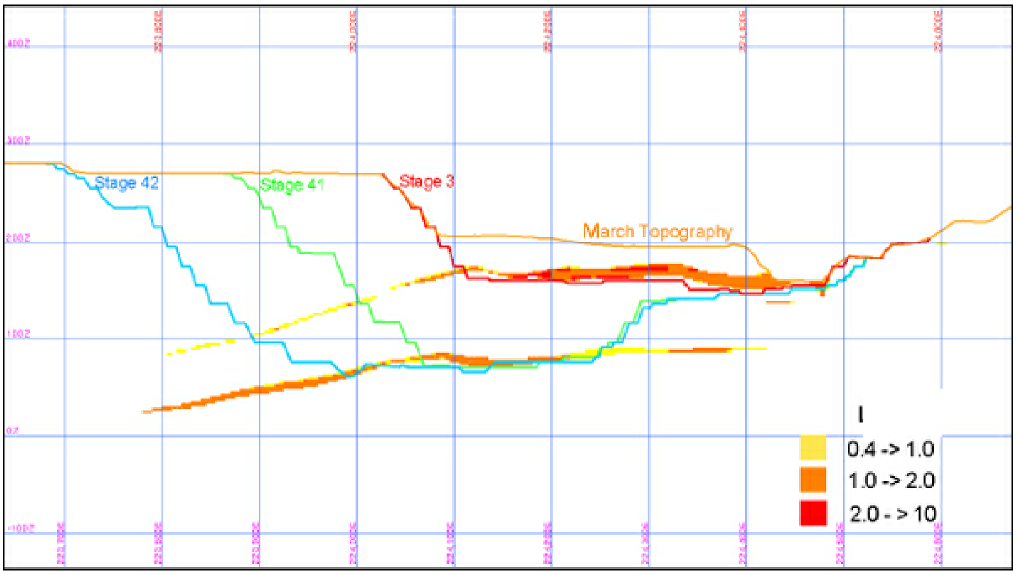


Figure 13-18 - Cross section showing the Pit Design Stages Including Ore Zones Colored by Li_2O Grade, and 31 March 2023 Topography.

13.4.5 Waste Rock Disposal

The waste rock disposal sequence is optimized by the scheduling software to define the most cost-effective approach available, while honoring the applied waste dumping constraints. The layout of the dumping locations and pit design rims is shown in Figure 13-19.

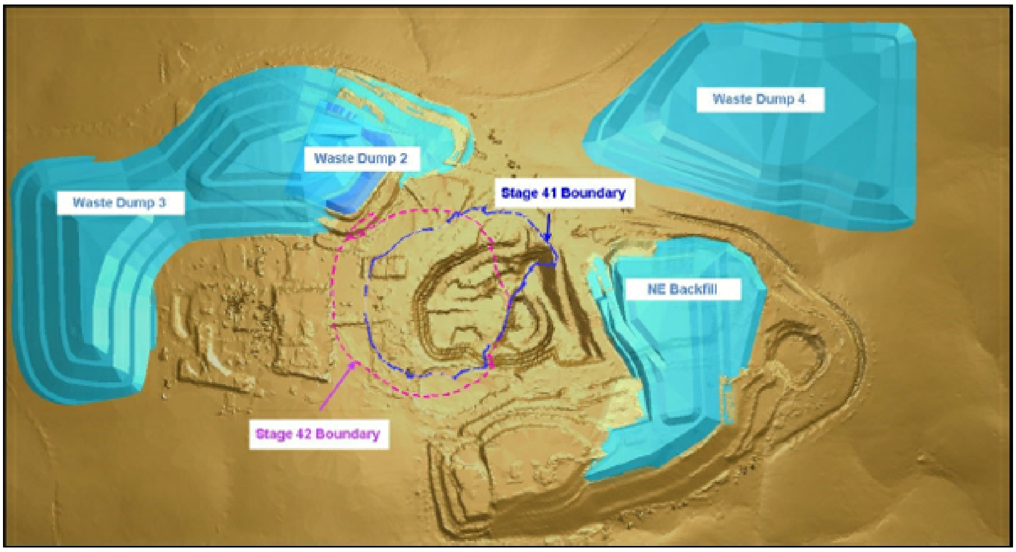


Figure 13-19 - Pit Design Outlines and Waste Dump Locations.

Allkem supplied the waste dumping constraints and sequence shown below in Table 13-12 to be implemented in the schedule.

Table 13-12 - Waste Dumping Constraints.

Priority	Dumping by Stage	Capacity	Unit	Stage Allocation
1	Waste Dump 2 - NW Part 1	1.9	M BCM	Stage 3
2	Waste Dump 2 - NW Part 2	0.8	M BCM	Stage 3
				Stage 4-1
3	NE Void Backfill 270 mRL Design	4.2	M BCM	Stage 3
				Stage 4-1
				Stage 4-2
4	Waste Dump 3	16.7	M BCM	Stage 4-1
				Stage 4-2
5	Waste Dump 4	17.1	M BCM	Stage 4-1
				Stage 4-2
Total		**40.8**	**M BCM**	

13.5 Mine Scheduling

A Life of Mine (LOM) schedule to economically extract the Ore Reserve material was developed in GEOVIA MineSched software using the physical quantities reported from the optimized pit designs.

As the operation is located close to the town of Ravensthorpe, strict noise emission limitations ultimately affect the overall size of the fleet and the size of the individual items of machinery. Sensitive noise receptors, located to the south of the mine, require a waste dumping sequence that builds a southern noise barrier, and then progresses dumping northwards. Wind direction can have a significant short-term effect on the perception of noise and must be managed by daily scheduling flexibility.

Mining dilution and recovery factors used in developing the schedules are outlined in Chapter 11.

The 360-t excavator fleet will remove the majority of the bulk waste in each stage, assisted by the smaller fleets when working area allows. The smaller fleets will focus on selective ore mining, and waste removal in the more constrained working areas of the lower benches.

High strip ratios and ramp access will occasionally limit the production rate due to a practical bench turnover constraint and limited working space. The mining sequence must be executed in order from the existing Stage 3 to Stage 4-1, and then onto the final Stage 4-2. There are several factors influencing the sequence, including managing the interface between the current active pit/s and the cutbacks, access to feed material, and minimum working area.

A mining fleet production target of 12 M BCM per annum including availability, utilization, and efficiency factors has been applied in conjunction with a 1.8 Mt per annum processing target.

Due to the constraints placed on the mining sequence with integrating the existing Stage 3 pit, permitting approval timelines, practical bench turnover rates, practical vertical advance, and high stripping ratios, the process plant does not always have ore available at the nominal capacity.

Figure 13-20 and Figure 13-21 show the process plant feed by pit stage, by Clean and Contaminated ore, and by head grade.

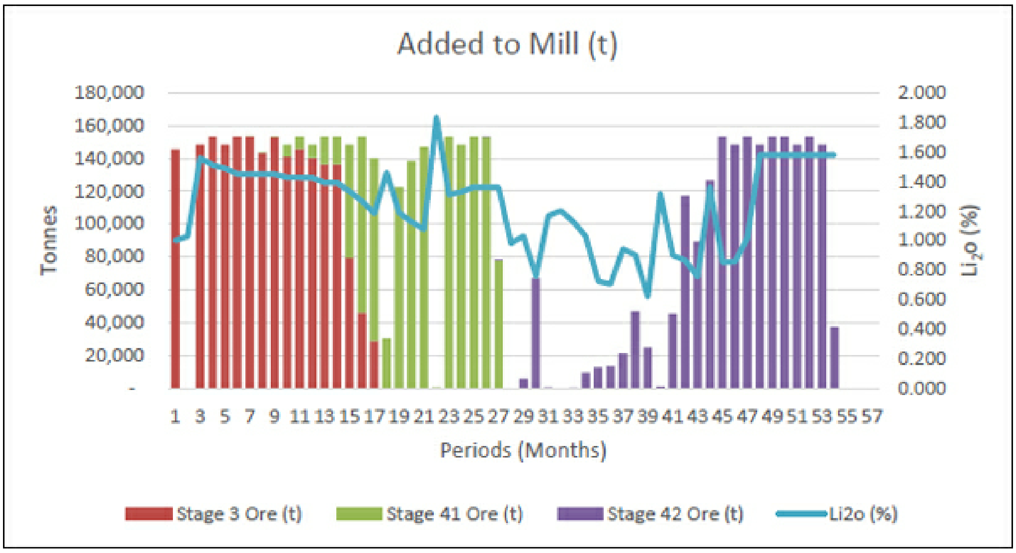


Figure 13-20 - Scheduled Process Plant Feed by Pit Stage.

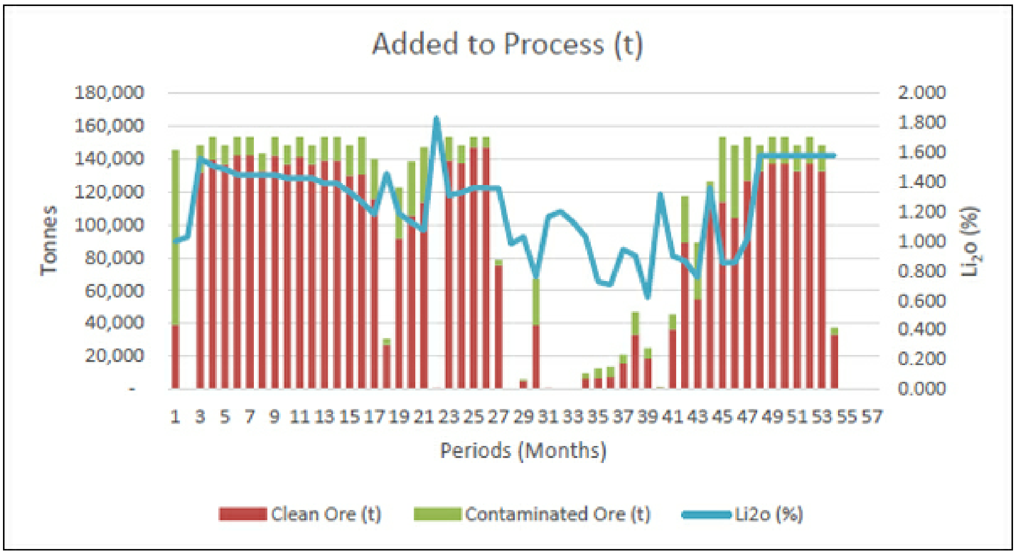


Figure 13-21 - Scheduled Process Plant Feed by Clean and Contaminated Ore.

The mine schedule start is defined as of July 1, 2023. Scheduling has been undertaken on monthly schedule periods to provide appropriate resolution for downstream financial modelling and for use in site production planning.

Figure 13-22 shows total excavation by period and cut-back stage. The total potential fleet capacity is not always achieved, due mainly to practical bench turnover constraints.

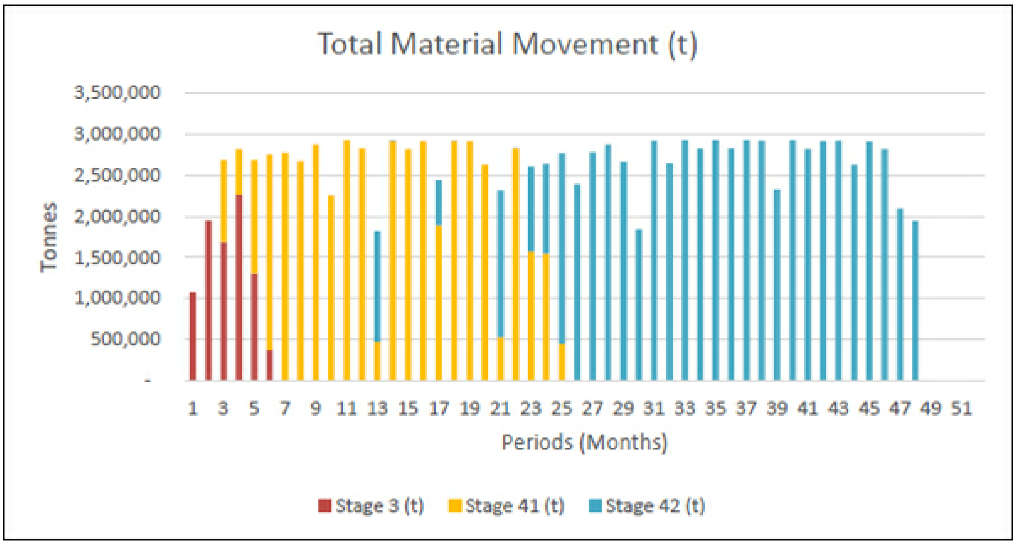


Figure 13-22 - Total Material Movement by Pit Stage (BCM).

Figure 13-23 shows the timing of in-situ ore presentation in the mining sequence by stage. The high strip ratios for Stage 4-1 and Stage 4-2 means there are periods of no ore due to the volume of waste to be removed and bench turnover limits.

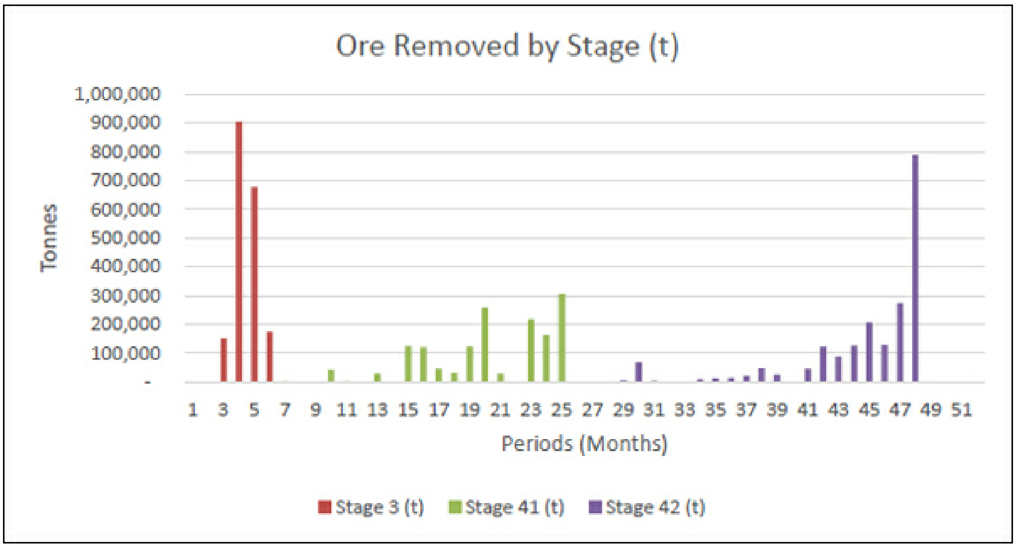


Figure 13-23 - Ore (t) Removed by Pit Stage.

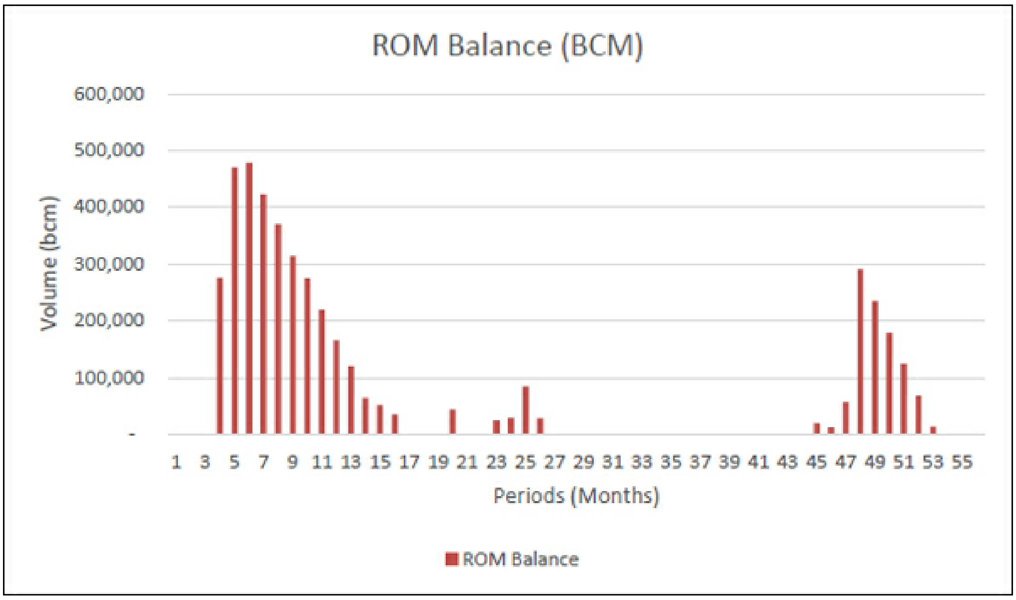


Figure 13-24 - ROM Balance (BCM).

Contaminated ore is taken to the Tomra ore sorter for beneficiation to become clean ore. During this process 50% of the mass in the form of basalt is removed from the material. The metal is also reduced by half, maintaining the Li_2O diluted head grade of the cleaned material. The clean material is now added to the Clean ore ROM feed for processing. Results from the schedule can be seen in Table 13-13.

Table 13-13 - Tomra Beneficiation and Mill Feed (incl. ROM Stocks).

Process	Material Description	Mass (Mt)	Li_2O
Tomra	Contaminated ore feed	0.72	0.66
DMS	Clean ore from Tomra	0.35	0.66
	Clean ore in situ	4.6	1.4
Total DMS Feed		**5**	**1.3**

Opening ROM stocks as seen in (Figure 13-24) has been taken from the provided site monthly production reconciliation spreadsheet as of 1 July 2023, and applied to the ex-pit schedule in the cashflow model.

The annual mining production and processing schedules for the LOM plan are shown below in Table 13-14.

Table 13-14- Annual Ore Mining and Processing Schedules

			Project Years Starting July 2023					
Area	Units	Total / Avg	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6
Open Pit Mining Movements								
Mined Waste BCM	MBCM	42.21	9.05	10.96	11.59	10.61	-	-
Mined Ore	Mt	5.36	1.96	1.12	0.42	1.87	-	-
Mined Ore Li_2O Grade	%	1.3	1.5	1.2	1.2	1.3	-	-
Mined Li_2O Contained	kt	70.7	28.4	13.5	5.1	23.6	-	-
Stockpiled ROM Ore Opening Balance	Mt		0.14	0.45	0.08	-	0.79	-
Stockpiled ROM Ore Closing Balance	Mt		0.45	0.08	-	0.79	-	-
Stockpile Ore Closing Li_2O Grade	%		1.4	1.3	0.0	1.6	-	-
Ore Processing Schedules Mined Ore and ROM								
Tonnes Processed	Mt	5.51	1.65	1.49	0.49	1.08	0.79	-
Li_2O Grade	%	1.3	1.4	1.3	1.2	1.0	1.6	0.0
Contained Li_2O	kt	72.1	23.5	18.9	6.1	11.1	12.5	-
Contained Ta_2O_5	Mlb	1.58	0.38	0.37	0.22	0.35	0.26	-
Ore Processing Schedules Tailings, Low Grade and Fine-Grained Stockpiles								
Tonnes Processed	Mt	1.6	-	-	-	-	1.1	0.6
Contained Li_2O	kt	11.9	-	-	-	-	7.0	4.8
Contained Ta_2O_5	Mlb	0.34	-	-	-	-	0.19	0.14
Processing Recoveries								
Li_2O From Mine and ROM Stockpiles	%	62.9%	65.6%	61.3%	61.8%	55.4%	67.3%	0.0%
Ta_2O_5 From Mine and ROM Stockpiles	%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	0.0%
Li_2O From Tailings, Low Grade and Fine-Grained Stockpiles	%	30.6%	-	-	-	-	34.4%	25.1%
Ta_2O_5 From Tailings, Low Grade and Fine-Grained Stockpiles	%	20.0%	-	-	-	-	20.0%	20.0%
Recovered Products								
Li_2O in Spodumene Concentrate	kt	49.0	15.4	11.6	3.8	6.1	10.9	1.2
Ta_2O_5 in Tantalite Concentrate	Mlb	0.38	0.08	0.08	0.04	0.07	0.09	0.03
Spodumene Concentrate Production	kmt	916	284	215	70	114	206	27

14. PROCESSING AND RECOVERY METHODS

The Mt Cattlin processing plant is located to the west of the mine, approximately 2 km northwest of the Ravensthorpe town site.

14.1 Process Development

14.1.1 Early Operations (2010-2016)

Mt Cattlin operations commenced in October 2010 with the ramp-up continuing throughout 2011. The original plant consisted of a four-stage crushing circuit producing a -6 mm product from ROM ore at a treatment rate of 1 million tonnes per annum. The crushing plant ran on day shift only, providing feed to an ore bin, which fed the concentrator on a continuous 24 hour per day basis.

The concentrator included a reflux classifier for mica removal, and dual size stream, two stage Dense Medium Separation (DMS) cyclones. The final spodumene concentrate was stacked on a pad adjacent to the plant area, drained and then hauled by road to Esperance Port for shipment in bulk. Coarse waste DMS plant float material was conveyed to the Rejects Load Out Bin and hauled by truck to mined portions of the pit(s) to be used as back-fill or as road base.

The DMS pre-screen undersize (-0.5 mm) was treated by gravity separation using spiral classifiers and shaking tables to recover a tantalite concentrate, which was contract dressed and sold, or stockpiled at site depending on the price.

Tantalite circuit tailings and other plant spillage streams were directed to a thickener for process water recovery. The thickener underflow was pumped to the tailings storage facility, approximately 500 m north of the plant.

14.1.2 Operations (2016-2018)

In 2016, process modifications were implemented to target an increased processing throughput of 1.6 million tonnes per annum of ROM ore. The significant process changes implemented included:

- Change from 4 stage to 3 stage crushing.
- Change of crusher top size from -6 mm to -12 mm
- Modified wet screen to cut at 1 mm.
- Other size fraction changes for spirals and DMS plant
- Addition of reflux classifiers and vacuum belt filter following the spirals to recover product from the wet screen undersize
- DMS reflux classifier only used for fine size fraction of DMS feed.

14.1.3 Yield Optimization Project (2018-Present)

Beginning in 2019, additional improvements were made to the flowsheet as part of the Yield Optimization Project (YOP), which was designed to improve yield and increase throughput of ROM ore to 1.8 million tonnes per annum.

These changes included:

- Further optimization of size fractions for Wet Plant feed and feed to the DMS Plant
- Reliberation circuit for the Secondary DMS rejects to recover spodumene composited with gangue material.
- Replacement of the Vacuum Belt Filter with Wet High Intensity Magnetic Separation and an Ultrafine DMS circuit for recovery of spodumene from the Wet Screen undersize
- Introduction of a Product Quality Upgrade (PQU) circuit containing a Wet Belt Magnetic Separator and an Optical Sorter for removal of basalt to improve product grade.

In early 2019, two in-series optical sorters were introduced in the crushing circuit to process ongoing and previously stockpiled material classed as 'contaminated' and not suitable for plant feed. Subsequent optimization exercises and equipment upgrades allowed for parallel sorter operation and increased processing rates. This circuit produces plant feed from previously unsuitable basalt contaminated material.

The current process flowsheet is summarized in Figure 14-1.

14.2 Detailed Process Description

14.2.1 ROM Pad and Crushing Circuit

Ore mined from the mine can be classified into two ore types; Clean ore which contains < 5% basalt and Contaminated ore that contains > 5% Basalt. The ore is classified visual by ore spotters in the pit, using the fact clean ore is pegmatite (white in color) and basalt is (black in color), the ore spotter will estimate the percentage basalt and direct truck driver to the appropriate finger on the ROM.

Clean ore is placed in fingers on the Run of Mine ROM and crushed as direct feed into the plant or onto Fine Ore Stockpile FOS for direct feeding at a later stage. Contaminated stored on finger F19 on the ROM pad and crushed separately to be feed into the sorters (TOMRA's) to remove the basalt which has similar SG characteristics to spodumene.

Basalt contaminated ore is reclaimed from the ROM F19 stockpile by front end loader put over a grizzly feeder to remove fines and into a single toggle jaw crusher. Due to the size requirement of the optical sorter the ore is split into three size fractions via triple deck screen 22mm to 75mm fraction, 14mm to 25mm fraction and -14mm which is not treated through the sorter due to being too small for optical sorting.

The split on the screens can very but is generally ~45% -14mm, 22% 14mm-25mm and 33% 25mm-75mm each size fraction is stacked into separate piles and fed into the sorter via loader or in case of -14mm stored for future treatment.

Each of the size ranges has setting optimized specific to treat size that size range, 14mm-25mm and 25mm-75mm, are fed into the TOMRA separately and using air canons to blow out basalt to upgrade the ore by shooting out 95% of the basalts. After successful treatment, the pegmatite is left clean with less than 3% basalt.

Contaminated ore treated trough the TOMRA is now clean ore <5% basalt and is batch processed through the crushing circuit while clean ore from the ROM being reintroduced before secondary cone and being crushed to -14mm in the cone crusher circuit becoming DMS plant feed.

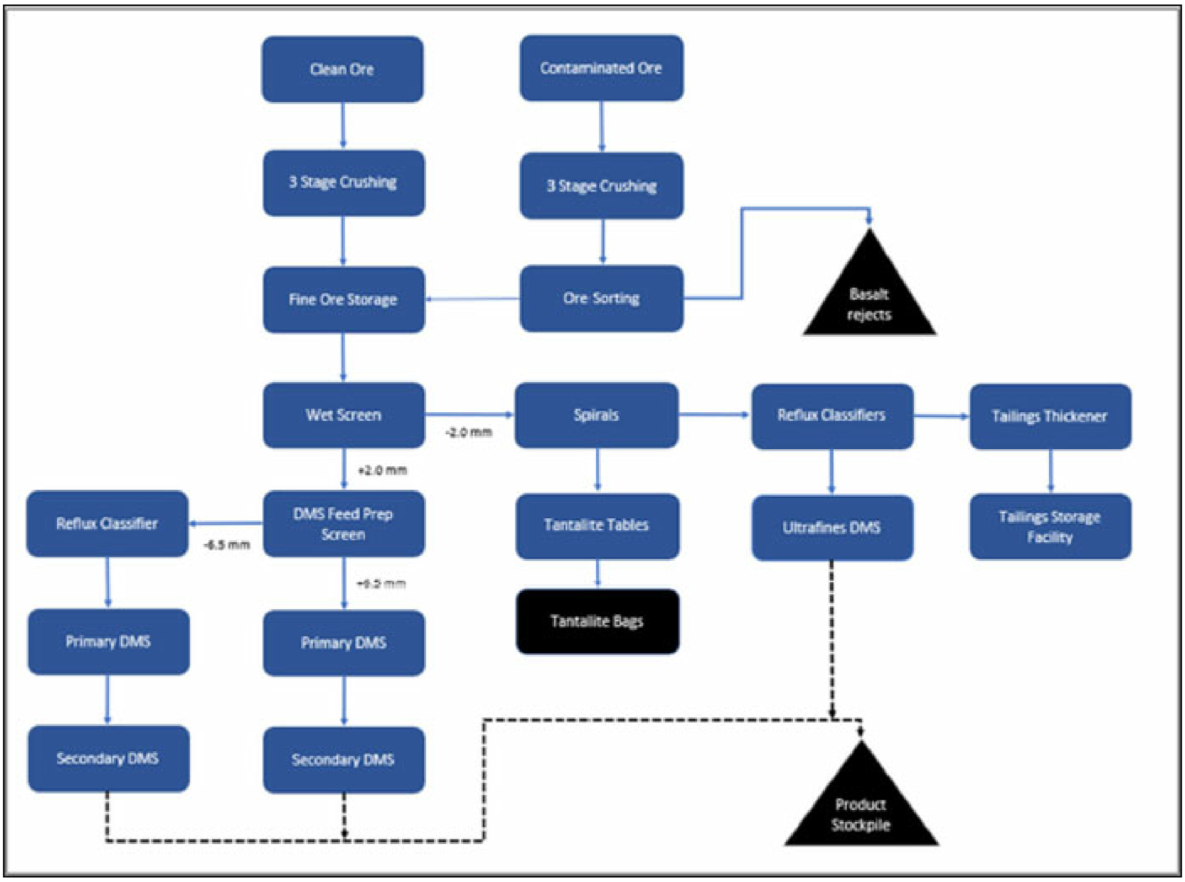


Figure 14-1 - Mt Cattlin Process Flowsheet.

14.2.2 Wet Plant Feed Classification

Ore from the FOB is fed over a wet screen with the oversize, nominally +2.0 mm, dewatered and conveyed to storage bin (Bin 10) and then control fed to the DMS plant. Screen undersize (-2.0 mm) material is collected in a hopper and pumped to the Fines Circuit.

14.2.3 Fines Circuit

The fines plant receives approximately 15% of the total feed which is split into coarse (+710 µm to 2.0 mm) and fine (less than 710 µm) streams by Derrick Stack Sizer screens. The coarse stream is pumped directly to the coarse spiral concentrators. The fines material is pumped to deslime cyclones ahead of the fines spiral concentrators.

The concentrate from both coarse and fines spirals combines on a single Wilfley shaking table to separate the tantalite product further for bagging and dispatch. The resulting table concentrate averages approximately 5% Ta_2O_5 and is collected in a one tonne bulk bag.

The fine spirals waste material is transported via the thickener to tailings while the coarse spirals product material is transported to the ultrafine circuit for further spodumene recovery.

14.2.4 Ultrafines Circuit

The coarse spirals waste is pumped to the wet high intensity magnetic separator (WIMS). Magnetic material is sent to rejects, while non-magnetic material is fed to a reflux classifier for mica removal. The mica containing stream is pumped to the tailings thickener. The classifier underflow is dewatered by a screw feeder and fed to the ultrafine DMS (UFDMS) feed bin.

UFDMS feed is added to a ferrosilicon slurry and pumped through the UFDMS cyclone cluster, which produces an underflow of spodumene concentrate or sinks, as well as an overflow of reject material or floats.

Ferrosilicon is recovered from both the sinks and floats via sieve bends followed by magnetic separation. The density of the ferrosilicon slurry is maintained by pumping a portion of it through primary and secondary densifying cyclones. Fresh ferrosilicon is added when required to replace losses during processing.

The UFDMS floats are pumped to a dewatering screw and fed onto the rejects conveyor. The sinks are combined with the concentrate from the main DMS plant and report to final product. The UFDMS product is generally slightly lower grade, making up about 2-3% of the total recovery and 25-35% of the Li_2O in the UFDMS feed.

14.2.5 DMS Plant

Plus 2.0 mm material from the wet plant feed preparation stage is split into 2.0 mm to 6.5 mm (fines) and 6.5 mm to 14 mm (coarse) size fractions by the DMS feed preparation screen. Each size fraction is added to a ferrosilicon slurry, then pumped through two separate stages of DMS cyclones to produce spodumene containing concentrate (sinks).

Ferrosilicon is recovered from both product and waste streams by screening and magnetic separation. It is then recycled to the DMS process. Fresh ferrosilicon is added as required, to make up for losses incurred in processing.

After separation from the ferrosilicon, the spodumene concentrate reports to the product stockpile.

Primary DMS float material is conveyed to the rejects load out bin. It is hauled by truck to the rejects stockpile. Secondary DMS float material is either directed to a stockpile bunker or sent to the re-liberation circuit to liberate spodumene particles that are locked in composites with gangue material.

14.2.6 Re-liberation Circuit

Secondary DMS plant float material is directed to a Vertical Shaft Impactor (VSI) crusher, followed by a dual layer screen. Plus 8 mm material is diverted to the secondary stockpile, while -8/+1.8 mm material is transferred back to the DMS feed preparation screen to be processed again through the DMS circuit. Minus 1.8 mm material is combined with the DMS plant effluent and recycled back to the Ultrafines circuit via the fines circuit.

14.2.7 Product Handling

Spodumene concentrate is stacked on a concrete pad adjacent to the plant area, prior to transport to the Esperance Port facility of the haulage contractor. The concentrate is weighed on site either by weighbridge or Loadrite weighing systems, with each mechanism being subject to routine calibration and certification. This defines the weight of the material hauled from site with the grade allocated to each parcel based on daily metallurgical accounting data. Once the material reaches the Esperance Port facility it is stored in one of three bins which are used to produce a sufficient stockpile of the correct grade required to meet customer needs.

The spodumene concentrate is sampled by an independent laboratory, Intertek, as an independent, accredited (ISO 17021 and ISO 17065) representative working on behalf of both Allkem and the concentrate buyer, before being moved in half-height sea containers for loading onto a dedicated compartment on a bulk material ship. Shipment size is generally in the range of 15,000 to 20,000 wmt.

An independent representative working on behalf of both Allkem, and the concentrate buyer is then responsible for defining the weight of the parcel through a draft survey, determining moisture content, and establishing the final sales grades. The final sample parcel is split into several portions that can be utilized for dispute resolution if required via another independent umpire laboratory.

Tantalite concentrate is stored in 1 m^3 bulk bags and shipments conducted periodically in 50 tonne parcels. Allkem initiates the shipment process on an as required basis and conducts approximately 13 to 15 shipments per year at approximately 5% Ta_2O_5.

14.3 Tailings and Utilities

Tantalite circuit tailings, along with the -75 µm slimes, mica and plant spillage streams are directed to the tailings thickener for process water recovery. Thickener underflow is pumped to the Tailings Storage Facility. Since mid-2022, all tailings have been pumped to 2SE Pit, which has been repurposed as a Tailings Storage Facility.

It is anticipated that the 2SE pit will reach capacity as a IPTSF in 2024, by when it is expected to pump tailings to NE IPTSF.

Further discussion on tailings facilities is found in Section of 15. of this report.

14.4 Process Water and Power

Electrical power is provided by five (5) dedicated 1250 kVa Cummins diesel generators under a contract with Contract Power Australia.

Site process "make up" water is currently sourced from the empty Northeast Pit and pumped back to the process plant for treatment and distribution.

Table 14-1 - Water Usage and Power Consumption per Period.

Period	Water Usage (t)	Power Consumption (kWh)
2020	819,624	14,984,163
2021	1,064,522	18,865,569
2022	844,037	15,792,497

14.5 Metallurgical Accounting and Sample Processing

Conveyor samples are taken by automatic crosscut belt samplers on the DMS feed (CV-06), final rejects (primary floats) and final products conveyors as the primary metal accounting points, with sample-cuts being collected at regular intervals throughout the day to produce a shift composite. The only exception to this is the final product for which four-hourly composite samples are produced on day shift to allow spot checks on grades using Xray diffraction (XRD).

Incoming plant feed from the fine ore reclaim system is measured by a weightometer installed on conveyor CV-06. The assay from the automatic sampling process ahead of the wet plant classifying screen is used as the basis to determine incoming metal content and to calculate total plant recovery.

Two hourly manual sample cuts of the tantalite concentrate stream are composited during filling a 1 m^3 bulk bag with concentrate. Pulverized samples are sent off site to a commercial laboratory for analysis. After draining, the tantalite bulk bags are weighed and stored in the tantalite storage yard pending shipment.

Material reporting to the final spodumene concentrate stockpile is measured by a weightometer installed on CV-11 and CV-18 (UFDMS), before being sampled by an automatic sampler installed on CV-12 giving a combined concentrate grade for the twelve-hour shift. This process defines the grade and volume of concentrate added to the stockpile on a per-shift basis. An additional automatic sampler monitors the grade of the ultrafine DMS sinks ahead of CV18, which is used in the internal accounting and monitoring of the UFDMS circuit.

Spodumene concentrate removed for haulage is accounted for on a first in first out basis due to the typically small site stockpile volumes. If it becomes necessary to build larger concentrate stockpiles on site, a cumulative stockpile grade is used to define the grade of material as it is reclaimed.

Material reporting to coarse rejects is monitored by a weightometer installed on CV-14, and automatically sampled from CV-13. Manual sampling of the tailings thickener underflow is performed every two hours and the in-line density meter and flowmeter are used to calculate the tonnage reporting to the TSF.

Samples are processed in the onsite laboratory by drying in an industrial oven and rotary split, followed by pulverizing with a ring mill and assaying by atomic absorption spectroscopy (AAS). Portions of each sample from the rotary splitter are stored for later analysis if required, with secondary analysis of concentrates by inductively coupled plasma (ICP) routinely performed off site by an independent laboratory. The ICP grade determinations are then used for building shipment and as final concentrate grades.

Metallurgical accounting data is compiled in an excel spreadsheet-based system that is managed by the site metallurgical team.

14.6 Processing Workforce

The operation is primarily supported by a fly-in fly-out workforce from Perth, with some of the workforce additionally on a residential basis in the regional towns of Ravensthorpe and Hopetoun.

The processing plant operations and maintenance workforce comprises nominally 90 personnel that perform the following roles:

- Processing Manager
- Processing Superintendent
- Principal Metallurgist
- Senior Metallurgist (2)
- Maintenance Superintendent
- Maintenance Planner (3)
- Electrical Superintendent
- Electrical Supervisor
- Maintenance Supervisors (2)
- Maintenance staff (20) comprising fitters, electricians, boilermakers, and trade assistants in two rotations.
- Contract crushing plant operators (21)
- Process plant operators (28), including shift supervisors on four shifts of six operators.

- Process Coordinators (2)
- Laboratory personnel (5), including the Laboratory Supervisor.

The processing plant operations staff are supported by on-site management, administration, and safety personnel.

14.7 Processing Recommendations

Crushing Circuit Recommissioning

The original Mt Cattlin crushing circuit was decommissioned when the plant went into care and maintenance during 2013 and was not recommissioned when the plant was restarted in 2016 due to the capital cost involved, relative to the Spodumene concentrate sales price at the time. Since that time, a permanent contact crushing contractor has been in place on site, and whilst giving generally good service, is relatively expensive. Given the mine life extension proposition of this Feasibility Study, a project to re-institute the fixed plant crushing circuit has been initiated, with a view to assessing the suitability of the current plant capacity and commissioning a facility that can serve Allkem's life of mine needs.

Flotation Circuit

A test work program to investigate the potential of retreating tailings stockpiles to extract residual lithium is underway. This test work program has had encouraging results, and the potential business case deserves evaluation as the technical program concludes.

15. INFRASTRUCTURE

The existing infrastructure and service facilities available and accessible to Mt Cattlin within WA are sufficient to maintain the ongoing operations of the mining and processing works. The two nearest population centers of Albany and Esperance both provide heavy industry support including construction, engineering, and manufacturing services. These resources will continue to be utilized throughout the life of the mine including planned shutdown maintenance personnel and lifting machinery, as well as providing ready access for emergency breakdown repairs.

The townships of Ravensthorpe and Hopetoun are also able to provide these services on a more limited scale since both towns also service the extensive Ravensthorpe Nickel Project.

Other facilities within Ravensthorpe include a hospital, police station, primary and secondary school, a large recreation facility, hotel, motel, and caravan park, in addition to a number of small business enterprises and a Tele center. A fully sealed airstrip capable of accepting commercial jet aircraft has been established south of the town near the Hopetoun Road.

15.1 Infrastructure Layout

The major site infrastructure both existing and planned is described in this Chapter and illustrated in Figure 15-1 .

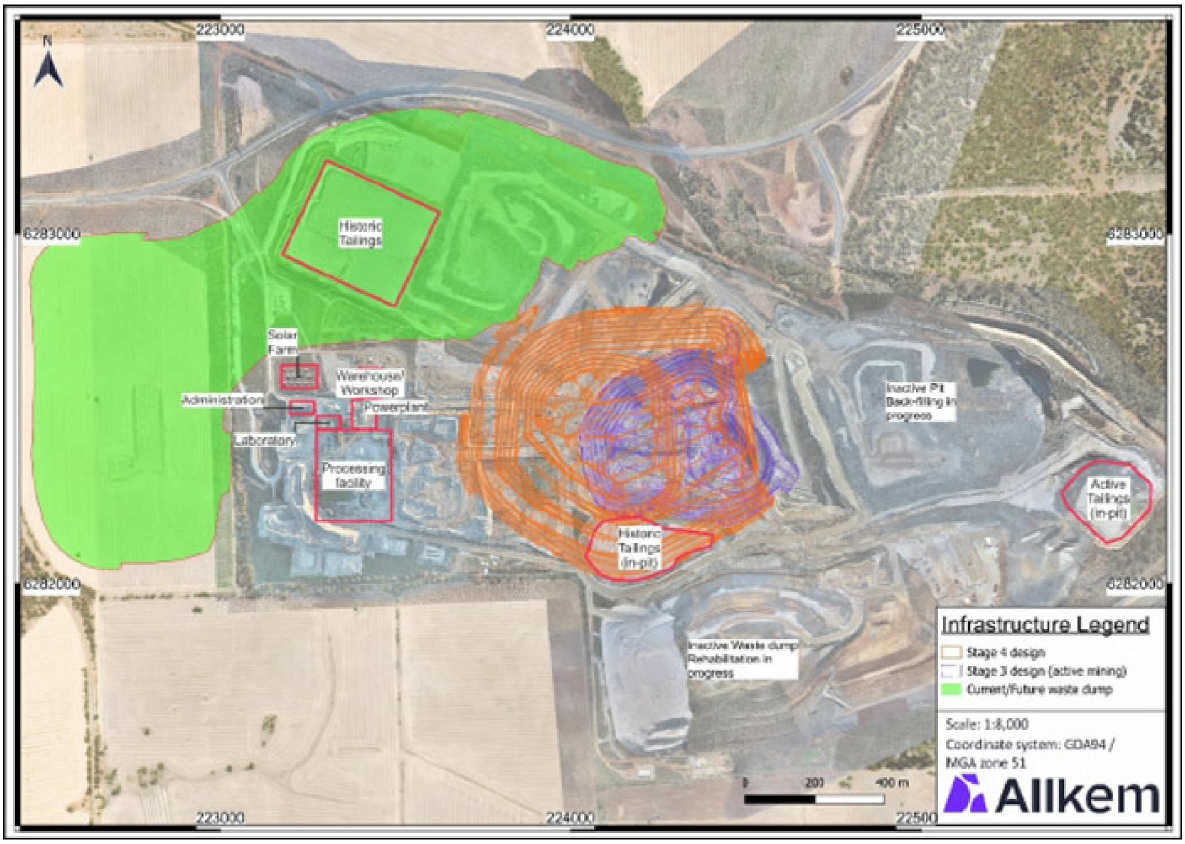


Figure 15-1 - Key Infrastructure Items.

15.2 Roads

Transport from Perth to Mt Cattlin can be via either the Brookton Highway (540 km) or the Albany and South Coast Highways (690 km). These highways do not typically present any difficulties in carrying materials and equipment to site.

Concentrate transport occurs via the South Coast Highway to Esperance, over a distance of 187 km. A new access road from the Lake King Road was constructed to provide heavy vehicle access from the site for concentrate transport.

15.2.1 Site Access Roads

Access to site will be via a turn off from Floater Road seen to the north of WD2 in Figure 15-1, however to accommodate the expansion of Waste Dump #2 (WD2) modifications will be required to the site access route, and the expansion of the Stage 4 pit will require some internal road adjustments.

15.2.2 Internal Site Roads

Internal site roads to service the project are in place and are suitable to act as a haul road for mining trucks and mining related activities.

Internal site roads to service the Stage 4 pit and North-East (NE) Tailings facility will need to be realigned to accommodate the expanded Stage 4 pit. Access to the South-East (SE) Tailings facility and Waste Dump #1 (WD1) will be required to be rerouted around the Northern edge of the Stage 4 pit. These roads will be required to be suitable to act as haul roads for mining trucks and mining related activities.

15.3 Concentrate Transport Route

Spodumene concentrate from Mt Cattlin is trucked in bulk by Qube Logistics to Esperance Port and stored in a Qube facility with a capacity of 45,000 tonnes prior to ship loading.

Shipments to China are typically in bulk quantities of 15,000 tonnes or 30,000 tonnes per shipment. Ships are contracted on a spot basis as required to meet spodumene concentrate shipments sold to customers under existing off-take agreements. Typically, 180-200,000tpa of spodumene concentrate is shipped to China.

Monsoon Agencies Australia Pty Ltd has been appointed as shipper’s agent at the Esperance Port. The agent’s responsibility includes coordinating shipping activities with Mt Cattlin, the vessel’s owner, and the Esperance Port.

15.4 Rail

There are no railway lines in the vicinity of Mt Cattlin.

15.5 Processing Plant

Details pertaining to the processing plant and its operation are laid out in Chapter 14 Processing and Recovery Methods.

15.6 Water Services

Raw water is sourced from water bores located on the tenements and piped to either the raw water dam adjacent to the processing plant or the turkey's nest for dust suppression in the mining operation. Process water supply is a combination of return water harvested from the SE IPTSF and "make up" water sourced from the "mined out" NE pit.

Site process make up water is currently sourced from the "mine out" North-East Pit and pumped back to the process plant for treatment and distribution, however an alternate water source will be required when the pit is converted to tailings storage. It is planned to access tailings return water from the NE IPTSF when in use via bore pumps, Allkem believes that these will be effective based on experience with current tailings behaviors and using rock back fill around the bores.

Drilling testing program to identify this source is currently underway, and there is an allowance in the cashflow model for the relocation of pumps and piping that will be required to make this adjustment.

Ongoing water availability and permitting is considered to be a key risk for the project once tailings deposition commences into the NE pit.

15.7 Power Supply and Reticulation

The feasibility study assumes continuing use of the existing installed 7 MW Diesel generation power plant as the basis for site power generation.

15.7.1 Power Supply

The power generation system at Mt Cattlin is owned and operated by an Independent Power Provider (IPP) under a Power Purchase Agreement (PPA) with Pacific Energy (formerly Contract Power). The PPA was originally in place for 5 years from 2018 when the mine was recommissioned; and extended in June 2022 for a further 5 years under the same terms and conditions. The system comprises of five (5) 1,250kVA Cummins generators, and it is a fit for purpose power solution that has met the site's power generation requirements without issue throughout the contract period.

15.7.2 Switchboard

A single 415V switchboard is located adjacent to the generator area to regulate site power distribution.

15.7.3 Powerline Reticulation

Power is generated at 11kV and reticulated around the site. Four transformers (from 750kVA to 2,000kVA) are used to bring the voltage down to 415V for use. The site reticulation is aligned with current haul roads and will need to be reconfigured with the expansion of the Stage 4 pit.

15.7.4 Solar Panels

A small array of two axis solar panels is currently located outside the main administration area. At this time, they are not in use generating power for the site, however, they may potentially be recommissioned in the future.

15.8 Mine Services and Administration

The mine services facilities are separated between the administration area located at the entrance to the site, and the mining and workshop areas. The mining and heavy vehicle areas are segregated from the general workshop area for personnel and equipment safety.

It is anticipated that some modifications to the mine services areas may be required should there be a change in the mine services contractor as a result of the current tender process.

15.8.1 Mining and Heavy Vehicles

Within the mining and heavy vehicle component of the mine services area there is space allocated for the following:

- Space and concrete pad for the Mining Contractor's heavy vehicle workshop
- Space and concrete pad for the Mining Contractor's light vehicle workshop
- Mining Contractor's heavy vehicle workshop office
- Mining Contractor's heavy vehicle workshop ablutions

- Space and concrete pad for the Mining Contractor's truck tire replacement facility.

15.8.2 Mine Administration Building

The main administration office is a 60 m long by 10 m wide permanent structure. It has offices for Allkem staff as well as meeting rooms, lunchroom, and toilet facilities.

15.8.3 Other Ancillary Buildings

Additional facilities on site include:

- Stores building
- Plant workshop
- Metallurgical laboratory.

15.9 Hydrocarbons

15.9.1 Diesel Off-Loading

The diesel facility consists of a skid equipped with duty/standby pumps, filtration, coalescing filter, isolation valves, and a flow meter to measure fuel deliveries. The off-loading pumps are high flow and self-priming to minimize fuel tanker off-loading times.

15.9.2 Storage and Reticulation

Diesel is stored in four (4) 110 kL self-bunded diesel tanks, which will be sufficient to support the site in the foreseeable future. The diesel storage facility is located to the North of the Mine Contractor's workshop and office area. The tanks are connected by a common manifold to balance the tanks.

15.10 Explosives Storage

The license for bulk explosive and emulsion supply and storage is provided by external contractor Johnex Explosives. The high explosive magazine license and inventory is owned and managed by Allkem.

15.11 Light Vehicles

Process Plant light vehicles and vehicles to transfer office staff to and from their accommodation are owned by Allkem.

15.12 Security

Due to the site's location and natural access restrictions, the perimeter security fencing is only installed where necessary around the site's boundary. Site vehicle access is coordinated via the gatehouse which is accessed from a turnoff on the newly upgraded Floater Road.

15.13 Technology and Communications

Allkem have implemented a third-party ERP system, to accommodate the core financial requirements of the Company.

The Mt Cattlin site uses a terrestrial microwave internet solution with satellite backup, thus the risk of losing access to an off-site email system is considered low.

The plant is deployed with various SCADA systems with monitoring and reporting functions.

The corporate network is extended securely to connect to the control system, allowing for the efficient access of data stored by the SCADA system on its Historian server and the automated integration of this data into various reporting systems.

The Mt Cattlin site currently has a terrestrial internet connection that services the site suitably. In the unlikely event that this connection experiences an issue, a National Broadband Network (NBN) satellite service remains in place allowing continued access to email and VoIP services.

A local third-party tower provides cell phone coverage of the site.

Under normal circumstances, communications off-site happen via the cell phone network and the deployed suite of collaboration and communication tools. These rely on the described internet links and a third-party cell phone network. As these communications could be affected by a common issue, such as a power outage to the area or an unforeseen weather event satellite phones provide alternative communications capability. Several satellite phones are distributed across site, to be used for emergency communications.

15.14 Waste Management

15.14.1 Sewage

Site sewage is pumped to septic tanks on site which are pumped out by a contractor on a regular basis for disposal.

15.14.2 Solid Waste

Solid waste is sorted on site and segregated into recycling and landfill bins. These bins are collected on a schedule by a contractor and taken to the local landfill facility.

15.15 Topsoil Stockpiles for Rehabilitation

Vegetation, topsoil, and overburden is stripped and stockpiled for future reclamation use.

Topsoil stockpiles will be paddock dumped and be approximately 2 m in height.

All topsoil stockpiles will be located away or protected from stormwater flows, minimizing potential losses via erosion.

15.16 Tailings Storage Facilities

Since commencement of operations three tailings storage facilities have been used, the first TSF1 was an above ground facility located northwest of the plant site. Tailings were then deposited into an in-pit tailings facility in the mined-out SW pit, named 2SWIPTSF until early 2022 when tailings deposition commenced into the current facility in the mined-out SE pit, called 2SEIPTSF. The location of the tailings storage facilities are shown in Figure 15-2.

Figure 15-2 - Tailings Storage Facilities.

15.16.1 Above Ground Tailings Facility

Until 2019, tailings from the process plant reported to a regulated tailings storage facility located 500 m north of the processing plant. The original design comprised an above ground storage facility formed by a primary embankment on three sides and a natural hillside slope forming the fourth side. The original design storage capacity, based on the planned maximum design crest was 2 million m^3 and covered a surface area of approximately 17 Ha. The maximum embankment height was 13 m for the starter embankment and 18 m for the final crest height. Adjustments made to the original 2009 design included a change from one large cell to two smaller cells which reduced the active pond area and simplified operating requirements.

Use of the original above ground facility was discontinued in 2019 and the site has been partly rehabilitated (Figure 15-3).

Investigations are underway to determine the viability for reprocessing of this tailings material. Recent modifications to the process plant configuration are likely to allow the pre-2018 tailings to be re-processed in order to recover residual spodumene.

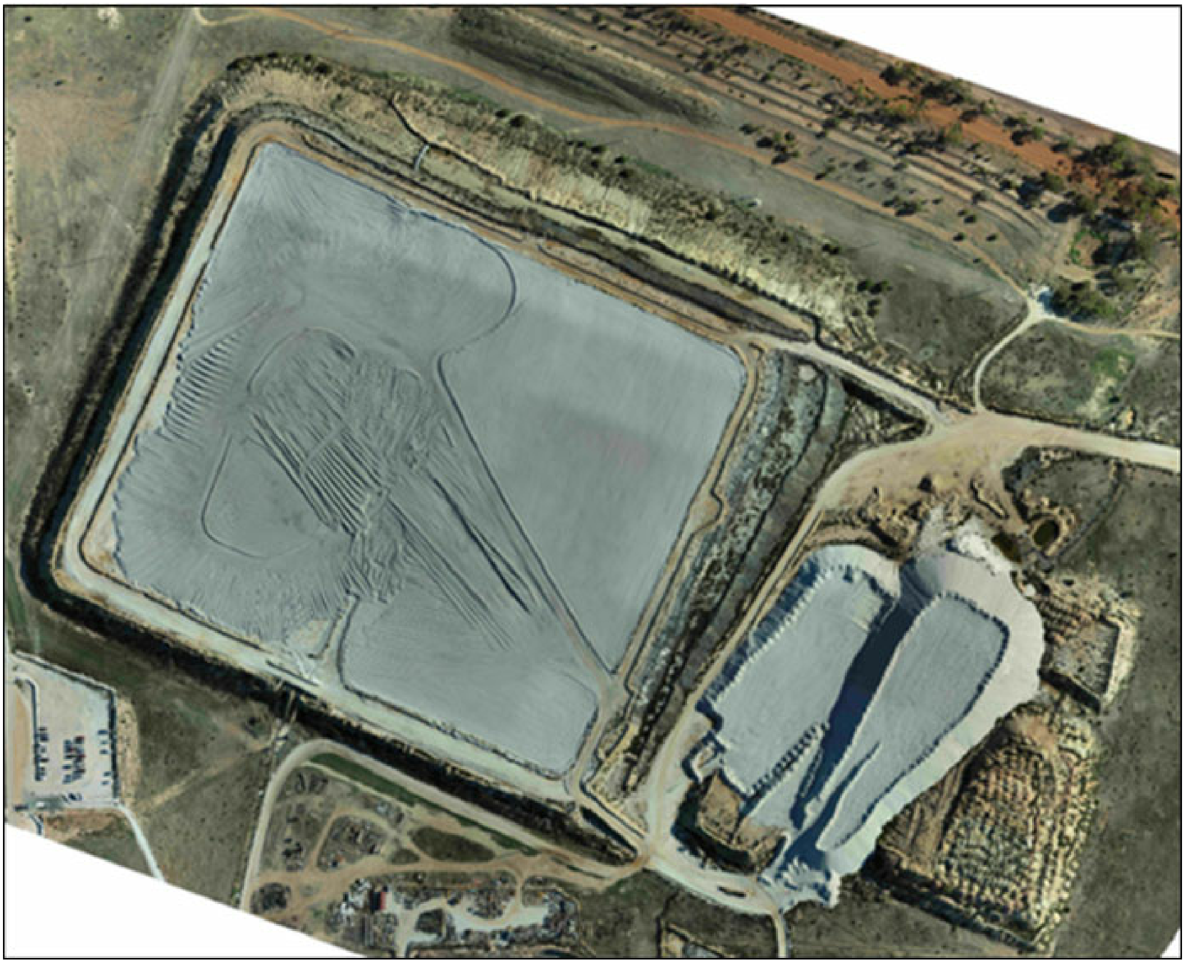


Figure 15-3 - Aerial image of the currently decommissioned TSF as of March 2021.

15.16.2 Stage 2 SW Pit In Pit Tailings Facility

After mid-2019, tailings were pumped to the completed Stage 2 SW Pit which was repurposed as a Tailings Storage Facility Figure 15-4. Tailings were pumped to the 2SW Pit until 2022 when tailings were redirected to the 2 SE Pit.

Figure 15-4 - Aerial image of the existing in-pit tailings storage in March 2021.

The Stage 4 pit expansion requires relocation of the adjacent SW IPTSF material. Allkem has identified dry stacking the excavated tailings onto the top of TSF1 and spreading the material with a dozer as the preferred option. Figure 15-5 illustrates the difference between current surface elevations of TSF1 as Area 1 (280 m RL) and Area 2 (275.3 m RL). This differential will accommodate part of the estimated SW IPTSF tailings volume of 739,000 m^3, with a final TSF1 surface elevation of 288 m RL required to accommodate the full relocation of SW IPTSF material as per Table 15-1.

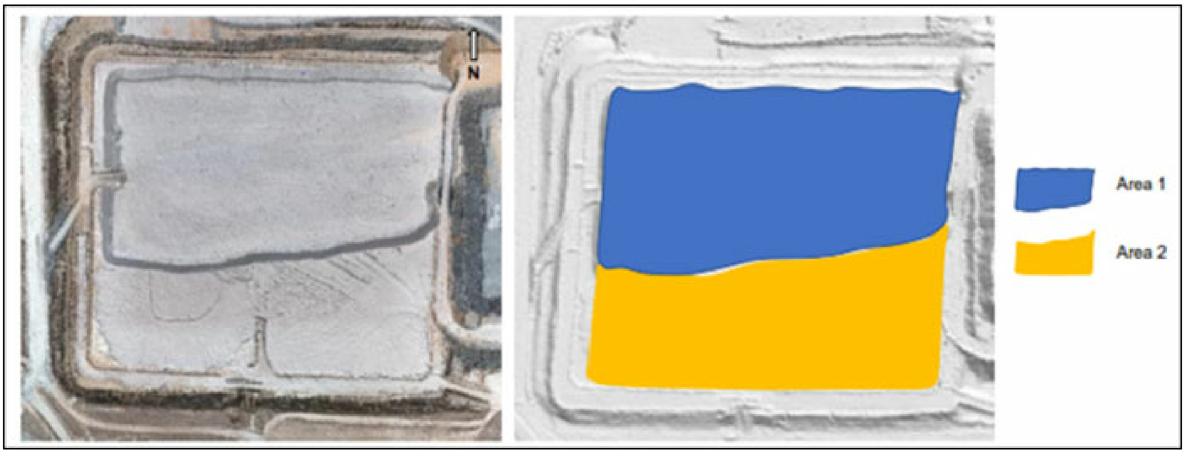


Figure 15-5 - TSF1 Surface RL Profile.

Table 15-1 - SW IPTSF Deposition Sequence.

Stage	Crest Level (m RL)	Volume Relocated (m3)
1	280	180,000
2/3	288	565,000

15.16.3 Current Tailings Storage Facility 2 SE Pit In Pit Tailings Storage Facility

Since early 2022, tailings have been deposited into the 2 SE Pit IPTSF.

The TSF is an in-pit (below ground) facility, formed by construction of rockfill embankment to partition the storage void from the adjoining worked out 2NE pit area. The 2SE IPTSF embankment was constructed from mine waste rock backfill from nearby active pit workings. Tailings is discharged in an easterly direction from the backfilled embankment toward the intact rock pit wall, which results in a decant pond forming against the pit wall as can be seen in Figure 15-6.

The embankment along the northern and western side of the pit is constructed to a maximum crest elevation of 240 m RL using fresh mine waste rock. The lowest crest elevation is 230 m RL at the south-eastern corner, with the maximum storage capacity defined by minimum freeboard 0.5 m below that.

The storage volume, capacity and life were estimated based on an adopted dry density of 1.5 t/m^3, varying tailings beach slope and a tailings production rate of 420,500 tpa. The maximum storage capacity is approximately 790,000 m^3, or 1.2 Mt, and it is forecast to provide operational tailings capacity until mid-2024, depending on the management of the decant pond (i.e., an excess of stored water will result in less solids storage capacity, and an earlier exhaustion of freeboard).

Figure 15-6 - SE IPTSF Decant Pond and Return Water System (October 2022).

The tailings slurry is deposited into the 2SE Pit TSF at 40-50% solids through a single spigot, open pipe discharge. Based on the performance of previous tailings discharge at the site, an initial steep beach angle of up to about 7° is expected, flattening with distance from the discharge point to approximately 1% after 20 m and 0.5% beyond 100 m (Coffey 2021).

15.16.4 Future Tailings Storage Facility

The solids storage capacity of the 2SE facility is calculated to be reached in mid-2024. Depending upon the volume of decant water held at the time, the practical capacity may be reached before that. The next planned tailings deposition location is another similarly styled IPTSF in an area of the worked out 2NE pit, designated as the NE Void. This new NE IPTSF is planned to be designed, permitted, constructed, and operationally ready, with sufficient contingency time, to accept tailings when the SE facility is at capacity.

With an active volume of 1.8 Mm^3, the NE IPTSF will accommodate approximately 7-years of plant production and support continuous operation until 2031 assuming a continued annual tailings production rate of 450 kt, and an improved in-situ density of 1.7 t/m^3. This storage potential would last well past the Stage 4 life of mine, predicted to be approximately 2028.

16. MARKET STUDIES AND CONTRACTS

16.1 Overview of the Lithium Industry

Lithium is the lightest and least dense solid element in the periodic table, with a standard atomic weight of 6.94. Lithium is a soft silvery-grey metal with good heat and electric conductivity in its metallic form. Although the least reactive of the alkali metals, lithium reacts readily with air, burning with a white flame at temperatures above 200°C and room temperature, forming a red-purple coating of lithium nitride.

In water, metallic lithium reacts to form lithium hydroxide and hydrogen. As a result of its reactive properties, lithium does not occur naturally in its pure elemental metallic form, instead occurring within minerals and salts.

The crustal abundance of lithium is calculated to be 0.002% (20 parts per million (ppm)), making it the twenty-third most abundant crustal element. Typical values of lithium in the main rock types are 1 ppm to 35 ppm in igneous rocks, 8 ppm in carbonate rocks and 70 ppm in shales and clays. Lithium concentration in seawater is significantly less than the crustal abundance, ranging between 0.14 ppm and 0.25 ppm.

16.2 Sources of Lithium

There are five naturally occurring sources of lithium, of which the most developed are lithium pegmatites and continental lithium brines. Other sources of lithium include oilfield brines, geothermal brines, and clays.

16.2.1 Lithium Minerals

Spodumene is the most mined mineral for lithium, with historical and active deposits exploited in China, Australia, Brazil, the USA, and Russia. The high lithium content of spodumene (approximately 8% lithia), its well-defined extraction process, and spodumene typically occurring in more extensive pegmatite deposits make it an essential mineral in the lithium industry.

Lepidolite is a monoclinic mica group mineral typically associated with granite pegmatites, containing approximately 7% lithia. Historically, lepidolite was the most widely extracted mineral for lithium, however, its significant fluorine content made it unattractive compared to other lithium-bearing silicates. Lepidolite mineral concentrates are mainly produced in China and Portugal for direct use or conversion to lithium compounds in the ceramics industry.

Petalite contains comparatively less lithium than lepidolite and spodumene, with approximately 4.5% lithia. Like the spodumene and lepidolite, petalite occurs associated with granite pegmatites. It is extracted for processing into downstream lithium products or for direct use in the glass and ceramics industry.

16.2.2 Lithium Clays

Lithium clays are formed by the breakdown of lithium-enriched igneous rock, which may also be enriched further by hydrothermal or metasomatic alteration. The most significant lithium clays are members of the smectite group, particularly the lithium-magnesium-sodium end member hectorite. Hectorite ores typically contain 0.24% to 0.53% lithium concentrations and form numerous deposits in the USA and northern Mexico. As well as having the potential to be processed into downstream lithium compounds, hectorite is also used directly in aggregate coatings, vitreous enamels, aerosols, adhesives, emulsion paints and grouts. Other lithium-bearing members of the smectite group are salitolite and swinefordite.

16.2.3 Lithium Brines

Lithium-enriched brines occur in three primary environments: evaporative saline lakes and salars, geothermal and oilfield brines. Evaporative saline lakes and salars are formed as lithium-bearing lithologies, which are weathered by meteoric waters forming a diluted lithium solution. The diluted lithium solutions percolate or flow into lakes and basin environments which can be enclosed or have an outflow. If lakes and basins form in locations where the evaporation rate is more significant than water input, lithium and other solutes are concentrated in the solution, as water is removed via evaporation. Concentrated solutions ("saline brines") can be retained subterraneously within porous sediments and evaporites or in surface lakes, accumulating over time to form large saline brine deposits.

The chemistry of saline brines is unique to each deposit, with brines changing dramatically in composition within the same salar. The overall brine composition is crucial in determining a processing method to extract lithium, as other soluble ions such as magnesium, sodium, and potassium must be removed during processing. Brines with a high lithium concentration and low lithium-magnesium and lithium-potassium ratios are considered the most economical to process. Brines with lower lithium contents can be exploited economically if evaporation costs or impurities are low. Lithium concentrations at the Salar de Atacama in Chile and Salar de Hombre Muerto in Argentina are higher than most other locations. However, the Zabuye Salt Lake in China has a more favourable lithium-magnesium ratio.

16.3 Lithium Industry Supply Chain

Figure 16-1 below shows a schematic overview of material flow through the lithium industry supply chain in 2021. Raw material sources in blue and brown represent the source of refined production and technical-grade mineral products consumed directly in industrial applications. Refined lithium products are distributed into various compounds displayed in green. Refined products may be processed further into specialty lithium products, such as butyllithium or lithium metal, displayed in grey. Demand from major end-use applications is shown in orange, with the relevant end-use sectors in yellow.

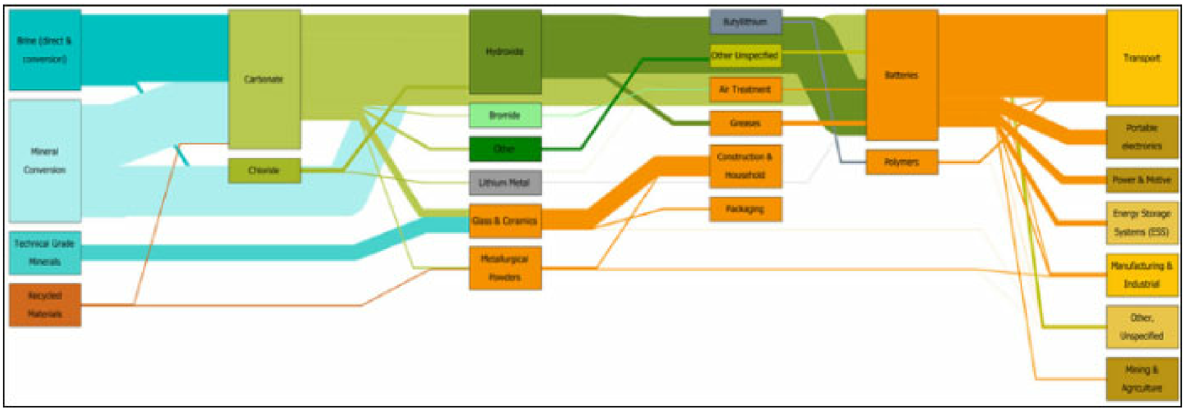


Figure 16-1 - Lithium Industry Flowchart (Wood Mackenzie).

16.4 Global Demand for Lithium

Lithium has traditionally been used for applications such as ceramic glazes and porcelain enamels, glass ceramics for high-temperature applications, lubricating greases, and as a catalyst for polymer production. Between 2020 and 2022, demand in these sectors rose steadily by approximately a 4% compound annual growth rate ("CAGR"). Growth in these applications is highly correlated to industrial activity and macroeconomic growth. Wood Mackenzie forecasts that the combined growth of lithium demand from industrial markets will likely be maintained at approximately 2% annually from 2023 to 2050 (Figure 16-2).

Rechargeable batteries represent the dominant application of lithium today, representing more than 80% of global lithium demand in 2022. Within the rechargeable battery segment, 58% was attributed to automotive applications, which has grown at 69% annually since 2020. This segment is expected to drive lithium demand growth in future. To illustrate, Wood Mackenzie forecasts total lithium demand will grow at 11% CAGR during 2023 and 2033: of this, lithium demand attributable to the auto sector is forecast to increase at 13% CAGR, whilst all other applications are forecast to grow at 7% CAGR. As the market matures, growth is forecast to slow in the following two decades (Figure 16-2).

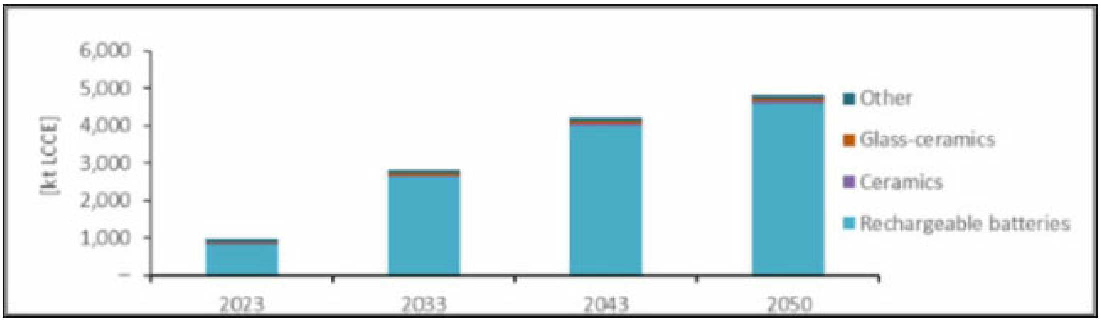


Figure 16-2 - Global Demand for Lithium by End Use, 2023 - 2050 (Wood Mackenzie).

Lithium is produced in various chemical compositions, which in turn serve as precursors in manufacturing its end-use products such as rechargeable batteries, polymers, ceramics, and others. For rechargeable batteries, the cathode, an essential component of each battery cell, is the largest consumer of lithium across the battery supply chain. The evolution in cathode chemistries determines demand profiles for lithium carbonate and hydroxide. The automotive industry mainly uses nickel-cobalt-manganese oxide ("NCM") and nickel-cobalt-aluminum oxide ("NCA") cathodes, often grouped as "high nickel" and lithium-iron-phosphate ("LFP") cathodes. High nickel cathodes consume lithium in hydroxide form and generally have a higher lithium intensity. LFP cathodes mainly consume lithium in carbonate form, with lower lithium content. LFP cathodes are predominantly manufactured in China.

Lithium in the form of lithium hydroxide and lithium carbonate collectively accounted for 90% of refined lithium demand in 2022. These two forms are expected to remain important sources of lithium in the foreseeable future, reflecting the share of the rechargeable battery market in the overall lithium market (Figure 16-3). The remaining forms of lithium include technical grade mineral concentrate (mainly spodumene, petalite and lepidolite) used in industrial applications accounting for 7% of 2022 demand, and other specialty lithium metal used in industrial and niche applications.

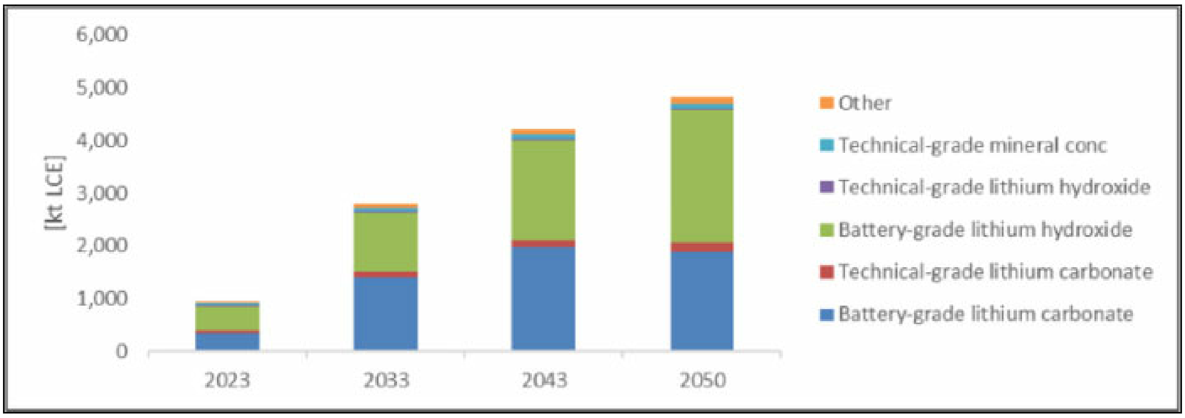


Figure 16-3 - Global Demand for Lithium by Product, 2023 - 2050 (Wood Mackenzie).

Lithium products are classified as battery-grade ("BG") for use in rechargeable battery applications and technical-grade ("TG"), which is primarily used in industrial applications. TG lithium carbonate can also be processed and upgraded to higher-purity carbonate or hydroxide products.

Lithium hydroxide is expected to experience exponential growth on the back of high-nickel Li-ion batteries. Demand for BG lithium hydroxide is expected to grow at 10% CAGR from 2023 to 2033 to reach 1,133 kt LCE in 2033, up from 450 kt LCE in 2023 (Figure 16-3). Wood Mackenzie predicts lithium hydroxide to be the most significant product by demand volume in the near term. However, the growth of LFP demand beyond China may see BG lithium carbonate reclaim its dominance.

Wood Mackenzie forecasts that LFP cathodes will increase its share of the cathode market from 28% in 2022 to 43% by 2033. This drives growth in lithium carbonate demand. Wood Mackenzie predicts lithium carbonate demand will grow at 14% CAGR between 2023 and 2033, slowing as the market matures (Figure 16-3).

16.5 Global Supply of Lithium

The world's lithium is supplied by primary production from hard rock mineral mines (spodumene, lepidolite and petalite), continental lithium brines, and reprocessing (upgrading) of lithium carbonates.

Lithium recycling currently contributes a small proportion of the global supply (approximately 2% in 2022). However, as the industry matures and recycling technology develops, supply from recycling will play an increasing role in global supply, expected to grow up to 36% of the global supply by 2050 (Figure 16-4).

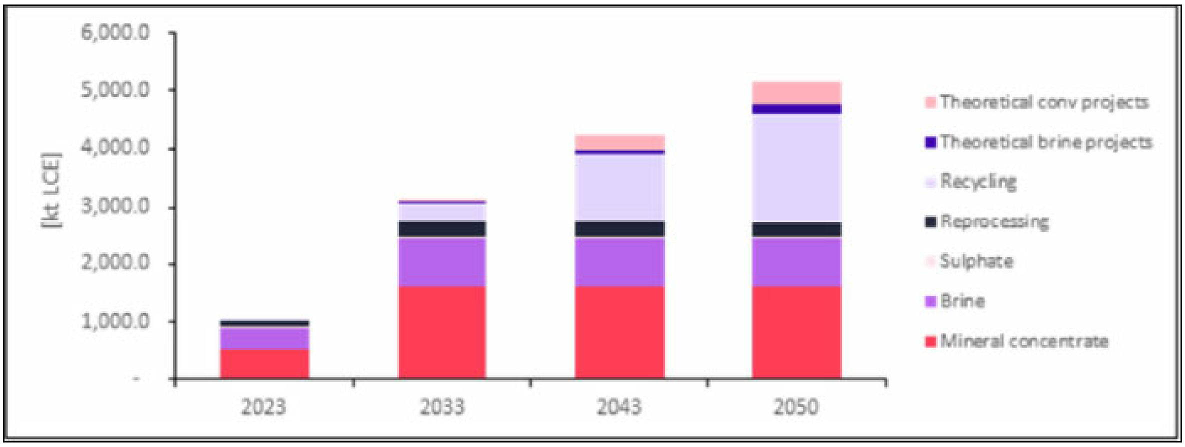


Figure 16-4 - Refined Lithium Production by Raw Material Source, 2023 - 2050 (kt LCE).

Mineral concentrates are the world's largest source of lithium. In 2022, refined lithium production sourced nearly half of mineral concentrate production. Spodumene is the dominant form of mineral concentrate, followed by lepidolite, representing 82% and 17% of total mined production in 2022, respectively. Mineral concentrates may be divided into two categories: chemical and technical. The chemical-grade mineral concentrate is exclusively used in the conversion process to produce refined lithium chemicals, such as carbonate and hydroxide, by conversion facilities. The technical-grade mineral concentrate is used directly in ceramic, glass, and metallurgical applications.

Lithium supply from mineral concentrate is supplemented by production from brine resources, where expansions and new projects in South America will add significant supply to the market. In 2022, 38% of refined lithium production was sourced from brine. Wood Mackenzie forecasts that brine-based refined lithium production will grow 8% CAGR between 2023 and 2033. Brine-based share is expected to fall to 27%, losing its share to mineral concentrates and recycling sources by 2033.

The total refined production of the final lithium product in 2022 is estimated at 701kt LCE. Wood Mackenzie forecast this to increase at a rate of 12% per annum between 2023 and 2033. As primary sources of lithium decline, recycling is expected to increase to meet growing demand (Figure 16-5).

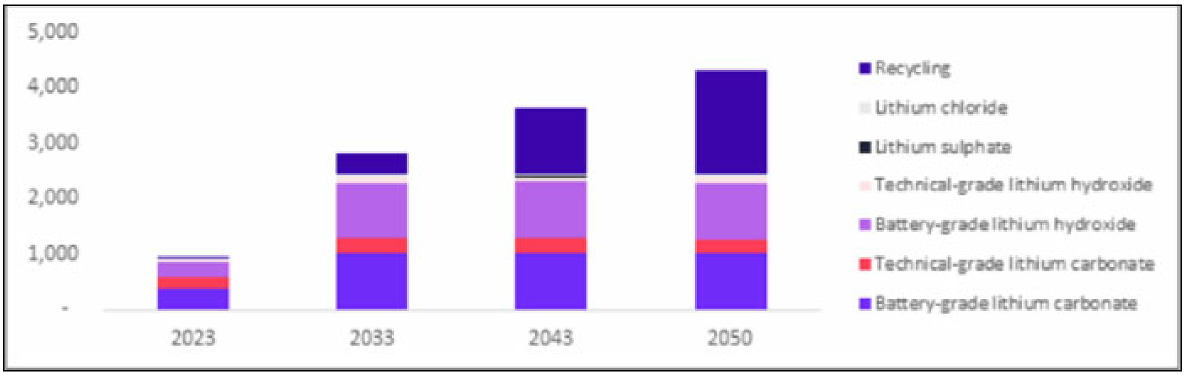


Figure 16-5 - Refined production by Final Product, 2023 - 2050 (Wood Mckenzie).

The top five operators are estimated to account for 47% of the total refined lithium output in 2023. Over the next decade, the share of the top five producers is forecast to decrease to 28% due to new entrants in the market. The top five producers will, however, remain vital in the market as they possess the know-how to produce high-quality products. The large-scale production of these companies will remain attractive to buyers (Figure 16-6).

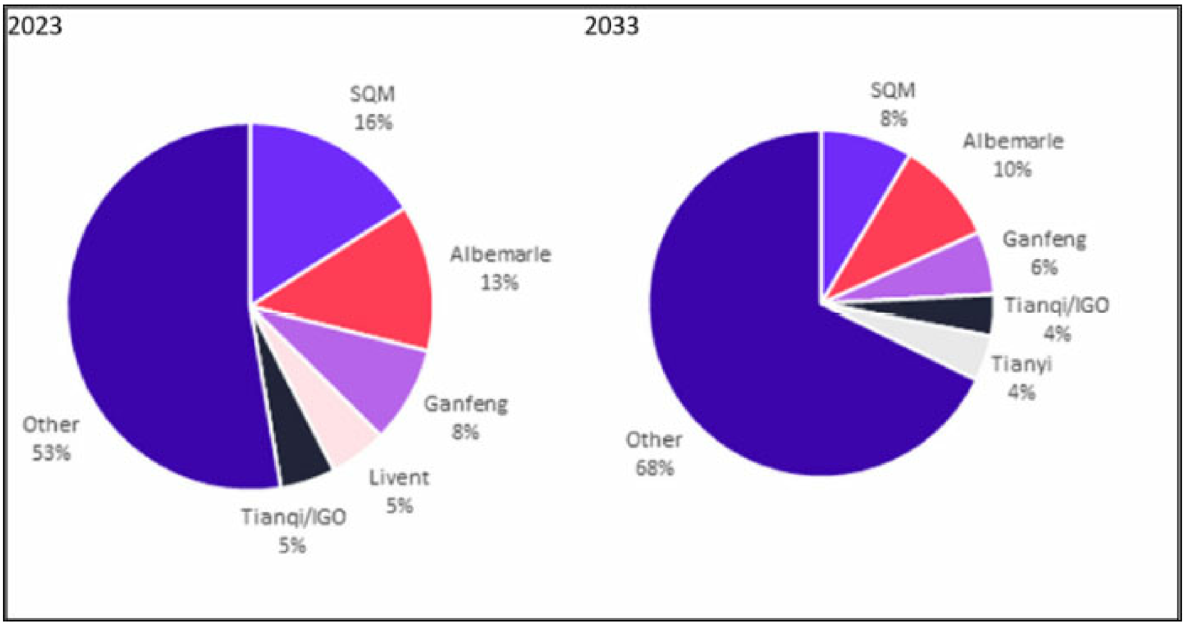


Figure 16-6 - Top 5 Global Lithium Producers of Refined Lithium, 2023 and 2033 (%) - (Wood Mackenzie).

16.6 Market Balance

The lithium market balance has shown high volatility in recent years. A supply deficit resulted from historical underinvestment relative to solid demand growth in electric vehicles (“EV”). The price rise over the last few years has incentivized investment in additional supply. However, the ability of supply to meet demand remains to be determined, given the persistence of delays and cost increases across both brownfield and greenfield developments.

Wood Mackenzie predicts the market will remain in deficit for battery-grade lithium chemicals in 2024. In 2025, battery-grade chemicals are expected to move into a fragile surplus before falling into a sustained deficit in 2033 and beyond. Notably, technical-grade lithium chemicals may be reprocessed into battery-grade to reduce the deficit. However, the capacity and ability to do so still need to be determined.

16.7 Lithium Prices

Lithium spot prices have experienced considerable volatility in recent months. Prices peaked in 2022, with battery-grade products reaching US$80,000 per tonne. However, spot prices fell significantly during the first quarter of 2023 before stabilizing in the second quarter of 2023. A combination of factors explains the price movements, including the plateauing EV sales, slowdown of cathode production in China, and destocking through the supply chain, partially attributed to seasonal maintenance activities and national holidays.

Contract prices have traditionally been agreed upon on a negotiated basis between the customer and supplier. However, in recent years there has been an increasing trend towards linking contract prices to those published by a rising number of price reporting agencies. As such, contracted prices have tended to follow spot pricing trends, albeit with a lag.

16.7.1 Lithium Carbonate

Continued demand growth for LFP cathode batteries will ensure strong demand growth for battery-grade lithium carbonate. This demand is expected to be met predominantly by supply from brine projects. The robust pricing environment provides incentive for numerous projects to come online steadily over the coming years. Wood Mackenzie forecasts prices to decline as supply increases. Wood Mackenzie however forecasts a sustained deficit in battery-grade lithium chemicals to commence in 2031. Over the longer term, Wood Mackenzie expects prices to settle between US$26,000 per tonne and US$31,000 per tonne (in real US$ 2023 terms) (Figure 16-7).

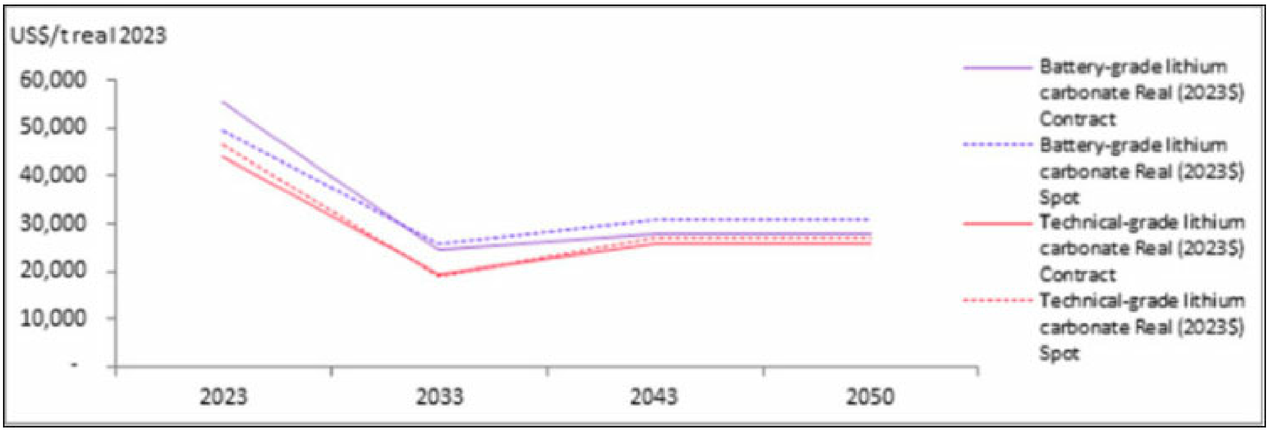


Figure 16-7 - Lithium Carbonate Price Outlook, 2023 - 2050.

Notably, the market for battery-grade carbonates is more profound, and the spot market is more liquid than hydroxide due to the size and experience of its primary market in China. In addition, battery-grade carbonates are used in a broader variety of batteries beyond the EV end-use. Technical-grade lithium carbonate demand for industrial applications is forecast to grow in line with economic growth. However, technical-grade lithium carbonate lends itself well to reprocessing into battery-grade lithium chemicals (carbonate or hydroxide). The ability to reprocess the product into battery-grade lithium chemicals will ensure that prices will be linked to the prices of battery-grade lithium chemicals.

16.7.2 Lithium Hydroxide

The market for battery-grade lithium hydroxide is currently small and relatively illiquid compared to the carbonate market. Growth in high nickel cathode chemistries supports a strong demand outlook. Most battery-grade hydroxide is sold under long-term contracts currently, which is expected to continue. However, contract prices are expected to be linked to spot prices and, therefore, likely to follow spot price trends, albeit with a lag. Over the longer term, Wood Mackenzie expects hydroxide prices to settle between US$25,000 per tonne and US$35,000 per tonne (real US$ 2023 terms) (Figure 16-8).

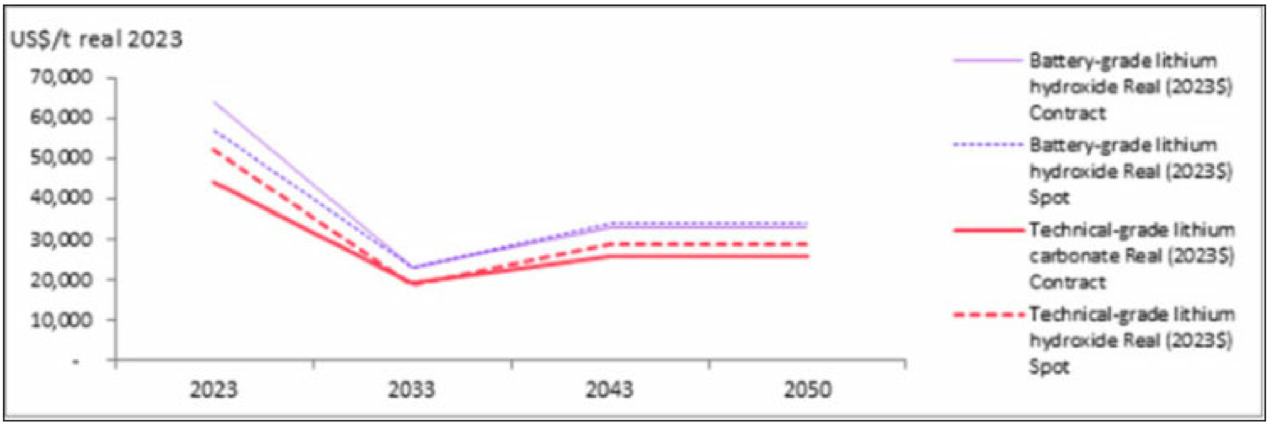


Figure 16-8 - Lithium Hydroxide Price Outlook, 2023 - 2050 (Wood Mackenzie).

16.7.3 Chemical Grade Spodumene Concentrate

In 2022, demand from converters showed strong growth resulting in improved prices. After years of underinvestment, new capacity has been motivated, and brownfield and greenfield projects are underway. Notably, these incremental volumes are observed to be at a higher cost and greater difficulty, raising the pricing hurdles required to maintain supply and extending timelines for delivery.

Wood Mackenzie forecasts a short period of supply volatility in the years to 2030, moving from surplus to deficit and oversupply before entering a sustained deficit beyond 2031. Reflecting this dynamic, prices are expected to align with market imbalances. Wood Mackenzie forecasts a long-term price between US$2,000 per tonne and US$3,000 per tonne (real US$ 2023 terms) (Figure 16-9).

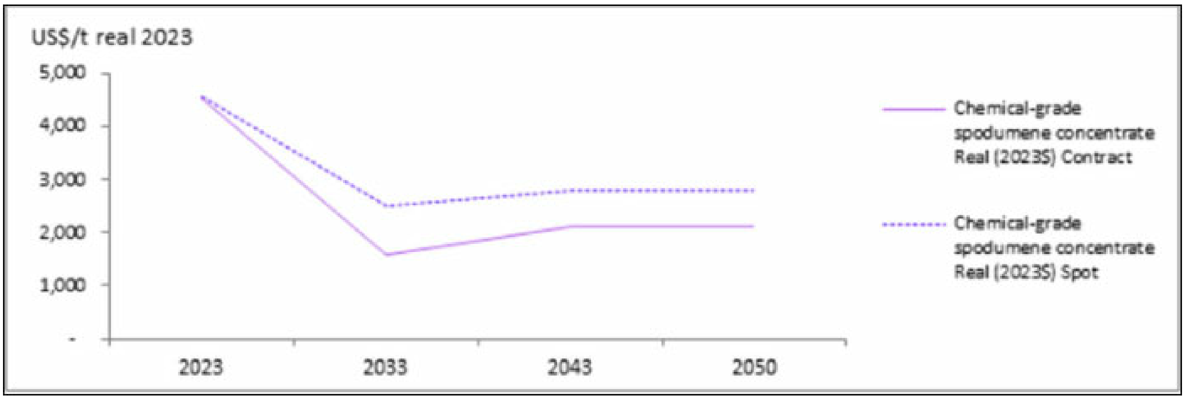


Figure 16-9 - Chemical-grade Spodumene Price Outlook, 2023 - 2050 (Wood Mackenzie).

16.8 Mt Cattlin Offtake

Allkem sells Mt Cattlin's spodumene concentrate through offtake agreements, mainly to Chinese converters. Offtake agreements have pricing conditions reflecting spodumene market prices.

16.9 Disclaimer

Information provided to Mining Plus by Allkem pertaining to forward looking forecasts and market demand was sourced by Wood Mackenzie, with the mandatory disclaimer:

> *"The data and information provided by Wood Mackenzie should not be interpreted as advice and you should not rely on it for any purpose. You may not copy or use this data and information except as expressly permitted by Wood Mackenzie in writing.*
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> *To the fullest extent permitted by law, Wood Mackenzie accepts no responsibility for your use of this data and information except as specified in a written agreement you have entered into with Wood Mackenzie for the provision of such of such data and information."*

17. ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL OR COMMUNITY IMPACTS

17.1 Results of Environmental Studies

Prior to and during operations, numerous comprehensive baseline environmental studies have been conducted by external technical experts to support project permitting. These studies covered factors such as:

- Flora and Vegetation
- Terrestrial Fauna
- Subterranean Fauna
- Hydrogeology
- Hydrology
- Soils
- Mine Waste Characterization
- Aboriginal Heritage
- European Heritage

Excepting the additional baseline studies required in the area of waste dump 4, should it be needed, all key studies required to enable the continuation of operations for the remainder of the life of mine have been completed and Mt Cattlin does not have any major environmental constraints that it believes would prevent permitting the ongoing development and mining.

17.1.1 Climate

The Project is situated within an area classified as a Mediterranean climate featuring moist, mild winters and hot, dry summers. The closest weather station is located at Ravensthorpe (Site number: 010633), approximately 2 km south of the Project (Bureau of Meteorology (BoM) 2019).

Climatic statistics recorded and averaged from 1901-2019 for rainfall and 1962-2019 for temperature at the Ravensthorpe weather station (BoM 2019) are summarized below:

- Mean annual maximum temperature (°C): 22.8, with a high of 29.0 recorded in January.
- Mean annual temperature (°C): 10.5, with a low of 6.7 recorded in August.
- Average annual rainfall (mm): 429.6 with most rainfall occurring between May-October
- Average annual days with z 1 mm of rainfall: 74.7.

The average wind speeds at Ravensthorpe vary throughout the year from 10.2-14.0 km/h in the morning to 12.2-16.3 km/h in the afternoon (BoM 2019).

17.1.2 Landscape

The Project area is in the Fitzgerald Interim Biogeographic Regionalization for Australia (IBRA) subregion (ESP1) of the Esperance Plains IBRA bioregion, which totals over one million hectares. The subregion is characterized by ‘myrtaceous and proteaceous scrub and mallee heaths on sandplain overlying Eocene sediments; and herb fields and heaths on abrupt granite tors and quartzite ranges that rise from the plain. Eucalypt woodlands occur in gullies and on alluvial foot-slopes.

The Fitzgerald sub-region has variable relief, comprising subdued relief on the sandplains of the coastal region, punctuated with metamorphosed granite and quartzite ranges both inland and on the coastal plain. It lies mainly on the Bremer Sedimentary Basin and the eastern and western sections of the ESP1 subregion within the Albany-Fraser Orogen of the Yilgarn Craton. It has extensive western plains over an Eocene marine sediment basement with small areas of outcropping gneiss. Archaean greenstones (primarily basaltic rocks) and sand sheets with varying levels of lateralization with gravelly soils also occur.

The region is dominated by duplex soils and deep and shallow sands on the plains and dissected areas and by shallow sandy soils on the mountain ranges (Comer et al 2001). Several rivers flow south to the coast including the Jerdacuttup River which includes Cattlin Creek as a western sub catchment.

The major towns occurring throughout the region include Ravensthorpe, Hopetoun, Jerramungup, and Bremer Bay.

17.1.3 Materials Characteristics

17.1.3.1 Soils Characteristics

The majority of the land within the proposed disturbance envelope is within the existing disturbed mine footprint. The exception to this is the WD2 footprint expansion area, which is located within land historically cleared for agriculture. Productive soils will be stripped and utilized in rehabilitation of the waste dumps.

Keith Lindbeck and Associates (KLA) conducted two rounds of soil assessment in 2008 and again in 2012 (Appendix 2 in Reg ID 73856). KLA confirmed that the surface horizons as well as the subsoils of the agricultural areas at the Mt Cattlin mine area are suitable for rehabilitation purposes.

17.1.3.2 Waste Rock Characteristics

There are no changes to the geochemical or physical properties of the waste rock associated with the Project.

The Stage 4 Open Pit expansion and the characteristics of the waste are well known. Waste rock characteristics at the Mt Cattlin Operation have been described in previously approved Mining Proposal applications (e.g., Reg ID 22377, 69112, 73856). Previous Mining Proposals have found that the geology at the Mt Cattlin operations is chemically benign and physically stable.

17.1.3.2.1 Geochemical Characterization

Additional internal analysis in December 2022 of drilling samples from the Stage 4 Open Pit expansion area confirmed the benign nature of the waste rock. This data combined with the Stage 3 Pit assays and sampling points shown in Figure 17-1 and Figure 17-2.

Figure 17-3 depicts the homogeneous extension of the lithologies from the current Stage 3 Open Pit to the proposed Stage 4 Open Pit.

Of 18,651 m of waste rock assayed, 21 m contained sulfides >0.3% and levels of other metals are low.

There have been four (4) cases at Mt Cattlin since 2016 where investigations of suspected asbestiform materials or fibrous minerals have been undertaken. All investigations returned negative results for the presence of potentially harmful asbestiform or fibrous material.

It is considered that no significant or additional fibrous material risks are posed by the proposed mine expansion at Mt Cattlin. Continuing vigilance and ongoing investigation and analysis of any suspected fibrous materials will be undertaken whenever such materials are encountered. These measures will inform appropriate operational risk assessments and will identify whether additional controls or management are required.

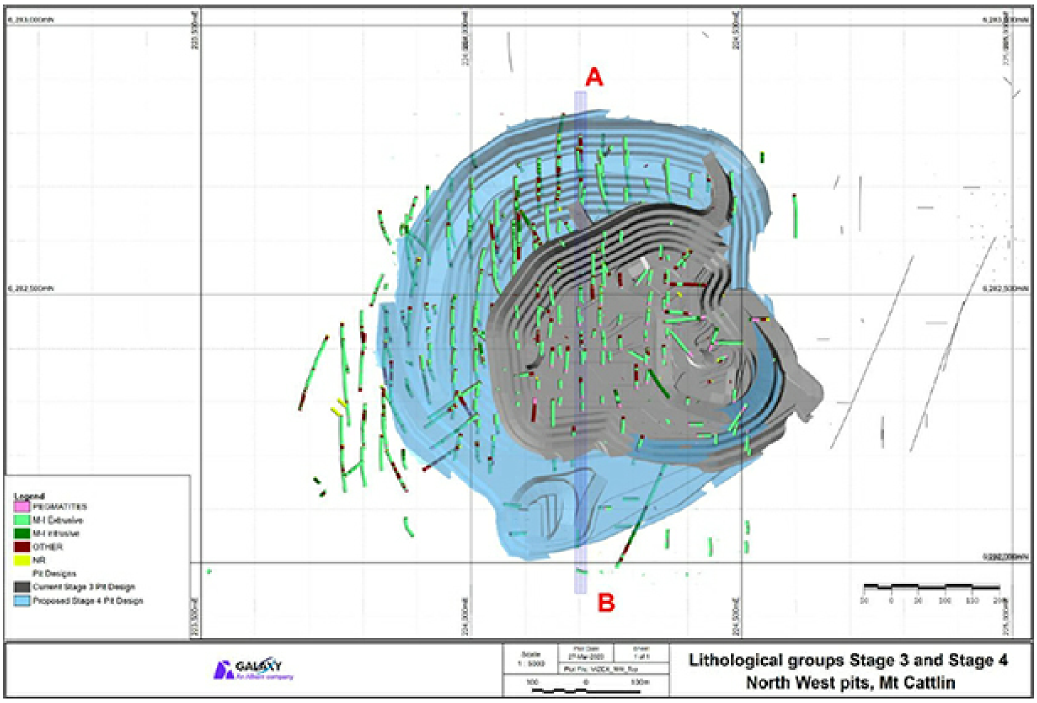

Figure 17-1 - Lithology Sampling (Stage 3 and Stage 4 Pit).

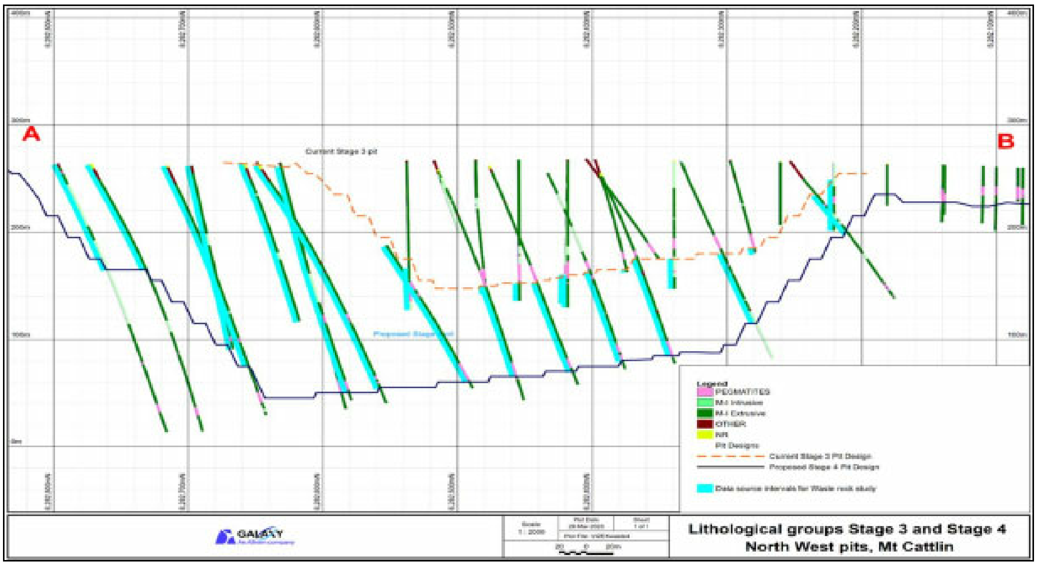

Figure 17-2 - Lithology Sampling Cross Section.

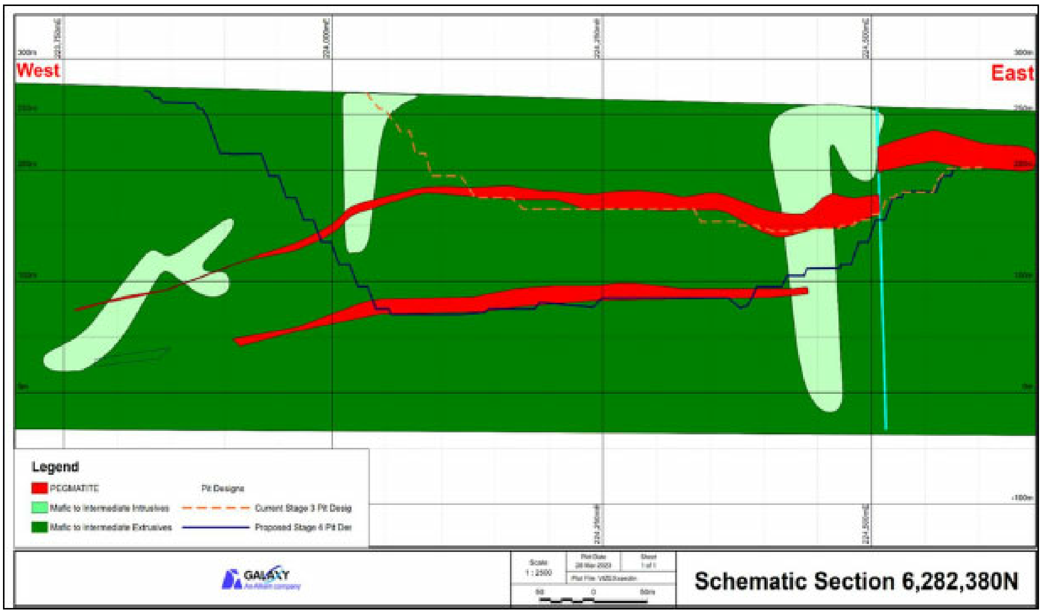

Figure 17-3 - Stage 3 to Stage 4 Lithological Extension.

17.1.3.3 Tailings Characterization

Granitic pegmatites are mineralogically simple igneous rock consisting of approximately 65% feldspar, 25% quartz, 5 to 10% mica and proximally 5% of accessory minerals, which include lithium bearing spodumene ($Li_2O.Al_2O_3.4SiO_2$) and tantalite (Ta_2O_5). These proportions typically result in large volumes of quartz and feldspar reject material requiring disposal as tailings waste material post processing.

17.1.4 Biodiversity

17.1.4.1 Flora and Vegetation.

The majority of the land within the proposed Disturbance Envelope is within an already disturbed mine footprint. The WD2 and WD3 expansion area is located within land historically cleared for agriculture.

As a result, most of the proposed disturbance envelope is devoid of any remnant vegetation. A small corridor of vegetation remains on the eastern boundary of the WD2 expansion area, within M74/244.The vegetation corridor represents approximately 1.3 ha, of which less than 0.05 ha will require disturbance to allow for an access road. Any vegetation clearance is authorized under CPS3045/5.

A small number of isolated trees and shrubs are in the paddock that will accommodate the WD2 expansion (Figure 17-4).

There are no Threatened Flora, Threatened Ecological Communities or Priority Ecological Communities recorded in the vicinity of the Project area. One priority flora species, Acacia bifaria (P3), has been recorded within adjacent vegetation east of the Project and considerable numbers of this species have been established and recorded in rehabilitated areas along the top banks of the creek diversion. No priority flora has been recorded within the Project area.

If required the waste dump 4 area would require additional baseline studies be undertaken and clearing additional land, not previously cleared.

Figure 17-4 - Photograph of Isolated Paddock Trees and Shrubs, WD2 Expansion Area (March 2023).

17.1.4.2 Fauna

The Project area occurs within the exiting disturbed mine footprint and on cleared agricultural land devoid of vegetation resulting in a depauperate fauna assemblage. No threatened fauna species have ever been recorded in any surveys of the Project area and its surrounds.

Areas further to the north and east of the Project area provide valuable remnant habitat, within a broader landscape that has largely been denuded of vegetation for agricultural purposes, including the Project area. A survey by Ninox (2018) of the habitat to the north and east of the Project area (outside the cleared areas of the Project area), described nearby areas as a mosaic of mallee form woodlands of Eucalyptus species over variable shrub and ground cover on the slopes and crests.

Further baseline surveys would be required if waste dumping in the Waste Dump 4 area.

Bennelongia Environmental Consultants conducted a Level 1 Subterranean Fauna survey in 2018. Bennelongia concluded that, despite the presence of suitable habitat for stygofauna in the nearby vicinity of Cattlin Creek, the community appears to have only low to moderate richness and that it is unlikely that any species would be restricted to the area of the pit and creek diversion development with the same habitat widespread in the Ravensthorpe area.

Two species of troglofaunal were collected as by-catch during stygofauna sampling. Habitat characterization suggested there is only low-quality habitat, at best, for roglofaunal. The two species collected show that some troglofaunal habitat is present, but the same habitat is widespread in the Ravensthorpe area. While there is no information on the likely ranges of roglofaunal species in the southwest, based on the existence of similar habitat outside the mine pits and the small size of the proposed mine pit expansion, it is unlikely any species would be restricted to the area of pit expansion.

17.1.5 Hydrology

17.1.5.1 Surface Water

The main surface water aspect associated with this Project is the Cattlin Creek which is highly saline, only flows after significant rainfall events and receives most of its runoff from agricultural land, built infrastructure (roads) and vegetated, unallocated Crown Land.

17.1.5.2 Ground Water

The main aquifers are fractures or joints within weathered and fresh volcanic rocks. Cattlin Creek appears to follow zones of weakness in the bedrock that are locally permeable. Open joints and fractures are mostly above 120 m depth, but some have been intersected down to 270 m depth. A drilling program to identify additional potential aquifers to service the projects requirements is underway.

17.1.6 Environmental Threats

Possible environmental threats to the environment from the proposed activities are described in the following Sections.

17.1.6.1 Dust Emissions

Mining activities can generate dust to varying degrees during all stages of the mine life and these events are usually visible and readily identifiable. The following activities have been included in this assessment:

- Disturbance of vegetation and topsoil

- Areas cleared of vegetation, exacerbating natural wind erosion
- Surface disturbance during construction activities
- Drilling and blasting programs
- Excavation and movement of topsoil, waste rock and ore
- Vehicle movements (and travel speeds) along unsealed access and haul roads
- Closure and rehabilitation activities including contouring and ripping of landforms
- Crushing and screening operations.

Most of any airborne particulates from the site are likely to be visible dust, with potential for fine particulate (PM10) material.

Galaxy developed an Airborne Material Management Plan (GLA-MTC-AMMP-Rev2.3-0720) (Galaxy, 2020) to address the requirements for nuisance dust management and minimize potential impacts to Galaxy site personnel, nearby receptors, and the environment.

Data collection, monitoring and reporting requirements are outlined in this Plan in accordance with any Conditions attached to Prescribed Premises License 8469/2010/02 and relevant Australian Standards.

17.1.6.2 Noise Emissions

Residential premises to the south of the mine within the Ravensthorpe Town site are sensitive to noise emissions from the Mt Cattlin Project.

A Condition of Prescribed Premise License L8469/2010/1 (amended 7/7/2011) for the Galaxy Ravensthorpe lithium mining and processing operation was the development and implementation of an Operational Noise Management Plan (ONMP) (02-MTC-ENV-PLA-0201) (Galaxy 2019). The License condition required that the ONMP shall include but not be limited to:

- An environmental risk assessment of potential sources of noise and possible impacts
- Details of all management measures taken on site to negate the risks identified.
- A noise monitoring program including monitoring locations, frequency, methodology, reporting and responsibilities.
- Protocols for noise incident/complaint response and notification procedures.

Noise risk management and control measures are outlined in the ONMP as follows:

Noise management measures:

- Consideration of wind conditions in daily planning of operations, with respect to likely noise propagation to key receptors if noise modelling or monitoring indicates potential noise emissions close to exceedance.
- Restriction of mining or dumping activities in specific areas to occur only in favourable wind conditions.
- Development of mine plans to optimize the use of acoustic barriers to control noise to key receptors.

Noise control measures:

- Location of the waste rock stockpile to provide an acoustic barrier between mining pits and town site where this is practical.
- Replacement of excavator horns signaling dump truck operators, with an alternative 'quiet' signal
- Fit only 'broadband' reversing alarms to mobile equipment.
- Use of haul road acoustic bunds on the receptor side of exposed haul roads, to minimize haul truck noise propagation to the Ravensthorpe town site.
- During night periods:
    - dumping of waste rock behind acoustic barriers to control noise emissions to the key receptors.
    - use of haul truck routes with acoustic barriers on the receptor side of the road
    - use of wheel dozers to minimize generation of track noise.
- Crusher and Processing Plant - Acoustic barrier bunds on the southern sides of the crusher unit and processing plant.

17.1.6.3 Blast and Vibration

Mt Cattlin is a hard rock lithium mine where conventional bench drilling and blasting techniques are used to fracture the rock to allow excavation. Sensitive structures identified as part of blasting risk assessment include residential houses at 810m from the tenement boundary (but 1.5 km from the nearest open pit).

Galaxy has developed a Blast Management Plan (GDMS-02-HSE-PLA-0014) (Galaxy 2020) to manage blasting activities located at the Mt Cattlin mine, inclusive of monitoring, reporting and communication requirements. Long-term vibration and air-blast monitoring records demonstrate compliance with Regulation 11: Blasting Operations, of the Environmental Protection (Noise) Regulations, 1997.

17.1.6.4 Weeds

Increased vehicle traffic has the potential to introduce soil and vegetative material that may contain weeds and seeds from other environments. Introduction and/or increased spread of weeds can degrade the condition and resilience of local vegetation.

Introduction and/or the increased spread of weed species in topsoil stockpiles can also reduce native seedbank, soil viability and the suitability of growth medium required to establish vegetation in rehabilitated areas.

17.1.6.5 Spills and Leaks

Spills, pipeline failure, material containment or equipment malfunction may result in discharge to the local environment. Substances posing a risk of environmental harm if discharged include:

- Hydrocarbons, reagents, and other chemicals used in mining and ore processing. Diesel fuel is brought into the site to power the mining fleet and the site power station.
- Process slurries. Handling of most process slurries will largely be restricted to the processing plant area. Overland pipeline/s are installed for transfer of tailings slurry from the processing plant to the operating 2SE Pit TSF. Tailings slurry is typically alkaline (pH 8 -10) but generates acidity when exposed to oxygen and natural waters, such that recovered TSF decant water is slightly acidic (pH 5 - 7)
- Mine water. Mine water is transferred to storage tanks for use in dust suppression and to the raw water settling pond at the Process Plant, for use in ore processing. Mine water quality tends to be slightly more basic that natural groundwater but is similar to existing groundwater of the mineralised area, in terms of its elevated salinity and metal/metalloid concentrations.
- TSF decant water. Water recovered from the TSF decant will be returned to the processing plant area via overland pipeline/s. This water has the potential to be acidic, saline and contain elevated concentrations of metal and metalloids.

Refueling occurs within a purpose-built facility with bunding and drainage to capture contaminated runoff, which is then directed to oil-water-separator and waste oil storage infrastructure.

Liquid chemical reagents are stored within tanks in appropriately bunded facilities whereby 110% of the largest vessel is contained and 25% of the total volume is contained according to Australian Standards AS1940 and AS1692. Stocks of solid reagents will be stored in a designated reagent shed, appropriately designed to comply with all relevant legislation.

17.2 Heritage

Heritage surveys were undertaken by Galaxy in conjunction with the Wagyl Kiap and Southern Noongar Native Title Group representatives in November 2008. One registered Site ID 26270 Mt Cattlin 2 and one other heritage place, Place ID 29352 Cattlin Creek were approved for disturbance to develop the 2SE Pit (Reg ID 73856) via two Section 18 Consents, 34/13042 (2011) and 69/09331 (2018).

In 2010 Galaxy completed negotiations with the Southwest Aboriginal Land and Sea Corporation (SWALSC) representing the Wagyl Kaip and Southern Noongar People with respect to a Native Title Claim Wide Mining Agreement covering the tenements surrounding Mt Cattlin. The mining agreement involves a range of provisions, including compensation during the life of the project and a commitment to direct employment, contracting and training initiatives for traditional owners.

It should be noted that the areas required for project development and operation are covered by granted tenements over which there is currently no native title however, there is an existing claim by the Wagyl Kaip and Southern Noongar Traditional Owner Groups.

In 2018, Galaxy entered a Noongar Standard Heritage Agreement (Non ILUA Proponents) with the SWALSC which defines the requirements for heritage surveys. Both agreements have been adequately upheld by both parties.

To fulfil its obligations under the Western Australian *Aboriginal Heritage Act 1972*, prior to development commissioned several Heritage Surveys were carried out across the main mining tenement M74/244 in conjunction with members of the Wagyl Kaip and Southern Noongar groups. As a result of a search of the Department of Indigenous Affairs (DIA) Aboriginal Heritage Sites Register prior to the site survey, it was determined that there were no previously recorded heritage sites within the project area.

During the field survey and consultations with the claimant representatives, no new ethnographic sites, as defined by Section 5 of the Western Australian Aboriginal Heritage Act (1972), were identified within the project mining leases.

In contrast to this, the archaeological survey identified sites within the mining impact area requiring management. In June 2011, Galaxy was granted consent by the DIA under a Section 18 application to access the affected site for the purpose of mining within the Registered Site ID 26270. A further Section 18 application was applied for in 2017 and granted in 2018 for the purpose of mining in the same site. The key condition applied to the Section 18 permits was that archaeological artefacts had to be recovered in the presence of the traditional owners and relocated to a safe place that would not be at risk of further development of any kind.

An Activity Notice was lodged with SWALSC on 10 February 2023 describing the proposed Waste Rock Dump (WD2) extension over agricultural land and seeking confirmation of Heritage Survey requirements in this area.

No formal response from SWALSC or Wagyl Kaip and Southern Noongar Agreement Group had been received at the time of the reserves update. By the terms of the Noongar Standard Heritage Agreement between SWALSC and Galaxy, further notification of the proposed activities may be lodged by Galaxy, giving a further 10 business day notice period, after which Galaxy may presume the Heritage Survey is not required.

Ongoing dialogue with Wagyl Kaip and Southern Noongar representatives will determine whether an additional heritage survey is required on the recently granted G74/13 and the overall site of the WD2 expansion area, prior to construction.

17.3 Environmental Management System

Mt Cattlin has a well-established system of management tools that are implemented across its everyday operations to control unwanted events that may impact the environment. These have been in place since the commencement of operations and have been regularly reviewed and audited by numerous government agencies. Mt Cattlin has a well-established and implemented Environmental Management Plan (GLAL, 2020) and suite of operating procedures consistent with the principles of ISO 14001:2015 Environmental Management Systems and includes, but is not limited to:

- Environmental Policy
- Requirements of approvals, permits and licenses
- Environmental responsibilities of site personnel
- Site induction programs
- Environmental monitoring and reporting requirements
- Inspection and audit process
- Non-conformance, corrective action, and risk management of incidents
- Preparation of procedures and work instructions addressing identified elements such as dewatering, saline spillage, waste management and bioremediation
- Stakeholder consultation.

17.4 Site Hydrology and Hydrogeology Introduction

The Mt Cattlin site is positioned within the upper reaches of the Cattlin Creek catchment. Cattlin Creek is a significant ephemeral creek which passes through the mine site via a diversion constructed in 2019. The catchment area, including Cattlin Creek is show in Figure 17-5.

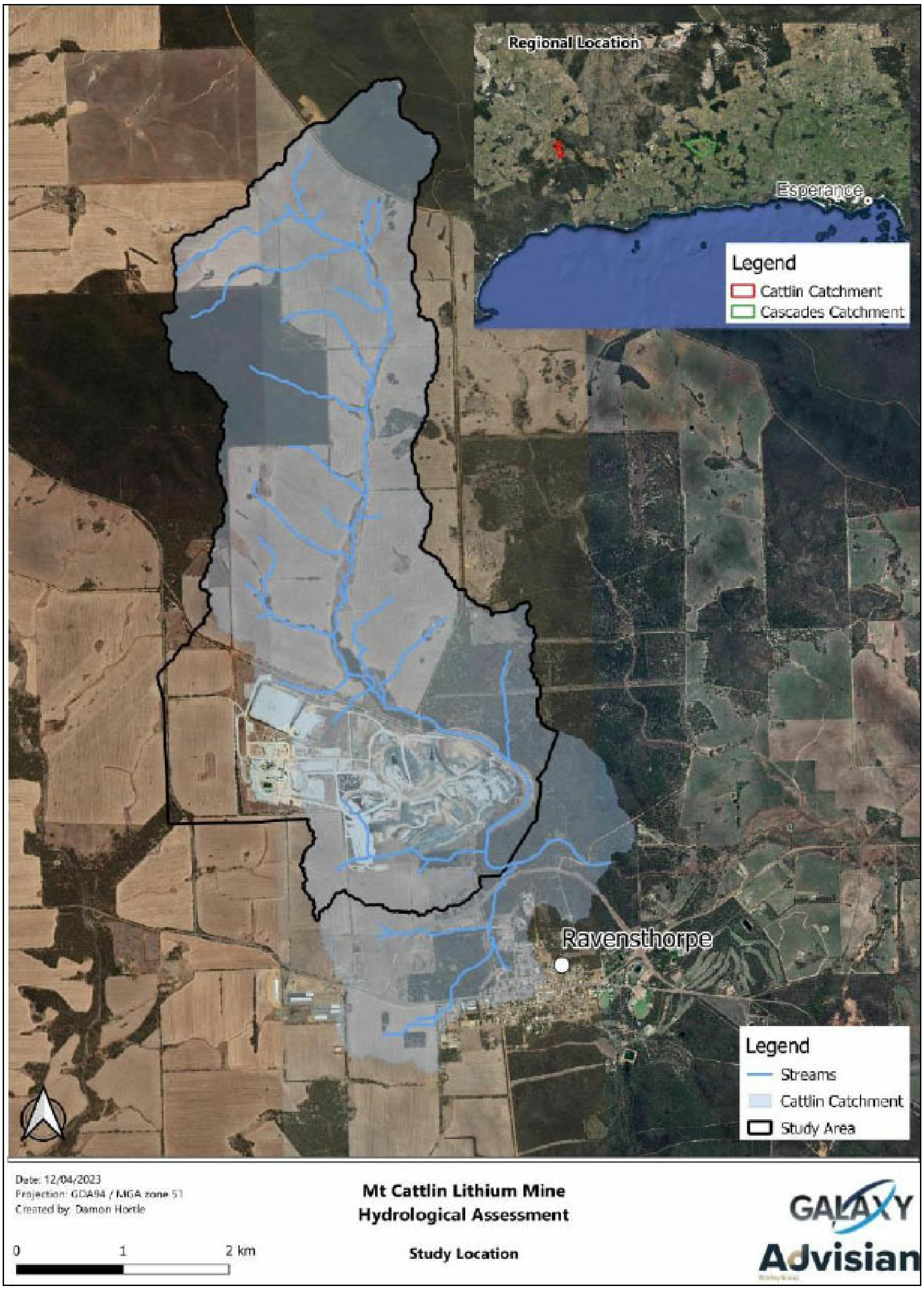

Figure 17-5 - Hydrological Assessment Study Location.

17.4.1 Climate

Ravensthorpe has a temperate climate with warm to hot summers and cool winters. Average monthly rainfalls recorded at the Bureau of Meteorology (BoM) station at Ravensthorpe (Station

No. 010633) from 1901 to 2022, indicate rainfalls can occur throughout the year with generally more from May to September (Table 17-1). The annual average rainfall recorded is 429 mm, with the average monthly rainfall totals presented in Figure 17-6. Dam evaporation exceeds average rainfall in all months of the year, and by a factor of 3.8 annually (Luke, Burke, and O'Brien, 1988).

Table 17-1 - Average Rainfall and Dam Evaporation (Ravensthorpe), mm.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall	24.2	26.4	32.5	32.4	43.7	43.2	47	45.5	41.6	38.4	30.4	23.5	**429**
Evap.	260	194	169	118	77	55	65	73	93	135	179	226	**1,644**

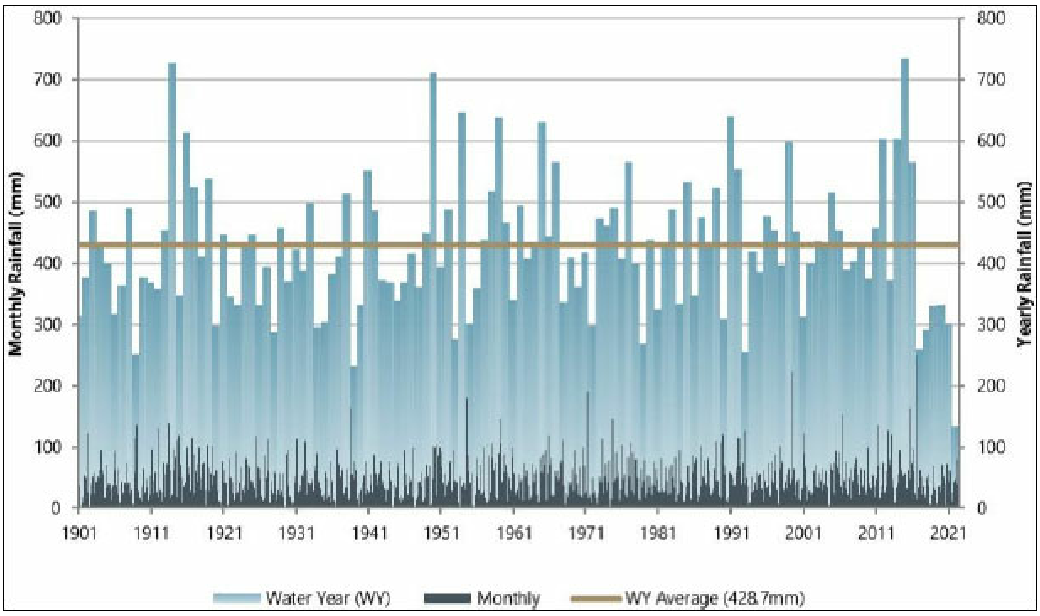

Figure 17-6 - Average Monthly Rainfall Recorded at Ravensthorpe Station (BoM ID: 7068) (BoM, 2021a).

Temperatures recorded at Ravensthorpe (1962-2022) indicate monthly mean minimum temperatures ranging from 6.7 °C in August to 14.6 ºC in February; and monthly mean maximum temperatures ranging from 16.4 °C in July to 28.9 °C in January.

The BoM 2016 intensity-frequency-duration (IFD) rainfall data for the site (Latitude: 33.54ºS, Longitude: 120.02ºE) is presented in Figure 17-7.

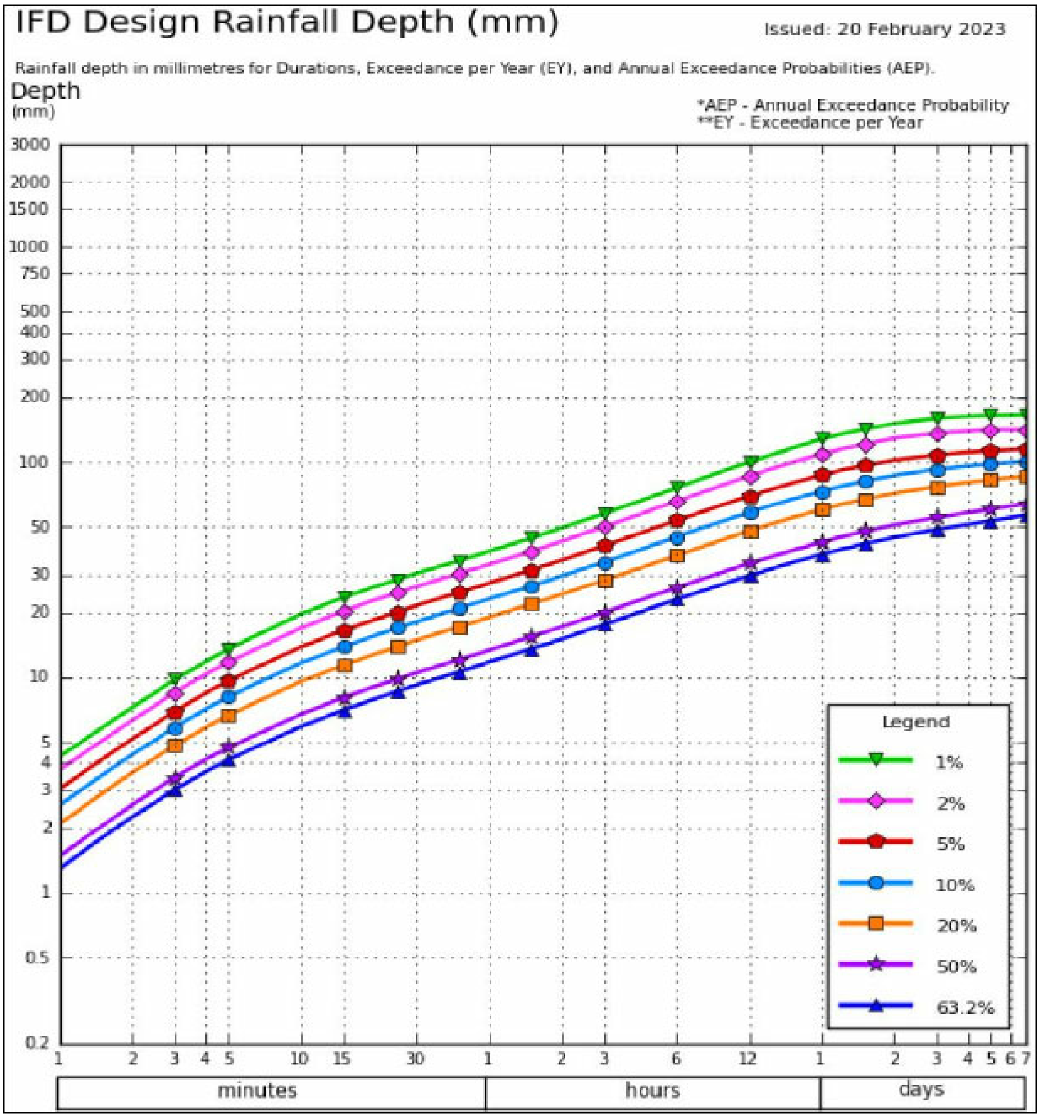

Figure 17-7 - IFD Data for Mt Cattlin Study Area (BoM, 2021b).

17.4.2 Topography and Catchment

The ground elevations at the mine site, including pits and stockpiles, currently range from 175 m to 295 m Above Height Datum (AHD).

Cattlin Creek is the most significant watercourse in the area, with a catchment area of 12.1 km^2 upstream of the mine site. The delineated streamlines in Figure 17-8 show Cattlin Creek flowing through the mine site via the creek diversion, as well as a catchment divide running north-south through the western portion of the mine site with a small creek flowing west under the Newdegate-Ravensthorpe Road (via a culvert crossing) to neighboring farmland. Another small creek flows east around the south boundary of the site before joining the main tributary of Cattlin Creek.

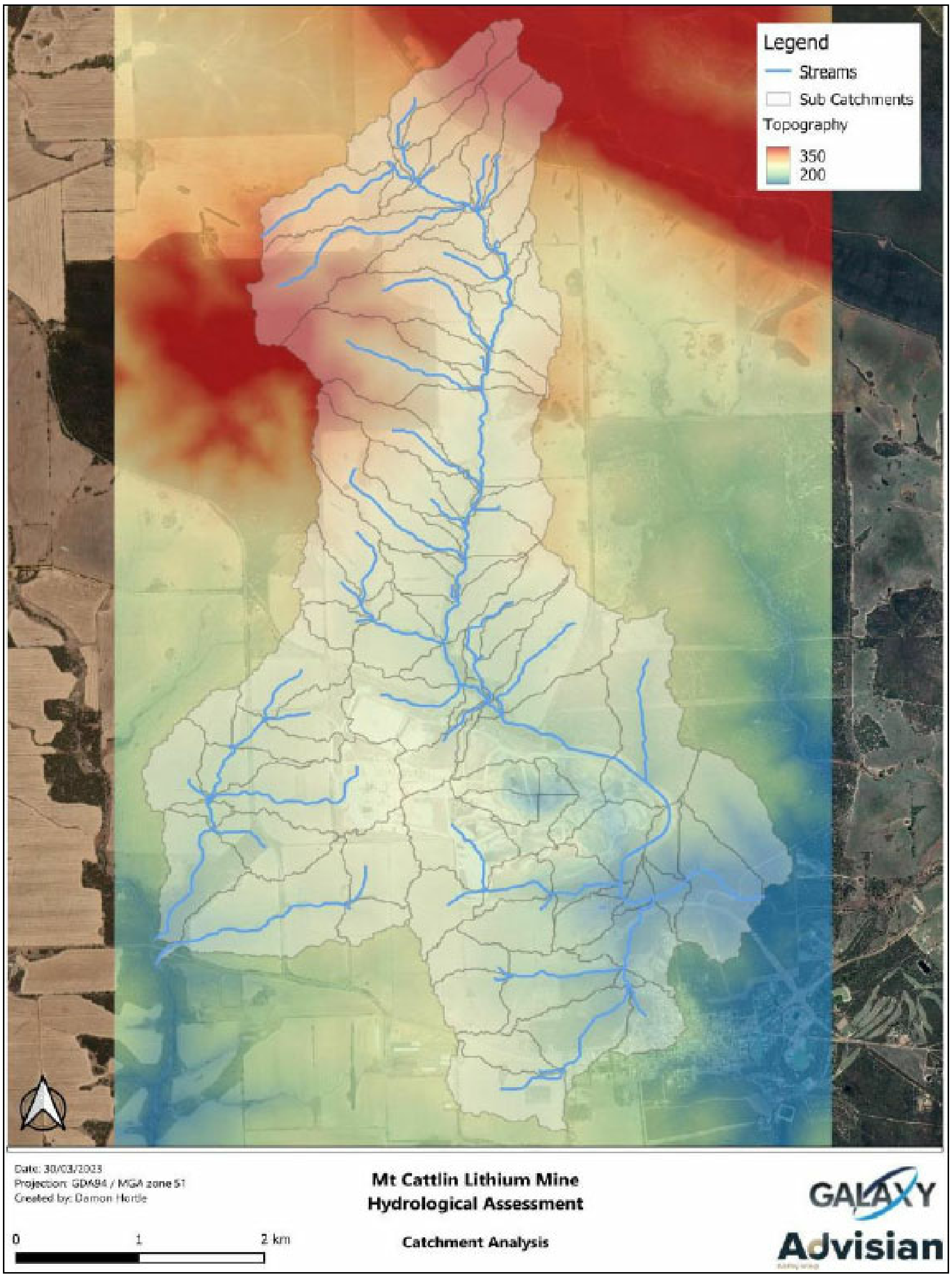

Figure 17-8 - Catchment Analysis.

17.5 Hydrology

Site wide flood modelling was completed between 2017 and 2018 and the resulting hydrology was used to inform the design of surface water management measures for operations and mine closure. This included design of the Cattlin Creek diversion and flood bunds (FPB1 and FPB2), which were constructed in 2019 at the locations shown in Figure 17-9.

A hydrological assessment as completed as part of the Feasibility study to inform mine planning and support regulatory approvals for the mine expansion, (excluding Waste dump 4). There was a new release of Australian Rainfall and Runoff in 2019 (ARR2019) with revised hydrological methods, therefore the hydrology of the mine site has been updated in this Feasibility Study for consistency with the recommendations of ARR2019.

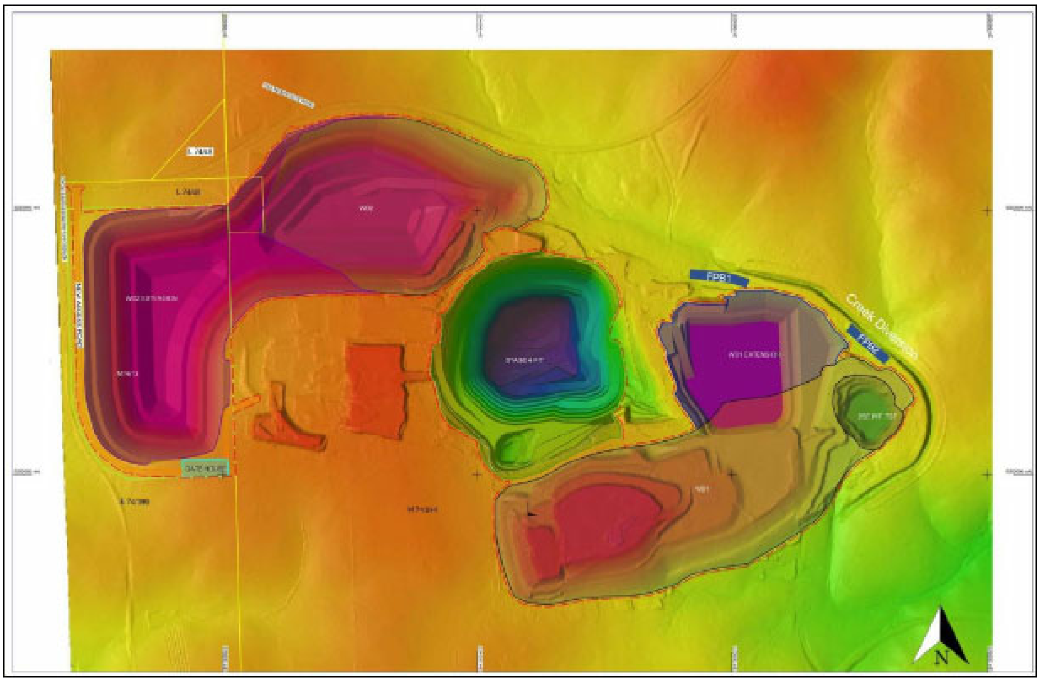

Figure 17-9 - Proposed WD and pit expansions and existing Cattlin Creek diversion and flood bunds (FPB1 and FPB2).

17.5.1 Surface Drainage

The following design Annual Exceedance Probability (AEP) events were adopted when developing concept designs for surface water management measures for operations and closure:

- Operations: 1% AEP (i.e.,1 in 100-year) event
- Closure: Probable Maximum Precipitation (PMP) / Probable Maximum Flood (PMF) events.

17.5.1.1 Existing (Pre-Stage 4) Conditions

The 1% AEP modelling results suggest there is no significant risk of flooding or scour and erosion at the mine site, with the results summarized below.

The 1% AEP flood event in Cattlin Creek is contained in diversion with between 6.5 to 7 m freeboard to the crest of flood bunds, thus satisfying the requirements in the basis of design. No upgrades are required to protect mining operations from flooding.

Peak 1% AEP velocities adjacent to the existing flood bunds (FPB1 and FPB2 shown in Figure 17-9) are less than 2 m/sec, and therefore the existing facing class rock protection on these bunds (Entech, 2023) is sufficient to protect from scour and erosion. No upgrade to the rock protection is required.

There are some areas within the mine area where minor ponding occurs with depths generally no more than 0.5 m, however there are some localized areas with depths of between 1.5 and 2.0 m. This ponding is mainly due to the grades adopted for cleared areas and construction of haul roads, and it does not pose a significant risk to operations. Site drainage works may be required to manage this nuisance water if required.

Direct rainfall on pits and waste dumps will be contained by perimeter bunding (refer Section 17.7.1) and does not present a risk to operations or downstream environments.

The Western Creek flows around the north-western boundary of the mine site, then west to Newdegate-Ravensthorpe Road. The water flows under the road via a culvert. Flows in this creek are unimpacted by mining.

Minor runoff flowing west of the processing area is captured and retained in an existing pond structure within the mine lease.

The Southern Creek flows along the southern mine site boundary, past WD1 before passing through an existing pond structure and into Cattlin Creek. The pond is likely to trap suspended sediment prior to discharge to the environment. The runoff from WD1 is contained by bunding on the benches, which acts to capture sediment and infiltrate runoff.

17.5.1.2 Post Stage 4 Development Conditions

17.5.1.2.1 Operations

The 1% AEP modelling results with the proposed additional waste dumps, Stage 4 pit and infrastructure in place suggest there is no significant risk of flooding or scour and erosion at the mine site, with negligible change in hydrology across the site when compared with the existing conditions. The results are summarized below.

The introduction of the proposed mine infrastructure shows no significant change in modelled 1% AEP flows, flood depths and velocities in the Cattlin Creek diversion and adjacent to the flood bunds. Therefore, no upgrades are required to protect mining operations from flooding.

The introduction of WD2 and Stage 4 pit does result in some minor changes in surface water runoff within the mine area, however the ponding depths are similar to existing conditions. This ponding is mainly due to the grades adopted for laydown areas and haul roads and does not pose a significant risk to operations. Site drainage works may be required to manage this nuisance water if required.

Construction of WD2 does not have a significant impact on flows in the Western Creek.

The proposed WD1 expansion works does not have a significant impact on flows in the Southern Creek. Further modelling would be required if Waste Dump is required.

17.5.1.2.2 Closure

The PMF modelling of closure conditions, with the proposed additional waste dumps and Stage 4 pit in place, identified surface water management measures required to establish a stable landform design at mine closure. The results and recommendations are summarized below.

The PMF flood event in Cattlin Creek overtops the existing flood bunds (FPB1 and FPB2). These flood bunds were previously designed to contain the PMF event, however the hydrological methods and hydraulic modelling have been updated in this study for consistency with ARR2019, resulting in a larger peak PMF flow. Therefore, the flood bunds should be raised and extended at the locations shown in Figure 17-10 to contain the PMF event. Analysis of the flood modelling results suggests the following:

- The existing flood bund crest levels should be raised by:
    - FPB1: 2.0 m at FPB1 and extended approximately 80 m west
    - FPB2: 1.5 m at FPB2 and extended approximately 40 m south-east
- The duration of inundation above the existing bund crest levels is approximately 1 hour and peak velocities are less than 2 m/sec. Therefore, the extended sections of bund are likely to be constructed using inert basalt mine waste which is readily available at the mine site (crushed rock). It is recommended that geotechnical and civil assessment are completed to develop more detailed designs for closure.
- The existing facing class rock protection on FPB1 and FPB2 is sufficient to protect from scour and erosion and does not require upgrading for mine closure.

Note that the recommendation to raise and extend FPB1 and FPB2 on Cattlin Creek to prevent overtopping in the PMF event, is a direct result of the updated hydrology and hydraulic modelling methods adopted in the 2023 Hydrological Assessment to ensure consistency with ARR2019. The proposed mine expansion landforms and infrastructure have no influence on the PMF flows estimated in Cattlin Creek and the associated FPB1 and FPB2 flood bunds.

Surface water modelling will be completed in future phases of mine closure planning, using the updated closure landform design when available. The size and volume of flows are minor and do not present a significant risk at closure.

Direct rainfall on rehabilitated waste dumps will be contained and infiltrated and thus does not present a risk to operations or downstream environments.

Peak PMF velocities around the southern toe of WD1 exceed 5 m/sec. The existing creek channel is approximately 1 m deep and between 10 and 20 m wide. Therefore, it is recommended that the existing drainage channel is widened to 30 m at closure to reduce peak velocities to no more than 3.9 m/sec, and 1/4 tonne rock protection placed on along the southern toe of WD1 to a height of 1 m to protect from scour and erosion. Further channel widening can be used to reduce rock sizing if required. The location and extent of the WD1 drainage upgrades are shown in Figure 17-11.

Peak PMF velocities around WD2 are less than 2 m/sec therefore no rock protection is required at mine closure to protect the toe from scour and erosion.

Figure 17-10 - Locations Where Existing Flood Protection Bunds are to be Upgraded at Mine Closure.

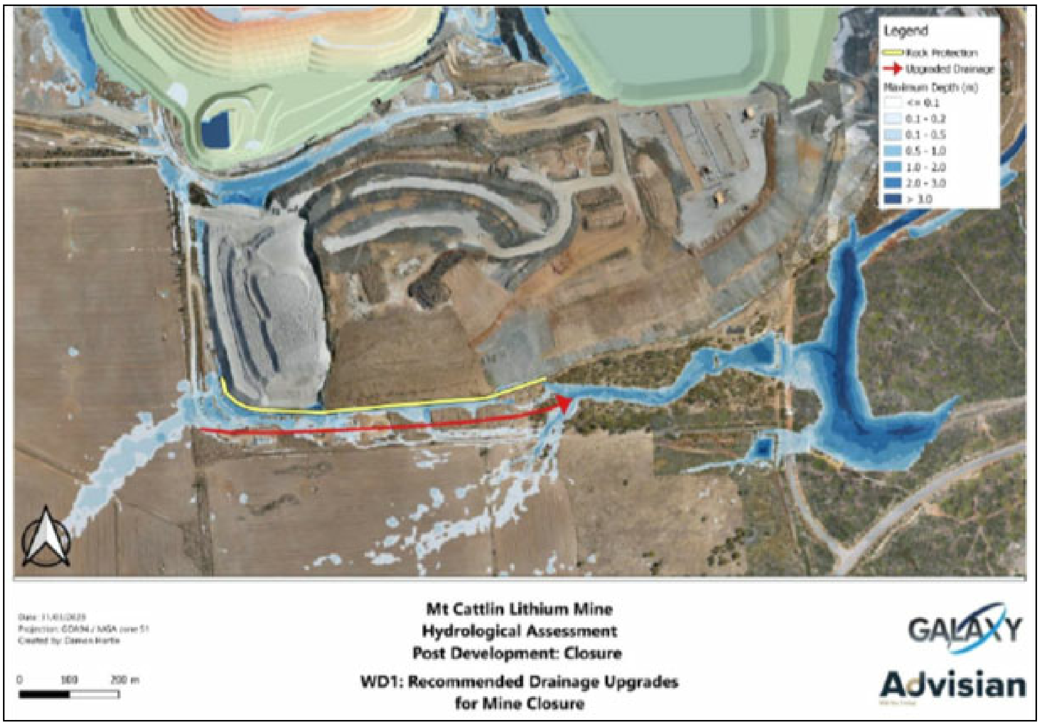

Figure 17-11 - WD1: Recommended Drainage Upgrades for Mine Closure.

17.6 Hydrogeology

17.6.1 Aquifers

The main aquifers are fractures or joints within weathered and fresh volcanic rocks, and most of the water bores were sited on air-photo lineaments. Cattlin Creek appears to follow zones of weakness in the bedrock that are locally permeable. Open joints and fractures are mostly above 120 m depth; however, some have been intersected down to 270 m depth.

The pegmatites are generally of low permeability, and the geological characteristics of the main rock units in the Stage 4 development area are expected to be similar to those in the current Stage 3 area. Some targets for testing groundwater yields have been selected within that area based on recorded water intersections in reverse-circulation drillholes.

17.6.2 Recharge and Discharge

Groundwater in the volcanics is recharged by the infiltration of rainfall and runoff following heavy rainfall events. The high salinity of the groundwater indicates that recharge rates and groundwater throughflow are low.

Groundwater levels prior to mining were all below the bed level of Cattlin Creek, indicating that the creek in the mining area is a losing stream (i.e., a potential source of groundwater recharge). Enhanced recharge from the creek into the old Mt Cattlin gold mine workings, which are used as a groundwater storage, is accomplished via bore BH01 in the creek bed. Other bores are used to extract water from the workings.

Prior to mining, the groundwater was flowing southwards, and is presumed to discharge along the coast in the Hopetoun region.

17.6.3 Groundwater Levels

Pre-mining groundwater level elevations, measured in exploration, production and TSF monitoring bores, are shown in Figure 17-12. The hydraulic gradient was steeply downwards to the south-east from a groundwater mound centered on the hill west of the mining area.

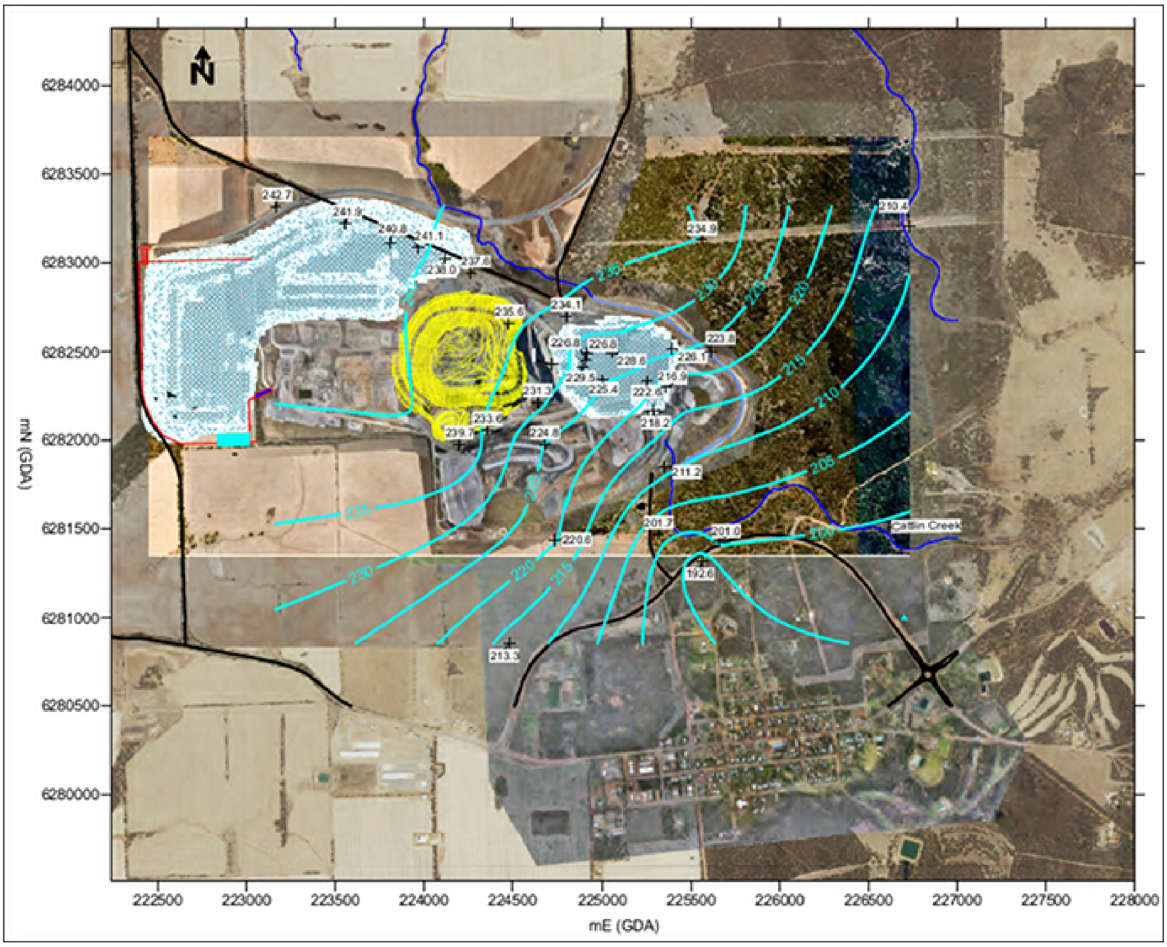

Figure 17-12 - Pre-Mining Groundwater Levels (m AHD) (Rockwater, 2023).

The most-recent groundwater monitoring review (Figure 17-13) shows groundwater levels in December 2022 followed a similar pattern to the pre-mining levels. However, they had generally risen by up to 6 m around the mining area; and by up to 12 m around the original TSF due to loading and infiltration of water from the TSF. Groundwater levels would be considerably lower in the mine pits, although there are no monitoring points in or close to the pits, except WTD11 to the south where the groundwater level had fallen by 21 m to December 2022.

Groundwater levels have risen or remained near original levels in most bores near the mining area that were monitored in both 2008-10 and December 2022 (Figure 17-13). Notable is the 6 m rise in bore MB01, resulting from infiltration of water or hydraulic loading from TSF1; and declines of 15 m to 31.5 m in and near the main production bores (WTD22, 23, 28 and 29).

Near the mine pits, groundwater levels will be below the pre-mining levels, however there is no data to show this except for the low level in WTD11 (located approximately 1.3 km south of the active pit).

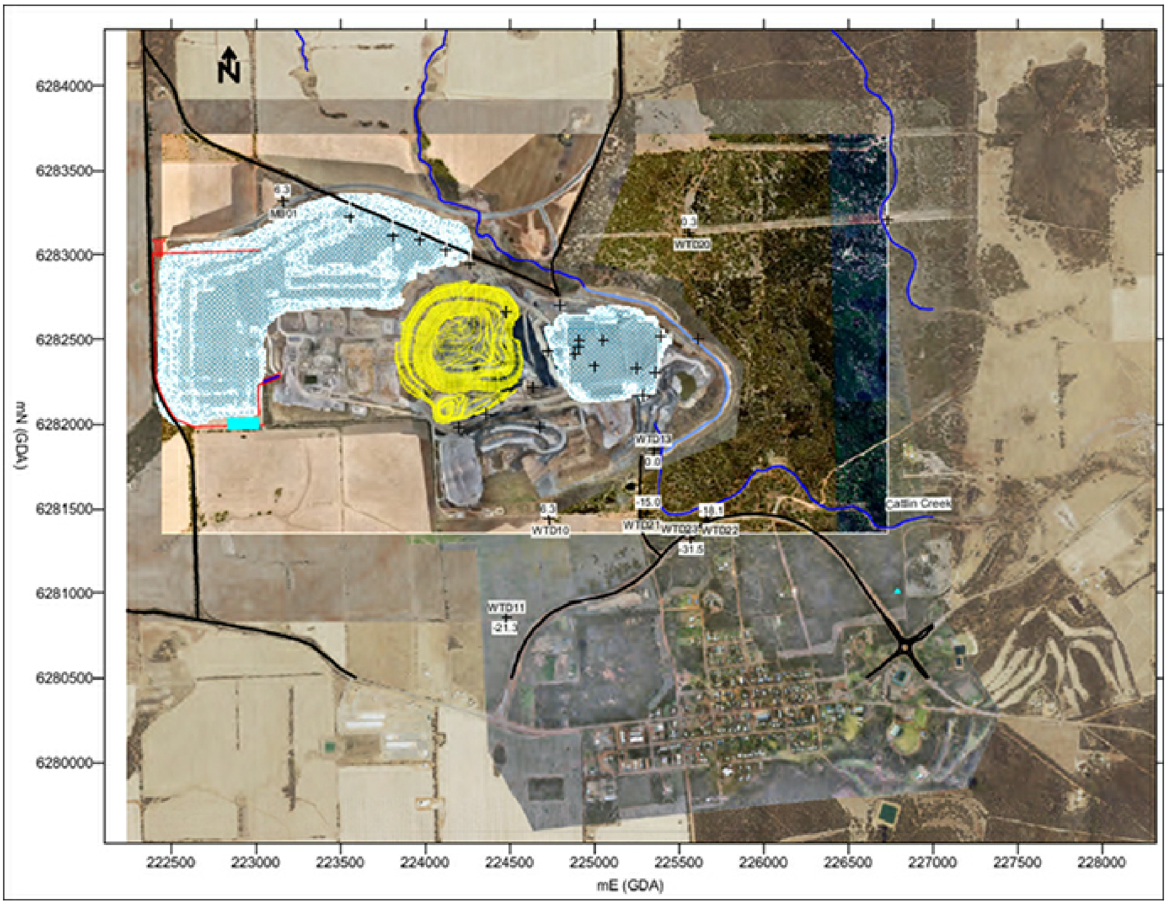

Figure 17-13 - Change in Groundwater Levels (m) From 2008-10 to December 2022 (Rockwater, 2023).

17.6.4 Groundwater Quality

17.6.4.1 Prior to Mining

Pre-mining groundwater salinities are shown in Figure 17-14. They cover a relatively small range for groundwater in a fractured rock aquifer, ranging from 24,400 to 37,400 mg/L TDS (similar to seawater). In general, (not in all cases) salinity was lower in elevated areas and higher closer to the creek and other drainage lines.

Laboratory pH values ranged from 7.6 to 8.3, meaning that the water was slightly alkaline.

Groundwater analysis indicated the groundwater was of a sodium chloride type, with elevated magnesium and sulphate. Aluminum, iron, and manganese were at low concentrations, as was nitrogen; and phosphorus was generally below laboratory reference (detection) levels.

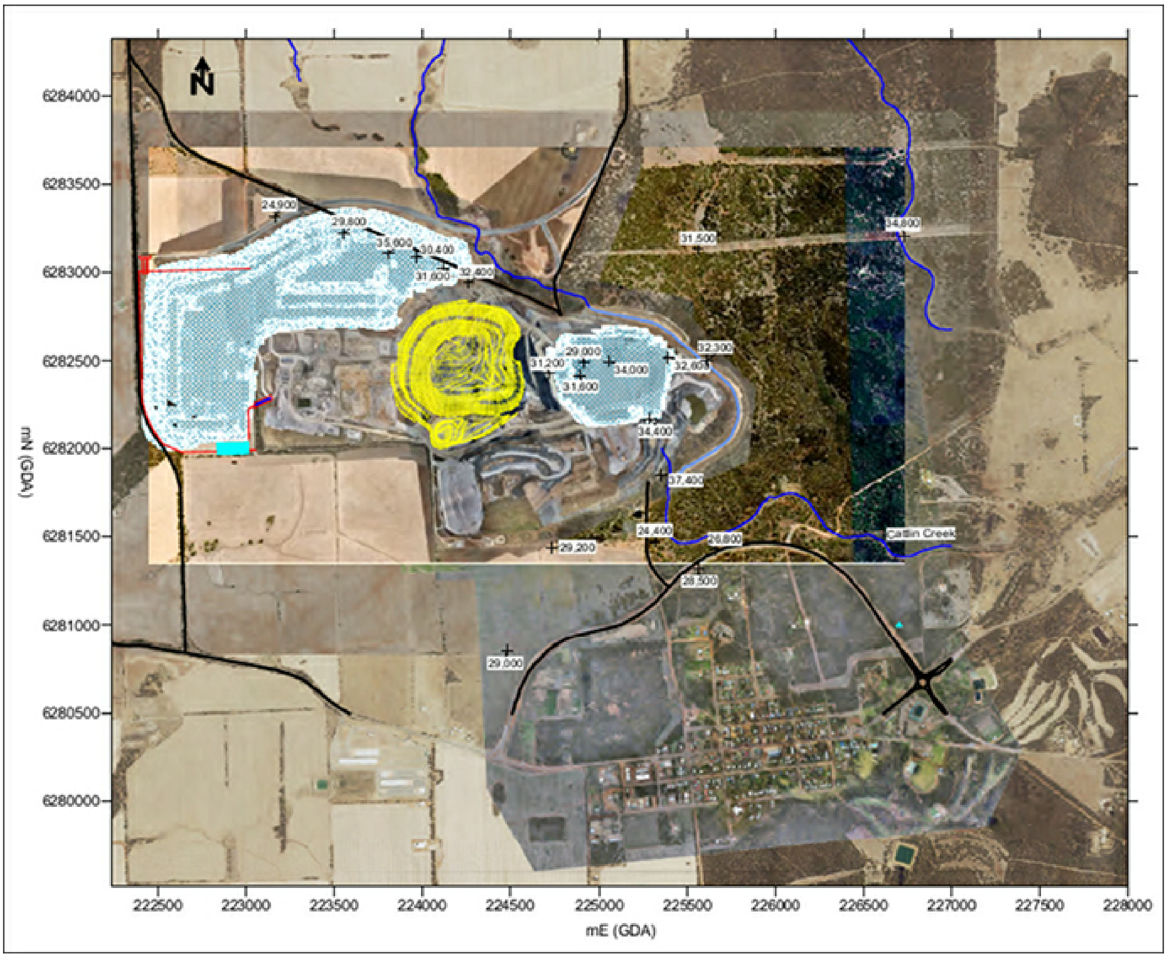

Figure 17-14 - Pre-Mining Salinity (mg/L TDS) (Rockwater, 2023).

17.6.4.2 Recent Water Quality

Salinities in November 2022 (the most recent analysis) were generally similar to pre-mining values, with some higher or lower. The largest changes since mining commenced were:

- A decrease in salinity of 12,100 mg/L in WTD13 (located on the south-eastern boundary of active mining operations)
- An increase of 8,900 mg/L in WTD19 (located hydraulically cross-gradient and north-east of the mine, beyond the extent of influence from mining activities).

The groundwater had become acidic (pH < 6) in 10 bores where water levels had risen to above pre-mining levels, in August 2021. The affected bores included MB02 to MB04, MB06 and WTD28 down-gradient (east) of the above-ground “paddock” TSF1; MB09 and MB11 adjacent to the SW pit which has been used for tailings storage; and WTD29 and WTD34 in the old Mt Cattlin gold workings. The acidity near the TSFs has been attributed to localized ferrolysis occurring within the monitored bores where water containing Fe^{2+} reacts with dissolved atmospheric oxygen introduced via the bore casing (Rockwater, 2014), rather than acidic seepage from the TSFs. The water within the old Mt Cattlin workings is probably acidic due to oxidation of sulfides of the mineralised rocks.

In November 2022, when only one of the TSF monitoring bores was sampled, MB01 had a pH of 5.7. In the other WTD-series production and monitoring bores that were sampled, the pH levels were circum-neutral, ranging from 6.8 to 7.4 (all slightly more acidic than when they were first sampled pre-mining).

The only notable change in groundwater quality is the lower pH values and corresponding increases in aluminum, manganese, and iron concentrations around and down-gradient (east) of TSF1. As shown by testing of bore MB04 in 2014, the low pH is localized, and caused by ferrolysis within the bore casings where oxygen introduced via the bores reacts with iron in the groundwater.

There is no other evidence from the 2021 and 2022 monitoring data of any decline in groundwater quality due to infiltration of tailings water from TSF1.

17.7 Impacts of Mining

17.7.1 Surface Water

Runoff from operational waste dumps will contain suspended sediment which has the potential to affect downstream environments if not adequately managed. To mitigate risk, waste dumps will be designed for operations and closure to contain and infiltrate direct rainfall-runoff for the 1% AEP and PMP events, respectively. The 2023 Hydrological Assessment conducted as part of the Feasibility Study assumed all direct rainfall-runoff is contained.

17.7.2 Groundwater

As discussed in Section 17.6.4.1, salinities in August 2021 and November 2022 were similar to those measured prior to mining. There have been no environmental receptors identified that could be impacted by mining activities. It is not expected that the proposed Stage 4 works will result in any significant changes to the local groundwater regime compared to that resulting at closure from the current mining plan.

17.7.2.1 Pit Groundwater

17.7.2.1.1 Current Pit Groundwater Regime

Groundwater inflows in the planned Stage 4 pit are likely to be similar to those observed in the previously mined NW (Dowling) pit area: averaging 4 to 5 L/s during dewatering. Test-pumping of planned bores within the Stage 4 pit area will provide hydraulic conductivity values that will be used in numerical modelling of likely dewatering flow rates, and in updating the nature of the final my voids.

17.7.2.1.2 Post Closure Pit Groundwater Regime

With the likely low values of hydraulic conductivity, except on localized joints and fractures, and the low rainfall and high evaporation rates, the final pit voids are expected to be permanent groundwater sinks. Consequently, pit lake levels after mining would remain below pre-mining groundwater levels. Salinities of water in the pit lakes will gradually increase, however there would be no movement of water from the pit lakes into the surrounding groundwater.

With continuing inflows to the pit after mining estimated to be about 2 to 3 L/s (say, 2.5 L/s = 216 m^3/d average). Using that value, and the average rainfalls and dam evaporation rates given in Table 17-1, a water balance for the final Stage 4 pit void can be estimated with the following assumptions:

- 80 % of the rain falling within the pit perimeter will report to the pit lake.
- Evaporation from the pit lake will be 90 % of average dam evaporation (reduced to allow for the high salinity of the water in the lake).

On completion of mining, the water level of the pit lake will rise until there is a balance between groundwater inflows, rainfall accumulation, and evaporative losses. That balance is estimated to be reached at a reduced level of approximately 125 m AHD (i.e., approximately 110 m below the original static groundwater level).

Preliminary estimates indicate that after 100 years, the pit lake will have risen from the pit base at about 45 m AHD, to a level of about 80 m AHD, but the rate of rise will continue to decrease, and it is likely to take about 5,000 years to stabilize at about 125 m AHD.

A north-south section through the Stage 4 pit showing the pre-mining groundwater level and the water level in the final pit void is included as Figure 17-15.

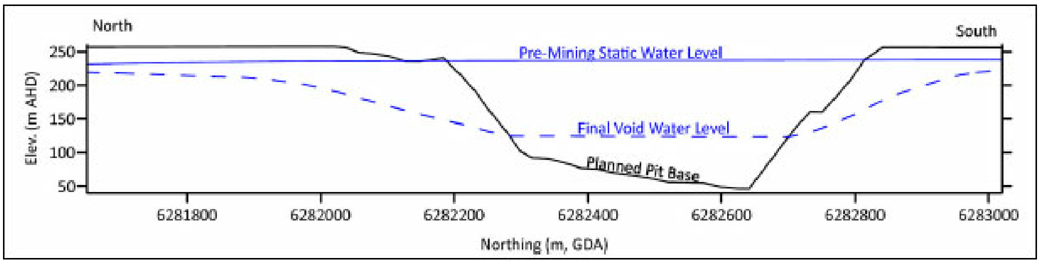

Figure 17-15 - Section Through Stage 4 Pit Showing Pre-Mining and Final Void Groundwater Levels.

The salinity of the lake water will continue to increase until it becomes supersaturated after about 40 years. The lake will form a permanent groundwater sink, with no possibility of the highly saline water flowing from the lake back into the surrounding groundwater.

It is planned to refine the modelling of the pit voids following further hydrogeological work, including test-pumping of bores to determine hydraulic conductivity values.

17.8 Overall Site Water Balance

The overall site water balance is negative, although there is a paucity of data to reliably quantify the specific quantities. The main water user on site is the processing plant which recycles all process water. The main water losses on site are:

- Evaporation - mine and process plant dust control, and TSF decant pond
- Tailings void water capture.

The pit experiences relatively low levels of seepage (~5L/s) which is collected by floor sumps and used for dust suppression or pumped to the TSF decant pond to enter the process water stream. In addition, the plant draws the remaining required make-up water from the mined-out NE pit.

17.9 Stakeholder Engagement

17.9.1 Key Stakeholders

Allkem has successful history of meaningful consultation with identified stakeholder and decision-making authorities throughout the life of the Project. Allkem is committed to continuing the consultation process as part of ongoing operations, as well as through the site closure process, and finally tenement relinquishment. Current stakeholders are included in Table 17-2.

Table 17-2 - Identified Key Stakeholders and their Interest in the Project.

Organization	Interest
Department of Water and Environment Regulation (DWER) Department of Mines, Industry Regulation, and Safety (DMIRS) Department of Planning, Lands, and Heritage (DPLH)	● Licensing and closure planning ● Contaminated site identification and remediation ● Water supply and groundwater licensing, usage monitoring and aquifer sustainability ● Disturbance management ● Evidence of rehabilitation standards ● Performance securities ● Closure provisioning ● Transfer of mine infrastructure to local landowners at closure Indigenous heritage sites and agreements.
Shire of Ravensthorpe	● Community support programs ● Infrastructure use including potential transfer and management of former mine infrastructure.
Southern Noongar and Wagyl Kaip Traditional Owners South-West Aboriginal Land and Sea Council	● Protection of Aboriginal heritage sites ● *Preservation of the natural landscape.*
Mt Cattlin Community Consultation Group (MTCCCG) representing the broader Ravensthorpe community	● Conserving the amenity and aesthetic value of Ravensthorpe township and surrounds ● Community involvement in rehabilitation and closure activities ● Post mining land use.
Ravensthorpe business community Surrounding Property Owners	● Land access ● Exploration activities ● Post mining land use ● Infrastructure transfer/retention ● Weed management ● Individual property access agreements.

17.9.2 Stakeholder Engagement Strategy

Allkem has committed to effectively consult with its identified stakeholders through the following processes:

- Regular update meetings with the Shire of Ravensthorpe and Ravensthorpe Business Association
- Ongoing consultation with local neighbors
- Ongoing consultation with Traditional Owner groups and presentations at the South-West Aboriginal Land and Sea Council working party meetings

- Appointment of an Environmental and Community Liaison Officer
- Regular quarterly presentations to the Ravensthorpe community
- Establishment of the Mt Cattlin Community Consultation Group in 2018 with members consisting of respected leaders of the community and Allkem senior management. Minutes of meetings and presentations are made publicly available https://www.mtcattlin.com.au/ccg

Allkem will continue to engage with stakeholders on all mining matters including closure issues and will update the engagement strategy where feasible, following consultation with the local community.

17.10 Public Consultation

Allkem understand the importance of proactive community relations as a key principle in its day-to-day operations as well as for future development planning.

Stakeholders have been identified based on issues related to the scope of works and the geopolitical and traditional setting of the Project, including:

- Regulatory institutions
- Local government bodies
- Government agencies
- Traditional Owner groups and authorities
- Local communities within a 5 km radius of the Project, and then those further away from the projects
- Non-government organizations with a presence in the Project area
- State agencies publish license applications and variations in state-based public media as a matter of regulation for comment.

Extensive stakeholder consultation has been carried out since 2010, including distribution of background documentation, a series of information sharing meetings with key stakeholders and all residents, open days, and focus group discussions. Background information on the Project and potential impacts have been distributed to stakeholders both locally and nationally at different times.

Project stakeholders have been identified based on issues related to the scope of works and the geopolitical and traditional setting of the project. This includes regulatory institutions, local government bodies, government agencies, traditional authorities, local communities within a 5 km radius of the Project and those further away from the projects, and non-government organizations with a presence in the Project area.

Extensive stakeholder consultation has been carried out, including distribution of background documentation, a series of information sharing meetings with key stakeholders and all residents, and focus group discussions. Background information on the Project and potential impacts were distributed to stakeholders both locally and nationally.

Public consultation has continued with a wide variety of stakeholders since the draft EIS documents were submitted to EPA in 2017 and 2018 and the process continues. The International Finance Corporation Standard for Stakeholder Public Consultation was adopted. Presentations on the Project including impacts and mitigations were made, and feedback and records were logged. Feedback and comments have been incorporated into the EIS documents submitted to EPA.

Generally, the stakeholders welcomed the Project because they will improve economic conditions in the area and create direct and indirect job opportunities. The local government authorities indicated that they will significantly improve upon their revenue base. The local communities are in expectation of getting jobs for the youth and benefitting from corporate social responsibility arrangements through the provision of boreholes, sanitation and health facilities, shea nut processing plants, corn mills, and dry season gardening amongst others. Stakeholders expressed concern about the adverse or negative impacts especially with regard to air and water pollution concerns, land take and compensation issues, food security issues, noise, vibration and traffic issues, relocation / resettlement, likely increase in some social vices and impacts on cultural sites / shrines. Proposed management and mitigation measures were generally accepted and viewed as satisfactory to address these concerns.

The consultation process is required to run concurrently with the life of the Project. Community Consultative Committees have been established in communities surrounding the Project Site. These Community Consultative Committees create a link between the Project and its stakeholders in the surrounding villages and provide advisory resources to the Project, so that efforts are appropriately directed. The composition of the Committee has been specifically targeted at reflecting the widest possible range of interest groups in the community and includes project employees, traditional leaders, administrative leaders, youth groups, woman's representatives, business leaders and opinion leaders. The Committees meet regularly and acts as a forum and consultative group channeling information to and from the Project.

17.10.1 Community Consultative Group

Galaxy established the Community Consultation Group (CCG) in August 2018 to provide a platform for the community to communicate directly with the Company. The CCG conducts regular meetings with the aim to improve the social well-being of individual groups and organizations of the local community.

The CCG consists of ten members, eight from the community of Ravensthorpe and two from Galaxy's management team at Mt Cattlin. The CCG Terms of Reference sets out the group's:

- Purpose
- Objectives
- Roles and responsibilities
- Membership selection, terms, and requirements
- Code of conduct
- Draft meeting agenda.

Community members are encouraged to contact a CCG member directly for any concerns or issues they have regarding Mt Cattlin's operations.

The specific objectives of the CCG are to:

- Provide a forum to develop and strengthen long-term relationship between Mt Cattlin and the

community.
- Build trust and confidence in Allkem by members of the community.
- Provide timely transfer of information, comments, concerns, and feedback between Mt Cattlin and the community.
- Provide accurate and effective communication between Mt Cattlin and the community. Make Mt Cattlin more accessible to the community.
- Support Mt Cattlin with delivering an effective community engagement process during all phases of mining.
- Enable Mt Cattlin to consider community feedback for everyday operation activities.
- Provide transparency to the community.
- Allow collaboration regarding the management of issues.

17.11 Environmental Permit Requirements

17.11.1 Environmental Legislative Framework

Allkem have completed numerous baseline environmental studies (during and prior to operations) and all key studies have been completed in all areas except Waste Dump 4 where additional baseline studies will be required. The permitting process is well understood and Allkem do not believe that there are constraints that will prevent permitting.

Allkem has obtained all relevant permits required to operate as listed below in Table 17-3.

Table 17-3 - Mt Cattlin Permits and Key Legislation.

Governing Agency	Permit and Governing Legislation
Aboriginal Heritage Act 1972 (Department of Planning, Lands and Heritage - DPLH)	Section 18 permits
Environmental Protection Act 1986 (Department of Water and Environmental Regulation - DWER)	Part V Prescribed Premises License: L 8469/2010/2,
	Part V Clearing Permits: CPS 3045/5, CPS 8052/2, CPS 8049/1
Mines Safety and Inspection Act 1994 (Department of Mines, Industry Regulation and Safety)	Project Management Plan
Rights in Water and Irrigation Act 1914 (Department of Water and Environmental Regulation)	Groundwater License: GWL 167439(5)

To ensure compliance, Allkem submits Annual Environmental Reports to the relevant government agencies. To date there have been no material non-compliance issues with any permit conditions or legislative requirements at Mt Cattlin.

17.11.2 Mining proposals

The regulatory approval request is submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in a Mining Proposal, the Mining Proposal provides detailed information on the identification, evaluation, and management of the environmental impacts. All Mining Proposals must include a mine closure plan.

A Mining Proposal to support the Stage 4 expansion activities outlined in this study has been submitted to DMIRS, as described in other sections these will require updates to support the full extraction of reserves.

There is an allowance in the schedule for the Mining Proposal to take four months to be approved before activities on site may be impacted. At the time of feasibility study, the approval timeline was well advanced and DMIRS had not indicated any issue that may delay approval as expected.

Further Mining Proposals will need to be submitted for the full scope of Stage 4 development, as outlined in 17.11.5.

17.11.3 Mine Closure Plan

A Mine Closure Plan has been submitted, as required, with the Mining Proposal. It is a renewed version of the previously submitted and accepted version by DMIRS, outlining the remediation that Allkem will undertake upon the closure of the mine.

Mine Closure plans require updating as the additional Mining Proposals are submitted and approved.

17.11.4 Prescribed Premises License

The site holds a Prescribed Premises License L8469/2010/2 issued by DWER under Part V of the Western Australian Environmental Protection Act which permits activities, and sets out the monitoring and reporting requirements, associated with:

- Tailings disposal
- Water bores
- Fugitive dust emissions
- Waste disposal (industrial waste and tires)

The PPL has been updated numerous times since its first issuance in October 2010. The PPL expiry date is October 2029.

17.11.5 Future Permits

A new Mining Proposal will need to be submitted to seek DMIRS approval for a new In-Pit Tailings Storage Facility and Stage 4-2 of the open pit (only Stage 4-1 is covered in the current Mining Proposal).

A further updated Mining Proposal, along with an Environmental Protection Agency (EPA) referral will be required to be submitted should waste dump space to the Northeast of the site be required to accommodate the full bulk of mine waste in Stage 4-2. The EPA referral is required as the area being considered for extra waste dumping would require clearing a significant area of native vegetation.

This new Mining Proposal process will commence upon the successful receipt of the under-assessment Mining Proposal discussed above, to provide optionality for the project whilst the technical, economic, and social trade-offs of a pit cut-back for Stage 4-2 and/or an underground operation are assessed as the most appropriate mining methodology.

Other Stage 4 capital projects, such as the development of a dedicated staff village on freehold, a new and modernized power supply, and groundwater abstraction will require a series of new and/or altered Works Approvals or modifications to Licenses, issued by the WA State Department of Water and Environmental Regulation (DWER).

17.12 Land Disturbance

Prior to initial project development, the site was predominantly privately owned, cleared agricultural land used for cropping and grazing, with some isolated pockets of remnant vegetation. Expansion of the mine to the east of the original Dowling Pit in 2018 occurred in a stand of remnant vegetation that had been previously disturbed by historic mining and exploration activities, as well as local community recreation activities such as motorbike riding. Clearing of up to 95 hectares of remnant vegetation for project development has been approved by clearing permits whilst development in previously disturbed agricultural land does not require such approval.

The current total area of land disturbance, both agricultural and vegetation, approved for all mining and exploration activities on the main project tenement M74/244 is approximately 380 hectares. The current approvals cover the expected land disturbance for the remainder of the life of mine, with the proposed project expansions occurring predominantly in previously disturbed agricultural land, other than as noted above in respect of waste dumping if Stage 4-2 open pit requires additional waste dumping.

The process applied by Allkem for all land disturbance activities includes:

- Conduct baseline environmental (flora/vegetation/fauna) and heritage surveys,
- Acquire relevant permits if proposed land disturbance is not already permitted,
- Seek internal approval to conduct land disturbance via Allkem mandated ground disturbance permit,
- Clear vegetation where it occurs, strip topsoil/subsoil and store in stockpiles away from drainage for use in progressive rehabilitation of key infrastructure such as waste rock landforms.

All land disturbances are reported in the Department of Mines, Industry Regulation and Safety (DMIRS) and Department of Water and Environmental Regulation (DWER) Annual Environmental Reports.

Under the Mining Rehabilitation Fund Regulations 2013, Allkem is required to calculate its ‘open’ land disturbance area per infrastructure category and its ‘rehabilitated’ land area on an annual basis, for each tenement. Each land disturbance category has a per hectare unit rate ranging from US$2,000 to US$50,000 dependent on the environmental risk, for example Tailings Storage Facilities (TSFs) and Waste Rock Landforms (WRLs) attract the highest unit rate. The land disturbance area for each category is multiplied by its respective unit rate and totaled across all categories, with Allkem required to pay an annual levy of 1% of the calculated total.

17.13 Waste Rock Landforms

The routine mining operations at Mt Cattlin include the movement of competent inert and predominantly basaltic waste rock material. The mine plan endeavors to maximize the amount of waste material returned to previously mined, sterilized open pit voids such as the Dowling, 2 NE Pit and 2 SE Pit. This backfilling strategy is prioritized over the development of WSLs for the following reasons:

- Minimizes the need for clearing of vegetation and further land disturbance,
- Removes the safety hazards associated with deep open pit voids post closure of the mine,
- Shorter waste rock haulage distances reducing operational costs,
- WSLs require increased earthmoving inputs and prescriptive rehabilitation methods to reduce closure liability with greater annual monitoring commitments post mining.

The WRLs are constructed as a series of terraces up to 60 m in vertical height, are designed to conform to the local topography and to maintain the aesthetics of the surrounding landscape. The WRL construction sequence involves initial placement of waste rock via dump truck at ground surface level which is then developed in two or three lifts between 10 m and 20 m high, with batter faces initially constructed at the angle of repose. Each lift of the WRL is to be reprofiled to create a final batter angle of 18° with back sloped berms 5 m to 10 m wide to retain any batter runoff and assist with revegetation.

Due to the significant volumes of benign competent waste rock, the WRL's are designed to be water harvesting landforms so that significant rainfall events will be contained within the stockpile, prevent runoff, and avoid erosion.

Rehabilitation of the waste dump stockpile will include topsoil, subsoil and targeted vegetation replacement, contour ripping, and seeding of the ripped surface with plant species of local provenance.

17.14 Tailings Storage Facility

The original above-ground TSF1 facility has been allowed to dry and been covered with a layer of reject tails to limit dust from the facility. The dried tailings contain significant remnant spodumene and a study into reprocessing these tailings is being investigated.

As part of licensing requirements, independent geotechnical and hydrological specialists conduct audits of the tailings storage facility. The TSF is operated in accordance with a TSF Management Plan and with all relevant applicable legislative requirements.

17.15 Low Grade Ore Stockpiles

Temporary low-grade stockpiles have been constructed at a location adjacent to the processing plant. Stockpiled low grade may be treated in the plant prior to the plant closure or sold as an aggregate material for clean fill purposes.

Should material remain at the end of operations, this will be rehabilitated in situ using a similar procedure to the waste rock landform rehabilitation.

17.16 Noise

Mt Cattlin is located two kilometers north of the Ravensthorpe township. In 2020, mining and processing activities were approved by DWER to operate for 24 hours per day and seven days per week. Allkem is required to comply with the conditions assigned by the prescribed premises license and the assigned noise levels defined by the *Environmental Protection (Noise) Regulations 1997,* to ensure that noise emissions are below assigned levels at the nearest sensitive receptors.

To maintain compliance, Allkem has developed an Operational Noise Management Plan 2019 (ONMP) which defines noise management controls and a noise emission monitoring program to ensure compliance. The ONMP is reviewed on an annual basis and has been approved by both the DWER and DMIRS via numerous permit applications for project expansion.

Monitoring is conducted at nearby sensitive receptors, located in adjacent residences, by independent qualified Acoustic Engineers on a quarterly basis, and results provided in the DWER Annual Environmental Report (AER) submissions. Data from the acoustic monitoring program is also made publicly available to the Shire of Ravensthorpe residents and other interested parties.

17.17 Air Quality

Gaseous emissions are limited to those from vehicle and equipment exhaust emissions. Dust emissions is the main air quality generated from the following activities:

- Blasting,
- Earthmoving equipment on unsealed internal roads,
- Waste rock movement at the WRL,
- ROM ore handling and ore crushing,
- Large, exposed surface areas such as the top of the WRL and TSF.

Although dust emissions can be significant under certain climatic conditions, such as during high winds or dry conditions, dust generation at the mine site is effectively controlled through the implementation of management actions as outlined in the Mt Cattlin Airborne Material Management Plan 2020 (AMMP). The AMMP is reviewed on an annual basis by external air quality specialists to ensure that the management and monitoring strategies are suitable for the current state of mining and processing operations.

Typical dust management methods are employed such as:

- Watering of mine haul roads and other exposed areas,
- Weather prediction analysis and utilization of stop-work procedures in high wind conditions,
- Covering exposed areas including TSF surfaces with coarse reject tailings,

- Progressive land disturbance and progressive rehabilitation of disturbed areas to reduce open area exposure time to wind erosion.

Air monitoring is conducted by Mt Cattlin's Environmental Department personnel to determine the quality and quantity of emissions via two methods, the use of deposition gauge sampling stations situated around the mine perimeter and in the Ravensthorpe town, and a continuous High Volume Air Sampler located in the center of town.

All monitoring and sampling collection methods are conducted in accordance with Australian Standards (AS/NZS 3580), samples analyzed by NATA accredited laboratories and results assessed against National Environmental Protection Measure ambient air quality standards.

Like noise, air quality monitoring results are monitored and reported and are also made publicly available to the Shire of Ravensthorpe residents and other interested parties.

17.18 Environmental Liabilities and Other Encumbrances

The permit conditions and commitments made by Mt Cattlin in associated permit application supporting documents provide a framework for managing the environmental and social impacts of mining activities to be as low as reasonably practicable and to achieve the following objectives:

- Good stewardship of natural resources, consistent with safe and efficient mining practices,
- Minimal disturbance of land and utilization of existing disturbed areas for project expansion where feasible,
- Conservation of flora and fauna habitats,
- Protection of sites of cultural and spiritual significance,
- Confirmation of the success of impact control measures by means of monitoring and audits,
- Compliance with all statutory requirements,
- Rehabilitation to a safe, stable, non-polluting landform and an acceptable post-disturbance land use and land capability,
- Preservation of downstream water quality and quantity,
- Transparent engagement with the Ravensthorpe Community.

To confirm compliance with the conditions and commitments, Allkem submits Annual Environmental Reports for review by officers of the relevant agencies. To date there have been no material non-compliance issues with any permit conditions or other legislative requirements.

The only known environmental liability applicable to the site relates to the usual rehabilitation of mining and processing activities undertaken on site. Mt Cattlin has a Closure Plan for this work, approved by the Department of Mines, Industry Regulation and Safety ("DMIRS").

At the end of the Mt Cattlin project life, the freehold property will remain in ownership of Allkem.

17.19 Rehabilitation and Closure

The Mt Cattlin Rehabilitation and Closure practices are prescribed in the Mine Closure Plan, which has been prepared in accordance with the Guidelines for Preparing Mine Closure Plans and approved by DMIRS. The document is publicly available via the DMIRS website.

The purpose of the Mine Closure Plan included the following:

- Identification of closure obligations and relevant legislation,
- Detail any key stakeholder consultation undertaken previously and plans for continued consultation,
- Development of Completion Criteria and Completion Objectives,
- Identify any potential closure issues and associated management strategies,
- Define rehabilitation and closure implementation strategies,
- Outline rehabilitation and completion criteria monitoring methods.

Mt Cattlin is focused on ensuring that mine scheduling incorporates progressive rehabilitation to disturbed land during operations. This involves rehabilitating any land that is no longer required for operational purposes as soon as it is available to generate a safe, stable, and non-polluting landscape to support post- mining land uses such as agriculture or a self-sustaining native vegetation ecosystem. This progressive approach to rehabilitation enables the early commencement of disturbance revegetation prior to mining completion, so that the duration of the post closure rehabilitation maintenance and management liability is reduced by undertaking rehabilitation during operations, and maintaining the trajectory towards meeting agreed completion criteria so tenure can be relinquished as soon as possible.

Annual rehabilitation monitoring conducted during the operations phase has enabled Allkem to understand the most successful methods of rehabilitation. Through trials and benchmarking with other projects, adjustments have been made to managing those that require rectification. Improvement works have been undertaken particularly on the WRL to alleviate minor erosion after significant rainfall events, and supplement seed or plant tube stock in underperforming areas of revegetation.

A detailed Closure Cost Estimate (CCE) is undertaken annually by an external consultant for the currently developed and approved domains of Mt Cattlin. The detailed CCE is commercially confidential and includes financial provisions for:

- Administration,
- Maintenance, monitoring, and auditing programs,
- Failed rehabilitation or additional monitoring,
- Ongoing stakeholder engagement process,
- Closure project management costs,
- Specialist consultant and legal fees,
- Legal obligations associated with approval conditions,
- Provision for premature closure, potential delays, extreme events, or other external factors relevant to closure.

The rehabilitation and closure process developed is consistent with industry leading practice.

17.20 Summary of Environmental, Social and Permitting.

The Allkem employee set forth herein is familiar with the Environmental, Permitting and Closure requirements for the project. This work has largely been completed by Mt Cattlin and Tetris Environmental. The key observations are:

- Mt Cattlin has completed numerous baseline environmental studies (during and prior to operations) and all key studies have been completed and there are no ongoing constraints preventing ongoing development and mining. Should Waste Dump 4 be required then additional baseline studies will be required.
- Mt Cattlin has obtained all relevant permits required for current operations.
- At the date of reporting reserves Mt Cattlin was in compliance with all permits.
- A Mining Proposal has been lodged with the regulator (DMIRS) for the development of Stage 4-1 pit and additional waste dumping; this approval is seeking the expansion of the pit and relocation of the SW tailings. Approval was considered routine and was expected in August 2023.
- A new Mining Proposal will need to be submitted following the receipt of the approval for the currently lodged proposal, to permit the use of NE pit IPTSF. The highest priority is the new NE IPTSF as the current TSF will reach capacity in mid-2024. The new TSF will be the third similar style of TSF at Mt Cattlin and therefore is not a novel concept. Whilst the approval should be relatively straightforward and non-controversial, the time remaining to design and gain the approval, inclusive of any intermediate delays or required changes of scope, could elevate the risk to production given the expected exhaustion of tailings capacity in the SE pit IPTSF in mid-2024.
- A further Mining Proposal process will commence upon the successful receipt of the currently lodged Mining Proposal discussed above, to provide optionality for the project whilst the technical, economic, and social trade-offs of a pit cut-back for Stage 4-2 and/or an underground operation are assessed as the most appropriate mining methodology. Should open pit mining of Stage 4-2 ultimately be decided on by Allkem and further waste dumping space to the Northeast be required then an Environmental Protection Agency (EPA) referral will be required. The EPA referral is required as the area being considered for extra waste dumping would require clearing a significant area of native vegetation.
- Other Stage 4 capital projects, such as the development of a dedicated staff village on freehold land, a new and modernized power supply, and groundwater abstraction will require a series of new and/or altered Works Approvals or modifications to Licenses, issued by the WA State Department of Water and Environmental Regulation (DWER).
- Allkem do not believe that there are constraints that will prevent permitting.
- Mt Cattlin has no known environmental liabilities other than rehabilitation/ closure obligations.
- Mt Cattlin is required to pay a per hectare unit rate for land disturbance as part of the Mining Rehabilitation Fund Regulations 2013.
- The closure and rehabilitation of the site post operations is prescribed in the Mine Closure Plan prepared in accordance with the Department of Mining, Industry, Regulation and Safety and outlines

the closure obligations. The Mine Closure Plan identifies and sets out management of any potential closure issues and defines and outlines the site rehabilitation requirements.

- Mt Cattlin has focused on mine scheduling that allows for progressive rehabilitation to all disturbed land during operations. Annual rehabilitation monitoring is conducted on site and a detailed Closure Cost Estimate (CCE) is completed annually. An updated Mine Closure Plan has been submitted with the current Mining Proposal which estimates a closure cost of US$12.3M.

- Mt Cattlin has built up social credit with the local community over the past decade through local employment, operating without major incident, and initiatives such as the Community Consultation Group (CCG) and site Open Days. The responsible QP's opinion is that there is adequate planning, current compliance with environmental conditions and demonstrated engagement with local individuals and interest groups, including West Australian State regulators, local landowners, residents and stakeholders. The cost of site closure and reclamation is approximately USD $12.3 million and a statutory provision has been made for this cost. A new closure plan will be required on approval of the Stage 4 Mining Proposal.

18. CAPITAL AND OPERATING COSTS

This chapter discusses the capital and operating cost estimates that were developed as a part of the Stage 4 Feasibility Study, and which are used in Chapter 19 Economic Analysis.

The operating costs have been derived from onsite budgets and actual operating history, or in the case of mining costs via negotiated tender and detailed schedule and are considered at a Feasibility Study level of confidence. The overall capital costs are based off industry benchmarking, and considered to be a pre- feasibility study level of confidence (Entech, 2023)

The Mt Cattlin Stage 4 Feasibility study has noted that the overall cost estimation is judged to have an accuracy range of ±15% which is reflective of the level of development of the Project and is typical of a Feasibility Study.

18.1 Basis of Costing

The costs were based on a monthly forecast of costs and modelled in an Excel based financial model.

Mt Cattlin is an operating mine and capital costs projections exclude sunk costs already incurred in developing the project to date, and any ongoing costs that may be incurred that are not directly associated with the Mt Cattlin operation such as business development, exploration costs and further resource definition beyond the current Mineral Resources.

No allowances have been included within the estimates for the following items:

- Goods and Services Tax (GST - this is a refundable expense)
- Withholding taxes
- Escalation or inflation
- Financial charges of any description
- Interest

All cost estimates are expressed in United States (US$), unless stated otherwise.

18.1.1 Mining Cost Estimation

The mining cost estimate considered all costs incurred to mine material, deliver it to the stockpiles, waste dumps and ROM pads. The battery limits of the cost estimations were as follows:

- Mining site preparation and establishment
- Mining disestablishment and demobilization
- Road construction and maintenance between mining areas and the processing facility
- Mine dewatering of the pits

- Mining-specific capital costs only
- Diesel rate of US$0.99 per liter post rebate.

The cost basis for the estimate has been developed to represent the mining methods outlined within this report. Cost estimates represent expenditures required to develop and mine the Mt Cattlin Stage 4 Expansion. Operating cost estimates are supported by information from the following sources:

- Mining Services Contract Tendered Schedule of Rates
- Other surface mining assumptions are drawn from historical actuals or first principles/benchmarks.

Where possible, parties have sought quotations for costs, however in some instances, costs have not been available by quotation. In these instances, costs have been worked up from first principles or the parties have used in-house database information available from cost estimates for similar projects.

18.2 Site Capital Costs

The Life-of-mine capital expenditure has been calculated to total US$80.3M, which includes a sustaining capital expenditure of US$21.5M summarizes (Table 18-1).

Being an operating mine capital costs are a modest part of the overall cost structure, <10%, and not a material driver in the economic analysis.

Table 18-1 - Life of Mine Capital Expenditure Summary.

Capital Type	US$M
Site Capital	41.1
Closure	12.3
Mining	5.6
Sustaining	21.5
Total Capital Costs	80.3

Variances in totals may be due to rounding.

Table 18-2 details expenditure for site capital and includes an allowance for the new NE In-Pit Tailings Storage Facility (IPTSF) as the current SE IPTSF will reach capacity in 2024.

To create a buffer zone around the Mt Cattlin site, a provision of US$4.7M has been allowed for neighboring land purchases. Due to the operation's proximity to the town of Ravensthorpe and location in an active cropping and grazing farming district, the site has more interaction with neighbors than is typical in Western Australia. Creation of a buffer zone will lessen potential impacts such as noise, dust, and light spill, as well as provide land for future growth should it be needed.

A nominal sum of US$35M has been allowed for the construction of a flotation circuit attached to the existing DMS processing plant, to facilitate the retreatment of approximately 900,000 t of tailings in TSF1, based on benchmarking Entech believe that the capital estimate is at PFS level. Current testwork shows the retreatment is feasible, and further testwork should enhance the economics and technical robustness of the

Project. It is assumed the retreatment happens at the end of the mine life and the expenditure accounted for at that time.

Table 18-2 - Site Capital Expenditure.

Capital Type	US$m
TSF	1.4
Land Purchase	4.7
Tailings Retreatment	35.0
Total Site Capital Costs	**41.1**

Closure capital costs of US$12.3m have been allocated for the end of the project life, derived from the existing mine closure plan, as is deemed reasonable based on the site footprint size and nature of tasks at hand. The allowance assumes a material amount of progressive rehabilitation is undertaken during the project's operational life.

Table 18-3 shows a general sustaining capital expenditure of US$0.7m per annum has been allowed for equipment replacements typically seen on sites such as Mt Cattlin that have been operating for around 10- years. The expenditure can be thought of as 'lumpy opex,' for example expenditure that is operational in nature, however, occurs at times in excess of one year, such as the casing of a key pump - the internal wear parts are replaced several times a year as operating expenditure, but the casing may need replacement every 3-years.

A precursor to the Stage 4 mine expansion is the removal of tailings within the completed 2SW IPTSF which is immediately adjacent to the current Stage 3 pit. A nominal costing of US$14/BCM has been allowed for, over an 8-month period, US$14/BCM including a significant allowance made on top of the tendered mining contract rates. The task is likely to be slow and bespoke, and unsuited to being included in the main mining contract. The task totals US$17.7 m.

Table 18-3 - Sustaining Capital Expenditure.

Capital Type	US$m
Processing Plant	3.7
Removing in-pit tailings from 2SW IPTSF	17.7
Total Sustaining Capital Costs	**21.5**

18.2.1 Mining Capital Cost Estimate

The total mining capital cost estimate is US$5.6M. A breakdown of the total capital estimate by area is shown in Table 18-4.

Mining Capital Costs are based on the negotiated schedule of rates, given the nature of the costs and small size no contingency was applied.

These capital costs include:

- Clear and grub, and topsoil stripping; clearing material over the waste dump and pit footprint to a 300 mm depth. This cost also includes movement of the material to a designated topsoil dump.
- Establishment: Setting up mining facilities for the contract miner.
- Mobilization and Demobilization; Movement of the mining contractor's equipment and personnel.

Table 18-4 - Total Mining Capital Cost.

Description	US$m
Clear & Grub and Topsoil Strip	0.4
Establishment	0.5
Mobilization	3.7
Demobilization	0.9
Total Mining Capital Costs	5.6

18.3 Site Operating Costs

This section covers operating costs in the processing and general administration areas.

Operating costs were derived from operating experience in the case of Processing, and General and Administration costs, or from a negotiated tender in respect of Mining costs.

18.3.1 Processing and General and Administration

The key operating cost inputs are shown in Table 18-5, and were predominantly sourced from Mt Cattlin's budget forecasts, which have their basis in the site's historical operating data.

The costs of operating the processing facility are a combination of fixed and variable elements, from previous experience a split of 50% fixed cost and 50% variable cost has been found to accurately reflect the cost build- up, and this was applied to the model.

The General and Administration (G&A) costs represent the site operating costs less processing and contract mining. Essentially it is Mt Cattlin administration, power, accommodation, flights, and management, technical, administrative, and compliance staff costs. It does not include any Allkem corporate costs. Similar to the Processing cost center, if the plant was not operating at nameplate capacity, the total true G&A costs of running site would be understated by using a fully variable cost assumption. A more robust method was to convert the fully variable rate to a fixed charge of US$1,018,500 per month.

Table 18-5 - Key Operating Cost Assumptions.

Assumption	Unit	Value
Transport		
Surface Haulage Costs	US$/wmt concentrate trucked	25.57
Port Costs	US$/wmt concentrate shipped	14.06
Moisture	%	2.0
Processing		
Fixed	US$/month	2,184,000
Variable	US$/t ore processed	14.56
General and Administration (G&A)		
Fixed	US$/month	1,018,500
Royalty		
LRC Royalty	US$/t ore processed	1.05
Western Australian State	%	5.0

Total operating expenditure over the life of the project is US$899 m (Table 18-6), by key operating cost centers by mine stage, including the end-of-life stockpiles (low grade, fine-grained, and tailings retreatment) that are scheduled to be processed.

Table 18-6 - LOM Operating Costs by Mining Stage.

Operating Expenditure (US$m)	Stage 3	Stage 4-1	Stage 4-2	Stockpiles	Total
Mining	33.4	150.2	247.8	0	**431.4**
Transport	14.4	8.3	11.2	3.1	**37**
Processing	61.9	48.3	86.2	58.1	**254.5**
G&A	14.9	12.6	26.7	11	**65.2**
Royalty	51.9	17.8	31.6	9.1	**110.4**
Total Operating Expenditure Costs	**176.6**	**237.2**	**403.5**	**81.2**	**898.5**

The annual expenditure by category over the life of mine is displayed below in Figure 18-1.

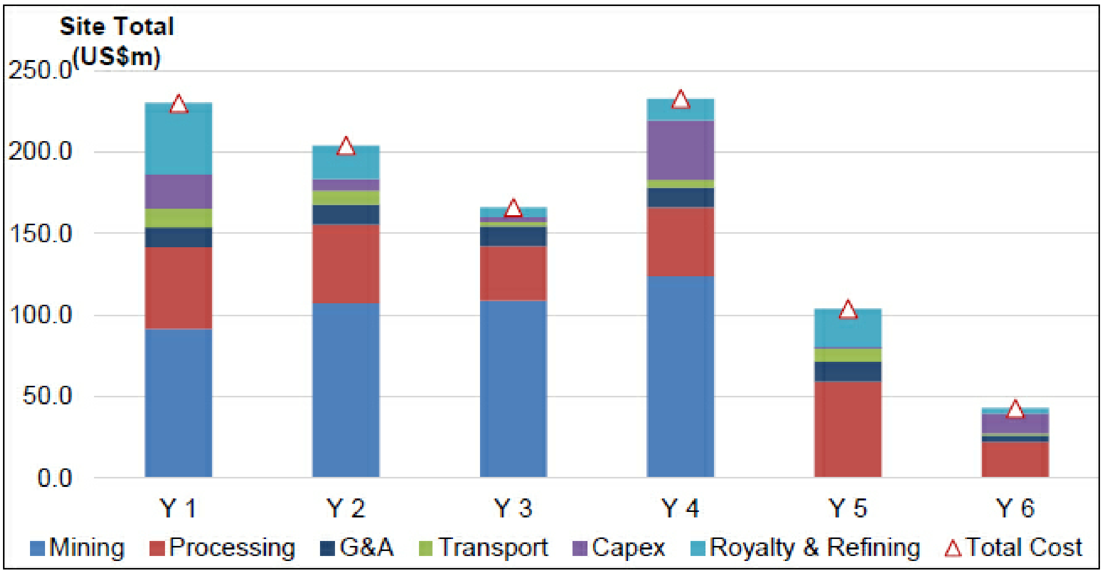

Figure 18-1 - Annual Expenditure by Major Category.

18.3.2 Mining Operating Cost Estimate

The operating cost estimate was provided to Mining Plus by Allkem, completed by Entech as part of NI-43101 Ore Reserve Estimate and the Mt Cattlin Stage 4 Feasibility Study. Mining Plus has relied the cost information, sources of estimation and the economic model provided to Mining Plus in order to determine the viability of the project and to evaluate and report on the Mineral Reserve estimation.

The direct mining costs used in the mining cost estimate are from the schedule of rates submitted by contractors in a competitive tender process. An interim mining schedule was prepared by Allkem and incorporated into a tender package (3-year term) prepared and issued to five contractors.

The returned submissions were then evaluated based on the following criteria:

- Completeness
- Conformance to specifications
- Price
- Relevant experience.

The mining cost model incorporates one selected bid from the latest pricing.

18.3.3 Summary of Mining Operating Cost

The operating costs are based on the following assumptions:

- Ramp up to a maximum 12 M bcm a year mining rate.
- Open pit mining services provided by the selected mining contractor.
- Fixed and variable contract. Variable costs are calculated as a function of the relevant variable.

Workforce levels vary as new deposits come online in the project. Mining maintenance, staff and safety personnel numbers change with each phase of the operation.

The total mining operating costs by pit is illustrated in Table 18-7.

Table 18-7 - Mining Operating Cost by Deposit.

Pit	US$m
Stage 3-Phase 1	33.4
Stage 4-Phase 1	150.2
Stage 4-Phase 2	247.8
Total Operating Costs	**431.4**

18.3.4 Open Pit Mining Costs

Open pit mining operating costs have been determined by the schedule of rates provided by the mining contractor. The mining cost is based on working 365 days per year, seven (7) days per week, with two (2) 12- hour shifts per day and includes allowances for the following items:

- All mobile machinery
- Dayworks
- Drill consumables (in drill and blast rates)
- Dewatering
- Explosives
- Manpower for contractor operators and supervisors/managers
- PPE
- Tooling for the workshop
- Preliminary and ongoing primary pit dewatering
- Supply of diesel fuel to the contractor
- All flights, accommodation and messing for management and contractor personnel if applicable.

18.3.5 Open Pit Load and Haul

Load and haul costs include all consumables, equipment, labor, and ancillary equipment required for the loading and hauling of all waste and ore material from the open pits to the waste dumps and ore stockpiles at each pit. Costs were calculated on a unit cost per Bank Cubic Meter (BCM) basis, with the unit cost increasing with depth below the pit crest.

Ancillary equipment costs include all equipment and labor contingency for supporting the primary fleet. This includes a consideration for lighting towers, service truck, dewatering and other miscellaneous equipment.

The open pit load and haul cost (tonnes of ore plus waste) averaged US$6.34/BCM of total pit production. In terms of plant feed, open pit mining costs an average of US$47.56/t ore processed. Open pit mining costs by pit stage are presented in Table 18-8.

Table 18-8 - Load and Haul Cost by Deposit.

Pit	US$m	US$/BCM
Stage 3-Phase 1	19.9	6.51
Stage 4-Phase 1	94.5	5.91
Stage 4-Phase 2	165.5	6.58
Total Operating Costs	**279.9**	**6.34**

18.3.6 Open Pit Drill and Blast

The overall drill and blast unit cost across all volume moved equated to US$2.94/BCM using rates generated by the open pit contractor. The drill and blast costing also has an allowance for diesel, a breakdown is shown in Table 18-9.

Table 18-9 - Drill and Blast Cost by Deposit.

Pit	US$m	US$/BCM
Stage 3-Phase 1	11.0	3.61
Stage 4-Phase 1	46.3	2.92
Stage 4-Phase 2	67.9	2.82
Total Operating Costs	**125.3**	**2.91**

18.3.7 Dayworks

A dayworks allowance of one percent of the total load and haul, drill and blast, and fuel costs have been costed. Dayworks cost over the life of mine equated to US$4.2m.

18.3.8 Diesel Usage

Diesel usage has been modelled and costed. Diesel usage for the open pit was based on the tender estimates received from the mining contractors.

18.3.9 Mine Overheads

Open pit mine contracting personnel oncosts including camp and FIFO costs have been included in the mining cost estimate. No company-based mine overheads were included within the mining estimate, as these have been captured in the G&A costs in the financial model provided.

18.3.10 Mine Services

Mine services costs were included in the mining contractor variable rates, and the scope is outlined below.

The following is captured in the Financial model provided by Allkem:

- Mining management and administrative personnel captured in General and Administration.
- Pit pumping / dewatering (Contractor responsible for pumping to the main dewatering line installed by Allkem at the pit crest).

Messing, accommodation and FIFO costs for all the mining service team's personnel are considered within the mining cost overheads estimate.

18.3.11 Light Vehicles

Light vehicle costs were included in the mining contracting rate estimates and includes vehicles for the contract mining team.

18.3.12 Grade Control

Grade control is conducted by visually inspecting cuttings from the blast hole rigs, and geological 'ore spotting' when excavating pegmatite. An allowance for this has been captured in the G&A costs in the financial model.

19. ECONOMIC ANALYSIS

This Chapter presents the results of the economic analysis completed for Mt Cattlin. Financial modelling was completed on a 100% project basis, using the discounted cash flow (DCF) method of analysis to assess the estimated economics and to evaluate the sensitivity of key input parameters on the expected returns. The financial assessment was completed on an unlevered basis.

19.1 Basis of Analysis

The financial evaluation is based on a DCF model, which involves projecting estimated revenues and subtracting estimated cash outflows such as operating costs including mining, crushing, processing, maintenance and general and administrative (G&A) costs, capital costs, and royalties to obtain the estimated net free cash flows.

The revenues and costs were forecast on a real (un-inflated basis) monthly basis in 2023 AUD. The data presented in this report is summarized from those forecasts into annual or, by pit stage, increments and converted into US$ at a fixed exchange rate.

Mt Cattlin pays the majority of its operating and capital costs in Australian dollar.

These net cash flows are discounted back to the valuation date using a real, after-tax discount rate of 10%, and then summed to determine the net present value (NPV) of Mt Cattlin as of 1 July 2023. There are no additional project or country-specific risk factors, or adjustments considered. For the purposes of discounting, the model assumes that all revenues, operating and capital costs, and resulting free cash flows occur at the end of each month.

The economic analysis is based on reserves only and includes all the in situ and stockpile reserves.

19.2 Economic Evaluation

The economic evaluation was provided to Mining Plus which was compiled using the financial data sourced from Allkem. The economic model calculated the revenue from the saleable product produced over time and subtracts the capital and operating costs (mining, processing, and selling costs) over time to produce a net cashflow. As an existing operation, Mt Cattlin requires only minor capital expenditure to support the Stage 4 expansion.

19.2.1 Product Pricing Assumptions and Revenue

Product pricing for this analysis has been provided by Allkem, the pricing in the economic analysis has been conservatively applied at lower prices than price forecasts provided by independent market analyst group Wood Mackenzie shown in Chapter 16. The price estimates used in the analysis are shown in Table 19-1.

Mt Cattlin sells a 5.4% Li_2O spodumene concentrate. Allkem's supplied pricing includes discounts for costs and penalties (e.g., shipping; marketing; concentrate grade reduction; penalty element exceedances) to give a Realized Li_2O Price. The pricing used is therefore effectively a net US$ FOB price.

Tantalite (Ta_2O_5) concentrate is a by-product that contributes meaningful, but not material, revenue to the project. A flat sale price based on existing contracts has been applied to expected production. Tantalite revenues make up ~0.5% of the total revenue from Mt Cattlin.

A USD:AUD exchange rate forecast of 0.7:1.00 was provided by Allkem has been used for this study.

Table 19-1 - Forward Estimates for Concentrate Price and Foreign Exchange.

Period	Realized Li_2O US$/dmt	Realized Ta_2O_5 US$/dry lb.
H2 CY23	4,048	24.3
CY24	2,074	24.3
CY25	1,425	24.3
CY26	2,375	24.3
CY27	2,103	24.3
CY28	1,762	24.3

The cashflow model was also tested at a flat US$1,500/dmt Li2O realized spodumene concentrate revenue used in the optimization, and cashflows remained positive for the overall ORE and each separable pit stage.

19.3 Revenue

Revenue received from all concentrate sales totals US$2,092m, of which Spodumene sales contribute 99.5% of the total. The revenue is derived using pricing forecasts for Spodumene and Tantalite concentrates provided by Allkem that average US$2,271/DMT and US$24.30/lbs. over the life of the Project.

The Spodumene pricing used in the analysis varies significantly over time. Spodumene concentrate sales total 916 kt, these are assumed to be at concentrate grade of 5.4% lithia for insitu reserves, 5.2% for low grade and fine-grained stockpiles and 4.5% for Tailings.

Production forecasts, including contaminated and non-contaminated ores are shown in Section 13.5. The production from the stockpile reserves is assessed as occurring at the depletion of the insitu reserves. Given the availability of mill capacity future schedules could consider the processing of Stockpile Reserves when capacity exists. The following graph (Figure 19-1) shows the revenue by month over the Life of Mine (LOM) (Green line - referenced to the right scale).

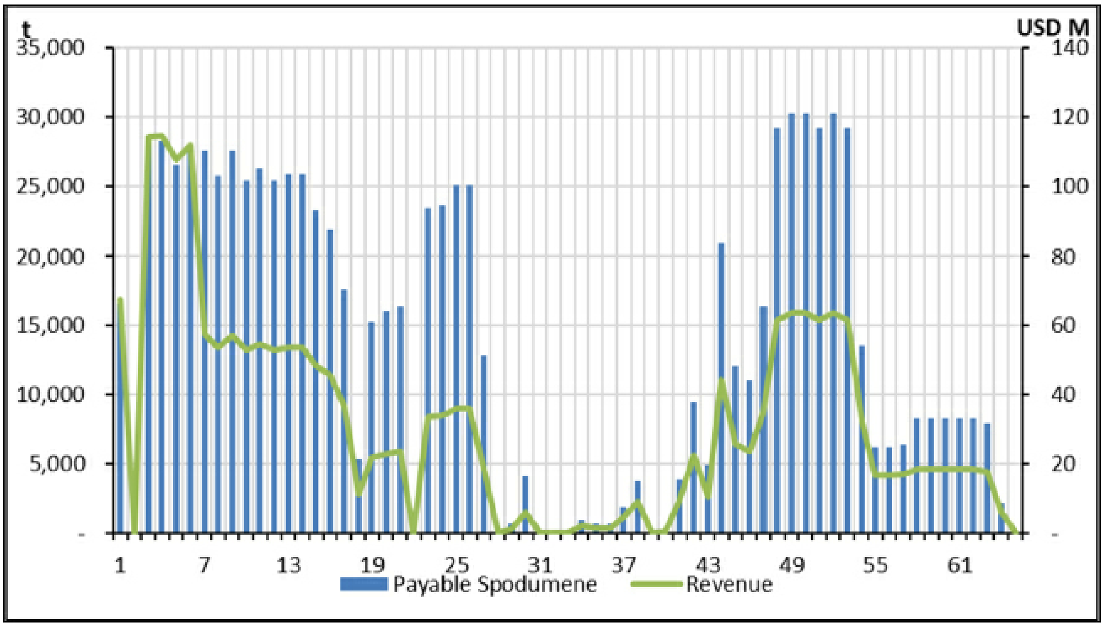

Figure 19-1 - Monthly Project Revenue.

19.4 Capital and Operating Costs

The basis of preparation of the capital and operating costs is described in Chapter 18, as described in that chapter project expenditures do not include contingency amounts or factors.

The cost of transport of concentrate to port and port costs have been included, other freight and sales costs have been incorporated in the realized price of Spodumene.

Goods and Services Tax has not been modelled.

19.5 Other Key Assumptions

The AUD/USD exchange rate applied in the model is 0.70 (flat, over the LOM) and is an Allkem provided internal forecast.

The financial model uses real 2023 values for revenue and expenditure. No account has been made for price escalation.

The LOM financial model does not include corporate office recharges, business development, exploration, or resource development expenditure.

Income tax expense / payments have not been considered in this model.

Project funding, including working capital, has not been considered in preparing this financial model, mainly because the project is operating and is cash positive from the outset. As a result of this, no allowance is made for debt service costs or interest expense. At times, the period cashflow is negative and it is assumed this will be met from retained earnings. Overall, the Project is strongly cashflow positive.

19.5.1 Royalties and Taxes

Two royalties apply to Mt Cattlin and have been included in the economic analysis.

1) A royalties applied to the production of spodumene is payable to the Western Australian (WA) State Government. The royalty is applied at a rate of 5% on the revenue realized from the sale of spodumene concentrate. The exchange rate applied for this royalty is set by DMIRS.
2) A royalty payment of US$1.05 per tonne of ore crushed is paid to Lithium Royalty Corp.

19.5.2 Corporate Tax

The economic analysis has been prepared on a pre and post-tax basis and tax has been applied to the model at the federal company tax rate payable to the Australian Taxation Office of 30%. This tax has been incorporated into the economic analysis, without allowance for depreciation, carried forward losses, credits or offsets.

19.6 Project Free Cashflow and Net Present Value

The Project cashflow as shown by mine stage in Table 19-2 and then by month in Figure 19-2 assumes there is no opening cash on hand at the start of the Project. LOM total net cash flow is US$1,113 m over the period from 1 July 2023 to November 2028 (mine closure).

The Net Present Value (NPV) of the pre-tax cashflows are US$947 m using a discount rate of 10.0%.

The post tax NPV is US$614m using a discount rate of 10%.

Open pit mining continues until July 2027, ore deliveries to the ROM pad are lumpy, building stockpiles initially before it is drawn to zero, a small stockpile is built again in the third year before depletion and again in year 5.

The reserves (those mined from pit) are processed at a rate of 1.8Mtpa when ore is available until December 2027 when the pit reserve material is exhausted, thereafter the “Stockpile reserves” are treated. The Stockpiles are treated sequentially, firstly Low Grade, then Tailings then Fine-Grained ore stockpiles, at a rate of 1.8Mtpa. The reserves are fully depleted in October 2028.

19.6.1 Project Cashflows by Pit Stage

All stages of the Project are cashflow positive, however the metrics between the stages, and that of the overall Project average are markedly different. In the current mine, Stage 3 is effectively pre-stripped by past operations and is now entering a period of very strong cash generation shown by the steep ramp up in the cumulative cash balance curve in Figure 19-2. The first phase of the Stage 4 expansion, Stage 4-1 requires a large waste stripping program to access the down-dip portion of the upper pegmatite and to expose the lower pegmatite, and at times the mill will be ore constrained, limiting cash generation during the phase of high expenditure (as referred to in refer to Chapter 13). A similar pattern is seen in Stage 4-2 and Figure 19-2 shows a long period of flat cumulative cash balance, before a late accumulation as Stage 4-2 and the closure stockpiles deliver sustained positive cash flows.

Table 19-2 - Project Cashflow by Stages.

Cashflow (US$m)	Stage 3	Stage 4-1	Stage 4-2	Stockpiles	Total
Gross Revenue	993.7	325.9	591.3	181.2	2,092.00
Capital Expenditure	28.4	7.3	8.9	35.6	80.3
Operating Expenditure	176.6	237.2	403.5	81.2	898.5
Total Cashflow	**788.7**	**81.3**	**178.9**	**64.3**	**1,113.20**

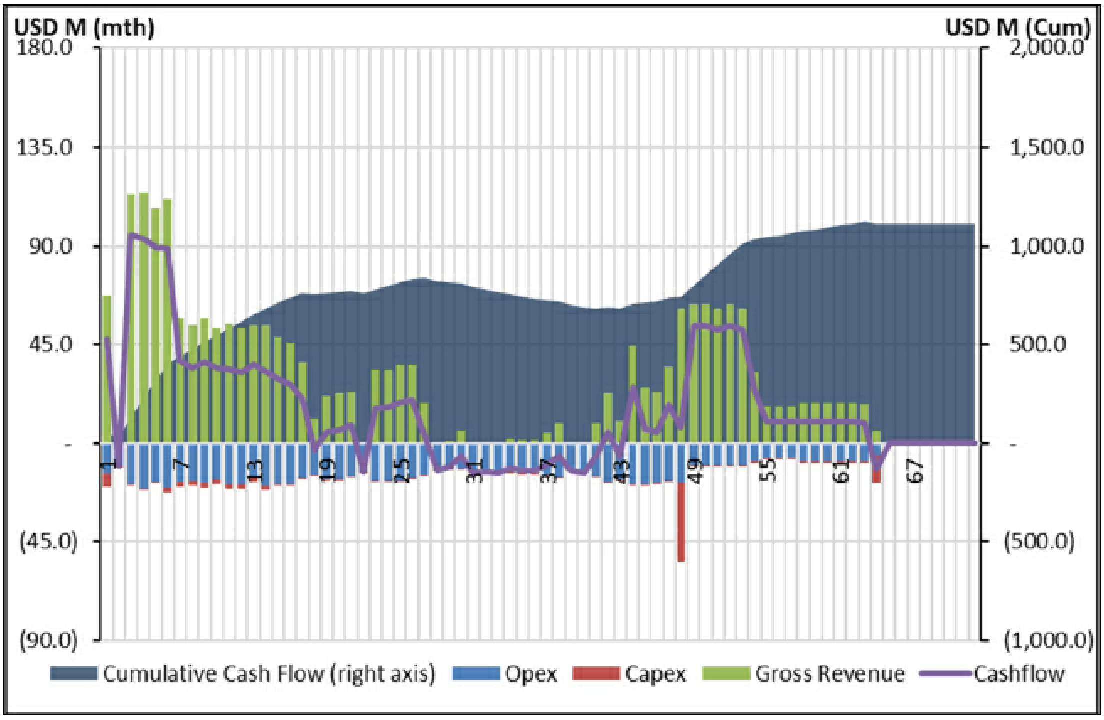

Figure 19-2 - Period Revenue and Costs, and Cumulative Cash Balance.

19.6.2 Project Cashflows Annually

Annual Cashflows are shown below in Table 19-3.

Table 19-3 - Annual Cashflows represented in US$m.

Annual Cashflow (US$m)	Total LOM	1	2	3	4	5	6
Capex	80.3	20.7	6.9	2.9	36.6	0.7	12.5
Mining	431.4	91.3	107.4	108.7	124	0	0
Transport	37	11.5	8.7	2.8	4.6	8.3	1.1
Processing	254.5	50.2	47.9	33.4	41.9	59	22
G&A	65.2	12.2	12.2	12.2	12.2	12.2	4.1
Royalty & Refining	110.4	43.9	20.8	5.7	13.4	23.5	3
Total Costs	**978.9**	**229.9**	**204**	**165.8**	**232.7**	**103.8**	**42.7**
Gross Revenue	**2,092.10**	**843.8**	**385.5**	**103.1**	**246.3**	**452.9**	**60.5**
FCF	1,113.20	613.9	181.5	-62.7	13.5	349.1	17.8
Corporate Tax @ 30%	352.8	184.2	54.5	0	4.1	104.7	5.4
Post-Tax Cashflow	760.4	429.7	127.1	-62.7	9.5	244.4	12.5

19.7 Sensitivity Analysis

Sensitivity analysis was conducted on the following variables (+/-20%) and quantified with the financial model on pre-tax Free Cashflow (FCF) and Net Present Value (NPV) outputs:

- Revenue factors:
  - Spodumene concentrate price
  - Currency exchange rate
  - Process plant recovery
- Cost factors:
  - Mining operating costs
  - Processing operating costs.

Being an operating mine, capital costs are relatively minor, <10%, of project expenditures, and were not tested by sensitivity given the expectation of immateriality on project economics (i.e., 20% of US$80.3m is ~2% of the post-tax NPV).

The results are graphically summarized in Figure 19-3 and Figure 19-4 for cashflow, correspondingly in Figure 19-5 and Table 19-4 for NPV, which is also shown as relative changes in Table 19-5

The outputs show the expected heightened sensitivity to revenue factors compared to cost factors. The plant recovery and revenue trends mimic each other, and currency exchange rate is the inverse. The cost sensitivity trends of the mining and processing operating costs mimic each other with mining being somewhat more influential on cashflow and NPV due to being a larger overall cost.

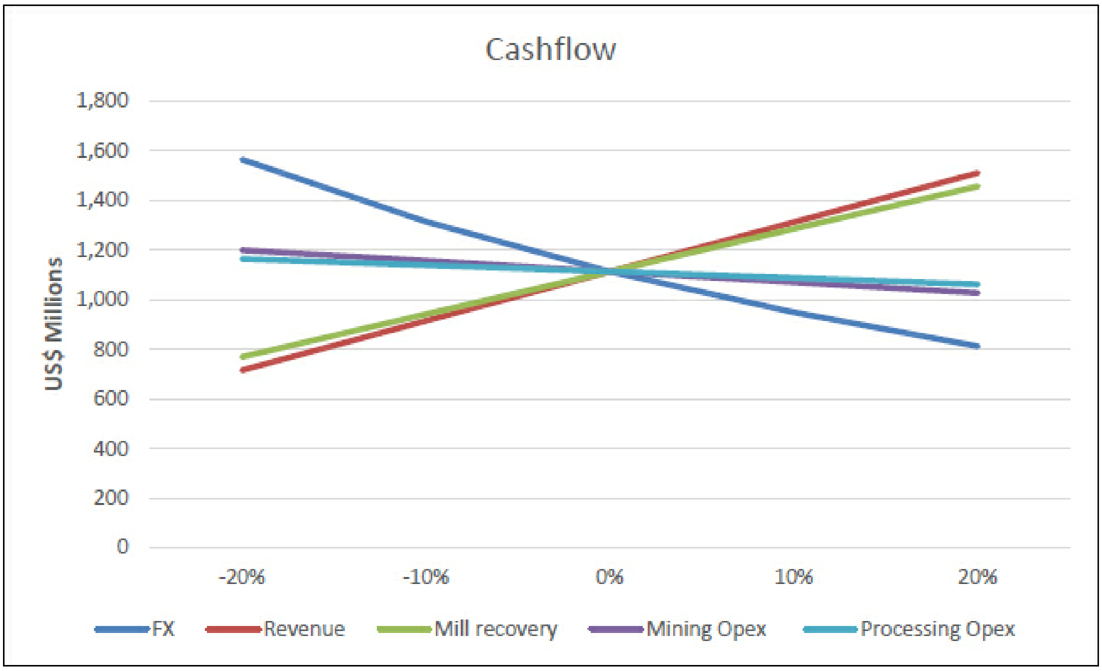

Figure 19-3 - Cashflow Sensitivity to Key Revenue and Cost Factor Variables.

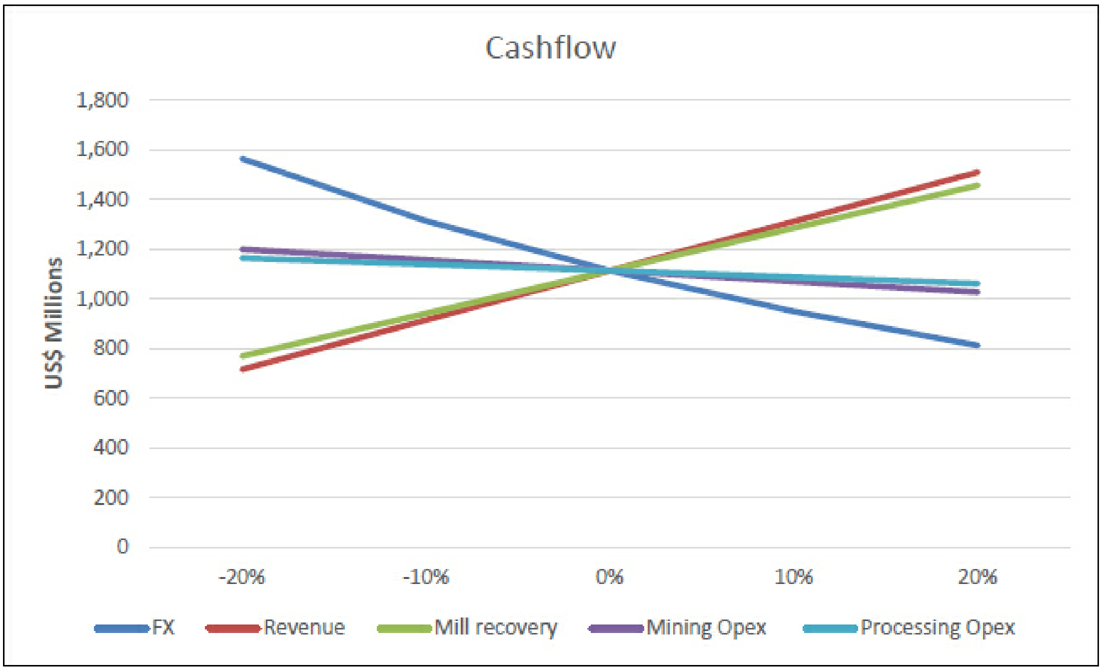

Figure 19-4 - Cashflow Sensitivity to Key Revenue and Cost Factor Variables.

Table 19-4 - Cashflow Sensitivity (US$m).

Item/ Range	Unit	-20%	-10%	0%	10%	20%
FX	US$m	1,565	1,314	1,113	949	812
Revenue	US$m	716	914	1,113	1,312	1,511
Mill recovery	US$m	769	941	1,113	1,285	1,457
Mining operating cost	US$m	1,199	1,156	1,113	1,070	1,027
Processing operating cost	US$m	1,164	1,139	1,113	1,088	1,062

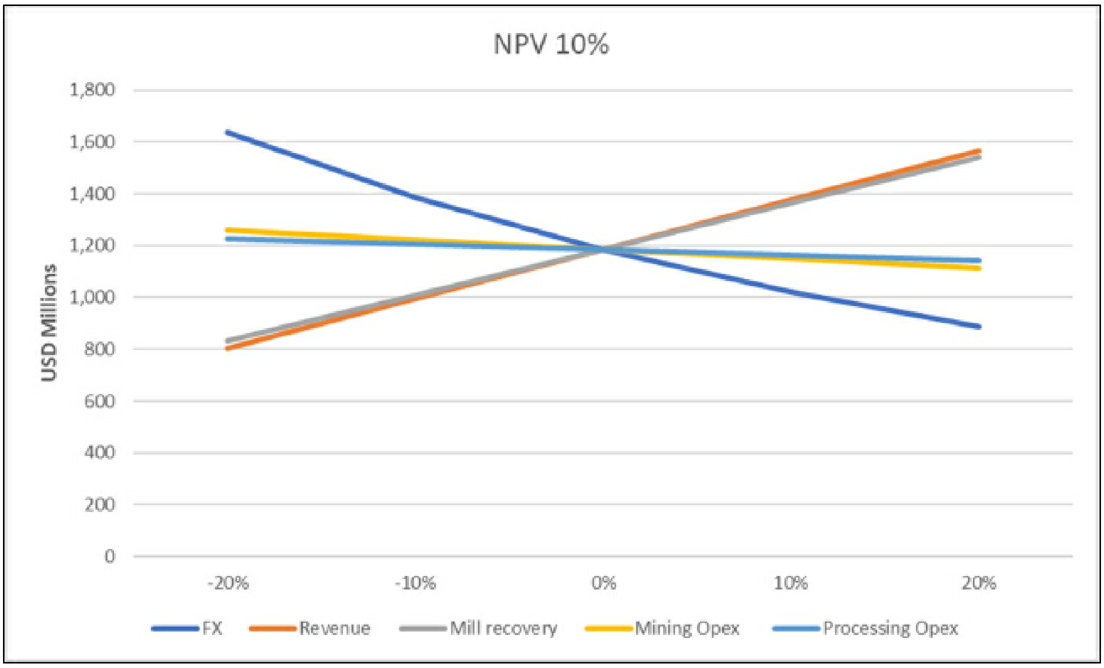

Figure 19-5 - NPV Sensitivity to Key Revenue and Cost Factor Variables.

Table 19-5 - NPV Sensitivity (US$M).

Item/ Range	Unit	-20%	-10%	0%	10%	20%
Currency exchange rate	US$M	1,330	1,117	947	808	693
Revenue	US$M	619	783	947	1,112	1,276
Mill recovery	US$M	658	803	947	1,092	1,237
Mining operating cost	US$M	1,018	983	947	912	877
Processing operating cost	US$M	987	967	947	928	908

Table 19-6 - Relative changes to pretax cashflows with % changes to key inputs.

Parameter	Unit	-20%	-10%	0%	10%	20%
Currency exchange rate	%	140	118	100	85	73
Revenue	%	65	83	100	117	135
Mill recovery	%	69	85	100	115	131
Mining operating cost	%	107	104	100	96	93
Processing operating cost	%	104	102	100	98	96

The pit staging as applied in this assessment (e.g., Stage 3, Stage 4-1, Stage 4-2) individually have quite different stripping ratios, ore capture, and occur at times of quite different forecast product prices. Therefore, the risk characteristics of the individual stages is quite different to the overall Project average as shown below in Table 19-7.

Table 19-7 - Comparative Risk Metrics - Stage vs. Overall.

Pit Stage	Strip Ratio w:o (t)	Concentrate % of Total (t)	Revenue % of Total (US$)	Cost % of Total (US$)	Cashflow % of Total (%)
Stage 3	3.5	37	47	21	71
Stage 4-1	31.1	22	16	25	7
Stage 4-2	29.5	30	28	42	16
Closure Stockpiles	n/a	10	9	12	6
Overall	**21.5**	**100**	**100**	**100**	**100**

Stripping Ratio can be a useful consideration in economic risk assessment. Stage 3 has a stripping ratio of 3.5:1, whilst Stage 4-1 and 4-2 are both approximately 30:1 (the overall Project LOM stripping ratio is 20:1). Clearly the two Stage 4 phases carry more risk and are more sensitive to variations in assumptions and actual performance than Stage 3, as can be clearly seen in the cashflow contributions relative to the cost burden.

19.8 Summary Economic Analysis

The Key financial results are shown in Table 19-8.

Table 19-8 - Key Financial Results.

Description	Value
Revenue from concentrate (US$m)	2,092
Total operating costs over the LOM (life of mine US$m)	899
Total Site Cash Cost (life of mine US$m)	979
C1 cash operating cost (US$M)	788
All in sustaining cash cost (US$M)	932
LOM net cash flow (undiscounted US$M)	1,113
LOM post tax cashflow (undiscounted US$M)	760
The pre-tax NPV using a discount rate of 10% (US$M)	947
The post-tax NPV using a discount rate of 10% (US$M)	614
The pre-tax NPV using a discount rate of 8% (US$M)	975
The post-tax NPV using a discount rate of 8% (US$M)	638
Average Spodumene price over LOM (US/dmt)	2,271
Average Tantalite price over LOM (US/lbs.)	24.3

Mt Cattlin produces spodumene and tantalite concentrates for sale. The concentrate revenue has been modelled on a Realized Price basis (i.e., net of all penalties and/or grade discounts, Free-on-board Esperance, WA) using data supplied by Allkem.

Operations are modelled from July 2023 and through to mine closure in November 2028 and producing 916kt of Li_2O concentrates and 1.6Mlbs of Ta205 in concentrates which are sold for US$2,092m.

All in cash costs are US$979M, free before tax cashflows total US$1,113m.

The pre-tax NPV of the project, using the supplied economic assumptions from 1 July 2023 is US$947M. Post tax NPV is US$614m.

As an existing operation, the project has no construction or pre-production period.

All pit stages and years of operation are cashflow positive, the final year of operations treating the stockpiles is also cashflow positive.

The third year of operations, being year ending June 30, 2026, is the only year showing a negative cashflow, resulting from low revenues and ore feed during the year whilst high waste movement continues in stage 4- 2. The negative cashflows in this year could be comfortably funded by high cashflows from prior years and the total stage 4-2 is demonstrated to have a positive overall cashflow.

Sensitivity testing shows that the project NPV remains positive under testing, including:

- 20% increases in mining or processing costs.
- 20% decline in revenues (prices), or processing recovery.
- 20% adverse move in the AUD:USD exchange rate.

It is recommended that Allkem develop a more sophisticated tax model for future Economic Analysis including incorporating carried forward losses and depreciation.

20. ADJACENT PROPERTIES

Mt Cattlin is the only known major lithium / tantalum deposit in the Ravensthorpe region. Allkem holds most of the adjacent exploration tenements that surround the mining lease. No other lithium operations are in production in the Ravensthorpe district.

Occurrences of copper and gold mineralization are known from within the Mt Cattlin mining lease and on adjacent properties, and they have been the subject of historic, small-scale mining. The most important of these are the following (Witt, 1998):

- Mt Cattlin gold-copper mine located 1 km east-south-east of the Mt Cattlin lithium deposit
- Marion Martin 1.5 km to the south
- Floater 1.5 km to the north
- Maori Queen 3.5 km to the northeast.

Traka Resources is actively exploring for economic gold and copper mineralization on exploration lease E74/401. Various open file government reports quote small remnant, non-compliant copper-gold resources for these properties.

Tenement G74/13 was awarded on 26 May 2023 on Allkem owned freehold, for 21 years as part of the Stage 4 expansion. Tenement E 74/621 expires on 15 August 2023.

The tenement map in Figure 20-1 shows the Allkem Galaxy tenement holdings relevant to the adjacent properties.

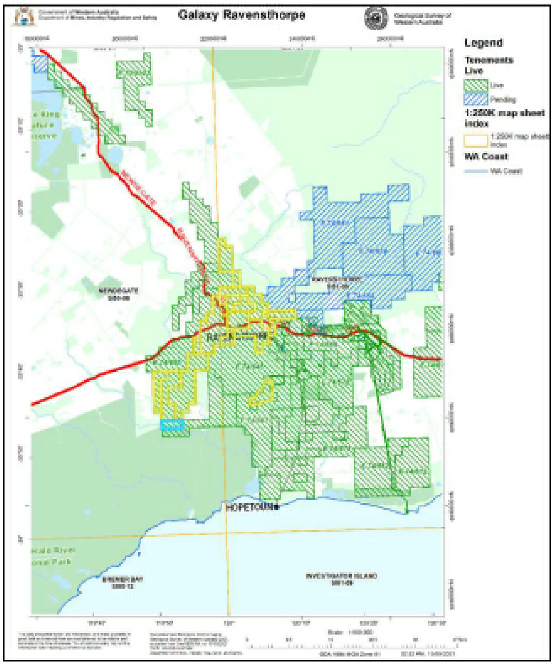

Figure 20-1 - Tenement Map Showing Properties Adjacent to the Mt Cattlin Tenements.

21. OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information material to Mt Cattlin that has not been documented in the other Chapters of this Technical Report.

22. INTERPRETATION AND CONCLUSIONS

This report has been prepared by Mining Plus and the Allkem employee set forth herein in accordance with the guidelines set forth in S-K 1300. Its objective is to disclose the current Mineral Resources and Mineral Reserves for the Project and evaluate the economic viability of the Project.

22.1 Conclusion

The QPs have weighed the potential benefits and risks presented in the Report and found the Project to have reasonable economic viability for the stated Mineral Reserves under S-K 1300 guidelines.

22.2 Project Risks

The Project is at advanced-staged production and has demonstrated operational performance history, tenure and permitting within the project area and much of the required infrastructure in-situ.

A number of key risk issues are highlighted:

- The timely permitting of:
    - Approval of Stage 4-1 pit and waste dump permitting. Delays is this permitting would risk the production schedule.
    - Northeast Pit for receiving tailings is considered a key risk to the production schedule.
- Provision of water for processing once NE pit is receiving tailings.
- The permitting of waste dump 4 should it be needed requires an EPA process, due to the amount of vegetation clearing required, including additional base line surveys.
- The metallurgical performance of NW Stage 4 is based on limited testwork at time of reserve generation and further test work will be required.

22.3 Mineral Processing and Metallurgical Test work

Mt Cattlin ore is processed using conventional processing techniques to produce spodumene and by-product tantalite concentrates, through the processing plant.

Processing consists of multi-stage crushing, screening, optical sorting, DMS and gravity concentration to produce concentrate.

Historical processing performance is used as the basis for making recovery projections used the reserves and economic study of NW Stage 4 area which is the focus of this report. Whilst it is a reasonable assumption, based on geometallurgical understanding, that the performance will continue into the stage 4 area there was limited specific testwork at the time of this reporting. Additional metallurgical drillholes have been drilled into this area and were awaiting results and analysis at the time of this report.

22.4 Operating and Capital Costs

Total LOM operating cost for the Project is estimated at US$899m, based on the production schedule, and incorporates all surface mining, transport, processing, G&A, and royalty costs. The operating costs have been prepared without contingency or escalation.

Total LOM capital cost for the Project is estimated at US$80.3m. The capital cost has been prepared without contingency or escalation.

Mining Costs have been developed from the pricing of a preferred tender for the Stage 4 mining contracts. Other operating costs have been derived from historic site costs and benchmarks.

The estimate is developed on a June 2023 basis using native currencies for all costs (predominately Australian dollars) and then converted to US dollars.

22.5 Geology and Mineral Resource Estimate

A Mineral Resource was prepared in accordance with the standard definitions of S-K 1300.

- Geological information is being collected routinely within the active pits. Mine Geologists are mapping bench faces where possible logging blasthole drillholes.
- The geological setting and complexity are well understood. The pegmatites are offset and juxtaposed relative to each other by numerous late-stage faults. Several large dolerite dykes and dyke swarms intersect and stope the pegmatites.
- The Mineral Resource estimation has been undertaken within detailed geologically controlled wireframes. Mineralized pegmatite wireframes have been generated in Leapfrog Geo modelling software at a cut-off of 0.3% Li_2O. The majority of drillhole samples have been drilled by Reverse Circulation (RC) drilling methods and sampled at a length of 1 m. Compositing has been undertaken at a length of 1 m. Modelling has been undertaken in Leapfrog Geo and Leapfrog Edge using Na20 to wireframe out finer grained pegmatite. No top-cuts have been applied to. A variographic analysis has determined variographic parameters for use in the estimation, with domains which contain too few composites either grouped for variographic analysis or assigned variographic parameters from other domains. The estimation has been undertaken within hard boundary domains using ordinary kriging at the scale of the parent block. The block model validates well compared to the input composite data, with the majority of domains being within +/- 10% relative difference. The Mineral Resource has been classified on the basis of geological and grade continuity, and data support. The estimate has been depleted for mining as of 30 June 2023.
- The geological and assay data used as input to the Mineral Resource Estimate have been collected, interpreted, and estimated in line with best practice as defined by the CIM (CIM 2018, 2019). Data verification work undertaken by Mining Plus identified minor errors, however, these have not materially impacted the accuracy of the Mineral Resource Estimate. It is of the opinion of Albert Thamm (QP) that the CIM best practice guidelines comply with the S-K 1300 regulations and therefore the data is deemed suitable for use in the estimation of Mineral Resources. Monthly and end-of-pit

reconciliations display good agreement between the 2022-3 mill-reconciled production tonnes and grades when compared to the equivalent tonnes and grades reported out of the December 2022 MRE block model and GC block models.
- The key risk to the operation is the loss of pegmatite mineralization due to dolerite dyke stoping in areas of wide-spaced drilling. In addition, xenolith protoliths stoped from the pegmatite hanging wall are known, as are internal zones of either barren pegmatite, metasomatically altered pegmatite and fine-grained pegmatite. Other significant risks or uncertainties could reasonably be expected to affect the reliability or confidence in the drilling information or Mineral Resource Estimate include late-stage alteration to non-spodumene bearing mineralogies.

22.6 Mineral Reserve Estimate

The Mineral Reserves were prepared in accordance with the standards and definitions of S-K 1300.

The 2023 Mineral Resource model was used for pit optimization and design using industry standard software with inputs for modifying factors, geotechnical slope parameters, mining and operating costs, grade and mass recoveries and economic parameters to determine the optimal pit limits. This formed the basis of the final design and scheduling of the mine.

Inferred resources have not been included in the economic evaluation.

There has been a history of conversion of Inferred to Indicated Resources resulting in additional Resources from outside the Mineral Reserve being included into the life of mine (LOM) plan, which has the potential to improve the Project economics. There is a small quantity of mineralization outside the 2022 Mineral Resource Estimate that lies within the designed pits. This material is excluded from the 2023 Mineral Reserve Estimate; however, it is included in the LOM Plan

Mt Cattlin has demonstrated an ability to improve the mining method and productivity by continuing to collect geological information and therefore improving the geological understanding of the deposit and thus the mine designs and planning.

Mt Cattlin continues to reconcile local grade control models against the un-diluted Mineral Resource, the diluted Ore Reserve to improve forecasting.

22.7 Mining Methods

Mining will be undertaken using typical drill and blast operations with hydraulic excavator(s) and dump trucks. All mining and associated activities are planned to be undertaken by a mining contractor using conventional open pit mining methods.

The mine is planned for 10m high benches extending to 220m below surface with an overall strip ratio of 20:1. The life of mine (LOM) schedule is planned for operation until mid-2027.

As the operation is located close to the town of Ravensthorpe, strict noise emission limitations ultimately effect the overall size of the fleet and the size of the individual items of machinery. Sensitive noise receptors, located to the south of the mine, require a waste dumping sequence that builds a southern noise barrier, and then progresses dumping northwards. Wind direction can have a significant short-term effect on the perception of noise and must be managed by daily scheduling flexibility.

High strip ratios and ramp access will occasionally limit the production rate due to a practical bench turnover constraint and limited working space. The mining sequence must be executed in order from the existing Stage 3 to Stage 4-1, and then onto the final Stage 4-2. There are several factors influencing the sequence, including managing the interface between the current active pit/s and the cutbacks, access to feed material, and minimum working area.

Due to the constraints placed on the mining sequence with integrating the existing Stage 3 pit, permitting approval timelines, practical bench turnover rates, practical vertical advance, and high stripping ratios, the process plant does not always have ore available at the nominal capacity.

22.8 Infrastructure

As an operating brownfields site, much of the required infrastructure is already in-situ with respect to site access, roads, processing infrastructure, tailings storage and waste dumps and access to shipping facilities. There will be some modifications to site access roads as the mine and the waste dump expands, and the construction of a floatation circuit to the existing DMS, however this has been accounted for within the Report and findings.

The site has an adequate supply of power, water and other services required for the current operation, however as the current NE pit is planned for tailings deposition, additional water sources will be required. Return water is planned to be sourced from the NE IPTSF, this will utilize a new method, bore established at the base of the tailings, but drawing on experience gained from tailings behavior at site.

An additional make-up water source will also be required, an alternative water source. Drilling is underway to source this water.

A drilling program is currently underway; however, water availability remains a key project risk until this alternative water source is shored up.

22.9 Environmental, Social and Permitting

Key interpretation and conclusions are:

- Mt Cattlin has completed numerous baseline environmental studies (during and prior to operations) and all key studies have been completed and there are no ongoing constraints preventing ongoing development and mining. Waste Dump 4 will require additional baseline studies and permitting prior to the dump being developed.

- Mt Cattlin has obtained all relevant permits required for current operations.

- At the date of reporting reserves Mt Cattlin was in compliance with all permits.
- A Mining Proposal has been lodged with the regulator (DMIRS) for the development of Stage 4-1 pit and additional waste dumping; this approval is seeking the expansion of the pit and relocation of the SW tailings. Approval was considered routine and was expected in August 2023.
- A new Mining Proposal will need to be submitted following the receipt of the approval for the currently lodged proposal, to permit the use of NE pit IPTSF. The highest priority is the new NE IPTSF as the current TSF will reach capacity in mid-2024. The new TSF will be the third similar style of TSF at Mt Cattlin and therefore is not a novel concept. Whilst the approval should be relatively straightforward and non-controversial, the time remaining to design and gain the approval, inclusive of any intermediate delays or required changes of scope, could elevate the risk to production given the expected exhaustion of tailings capacity in the SE pit IPTSF in mid-2024.
- A further Mining Proposal process will commence upon the successful receipt of the currently lodged Mining Proposal discussed above, to provide optionality for the project whilst the technical, economic, and social trade-offs of a pit cut-back for Stage 4-2 and/or an underground operation are assessed as the most appropriate mining methodology. Should open pit mining of Stage 4-2 ultimately be decided on by Allkem and further waste dumping space to the Northeast be required then an Environmental Protection Agency (EPA) referral will be required. The EPA referral is required as the area being considered for extra waste dumping would require clearing a significant area of native vegetation.
- Other Stage 4 capital projects, such as the development of a dedicated staff village on freehold, a new and modernized power supply, and groundwater abstraction will require a series of new and/or altered Works Approvals or modifications to Licenses, issued by the WA State Department of Water and Environmental Regulation (DWER).
- Allkem do not believe that there are constraints that will prevent permitting. Mt Cattlin has no known environmental liabilities other than rehabilitation/ closure obligations.
- Mt Cattlin is required to pay a per hectare unit rate for land disturbance as part of the Mining Rehabilitation Fund Regulations 2013.
- The closure and rehabilitation of the site post operations is prescribed in the Mine Closure Plan prepared in accordance with the Department of Mining, Industry, Regulation and Safety and outlines the closure obligations. The Mine Closure Plan identifies and sets out management of any potential closure issues and defines and outlines the site rehabilitation requirements.
- Mt Cattlin has focused on mine scheduling that allows for progressive rehabilitation to all disturbed land during operations. Annual rehabilitation monitoring is conducted on site and a detailed Closure Cost Estimate (CCE) is completed annually. An updated Mine Closure Plan has been submitted with the current Mining Proposal which estimates a closure cost of US$12.6m.
- Mt Cattlin has built up social credit with the local community over the past decade through local employment, operating without major incident, and initiatives such as the Community Consultation Group (CCG) and site Open Days.

22.10 Market Studies

Lithium market studies have been sourced via Allkem from independent consulting group, Wood Mackenzie, providing market supply and demand analysis and lithium price forecasts.

Forecast global demand for lithium is strong with continued growth projections to 2050 due to an increase in requirement for battery technologies, particularly within the automotive industries, which has seen a 69% growth since 2020.

Allkem's shipments of spodumene concentrate are contracted on a spot basis to meet customers under existing off-take agreements.

22.11 Economic Analysis

An economic evaluation was completed for the life of the project, with an estimated a pre-tax NPV of US$947m (discounted at 10%) and a post-tax NPV of US$614m. This analysis was derived from the mining and processing schedule based on the Mineral Reserves and the associated mining, processing, transport, G&A, and royalty costs. This analysis excludes provision for sunk capital and does not provide for GST, withholding taxes, escalation and inflation, interest, or financial charges.

The estimate is developed on a 2023 basis using native currencies for all costs (predominately Australian dollars) and then converted to US dollars at an exchange rate of AUD:USD = 0.70.

A sensitivity analysis was completed with the greatest NPV sensitivity being to revenue (commodity price) and processing recoveries. Testing the pre-tax cashflows at 20% adverse moves to key inputs showed the cashflows and NPV's remained positive.

23. RECOMMENDATIONS

23.1 Introduction

This Chapter contains a summary of key works required to implement stage 4 and opportunities that may be instituted in the future to optimize and/or further extend the life of the Mt Cattlin Project.

23.2 Environmental Studies and Permitting

The diligent management, including timely submission of permits is required to achieve the production schedules in this report, notably:

- The current Mining Proposal submitted for approval with DMIRS only considers Stages 4-1 of the proposed mine plan.
- The highest priority next regulatory approval needed is to operate the planned North-East In-Pit Tailings Storage facility (which is currently being used as a water aggregation 'dam') and associated infrastructure. A new Mining Proposal will be submitted to permit these activities.
- In order to continue with either Stage 4-2 and/or a transition to underground mining, a further Mining Proposal will be required, this proposal will also have to incorporate the construction of additional waste dumping capacity should more open pit mining be contemplated, the current Mining Proposal will only accommodate Stage 4-1 waste). If the Stage 4-2 open pits are developed, then EPA approval will be required for additional for vegetation clearing additional waste dumping. Timely decision making and commencement of required studies and submissions will be required to avoid impact to the project schedule.
- Additional and/or amended permits will also be required to construct a new power facility, as well as the accommodation village noted in the recommendations.
- Complete drilling to source alternative water source and subsequent permitting for processing operations to provide processing to water currently sourced from the NE Pit, which is scheduled for use as IPTSF in 2024. This source of water remains a key project risk until alternate sources of water are available.

23.3 Geology and Mineral Resource

Allkem has an active exploration and sterilization drilling program in place as the Mineral Resource is currently drilling constrained. Grade control specific drilling has been used intermittently under the direction of the Exploration Manager. Opportunity exists to imbed dedicated grade control definition into the mining cycle to address risk of short-term ore mismatches with the resource model. Grade control drilling is scheduled for calendar 2023, the remainder program for 2023 is expected to cost US350k.

The Mineral Resource remains open at depth to the NW and to the SW at shallower depths.

To support underground studies, further geotechnical and metallurgical drilling is recommended.

Further resource estimation work, incorporating the 2023 grade control drilling should investigate fine grade pegmatite with lithia grade above cut-off, for either end of mine processing or blending into ore grade stockpiles to maintain process plant nameplate run rates while meeting product specifications.

Continue to develop geo-metallurgical grade control techniques to define and segregate fine grained spodumene for future processing. Further resource estimation work, incorporating the 2023 grade control drilling should investigate fine grade pegmatite with lithia grade above cut-off, for either end of mine processing or blending into ore grade stockpiles to maintain process plant nameplate run rates while meeting product specifications.

Continue resource drilling to further expand the resource and define the limits of mineralization. An 8,000 m combined reverse circulation and diamond tail program has been proposed for FY 2024. This is costed at US$1.75m.

23.4 Processing and Metallurgy

Evaluate the results of the 4 additional metallurgical drillholes and associated testing to quantify the continuity of the mineralization and recovery expectations for the bulk of the Stage 4 expansion.

Progress the business case for processing the potential low grade fine grained spodumene.

Further expand the current study level of the tailings re-treatment to sure up processing and support forecast capital expenditure of additional floatation cells to process the tailings.

Progress the business case for processing the potential low grade fine grained spodumene.

Further expand the current study level of the 2018 tailings re-treatment to sure up processing and support forecast capital expenditure of for floatation to process the tailings.

23.5 Crushing Circuit Recommissioning

The original Mt Cattlin crushing circuit was decommissioned when the plant went into care and maintenance during 2013 and was not recommissioned when the plant was restarted in 2016 due to the capital cost involved, relative to the Spodumene concentrate sales price at the time. Since that time, a permanent contact crushing contractor has been in place on site, and whilst giving generally good service, is relatively expensive. Given the mine life extension proposition of this Feasibility Study, a project to re-institute the fixed plant crushing circuit has been initiated, with a view to assessing the suitability of the current plant capacity and commissioning a facility that can serve Mt Cattlin's life of mine needs.

23.6 Flotation Circuit

A test work program to investigate the potential of retreating tailings stockpiles to extract residual lithium is underway. This test work program has had encouraging results, and the potential business case deserves evaluation as the technical program concludes. The cost of studies is incorporated within the capital cost.

23.7 Tailings

The current South-East In-Pit Tailings Storage facility will reach capacity in mid-2024 or possibly sooner. At this point tailings deposition will need to be transferred to the North-East Pit. In order to accommodate this shift, permitting and preparatory works need to be completed as a priority. These works include establishing and protecting the future tailings lines through the area that is soon to be used in the expansion of Waste Dump #1. The cost of these is included in processing operating and Tailing capital cost assumptions.

23.8 Hydrogeology and Water Management

To maintain adequate water supply to the site process plant, recycled TSF decant water is pumped from the current North-East pit through a decant line back to the processing plant. When this pit it converted to being used as a Tailings Storage Facility in 2024 the cleanliness and easy access to this water will be disrupted. In preparation, bore casings need to be installed from the top of the adjacent waste dump to tap into this resource and allow pumping the of “return water” from the tailings, Allkem’s experience in tailings properties and rock backfill provides confidence that the methodology will be effective in recovering return water. Additional water will need to be sourced to “make up” the plant treatment requirements. A planned drilling program to identify potential alternative water sources on the mining site is soon to commence.

23.9 Infrastructure and Services

Consolidation of the village accommodation, adopting a hybrid power station are not currently part of the capital works included in the Feasibility Study and the evaluation of this report.

23.9.1 Hybrid Power Station

The current site power supply of multiple diesel fueled generators, while fit for purpose, is relatively expensive and has comparatively large carbon emissions compared to similar sized alternative fuel power sources. A project to replace or supplement the current plant with a hybrid natural gas / renewable energy installation is underway, with an expected timeline of 12-15 months.

23.9.2 Village Accommodation

To consolidate the Mt Cattlin workforce and reduce the reliance on multiple third-party accommodation sources, Allkem have commenced the process of constructing their own accommodation village for Allkem staff and primary contractors. The village has had a Development Approval application submitted, a tender for the accommodation and central facility modules let, and planning for utilities and construction has commenced. A low accuracy cost estimate of a new village is US$21m.

23.10 Mining

Strengthen the QA/ QC processes with the Mining Models.

Continue to evaluate the Mining Model performance against site reconciliation results.

Progress geotechnical trials of pit wall control techniques e.g., presplitting to demonstrate the case for safer and steeper wall angles.

Continue to investigate underground mining methods as an alternative to open pit mining as the strip ratio increases and analyze a tradeoff between open pit and underground mining transition.

A Feasibility study to investigate the viability of developing the resource as an underground mine was commissioned in May 2023.

This study is being completed by Orelogy Mine Consulting with the intention of having a finalized study document by January 2024. The goal of this study is to determine if there is value in changing mining methodology prior to committing to open pit extraction of the Stage 4-2 pit, and to determine the required infrastructure modifications that would be associated with such a change. The estimated cost of the study is US$525k.

The scheduling of the Stockpile Reserves should be considered to take advantage of the available mill capacity when the ex-pit ores are unavailable.

23.11 Economic Modelling

The economic modelling taxation model does not account for carried forward losses or depreciation. It is recommended that a more sophisticated tax model is employed in future economic analysis.

Future economic modelling should also consider the opportunity to process Stockpile Reserves when there is mill capacity available.

Further develop capital estimates for the floatation circuit (retreating historic tailings) and the removal of the tailings from the 2SWIPTSF.

The remainder of the program is to be carried out as per normal operational execution.

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25. RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

The QPs have relied on information provided by Allkem (the registrant), including expert reports, in preparing its findings and conclusions with respect to this report.

The QPs consider it reasonable to rely on Allkem for this information as Allkem obtained opinions from appropriate experts with regards to such information, as described in Table 25-1.

Table 25-1 - Expert Contributors.

Chapter	Title	Source	Source Material
3	Property Description and Location	Allkem Limited	NI-43101 Technical Report Mt Cattlin JORC MRE
4	Accessibility, Climate, Local Resources, Infrastructure and Physiography	Allkem Limited	NI-43101 Technical Report Mt Cattlin JORC MRE
5	History	Allkem Limited	NI-43101 Technical Report Mt Cattlin JORC MRE
6	Geological Setting, Deposit and Mineralization	Allkem Limited	Mt Cattlin JORC MRE
7	Exploration	Allkem Limited	Mt Cattlin JORC MRE
8	Sample Preparation, Analysis and Security	Allkem Limited	Mt Cattlin JORC MRE
9	Data Verification	Allkem Limited	Mt Cattlin JORC MRE
10	Mineral Processing and Metallurgical Testing	Allkem, Entech Strategic Metallurgy	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report
11	Mineral Resource Estimate	Allkem Limited	NI-43101 Technical Report Block model and wireframes
12	Mineral Reserve estimates	Allkem Limited, Entech	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report
13	Mining Methods	Mining Plus Pty Ltd., Entech	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report
14	Processing and Recovery methods	Entech, Strategic Metallurgy	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report
15	Project Infrastructure	Allkem Limited	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report
16	Market Studies and Contracts	Wook McKenzie, Allkem Limited	NI-43101 Technical Report Global Lithium Strategic Planning Outlook
17	Environmental studies, permitting and social community impact, Negotiations, Contracts with local communities and groups	Allkem Limited	
18	Capital and Operating Costs	Entech	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report Mt Cattlin Economic Model
19	Economic Analysis	Allkem Limited	Mt Cattlin Stage 4 Feasibility Study NI-43101 Technical Report Mt Cattlin Economic Model
20	Adjacent properties	Allkem Limited	

26. SIGNATURE PAGE

CERTIFICATE OF CONSENT for Mining Plus Pty Ltd.

We hereby consent to the incorporation by reference of Chapters 1-2 (shared), Chapter 10, Chapter 12-14, Chapter 16, Chapters 18-19, and Chapters 22- 25 (shared) in the "SEC Technical Report Summary, Mt Cattlin Lithium Project" the ("Technical Report Summary") performed by Mining Plus Pty Ltd. in its capacity as an independent consultant to Allkem Limited, which are set forth in the disclosure requirements for mining registrants promulgated by the United States Securities and Exchange Commission (SEC), in accordance with the requirements contained in the S-K §229.1300 to S-K §229.1305 regulations. We further consent to the use of our name in the Technical Report Summary S-K §229.1300.

PERSONAL INSPECTIONS Mining Plus Pty Ltd.: Visited site on July 2022, during this visit the engineer inspected the property, surface topography, areas proposed for the open pit, waste dumps and mine infrastructure.

Effective Date: June 30th, 2023

Signing Date: October 30, 2023

/s/ Mining Plus Pty Ltd.

CERTIFICATE OF AUTHOR

I, Albert Thamm, F.Aus.IMM, in my individual capacity, do hereby certify that:

1. I have read the definitions of “qualified person” and “relevant experience” and the related definitions thereto set forth in Subpart 1300 of Regulation S-K promulgated by the Securities and Exchange Commission (“Subpart 1300”).

2. I meet all of the qualifications and requirements specified under the definition of “qualified person” set forth in Subpart 1300.

3. I have served as a “qualified person” pursuant to Subpart 1300 in connection with the technical report summary titled “SEC Technical Report Summary, Mt Cattlin Lithium Project” (the “Technical Report Summary”), with an effective date of June 30, 2023, prepared for Allkem Limited (“Allkem”).

4. I am responsible for authoring the following sections of the Technical Report Summary: 1 (co-author), 2 (co-author), 3, 4, 5, 6, 7, 8, 9, 10 (co-author), 12 (co-author), 13 (co-author), 14 (co-author), 15, 16 (co-author), 17, 18 (co-author), 19 (co-author), 20, 21, 22 (co-author), 23 (co-author), 24 (co-author), and 25 (co-author).

5. As of the effective date of the Technical Report Summary and as of the date hereof, to the best of my knowledge, information and belief, the Technical Report Summary contains all scientific and technical information that is required to be disclosed to make the Technical Report Summary not misleading.

6. I, or a third-party firm comprising mining experts of which I am affiliated, have dated and signed, or will date and sign, both (i) the Technical Report Summary and (ii) the related Consent of Qualified Person, pursuant to Subpart 1300.

7. I am an employee of Allkem, and I serve as Exploration Manager, Australian Operations.

Signing Date: October 30, 2023.

Albert Thamm , F.Aus.IMM

/s/ Albert Thamm, F.Aus.IMM

Fellow of the Australasian Institute for Mining and Metallurgy #203217

This report titled “SEC Technical Report Summary, Mt Cattlin Lithium Project” with an effective date of June 30, 2023, was prepared and signed by:

/s/ Mining Plus Pty Ltd.

Mining Plus Pty Ltd.

/s/ Albert Thamm, F.Aus.IMM

Albert Thamm, F.Aus.IMM