



**Pilbara
Minerals**

...Powering a sustainable energy future

ASX / MEDIA ANNOUNCEMENT

WEDNESDAY 28 JULY 2021

JUNE 2021 QUARTERLY ACTIVITIES REPORT

STRONG PRODUCTION AND RECORD SHIPMENTS; RESTART OF THE NGUNGAJU PLANT SET TO UNDERPIN MATERIAL UPLIFT IN PRODUCTION

ACCESS THE QUARTERLY INVESTOR, ANALYST AND MEDIA WEBCAST HERE AT 8.00AM (WST) /10.00AM (AEST) ON THURSDAY 29 JULY 2021:

<https://webcast.boardroom.media/pilbara-minerals-limited/20210729/NaN60f60f47d194c5001ac4e147>

KEY POINTS

PRODUCTION AND SALES

- Production of 77,162 dry metric tonnes (dmt) of spodumene concentrate (March Quarter: 77,820 dmt).
- Record spodumene concentrate shipments of 95,972 dmt (March Quarter: 71,229 dmt), exceeding guidance of 75,000-90,000 dmt.
- Record sales of 109,190 dmt of spodumene concentrate, inclusive of tonnes loaded on a vessel late in the March Quarter which departed early April 2021.
- Tantalite concentrate sales totalled 39,234 lbs (March Quarter: 47,831 lbs).

PROJECT DEVELOPMENT

- Pilgan Plant improvement projects commissioning targeted for September Quarter.
- Ngungaju Operation set for staged restart during December Quarter, targeting annual production capacity of 180,000 to 200,000 dmt by mid-2022 calendar year.

EXPLORATION

- Strategic exploration and resource extensional drilling program along the boundary of the Ngungaju Operation identifies multiple zones of high-grade pegmatite mineralisation.
- Combined Pilgangoora Project Mineral Resource update anticipated during the September Quarter.

LITHIUM MARKET

- Continued strengthening in global lithium materials demand, with China domestic lithium carbonate prices remaining stable and China domestic lithium hydroxide prices increasing by 16% since March to regain their premium over the lithium carbonate price (Asian Metals).
- Spodumene concentrate spot market continued to tighten.

CORPORATE

- Evaluation of and documentation for the POSCO Downstream Joint Venture (DSJV) opportunity further progressed during the June Quarter, with parties targeting a Final Investment Decision in late August 2021.
- BMX Digital Sales Platform ready for launch, with the first cargo auction scheduled to take place imminently.
- Memorandum of Understanding signed with Calix Limited to jointly complete a Scoping Study for a demonstration plant for the potential production of value-added lithium salts/chemicals.
- Quarter-end cash balance of \$115.7M, inclusive of \$16.0M of irrevocable bank letters of credit for shipments completed up to June 2021.



NAMING OF PROCESSING PLANTS

Pilbara Minerals wishes to thank Traditional Owners, the Nyamal People for their assistance and the constructive relationship they share. The opportunity to honour Nyamal culture and language by allocating Nyamal names for each of the two processing plants at Pilgangoora is a privilege and supports Pilbara Minerals' commitments under '**What We Stand For**'.

Plant 1 is now known as the '**Pilgan Plant**' and Plant 2 as the '**Ngungaju Plant**' (pronounced nuh-ga-ju), with the overarching operation to be known as the '**Pilgangoora Operation**'.

The mine pit located at Ngungaju has been named '**South Pit**'. There will be no changes to the naming of the Central Pit, located in the Pilgan Operating area.

1. OPERATIONS OVERVIEW

During the June Quarter 2021 (**the Quarter**), mining quantities and production activities continued to increase as Pilbara Minerals Limited (**Pilbara Minerals or the Company**; ASX: PLS) responded to strong spodumene concentrate demand.

1.1 SUSTAINABILITY

1.1.1 HEALTH AND SAFETY

The Quarter ended with no reportable safety incidents.

The Company continues to monitor the COVID-19 situation and respond accordingly to any changes in directives by the State and Federal Government. During the Quarter, there was a four-day lockdown in Western Australia's Perth and Peel regions, which resulted in working from home arrangements and an extension of site operational rosters during the lockdown period for employees and contractors. This did not materially impact operations.

1.1.2 CLIMATE CHANGE

Pilbara Minerals has been progressing work during the Quarter to support the development of its climate strategy. This work has identified the following areas which will underpin Pilbara Minerals' approach to climate change:

- **Raw material production** - sustainable and ethical lithium extraction and processing.
- **Decarbonisation** - pathway to net zero emissions (Scope 1 and 2) in the decade commencing 2040.
- **Innovation** - developing tomorrow's solutions to address today's challenges.
- **Build resilience** - a climate change resilient business.

The Company has made significant progress in these areas through several initiatives, including:

- Scoping Study commenced with Calix to investigate an alternative 'electric' calcination process (using renewable energy) to produce a new 'mid-stream product', being a concentrated lithium salt. The processing path being studied is expected to materially reduce Scope 3 emissions within the lithium chemical supply chain.
- Test work has been completed for ore sorting equipment with the focus now moving to the design stage for a larger scale trial. If successful, this will reduce the amount of waste processed through the processing plant, thereby reducing energy intensity in the production of spodumene concentrate.
- The investigation and development of various decarbonisation pathway options to



achieve a target of net zero emissions (Scope 1 and 2) during the decade commencing 2040.

- Renewable energy investigation, with a contract for a 6MW solar power solution at the Pilgangoora Project expected to be awarded during the September Quarter 2021.
- Scenario analysis completed in respect of the Taskforce on Climate-related Financial Disclosure (TCFD).

Pilbara Minerals does not underestimate the work involved, nor its importance, in achieving its climate change strategy and ambitions. The Company recognises it will take a concerted effort over time to deliver on these commitments to ensure Pilbara Minerals makes a notable positive impact to the global response to climate change.

Further information on these initiatives will be provided within the Company's 2021 Annual and Sustainability Report.

1.1.3 PEOPLE AND CULTURE

During the Quarter, Pilbara Minerals rolled out an internal communications campaign reiterating the Company's zero tolerance approach to workplace harassment and inappropriate behaviour. The campaign titled 'Unmute Yourself and Stand Up if You See Disrespect', aligns with the Australian Government's recent campaign and calls upon employees and contractors to call out bad or disrespectful behaviour in the workplace. The campaign involved presentations to employees and contractors on what is and is not acceptable behaviour, how to respond and report if you experience this in the workplace, and what support mechanisms are available.

Further, the Company fully supports the Parliamentary Inquiry into sexual assault and harassment in the industry. Pilbara Minerals' intention is to participate in this inquiry via its industry memberships.

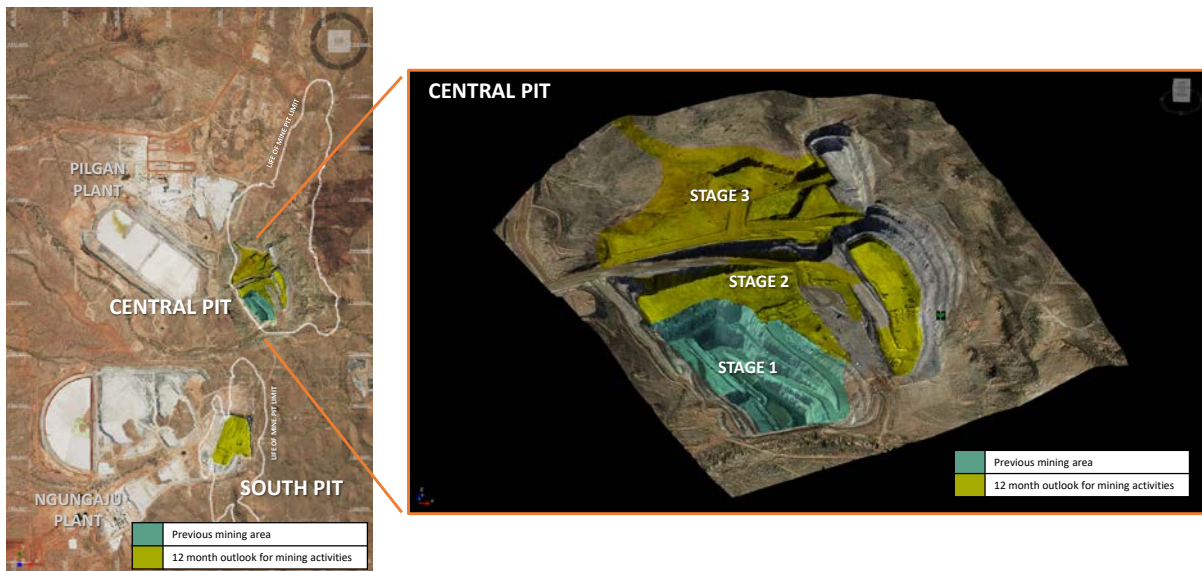
1.2 MINING AND PROCESSING COMMENTARY

Since the March Quarter 2021, mining activity has increased to support expanded mine development and processing plant throughput as the Company responds to increased customer demand.

Total material mined was 2,648,059 wet metric tonnes (wmt) from the Central Pit. Of this, a total of 672,020 wmt of ore was mined at 1.41% Li₂O (refer Table 1).

As highlighted previously (ASX Announcement: 25 June 2021), waste movements during the Quarter supported mine development activities and access to additional ore. Waste movements will continue to be higher over approximately the next 12-24 months as the Company catches up on waste movements previously deferred and accesses more ore for production growth in the Central Pit Stage 2 and 3 development areas.

Figure 1: Schematic of the project area highlighting areas of increased mining activity for the next 12 months



Plant recovery averaged 72% for the Quarter, which along with processing plant feed of 422,111 dmt (March Quarter: 415,277 dmt), resulted in production of 77,162 dmt of spodumene concentrate (SC6.0 basis) (refer Table 2).

The processing plant achieved an 83% runtime for the Quarter (against forecast 85% runtime), reflecting excellent throughput and combined product recovery rates.

Quantities for mining, ore processed, shipments and concentrate stocks for the Quarter are shown in Tables 1, 2 and 3 below.

Table 1: Total ore mined and processed

	Units	Q1 FY21	Q2 FY21	Q3 FY21	Q4 FY21
Ore mined	wmt	372,468	466,121	585,068	672,020
Waste mined	wmt	338,461	612,147	1,639,128	1,976,039
Total material mined	wmt	710,930	1,078,268	2,224,196	2,648,059
Ore processed	dmt	360,227	381,973	415,277	422,111

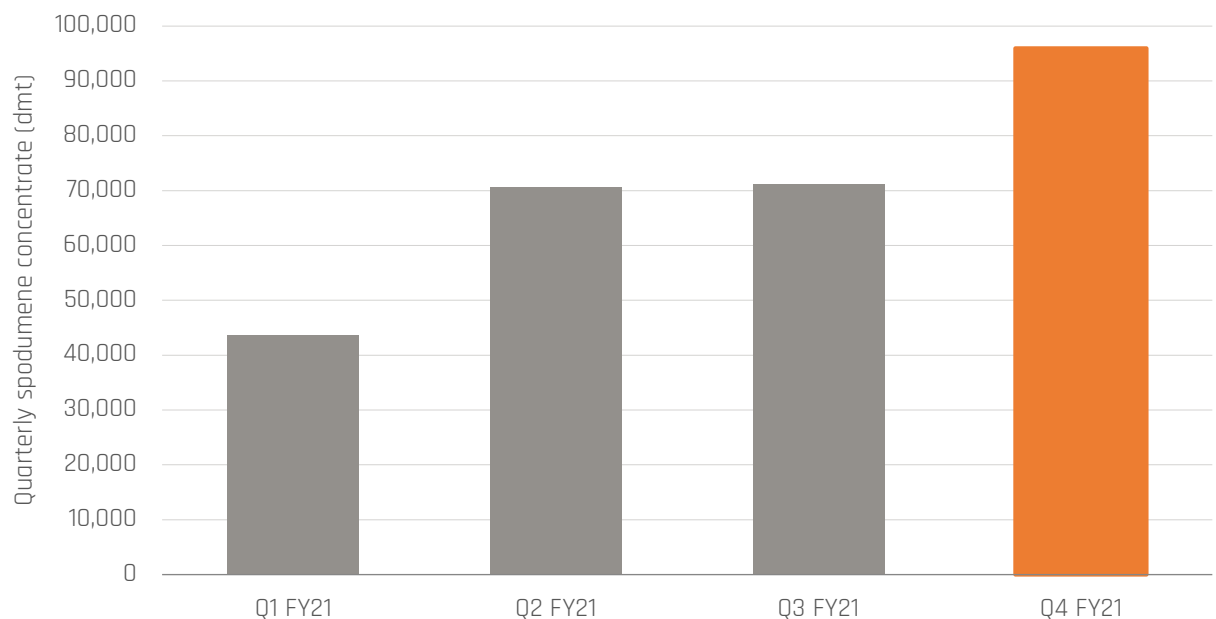
1.3 SHIPMENTS AND SALES

A total of 95,972 dmt of spodumene concentrate was shipped (SC6.0 basis) during the Quarter, exceeding guidance of 75,000-90,000 dmt.

Sales for the Quarter of 109,190 dmt was also a new record for the operation, which included 13,218 dmt loaded onto a vessel late in the March Quarter, but which departed and was sold in early April due to public berth congestion in Port Hedland (as noted in the March Quarterly Report). These tonnes were reflected as shipped tonnes in the March Quarter 2021.



Figure 2: Quarterly spodumene concentrate shipments (dmt)



The Quarter saw continued strong improvement in lithium market conditions. Based on customer feedback and other market enquiries, Pilbara Minerals expects these conditions will continue, with forecast shipped tonnes for the September Quarter 2021 expected to be in the range of ~77,000 to 90,000 dmt of spodumene concentrate.

Tantalite concentrate sales for the Quarter were 39,234 lbs (provisional sales, pending final reconciliation and assay results).

Table 2: Production and shipments

	Units	Q1 FY21	Q2 FY21	Q3 FY21	Q4 FY21
Spodumene concentrate produced	dmt	62,404	63,712	77,820	77,162
Spodumene concentrate shipped	dmt	43,630	70,609	71,229 ¹	95,972²
Tantalite concentrate produced	lbs	32,881	28,456	36,481	34,048
Tantalite concentrate shipped	lbs	25,222	18,541	47,831	39,234

¹ Includes tonnes partially loaded onto ship at the close of the March Quarter 2021.

² Includes tonnes loaded onto ship in April 2021 to complete a shipment commenced and partially loaded during March Quarter 2021

Table 3: Stocks position

	Units	Q1 FY21	Q2 FY21	Q3 FY21	Q4 FY21
Spodumene concentrate stocks	dmt	36,303	30,911	40,134	18,845¹
Tantalite concentrate stocks	lbs	26,210	36,124	24,775	19,588

¹ Closing balance includes reconciliation adjustments of -2,479 dmt during the Quarter for final survey adjustments, storage handling at the mine site, moisture reconciliation and draft survey at port.



2. MARKET COMMENTARY

The Quarter saw a continued strengthening in the global demand for lithium raw materials. While China domestic lithium carbonate prices were stable, China domestic lithium hydroxide prices increased by 16% to regain their premium over the lithium carbonate price (Asian Metals).

Independent market analysts, FastMarkets and Benchmark Mineral Intelligence (BMI), reported battery-grade lithium carbonate prices of US\$13,500/t to US\$13,800/t in June 2021, with battery-grade lithium hydroxide prices of US\$13,800/t to US\$15,000/t.

The spodumene spot market continued to tighten during the Quarter. Price reporting agencies (including Platts, FastMarkets and Asian Metals) are currently citing reasonably significant variation in spodumene concentrate price outcomes, varying between approximately US\$700 and US\$975/dmt (CFR China basis). This wide variance is likely explained by either the speed with which the market is developing and/or the effect of either contract delivery or spot pricing basis being reported.

In Pilbara Minerals' view, it is now clear that there is currently a disconnect between longer dated spodumene offtake pricing outcomes which reference lithium chemical pricing inputs, compared to the emerging 'spodumene spot sales market'.

Currently there appears to be a shortage of spodumene supply to support available chemical conversion capacity in China, which is driving a fundamental shift in the value being placed on spodumene concentrate, leading to higher price outcomes on a 'spot basis'. Pilbara Minerals is seeking to maximise its exposure to this dynamic via its BMX digital sales platform, facilitating trade auctions for any product available outside existing longer dated offtake arrangements. Pilbara Minerals is also intending to undertake price reviews with its offtake partners (as allowed for under its offtake agreements) to address these fundamental changes to the manner in which prices are set in the current market for spodumene concentrate.

During the Quarter, Macquarie Bank materially upgraded its outlook for spodumene prices, forecasting that prices will rise between 7 and 30% between calendar year (CY) 2021 and CY2025 due to a lack of independent supply for third parties.

Other investment banks have supported this view, with Credit Suisse recently saying that the lithium supply glut has ended with the market now "tightening as the EV revolution accelerates".

In a recent report (7 July 2021), Deutsche Bank said that it sees the lithium market deficit widening in upcoming years driven by robust China EV demand and supply facing emerging risks on ESG scrutiny. Deutsche Bank has raised both its medium and long-term lithium demand forecast by ~9% to reach 1.1Mt LCE (lithium carbonate equivalent) by 2025 and 1.95Mt by 2030. At the same time, the bank has reduced its supply numbers by 1% and now anticipates 2025 supply of 947,000t.

3. PROJECT DEVELOPMENT

3.1 RESTART OF NGUNGAJU PLANT

During the Quarter, Pilbara Minerals' Board approved the restart of the Ngungaju Plant, representing a significant step towards growing spodumene concentrate production at the Pilgangoora Operation (ASX Announcement: 25 June 2021).

It is expected operations will recommence during the December Quarter 2021, with annual production from the Ngungaju Plant to be ramped up to approximately 180,000 to 200,000 dmt by mid-CY2022, with none of these tonnes notionally committed to any offtake arrangement. This will see the combined annual production capacity of the Pilgangoora Project increase to 560,000 to 580,000 dmt.¹

¹ This assumes the Pilgan Plant production capacity increases to 380,000 dmt/tpa following implementation of improvement projects. Refer to March Quarterly Report released to ASX dated 21 April 2021.



This represents a key milestone as Pilbara Minerals works towards maximising the value of its strategic and well-timed acquisition completed earlier in CY2021. The restart will expand production capacity, increase the scale of operations and provide production flexibility as the Company looks to satisfy rapidly growing market demand. The integration of the two processing facilities (Pilgan and Ngungaju) and enlarged resource and pit inventories should provide significant operational synergies, enabling the Company to realise cost efficiencies across the operation.

The estimated restart cost of \$39M (inclusive of plant modifications and operational readiness activities) is consistent with Pilbara Minerals' original valuation at the time of acquisition and are proposed to be incurred over approximately the next 12 months.

The Company is likely to fund the cost of the re-start from existing cash, although consideration will be given to funding support via the potential restructure of the existing syndicated debt facility, provided favourable terms and conditions can be achieved.

Figure 3: Completed civil works around the Ngungaju Plant



3.2 PILGAN PLANT IMPROVEMENT PROJECT

Pilbara Minerals continued to progress improvement projects at the Pilgan Plant during the Quarter. As previously advised, these improvements are expected to unlock an additional 10-15% (~30-50,000tpa) of production capacity, increasing the Pilgan Plant's annualised capacity to up to ~380,000tpa. The improvement projects are expected to increase plant operating time and throughput, lower final product moisture (minimising solar drying) and further manage product recovery performance. Works completed during the Quarter pertaining to these projects included civil works and erection of the structural steel for a new filter press.

Commissioning is on track for completion later in the September Quarter 2021.



Figure 4: Installation of the filter press as part of the improvement projects package to increase production throughput for the Pilgan processing plant



3.3 PILGAN PLANT INCREMENTAL EXPANSION

In readiness for future expansion, Pilbara Minerals is progressing study works to support the next phase of incremental expansion for the Pilgan Plant.

Previous studies contemplated a phased and incremental expansion of the Pilgan Plant to ultimately increase total production to 5Mtpa of ore feed or 800,000-850,000tpa of spodumene concentrate production (refer ASX Announcement 27 August 2019). This total expansion, when combined with production from the Ngungaju Operation (180,000-200,000tpa) would increase total spodumene concentrate production capacity to more than 1Mtpa.

Current studies are targeting the first phase of the incremental expansion, providing approximately 100,000t of additional spodumene concentrate production. This study is expected to be completed late in the December Quarter 2021. This first phase of the expansion capacity is capable of being delivered in a timeframe of 9-12 months, following a Final Investment Decision (FID). Any FID will be considered closer to the time of study completion and will take into consideration market conditions, demand from customers and funding requirements at that time.

Pilbara Minerals will continue to provide updates to the market on the progress of any incremental expansion of the Pilgan Plant as part of its quarterly reporting cycle.

4. EXPLORATION AND GEOLOGY

Exploration activities for the Quarter included resource development and reverse circulation (**RC**) grade control drilling, as well as desktop studies and field mapping undertaken over some of the Company's regional tenements.

4.1 PILGANGOORA PROJECT (PILBARA MINERALS 100%)

Pilbara Minerals continued with a strategic exploration and resource extensional drilling program targeting the under-explored region on the tenement boundary adjacent to the Ngungaju Plant and associated facilities, with the intention of optimising and growing the future pit inventory. The program has progressed well with a total 49 RC holes for 8,624 metres drilled during the Quarter.



Results from the program have identified zones of high-grade pegmatite mineralisation adjacent to the tenement boundary and future South Pit expansion area which is outside of the previously identified Mineral Resource.

Highlights from the assay results received during the Quarter include:

- 15m @ 2.35% Li₂O and 100 ppm Ta₂O₅ from 142m (PLS1315)
- 22m @ 1.27% Li₂O and 87 ppm Ta₂O₅ from 125m (PLS1316)
- 18m @ 2.01% Li₂O and 75ppm Ta₂O₅ from 168m (PLS1319)
- 18m @ 1.81% Li₂O and 80ppm Ta₂O₅ from 150m (PLS1320)
- 20m @ 1.55% Li₂O and 89ppm Ta₂O₅ from 174m (PLS1321)
- 20m @ 1.83% Li₂O and 36 ppm Ta₂O₅ from 28m (PLS1328)
- 12m @ 1.84% Li₂O and 67 ppm Ta₂O₅ from 5m (PLS1330)
- 21m @ 1.28% Li₂O and 62 ppm Ta₂O₅ from 25m (PLS1337)
- 32m @ 1.44% Li₂O and 79 ppm Ta₂O₅ from 159m (PLS1337)
- 44m @ 1.49% Li₂O and 76 ppm Ta₂O₅ from 146m (PLS1341)
- 28m @ 2.01% Li₂O and 94 ppm Ta₂O₅ from 127m (PLS1356)
- 10m @ 2.14% Li₂O and 95 ppm Ta₂O₅ from 42m (PLS1346)
- 17m @ 1.56% Li₂O and 554 ppm Ta₂O₅ from 70m (PLS1357)

Full details of the drill hole locations and exploration results have been provided in the Company's ASX Announcements dated 10 May 2021 and 23 June 2021. Additional results received up to the date of reporting are listed in Appendix 1.

Results from this drill program will be incorporated into an updated combined Pilgangoora Project JORC Mineral Resource (including the compilation and integration of the former Altura Lithium Operations Pty Ltd Resource), which is scheduled for release in the September Quarter 2021².

In addition to the resource development program, RC grade control drilling commenced within the South Pit in advance of the Ngungaju Operation restart. A total of 177 holes for 5,548 metres had been drilled at the Quarter end. Grade control drilling will continue in the South and Central pit areas through to the December Quarter 2021, in support of future ore production.

² Pilbara Minerals is undertaking a review of the JORC Mineral Resource previously stated by Altura Mining Limited in its ASX Announcement dated 9 October 2019 and will aim to release an update to the market in the September Quarter 2021.



Figure 5: South Pit exploration and resource development drilling

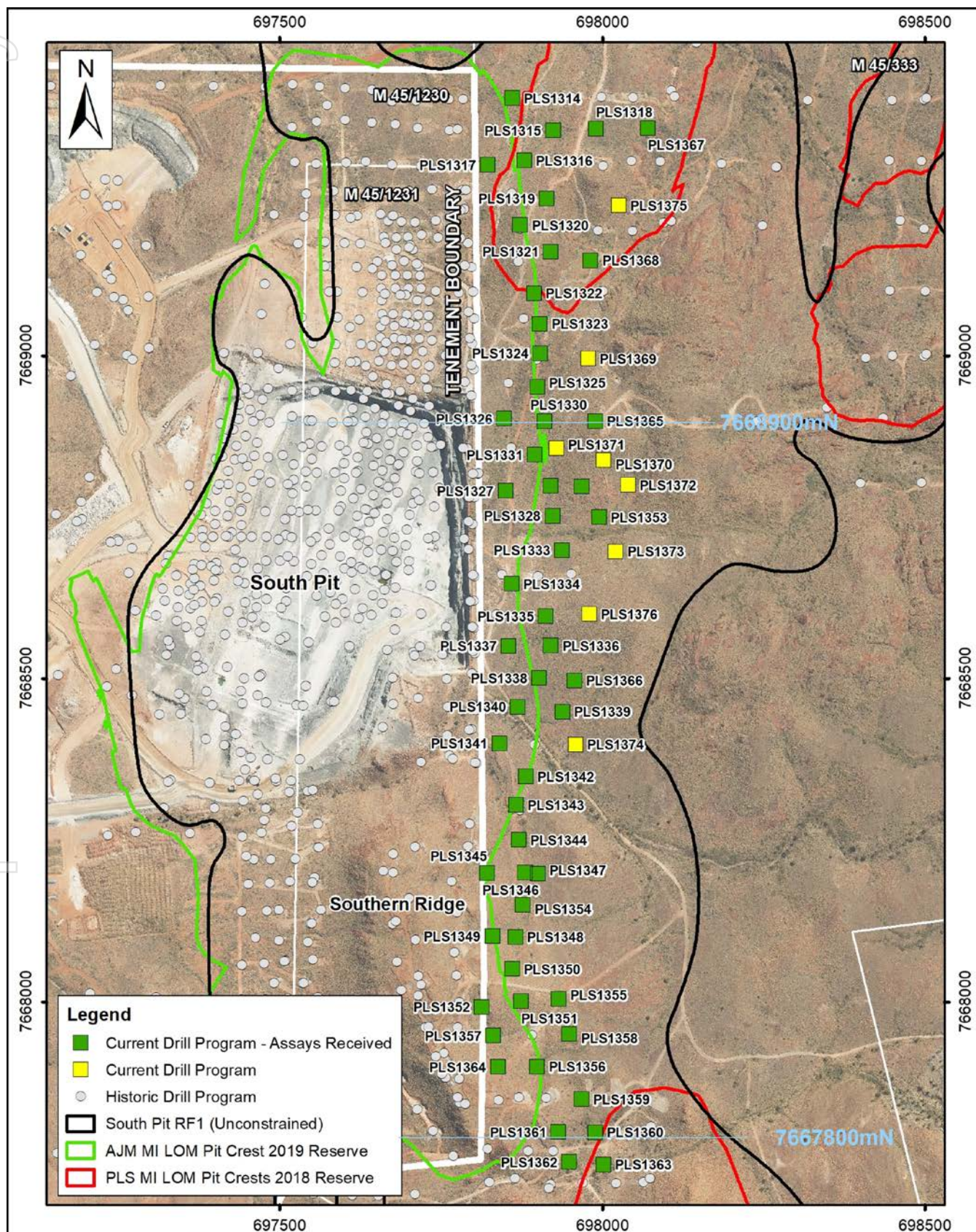




Figure 7: Section 7,668,900mN

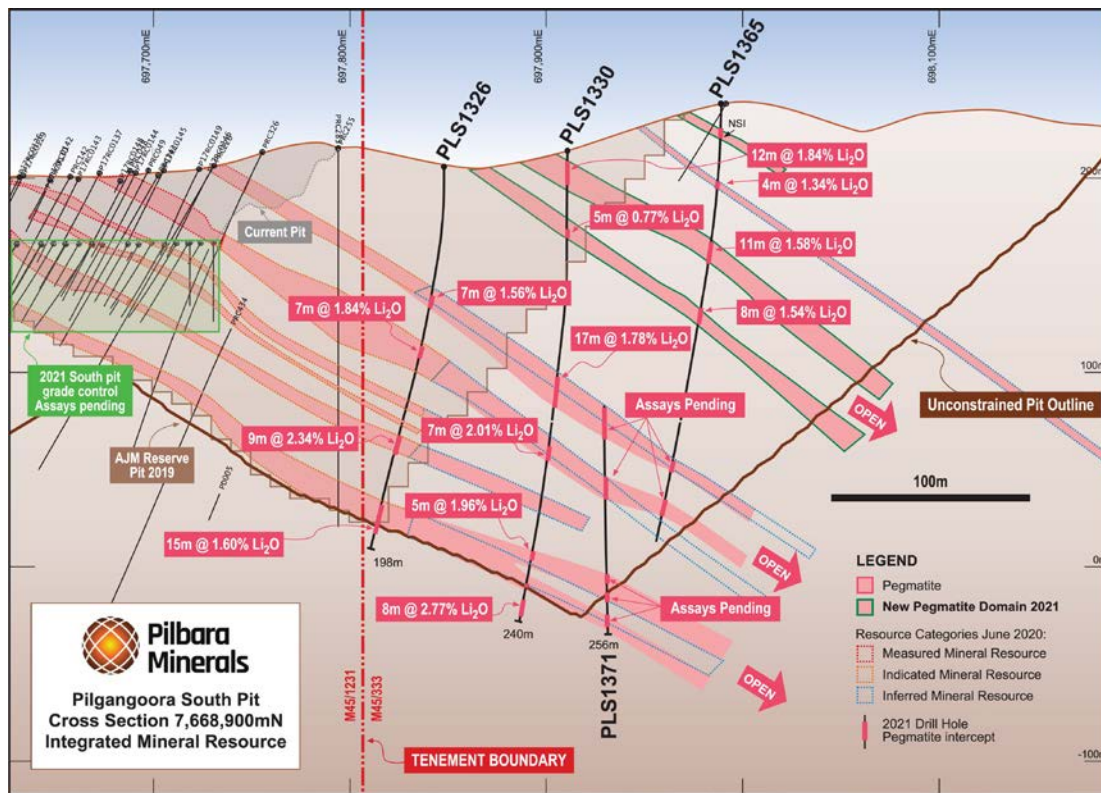
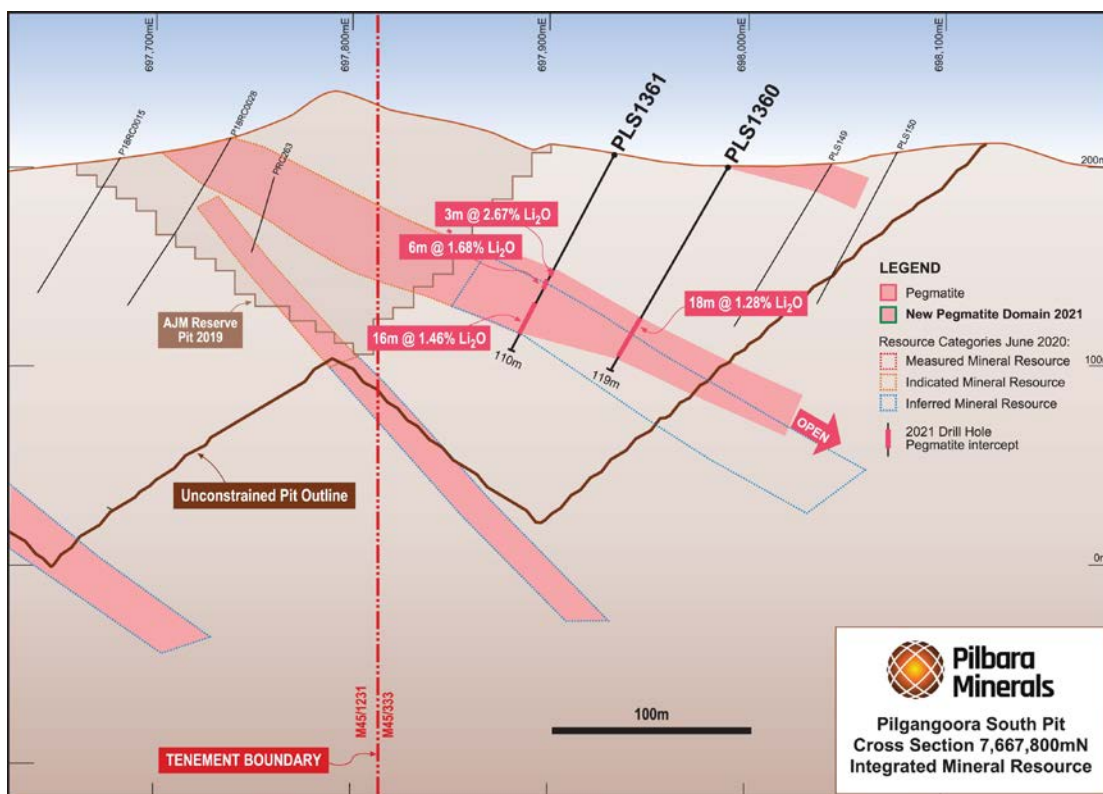


Figure 6: Section 7,667,800mN





4.2 REGIONAL PROJECTS (PILBARA MINERALS 100%)

Pilbara Minerals is continuing with desktop studies for gold and base metals. Field mapping along with rock chip sampling was undertaken in conjunction with a company sponsored PhD research project focused on the rare metal pegmatites of the Pilbara Craton.

4.2.1 MT FRANCISCO JV (PILBARA MINERALS LIMITED 70%, ATLAS IRON 30%)

No exploration work was undertaken at Mt Francisco during the Quarter.

5. CORPORATE

5.1 POSCO DOWNSTREAM JV OPPORTUNITY

During the Quarter, Pilbara Minerals continued to finalise its due diligence and evaluation of the proposed Downstream Joint Venture (DSJV) with POSCO, inclusive of the lithium hydroxide conversion facility located in Gwangyang, South Korea. Significant and positive progress was achieved during the Quarter on the negotiation of formal documentation, which was supported by a POSCO representative coming to Perth during the Quarter.

Both parties remain committed to bringing the transaction to a close, however completion of negotiations and formal documentation to enable a FID has taken slightly longer than expected due to key members of the POSCO negotiation team being unavailable over the last few weeks. The parties are now aiming to complete documentation by the end of August 2021, with Board approvals to follow shortly thereafter. Further updates to the market will be provided once the transaction has been finalised and a FID to be made.

5.2 BMX SALES TRADING PLATFORM

As outlined in the March Quarterly 2021 Report, Pilbara Minerals will introduce a new digital trading and sales platform for its uncommitted spodumene concentrate production. The Battery Material Exchange (**BMX**) platform is intended to provide Pilbara Minerals with a further avenue for sales growth, offering interested parties with access to current and future unallocated spodumene concentrate product from the Company's operations, including from the recently acquired Ngungaju Plant following its recommencement.

The BMX platform is now ready for implementation, with the first cargo auction scheduled to take place imminently. Pilbara Minerals has received strong interest from numerous parties in the lithium industry wishing to participate in the first cargo auction, with over 30 interested parties registered to date. Pilbara Minerals is now working with those parties to complete the registration and pre-qualification process ahead of the first cargo auction.

Expressions of interests are now closed, and participants have been confirmed for the inaugural auction.

Pilbara Minerals' intention is to grow the available production (including the potential for the sale of multiple cargos in a single auction over forward physical contracts), that will facilitate access to spodumene for interested parties that may not have visibility to available supply.

5.3 MOU FOR PRODUCTION OF MID-STREAM LITHIUM CHEMICALS

Following successful initial test work, Pilbara Minerals signed a Memorandum of Understanding (**MOU**) with Sydney-based technology company Calix Limited (ASX: CXL) to jointly undertake a Scoping Study to evaluate a new refining process. This new process will incorporate Calix's unique calcination technology to produce a concentrated lithium salt from the Pilgangoora Project for downstream lithium raw material demand.



Under the MOU, Pilbara Minerals and Calix have agreed to complete a Scoping Study on the joint development of a demonstration plant at Pilgangoora, with a view to negotiating and entering into a joint venture to build and operate the demonstration plant and further commercialise the technology developed.

The proposed demonstration plant will likely utilise fine particle, lower-grade spodumene concentrate from the Pilgangoora Operation with further processing on site (with electricity generation using renewable energy) to produce a low-carbon, concentrated lithium salt which could be further refined into lithium battery materials. Further information can be found in the Company's ASX Announcement on 11 May 2021.

Scoping Study work is ongoing and on track for completion by the end of CY2021.

5.4 FINANCIAL RESULTS FROM OPERATIONS

The Company shipped 95,972 dmt of spodumene concentrate for the Quarter, exceeding guidance of 75,000-90,000 dmt.

Average SC6.0 market reference prices increased during the Quarter, resulting in higher prices being received compared to the March Quarter 2021. In addition, positive final pricing adjustments of ~A\$1.8M associated with provisionally priced cargoes shipped during the June Quarter 2021 are expected to be received during the September 2021 Quarter (pending final pricing outcomes).

The Company will have full exposure to the spot price for any cargoes sold through the new BMX trading platform, with the first cargo scheduled to be sold via the BMX platform imminently.

A unit cash operating cost³ of US\$441/dmt (CIF China) was achieved for the Quarter, being A\$572/dmt at a quarterly average AUD:USD exchange rate of 0.7703 (March Quarter: US\$383/dmt; A\$495/dmt at average quarterly AUD:USD exchange rate of 0.7730).

The increase of US\$58/dmt compared to the March Quarter is mainly attributable to a US\$24/dmt increase in sea freight costs compared to the March Quarter, driven by multiple factors, which include tightness of suitable vessel supply coupled with strong shipping demand across all major commodity groups, with the Atlantic basin continuing to attract vessels, reducing the availability of vessels for the WA Coast to Far East trade route.

Costs were also impacted by an increase in mining costs associated with the impending step-up in strip ratio (as highlighted in the March Quarter 2021), with additional investment in mining equipment mobilisation, drill and blast costs and other ancillary infrastructure and people costs required to aid increasing mining volumes during the September 2021 Quarter. This will in turn support the higher production throughput at the Pilgan Plant of 2.3Mtpa once the plant improvements are completed.

In addition, higher royalty costs were incurred following an increase in the selling price of spodumene concentrate during the Quarter.

As highlighted in the March 2021 Quarterly Report, a higher mining strip ratio will be required over the next 12-24 months to access sufficient ore to support higher plant throughput and is required as the Company emerges from the prior periods of moderated production. When combined with the impact of higher sea freight rates, higher unit costs associated with restarting and ramping up the Ngungaju Plant and the stronger AUD:USD exchange rate, this is likely to result in an increase in unit cash operating costs for FY22 as compared to FY21.

The cash operating cost of the combined Pilgangoora Operation for the 2022 financial year (**FY22**) is expected to be in the range of A\$525-A\$575/dmt (CIF China) or approximately US\$395-430/dmt at an AUD:USD exchange rate of 0.75.

³ Cash operating costs include mining, processing, transport, state and private royalties, native title costs, port, shipping/freight and site based general and administration costs and are net of Ta₂O₅ by-product credits. Cash operating costs are calculated on an incurred basis (including accruals) and include inventory movements.



Beyond CY2022, costs are expected to trend lower with the realisation of expected synergies and improved economies of scale from the combined operations following the ramp up of the Ngungaju Operation, as well as strip ratios and freight costs returning to more normal levels.

Detailed FY22 guidance in respect of production, cost and shipped tonnes will be provided coincident with the presentation of the 2021 financial year annual results in the second half of August 2021.

5.5 CASH BALANCE

Pilbara Minerals closed the Quarter with a cash balance of \$115.7M, inclusive of \$16.0M of irrevocable bank letters of credit for shipments completed within the Quarter (31 March 2021: \$112.1M). A positive cashflow from operations of \$26.8M was generated, \$14.2M of capital payments were made largely relating to the Pilgan Plant Stage 1 improvement works, \$2.4M of payments were made for transaction costs associated with the acquisition of Altura Lithium Operations Pty Ltd and \$1.7M in interest was paid under the USD senior secured syndicated finance facility.

During the Quarter, Pilbara Minerals received:

- proceeds of \$78.4M from customer sales (inclusive of A\$7.5M of receipts following finalisation of pricing adjustments on the March Quarter cargoes that were provisionally priced); and
- proceeds of \$1.7M following the exercise of share options.

Major cash outflows and movements during the Quarter included:

- \$51.6M on operating costs at the Pilgangoora Project;
- \$14.2M on capital costs largely related to the Pilgan Plant Stage 1 improvements and construction works to lift the existing tailings storage facility;
- \$1.7M in interest and financing payments, largely associated with the USD senior secured syndicated finance facility;
- \$3.9M on payroll, administration and corporate costs;
- \$2.2M on exploration and evaluation work and feasibility studies;
- \$1.3M on care and maintenance costs at the Ngungaju Operation; and
- \$2.4M of transaction costs relating to the acquisition of Altura Lithium Operations Pty Ltd in January 2021.

The US\$15M Working Capital Facility provided by BNP Paribas remains undrawn.

5.6 DEFERRED CONSIDERATION FOR ACQUISITION OF ALTURA LITHIUM OPERATIONS

The acquisition of Altura Lithium Operations Pty Ltd was successfully completed on 20 January 2021 following a cash payment of US\$155 million. As previously advised to the market in its ASX release dated 1 December 2020, a further amount of deferred consideration representing approximately 69 million Pilbara Minerals shares (or its cash equivalent) remains payable to the loan note holders within 12 months after completion. The deferred consideration is payable by Pilbara Minerals in either cash or shares (at the Company's election) and may be paid early at any time prior to the 12 month maturity date, being 19 January 2022.

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Release authorised by Ken Brinsden, Pilbara Minerals Limited's Managing Director.



MORE INFORMATION

ABOUT PILBARA MINERALS

Pilbara Minerals is the leading ASX-listed pure-play lithium company, owning 100% of the world's largest, independent hard-rock lithium operation. Located in Western Australia's resource-rich Pilbara region, the Pilgangoora Project and Operation produces a spodumene and tantalite concentrate. The significant scale and quality of the operation has attracted a consortium of high quality, global partners including Ganfeng Lithium, General Lithium, Great Wall Motor Company, POSCO, CATL and Yibin Tianyi.

While it continues to deliver a low-cost, quality spodumene to market, Pilbara Minerals is pursuing a growth and diversification strategy to become a sustainable, low-cost lithium producer and fully integrated lithium raw materials and chemicals supplier in the years to come.

Through execution of this strategy, Pilbara Minerals is positioned to become a major player in the rapidly growing lithium supply chain, underpinned by increasing demand for clean energy technologies such as electric vehicles and energy storage as the world pursues a sustainable energy future.

FORWARD LOOKING STATEMENTS AND IMPORTANT NOTICE

This announcement may contain some references to forecasts, estimates, assumptions and other forward-looking statements. Although the Company believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions, it can give no assurance that they will be achieved. They may be affected by a variety of variables and changes in underlying assumptions that are subject to risk factors associated with the nature of the business, which could cause actual results to differ materially from those expressed herein. All references to dollars (\$) and cents in this announcement are to Australian currency, unless otherwise stated. Investors should make and rely upon their own enquiries before deciding to acquire or deal in the Company's securities.

COMPETENT PERSONS STATEMENT

The information in this report that relates to Exploration Results and Exploration Targets is based on and fairly represents information and supporting documentation prepared by Mr John Holmes (full-time Exploration and Geology Manager of Pilbara Minerals Limited). Mr Holmes is a shareholder of Pilbara Minerals. Mr Holmes is a member of the Australasian Institute of Geoscientists and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Holmes consents to the inclusion in this report of the matters based on his information in the form and context in which they appear.

Information relating to the current Mineral Resource and Ore Reserve estimates, production targets and forecast information derived from the production targets (including information relating to the proposed expansions of the Pilgan Operation), each in respect of the Pilgan Operation, is extracted from the ASX announcement dated 3 August 2018 entitled "Outstanding DFS Results Support Pilgangoora Expansion", the ASX announcement dated 17 September 2018 entitled "Pilgangoora Reserve and Resource Upgrade", the ASX announcement dated 27 August 2019 entitled "Update on Partnering Process and Revised Stage 2" and as updated in the 30 June 2019 Annual Report. Pilbara Minerals confirms that it is not aware of any new information or data that materially affects the information included in these announcements and that all material assumptions and technical parameters underpinning the resource and reserve estimates, production targets and forecast financial information derived from the production targets in the announcements continue to apply and have not materially changed. Pilbara Minerals confirms that the form and context in which the competent persons' findings are presented in this report have not been materially modified from the original market announcements.



The technical studies referred to in this report in respect of the incremental expansion of the Pilgan Operation have been undertaken to determine the potential viability of the expansion and to reach a decision to proceed with more definitive studies. Each technical study is based on low-level technical and economic assessments and is insufficient to provide assurance of an economic development case at this stage or provide certainty that the conclusions of the studies will be realised. The results of the studies should not be considered a profit forecast or production forecast.

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APPENDIX 1 – DRILL HOLE INTERCEPTS (0.5% Li₂O lower cut-off grade)

Hole ID	From (m)	To (m)	Thickness (m)	Li ₂ O %	Ta ₂ O ₅ (ppm)
PLS1318	136	138	2	1.65	40.5
PLS1318	191	218	27	1.32	44.56
PLS1331	40	41	1	0.51	1
PLS1339	185	186	1	0.66	30
PLS1339	211	220	9	1.29	79.67
PLS1339	242	244	2	0.97	144
PLS1345	38	41	3	0.67	65.67
PLS1345	44	45	1	1.09	39
PLS1345	81	82	1	1.09	79
PLS1345	91	93	2	2.22	36.5
PLS1346	42	52	10	2.14	94.8
PLS1346	104	128	24	1.6	51.29
PLS1346	132	136	4	1.28	51.25
PLS1347	60	62	2	1	131.5
PLS1348	92	93	1	0.74	38
PLS1348	97	107	10	0.98	97.8
PLS1348	111	127	16	1.59	54.88
PLS1348	180	182	2	0.56	0.75
PLS1349	50	63	13	1.62	65.08
PLS1349	66	71	5	1.54	46
PLS1349	75	79	4	1.15	36.25
PLS1349	103	111	8	1.75	58.5
PLS1349	114	120	6	1.97	46.5
PLS1349	124	126	2	1.63	30.5
PLS1350	81	82	1	2.36	19
PLS1350	130	155	25	1.4	42.3
PLS1351	81	91	10	1.16	84.4
PLS1351	97	98	1	1.11	89
PLS1351	102	105	3	1.35	84
PLS1351	140	159	19	1.43	51.58
PLS1352	73	83	10	0.9	157.9
PLS1352	103	105	2	0.97	42.5
PLS1352	112	114	2	1.77	36
PLS1352	121	126	5	1.77	43.6
PLS1353	108	109	1	2.37	76
PLS1354	78	89	11	1.26	60.91
PLS1354	123	135	12	1.91	45.08
PLS1355	119	131	12	1.2	79.08
PLS1355	142	143	1	0.61	2
PLS1355	146	150	4	1.18	65.25



Hole ID	From (m)	To (m)	Thickness (m)	Li ₂ O %	Ta ₂ O ₅ (ppm)
PLS1355	189	194	5	0.88	91.2
PLS1356	127	155	28	2.01	93.82
PLS1357	70	87	17	1.56	553.71
PLS1357	92	95	3	1.27	59.67
PLS1357	118	125	7	1.23	41.14
PLS1357	128	134	6	0.99	32.5
PLS1357	138	139	1	0.66	53
PLS1358	128	135	7	2.19	130.86
PLS1358	140	141	1	1	121
PLS1358	189	192	3	0.61	65
PLS1358	196	198	2	0.73	41.5
PLS1358	207	214	7	1.35	59.71
PLS1358	218	219	1	0.73	110
PLS1359	128	131	3	2.45	64
PLS1359	134	139	5	1.88	216.2
PLS1360	88	106	18	1.28	107
PLS1360	109	110	1	1.54	95
PLS1361	66	69	3	2.67	249
PLS1361	72	78	6	1.68	80
PLS1361	85	101	16	1.46	135.56
PLS1362	62	63	1	0.53	40
PLS1362	73	80	7	0.75	72
PLS1362	86	89	3	1.32	70.33
PLS1363	3	8	5	0.94	94.8
PLS1363	14	18	4	1.07	55.25
PLS1363	74	79	5	1.11	105.4
PLS1363	89	96	7	0.57	80.57
PLS1364	94	104	10	1.43	138.9
PLS1364	110	113	3	1.5	126.67
PLS1364	190	195	5	1.38	48.8
PLS1365	39	43	4	1.34	86
PLS1365	70	81	11	1.58	41.82
PLS1365	104	112	8	1.54	62.38
PLS1366	111	122	11	1.45	66.45
PLS1367	80	81	1	0.75	27
PLS1367	105	110	5	1.32	65
PLS1368	62	64	2	0.82	72
PLS1368	90	94	4	1.14	33
PLS1368	102	111	9	1.53	69.56
PLS1368	185	191	6	1.54	54.5
PLS1368	203	222	19	1.97	55.16

JORC Code, 2012 Edition - Table 1 report

Section 1: Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Sampling techniques	<i>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i>	Pilbara Minerals Limited have completed 49 exploration RC drill holes for 8,624m during the June Quarter 2021.
	<i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i>	RC holes were sampled every metre, with samples split on the rig using a cyclone splitter. The sampling system consisted of a rig mounted cyclone with cone splitter and dust suppression system. The cyclone splitter was configured to split the cuttings at 85% to waste (exploration RC holes to be captured in 600mm x 900mm green plastic mining bags) and 15% to the sample port in draw-string calico sample bags (10-inch by 14-inch).
	<i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or</i>	Exploration drill holes were all RC, with samples split at the rig, samples are then sent to Nagrom laboratory in Perth and analysed for a suite of multi-elements. Analysis was completed by XRF and ICP techniques.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	<i>mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</i>	
Drilling techniques	<i>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</i>	Exploration RC Drilling was completed by Mt Magnet Drilling utilising an RCD300-2 track mounted drilling rig with a truck mounted booster & auxiliary compressor (900cfm/350psi) coupled to a V8 booster up to 1000psi. Drilling used a reverse circulation face sampling hammer. The sampling system consisted of a rig mounted cyclone with cone splitter and dust suppression system.
Drill sample recovery	<i>Method of recording and assessing core and chip sample recoveries and results assessed.</i>	Sample recovery was recorded as good for RC holes.
	<i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i>	Whilst drilling through the pegmatite, rods were flushed with air after each 6 metre interval.
	<i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i>	Samples were dry and recoveries are noted as "good."
Logging	<i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i>	1m samples were laid out in lines of 20 or 30 samples with cuttings collected and geologically logged for each interval and stored in 20 compartment plastic rock-chip trays with hole numbers and depth intervals marked (one compartment per 1m). Geological logging information was recorded directly onto digital logging system (OCRIS) and information validated and transferred electronically to Database administrators in Perth. The rock-chip trays are stored on site at Pilgangoora in a shelved 40 ft sea container.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	<i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i>	Logging has primarily been quantitative.
	<i>The total length and percentage of the relevant intersections logged.</i>	The database contains lithological data for all holes in the database.
Sub-sampling techniques and sample preparation	<i>If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i>	RC samples were generally dry and split at the rig using a cyclone splitter, which is appropriate and industry standard.
	<i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i>	Samples have field duplicates, field standards and blanks as well as laboratory splits and repeats
	<i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i>	Field duplicates were taken approximately every 20m, and standards and blanks every 50 samples.
	<i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	Drilling sample sizes are considered to be appropriate to correctly represent the tantalum and lithium mineralisation at Pilgangoora based on the style of mineralisation (pegmatite) and the thickness and consistency of mineralisation.
Quality of assay data and laboratory tests	<i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i>	Samples were submitted to Nagrom Laboratories in Perth and analysed for a suite of 25 elements. Samples were subject to a sodium peroxide fusion and analysed using ICPOES and ICPMS techniques.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	<i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i>	No geophysical tools were used to determine any element concentrations used in this resource estimate.
	<i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i>	Duplicates of the samples were taken at twenty metre intervals with blanks and standards inserted every 50m. Comparison of duplicates by using a scatter chart to compare results show the expected strong linear relationship reflecting the strong repeatability of the sampling and analysis process. Drilling contains QC samples (field duplicates, blanks and standards plus laboratory pulp splits, and SGS internal standards), and have produced results deemed acceptable.
Verification of sampling and assaying	<i>The verification of significant intersections by either independent or alternative company personnel.</i> <i>The use of twinned holes.</i>	No diamond twins were carried out during this drilling campaign.
	<i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i>	An electronic database containing collars, surveys, assays and geology is maintained by Trepanier Pty Ltd, an Independent Geological consultancy.
	<i>Discuss any adjustment to assay data.</i>	Li was converted to Li ₂ O for the purpose of reporting. The conversion used was Li ₂ O = Li x 2.153
Location of data points	<i>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i>	Holes were surveyed using DGPS in GDA94, Zone 50. Down hole surveying of drill holes was conducted using a Gyro tool.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
		Measurements were recorded at the bottom of each hole and every 10m up hole for vertical holes and continuous readings for angle holes. Drill hole collar locations were surveyed at the end of the program by a differential GPS (DGPS).
	<i>Specification of the grid system used.</i>	The grid used was MGA (GDA94, Zone 50)
	<i>Quality and adequacy of topographic control.</i>	The topographic surface used was supplied by Pilbara Minerals.
Data spacing and distribution	<i>Data spacing for reporting of Exploration Results.</i>	Drilling spacings for the exploration RC holes varied between 50m to 75m apart.
	<i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i>	The interpretation of the mineralised domains are supported by a moderate drill spacing, plus both geological zones and assay grades can be interpreted with confidence.
	<i>Whether sample compositing has been applied.</i>	No compositing
Orientation of data in relation to geological structure	<i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i>	The mineralisation dips approximately 45-60 degrees at a dip direction of 090 degrees The drilling orientation and the intersection angles are deemed appropriate.
	<i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i>	No orientation-based sampling bias has been identified.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Sample security	<i>The measures taken to ensure sample security.</i>	Chain of custody for PLS holes were managed by PLS personnel.
Audits or reviews	<i>The results of any audits or reviews of sampling techniques and data.</i>	<p>Sampling techniques for historical assays have not been audited.</p> <p>The collar and assay data have been reviewed by checking all of the data in the digital database against hard copy logs.</p> <p>All PLS assays were sourced directly from Nagrom laboratory.</p>

Section 2: Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Mineral tenement and land tenure status	<i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites</i>	PLS owns 100% of tenements M45/1256, M45/333, M45/511 and M45/1259
	<i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i>	No known impediments.
Exploration done by other parties	<i>Acknowledgment and appraisal of exploration by other parties.</i>	Talison completed RC holes in 2008 GAM completed RC holes between 2010 and 2012. Altura completed holes between 2010 and 2018
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	The Pilgangoora pegmatites are part of the later stages of intrusion of Archaean granitic batholiths into Archaean metagabbros and metavolcanics. Tantalum mineralisation occurs in zoned pegmatites that have intruded a sheared metagabbro.
Drill hole Information	<i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes, including easting and northing of the drill hole collar, elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar, dip and azimuth of the hole, down hole length and interception depth plus hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of</i>	Reported in ASX announcements on 10 May 2021 and 23 June 2021

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	<i>the report, the Competent Person should clearly explain why this is the case.</i>	
Data aggregation methods	<i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. The assumptions used for any reporting of metal equivalent values should be clearly stated.</i>	Exploration results have been received for 30 drill holes – PLS1345 to PLS1368 and extensions to holes PLS1318 and PLS1339. Results for hole PLS1314 to PLS1344 have been reported in ASX announcements on 10 May 2021 and 23 June 2021.
Relationship between mineralisation widths and intercept lengths	<i>These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</i>	Down hole intercepts have been reported and are tabled in APPENDIX 1. Reported intercepts are not true width. Cross sections illustrate the modelled pegmatite domains and intersections.
Diagrams	<i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</i>	Drill hole locations are shown in Figure 5. Cross sections showing selected holes from the program are presented as Figures 6 and 7.
Balanced reporting	<i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be</i>	Comprehensive reporting of drill details have been previously reported in ASX announcements on 10 May 2021 and 23 June 2021

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	<i>practiced to avoid misleading reporting of Exploration Results.</i>	
Other substantive exploration data	<i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>	All meaningful & material exploration data has been reported.
Further work	<i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i>	The aim is to upgrade the existing JORC compliant resource calculation.