

29 October 2021

30 SEPTEMBER 2021 QUARTERLY ACTIVITIES REPORT

HIGHLIGHTS

CORPORATE

- Available cash of US\$7.4 million at 30 September 2021
- Sale of 200,000 pounds of U₃O₈ at US\$50.35 per pound, generating a net cash margin of US\$3.5 million in October 2021
- 310,000 pounds of uranium in converter accounts at 30 September 2021, with a market value of US\$13.1 million (US\$42.20 per pound U₃O₈)

LANCE PROJECT – MU1A FIELD DEMONSTRATION

- Field Demonstration has been operating successfully for over one year
 - Target flow and solution chemistry achieved and maintained
 - Delivering meaningful and valuable results
 - Key learnings include well pattern configuration criteria
- Operations yielding improved uranium grades
 - Composite grade of around 50 ppm U₃O₈ during the quarter
 - One production well has yielded 80 to 100 ppm U₃O₈ during the quarter
 - Uranium grades indicate that Lance is better suited to the planned low-pH solutions than previous alkaline based solution
 - Additional test pattern commissioned at the end of the quarter has achieved highest grade results to date
- Pilot scale ion-exchange system yields uranium for further processing
- Bench-scale evaluation of advanced uranium recovery technology nearing conclusion
- Permitting enhancements and modifications progressed

LANCE PROJECT, WYOMING

MU1A Low-pH Field Demonstration – Test Adjustments Deliver Favourable Results

Peninsula continued to focus on the progression of the MU1A low-pH field demonstration (“field demonstration”) at the Company’s flagship, 100% owned Lance Project (“Lance”) located in Wyoming, USA.

The field demonstration has been operating for more than one year and has yielded significant additional results during the quarter.

Prior to the quarter, Peninsula highlighted the achievement of targeted solution chemistry (principally pH level and oxidant concentration) and corresponding elevated uranium production grades. Importantly, field operations have continued to run well, complimenting the improvement in uranium grade. The project team has continued to focus on technical and operational concepts that have potential to enhance future performance, particularly changes to the configuration of the injection and recovery well patterns.

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Operational Performance Overview

At the end of the June 2021 quarter, the composite production stream had reached the approximate target levels for pH, free acid concentration and Oxygen Reduction Potential (“ORP”) and the composite stream uranium grade was trending upward, reaching approximately 40 ppm.

The target flowrates, pH and ORP levels have been maintained during and after the end of the September 2021 quarter. Ongoing operational activities completed and detailed below resulted in the uranium composite grade increasing to over 50 ppm U₃O₈, with one production well consistently yielding solution grades of 80 to 100 ppm U₃O₈ during the quarter. Ongoing adjustments to the operating well pattern configurations has slowed the improvement in uranium grade yields since the month of September 2021.

ISR Pattern Configuration Modifications

Peninsula has utilised the field demonstration to evaluate multiple ISR pattern configurations with an objective to identify the optimal design considerations for Lance.

The Company prepared a hydrogeologic model to simulate the solution flow paths and the extent that the injected solution has been sweeping across the full orebody. The modelling exercise revealed the possibility that under the initial pattern design concept, injected solution was not sweeping across the full pattern area and therefore, mineralised portions of the orebody were potentially not being addressed with lixiviant. This inefficiency is now regarded as a significant contributing factor in the variability in the individual production well results that have been realised.

As a corrective measure, the Company installed two additional wells located within potentially unaddressed zones of the pattern area. Figure 1 illustrates the modified pattern configuration with the addition of wells MU1-OZ345 and MU1-OZ347. Located in-between the original recovery wells, the two new wells were placed into service as injection wells that had a much shorter direct flow path to the recovery wells.

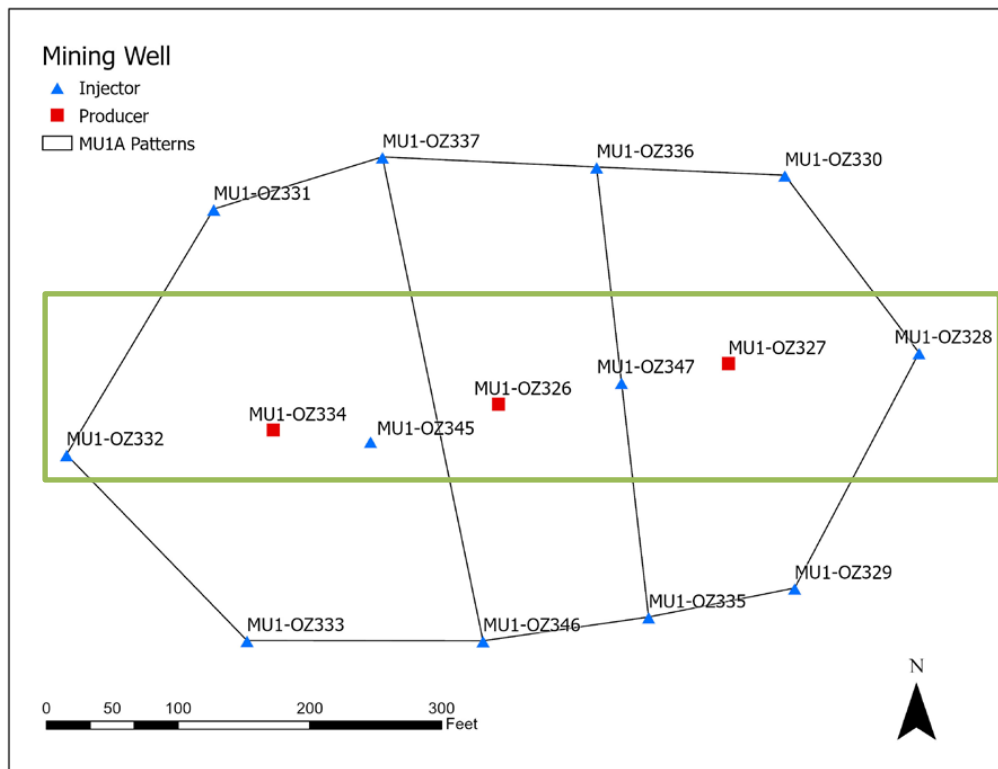


Figure 1: Modified Pattern Configuration of MU1A
[Includes green box to indicate the line drive in operation since July 2021 – refer below]

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The two new injection wells drove the composite recovery grade higher soon after activation.

The availability and location of the two new wells presented the opportunity to evaluate additional pattern configurations with shorter expected overall response times. Early in the quarter, the Company discontinued regular injection into the Northernmost and Southernmost wells (8 wells in total) and started operating MU1A in a line drive configuration, with four injection wells and three production wells (from West to East including the wells crossing from MU1-OZ332 to MU1-OZ328).

Flow model simulations indicated that flow paths within the line drive would be focused in a discrete area and would cross significant ore. The line drive configuration also allows for simple pattern reversals where the function of the wells is switched between injection and recovery. Following the change to a line drive configuration, production composite grade increased to 50 ppm U_3O_8 , with one production well consistently yielding 80 to 100 ppm solution grades during the quarter. The change of well function can also result in a temporary grade reduction in the newly converted production wells. This is common and was observed in one of the converted recovery wells, muting the overall composite uranium grade response in the month of September 2021.

The Company also prepared an additional small scale test pattern based on learnings from the field demonstration. The new pattern is expected to provide further valuable operational information on the performance of tightly spaced wells. The new pattern features three new wells (MU1-OZ348, OZ349 and OZ350), with close spacing to facilitate rapid response times. The pattern was commissioned near the end of the quarter. The outcomes of this pattern will inform the parameters to be used in an updated feasibility study and future commercial operations. Figure 2 illustrates the addition of the new pattern to the configuration.

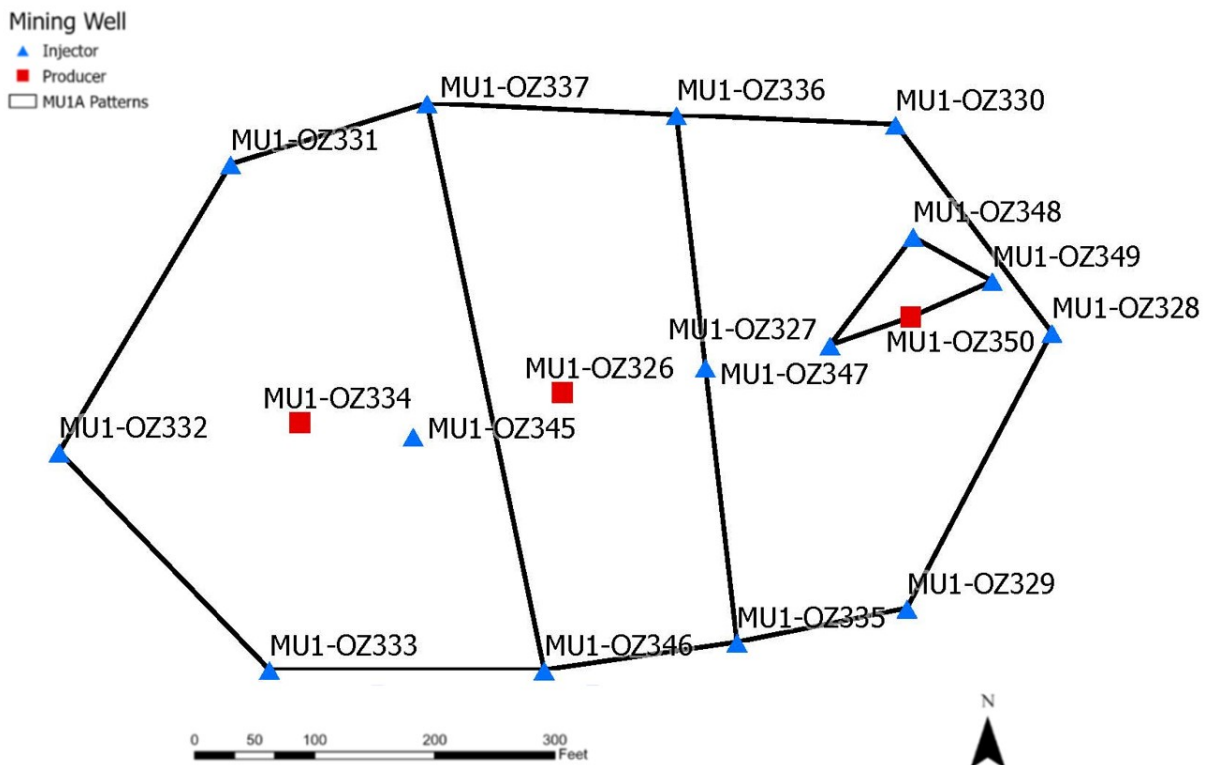


Figure 2: Additional Pattern Configuration within MU1A

Since commissioning the new pattern the production grade specific to this small area has peaked above 150 ppm U_3O_8 . The pattern grade responded promptly as the pattern area had the benefit of being within the already established MU1A field demonstration area. The small scale of the pattern allows for short time frames to displace the contained solution volumes. Since activation, 13 pore volumes have been

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processed. The average produced grade has been approximately 80 ppm. With the rapid recovery and depletion of the uranium contained in this discrete area, the produced grade has declined to near 40 ppm U_3O_8 where it is at the time of this report (late October). The company will provide a further update on the performance of the field demonstration in November 2021.

Uranium Capture - Ion Exchange

Concurrent with a rising uranium grade, Peninsula activated the pilot ion exchange system in the previous quarters. The test system design utilises a three-column ion exchange recovery circuit as compared to the currently installed two-column ion exchange system. The final ion exchange circuit design requirements will be determined and revised as part of completing the field demonstration and updated studies.

Fresh ion exchange resins were loaded to capacity and shipped off site for elution and yellowcake production. While not a commercial scale operation, the field demonstration will result in the Company reporting a small quantity of produced uranium for the calendar year, the first time since the operations were idled in 2019. The loaded resins were demonstrated to contain uranium in quantities consistent with industry standards for low pH ISR operations.

Peninsula utilised the opportunity presented by having production solutions derived from the field demonstration to complete a bench scale study of an alternative plant uranium recovery circuit with the involvement of a third-party consultant. The Company has received a draft evaluation report after quarter end and is in the process of review. If deemed successful, testing may be advanced to pilot scale demonstrations that could be run in conjunction with the current field demonstration. Identified advanced technologies have the potential to significantly enhance downstream processing performance while reducing operating costs.

Permitting

Peninsula continued to progress permitting enhancements and modifications in advance of the restart of operations.

The application for an expanded list of oxidants, including hydrogen peroxide presently being used in the field demonstration, has progressed through the Wyoming Department of Environmental Quality (WDEQ) process and a draft permit revision is expected to be published for public comment shortly.

A permit amendment requesting authorisation for the use of ponds for the purpose of fine solids management, as trialed in the field demonstration, is in the process of being drafted for submission.

CORPORATE

Sales and Marketing

Peninsula sold a total of 200,000 pounds of U_3O_8 pursuant to long-term contracts during the quarter, at a realised average cash price of US\$50.35 per pound. The deliveries were completed using uranium purchased in the market, generating a net cash margin of US\$3.5 million which was realised in October 2021, following the current reporting period.

At 30 September 2021, the Company holds a portfolio of uranium concentrate sale agreements with major utilities for up to 5.05 million pounds U_3O_8 , at average pricing of US \$51 to \$53 per pound with 3.7 million pounds of firmly committed sales and up to 1.35 million pounds of sales optional at the election of the customers.

30 September 2021 Summary of Sale Agreements Over the Next Five Years ⁽¹⁾ :	
Calendar Year	Pounds U ₃ O ₈
2021 (remaining)	50,000
2022	450,000
2023	650,000
2024	850,000
2025	850,000

(1) This disclosure includes both pounds of U₃O₈ committed under sale agreements and optional at the election of customers.

Of the committed U₃O₈ sales, 0.7 million pounds can be satisfied with market sourced material (“**open origin**”) in the next three years, with the balance to be supplied from Company produced uranium.

At 30 September 2021, the Company has an inventory of 0.31 million pounds U₃O₈ held in converter accounts and a portfolio of U₃O₈ uranium concentrate purchase commitments totalling 0.5 million-pounds.

Purchased uranium will be received in allotments during the coming quarters which align closely with the timing of deliveries to customers. The agreed purchase pricing is fixed and payment terms for the purchased uranium is also aligned closely with the receipt of proceeds from the sales.

30 September 2021 – Summary of Purchase Agreements:	
Calendar Year	Pounds U ₃ O ₈
2021	50,000
2022	450,000

The portfolio of uranium concentrate sale and purchase agreements have secured a forecast net cash margin of US\$7 million to US\$8 million on uranium sales in CY2021 (all in the second half including the US\$3.5 million received in early July and the additional US\$3.5 million received in early October) and US\$8 million to US\$9 million on uranium sales in CY2022. The forecast net cash margin is based on the difference between the fixed purchase price and the likely sales price based on customer agreements.

In the December 2021 quarter, the Company has scheduled open origin committed sales of 50,000 pounds of U₃O₈ pursuant to long-term contracts, which will be sourced from its existing portfolio of binding purchase agreements.

Uranium Inventory

At 30 September 2021 Peninsula has 310,000 pounds of uranium held in converter accounts which is unchanged from 30 June 2021.

The total market value of this uranium at 30 September 2021 is US\$13.1 million (US\$42.20 per pound U₃O₈).

Strategic Uranium Reserve

The transition to the Biden Administration in 2021 and consequential changes to the leadership at the US Department of Energy (“DOE”), has slowed implementation of the US\$75 million Uranium Reserve established by Congress in 2020.

In August 2021, the DOE published a request for information for the Uranium Reserve and the Company appreciates the opportunity to participate in this valuable initiative. After quarter end, the Company

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submitted its response and expects the DOE to announce further details of its plan for the US Uranium Reserve by the end of the year.

Ultimately, the Uranium Reserve is expected to be implemented through DOE issuing requests for proposals, which will provide US uranium production projects, including the Lance Project, with the opportunity to bid for new uranium sales contracts.

OTCQB Venture Market

Trading of Peninsula ordinary shares in the US OTC Markets under the ticker “PENMF” was upgraded to the OTCQB Venture Market on February 17, 2021. The Company sought the upgrade to the OTCQB Market in response to increased US and Canadian investor interest in the Company.

The Company is pleased to report that shareholdings from US and Canadian based investors at 30 September 2021 have increased to account for 19.3% of the total shares on issue, representing a significant increase from the level at 30 November 2020 which only accounted for 2.4% of the total shares on issue.

The OTCQB Venture Market is a transparent trading platform that offers a cost-effective method for North American investors to access Peninsula’s securities. Investors can find Real-Time quotes (denominated in US dollars) and market information for Peninsula shares at www.otcm Markets.com/stock/PENMF/quote along with current company news. Peninsula’s securities have continued to be listed and traded on the ASX.

Whilst not as marked, the Company has also seen an increased interest from European-based investors in acquiring Peninsula shares. With increased US and European share ownership, there has been a corresponding reduction in shareholding from Australian-based investors from 53.2% of total shares on issue at 30 November 2020 to 26.8% of the total shares on issue at 30 September 2021.

Withdrawal from Karoo Projects

Rehabilitation activities continued at the Riet Kuil trial mining site, with the back filling of the historical trial mining area completed at the end of the quarter.

In August 2021, the Company received the Water Use License from the Department of Water and Sanitation for the planned remedial activities at Ryst Kuil. The South African National Nuclear Regulator had already approved this rehabilitation plan and the Company commenced these rehabilitation activities after the end of the quarter.

The Company continues to progress the sale of the remaining freehold farmland previously held in the Karoo Basin, with proceeds still expected to be sufficient to cover remaining rehabilitation costs.

Resignation of Non-Executive Director

After the quarter, on 13 October 2021, Mr David Coyne resigned from his role as Non-Executive Director to focus on other business interests.

David served as a Non-Executive Director of Peninsula since July 2020, prior to which he held a number of executive positions with the Company since 2013, including Finance Director, Chief Financial Officer and Joint Company Secretary.

The Board has commenced the process of seeking a Non-Executive Director to join the Peninsula Board.

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Cash Position

The Company's available cash at the end of the quarter was **US\$7.4 million**, excluding the US\$3.5 million net cash margin from the sale of 200,000 pounds of U₃O₈ received in early October.

The Company has disclosed US\$0.247 million in payments to related parties and their associates for the September 2021 quarter in Item 1.2(a) of the Appendix 5B. These amounts relate to payments made under the Managing Director/Chief Executive Officer employment agreement, including annual short term incentive cash payments, and Non-Executive Director fees as described within the audited Remuneration Report section of the Company's most recently published 2021 Annual Report.

The Company has disclosed US\$0.028 million in exploration and evaluation payments for the September 2021 quarter in Item 1.2(a) of the Appendix 5B. This expenditure relates to miscellaneous activities at the Karoo Project in South Africa that the Company is in the process of exiting.

FOR FURTHER INFORMATION, PLEASE CONTACT:

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This release has been approved by the Board.

ABOUT PENINSULA ENERGY LIMITED

Peninsula Energy Limited (PEN) is an ASX listed uranium mining company which commenced in-situ recovery operations in 2015 at its 100% owned Lance Projects in Wyoming, USA. Following a positive feasibility study, Peninsula is embarking on a project transformation initiative at the Lance Projects to change from an alkaline ISR operation to a low pH ISR operation with the aim of aligning the operating performance and cost profile of the project with industry leading global uranium production projects.

Lance Projects Classified JORC-Compliant Resource Estimate (U₃O₈) as at 31 December 2020

Resource Classification	Tonnes Ore (M)	U ₃ O ₈ kg (M)	U ₃ O ₈ lbs (M)	Grade (ppm U ₃ O ₈)	Location
Measured	3.4	1.7	3.7	489	Wyoming, USA
Indicated	11.1	5.5	12.1	496	Wyoming, USA
Inferred	36.2	17.2	37.8	474	Wyoming, USA
Total	50.7	24.4	53.6	480	

JORC Table 1 included in an announcement to the ASX released on 14 November 2018: “Revised Lance Projects Resource Tables”. Peninsula confirms that it is not aware of any new information or data that materially affects the information included in this announcement and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original market announcement.

Competent Persons Statement

The information in this report that relates to Exploration Results, Mineral Resources or Ore Reserves at the Lance Projects is based on information compiled by Mr Benjamin Schiffer. Mr Schiffer is a Registered Professional Member of the Society of Mining, Metallurgy and Exploration (Member ID #04170811). Mr Schiffer is a professional geologist employed by independent consultant WWC Engineering. Mr Schiffer has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking as a Competent Person as defined in the 2012 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’.

SCHEDULE OF INTERESTS IN MINING TENEMENTS AT 30 SEPTEMBER 2021

Lance Projects, Wyoming, USA

Location / Project Name	Tenement	Percentage
Private Land (FEE) – Surface Access Agreement	Approx. 2,397 acres	100%
Private Land (FEE) – Mineral Rights	Approx. 10,361 acres	100%
Federal Mining Claims – Mineral Rights	Approx. 13,445 acres	100%
Federal – Surface Access – Grazing Lease	Approx. 40 acres	100%
State Leases – Mineral Rights	Approx. 11,544 acres	100%
State Leases – Surface Access	Approx. 314 acres	100%
Strata Owned – Surface Access	Approx. 315 acres	100%

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Karoo Projects, South Africa

Permit Number/ Name	Holding Entity	Initial Rights Date	Renewed/ Signed/ Validity (e.g. Valid, Under PR Application, Under Mining Right Application, Closure Submitted/Issued)	Area (km ²)	Current Expiry	Commodity Group	Original PR Status
WC 10085 MR	Tasman Lukisa JV	TBD	Mining Right Application	689	TBD	U, Mo	In Progress*
EC 10029 MR	Tasman Lukisa JV	TBD	Mining Right Application	345	TBD	U, Mo	In Progress*
WC 10248 PR	Beaufort West Minerals	TBD	Prospecting Right Application	509	TBD	U, Mo	In Progress*
WC 10249 PR	Beaufort West Minerals	TBD	Prospecting Right Application	298	TBD	U, Mo	In Progress*
WC 10250 PR	Beaufort West Minerals	TBD	Prospecting Right Application	570	TBD	U, Mo	In Progress*
WC 10251 PR	Beaufort West Minerals	TBD	Prospecting Right Application	347	TBD	U, Mo	In Progress*
EC 07 PR	Tasman Lukisa JV	14/11/2006	Under MR Application – Environmental Closure Application Submitted	48	10/06/2015	U, Mo	Expired
EC 08 PR	Tasman Lukisa JV	14/11/2006	Under MR Application - Environmental Closure Application Submitted	47	10/06/2015	U, Mo	Expired
EC 12 PR	Tasman Lukisa JV	14/11/2006	Under MR Application - Environmental Closure Application Submitted	36	10/06/2015	U, Mo	Expired
EC 13 PR	Tasman Lukisa JV	14/11/2006	Under MR Application - Environmental Closure Application Submitted	69	10/06/2015	U, Mo	Expired
WC 25 PR	Tasman Lukisa JV	17/10/2007	Rehabilitation Planned	7	12/11/2014	U, Mo	Expired
WC 33 PR	Tasman Lukisa JV	01/12/2006	Under MR Application	68	04/07/2016	U, Mo	Expired
WC 34 PR	Tasman Lukisa JV	01/12/2006	Under MR Application - Environmental Closure Application Submitted	34	01/08/2015	U, Mo	Expired
WC 35 PR	Tasman Lukisa JV	01/12/2006	Under MR Application - Environmental Closure Application Submitted	69	01/08/2015	U, Mo	Expired
WC 47 PR	Tasman Lukisa JV	04/09/2008	Under MR Application - Environmental Closure Application Submitted	36	04/07/2015	U, Mo	Expired
WC 59 PR	Tasman Lukisa JV	01/12/2006	Under MR Application - Environmental Closure Application Submitted	40	01/08/2015	U, Mo	Expired
WC 60 PR	Tasman Lukisa JV	01/12/2006	Under MR Application - Environmental Closure Application Submitted	56	01/08/2015	U, Mo	Expired
WC 61 PR	Tasman Lukisa JV	01/12/2006	Under MR Application - Environmental Closure Application Submitted	69	01/08/2015	U, Mo	Expired
WC 127 PR	Tasman Lukisa JV	30/11/2006	Under MR Application - Environmental Closure Application Submitted	59	10/12/2017	U, Mo	Expired

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WC 137 PR	Tasman Lukisa JV	30/11/2006	Under MR Application - Environmental Closure Application Submitted	73	04/07/2016	U, Mo	Expired
WC 156 PR	Tasman Lukisa JV	30/11/2006	Under MR Application - Environmental Closure Application Submitted	69	04/07/2014	U, Mo	Expired
WC 158 PR	Tasman Lukisa JV	23/01/2007	Under MR Application - Environmental Closure Application Submitted	57	12/11/2014	U, Mo	Expired
WC 167 PR	Tasman Lukisa JV	30/11/2006	Under MR Application - Environmental Closure Application Submitted	21	12/11/2015	U, Mo	Expired
WC 95 PR	Tasman-Lukisa JV	17/04/2007	Closure Submitted	5	23/03/2013	U, Mo	Expired
WC 152 PR	Tasman-Lukisa JV	01/12/2006	Rehabilitation in Progress	189	04/07/2016	U, Mo	Expired
WC 187 PR	Tasman Lukisa JV	01/12/2006	Closure Submitted	24	01/08/2014	U, Mo	Expired
WC 168 PR	Tasman Pacific Minerals	13/12/2006	Closure Submitted	332	05/05/2014	U, Mo	Expired
WC 170 PR	Tasman Pacific Minerals	13/12/2006	Closure Submitted	108	05/05/2014	U, Mo	Expired
NC 330 PR	Tasman Pacific Minerals	08/06/2007	Closure Submitted	481	19/04/2019	U, Mo	Relinquished
NC 331 PR	Tasman Pacific Minerals	08/06/2007	Closure Submitted	205	17/11/2018	U, Mo	Relinquished
NC 347 PR	Tasman Pacific Minerals	08/06/2007	Closure Submitted	634	17/11/2018	U, Mo	Relinquished
EC 28 PR	Tasman Pacific Minerals	15/11/2006	Closure Submitted	225	26/03/2015	U, Mo	Expired

Note: * JV Partner consent requested to withdraw application