

# **Quarterly Report**

31 March 2020

#### Registered Office:

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## Summary

## Steam Engine Gold Deposit – evaluation studies (Greenvale)

- A series of studies commenced to determine the potential for nearterm development of the Mineral Resource.
- A revised Mineral Resource estimate will be published shortly.

#### Nicholson Project - drill results from 2019 program

- Nicholson Project's base metal potential upgraded following recent drilling program.
- Four diamond core holes, totalling 3,175m, drilled at three of eight targets; drilling at other targets pending.
- Drilling confirmed presence of SEDEX-style mineralisation system at Nicholson West, contained within a thick (up to 340m) Mount Les Siltstone rock unit.
- Earn-in and Joint Venture Agreement with South32 terminated.

#### Bottletree (Greenvale)

- IP chargeability anomaly 1.4kms in length and open to the north, south and at depth.
- Planning for drilling program targeting a large copper target at depth.
- Land access preparations underway.

### Big Mag (Greenvale)

- Regionally large and intense magnetic anomaly with potential for magmatic nickel-copper sulphide mineralisation.
- Initial exploration program planning and land access preparations underway.

#### Wyandotte (Greenvale)

- The Wyandotte Prospect is a shallow zone of high-grade copper mineralisation, which is potentially associated with a deeper intrusionrelated or porphyry system.
- A technical study of the existing data was commenced during the Quarter in order to establish an exploration target to determine whether potential exists for expansion of the copper mineralisation.
- The results of this study will be published shortly.

#### **Superior Resources Limited**

#### ASX:SPQ

#### Roard

Carlos Fernicola – Chairman Peter Hwang – Managing Director Simon Pooley – Non-Exec Director Carlos Fernicola – Company Secretary

#### **Securities**

Ordinary Shares – 745,418,740 Top 20 holders: 47.93% issued capital

#### **Summary**

Superior Resources Limited is a Brisbane based ASX-listed mineral explorer with a portfolio of large base metal exploration projects, including a developing portfolio of nickelcobalt projects in northern Queensland. The projects include large targets for Mount Isa style copper and lead-zinc-silver deposits in north western Queensland and exploration projects in northeast Queensland for VMS and porphyry copper-gold-lead-zinc-silver deposits. The Company's cobalt projects are located across the northern Queensland region.

### **Share Registry**

Link Market Services Level 15, 324 Queens Street Brisbane, QLD, 4000

#### **Web Site**

www.superiorresources.com.au

#### Contact

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#### **PROJECT LOCATIONS**



## STEAM ENGINE GOLD DEPOSIT (GREENVALE PROJECT)

A series of technical studies to assess the potential for a near-term mining and toll treatment operation at the Steam Engine Gold Deposit were progressed through the Quarter. This program commenced with a reassessment of the initial Mineral Resource estimate released during 2017 and will be followed up with an accelerated Scoping Study.

A revised Mineral Resource estimate will be published shortly.

In addition, planning of a reverse-circulation (RC) and diamond core drilling program to upgrade and expand the Mineral Resource has commenced.

Steam Engine's current Inferred Mineral Resource estimate is 1.0Mt @ 2.5g/t gold (1.0 g/t cut-off) for a total of 85,000 ounces gold (refer to ASX announcement, dated 19 October 2017 for details relating to the Steam Engine mineral resource estimate).

The gold lodes are developed in a series of shear zones with a total strike extension of at least 2.5 kilometres at surface (Figure 1). The Mineral Resource estimate is based only on 400 metres of the Steam Engine Lode.



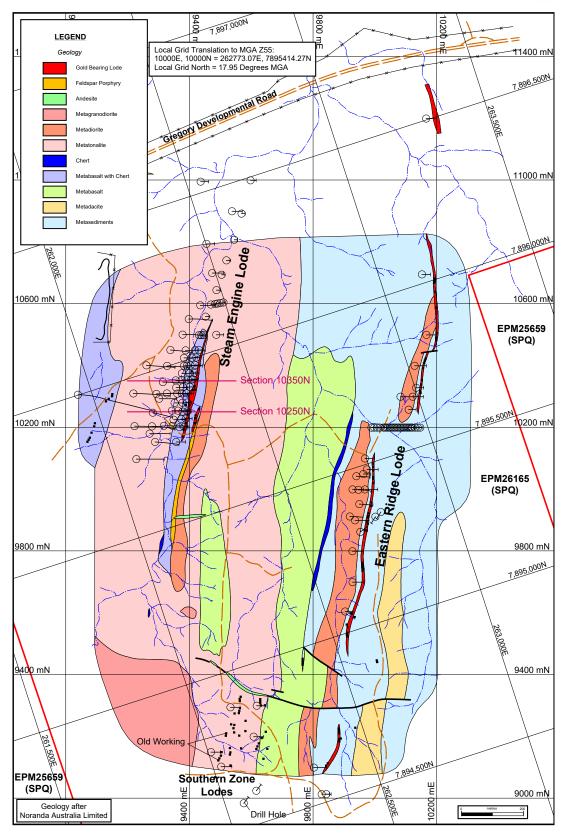


Figure 1. Steam Engine Gold Deposit – Interpreted geology showing known gold bearing lodes at surface and drill holes.



#### **NICHOLSON PROJECT**

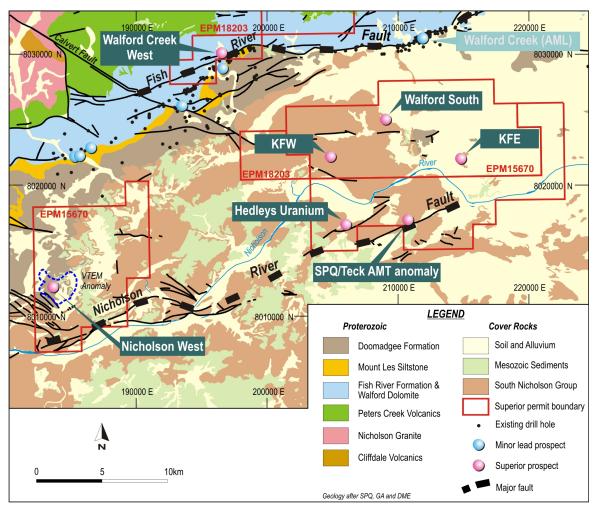


Figure 2. Nicholson Project tenements and key prospect locations overlain on regional geology.

Final assay results were received for core samples taken from the 2019 drilling program, which was funded by earn-in party, South 32, under an Earn-in and Joint Venture Agreement (Agreement).

Due to access difficulties and restricted time prior to the end of the 2019 field season, only three of up to eight high priority targets were drilled. Drilling of the highest priority targets remains to be conducted.

The drilling program represents the first program in the region designed to systematically test for the presence of large SEDEX (McArthur River style) base metal deposits. The program was planned to target up to eight large geophysical conductivity targets (refer Figures 2 and 3 and Table 1).

Analysis of all data obtained from the drilling program has upgraded the base metal potential of the Nicholson Project.

South32 withdrew from the Agreement on 4 March 2020.

A summary of the drilling results follows.



#### NICHOLSON DRILLING SUMMARY1:

- Stage 1 drilling program under the Hedleys Joint Venture between South32 and Superior Resources Limited commenced on 23 July 2019, targeting up to eight large (Tier-1 size potential) geophysical conductivity anomalies having potential to be caused by large SEDEX (McArthur River style) base metal deposits (Figure 3).
- Four diamond core holes, totalling 3,175.7m (of a planned eleven hole program), drilled at three of the targets were completed by late October 2019 (the end of the 2019 field season).
- Initial drilling at five high priority targets yet to be completed.
- Recently received assay results from selective drill intercepts confirms mineralisation visually observed within the core and enables the commencement of an interpretative review of all data sets. This review is incomplete, but ongoing.
- Drilling confirmed the presence of a SEDEX mineralisation system at Nicholson West, which is developed within a thick (up to 340m) Mount Les Siltstone rock unit.
- Drilling to date has been focussed on the Nicholson West target area (including Nicholson River target).
- Nicholson West target area:
  - two drill holes at Nicholson West (NWDD001 and NWDD002) intersected multiple thin horizons of visible stratiform sulphide mineralisation, including pyrite and sphalerite (zinc sulphide) within thick Mount Les Siltstone;
  - encouraging levels of zinc and lead mineralisation were returned within interpreted outer edges of a SEDEX system, indicating that a main body of mineralisation may be developed closer to the potential mineralising feeder structure located about 3 kilometres to the south at the Nicholson River Fault Zone.
  - anomalous lead and zinc values of up to 1840 ppm are scattered but concentrated near the top and base of the Mount Les Siltstone, which is consistent with the visually observed multiple thin bands of visible mineralisation in the core; and
  - considered to represent the outer zones of a potentially mineralised apron of a large SEDEX system (Figure 4).

#### Nicholson River target:

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- large, high order conductivity anomaly located 3.5 kms south of the Nicholson West drill holes and within the Nicholson River Fault Zone (NRFZ) (the first of several highest priority targets planned to be drilled);
- the NRFZ is considered to be the likely major fault conduit and the potential source of mineralised fluids for the deposition of zinc-lead-silver SEDEX ore deposits within the area between the NRFZ and the Nicholson West drill holes;
- current analysis of drill hole NWDD003 (which targeted the Nicholson River anomaly) together with geophysical data indicates that the anomaly was not intersected as a result of:
  - NWDD003 drilled at a -55<sup>o</sup> angle due to difficulties accessing the location for a vertical hole; and

<sup>&</sup>lt;sup>1</sup> Refer to ASX announcement, dated 6 March 2020 for more comprehensive information regarding exploration results.



- probable incorrect anomaly depth estimates produced from the Aarhus geophysical modelling at this location.
- \$1.7 million has been spent to date. Due to the difficult terrain and remoteness of the project, together with the substantial initial infrastructure establishment costs, the permetre drilling costs have been high.
- Fortunately, future drilling costs will be substantially lower.

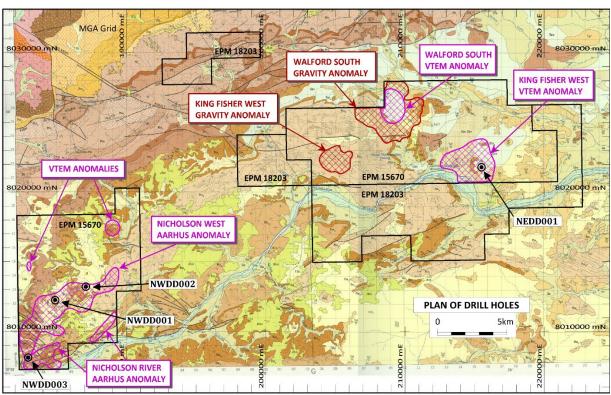


Figure 3. Plan of key Nicholson Project targets, showing 2019 drill hole locations (NWDD001, NWDD002 and NEDD001).

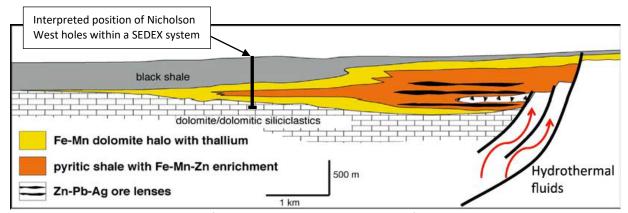


Figure 4. Schematic cross section of a typical northern Australian stratiform zinc-lead-silver deposit showing multiple ore lens horizons at or near the source of hydrothermal mineralising fluids and an apron of diminishing stratiform sulphide mineralisation away from the fluid source zone (Large et al., 2005). The interpreted position of the Nicholson West holes (NWDD001 and NWDD002) relative to the schematic representation of a SEDEX deposit system is also shown.



Table 1. Nicholson Project – Initial Drilling Program summary

| Target (approximate size)      | Drill Hole<br>reference              | Assays<br>Received | Preliminary Comments  |  |  |
|--------------------------------|--------------------------------------|--------------------|---|--|--|
| Nieboleen West                 | NWDD001<br>(vertical hole)           | Yes                | Intersected thick Mount Les Siltstone.  Multiple thin horizons of visible stratiform sulphide mineralisation within the Mount Les Siltstone.  |  |  |
| Nicholson West<br>(10 km²)     | NWDD002<br>(vertical hole)           | Yes                | Possible outer apron of a more substantial zone of mineralisation. Any more substantial mineralisation potentially located closer to the Nicholson River (Nicholson River Fault Zone).                      |  |  |
|                                | NWDD003<br>(-55º angle hole)         | Yes                | Highest priority hole.  Adjacent to Nicholson River Fault Zone.  Conductivity anomaly not visually explained in the core – target not intersected. Geophysical review and vertical follow-up hole required. |  |  |
| Nicholson West<br>(River)      | Proposed Hole 2<br>(Not yet drilled) | N/A                | Highest priority hole.  Adjacent to Nicholson River Fault Zone.   |  |  |
|                                | Proposed Hole 3<br>(Not yet drilled) | N/A                | High priority hole.  Adjacent to Nicholson River Fault Zone.  |  |  |
|                                | Proposed Hole 4<br>(Not yet drilled) | N/A                | High priority hole.  Adjacent to Nicholson River Fault Zone.  |  |  |
| Hedleys South<br>(15 km2)      | Proposed Hole 1<br>(Not yet drilled) | N/A                | Highest priority hole   |  |  |
| Teck/SPQ<br>AMT Target         | Proposed Hole 1<br>(Not yet drilled) | N/A                | High priority hole  |  |  |
| Kingfisher East<br>(15 km²)    | NEDD001<br>(vertical hole)           | Yes                | Intersected thick Mount Les Siltstone.  Multiple thin horizons of visible stratiform sulphide mineralisation within the Mount Les Siltstone.  |  |  |
| Nicholson West<br>(North West) | Proposed Hole 1<br>(Not yet drilled) | N/A                | High priority hole  |  |  |
| Nicholson West<br>(North East) | Proposed Hole 1<br>(Not yet drilled) | N/A                | High priority hole  |  |  |



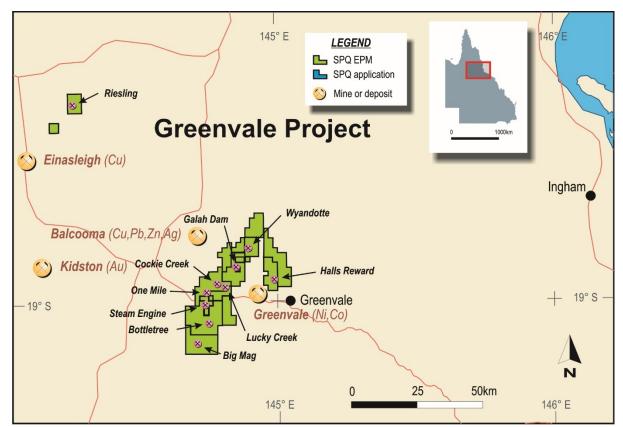


Figure 5. Map of the area north west of Townsville showing Superior's Greenvale Project tenements and the Bottletree Prospect location.

## **BOTTLETREE (GREENVALE PROJECT)**

#### **Summary**

- Desktop analysis of data and planning continued during the Quarter.
- IP chargeability anomaly 1.4kms in length and open to the north, south and at depth.
- August 2018 drilling confirmed<sup>2</sup>:
  - o high grade copper mineralisation intersected in hole SBTRD006 of **18.7m @ 1.12% copper** (**328.0m to 346.7m**); and
  - a broad zone of copper mineralisation intersected in hole SBTRD006 totalling 292m @
     0.22% copper (148.0m to 440.0m).
- Planning for 2020 drilling program targeting a large copper target at depth and to the immediate south of 2018 diamond drilling.

Planning continued for a Phase 2 diamond drilling program targeting a large IP chargeability anomaly to be conducted during the 2020 field season, subject to funding. Preparatory work focussed on obtaining landholder access agreements.

Drilling during 2018 intersected extensive copper mineralisation averaging 0.22% copper over 292m, including 18.7m at 1.12% copper.

The geophysical modelling results together with the 2018 drill hole assay data indicate that higher

<sup>&</sup>lt;sup>2</sup> Refer to ASX announcement, dated 25 October 2018 for more comprehensive information regarding drilling results.



grade copper mineralisation may exist within the main chargeable target zone, which is located to the south of the 2018 drilling and also at deeper levels.

A second phase diamond drilling program is currently envisaged to comprise up to four diamond core holes (Figure 6).

#### **Bottletree - Background**

Bottletree is a large (2km x 1km) soil copper anomaly located in the southern part of the Greenvale Project (Figure 5). Coincident with the soil anomaly is a large and high order chargeability anomaly.

A two-hole diamond drilling program totalling 1,102 metres was completed during August 2018. This drilling followed up earlier shallow reverse-circulation (**RC**) drilling and confirmed extensive copper mineralisation extending to depths in excess of 300 metres.

The objective of the diamond drilling program was to determine whether large and high order chargeability anomalies identified from a MIMDAS IP geophysical survey completed in May 2018 (ASX Announcement - 16 May 2018) are caused by significant copper and gold mineralisation.

The deep drilling program represents the first deep drilling to have been undertaken at Bottletree.

Assay results show copper mineralisation present in SBTRD006 over a broad interval<sup>3</sup>:

- Average grade: **292m @ 0.22% Cu (148.0m to 440.0m)** (Cut-off of 0.1% Cu but with some narrow intervals of less than 0.1% Cu included); and
- High grade zones, including: 18.7m @ 1.12% Cu (328.0m to 346.7m).

Advanced 3D modelling of the MIMDAS survey results indicate a close correlation between the copper grades and chargeability.

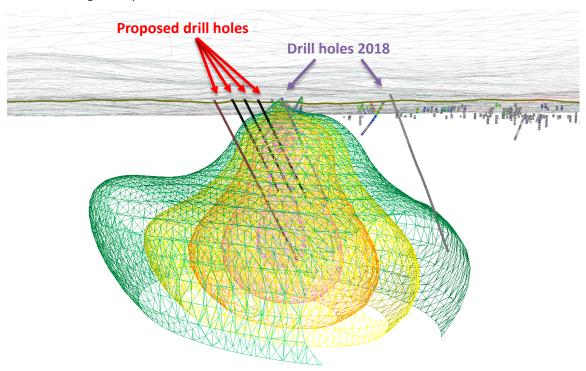


Figure 6. 3D modelling of Bottletree MIMDAS IP survey results presented in wireframe, showing locations of 2018 drill holes and proposed Phase 2 drill holes.

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<sup>&</sup>lt;sup>3</sup> Refer to ASX announcement, dated 25 October 2018 for more comprehensive information regarding drilling results.



## **BIG MAG (GREENVALE PROJECT)**

Desktop data review, land access preparations and initial exploration program planning continued during the Quarter on the Big Mag Prospect.

Big Mag is a regionally large and intense magnetic feature that appears to be a large mafic or ultramafic intrusion, or several such intrusions. Consequently, it has the potential to host nickel-cobalt-copper mineralisation, either as sulphides or in a laterite weathering profile. The Company is of the view that the Big Mag feature is developed within the same geological sequence as the "old" Greenvale Nickel Mine" (now part of the SCONI Project).

The Big Mag magnetic feature is regionally significant and under-explored and is covered by a recently granted exploration permit (EPM26751, Twelve Mile Creek) (Figure 7).

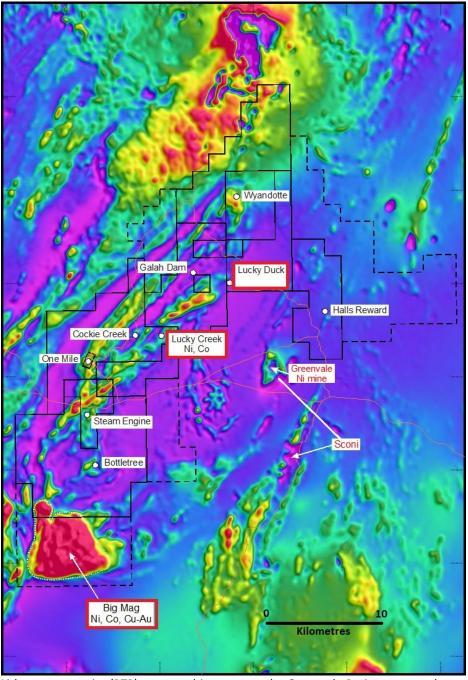


Figure 7. Airborne magnetics (RTP) processed image over the Greenvale Project area and surrounds. The "Big Mag" magnetic feature is visible in the lower left part of the image.



## **WYANDOTTE (GREENVALE PROJECT)**

The Wyandotte Prospect is a shallow zone of high-grade copper mineralisation, which is potentially associated with a deeper intrusion-related or porphyry system.

Historic drilling has targeted the copper mineralisation. However, there has been insufficient drilling to estimate a reportable Mineral Resource.

A technical study of the existing data was commenced during the Quarter in order to establish an exploration target to determine whether potential exists for expansion of the copper mineralisation.

The results of this study will be published shortly.

#### **CORPORATE and COMMERCIAL**

#### **INVESTMENTS**

Superior maintains an exposure in relation to ASX listed entities, Deep Yellow Limited (ASX:DYL) and Carnaby Resources Limited (ASX:CNB).

As at 31 March 2020, the Company held 74,244 DYL shares with a closing value of \$15,591.24.

As at 31 March 2020, the Company held 2,403,846 CNB shares with a closing value of \$84,134.61.

## **ASX Listing Rule 5.3.3**

Appendix 1 sets out information that is required under ASX Listing Rule 5.3.3 (for exploration entities).

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Further Information:

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**Reporting of Exploration Results:** The Exploration Results and interpretations contained in this report that relate to the Steam Engine Gold Deposit, Nicholson Project and Bottletree Prospect reflect information that has been reported in ASX market announcements as noted within this report. The Company confirms that it is not aware of any new information that materially affects the information included in the relevant original market announcements.

The Steam Engine JORC 2012 Mineral Resource Estimate (MRE) was first announced on the ASX Market Announcements Platform in "Maiden JORC Inferred Mineral Resource Estimate, Steam Engine Deposit (Steam Engine Lode)" on 19 October 2017 (Announcement). The Company confirms that it is not aware of any new information that materially affects the information provided in the Announcement. All material assumptions and technical parameters on which the MRE is based continue to apply and have not materially changed.

Other information in this report that comprises Exploration Results is based on information evaluated by Mr Peter Hwang, an executive director and shareholder of Superior Resources Limited and a Member of the Australian Institute of Geoscientists. Mr Hwang has sufficient experience which is relevant to this style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as a Competent Person under the 2012 edition of the "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Hwang consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

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## **Appendix 1**

## **DISCLOSURES REQUIRED UNDER ASX LISTING RULE 5.3.3**

## • Mining tenements held at the end of the quarter and their location

| State | Tenement Name     | Tenement ID | Location  | Interest | Holder | Comments |
|-------|-------------------|-------------|-----------|----------|--------|----------|
| QLD   | Hedleys 2         | EPM15670    | Nicholson | 100%     | SPQ    | Granted  |
| QLD   | Hedleys South     | EPM18203    | Nicholson | 100%     | SPQ    | Granted  |
| QLD   | Tots Creek        | EPM19097    | Victor    | 100%     | SPQ    | Granted  |
| QLD   | Scrubby Creek     | EPM19214    | Victor    | 100%     | SPQ    | Granted  |
| QLD   | Cockie Creek      | EPM18987    | Greenvale | 100%     | SPQ    | Granted  |
| QLD   | Cassidy Creek     | EPM19247    | Greenvale | 100%     | SPQ    | Granted  |
| QLD   | Dinner Creek      | EPM25659    | Greenvale | 100%     | SPQ    | Granted  |
| QLD   | Wyandotte         | EPM25691    | Greenvale | 100%     | SPQ    | Granted  |
| QLD   | Tomahawk Creek    | EPM25264    | Victor    | 100%     | SPQ    | Granted  |
| QLD   | Cockie South      | EPM26165    | Greenvale | 100%     | SPQ    | Granted  |
| QLD   | Victor Extended   | EPM26720    | Victor    | 100%     | SPQ    | Granted  |
| QLD   | Twelve Mile Creek | EPM26751    | Greenvale | 100%     | SPQ    | Granted  |

## • Mining tenements acquired and disposed of during the end of the quarter and their location

| State | Tenement Name | Tenement ID | Location | Interest | Holder | Comments    |
|-------|---------------|-------------|----------|----------|--------|-------------|
| QLD   | Harris Creek  | EPM18840    | Victor   | 100%     | SPQ    | surrendered |

## . Beneficial percentage interests held in farm-in or farm-out agreements at end of the quarter

| State | Project Name | Agreement<br>Type | Parties | Interest held at end of<br>quarter by exploration<br>entity or child entity | Comments |
|-------|--------------|-------------------|---------|---|----------|
|       |              |                   |         |   |          |

Abbreviations:

EPM Exploration Permit for Minerals, Queensland

SPQ Superior Resources Limited