

# QUARTERLY ACTIVITIES REVIEW FOR THE PERIOD ENDING 31 DECEMBER 2016

#### Talga Resources Ltd ABN 32 138 405 419

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#### **Corporate Information**

ASX Codes **TLG**, **TLGOA**Shares on issue **181.9m**Options (listed) **44.9m**Options (unlisted) **26.7m** 

## Company Directors Keith Coughlan

Non-Executive Chairman

#### Mark Thompson Managing Director

**Grant Mooney**Non-Executive Director

#### Stephen Lowe Non-Executive Director

#### **OVERVIEW**

Australian technology minerals company, Talga Resources Ltd (ASX: TLG) ("Talga" or "the Company") is pleased to report its activities for the quarter ending 31 December 2016. Highlights included:

#### **COMMERCIAL DEVELOPMENT**

- Positive lithium-ion battery test results at UK research institution Warwick University, deliver industry standard battery anode performance using Talga graphite material but without requiring energy intensive milling or shaping steps; - triggers scale-up test work with graphite and graphene formulations.
- Indian Institute of Technology study shows Talga graphene nitrite sensor achieves a 10-fold increase in sensitivity for air and water pollution analysis but manufactured with simpler, more eco-friendly production process.
- Ongoing and new dialogues entered into with global industry and academic partners to test Talga raw materials as well as newly developed valueadded products and prototypes.

#### MINING AND EXPLORATION

- Trial graphite mining program in Sweden successfully completed with new contractors, equipment and efficiencies. German pilot facility well supplied with graphite feed material and critical data collected for future mine planning.
- Successful Swedish graphite drilling program completed with outstanding high grade graphite assays including zones exceeding 40% graphitic carbon. Results to drive updated Vittangi project resource estimate in next quarter.
- A wildcat hole drilled at the Jalkunen project intersected a broad zone of copper-cobalt-gold mineralisation in addition to graphite. Alteration style supports follow-up exploration across range of permits.
- Consultation and pre-planning processes underway with Swedish regulators and stakeholders regarding future mine options.

#### **CORPORATE & MARKETING**

- Talga presentations delivered by Company's Perth and European-based managers at a range of national and international industry and investor events.
- Renewed media attention on Talga as achievements in product, processing and operational developments continue to gather momentum.



#### **COMMERCIAL DEVELOPMENT**

#### Lithium Ion Battery Program

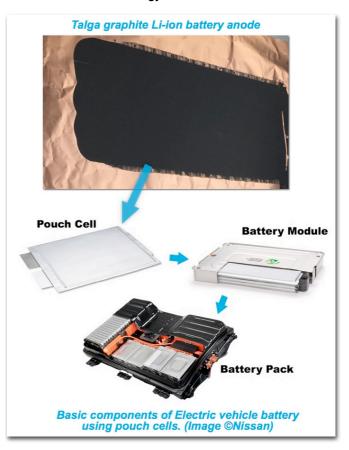
During the quarter, Talga provided an update on testing of its graphite in lithium-ion ("Li-ion") batteries at the Warwick Manufacturing Group's ("WMG") Energy Innovation Centre, University of Warwick, UK.

Under the testing program, which followed smaller scale research undertaken at the University of Dresden in Germany, (see ASX: 17/02/16), graphite material produced at Talga's Rudolstadt pilot processing facility was used to create the anodes of full coin cell Li-ion batteries.

The battery cells were tested for at least 1,000 hours under standard conditions and performed well, with results similar to the previous test programs, with battery capacities in the range of 360mAh/g and coulombic efficiency >99.7%.

The results were in line with standard industry graphite anode performance, yet importantly, Talga's material did not require the energy intensive milling or shaping (grinding and spheronising) processes that adds financial and ecological costs to the production of Li-ion batteries. Further, the data supports Talga's north Swedish sourced graphite as being suitable for industry scale roll-to-roll fabrication of Li-ion anodes and larger pouch cell batteries.

**Figure 1.** Talga graphite making Li-ion battery anodes for tests at WMG's Energy Innovation Centre.



The results from this program have encouraged Talga to continue test work at increasing scale. A follow-up work program is underway with WMG, whereby new Talga aqueous anode formulations (inks) are being used in larger, pouch battery cells and also full coin cells matched with common industrial Li-ion battery cathodes, such as nickel manganese cobalt (NMC) and lithium iron phosphate (LFP).

In addition to graphite, this program is also testing water based, rather than toxic solvent based, graphene anode formulations. The Talga aqueous graphene based formulations will also be tested under roll-to-roll coating conditions which are suitable for commercial scale battery anode manufacture.

#### Talga Material in Graphene Based Sensor

Results from a collaborative scientific study undertaken by the Indian Institute of Technology and Talga (using Talga materials in a nitrite sensor application) were published in the October edition of the Royal Society of Chemistry Advances journal.

The study used graphene made from Talga's 99.7% purity graphite to construct a new form of sensor to detect nitrites, a widespread chemical of the natural and industrial world and major component of air and water pollution. The graphene-based sensor successfully improved sensitivity to nitrite by over 10x that of competing sensor materials. In addition, the use of graphene enabled a simpler more ecofriendly production process and lowered the amount of expensive active ingredients.

The published results support that Talga's base graphite and graphene products can be used in multiple applications within the multi-billion dollar global sensor market.

#### **Industry and Academic Partners**

Product development initiatives continued throughout the quarter with management initiating and continuing industry dialogues primarily in Europe. The presence of Talga's pilot testwork facility in Germany enables the Company to communicate with potential customers at an advanced level and provide test samples in a timely manner.

In addition to a range of commercial discussions which are now at various stages of maturity, Talga has made strong inroads into broadening the awareness of the Company's activities through a range of academic institutions in Europe. Many of these academic institutions provide advisory services to substantive industry leaders and in doing so actively demonstrate graphene and its derivatives as a viable additive to replace many of today's materials.

As part of the above, Talga has applied for a range of European funding opportunities as a single applicant and also as a member of industry-led consortia looking to secure future funding related to graphene research and its commercialisation.

#### MINING AND EXPLORATION

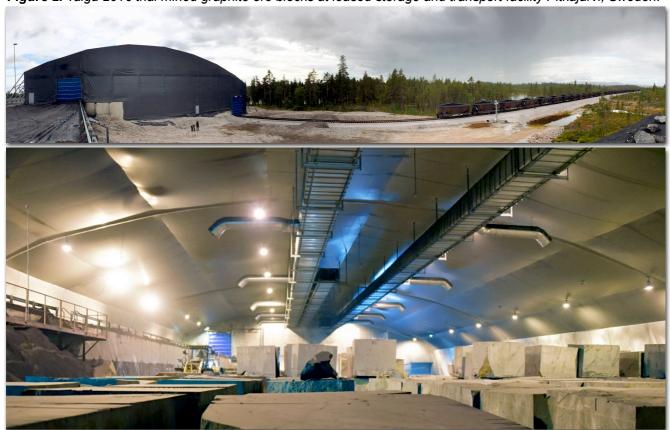
#### 2016 Graphite Trial Mining Program in north Sweden

During the quarter, Talga successfully completed, a trial mining program at the Company's 100% owned Vittangi graphite project in north Sweden. The program followed a similar but smaller exercise in 2015 and the balance of permitted ore extraction has now been reached at the project.

The 2016 trial mining campaign extended and deepened the 2015 open-pit site, cutting whole blocks of graphite ore from within the project area. Improved, larger-scale mining equipment performed very well, with average blocks weighing in at ~7 tonnes each. In total, approximately 5,000 tonnes has now been extracted over two trial mining campaigns at Vittangi.

As well as providing a large supply of feed material for pilot test work in Germany, the 2016 campaign gathered further critical data for planning larger scale mining in the future. The trial open pit has been backfilled and site rehabilitation was completed during the period. The graphite ore blocks are warehoused at a leased, covered storage facility in Sweden with integrated railway loading and direct rail or road access direct to greater Europe.

Figure 2. Talga 2016 trial mined graphite ore blocks at leased storage and transport facility Pitkäjärvi, Sweden.



#### North Sweden Drilling Results

Talga reported very high grades of graphite in the first assay results from the Company's October 2016 drilling program across several 100%-owned graphite projects located in north Sweden.

The assay results, many starting at shallow depth, recorded outstanding high grade graphite, including zones grading over 40% graphitic carbon ("Cg"). Some highlights of significant results included:

- 37.2m @ 32.7% Cg from 34.8m (NUN16005) including 10.7m @ 42.5% Cg from 55.2m
- 21.9m @ 30.7% Cg from 21.6m (NUN16003) including 4.3m @ 38.2%Cg from 34.3m
- 22.2m @ 29.2% Cg from 73.6m (NUN16006) including 6.7m @ 40.0% Cg from 89.2m
- 23.2m @ 26.0% Cg from 29.0m (NUN16011)
- 12.7m @ 28.8% Cg from 2.4m (NUN16012)

The very high graphite grades reported are extremely significant and rank amongst the highest recorded globally. Importantly, they significantly exceed the average grade of known graphite resources in the world as published in the Technology Metals Research ("TMR") Advanced Graphite Projects Index (which average ~10%Cg).

The results, together with the balance of drill holes received after the quarter (see ASX: 19/1/2017), are being used to estimate an upgraded graphite resource at Vittangi, and which is expected to be completed in the current period.

In addition to graphite, a single 'wildcat' diamond drillhole drilled on an electromagnetic conductor 40 kilometres away at the Company's Lautakoski prospect, intersected a broad zone of copper-cobalt-gold mineralisation in addition to graphite (see Fig 3).

Highest grade individual samples from LAU16001 include 0.7m @ 1.5% Cu, and 0.27g/t Au from 89.3m and 1.15m @ 565ppm Co from 95.5m (for full details see ASX:TLG 6 Dec, 2016).

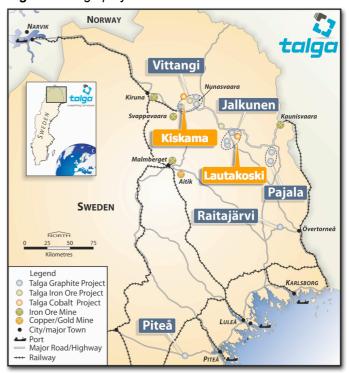
The assay results and interpreted "IOCG" alteration style encountered at the Lautakoski prospect (see Fig 4) are considered highly encouraging for this project to host a possible significant base, precious and technology metals deposit.

Development of all the deposits around the key Vittangi project is central to Talga's growth strategy, and maintains leverage to the fast growing Li-ion battery space where cobalt is a similarly vital ingredient alongside graphite.

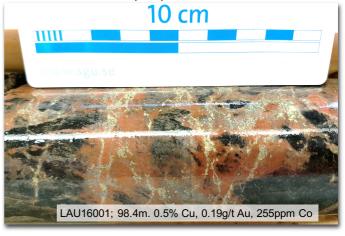
#### **Swedish Consultation and Engagement**

Talga maintains a full time geological management presence in Sweden, which, coupled with significant board and management time spent in Sweden/Europe during the trial mining program, has provided robust opportunities for local Swedish stakeholder

Figure 3. Talga project locations in Sweden.



**Figure 4.** Drillcore with interpreted IOCG style alteration, Lautakoski prospect.



engagement. Talga is fast becoming a European growth story with the majority of its staff, operations and largest shareholders now Europe based. This fact, together with the maturing of the Company's mine permitting process, has triggered a range of very successful consultation and pre planning processes that will be ongoing with Swedish decision makers and other stakeholders.

#### **CORPORATE & MARKETING**

During the quarter, Talga participated in a range of investor relations events, including presenting to Australian and international industry and investor symposiums. This schedule included, but was not limited to, presentations, meetings and interviews during the Finance News Network orchestrated 'ASX CEO Sessions' in Sydney and an informal investor update roadshow in New South Wales and Victoria. Coupled with this, there was renewed media attention during the quarter as Talga product, processing and operational developments continued to progress.

#### **TENEMENT INTERESTS**

As required by ASX listing rule 5.3.3, refer to Table 1 for details of Talga's interests in mining tenements held by the Company. No new joint ventures or farm-in/farm-out activity occurred during the guarter.

For further information, visit <u>www.talgaresources.com</u> or contact:

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#### **About Talga**

Talga Resources Ltd ("Talga") (ASX: TLG) is a technology minerals company enabling stronger, lighter and faster products for the coatings, battery, concrete and carbon composites markets using graphene and graphite. Talga has significant advantages owing to 100% owned unique high grade deposits in Sweden, a pilot test facility in Germany and in-house product IP. Advanced testing is underway with a range of corporations including industrial conglomerate Tata, UK listed Haydale and German based Jena Batteries.

#### **No New Information**

To the extent that announcement contains references to prior exploration results, these have been cross referenced to previous market announcements made by the Company. These had been disclosed to JORC 2012 standard. Unless explicitly stated, no new information is contained. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements that assumptions and technical parameters underpinning the relevant market announcement continue to apply and have not materially changed.

TABLE 1
Tenement Holdings

Project/Location	Tenements	Interest at end of quarter	Acquired during quarter	Disposed during quarter
Jalkunen Project Norrbotten County, Sweden	Jalkunen nr 1 Jalkunen nr 2 Jalkunen nr 3 Kursuvaara Lautakoski nr 1 Lautakoski nr 2 Lautakoski nr 3 Nybrännan nr 1 Nybrännan nr 2 Suinavaara nr 1 Suinavaara nr 2 Tiankijoki nr 1	100% 100% 100% 100% 100% 100% 100% 100%		•
Kiskama Project Norrbotten County, Sweden	Kiskama nr 1	100%		
Masugnsbyn Project Norrbotten County, Sweden	Masugnsbyn nr 1 Masugnsbyn nr 2	100% 100%		
Pajala Project Norrbotten County, Sweden	Lehtosölkä nr 3 Liviövaara nr 2	100% 100%		
Piteå Project Norrbotten County, Sweden	Gråliden nr 2 Önusträsket nr 2	100% 100%		
Raitajärvi Project Norrbotten County, Sweden	Raitajärvi nr 5	100%		
Vittangi Project Norrbotten County, Sweden	Maltosrova nr 2 Maltosrova nr 3 Mörttjärn nr 1 Nunasvaara nr 2 Vathanvaara nr 1 Vittangi nr 2 Vittangi nr 3 Vittangi nr 4	100% 100% 100% 100% 100% 100% 100%		
Bullfinch Project Western Australia	E77/2139 E77/2221 E77/2222 E77/2251 P77/4106	100% 100% 100% 100% 100%		

#### **APPENDIX 1**

#### Mineral Resources - Graphite

VITTANGI GRAPHITE PROJECT, NORTHER SWEDEN (Talga 100%)
Nunasvaara Graphite Deposit - JORC (2012) Resource at 10% Cg cut-off

DEPOSIT	JORC RESOURCE CATEGORY	TONNES	GRADE CG (%)
Nunasvaara	Indicated	6,900,000	24.2
Nunasvaara	Inferred	2,900,000	28.1
Total		9,800,000	25.3

Note: Ore tonnes rounded to nearest hundred thousand tonnes. The Vittangi project graphite mineral resource was disclosed in May 2016 in accordance with the 2012 JORC Code (ASX:TLG 30 May 2016).

### JALKUNEN GRAPHITE PROJECT, NORTHER SWEDEN (Talga 100%) Jalkunen Graphite Deposit - JORC (2012) Resource at 10% Cg cut-off

DEPOSIT	JORC RESOURCE CATEGORY	TONNES	GRADE CG (%)
Jalkunen	Inferred	31,500,000	14.9

Note: Ore tonnes rounded to nearest hundred thousand tonnes. The Jalkunen project graphite mineral resource was disclosed in August 2015 in accordance with the 2012 JORC Code (ASX:TLG 27 August 2015).

#### RAITAJÄRVI GRAPHITE PROJECT, NORTHER SWEDEN (Talga 100%) Raitajärvi Graphite Deposit - JORC (2004) Resource at 5% Cg cut-off

DEPOSIT	JORC RESOURCE CATEGORY	TONNES	GRADE CG (%)
Raitajärvi	Indicated	3,400,000	7.3
Raitajärvi	Inferred	900,000	6.4
Total		4,300,000	7.1

Note: Ore tonnes rounded to nearest hundred thousand tonnes. The Raitajärvi project graphite mineral resource was disclosed in August 2013 in accordance with the 2004 JORC code (ASX:TLG 26 August 2013). It has not been updated since to comply with the JORC code 2012 on the basis that the information has not materially changed since it was last reported. The Company is not aware of any new information or data that materially affects the information included in the previous announcement and that all of the previous assumptions and technical parameters underpinning the estimates in the previous announcement have not materially changed.

#### **Competent Person's Statement**

The information in this document that relates to exploration results is based on information compiled by Amanda Scott, a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy (Membership No.990895). Amanda Scott is a full-time employee of Scott Geological AB. Amanda Scott has sufficient experience, which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which has been undertaken to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Amanda Scott consents to the inclusion in the report of the matters based on her information in the form and context in which it appears.

The information in this report that relates to Resource Estimation is based on information compiled and reviewed by Mr Simon Coxhell. Mr Coxhell is a consultant to the Company and a member of the Australian Institute of Mining and Metallurgy. Mr Coxhell has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this document and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" ("JORC Code"). Mr Coxhell consents to the inclusion in this report of the Matters based on this information in the form and context in which it appears

+Rule 5.5

### Appendix 5B

# Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

#### Name of entity

Talga Resources Ltd

ABN
Quarter ended ("current quarter")

32 138 405 419
31 December 2016

Cor	solidated statement of cash flows	Current quarter \$A'000	Year to date (9 months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers	-	-
1.2	Payments for		
	(a) exploration & evaluation	(582)	(808)
	(b) development (1)	(636)	(1,094)
	(c) production	-	-
	(d) staff costs	(374)	(737)
	(e) administration and corporate costs (2)	(351)	(722)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	47	108
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Research and development refunds	-	-
1.8	Other (provide details if material)	49	60
	Other – Trial Mining (3)	(517)	(1,224)
1.9	Net cash from / (used in) operating activities	(2,364)	(4,417)

2.	Cash flows from investing activities		
2.1	Payments to acquire:		
	(a) property, plant and equipment	(116)	(326)
	(b) tenements	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-

<sup>+</sup> See chapter 19 for defined terms

1 September 2016

Page 1

Cons	solidated statement of cash flows	Current quarter \$A'000	Year to date (9 months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
	Other – Security Bond payments	-	-
2.6	Net cash from / (used in) investing activities	(2,480)	(4,743)

3.	Cash flows from financing activities		
3.1	Proceeds from issues of shares	-	898
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other – security issue costs	-	(99)
3.10	Net cash from / (used in) financing activities	-	799

4.	Net (decrease) in cash and cash equivalents for the period	(2,480)	(3,944)
4.1	Cash and cash equivalents at beginning of period	10,300	11,764
4.2	Net cash from / (used in) operating activities (item 1.9 above)	-	-
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	-
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-
4.5	Effect of movement in exchange rates on cash held	-	-

<sup>+</sup> See chapter 19 for defined terms 1 September 2016

Page 3

Con	solidated statement of cash flows	Current quarter \$A'000	Year to date (9 months) \$A'000
4.6	Cash and cash equivalents at end of period	7,820	7,820

#### Note:

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	755	1,112
5.2	Call deposits	7,065	9,188
5.3	Bank overdrafts	-	-
5.4	Other security deposit	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	7,820	10,300

6.	Payments to directors of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to these parties included in item 1.2	133
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

+ See chapter 19 for defined terms

1 September 2016

<sup>&</sup>lt;sup>(1)</sup>Development includes costs towards the pilot plant and processing facility operations and R&D in Germany and product development in the UK.

<sup>&</sup>lt;sup>(2)</sup>Administration includes European subsidiaries.

<sup>(3)</sup> Trial Mining in Sweden.

Page 4

7.	Payments to related entities of the entity and their associates	Current quarter \$A'000
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
7.3	Include below any explanation necessary to understand the transaction items 7.1 and 7.2	ons included in

8.	Financing facilities available Add notes as necessary for an understanding of the position	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
8.1	Loan facilities	-	-
8.2	Credit standby arrangements	-	-
8.3	Other (please specify)	-	-

8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.

9.	Estimated cash outflows for next quarter	\$A'000
9.1	Exploration and evaluation	650
9.2	Development (1)	660
9.3	Production	-
9.4	Staff costs	360
9.5	Administration and corporate costs (2)	240
9.6	Other –Trial mining (3)	120
9.7	Total estimated cash outflows	2,030

#### Note:

1 September 2016

<sup>&</sup>lt;sup>(1)</sup> Development includes costs towards the pilot plant and processing facility operations and R&D in Germany and product development in the UK.

<sup>&</sup>lt;sup>(2)</sup> Administration includes European subsidiaries.

<sup>&</sup>lt;sup>(3)</sup> Trial Mining in Sweden.

<sup>+</sup> See chapter 19 for defined terms

10.	Changes in tenements (items 2.1(b) and 2.2(b) above)	Tenement reference and location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
10.1	Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	Nil			
10.2	Interests in mining tenements and petroleum tenements acquired or increased	Nil			

Page 5

<sup>+</sup> See chapter 19 for defined terms 1 September 2016

#### **Compliance statement**

This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.

2 This statement gives a true and fair view of the matters disclosed.

Sign here:	(Company secretary)	Date:30 January 2017
Print name:	Dean Scarparolo	

#### **Notes**

- 1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
- 2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
- 3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.

1 September 2016 Page 1

<sup>+</sup> See chapter 19 for defined terms