GREENBUSHES LITHIUM OPERATIONS

Located in Western Australia - Australia

NI 43-101 TECHNICAL REPORT

21st December 2012

Report Prepared for

TALISON LITHIUM LIMITED

Report Prepared by
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Behre Dolbear Australia Pty Ltd
Mr I R White, BSc (Hons), MSc, DIC, FAusIMM, Senior Associate
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Quantitative Group Pty Ltd

Behre Dolbear Australia Pty Limited
Level 9, 80 Mount Street, North Sydney, New South Wales 2060, Australia

DATE AND SIGNATURE PAGE

This report entitled “Greenbushes Lithium Operations, Located in Western Australia – Australia, NI 43-101 Technical Report” dated 21st December 2012 was prepared and signed by the following:

“Peter D. Ingham” (signed)
Peter D. Ingham,
MSc, BSc, FAusIMM, MIMMM, CEng,

“Ian R. White” (signed)
Ian R. White,
BSC (Hons), MSc, DIC, FAusIMM

“Scott Jackson” (signed)
Scott Jackson,
BSc (Hons), CFSG, FAusIMM, MAIG

BEHRE DOLBEAR AUSTRALIA PTY LIMITED
“Peter D. Ingham” (signed)
Name: Peter D Ingham
Title: General Manager Mining

QUANTITATIVE GROUP PTY LTD
“Scott Jackson” (signed)
Name: Scott Jackson
Title: Director

CERTIFICATE OF QUALIFICATION

I, Peter D. Ingham (MSc, BSc, FAusIMM, MIMMM, CEng), do hereby certify that:

1. I am General Manager Mining of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. I graduated with a Bachelor of Science degree in Mining from Leeds University, England in 1975 and a Master of Science degree in Mineral Production Management from Imperial College of Science and Technology in 1980.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy.

4. I have worked as a mining engineer for a total of 34 years since my graduation from university and I have particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I oversaw and am responsible for reviews of the Mining History, Infrastructure, Taxes and Royalties, Environmental Considerations, Tenements and Land Ownership by Mr Adrian Brett, an Associate of Behre Dolbear Australia Pty Ltd, (Sections 1.2, 4, 5, 6, 18, and 20) and I am responsible for the Mineral Reserves, Mining, and Economic Analysis sections; specifically of Sections 1.1, 1.5, 1.7, 2, 3, 5, 15, 16.1, 16.2, 16.6, 19.2, 21.2 (Mine Operating Costs), 22, 23, 24 (excluding The Life of Mine and Exploration Potential), 25 (paragraph 4 and 5) and 26 (paragraph 5), of the "Greenbushes Lithium Operations, Located in Western Australia – Australia, NI 43-101 Technical Report" dated 21st December 2012 (the "Technical Report"), and am responsible for the overall preparation of the report. I conducted personal inspections of the Greenbushes site on 13th April 2011 and 4th September 2012 and reviewed the open pit operations infrastructure, environmental and related aspects.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8 I am independent of Talison Lithium Limited in accordance with Section 1.5 of NI 43-101 and have not had any prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 21st December 2012

"Peter D. Ingham" (signed)

Signature of Qualified Person

Peter D. Ingham
General Manager Mining - BDA

CERTIFICATE OF QUALIFICATION

I, Ian R. White (BSc. (Hons), MSc, DIC, FAusIMM), do hereby certify that:

1. I am a Senior Associate of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. The Degrees that I hold which are relevant to this work are a Bachelor of Science in Metallurgy with Honours from the University of Melbourne in 1974, a Master of Science (Mineral Production Management) from Imperial College of Science and Technology, London, in 1984 and a Diploma of Imperial College, London, in 1984.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy.

4. I have worked as a metallurgist for a total of 38 years since my graduation from university.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I am responsible for the Mineral Processing and Metallurgical Testing, Process Plant and LOM Plan (Capital Costs and Operating Costs) sections (specifically Sections 1.6, 13, 17, 19.1, 21 (excluding Operating Costs) and 25 (paragraph 6) of the "Greenbushes Lithium Operations, Located in Western Australia – Australia, NI 43-101 Technical Report" dated 21st December 2012 (the "Technical Report"). I conducted a personal inspection of the Greenbushes site on 13 April 2011 and reviewed the processing operations and related aspects.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of Talison Lithium Limited in accordance with Section 1.5 of NI 43-101 and have not had any prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 21st December 2012

"Ian R. White" (signed)

Signature of Qualified Person

Ian R. White
Senior Associate – BDA

CERTIFICATE OF QUALIFICATION

I, Scott Jackson (BSc (Hons), CFSG, FAusIMM), do hereby certify that:

1. I am a Director and Principal Consultant of Quantitative Group Pty Ltd of Level 2, 25 Cantonment Street, Fremantle, WA 6160, Australia.

2. I graduated with an honours degree in geology from the University of Western Australia in 1990, and completed the CFSG post-graduate diploma in geostatistics at the Paris School of Mines in 1999.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy.

4. I have worked as a geologist and geostatistician for a total of 22 years since my graduation from university.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I oversaw and am responsible for statistical and geostatistical analysis, preparation of the Mineral Resource block model estimate and classification of the Greenbushes Mineral Resource by Michael Stewart and Orlando Rojas, both employees of Quantitative Group Pty Ltd I am responsible for the geology, exploration, grade control and Mineral Resource estimation sections (Sections 1.3, 1.4, 1.8, 1.9, 7, 8, 9, 10, 11, 12, 14, 16.3, 16.4, 16.5, 24 (Exploration Potential), 25 (Paragraphs 1, 2, 3, 7), 26 (paragraphs 1, 2, 3 and 4) and 27 of the "Greenbushes Lithium Operations, Located in Western Australia – Australia, NI 43-101 Technical Report" dated 21st December 2012. I have visited the Greenbushes site on a number of different occasions and most recently conducted a personal investigation of the Greenbushes site on 2 May 2011.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of Talison Lithium Limited in accordance with Section 1.5 of NI 43-101. I have previously carried out estimations of Mineral Resource models on the property the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 21st December 2012

"Scott Jackson" (signed)

Signature of Qualified Person

Scott Jackson
Principal Consultant - QG

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1 SUMMARY

1.1 Description and Location

The Greenbushes Lithium Operations (as defined below) are located directly south of and immediately adjacent to the town of Greenbushes approximately 250 kilometres ("km") south of Perth, at latitude 33° 52´ S and longitude 116° 04´ E, and 90km south-east of the Port of Bunbury, a major bulk handling port in the southwest of Western Australia ("WA"). The Greenbushes Lithium Operations are situated approximately 300 metres ("m") above mean sea level ("AMSL"). The Greenbushes Lithium Operations produce a range of lithium mineral products.

Talison Lithium Limited ("Talison or the "Company") requested Behre Dolbear Australia Pty Limited ("BDA") undertake the preparation of this independent technical report in connection with the recent update of Talison's lithium Mineral Resources and Mineral Reserves at its Greenbushes Lithium Operations in WA ("the "Greenbushes Lithium Operations") in compliance with the Canadian Securities Administrators' National Instrument 43-101 — Standards of Disclosure for Mineral Projects ("NI 43-101"). BDA is the Australian subsidiary of Behre Dolbear and Company Inc., which has offices in Denver, New York, Toronto, Vancouver, London, Hong Kong, Guadalajara, Santiago and Sydney.

Unless the context otherwise requires, all references to "Talison" refer to Talison Lithium Limited and its wholly-owned subsidiaries.

1.2 Ownership

In 2010, upon completion of a reorganisation of the lithium and tantalum businesses previously held by Talison Minerals Pty Ltd and its subsidiaries ("Talison Minerals Group"), Talison acquired the Greenbushes Lithium Operations comprising real property, mining tenements, intellectual property, goodwill, contracts, and plant and equipment, including two lithium ore treatment plants, three open pits, and associated infrastructure at Greenbushes in south-west WA (Figure 1). Talison owns the Greenbushes Lithium Operations through its wholly-owned subsidiary companies Talison Lithium (Australia) Pty Ltd ("TLA"), Talison Services Pty Limited ("Talison Services") and Talison Minerals Pty Ltd ("Talison Minerals").

As a result of the reorganization, the tantalum business previously owned by the Talison Minerals Group was acquired by Global Advanced Metals Greenbushes Pty Ltd ("GAM"), including the rights to all minerals other than lithium on the Greenbushes tenements, the crushing facility, the tantalum primary and secondary plants, and access to the Greenbushes tenements. The lithium Mineral Reserves and Mineral Resources and the tantalum mineralization and related processing facilities are located on the same tenements at Greenbushes. GAM's operations are currently on care and maintenance.

Talison and GAM, through their respective subsidiaries, are party to a series of agreements entered into in connection with the reorganization relating to development, production and operational matters at Greenbushes.

1.3 Geology and Mineralization

The Greenbushes deposit lies within the Balingup Metamorphic Belt ("BMB") which forms the southern portion of the Western Gneiss Province, one of four divisions of the Archaean Yilgarn Craton. The Greenbushes pegmatite intrudes rocks of the Balingup Metamorphic Belt and lies within a 15-20km wide, north to north-west trending lineament called the Donnybrook-Bridgetown Shear Zone.

The Greenbushes deposit comprises a main, rare-metal zoned pegmatite with numerous smaller pegmatite dykes and footwall pods. These are concentrated within shear zones running on the boundaries of granofels, ultramafic schists and amphibolites. The pegmatite body is 5km in length, up to 300m wide, strikes north to north-west and dips moderately to steeply west to southwest.

The primary ore minerals are found in specific mineralogical zones or assemblages. The Lithium Zone is enriched in spodumene. Tantalum (tantalite) and tin (cassiterite) mineralization is concentrated in the Sodium Zone which is characterized by albite, tourmaline and muscovite. A third zone, of lesser commercial importance, contains concentrations of microcline.

The geology of the Greenbushes deposit is reasonably well understood and the data used to estimate the Mineral Resource has been checked and validated.

Figure 1: Location Plan

Behre Dolbear Australia Pty Ltd

1.4 Mineral Resources

Mineral Resource estimation was performed by Quantitative Group Pty Ltd (“QG”) of Perth, WA, using Ordinary Kriging (“OK”), with each variable being estimated independently. Mineral Resource block models were prepared for the Central Lode C3, C2 and C1 areas of the Greenbushes Lithium Operations.

The Mineral Resources total 118.4 million (“M”) tonnes (“t”) at 2.4% lithium oxide (“Li_2O”), 7.1Mt lithium carbonate equivalent (“LCE”) of combined Measured and Indicated Mineral Resource; and 2.1Mt at 2.0% Li_2O , 0.1Mt LCE, of Inferred Mineral Resource at a 0.7% Li_2O domain boundary grade, as summarized in Table 1.1. The majority of the Mineral Resources lie adjacent to the Central Lode Pit 3 (“C3 pit”) and Central Lode Pit 1 (“C1 pit”).

Table 1.1
Greenbushes Lithium Mineral Resources at 30 September, 2012

	Update - September 30, 2012			Previous - March 31, 2011		
Category	**Tonnage (Mt)**	**Li_2O Grade (%)**	**LCE (Mt)**	**Tonnage (Mt)**	**Li_2O Grade (%)**	**LCE (Mt)**
Measured Mineral Resources	0.6	3.2	0.04	0.2	3.9	0.02
Indicated Mineral Resources	117.9	2.4	7.1	70.2	2.6	4.5
Total Measured and Indicated Mineral Resources	**118.4**	**2.4**	**7.1**	**70.4**	**2.6**	**4.6**
Total Inferred Mineral Resources	2.1	2.0	0.1	2.0	2.2	0.1

Notes:

1. *There may be some rounding errors in totals.*
2. *The derivation of lithium carbonate equivalent is tonnes x (%Li_2O/100) x 2.473 = tonnes LCE.*
3. *For the updated estimate (as of September 30, 2012) the lithium Mineral Resources are within lithium domains drawn at a 0.7% Li_2O grade boundary, constrained by an optimized pit shell, and above 950mRL; and Measured Mineral Resources comprises the Run of Mine and Fine Ore stockpiles. For the previous estimate (as of March 31, 2011) the lithium Mineral Resources are within lithium domains drawn at a 1.0% Li_2O grade boundary and above 1000mRL.*
4. *Mineral Resource estimation was performed using Ordinary Kriging into 20mNx20mEx5mRL parent blocks, with each variable Li_2O, calcium oxide (CaO), ferric oxide (Fe_2O_3), potassium oxide (K_2O), manganese oxide (MnO), sodium oxide (Na_2O), phosphorus oxide (P_2O_5),arsenic oxide (As_2O_3), tin (Sn), and tantalum oxide (Ta_2O_5)) being estimated independently. The geostatistical analysis of the data and construction of the 3-D Mineral Resource block model was undertaken or supervised by Scott Jackson of QG, who is the Competent Person as defined under the JORC Code and who is a Qualified Person under NI 43-101. Data collection, validation and construction of the geological models was overseen by Andrew Purvis, a full-time employee of Talison, who is “Qualified Person” in accordance with National Instrument 43-101 and a ‘‘Competent Person’’ as defined by the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2004 Edition (the JORC Code)*
5. *Mineral Reserves are included in Mineral Resources. Mineral Resources are not Mineral Reserves and, as such, do not have demonstrated economic viability.*
6. *Mineralization was classified according to the definitions in National Instrument 43-101 and the guidelines published by the Council of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM Standards). Categorisation of Mineral Resources under NI 43-101 is consistent with the JORC Code.*

1.5 Mineral Reserves

Mineral Reserves total 61.5Mt at 2.8% Li_2O, 4.3Mt LCE, as of September 30, 2012, as summarized in Table 1.2. Stockpiles of 0.6Mt existed at that date. All Mineral Reserves are contained within the Mineral Resources.

Table 1.2
Greenbushes Lithium Mineral Reserves at September 30, 2012

Category	Update – September 30, 2012			Previous - March 31, 2011		
	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)
Proven Mineral Reserves	**0.6**	**3.2**	**0.04**	**0.2**	**3.9**	**0.02**
Probable Mineral Reserves	**61.0**	**2.8**	**4.2**	**31.3**	**3.1**	**2.4**
Total Proven and Probable Mineral Reserves	**61.5**	**2.8**	**4.3**	**31.4**	**3.1**	**2.4**

Notes:
1. *There may be some rounding errors in totals.*
2. *The derivation of lithium carbonate equivalent is tonnes x (%Li_2O/100) x 2.473 = tonnes LCE.*
3. *For the updated calculation (as of September 30, 2012) a 1.8% Li_2O cut-off grade has been applied; for the previous calculation (as of March 31, 2011) a 2% Li_2O cut-off grade was applied.*
4. *Proven Mineral Reserves comprises the Run of Mine and Fine Ore stockpiles. All the Probable Mineral Reserves are contained within the Indicated Mineral Resources.*
5. *Mineralization was classified according to the definitions in National Instrument 43-101 and the guidelines published by the Council of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM Standards).*

Mineral Resources and Mineral Reserves are reported as at September 30, 2012. The Mineral Resources and Mineral Reserves estimates forming the basis of the above tables remain current at the time of this report.

BDA considers the mine design for the open pits to be appropriate and the mining schedule achievable. The estimated mine recovery and dilution factors appear reasonable. Overall BDA considers the Proven and Probable Mineral Reserves to be an appropriate representation of the recoverable tonnes and grade and suitable for use in financial modelling of the project.

1.6 Processing

Talison's lithium processing operations at Greenbushes include a crushing plant under a license agreement, two processing plants and associated administrative, workshop, laboratory and other infrastructure, all located adjacent to the open pit mining operation. Lithium ore treatment commenced at the site in 1984-1985 and has been expanded progressively since that time to its current capacity of about 1,500,000tpa of ore feed yielding approximately 740,000tpa of lithium concentrates. The two plants, the Technical Grade Plant ("TGP") and the Chemical Grade Plant ("CGP"), produce mineral concentrates containing a range of lithium grades with varying iron impurity levels. Low iron technical grade ("TG") lithium products are produced in the TGP; chemical grade ("CG") lithium products which contain higher levels of iron are produced in the CGP. The main usage for low iron products is as feedstock for the glass and ceramic industries. The CG products are mostly supplied to lithium chemical converters. In the financial year ("FY") 2012, approximately 785,000t of ore was processed to produce 357,000t of lithium concentrates.

For the first 3 months of FY 2013, approximately 331,900t of ore was processed to produce 126,500t of lithium concentrates.

1.7 Economic Analysis

BDA considers that Talison's financial model for the Greenbushes Lithium Operations provides a reasonable projection of future performance. Over the life of mine ("LOM") of 24 years, Talison projects that 61.5Mt of ore will be processed to produce 22.2Mt of lithium products; the LOM capital costs are projected to total Australian dollars ("A$") 201M, of which plant expansions and sustaining capital comprise 68% and 21%, respectively. Projected operating costs over the LOM are generally lower than recent actual operating costs as rates of production are expected to be higher and economies of scale achieved. Projections for revenue are based on the updated Mineral Resource and Mineral Reserve estimates, increasing the utilisation of the current expanded production capacity over the next few years and a further expansion of the CGP in FY 2018 and on lithium concentrate prices which reflect Talison's supply and demand scenarios and Talison's current view of future exchange rates.

Talison has forecast that cash flow before income tax over the LOM will total A$2,920M and that the net present value ("NPV") of the Greenbushes Lithium Operation before income tax and applying a real discount rate of 9% is A$1,043M. The operation is most sensitive to variations in lithium concentrate prices.

The Greenbushes Lithium Operations have a history of reliable production of lithium products over more than 25 years. Talison's projections of future production levels include progressive increases in the tonnes of lithium concentrate produced. These increases are justified by market research which predicts continued growth in consumption of lithium driven primarily by the lithium secondary (rechargeable) battery market.

1.8 Development Potential

There is potential to further increase Mineral Resources and Mineral Reserves at the Greenbushes Lithium Operations. Lithium mineralization occurs adjacent to the designed C3, C2 and C1 areas. Potential extensions to Mineral Resources exist to the south, east, and north-east of the current mining areas, and at depth below the C3 area.

1.9 Recommendations

QG recommends that Talison:

- Continues to investigate the processes for determining the iron content of the spodumene;
- Continues to improve the grade control procedures to minimize the risk of dilution to feed for the TGP; and
- Continues to upgrade the drilling sampling and assay procedures to improve both grade and mineral quality boundaries data.

The cost of the programs outlined above is not considered significant and Talison has indicated that they can be funded from operating cash flow.

2 INTRODUCTION

Talison acquired the Greenbushes Lithium Operations comprising real property, mining tenements, intellectual property, goodwill, contracts, and plant and equipment, including two lithium ore treatment plants, three open pit mines, and associated infrastructure at Greenbushes in south-west WA (Figure 2) in 2010 upon completion of the reorganization of the lithium and tantalum businesses previously held by the Talison Minerals Group. Talison owns the Greenbushes Lithium Operations through its wholly-owned subsidiary companies TLA, Talison Services and Talison Minerals. Details of the corporate structure are set out in Section 24 – Other Relevant Data and Information.

Talison requested BDA to undertake the preparation of this independent technical report in connection with the recent update of Talison's lithium Mineral Resources and Mineral Reserves at its Greenbushes Lithium Operations in accordance with the requirements of NI 43-101 and in accordance with the Company's obligations as a reporting issuer in Canada.

This report has been prepared in accordance with NI 43-101 and the Mineral Resource and Mineral Reserve classifications adopted by the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Council, as amended. The Mineral Resource and Mineral Reserve reporting and classifications are also consistent with the December 2004 "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (the "JORC Code"), as prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy ("AusIMM"), the Australian Institute of Geoscientists ("AIG"), and the Minerals Council of Australia.

This report complies with disclosure and reporting requirements set forth in NI 43-101, Companion Policy 43-101CP, and Form 43-101F1 and is in accordance with the 2005 "Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports" (the "Valmin Code") as adopted by the AusIMM. The satisfaction of requirements under both the JORC and Valmin Codes is binding upon those authors who are members of either the AusIMM or AIG.

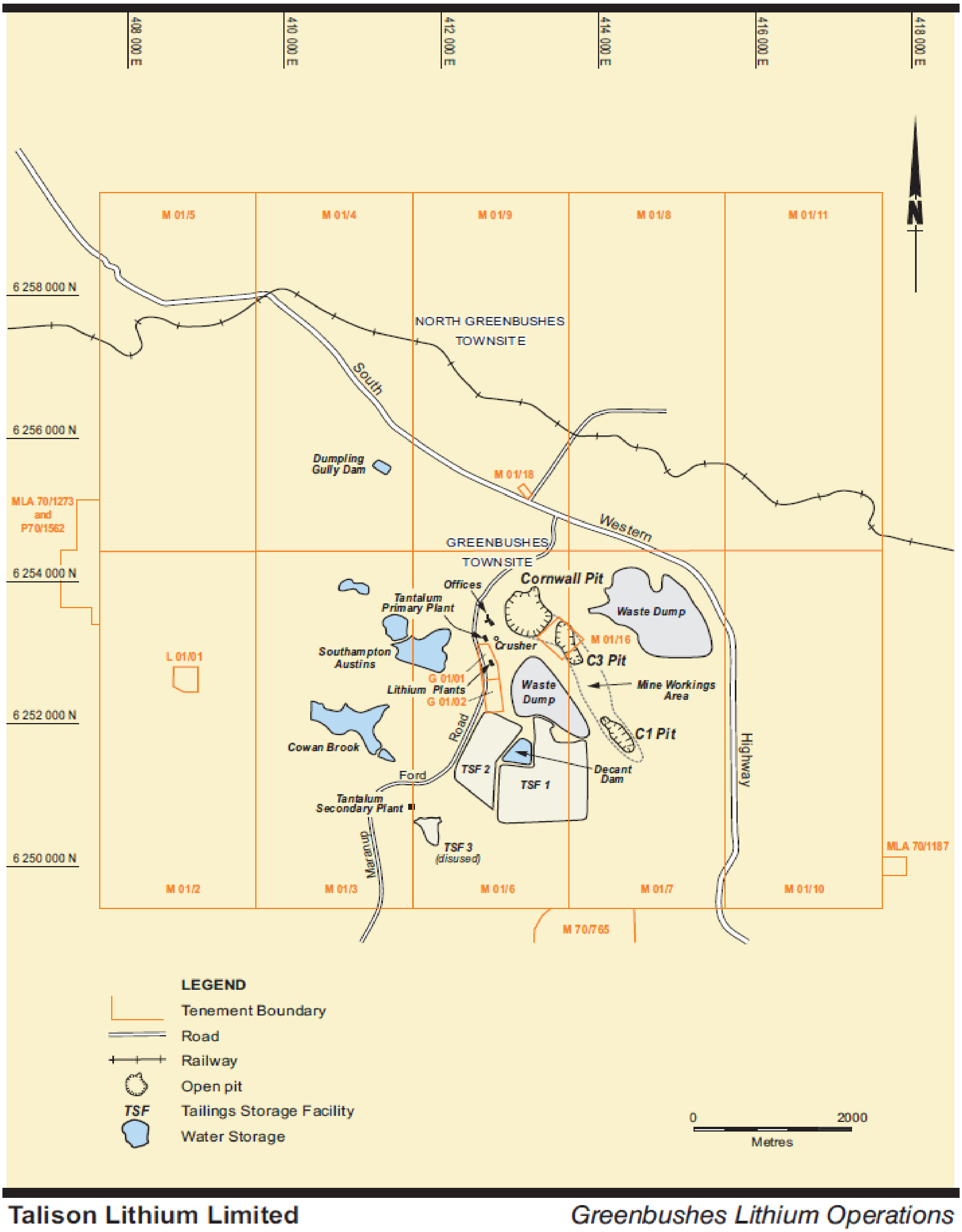
All monetary amounts expressed in this report are in Australian dollars ("A$") unless otherwise stated.

The principal sources of information and data on the Greenbushes deposit are Mineral Resource reports prepared by QG and the internal reports of Talison. The following consultants are the principal contributors to the preparation of this report.
Mr. Peter Ingham ("Ingham"), General Manager Mining, BDA – mining engineer with over 30 years experience in the mining industry, with particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves. During Mr. Ingham's site visits in April 2011 and September 2012, he reviewed the open pit operations and related aspects of the operation.

Mr. Ian White ("White"), Senior Associate, BDA – metallurgist with over 35 years experience in the mining industry, with particular expertise in mineral processing, including experience in gravity processing, dense media separation, floatation and magnetic separation. During Mr. White's site visit in April 2011, he reviewed the processing operations and related aspects of the operation.

Mr. Scott Jackson ("Jackson"), Director and Principal Consultant, QG – consulting geologist with over 20 years experience in the mining industry, with particular expertise in resource assessment and modelling. Mr. Jackson visited the site in December 2008, January 2009, December 2009, and May 2011 reviewing geological domaining and data input to the Mineral Resource estimation process. Mr. Jackson is continuing to oversee the update of the current resource models.

Figure 2: Site Layout Plan



3 RELIANCE ON OTHER EXPERTS

The authors of this report are not qualified to comment on lithium marketing, lithium price and corporate taxation, and accordingly have relied, and believe they have reasonable basis to rely, upon the representations and judgements of Mr. Lorry Mignacca, Chief Financial Officer, Talison Lithium Limited (see Section 19 – Market Studies and Contracts; and Section 22 – Economic Analysis).

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

Talison produces lithium mineral products from its operations at Greenbushes approximately 250km south of Perth, at latitude 33° 52´ S and longitude 116° 04´ E, and 90km south-east of the Port of Bunbury, a major bulk handling port in the southwest of WA (Figure 1).

The Greenbushes Lithium Operations are in close proximity to the Greenbushes town site located in the Shire of Bridgetown-Greenbushes (population 4,200).

Greenbushes has a population of approximately 450 people and is serviced by the larger town of Bridgetown (population 2,300). Greenbushes is connected to the regional centre of Bunbury by the South Western Highway.

About 55% of the Greenbushes tenements held by Talison are covered by State Forest which is under the authority of the WA Department of Environment and Conservation (“DEC”). The majority of the remaining land is Private Land which covers about 40% of the surface rights. The remaining ground comprises Crown Land, Road Reserves and other miscellaneous reserves.

4.2 Mineral Tenure

The mineral tenements are held and controlled by Talison in the Greenbushes area. Table 4.1 lists and Figure 2 shows the mineral tenements held and controlled by Talison.

Table 4.1
List of Mineral Tenements Held and/or Controlled by Talison

Tenement	Grant Date	Expiry Date	Area (Ha)	Holder
L01/01	19-Mar-1986	27-Dec-2026	9	TLA
M01/02	28-Dec-1984	27-Dec-2026	969	TLA
M01/03	28-Dec-1984	27-Dec-2026	1000	TLA
M01/04	28-Dec-1984	27-Dec-2026	999	TLA
M01/05	28-Dec-1984	27-Dec-2026	999	TLA
M01/06	28-Dec-1984	27-Dec-2026	985	TLA
M01/07	28-Dec-1984	27-Dec-2026	998	TLA
M01/08	28-Dec-1984	27-Dec-2026	999	TLA
M01/09	28-Dec-1984	27-Dec-2026	997	TLA
M01/10	28-Dec-1984	27-Dec-2026	1000	TLA
M01/11	28-Dec-1984	27-Dec-2026	999	TLA
M01/16	06-Jun-1986	05-Jun-2028	19	TLA
M01/18	28-Sep-1994	27-Sep-2015	3	TLA
G01/01	17-Nov-1986	05-Jun-2028	10	TLA
G01/02	17-Nov-1986	05-Jun-2028	10	TLA
M70/765	20-Jun-1994	19-Jun-2015	71.0	TLA
P70/1562	Pending	-	65.0	GAMG

Notes:
G01/01 and G01/02 are linked to Mining Lease M01/16 and are General Purpose Leases; “G” denotes General Purpose Lease; “L” denotes Miscellaneous Licence, “M” denotes Mining Lease; “P” denotes Prospecting Licence.

The tenements include mining leases, prospecting licence application, general purpose leases and miscellaneous licences. These are registered with mining registrars located in the State of WA. The tenements have been surveyed and constituted under the Mining Act 1978 (WA) (the “Mining Act”). The tenements total approximately 10,000 hectares (“ha”) and cover the historic Greenbushes tin, tantalum and current lithium mining areas. The mining leases entitle the tenement holder to work and mine the land (see Section 5.3). The operating lithium mining and processing plant area covers about 2,000ha comprising Mining Leases M01/06, M01/07 and M01/16. Talison holds the mining rights for all lithium minerals on these tenements, while GAM holds the mining rights to all minerals other than lithium through a reserved mineral rights agreement dated November 13, 2009. The areas containing the crusher, tantalum primary and secondary plants on Talison’s tenements are to be sub-leased to GAM for its tantalum operations. Talison does not hold any exploration tenements in the Greenbushes area as these have been converted previously to mining leases.

Mining Leases M01/06, M01/07 and M01/16 contain the entire Measured, Indicated and Inferred Mineral Resource and all lithium mining activities, including tailings storage, processing plant, open pits and waste rock dumps, are currently carried out within the boundaries of Mining Leases M01/06, M01/07 and M01/16 plus General Purpose Leases G01/01 and G01/02.

GAM is the registered applicant of P70/1562 which will be transferred to Talison upon it being granted pursuant to the lithium business sales agreement dated November 13, 2009.

In order to keep the current granted tenements in good standing, Talison is required to spend a yearly minimum expenditure of A$1.02M for all the permits. Annual rates of A$48,930 and rent of A$153,936 are also payable to the Shires of Bridgetown-Greenbushes and Donnybrook-Balingup, and the WA Department of Mines and Petroleum ("DMP"), respectively. Further, a condition of grant of a mining lease is the lodging of environmental bonds. Currently the total of bonds lodged with DMP for the Greenbushes tenements to be held by Talison is A$3.91M.

4.3 Other Surrounding Mineral Tenements

There are four surrounding tenements in which neither Talison nor GAM have any interests. These tenements are Exploration Licences for the exploration of bauxite and diamonds by companies not associated with Talison or GAM. The four tenements are ELA70/3313, E70/3407, E70/3622 and E70/3473.

4.4 Royalties

In WA, a royalty of 5% of the royalty value of lithium concentrate sales is payable for lithium mineral production as prescribed under the Mining Act. The royalty value is the difference between the gross invoice value of the sale and the allowable deductions on the sale. The gross invoice value of the sale is the Australian dollar value obtained by multiplying the amount of the mineral sold by the price of the mineral as shown in the invoice. Allowable deductions are any costs in Australian dollars incurred for transport of the mineral quantity by the seller after the shipment date. For minerals exported from Australia, the shipment date is deemed to be the date on which the ship or aircraft transporting the minerals first leaves port in WA.

Talison has advised BDA that no private royalties apply to the Greenbushes property.

4.5 Access

Access to the Greenbushes mine is via the sealed South Western Highway between Bunbury and Bridgetown to the Greenbushes Township and via Maranup Ford Road to the Greenbushes mine.

4.6 Permits

Mining and mineral processing activities at the Greenbushes Lithium Operations operate under a number of State Government approvals under the Environmental Protection Act 1986 (WA) ("Environmental Protection Act") and the Mining Act.

The Greenbushes mine is operated under a number of approvals, and variations to these approvals have been granted over a period of time. The mining Notice of Intent ("NOI") dated April 1991 (Gwalia Consolidated, 1991) is the main development approval which provides for current lithium and tantalum production activities at Greenbushes. A subsequent mining NOI dated August 2000 (Department of Minerals and Energy, 2000) was approved for underground mining on Mining Lease 01/06.

Various Works Approvals under the Environmental Protection Act have also been granted over time to provide for various process plant upgrades. Greenbushes also operates under an Environment Protection Licence (No. L4247/1991/12) which was issued by the Department of Environment and Conservation ("DEC") under the Environmental Protection Act.

Other WA State legislation relevant to Greenbushes' mine operations includes:

- Dangerous Goods Safety (Explosives) Regulations 2007
- Dangerous Goods Safety Act 2004
- Environmental Protection Act
- Environmental Protection Regulations 1987
- Environmental Protection (Noise) Regulations 1997
- Clean Air Regulations 1983

- Local Government Act 1995
- Rights in Water and Irrigation Act 1914
- Rights in Water and Irrigation Regulations 2000
- Soil and Land Conservation Act 1945
- Town Planning & Development Act 1928
- Conservation and Land Management Act 1984
- Mining Act
- Mines Safety and Inspection Act 1994
- Occupational Safety and Health Act 1984.

Talison has achieved accreditation by Bureau Veritas for International Standards ISO 9001:2008 Quality Management System Requirements and ISO 14001:2004 Environmental Management System Requirements.

4.7 Environmental Liabilities

The Greenbushes mining leases held by Talison cover State Forest (managed by the DEC) and privately owned land near Greenbushes. Mining in the area has been carried out for over 100 years leaving a legacy of areas that current operators are required to rehabilitate. Rehabilitation programs for historical and inactive mining sites are being managed with the assistance of local regulators. Relinquishment of rehabilitation liability criteria has been established with regulators and requires Talison to re-establish a self-sustaining native forest while maintaining recreation, conservation, landscape and hydrology objectives.

Talison is finalizing the relinquishment of rehabilitation liability criteria for approximately 650ha of rehabilitated mine workings with the intent of returning these areas to be managed as part of State Forest. Rehabilitation is monitored annually by assessing the variety of species and the density of plants growing in the area.

Each year, as part of its annual environmental reporting to regulators, Talison is required to calculate site mine closure costs. The closure (rehabilitation liability) cost estimate is A$16.82M based on the 2012 disturbed areas totalling 1,808ha covering infrastructure areas, tailings storage facilities, overburden and waste rock dumps and open pits as reported in the 2011-2012 Annual Environmental Review Report (Talison, 2012).

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Topography, Elevation and Vegetation

The Greenbushes site is situated approximately 300m AMSL. The operations area lies on the Darling Plateau and is dominated by a broad ridgeline which runs from the Greenbushes township (310m) towards the south-east (270m) with the open pits located along this ridgeline (300m). The current operating waste rock dump is located on an east facing hill slope which descends to 266m and adjoins the South Western Highway, while the process plant area is located on the west facing hill slope which descends to 245m. The tailings storage areas are located south of the mining and plant areas at 265m.

The Greenbushes area has a temperate climate that is described as mild Mediterranean, with distinct summer and winter seasons. The mean minimum temperatures range from 4°C to 12°C, while the mean maximum temperatures range from 16°C to 30°C. The hottest month is January (mean maximum temperature 30ºC), while the coldest month is August (mean minimum temperature 4ºC).

There is a distinct rainfall pattern for winter, with most of the rain occurring between May and October. The area averages about 970 millimetres (“mm”) per annum with a range of about 610mm to 1,680mm per annum. The evaporation rate for the area is calculated at approximately 1,190mm per annum.

The area is surrounded by vegetation broadly described as open Jarrah/Marri forest with a comparatively open understorey.

Mining and processing operations at Greenbushes operate throughout the year.

5.2 Access to the Property

Access to the Greenbushes Lithium Operations is via the sealed South Western Highway between Bunbury and Bridgetown to the Greenbushes Township and via Maranup Ford Road to the Greenbushes mine.

5.3 Infrastructure

General

Currently, operating infrastructure on site includes a crushing plant, two lithium processing plants, tailings disposal facilities, a laboratory, administrative offices, occupational health/safety/training offices, dedicated mines rescue area, stores, storage sheds, workshops and engineering offices. The crushing plant is owned by GAM but operated by Talison under a crusher license agreement dated November 13, 2009. There are also primary and secondary tantalum processing facilities on the Greenbushes site which are owned by GAM which are currently on care and maintenance.

Under Australian mining law, subject to the provisions of the Mining Act, the holder of a mining lease is entitled to work and mine the land, take and remove any minerals (except iron ore, unless expressly authorised by the Minister) and do all things necessary to effectively carry out mining operations in, on or under the land. The mineral tenements held and controlled by Talison are covered in Section 4.2 – Mineral Tenure.

The Greenbushes Lithium Operations are a major employer in the region with a workforce of approximately 180 people, which includes a number of contractors. The workforce is characterised by a diversity of skills and knowledge. Employee training, which includes skills and competency training, is further enhanced by having health and safety, quality management and an environmental awareness emphasis. Detailed descriptions of the crusher and lithium process plants are provided in Section 17 - Recovery Methods.

There is sufficient storage area in the mining leases for the disposal of waste and tailings for the LOM Production Plan detailed in Section 22 – Economic Analysis.

Water Supply

The Greenbushes Lithium Operations are located in the Blackwood Valley Catchment. Water for current mineral processing is sourced from rainfall and stored in several process dams located on site, with the majority of the water used being recovered and recycled through the water circuit. Surface water quality is measured and reported on a monthly basis.

Power Supply

Talison purchases its power from Synergy Australia which is delivered to the site by Western Power's distribution system and reticulated and metered within the site by Talison. Peak demand for the lithium operation is currently approximately 6.0 megawatt hours ("MW") while average demand is approximately 4.8MW.

Gas Supply

Talison uses liquefied petroleum gas ("LPG") fired dryers and other equipment in the plants and the laboratory. A total of approximately 952t of LPG is used by the lithium operation annually which is purchased and stored on site in bulk storage facilities.

6 HISTORY

6.1 Mining History

Mining in the Greenbushes area has continued almost uninterrupted since tin was first discovered at Greenbushes in 1886. Greenbushes is recognized as the longest continuously operated mine in WA.

Tin

Since it was first discovered at Greenbushes in 1886, tin has been mined almost continuously in the Greenbushes area, although in more recent times lower tin prices and the emergence of lithium and tantalum as major revenue earners have relegated tin to the position of a by-product. Tin was first mined at Greenbushes by the Bunbury Tin Mining Co in 1888. However there was a gradual decline in tin production between 1914 and 1930. Vultan Mines carried out sluicing operations of the weathered tin oxides between 1935 and 1943, while between 1945 and 1956 modern earth moving equipment was introduced and tin dredging commenced. Greenbushes Tin NL was formed in 1964 and open cut mining of the softer oxidized rock commenced in 1969.

Tantalum

Tantalum mining at Greenbushes commenced in the 1940s with the advancement in electronics. Tantalum hard-rock operations started in 1992 with an ore processing capacity of 800,000tpa. By the late 1990s demand for tantalum reached all-time highs and the existing high grade Cornwall Pit was nearing completion. In order to meet increasing demand a decision was made to expand the mill capacity to 4 million tonnes per annum (“Mtpa”) and develop an underground mine, to provide higher grade ore for blending with the lower grade ore from the Central Lode pits.

An underground operation was commenced at the base of the Cornwall Pit in April 2001 to access high-grade ore prior to the completion of the available open pit high-grade resource. In 2002, the tantalum market collapsed due to a slow-down in the electronics industry and subsequently the underground operation was placed on care and maintenance. The underground operation was restarted in 2004 due to increased demand but again placed on care and maintenance the following year. The lithium open pit operation has continued throughout recent times and mining is now focused on the Central Lode zone. Only lithium minerals are currently mined from the open pits. The tantalum mining operation and processing plants have been on care and maintenance since 2005.

6.2 Lithium Minerals

The mining of lithium minerals is a relatively recent event in the history of mining at Greenbushes with Greenbushes Limited commencing production of lithium minerals in 1983 and commissioned a 30,000tpa lithium mineral concentrator two years later in 1984-1985. The lithium assets were acquired by Lithium Australia Ltd in 1987 and Sons of Gwalia in 1989. Production capacity was increased to 100,000tpa of lithium concentrate in the early 1990s and to 150,000tpa of lithium concentrate by 1997, which included the capacity to produce a lithium concentrate for the lithium chemical converter market.

The Talison Minerals Group was incorporated in 2007 for the purpose of acquiring the assets of the Advanced Minerals Division of Sons of Gwalia by a consortium of US private equity companies led by Resource Capital Funds. The Talison Mineral Group’s assets included the Wodgina tantalum mine located about 1,500km north of Perth and 120km south of Port Hedland in the Pilbara region of WA as well as the Greenbushes Lithium Operations. Upon completion of the reorganization of the Talison Minerals Group in 2010, Talison acquired the Greenbushes Lithium Operations and the remainder of the assets were acquired by GAM.

There are two lithium processing plants that recover and upgrade the spodumene mineral using gravity, heavy media, flotation and magnetic processes into a range of products for bulk or bagged shipment. In the period 2005 to 2008, demand from the Chinese chemical producers was satisfied by using the Greenbushes primary tantalum plant which had been on care and maintenance. Products from that plant had a lower grade than preferred by the Chinese customers and were supplied as a temporary measure until Talison’s lithium concentrate production capacity was increased.

In 2009, Talison’s processing plants were upgraded to total nominal capacity of approximately 260,000tpa of lithium concentrates and in late 2010 capacity was increased to 700,000tpa of ore feed yielding approximately 315,000tpa of lithium concentrates. The lithium TG processing plant is currently operating at full production capacity. The CG plant was upgraded in 2011/2012 to enable processing of 1.3mtpa bringing the total capacity at the Greenbushes operation to 1.5mtpa. The product capacity for the two plants is approximately 740,000tpa.

A summary of the last eight years production of ore and lithium concentrates at the Greenbushes Lithium Operations is shown in Table 6.1.

Table 6.1
Recent Lithium Production History

Year Ending June 30	Lithium Ore Mined kt[1]	Lithium Products kt[1]	Total Lithium Production[2] (kt[1] LCE)
2005	367	146	21
2006	390	183	25
2007	390	271	40
2008	572	235	33
2009	507	209	31
2010	639	262	39
2011	778	342	51
2012	1,160	357	53

Notes:
(1) "kt" = thousand tonnes; excludes sales of crushed ore.
(2) Conversion of Lithium Products to Total Lithium Production is dependent on the average grade of the lithium products produced during the year.

7 GREENBUSHES GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geology

The Greenbushes area is underlain by rocks of the Balingup Metamorphic Belt ("BMB"), which forms the southern portion of the Western Gneiss Province, one of four divisions of the Yilgarn Craton in WA (Figure 3). The BMB is bounded to the west by the Darling Fault and Phanerozoic rocks of the Perth Basin, to the south by the Proterozoic Albany-Fraser Mobile Belt, and to the east by the Hester Lineament. It extends as far north as the Loguebrook Granite, where it is truncated by intrusions of the Darling Range Batholith.

The Greenbushes pegmatites lie within a 15-20km wide, north to northwest trending lineament known as the Donnybrook-Bridgetown Shear Zone, characterised by sheared gneiss, orthogneiss, amphibolite and migmatite. A series of syn-tectonic granitoid intrusives occur within the BMB, elongated along the Donnybrook-Bridgetown Shear Zone.

The pegmatites have been dated at approximately 2,525 million years ("Ma"), and appear to have been intruded during shearing, thereby accounting for the fine grain size and internal deformation. The pegmatites have been further affected by subsequent deformation and/or hydrothermal recrystallisation, the last episode dated at around 1,100Ma.

7.2 Local Geology

The Greenbushes deposit consists of a main, rare-metal zoned pegmatite body with numerous smaller pegmatite dykes and pods in the footwall to the main body. The pegmatites are concentrated within shear zones which form along the contact between granofels and amphibolite sequences. The pegmatite strikes in a north to north-westerly direction and dips moderately to steeply towards the west-southwest (Figure 4). Prominent mylonitic fabrics are developed, particularly along host rock contacts.

The mine sequence has been intruded by Proterozoic dolerite dykes and sills. The dykes trend east-west and vary in width from a few centimetres to tens of metres.

In general the hanging wall to the pegmatite bodies is composed of amphibolite (meta-basalt and sub-volcanic intrusive bodies) whereas the footwall is granofels, dominantly of metasedimentary origin. The amphibolites and dolerites contain occasional stringers and pods of sulphides such as pyrite, pyrrhotite and chalcopyrite. Arsenopyrite and arsenolamprite (native arsenic) are noted in some areas, particularly within granofels and amphibolite inliers in the main pegmatite. Some of the granofels is distinctly garnetiferous.

Weathering and erosion of the pegmatites has produced adjacent alluvial deposits in ancient drainage systems. These are generally enriched in cassiterite. All rocks have been extensively lateritised during Tertiary peneplain formation; the laterite profile locally reaches depths in excess of 40m below the original surface.

7.3 Pegmatite Zoning

The Greenbushes pegmatite is about 5km in length and up to 300m in width. The pegmatite is variably deformed with low-strain areas preserving primary igneous textures, and highly strained zones exhibiting re-crystallised and mylonitic fabrics.

Internally, the Greenbushes pegmatite consists of five mineralogically defined zones: the Contact Zone, Potassium Feldspar (Potassium) Zone, Albite (Sodium) Zone, Mixed Zone and Spodumene (Lithium) Zone. These are shown schematically in Figure 5, whereas in detail they display complex zoning, interfingering along strike and at depth.

The zones occur as a series of thick layers commonly with a lithium zone on the hanging wall or footwall, a potassium feldspar zone towards the hanging wall and a number of central albite zones. High-grade tantalum mineralisation (>420ppm) is generally confined to the Albite Zone, whereas the Spodumene and Potassium Feldspar Zones generally have tantalum-tin grades below the open-cut cut-off grades.

Figure 3: Regional Geology of Western Australia

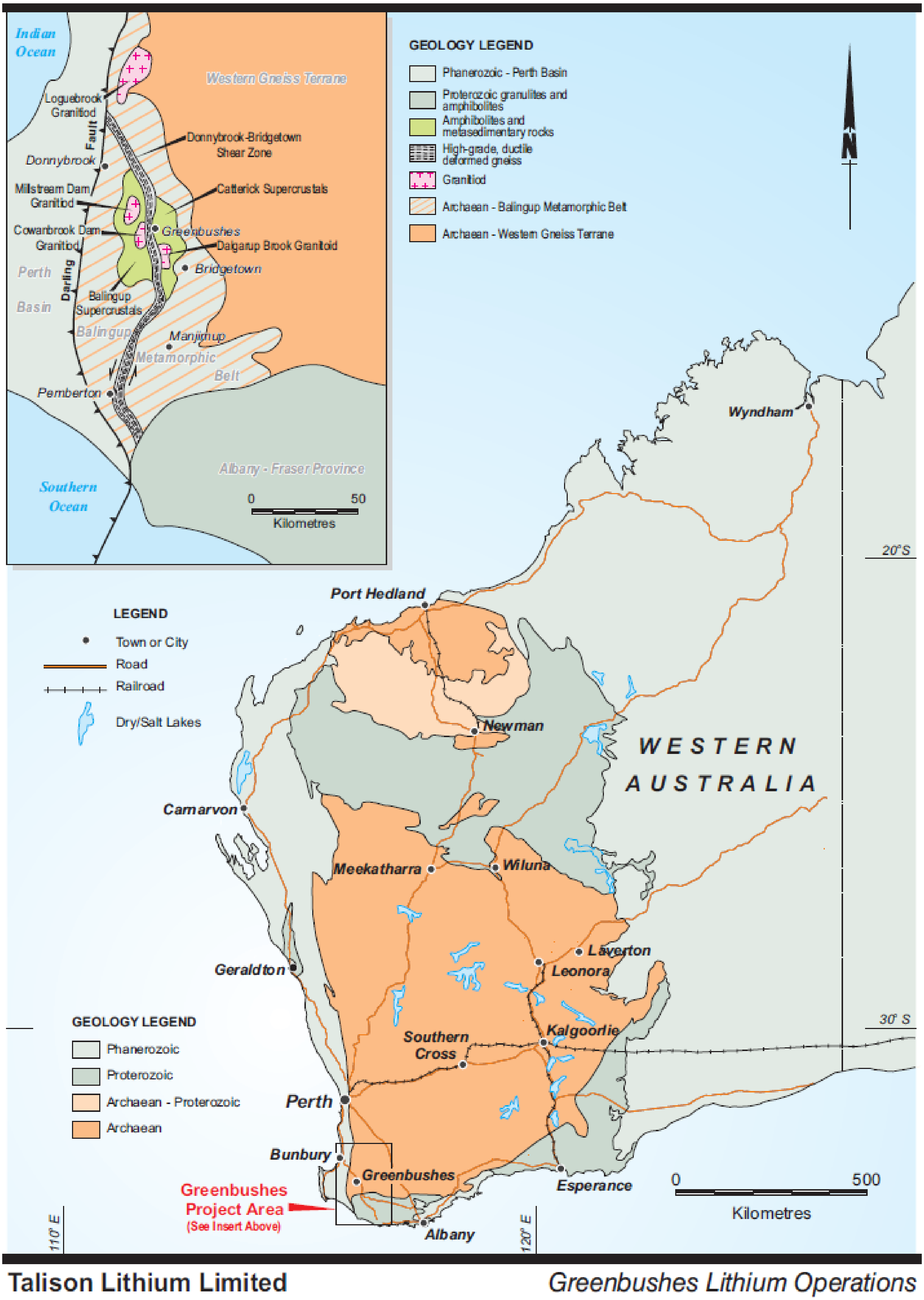
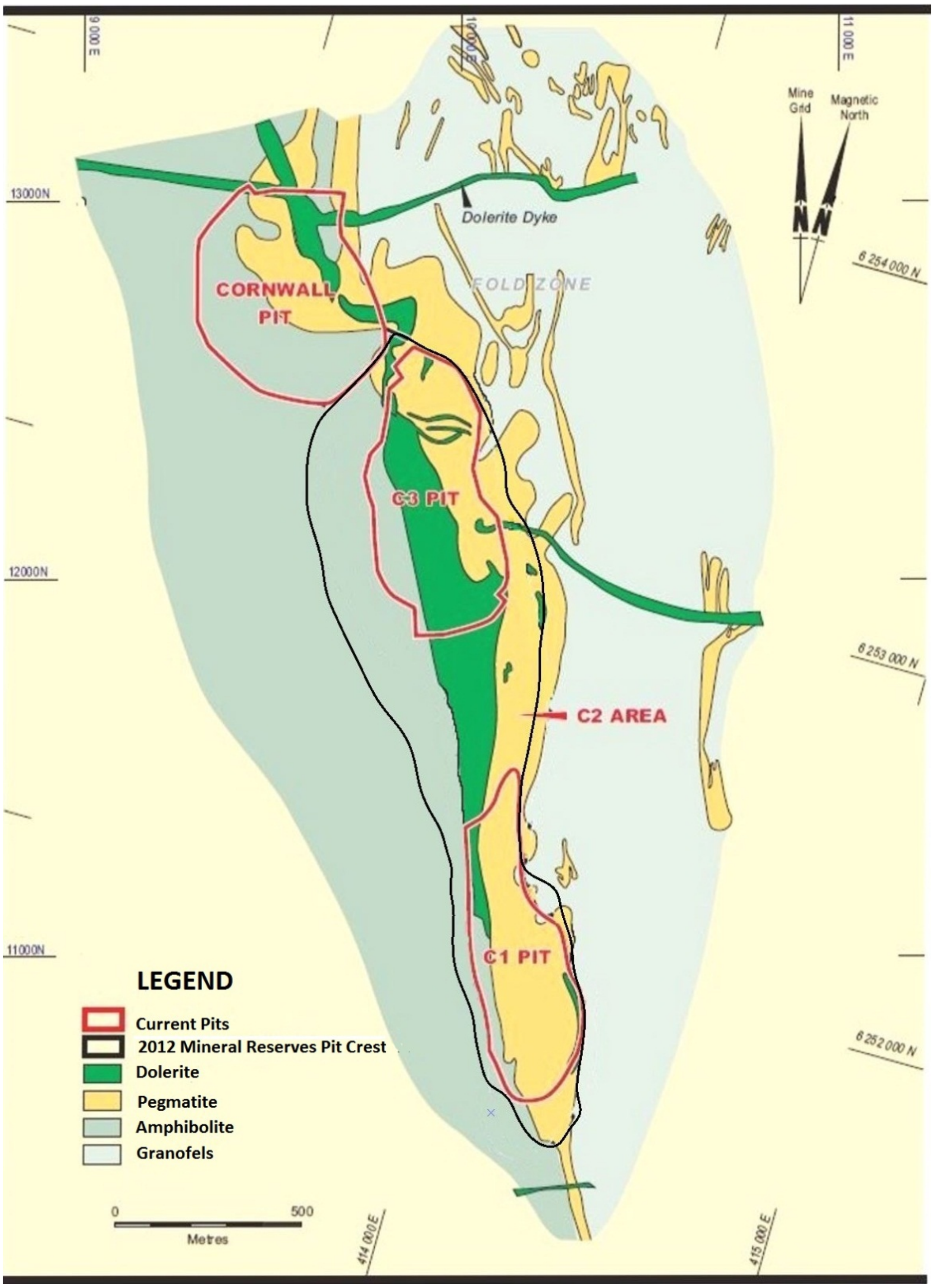


Figure 4: Greenbushes Local Geology



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7.4 Deposit Type and Origin

The Greenbushes lithium deposits belong to the Spodumene sub-class of the Lithium-Caesium-Tantalum pegmatite deposit class. The pegmatites are hosted in a major regional structure and represent a late stage product of cooling granite magma. Early crystallisation of the pegmatite formed albite-tourmaline zones, followed by albite, cassiterite and tantalite crystallisation. Spodumene-quartz assemblages crystallised at slightly lower temperatures, followed by formation of a potassium feldspar-rich zone in the hanging wall.

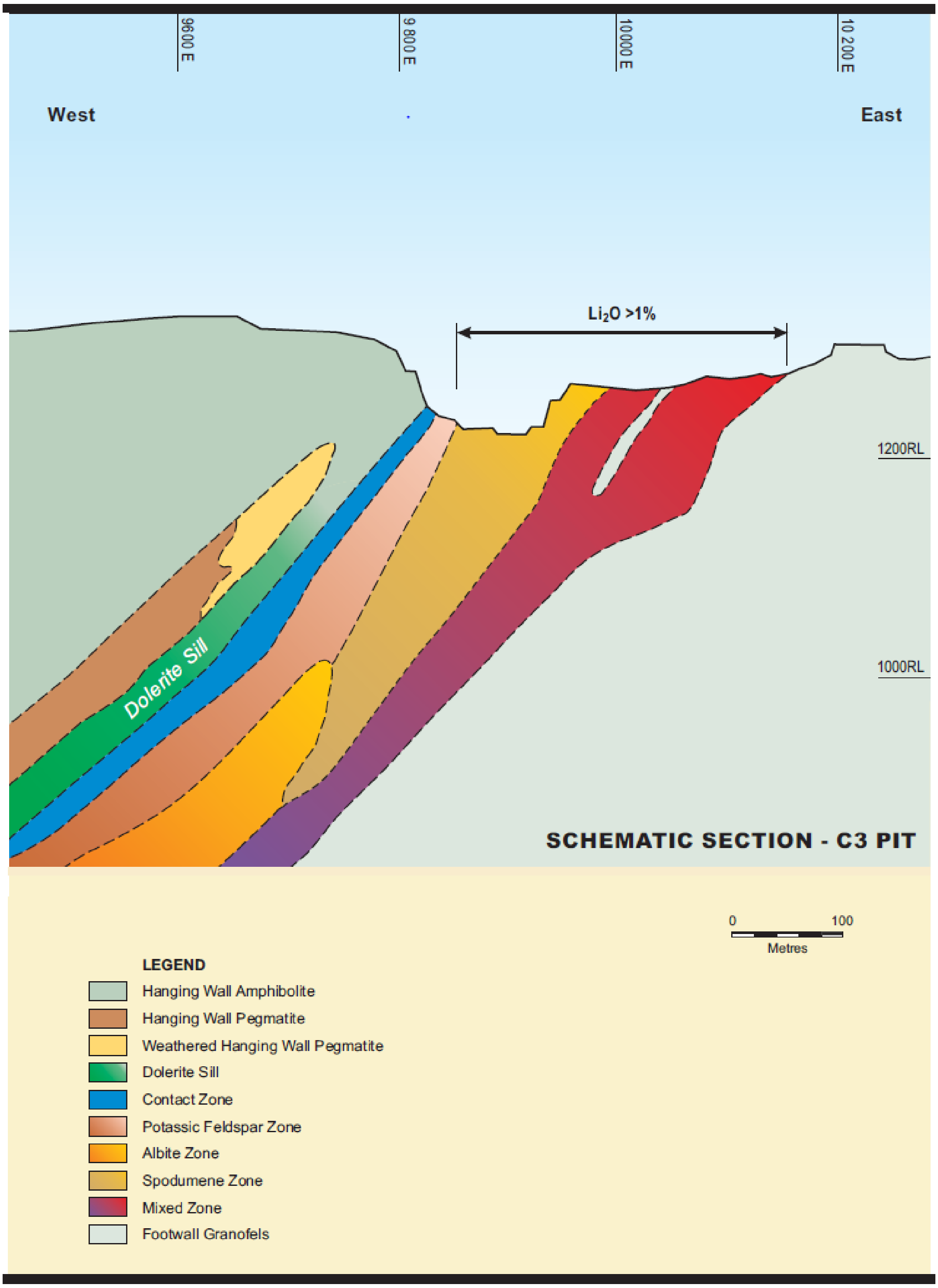
The Greenbushes pegmatites are considered to be Archaean in age (approximately 2,560 Ma), intruded along the Donnybrook-Bridgetown Shear, coeval with a second phase of regional deformation with pressures of approximately 5 kilobars ("kb") and temperatures greater than 870°C.

Lithium-rich zones are adjacent to tantalite-bearing zones which have been mined and processed in the recent past. In places the pegmatite may contain economically recoverable levels of both lithium and tantalum, although more typically lithium ore is low in tantalum (<100ppm Ta_2O_5) and vice versa.

The Greenbushes pegmatite is distinguished from many other rare-metal pegmatites by:

- not being symmetrically or truly asymmetrically zoned, and not having a quartz core
- having no indication of a parental granitoid at depth or in close proximity
- being formed at higher pressure/temperature, under synkinematic conditions.

Figure 5: C3 Pit Area Cross Section Showing Mineralogical Zones



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7.5 Deposit Geometry

The Greenbushes pegmatite deposits extend over a strike length of 5km north-south, and have been sub-divided for practical purposes into four sectors representing past and present open pit operations, known as (from north to south) the Cornwall (tantalum only), C3, C2 and C1 pits (Figure 4).

The C3 Pit contains the largest and highest grade lithium deposit and occurs in the upper part of a large (250m wide) lithium-enriched pegmatite. The ore body is about 600m long and up to 100m wide, dipping at 30-80° to the west or southwest. At the northern end of the ore body a highly felspathic zone separates the high-grade lithium zone from the hanging wall amphibolites and a dolerite sill.

Tantalum/tin and lithium mineralisation are conformable with the trends of the pegmatites both along strike and down dip.

The C1 area contains a second lithium deposit, some 500m long by 150m wide and dipping moderately to the west. The C2 area lies between C1 and C3. Limited mining has been undertaken in this part of the lithium-bearing pegmatite which extends for about 600m, varies in width up to about 30m and dips moderately to the west.

7.6 Structure

The pegmatite body strikes north to north-westerly and dips moderately (45°-50°) to steeply (70°-80°) to the west-southwest. The high-grade lodes within the main pegmatite body also exhibit variable dips from 30°-80° towards the west-southwest.

Shear structures observed in the pegmatites are most strongly developed at pegmatite margins and within albite rich zones. Foliation fabrics of variable intensity have developed within the pegmatite as a result of this shearing. Host rock greenstones also exhibit foliation fabrics, which are generally conformable to layering observed within the pegmatites. The orientations of shear fabrics are sub-parallel to the regional Donnybrook-Bridgetown Shear Zone.

North of the main lithium mineralization are asymmetric macro folds which post-date mylonisation of the albite zone and pre-date or are synchronous with later stages of crystallisation. Dilatant zones formed in the footwall albite zone during folding were infiltrated by late-stage fluids and provide the focus for a second stage of mineralization. The evidence appears to confirm that the pegmatite intrusion was synchronous with the formation of the Donnybrook-Bridgetown Shear Zone.

7.7 Mineralisation

Mineralogical Zones

Continuity of lithium mineralization at +1% Li_2O is demonstrated from block model estimates to be over 2km from the south of the C1 area to beyond the north of the C3 area. A narrowing of lithium mineralization occurs in the southern end of the C2 area. At +2.5% Li_2O, the lithium body breaks into a 490m zone in the C1 area and a 1,280m zone covering the C3 area.

Internally, the Greenbushes pegmatite consists of five mineralogically defined zones: the Contact Zone, the K-feldspar (Potassium) Zone, the Albite (Sodium) Zone, the Mixed Zone and the Spodumene (Lithium) Zone. These are shown schematically in Figure 5.

The zones occur as a series of thick layers commonly with a Lithium Zone on the hangingwall or footwall, K-feldspar towards the hanging wall and a number of central Albite Zones. High-grade tantalum mineralization (>420 grams per tonne) is generally confined to the Albite Zone within the deposit. Characteristics of each of the zones are summarized in Table 7.1.

Table 7.1
Mineralogical Zones in the Greenbushes Pegmatite

	Mineralogy		Geochemistry	
Zone	**Major**	**Minor**	**Major**	**Minor**
Contact	quartz, albite	muscovite, tourmaline	SiO_2, Na	SnO_2, Ta_2O_5, Nb_2O_5
K-Feldspar	quartz, microcline	muscovite, perthite	SiO_2, K	Cs, Rb
Albite	quartz, albite	muscovite, tourmaline, apatite	SiO_2, Na	SnO_2, Ta_2O_5, Nb_2O_5, Fe, P_2O_5, Be
Mixed	quartz, albite, k-feldspar spodumene	tourmaline, mica, apatite	SiO_2, Na, K, Li	< SnO_2, Ta_2O_5, Nb_2O_5, Fe, P_2O_5, Be
Spodumene	quartz, spodumene	muscovite, albite, microcline, perthite	SiO_2, Li	Na, K

Recent exploration drilling in 2011/12 has tested some nearby pegmatite targets to the east and south of the current mining areas, but indicated limited potential for additional high grade lithium mineralisation. Opportunities to expand the lithium resource base appear to be focussed on the main pegmatite zone, with the deposits open along strike and partly open at depth.

7.8 Mineralogy

Major minerals and approximate abundances in the Greenbushes pegmatite are quartz 28%, spodumene 26%, albite 23%, potassium feldspar 20%, tourmaline 1%, mica 1% and apatite 0.5%.

Lithium

Table 7.2 summarizes the main lithium minerals associated with the economic mineralization at Greenbushes. The main lithium minerals are spodumene (approximately 8% Li_2O) and varieties kunzite and hiddenite. Minor to trace minerals include lepidolite mica, and amblygonite and lithiophilite (phosphates). The iron-bearing species hiddenite appears to increase towards the south of the deposit, with the C1 area having the highest proportions. Lithium is strongly leached in the weathering environment and is virtually non-existent in weathered pegmatite. Lithium grade decreases towards the footwall of the high-grade Lithium Zone. The higher lithium grade ore generally consists of 50% quartz and 50% spodumene, having a Li_2O grade of around 4%.

Table 7.2
Major Lithium Ore Mineralogy

Mineral	Composition
Spodumene	$LiAlSi_2O_6$
Varieties	
Hiddenite – Green	(Fe, Cr)
Kunzite	(Mn)
Other Lithium Minerals	
Lithiophilite	$Li(Mn^{2+}, Fe^{2+})O_4$
Amblygonite	$(Li, Na)AlPO_4(F,OH)$
Holmquistite	$Li(Mg, Fe^{2+})_3Al_2Si_6O_{22}(OH)_2$
Lepidolite	$K(Li, Al)_3(Si, Al)_4O_{16}(OH)_2$

Tantalum

Tantalum and niobium occur mainly as columbo-tantalite and in numerous trace tantalum minerals. Columbo-tantalite grains commonly have Ta-rich cores and more Nb-rich rims. Grains are generally less than 350 microns ("µm"). Columbo-tantalite occurs as elongate blebs or crystals chiefly at the grain boundaries of quartz/albite, albite/mica and K-feldspar/spodumene. The Ta:Nb ratio is typically 2:1. Mineral species include microlite, stibiotantalite, ilmenotantalite, manganotantalite and tapiolite. Tantalum is associated with the Albite Zones.

Sodium

The main sodium mineral is albite feldspar (approximately 12% sodium oxide ("Na_2O")). The Albite Zones may assay up to around 11% Na_2O, averaging 6-7% (approximately 50-60% albite). Grain size is generally medium to coarse (up to 5 centimetres ("cm")). Albite is associated with quartz, tourmaline and apatite. There is prevalence for Ta on albite grain boundaries, and the highest grades of tantalum occur in the Albite Zone.

Average Na_2O content in the Central Lode is around 2.5-3.5%, increasing towards the footwall. High grades of lithium ore (>4% Li_2O) generally contain <5% albite. Lower grades of lithium ore (3.6-4% Li_2O) contain up to 10% albite. Contacts between albite and other mineralogical zones are generally transitional.

Phosphorus

This occurs primarily in the form of apatite (approximately 42% phosphorus oxide (P_2O_5)) and associated minerals such as fluorapatite, occurring mainly in Albite Zones, and as blue apatite in the K-feldspar/Spodumene Zones. Central Lode contains 0.3-0.5% P_2O_5 overall whereas lithium ore itself generally contains <0.1% P_2O_5.

Potassium

The primary potassium minerals are K-feldspar (approximately 17% potassium oxide (K_2O)) and mica. Assays of up to 12% K_2O have been recorded, representing 70% K-feldspar.

Tin

Cassiterite is the dominant tin mineral at Greenbushes occurring in grains of up to 50mm and at about twice the average tantalum content.

7.9 Conclusions

The geology and mineralisation controls at Greenbushes are well understood, based on a long history of mining. The Greenbushes pegmatite body remains open at depth and along strike, and there are prospective near-mine exploration targets in the footwall of the main pegmatite. However, there would appear to be limited exploration potential in the remainder of the district.

8 DEPOSIT TYPES

The following discussion is relevant to the formation of the pegmatite mineral deposit type at Greenbushes and to the geological concepts used in the description and definition of the Greenbushes lithium Mineral Resource.

Conventional fractional crystallisation processes operating in granite melts concentrate incompatible elements, light ion lithophile elements and volatiles into the late-stage melt phase. This process can form a marginal leucocratic granite or pegmatitic granite phase enriched in these incompatible elements. Such marginal phases typically occur at the top of granite intrusions and are termed apogranites. Late stage volatile-enriched fluids can also form internal and external greisen zones, typically tin-rich with associated tantalum (Ta) and niobium (Nb) mineralization. Concentration of incompatible elements in a melt (e.g. lithium (Li), phosphorus (P), fluorine (F), boron (B), rubidium (Rb) and caesium (Cs)) has a fluxing effect, enabling the melt to remain as a low viscosity liquid at very low temperatures (350ºC to 400ºC).

This allows fractional crystallisation to proceed to extreme levels, with pegmatites as the end-member of this process. Highly fractionated pegmatites can be found up to 10km from the parent granite, and are themselves categorised into various sub-types according to their degree of fractionation and parent protolith.

The parent protolith and evolved granite has a bearing on the final chemistry of the daughter pegmatites, with a broad characterisation based upon this relationship distinguishing between the Lithium-Caesium-Tantalum ("LCT") family and the Rare Earth Element ("REE") enriched Niobium-Yttrium-Fluorine ("NYF") family (Cerny, 1993a; Cerny and Ercit, 2005). The broad LCT-NYF characterization is important to consider as it has a strong bearing upon the prospectivity of a pegmatite for certain commodities and mineralization styles. Table 8.1 outlines this broad pegmatite classification.

Table 8.1
Classification of Pegmatite Family from Parent Protolith

Pegmatite Family	Pegmatite Sub-Types	Parent Granite	Protolith	Pegmatite Bulk Composition	Pegmatite Signature Elements[1]
LCT	beryl, complex, albite spodumene, albite	late orogenic S, I, or mixed S+I types	undepleted upper-middle crust supracrustals and basement gneisses	peraluminous	Li, Rb, Cs, Be, Sn<Ga, Ta>Nb, B, P, F
NYF	rare earth	anorogenic A and I types	depleted middle-lower crustal granulites or undepleted juvenile granitoids	subaluminous-metaluminous-(subalkaline)	Nb>Ta, Ti, Y, Sc, REE, Zr, U, Th, F
Mixed	'cross-bred' LCT and NYF	Post-orogenic to anorogenic, mixed geochem. signature	mixed protolith, or assimilation of supracrustals by A or I type granites	metaluminous to moderately peraluminous	Li, Rb, Cs, Be, Sn, Ta, Nb, REE, Zr, U, Th, B, P, F

Note:
(1) Be = beryllium, Ga = gallium, Sc = scandium, Th = thorium, U = uranium, Zr = zirconium, "S-type granite" = sedimentary protolith, "I-type granite" = igneous protolith, "A-type granite" = anorogenic

The Greenbushes lithium deposits belong to the Spodumene sub-class of the LCT pegmatite deposit class. The pegmatites are hosted in a major regional structure and represent a late stage product of cooling granite magma. Early crystallisation of the pegmatite formed albite-tourmaline zones, followed by albite, cassiterite and tantalite crystallisation. Spodumene-quartz assemblages crystallised at slightly lower temperatures, followed by formation of a potassium feldspar-rich zone in the hanging wall.

Lithium-rich zones are spatially related to tantalite-bearing zones which have been mined and processed in the recent past. In places pegmatite may contain economically recoverable levels of both lithium and tantalum, although more typically lithium ore is low in tantalum (<100 parts per million Ta_2O_5).

The Greenbushes pegmatite is distinguished from many other rare-metal pegmatites by:

- not being symmetrically or truly asymmetrically zoned, and not having a quartz core;
- having no indication of a parental granitoid at depth or in close proximity; and
- being formed at higher pressure/temperature, under synkinematic conditions.

9 EXPLORATION

Exploration in the Greenbushes district dates back to the 19th century with the discovery of cassiterite in 1886. Early production came from alluvial deposits of tin and tantalite. Spodumene was first identified in 1949. The extent of the pegmatite outcrop was masked by laterite cap rock and alluvium. Development of tantalum markets stimulated exploration and mining of the pegmatite and the identification of a complexly zoned body enriched in tin, tantalum and lithium. Modern exploration relevant to the current lithium operations and Mineral Resources has been undertaken since the mid-1980s. A number of operators have been involved, including Talison, Sons of Gwalia, Gwalia Consolidated Limited, Lithium Australia Limited and Greenbushes Limited.

The primary target for exploration since the 1970s has been extensions to the tantalum mineralization, with the lithium-rich zones being defined and extended during this work. Resource development for the two commodities often occurred within the same mining area.

A major review of previous exploration data in 2004 was followed by a work program of surface mapping and airborne geophysics primarily directed at building exploration models for tantalum targets but also providing insight into lithium potential. The mapping and compilation work was carried out by in-house geologists with assistance in database manipulation, and in geophysical data collection and reduction by contractors as outlined below.

The Greenbushes pegmatite was mapped at a scale of 1:1,000, using an orthophoto image and surveyed topographic data as a base. The geological mapping aimed to show the geometry and contact relationships of the main pegmatite and other smaller pegmatites, the internal mineralogical zoning in the main pegmatite and superimposed structural features. Structural measurements, including contacts, foliation and lineation, were taken during the mapping program.

Geological mapping shows the overall form of the Greenbushes pegmatite to be several lens-shaped pods joined by thinner dyke-like links. The thicker pods of pegmatite are arranged in a left stepping en echelon series, and the thin linking sections of pegmatites define S-shaped asymmetric folds where they link with the pods. Thin linking sections of the Greenbushes pegmatite are exposed in the Cornwall and C2 pits shown in Figure 4. Towards the north, there are increasingly numerous, thinner pegmatite dykes in the footwall of the main Greenbushes pegmatite.

The Greenbushes pegmatite is mineralogically zoned along strike and across strike. Across strike zoning is best developed in the thicker pods of pegmatite where spodumene-rich lithium zones form the cores of the pods. Lithium zones are generally quite “clean”, and comprised of quartz+albite+spodumene with little or no dark-coloured minerals. The lithium zones are enveloped by sodium zones comprising saccharoidal albite and quartz with variable amounts of tourmaline and apatite ± minor spodumene and mica. Along-strike zonation is defined by the relative abundance of tourmaline and the development of quartz-rich layers. The quartz zone is only found at the southern end of the C1 pit (Figure 4). This is interpreted as the least fractioned part of the Greenbushes pegmatite. There is an overall increase in the degree of fractionation from south to north in the Greenbushes pegmatite.

An aeromagnetic survey, commissioned by Sons of Gwalia was flown in April 2004, over the entire lease area, by contracting company Fugro Airborne Surveys. Survey lines were 50m apart and the flight height was 50m, except over the Greenbushes town site where survey height was up to 150m. Radiometric data were collected simultaneously with magnetic data. The data were gridded and several images, showing potassium, thorium, uranium, total magnetic intensity, and the first and second derivatives of total magnetic intensity were provided. A geological interpretation of the magnetic images, at a scale of 1:25,000 was completed. Radiometric images appear to be strongly influenced by the regolith. Thorium, and to a lesser extent uranium, are strongly influenced by topography with a strong response between approximately 200 and 250m AMSL. Thorium anomalies are concentrated in two main bands on either side of the >250m AMSL ridge on which the Greenbushes pegmatite is exposed. These relationships suggest that thorium and uranium may be concentrated in a lateritic layer, which has been stripped (or did not form) at higher and lower topographic heights. The Greenbushes pegmatite gives a strong potassium response but there are also potassium responses over areas of exposed granite and felsic gneiss. An association between potassium response and drainage suggests that exposure of bedrock due to weathering strongly influences the nature of this radiometric image.

A composite grade control and exploration sampling geochemical database was built containing lithium and the 36 elements from X-Ray Fluorescence (“XRF”) scans carried out at the Greenbushes analytical laboratory. The Greenbushes laboratory provided the results of all data collected from 1995 to 2003. The data of geological interest containing sample numbers and a full set of assay results were extracted into an ACCESS data base by contactor company Terra Search Proprietary Limited. Duplicate records were removed and exploration and grade control files merged for use in Leapfrog and DataDesk software.

Internal geochemical zoning of the pegmatite was investigated using Leapfrog. An anisotropy that reflects the average west dip of the Greenbushes pegmatite was applied to the analysis. In summary, the distribution of Li_2O highlights the concentration in the spodumene-rich lithium zones in the C3 area. There is a strong antipathetic relationship between Li_2O and Ta_2O_5. The high-grade Ta_2O_5 ore lies in the hanging wall of the lithium zone and lower grade Ta_2O_5 ore is produced from beneath the lithium zone in the C3 area.

This work has provided the basis for subsequent exploration programs at Greenbushes. The geochemical model built from surface and drill hole analyses has produced indices showing magmatic fractionation trends guiding exploration to the most prospective targets.

While surface exploration has proven useful in locating pegmatite bodies, weathering and associated leaching means that economic lithium mineralization does not occur at surface. Consequently, diamond and reverse circulation (“RC”) percussion drilling have been the primary tools in developing the lithium Mineral Resources.

Several exploration and resource development opportunities are available to extend and upgrade lithium Mineral Resources in the currently defined pegmatite structure.

The lithium Mineral Resources within the Greenbushes pegmatite are constrained by domain boundaries at approximately 0.7% Li_2O. These boundaries are based on an interpretation of population statistics and yield Mineral Resource grades that are consistent with future processing requirements. Lower grade lithium mineralization occurs outside these domain boundary constraints and is not included in the Mineral Resources.

Preliminary block-modelling of pegmatites above 950mRL and outside the current Mineral Resource outlines suggests exploration potential exists for lower grade lithium mineralization. This lower grade mineralization is potentially within reach of a surface mining operation. QG notes that these are conceptual targets. There has been insufficient exploration to define a lithium Mineral Resource in these areas and it is uncertain if further exploration will result in the delineation of the targeted mineralization.

10 DRILLING

10.1 Drilling Programs

Diamond and RC drilling for definition of lithium Mineral Resources and Mineral Reserves within the pegmatite has been undertaken typically on 50m or locally 25m spaced cross-sections. Drill patterns in recent programs have been less regular in some areas due to mining activities which restrict access to some sectional drill sites. This work has been undertaken in staged programs by several companies over the past 32 years.

The results of these drilling programs form the building blocks of the continuously improving interpretation of the geological solid models and geostatistical domains in the Mineral Resource model. The assay results from the drill samples are the basis for composite files used in Mineral Resource estimates.

Drill holes are generally sited on the hanging wall side of the mineralization and drilled vertically or to the east to intersect the pegmatite bodies as close to normal to the dip as possible, thereby providing nearly true thickness intersections.

The pegmatite and lithium zone geometries are described in Section 7 – Geological Setting and Mineralization. Considering the relationship between drill hole and lithium zone orientations in the C3 area, a typical drill pattern would drill east at a declination from the horizontal of minus 60º. At an average lithium zone dip of minus 50º to the west, the drill intersection would be approximately 6% longer than the true thickness of the mineralization. In the cases where site conditions necessitate drilling vertically, the drill intersection would be approximately 60% longer than the true thickness of the mineralization. In the C3 area, 65% of the holes have been drilled between minus 50º and minus 70º declination from the horizontal, and 26% drilled between minus 80º and vertically.

Considering the orientation relationships in the C1 area, where the average dip of the lithium mineralization is interpreted to be approximately minus 30º to the west, drill holes directed east at a declination from the horizontal of minus 60º intersect the mineralization at approximately true thickness. Holes drilled vertically have intersections approximately 15% longer than the true thickness. In the C1 area, 44% of the holes are drilled at or near minus 60º declination from the horizontal, and 56% of the holes are drilled at or near the vertical.

Available records in the Greenbushes database for the earlier drilling programs are more limited than for drilling completed since 2000.

A total of 753 surface drill holes totalling 107,910m of drilling are contained in the Greenbushes database, defining the lithium Mineral Resources and enclosing pegmatite. These are made up of 314 diamond holes (57,228m) and 439 RC holes (50,682m). A further 229 underground Mineral Resource holes are in the database, targeting high-grade underground tantalum mineralization.

A summary of surface drill holes in the Greenbushes database and available for lithium Mineral Resource estimation is provided in Table 10.1. The surface drill hole collar locations are shown in Figure 6, and in long section in Figure 7.

Table 10.1
Surface Drill Holes Available for Mineral Resource Modeling

Year	Series	RC Holes	RC Metres	Series	DD Holes[1]	DD Metres
1977-80				HP	31	7,885
1981				HP, JM	44	10,510
1982				HP, JM	30	4,539
1984				HP	12	1,463
1985				HP	11	1,410
1988				LD	2	370
1990				HP	5	756
1991				HP, NE, BG, KF, TC, GW	59	6,794
1993				HP	11	924
1994				GT	4	653
1996				HP, NC, NE	40	5,972
1997	RC	90	7,972	HP	8	790
1998	RC	9	1,549		0	0
1999	RC	13	2,378	HP, GT	15	6,521
2000	RC	10	762		0	0
2001	RC	7	1,044	HP, VT	13	1,666
2002	RC	40	5,199	HP	5	1,605
2004	RC	9	650			
2005	RC	11	976			
2006	RC	49	6,412			
2007	RC	15	3,234			
2008	RC	11	1,926	C1DD, C3DD	8	1,668
2010	RC	119	9,216			
2011	RC	5	264	C2DD	1	51
2012	RC	51	9100	C1DD C2DD C3DD	5 3 7	372 736 2543
Totals		439	50,682		314	57,228

Note:
(1) Excludes underground drill holes.

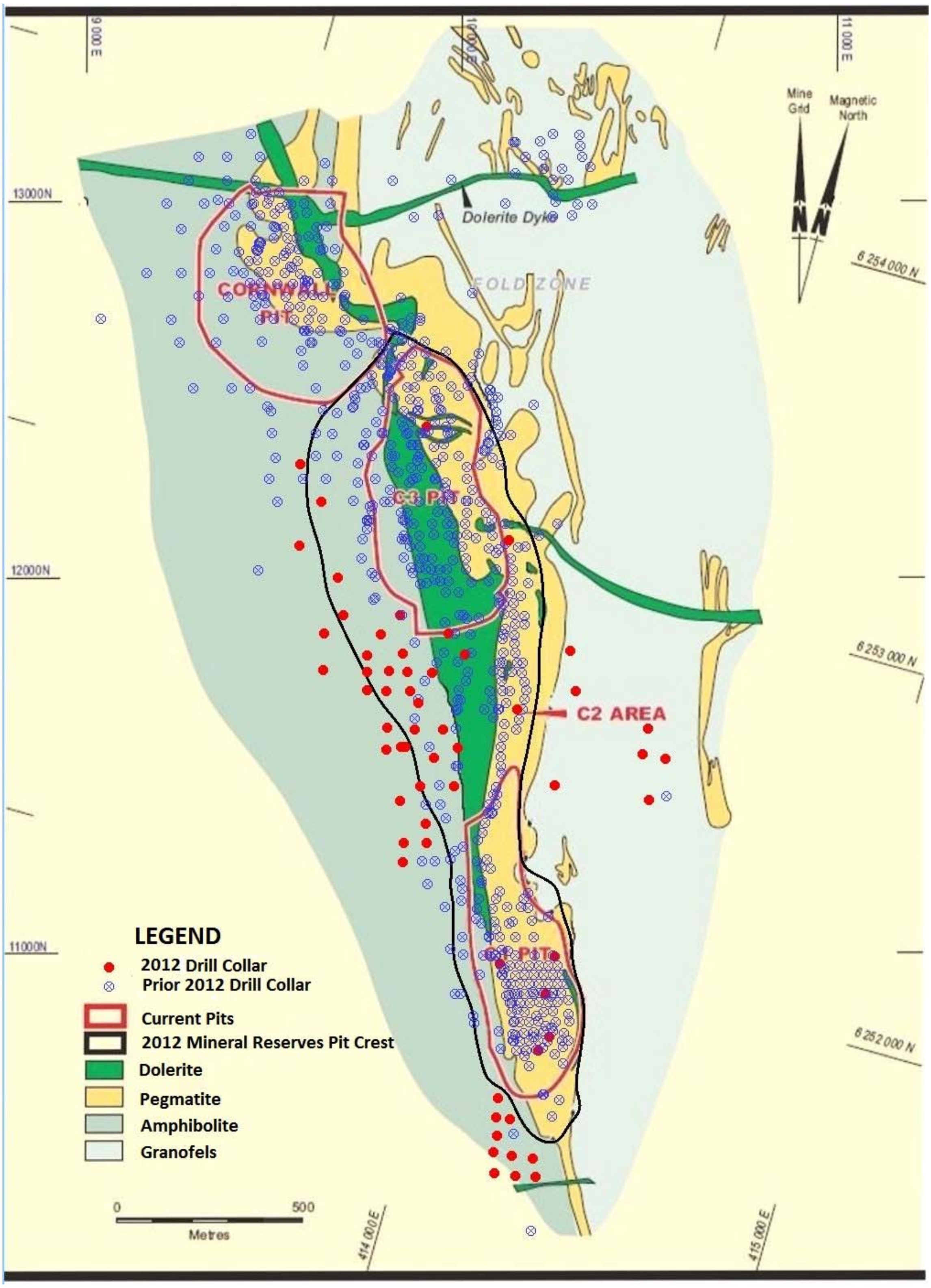
The most recent RC and diamond drilling programs were undertaken for lithium Mineral Resources in 2011 and 2012 and are described in the section below. The programs tested the lithium Mineral Resource distribution and extensions in the Greenbushes main pegmatite lode and flanking footwall pegmatite structures. Diamond drilling was contracted to Westcore using a LF90D Longyear rig; and RC drilling to SBD Drilling using Schramm T685WS and Explorac220 RC rigs, and to Action Drilling using an Atlas S8 rig.

For the RC drilling a 5.5 inch diameter hole was drilled using a 4.5 inch diameter rod string and face-sampling hammer. A total of 12,802.3m were completed in 67 holes including 9100m in exclusively RC drill holes, 574.1m in exclusively diamond drill holes, and 3128.2m in RC holes with diamond drill tails. Samples from the RC drilling were collected every metre through a face sampling hammer, cyclone and riffle splitter system. Limited groundwater exists and the RC samples were typically dry.

All holes were logged using the standard Greenbushes logging templates. Collars were surveyed by the mining surveyor and down-hole surveys run by the drilling company using a gyroscopic or Reflex survey tool. All of the above information is captured in the site acQuire Technology Solutions Pty Limited ("acQuire") database. Generally sample recoveries are reported to have been excellent.

The data collection processes described above are typical of drilling programs since 2000.

Figure 6: Surface Drill Hole Collar Locations



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2011-12 Drilling Programs

Since the last resource model update in 2011 two mine drilling programs have been completed. The programs increased the volume of the pegmatite bodies, improved interpretation of structures and increased the confidence of block model grade estimation.

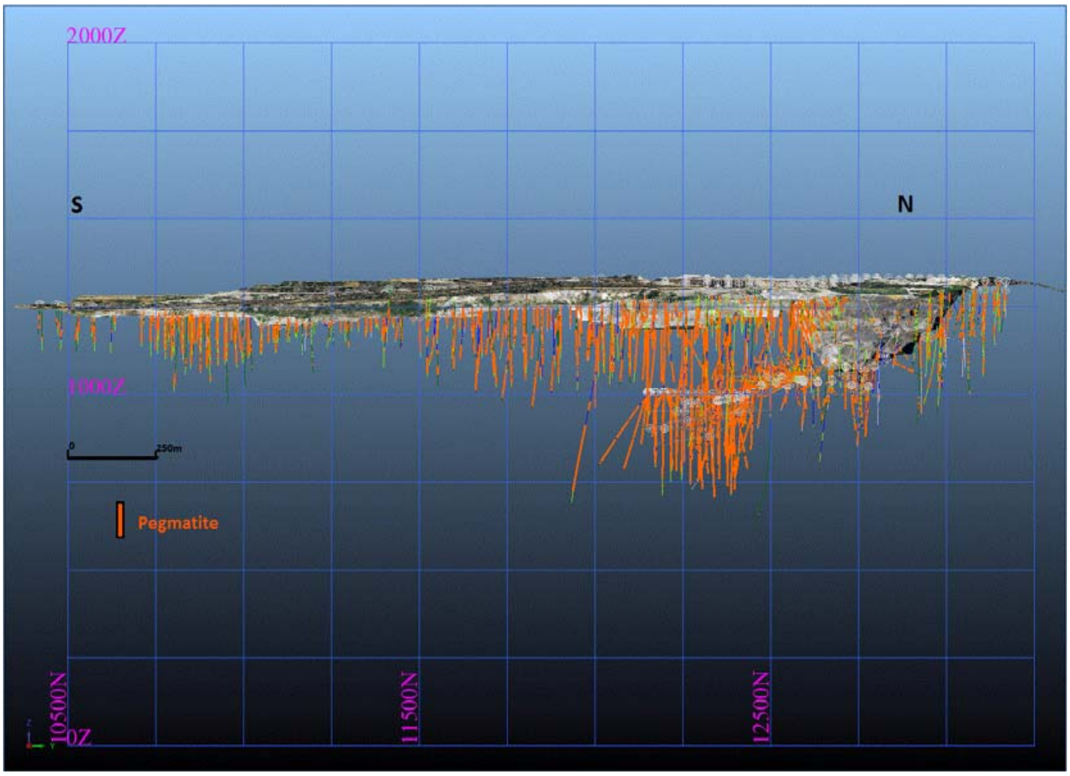
In late 2011 and early 2012 the Greenbushes main pegmatite lode and flanking footwall pegmatite structures were further tested with RC and diamond drilling programs. The objective was to increase Mineral Resources and Mineral Reserves at Greenbushes to increase the mine life and support the long term operation of a Mineral Conversion Plant treating Greenbushes lithium ores. Translation of Mineral Resource to Mineral Reserve tonnes in the 2011 Mineral Resource was about 43% indicating that with more favourable optimisation input parameters there was significant potential to expand Mineral Reserves from the existing Mineral Resource. In addition, there remained areas in the current geological interpretation where the pegmatite volume could be better defined and the lithium Mineral Resource improved with targeted drilling. More exploratory lithium targets outside the main pegmatite structure also required better definition to assess their Mineral Resource potential.

The targeted Mineral Reserve expansion from the drilling programs was expected to result from both the upgraded Mineral Resource after drilling and from improved economic and scheduling parameters in the optimisation and design process supporting the planned production increases in the strategic plan.

To assist with drill targeting, and to provide an preliminary indication of the impact on Mineral Reserves of revised input parameters in the pit optimisation process, a series of Whittle pit optimisations had been run on the 2011 Mineral Resource model. The outcome produced a pit shell with the dominant change in shape compared to the 2011 pit design being in the C2 area and the southern to mid-section of C3.

A total of 12,802m were completed in 67 holes including 9,100m in exclusively RC drill holes, 574m in exclusively diamond drill holes, and 3,128m in RC holes with diamond drill tails. Diamond drilling was contracted to Westcore using a LF90D Longyear rig; and RC drilling to SBD Drilling using Schramm T685WS and Explorac220RC rigs, and to Action Drilling using an Atlas S8 rig. The collar locations are shown in Figure 6.

Figure 7: Greenbushes Drill Hole Pegmatite intersections - Long Section Looking West



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Drilling data collection in the field includes geological logging, visual estimation of sample recovery, and sample collection by means of rotating cone or riffle splitter in accord with industry best practice QA/QC methods. These practices have been followed at Greenbushes for some years and are part of mine geological standard work procedures.

For the 2012 Mineral Resource model the additional 12,802m of drilling in the C1, C2 and C3 areas has extended the lithium Mineral Resource volume, upgrading the geological interpretation and the estimation confidence. Continuous improvements in data collection quality follow the recommendations from the previous Greenbushes NI 43-101 technical report titled “Greenbushes Lithium Operations, Located in Western Australia – Australia NI 43-101 Technical Report” and dated June 15, 2011, including upgrades to the drilling sampling and assay procedures to improve both grade and mineral quality boundaries data; and analysis of data to help define sampling error at the stage of splitting samples on the drill rig.

The database is acQuire, industry recognised software with built in internal checking and validation mechanisms. A QA/QC protocol is in place in the database to statistically analyse the results of duplicates and standards from the field and the laboratory. The output from this protocol is covered in Section 11.

The geological model was updated from drilling results. Domained solids of the pegmatite and internal mineralogical/grade zones within the pegmatite were generated by QG using Leapfrog software. Talison provided existing geological interpretation wireframes and information to feed into the Leapfrog software. Talison staff participated in the review process to refine the Leapfrog solid models to best represent the known geology.

For the 2012 Mineral Resource model the geological interpretation of the pegmatite has been extended by recent deeper drilling results. Lithium mineralisation domains were created for >= 0.1% <= 0.7% Li_2O, 0.7 % =< Li_2O <= 2.8% and Li_2O >=2.8% as an improvement to the Li_2O >=1% used in the 2011 Mineral Resource model and Li_2O >=2.8% used in the 2009 model. This domaining was driven by exploratory data analysis and addressed the need for lithium Mineral Resources to be defined at lower grades to meet the requirements of the processing plant expansion program whilst not smoothing the higher grades that are targeted for upgrading to technical grade products. The 0.7% Li_2O domain boundary is consistent with population statistics in the lower part of the lithium grade distribution curve. The 2.8% Li_2O boundary represents the lower limit of a high grade lithium population supported by mineralogical mapping.

Talison used the QG Leapfrog interpretations to composite the drill data and forwarded the composites to QG to use for data analysis and Mineral Resource estimation.

A Surpac block model was built on site covering the mine project area which includes C1, C2 and C3 pits. A block model was created and centroids forwarded to QG for interpolation of required values using supplied composited assay data.

Site based model validation was carried out in addition to QG model validation and the Mineral Resource block model was subsequently released to the mine engineering staff for pit optimisation and design.

10.2 Drill Surveys

Drill holes contained in the Greenbushes database date back to 1977 and, as expected, many of the early holes have been surveyed using different methods to those typically used at Greenbushes today. More recent (post-2000) down hole surveys have employed Eastman Single Shot cameras, while the later RC programs (since hole RC214) utilized either a gyroscopic or a Reflex electronic tool. Eastman down-hole surveys were recorded at 25m down-hole, and thereafter every 30m to a minimum of 10m from the final depth. The geologist checks the drillers’ dip and azimuth written recordings by viewing all single shot photographic discs prior to data entry into the database.

Checks of surveys within the database, by comparing overlapping data between older and post-2000 drill hole data, suggest in general that the surveying is reliable. Some of the RC holes drilled before 2002 were apparently not down-hole surveyed, and were given design parameters in the database. Also some of the older vertical diamond holes were not down-hole surveyed. This is not generally an issue if the hole is short and remains relatively vertical.

Collar surveys also varied in survey method with time. For the more recent RC and surface diamond drilling programs, drill collars (northing, easting and elevation) of completed holes were surveyed by the Greenbushes survey department and imported into the database.

The drill hole surveys were also subjected to a visual check where collar locations were checked on the collar plots and on the ground to confirm the coordinates in the database.

10.3 Logging

All holes within the Greenbushes database have been logged to some degree. Quality and quantity of logging varies considerably, particularly in the older drill holes. The most detailed logging exists for the underground drill holes and the recent surface diamond drilling program (C*DD prefix), where core was logged quantitatively for lithological, mineralogical and geotechnical data. The core was also digitally photographed and geotechnical defect logs were conducted on selected orientated holes.

All the data is in electronic format, in general utilising Excel logging templates. The data is downloaded into an acQuire database, recording the data in tables covering survey, geology, assay and collar information. Earlier drilling programs prior to 2001 often lacked geotechnical and defect logs. All previous logging was done on paper, and only a selected proportion of these data have been converted electronically and included in the database. Generally only Rock-Type and a limited number of other pertinent fields have been entered into the database from these paper logs.

10.4 Sampling Method and Approach

General

The Greenbushes pegmatite and included lithium mineralization is sampled by a combination of RC and diamond drilling programs. The drill patterns, collar spacings and hole diameters are guided by geological and geostatistical requirements for reliability of geological interpretation, and for confidence of estimation in Mineral Resource block models.

Drill core samples provide continuous intact columns of rock from which geological contact relationships can be determined, mineralogical associations examined and structural conditions measured. RC drill sampling provides mixed fine rock chips over the full selected sample length of 1m from which mineral proportions in the sample can be estimated by visual examination. The intact information from diamond drill cores can be interpolated into the samples of nearby RC holes through the common link of geochemical assays.

A sample interval of 1m is used as the default length in RC and diamond drilling. Analysis of the pegmatite geometry, lithium lode widths and internal waste zones in conjunction with mineralogical variations and assay population statistics have been used to determine the appropriate sample interval in drill holes. Pegmatite intersections and the major mineralogical variations defining lithium and tantalum enriched zones within them can vary from a few meters to over 100m in thickness
.
Distinguishing the dark host waste rock and intruding dolerite from the light pegmatites in drill core is clear and obvious. Where unaffected by shearing, the geological contacts are abrupt, often regular and intact. Contact relationships are masked in RC chips and the host rock/pegmatite contact position is inferred within the sample length from the proportion of waste to pegmatite mineral chips and chemical indicators as described in Section 14.5 – Geology and Domaining. Internal consistencies are maintained in the diamond drill and RC drill sampling populations, and the sample populations are considered representative of the mineralization.

Both diamond drill and RC drill holes are distributed throughout the lithium deposits. As shown in Table 10.1, diamond cored holes make up 42% and RC holes make up 58% of the surface holes available for Mineral Resource modelling in the lithium mineralization block model from approximately 9,800 metres North (“mN”) to approximately 14,620 mN.

10.5 Diamond Drilling

Diamond core is collected in aluminium trays marked with hole identification and down hole depths at the end of each core run. Core size is generally NQ (approximately 47mm diameter). Pegmatite zones are selected by the geologist while logging and intervals are marked up for cutting and sampling. All pegmatite intersections are sampled for assay. The sections of core selected to be sampled generally extend several metres into the host rock waste on either side of a pegmatite intersection. Internal waste zones separating pegmatite intersections are routinely sampled, although in a small proportion of holes drilled prior to 2000 some waste zones separating pegmatite lenses have not been assayed. The geological and mineralogical variations in the core which guide sample intervals are easily determined by visual examination.

The core is reassembled into a continuous column in the core tray as much as fracture patterns will allow. Core recovery is generally near or at 100% and reassembly is commonly achieved. A line of symmetry is then drawn on the core and the core is cut in half by diamond saw. One half of the core is bagged and numbered for submission to the laboratory while the other half is returned to the core tray. The selection of core for assay and core retained is unbiased and as far as available records show, all drill core since 2000 has been processed in the same way.

The typical core sampling interval for assay is 1m, but shorter intervals are sampled where required, to honour geological boundaries and mineralogical variations. Compositing of sample lengths for geostatistical analysis is described in Section 14.6 – Composite Files.

In general diamond core recovery and sampling is considered to be of good quality, and suitable for the purposes of Mineral Resource estimation.

10.6 RC Drilling

RC samples are collected for every metre drilled over the full length of the hole via a cyclone attached to the rig and split at the rig by the drilling contractor using either a riffle splitter or rotating cone splitter. A sample of approximately 3-4 kilogram (“kg”) is produced for submission to the laboratory. In some old RC holes drilled prior to 2000 the regular sampling length was 2m. For RC drilling post-2000, two splits have been taken from each pegmatite interval, one for analysis and the other for storage as a reference. A third sample is collected at every 20m interval and submitted to the laboratory for Quality Assurance/Quality Control (“QA/QC”) purposes. Excess cuttings are laid out in rows at the drill site for geological logging. RC drill hole bit size is normally approximately 5.25 inches (13.2cm).

All pegmatite intersections are sampled for assay. The sections sampled will normally extend several metres into the waste rock flanking the pegmatite. As with diamond drilling, internal waste zones separating pegmatite intersections are also sampled, although in some holes drilled prior to 2000 the sampling and assay of some internal waste zones is incomplete. Pegmatite intersections are visually distinguishable from waste zones in drill chips during drilling, however, the inferred position of the contact within a sample interval must be determined by detailed examination of the chips.

Drill cuttings have not been weighed to provide a measure of sample recovery. However, a Talison geologist reviews the piles of cutting rejects while undertaking geological logging, and intervals with poor recoveries are recorded. Talison reports that the drill samples are almost invariably dry, and that recoveries are consistently high.

QG considers that current sampling methods conform to acceptable industry standard. An improvement in future programmes would be to record estimates of sample recovery (or better, measurements), against every interval. This facilitates the analysis of potential biases due to loss in poor recovery intervals.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sample Preparation

Drill samples from RC drilling programs are collected and bagged at the rig as drilling progresses. The RC samples are collected in sequential, pre-numbered bags directly at a discharge chute on the sample splitter to which the sample bag is attached. The splitter is either fed via a closed sample collection circuit at the drill hole collar or is fed manually from a bagged sample at the cyclone.

Drill core samples are also collected sequentially in pre-numbered sample bags after cutting with a diamond saw. The integrity and continuity of the core string is maintained by reassembling the core in the tray. If any apparent geological discontinuities are noted within or at the end of core runs these are resolved by the logging geologist.

All sample preparation and analytical work is undertaken at the operation's on-site laboratory, which is ISO 9001: 2008 certified and audited in accordance with this system, most recently in September 2012. The Greenbushes laboratory provides quick and secure turn-around of geological samples using well established quality control procedures. The laboratory also services processing plant samples and samples from shipping products.

Upon submission to the laboratory, samples are entered into the laboratory sample tracking system and issued with an analytical work order and report ("AWOR") number. Separate procedures have been developed for RC and diamond drill samples.

Preparation, analysis and management of geological samples are covered comprehensively in laboratory procedures. The sample preparation flow sheet is shown in Figure 8 and can be summarized as follows: all samples are dried for 12 hours at a nominal 110ºC; thereafter samples are passed through a primary crusher to reduce them to minus 10mm, followed by secondary crushing in a Boyd crusher to minus 5mm. A rotary splitter is used to separate an approximate 1kg sub-sample, which is ground in a ring mill to minus 100µm.

Two routes have historically been used for the preparation of geological samples. The first utilises standard ferrous pulveriser bowls, while the second uses a low iron preparation method with a non-ferrous tungsten bowl. The low iron preparation as shown in Figure 8 was used for all samples in the 2011-2012 drilling programs. All drilling sample pulp residues are retained in storage. Coarse sample rejects are normally discarded unless specifically require for further test work.

Sample preparation is carried out by trained employees of the company in the Greenbushes site laboratory following set laboratory procedures.

11.2 Analysis

Due to the long history of operations at Greenbushes, the meta-data regarding assaying is somewhat incomplete; however, the recording of analytical data has been at the current standard since at least 2006. As far as can be determined, all assaying of drill samples has been by XRF and Atomic Absorption Spectroscopy ("AAS"). The majority of assays have been analysed for 36 elements at the Greenbushes laboratory. Sodium peroxide dissolution and AAS is used for Li_2O determination. The other elements/oxides are analysed by XRF following fusion with lithium metaborate. The analysis of geological samples for Li_2O by AAS and other elements/oxides by XRF is documented in laboratory procedures.

Over time, the detection limits of some elements assayed at the Greenbushes laboratory have improved, as outlined in Table 11.1, with implications for the accuracy of some of the older assays in the database. This appears only to be significant for the low concentration elements and has no material effect on the resource model estimates. Current detection limits remain as listed for PW2400 (low level) June 2001 in Table 11.1. Detection limits are stored in the acQuire geological database.

In 2002, a proportion of underground drill core samples were sent to the Ultra Trace Pty Limited ("Ultra Trace") Laboratory in Perth, WA, for analysis. XRF was used to analyse for Ta, Sn ("Tin") and others, and Inductively Coupled Plasma ("ICP") for Li_2O. It is possible that in the past some other assaying was carried out off-site, however, the number of samples is not thought to be significant.

Table 11.1
Greenbushes Laboratory Detection Limit History

Element	Detection Limit (%)		
	PW1400 - 1983	PW2400 - Nov 1995	PW2400 (low level) - June 2001
Ta_2O_5	0.005	0.005	0.001
SnO_2	0.005	0.005	0.002
Li_2O	0.010	0.010	0.010
Na_2O	0.005	0.005	0.005
K_2O	0.005	0.005	0.005
Sb_2O_3	0.005	0.005	0.002
TiO_2	0.005	0.005	0.005
As_2O_3	0.005	0.005	0.005
Nb_2O_5	0.005	0.005	0.002[1]
Fe_2O_3	0.005	0.005	0.005
U_3O_8	0.005	0.005	0.002

Note:
(1) The detection limits for June 2001 are current apart from Nb_2O_5 which reduced from 0.005% to 0.002% in 2010

Figure 8: Sample Preparation Flow Sheet

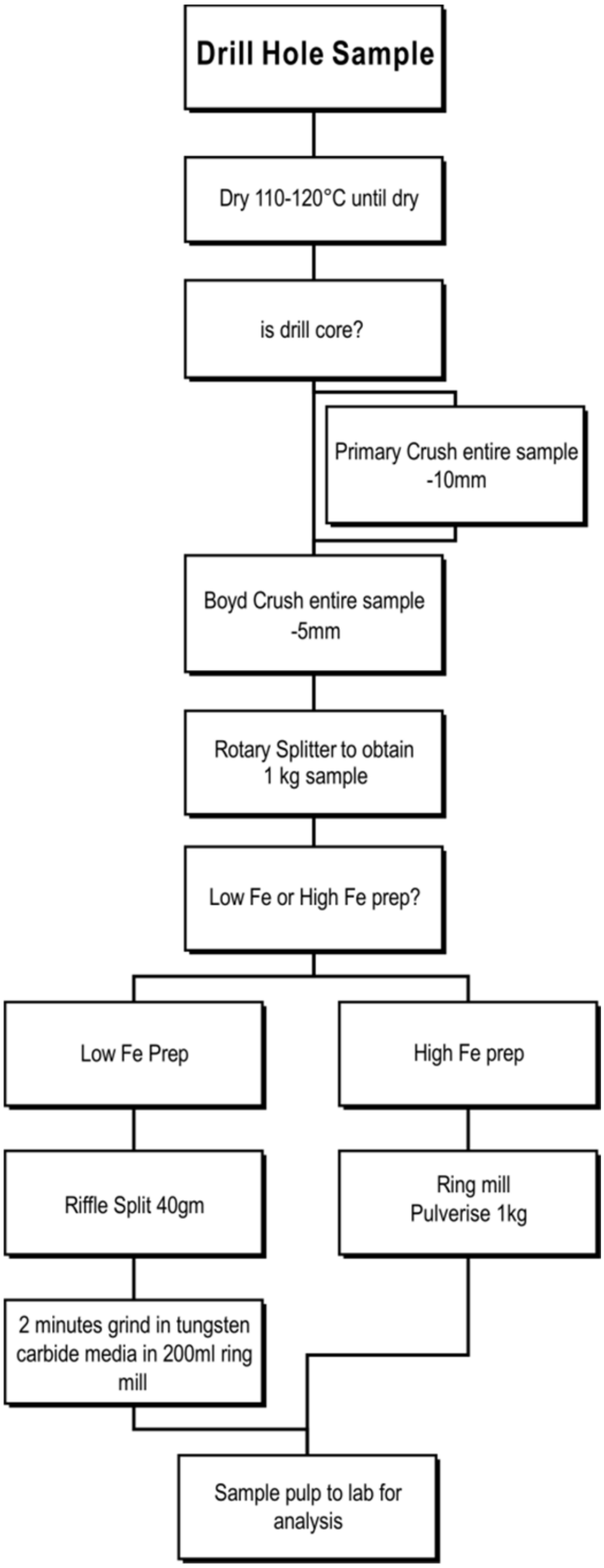

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Table 11.2 summarizes the Greenbushes database with respect to assays. In some older holes in the database drilled prior to 2005 not all samples were analysed for all 36 XRF elements. This introduces some issues requiring management in the determination of lithium ore types in the Mineral Resource block modelling process described in Section 14 - Mineral Resource Estimates.

Table 11.2
Assay Laboratory and Elements

Assay Type	Comments	Laboratory	Elements
XRF	Ta assaying. Full suite. Most recent drilling.	Greenbushes	Na_2O, MgO, Al_2O_3, SiO_2, P_2O_5, SO_3, K_2O, CaO, TiO_2, V_2O_5, Cr_2O_3, MnO, Fe_2O_3, CoO, NiO, CuO, ZnO, As_2O_3, Rb_2O, SrO, Y_2O_3, ZrO_2, Nb_2O_5, SnO_2, Sb_2O_3, Cs_2O, BaO, La_2O_3, CeO_2, HfO_2, Ta_2O_5, WO_3, PbO, Bi_2O_3, ThO_2, U_3O_8.
XRF	Ta assaying. Partially reported suite. Older holes.	Greenbushes	Na_2O, MgO, Al_2O_3, K_2O, CaO, TiO_2 Fe_2O_3, As_2O_3, Nb_2O_5, , SnO_2, Sb_2O_3, Ta_2O_5. (Reported)
XRF	Ta assaying. Partial suite. Some recent u/g. drilling.	Ultra Trace	Na_2O, MgO, Al_2O_3, SiO_2, P_2O_5, SO_3, K_2O, CaO, TiO_2, MnO, Fe_2O_3, As_2O_3, Rb_2O, SrO, Y_2O_3, ZrO_2, Nb_2O_5, SnO_2, Sb_2O_3, BaO, Ta_2O_5, PbO, Bi_2O_3, ThO_2, U_3O_8.
AAS	Li assaying. Most drilling.	Greenbushes	Li_2O
ICP	Li assaying. Some recent u/g.	Ultra Trace	Li_2O

The Greenbushes laboratory undertakes a regime of check standards, duplicate analyses and round-robin comparisons, to support the quality of the analytical work. In addition, the laboratory produces results for shipping samples that are confirmed by independent analyses on behalf of lithium concentrate purchasers.

QG has visited the Greenbushes laboratory on several occasions and discussed the sample preparation and analytical process with the Chief Chemist. The laboratory equipment appears well-maintained and the working spaces clear and tidy. Analytical methods and laboratory practices are in accordance with industry standards.

QG considers that current sample preparation, security and analytical procedures are adequate for the purpose of Mineral Resource estimation, grade control and reconciliation.

11.3 Data Management

The management of drill hole data has progressed from original paper logs to electronic databases, initially using Paradox database software in a number of datasets. In 2006, all site drill data, both exploration and grade control, were combined into the one master Sequential Query Language database administered through acQuire. Data were flagged as before or after the implementation of acQuire. Data were also flagged as belonging to Mineral Resource development and exploration or grade control.

All results are now captured electronically and transferred to the master database. Hole collars surveys are recorded in Gemcom Surpac Limited ("Surpac") string files and the co-ordinate information read into the database. Down hole surveys are entered manually unless collected by electronic instrumentation, in which case they are down-loaded electronically. Assay information is provided from the laboratory in Excel spread sheets which are converted to comma-separated values ("csv") files and read into the database. All information such as AWOR number, date and laboratory preparation code is now captured in the database.

Geology logging is initially carried out through Microsoft Excel and the resultant spread sheet down-loaded into the master database. Standard logging codes allow the installation of a range of filters to be applied to data entry during logging and prevent invalid coding.

11.4 Missing Assays

To overcome the sample intervals mainly in underground drill holes missing significant elements, over 1200 pegmatite intervals within the lithium Mineral Resource that were missing lithium assays were submitted to the laboratory as pulps for complete suite analysis. The submission of historical pulps and core for complete suite analysis is an on-going process with several thousand drill hole sample intervals remaining. The affected core is mainly from underground drilling programs in or about 2002 where the primary target was tantalum mineralisation.

QG considers that the sample preparation, analytical and data management procedures adopted at the Greenbushes site conform to industry standards, and are appropriate for Mineral Resource modelling purposes.

12 DATA VERIFICATION

12.1 QA/QC

QA/QC systems at Greenbushes have developed over time and therefore vary for the dataset used for Mineral Resource estimation. Current drilling practice involves collection of a duplicate field sample for every 20 RC samples submitted. Since January 2007 this has been recorded in the master acQuire database software and QA/QC reports generated for each drill program.

The site laboratory also utilizes a system of replicate analysis of samples and analysis of standards, along with each batch of drill samples, the results of which are also now captured in the master database.

Recovery logs are made of all diamond drill core as a part of the standard logging procedure which includes collection of geological, mineralogical and structural information. Talison reports that core recoveries within the fresh pegmatite range from 95% to 100%, averaging 99%. Weight measurements are made of RC samples from selected holes. Talison geologists also inspect the size of the cutting piles, and intervals differing from the norm in size or moisture content are noted on drill logs. Talison reports that RC sample recovery generally has been excellent.

QG has reviewed and verified the quality of the database, as described in the following sub-sections. Site visits were made in September 2009 and May 2011, during which inspections were made of the laboratory. As no RC or diamond drilling was in progress during these visits, it was not possible to review drilling and sampling practices.

12.2 Assay Quality

Collection of QA/QC sampling and assay data has been improved over time and therefore the type and amount of quality control data varies for different sections of the dataset.

Talison and previous operator QA/QC systems have relied partly upon the Greenbushes laboratory's internal quality systems, which include replicate (pulp repeat) laboratory analyses, analysis of known standards by XRF, and round-robin interaction with other laboratories. Li_2O in geological drill samples is not analysed in replicates; instead, the AAS machine is recalibrated before every batch of samples.

Known solution standards and blanks are embedded in each batch and the accuracy of the calibration is monitored regularly during the analysis of each batch. The precision of the AAS analysis technique is statistically monitored by the laboratory, using plant processing and shipping data. While these samples are typically higher grade than the average drill sample, ranging up to 8% Li_2O, the resulting precision at mining grades is very good and generally confirms the quality of the AAS method employed.

Duplicate field sample analyses exist for RC drill holes but not diamond core samples. No routine analysis of duplicate coarse reject or pulp samples is undertaken.

Current RC drilling practice is to submit a field duplicate sample for 5% of samples submitted. These duplicates are collected in the same way as the routinely assayed samples. Since January 2007 this has been recorded in the master acQuire database software and QA/QC reports generated for each drill program.

The QQ plots of RC drill sampling results do not indicate a significant bias between the original and check sample populations. Scatter plots of original and field duplicates for Li_2O from 2012 RC holes show less variability than the same plot over all the RC resource holes suggesting a reduction in sample error. Plots for half absolute relative difference (HARD) show less sampling error in the 2012 RC data compared to the overall RC data. The site laboratory undertakes a system of replicates the results of which are captured in the master database. A scatter plot for Li_2O replicates from RC samples shows acceptable repeatability of results.

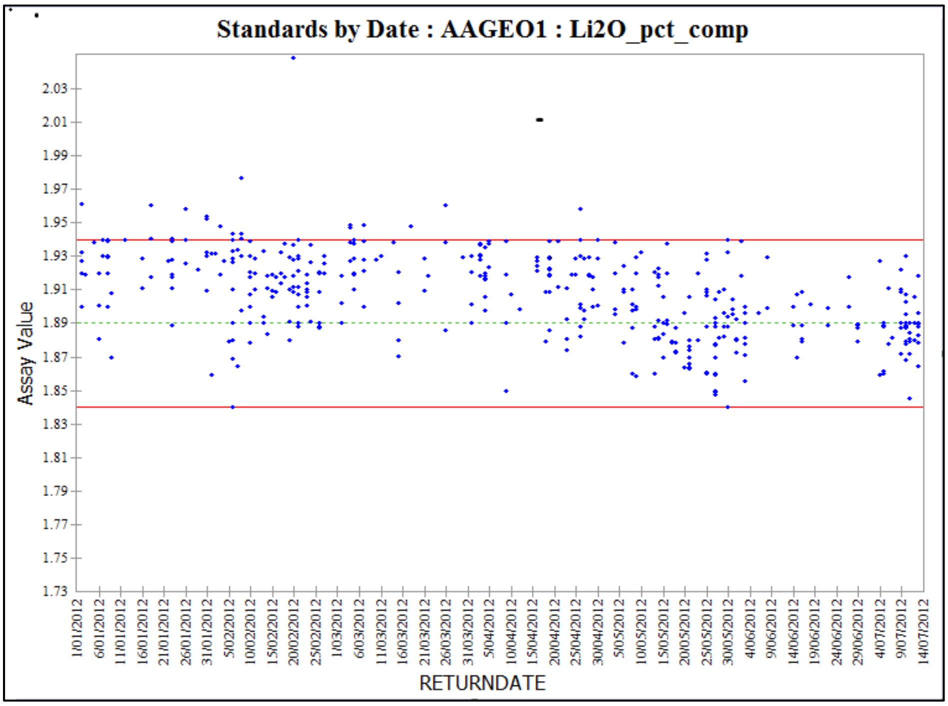
Standards

QG has examined the laboratory standards reports for drill samples in the period from July 2011 to June 2012, which covers the latest phase of Mineral Resource drilling (van Duuren 2012).

For XRF analyses, the laboratory routinely inserts any of four XRF standards, with multiple standards of different expected grades inserted in each batch. XRF analyses of four standards (GE16 to GE19) are reported over the period. GE16 to GE19 XRF standards are derived from run-of-mine pegmatite mineralisation from the Greenbushes mine chosen for their variation in Ta_2O_5 grade and designed to be bulk in-house standards to be used to verify specimen preparation, XRF measurement and to check positional errors. The standards were sent to independent laboratory Gannett Holdings to be pulverised, blended and homogenised. The expected values of the standards have been derived over time by statistical methods and adjusted in line with changes in instrument precision.

AAS analyses for Li_2O use internal laboratory rock standard AAGEO1 with an expected value of 1.89% Li_2O. During the period of the drill program, standard AAGEO1 returned results showing acceptable accuracy of laboratory analysis at this grade and the results for this standard over time are shown Figure 9. QG recommends the laboratory closely monitor on-going results to ensure trends are identified and if necessary that investigations are undertaken to bring the results back to limits around the certified mean.

Figure 9: AAS Standard AAGEO01 Results for Li_2O



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Notes:

1 *Red lines are acceptable limits derived from statistical analysis and instrument calibration approximating to two standard deviations*

2 *Green dotted line is the expected value*

Blanks

Solution blanks are embedded in sample batches analysed for Li_2O by AAS as referenced in above in this Section 12.2. No blank rock chip samples are run by the laboratory or inserted by the exploration group. However, Talison's procedures require that a preliminary charge of sample material is run to clean the mill prior to grinding the test sample.

RC Sample Field Duplicates

Field duplicates were taken approximately every 20 samples and the basic statistics for field duplicates collected during the resource drilling program are shown below. The basic statistics show similar populations of data although the charts show some spread in the results. QG considers the repeatability of field duplicate results would improve with a rig mounted rotary sample splitting system. The basic statistics for the field duplicate results are shown in Table 12.1 and the scatter plots are shown in Figure 10.

Table 12.1
Basic Statistics for RC Drilling Field Duplicate Results

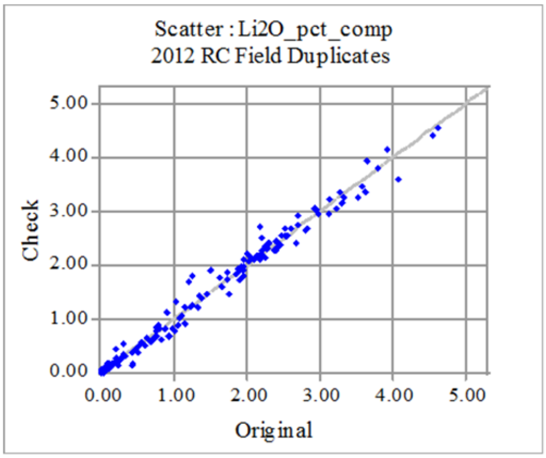
Assay Field	Mean		Standard Dev.	
	Original	Check	Original	Check
CaO_pct_comp	1.97	2.03	3.6	3.53
K_2O_pct_comp	2.16	2.16	2.49	2.40
Li_2O_pct_comp	1.92	1.91	1.62	1.58
MnO_pct_comp	0.08	0.08	0.09	0.08
Na_2O_pct_comp	2.04	2.03	1.60	1.55
P_2O_5_pct_comp	0.20	0.20	0.20	0.18
Ta_2O_5_pct_comp	0.01	0.01	0.01	0.02

Note: 1248 samples tested over the period from July 2005 to November 2012

Laboratory Replicates

Results of laboratory replicate analyses pairs were assessed to determine precision and bias. Laboratory replicate analysis is restricted to XRF analyses; consequently, Li_2O results were not included. The laboratory routinely takes replicates from every XRF sample batch. As expected, bias is negligible and precision is at acceptable levels. The plots of statistics for the results of laboratory replicates are shown in Figure 11.

Figure 10: Comparison of RC field duplicate samples



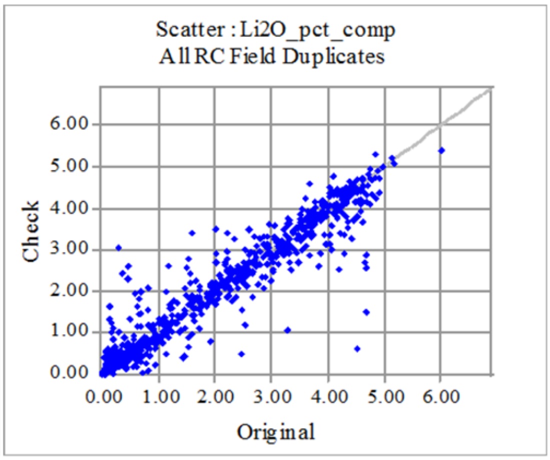


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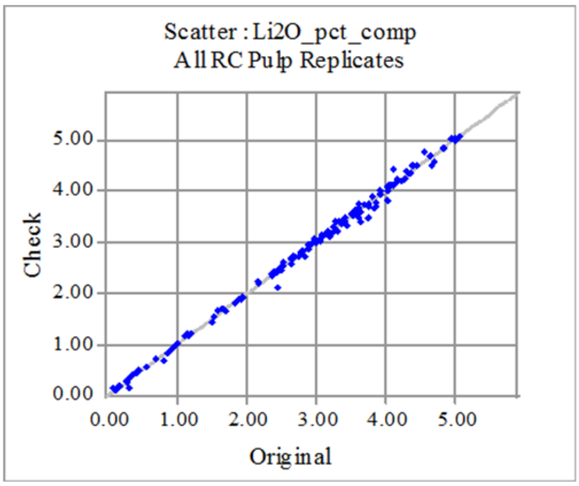
Figure 11: Comparison of Drilling Sample Laboratory Replicates



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QG is of the opinion that the QA/QC procedures used in conjunction with Mineral Resource development drilling should continue to be reinforced by:

- generation and analysis of data to help define sampling error at the stage of splitting samples on the drill rig;
- monitoring performance of the laboratory sample preparation processes;
- insertion of blind standards (made up from existing drill hole rejects) with routine drilling samples;
- inclusion of duplicate crusher and pulp samples routinely with all drilling samples; and
- introduction of laboratory pulp replicate data for Li_2O.

The precision observed for field duplicate samples from Mineral Resource development drilling is acceptable for Li_2O, Na_2O and manganese oxide ("MnO") once a small number of poorly matched sample pairs are removed from the database. Talison has been reviewing sampling practices at the drill rigs and has identified means where sample splitting can be improved. A preliminary review of the size of split samples from the RC rig for laboratory analysis suggests the current size of sample is adequate.

Analytical precision of better than 5% is indicated for Li_2O, based on repeat analyses of shipping products.

QG has minor concerns about the Mineral Resource assay data quality, but comfort can be gained from

(i) the very close similarity in mean and standard deviations of the data populations of both pairs for all elements, and

(ii) the general agreement between Mineral Resource, grade control and mill grades as discussed in Section 16 - Mining Methods. Nonetheless, moderate to poor precision makes accurate distinction between ore types more difficult and efforts should be made to improve data quality.

12.3 Survey

Visual validation of collar plots and drill sections has been undertaken by Talison. In addition, Talison routinely checks the location and orientation of drill collars in the field during drilling. All drill hole collars and drill traces are considered by Talison to be correctly represented in the database. In recent drilling programs drill collar locations and hole orientations have locally been less consistent with the normal sectional patterns due to drill site access difficulties around the existing pits. Although QG made no actual field checks of collar location and hole orientation, the drill data appears to be consistently and logically distributed, and QG considers that the survey integrity is adequate for Mineral Resource estimation purposes.

12.4 QA/QC Conclusions and Verification

QG has reviewed QA/QC data, and concludes that:

- sampling and QA/QC procedures have been upgraded;
- procedures are in place for QA/QC results to be rigorously assessed on a monthly basis; and
- better precision of RC samples will improve the accuracy with which grade and material quality boundaries can be drawn.

Nevertheless, the results of mining over an extended period of time indicate that there is no major problem with the primary analytical data. Consequently, QG considers that the quality of the database is adequate for estimation of Mineral Resources and Mineral Reserves under the NI 43-101 guidelines.

The grade control sampling function has been reviewed following an RC drilling pilot program testing the validity of blast hole sampling methods. Proposed improvements in QA/QC procedures, including additional field and laboratory duplicate and replicate sampling and routine inclusion of blind standards, are anticipated to be covered with current staffing levels and at minor additional assay costs in the laboratory.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Talison's processing operations at Greenbushes include a crushing plant under a licence/toll treatment arrangement, two processing plants and associated administrative, workshop, laboratory and other infrastructure, all located adjacent to the open pit mining operation. These processing plants include grinding, classification, heavy medium separation, gravity separation, flotation, leaching, magnetic separation, dewatering and drying processes. Lithium ore treatment commenced at the site in 1984-1985 and has been progressively expanded to its current capacity of about 1,500,000tpa of ore feed. The two processing plants, the TGP and the CGP, are described in Section 17 – Recovery Methods. The plants produce mineral products containing a wide range of lithium grades with different iron impurity levels and size specifications. The main usage for TG products is as feedstock for the glass and ceramic industries. The CG products are mostly supplied to manufacturers of lithium carbonate and other lithium chemicals.

The on-site laboratory described in Section 11 – Sample Preparation, Analysis and Security provides analyses of mining and processing samples for lithium content using AAS techniques and a comprehensive list of 36 elements using XRF techniques.

The Greenbushes processing operations have been treating lithium ores for over 20 years. The metallurgical process to produce concentrates from Greenbushes spodumene ore is well understood. Metallurgical test work is undertaken on a routine basis for the purposes of continued optimization and improvement with specific objectives including improving the knowledge of ore characteristics, assessing and optimizing process performance, assessing circuit changes and evaluation of new equipment and technologies. The scale and nature of the lithium processing circuits means that the majority of such test work can be carried out in the operating plant to provide a direct real measure of performance. Where necessary either the Greenbushes laboratory, or outside laboratories or supplier facilities are also used. BDA has viewed a number of the metallurgical test work reports which describe various testwork that has been undertaken relating to some of the fundamentals of the lithium processing including:

- the characteristics of the lithium ores and key parameters in processing;
- liberation of the lithium ores relating to heavy media separation;
- the capability of the crushing plant to produce 6mm product;
- spiral concentration performance on lithium ores;
- the application of ore sorting to lithium ores;
- the occurrence and removal of iron from spodumene;
- the application of flotation to lithium ores;
- the recovery of lithium from tantalum ores; and
- the performance of the 2010 SC6.0 upgrade post commissioning.

A critical aspect of the operation is the requirement to differentiate between feed for the TGP and the CGP, with the key parameters being the iron content of the ore and the mineral spodumene itself. The results of analyses of samples from Mineral Resource drilling and blast hole drilling using RC drills cannot be used to differentiate between TGP and CGP feed because the drilling process and sample preparation procedures introduce sufficient iron to interfere and also because the iron analysis does not provide any measure of iron that can and cannot be removed in the processing plant.

Talison personnel have developed a model which uses several non-iron component analyses to predict the iron content of the lithium concentrate that would be produced from a particular ore block. (BDA notes that Talison's practice is to call all its lithium concentrates SC – for spodumene concentrate – followed by the Li_2O grade of the concentrate.) The model has been extensively tested against plant performance and is considered to be reliable.

Routine test work on core and drill cuttings is not carried out as the application of the iron grade predictive model to analyses obtained from core and drill cuttings provides a more comprehensive and reliable method for assessment of plant feed type. However, iron analyses of spodumene grains from drill core samples are carried by microprobe for metallurgical characteristics of future ores. These analyses are used to confirm the reliability of the iron grade predictive model on the ore stream in the mine plan.

14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Lithium Mineral Resources at Greenbushes are concentrated in the C1 and C3 pit areas (Figure 4). A whole-of-mine lithium Mineral Resource model for the Greenbushes pegmatite deposits was prepared by QG in 2007 (Jackson, 2008). An updated model for the C3 deposit (between 11,800mN and 12,600mN and above 1,100mRL) was completed and reported by QG in 2009 (Stewart, 2009), and the full mine Mineral Resource model from 10,550mN to 12,700mN was updated and reported by QG in 2011 (Stewart, 2011). The 2012 resource block model has been extended to cover between 9800mN and 14,620mN, and is reported by QG (Stewart, 2012).

The C3 pit constitutes the largest lithium Mineral Resource with the widest grade ranges and has been the source of most of the recent lithium production. Mineral Resource modelling of the C3 area and differences between the 2011 Mineral Resource model and the 2012 Mineral Resource model are discussed in the following sub-sections.

The Mineral Resource estimate at Greenbushes was prepared using the following steps:

- Drill data was collected, analysed and validated by Talison during 2012, and added to the existing drill-hole database. QG has validated these inputs and found them to be appropriate for Mineral Resource modelling and Mineral Resource Classification according to the guidelines of the JORC Code and NI 43-101.
- The significance and impact of new drilling on existing interpretations was assessed by Talison geologists.
- Talison and QG jointly interpreted the pegmatite and lithium grade domains. QG constructed new 3 dimensional geometric models of lithology (pegmatites and dykes), and Li_2O mineralisation using Leapfrog implicit modelling software. The initial version of this model was based on an interim dataset, and was reviewed in detail by QG and Talison staff to ensure coherency with geological understanding of the deposit.
- Final versions of the lithological models and grade domains were generated based on a final extraction of drill-hole data in July 2012.
- Drill-hole sample intervals were coded by both lithological and grade domains.
- Drill-hole sample intervals were composited by length to a common support, and the compositing step validated.
- Lithological and grade domain solids were used to code a block model with parent cells of 20mNx20mEx5mRL and a minimum sub-block size in X and Y planes of 2.5m.
- All drill data and model coding was carried out in Surpac software;
- All geostatistical analysis and estimation was carried out in Isatis (TM) software.
- Variographic analysis and modelling was carried out on Li_2O, Ta_2O_5, As_2O_3, CaO, Fe_2O_3, K_2O, MnO, Na_2O, P_2O_5 and Sn within estimation domains.
- Estimation of the block grades of these variables was made by Ordinary Kriging (OK). All variables were treated independently during estimation.
- Grade estimates were validated statistically and visually.
- Confidence classifications were assigned with respect to CIM guidelines, taking into account data quality, geological interpretation, data density and the quality of estimation of Li_2O in the lithium domains, and .
- Mineral Resource estimates were reported constrained within a long-term pit optimisation

14.2 The Significance of Iron

The specifications of technical grade products place limitations on the iron content. Iron bearing mineral species, excluding iron contained in the spodumene crystal lattice, may be removed during processing of the spodumene concentrate. However, any iron in the spodumene crystal lattice is not removed by processing.

The Fe_2O_3 content in the products is managed in the mill feed via production grade control methods and stockpile blending. Due to the rock abrasion of the steel sample tube when RC drilling the reported Fe_2O_3 result for the samples collected using RC drilling will be higher than their true value. Therefore RC drill samples do not provide a reliable iron assay value and this lack of reliability is reflected in the block values interpolated during the estimation process.

Significant in managing iron in products is whether the in-situ Fe_2O_3 is present in minerals associated with the spodumene, or if it occurs within the spodumene crystal. Treatment records show that almost all Fe_2O_3 present as "tramp" or country rock can be removed through processing, while Fe_2O_3 associated with the spodumene crystal lattice is not removed. It follows that the critical aspect is not the absolute result of the Fe_2O_3 assay, but rather the split between that contained in contaminants and that occurring in the spodumene lattice.

In 2007 this split was investigated from a series of representative composites of various ore types taken from the C1 and C3 areas during an RC drilling program. The composites were passed over a high intensity magnet to remove all non-lattice iron. The remainder of the material was re-assayed to determine an estimate of the lattice iron. A process was then developed to transform the sample Fe_2O_3 values to a spodumene lattice iron equivalent.

Further investigation of the spodumene lattice iron using electron microprobe analysis has contributed to the development of a method of calculating a proxy spodumene lattice iron value. The method also draws on experience in the mill to calculate proxy iron values using other elements within the current XRF analysis suite.

The components with the largest contributions to the calculated proxy iron value are Na_2O and MnO.

In the 2012 Mineral Resource model the proxy iron is calculated in Mineral Resource blocks and is used to highlight the expected location of Technical Grade ore type feed for internal scheduling. Although the lithium ore types are not specifically separated by tonnage and grade in the 2012 Mineral Resource block model, the feed available to the Technical Grade and Chemical Grade processing plants from the mining operation is defined by applying a process to the blocks which includes the results from application of the above method.

14.3 Data Supplied

Drill-hole data was supplied to QG in two forms:

1. As raw data in the form of ASCII csv files
    a. Rdex_COLLAR_120717.col
    b. Rdex_COLLAR_120717.sur
    c. Rdex_COLLAR_120717.ass
    d. Rdex_COLLAR_120717.geo
2. As composites in Surpac string file format, coded by geological domain.

Raw data was loaded to Leapfrog software for modelling of geometry. After development of geological domains in Leapfrog, wireframe solid models were exported to Talison site staff for validation. The validated solids were then used to code assay intervals in Surpac software, and composited to fixed length composite files. Final coded composites were then passed back to QG for geological modelling.

A tabulation of all drill hole collar details is included in Table 14.1. A total of 67 new RC and Diamond drill holes for 12,802m have been added since the previous estimate. This drilling represents an increase of 10% in drilling metres over all previous resource drilling at Greenbushes.

Table 14.1
Summary of Drilling by Drill Hole Identification and by Year

DrillHole Prefix	Hole Type	Number	Total m	Year	Number	Total m
BG	DDH	4	486.65	1977	2	366.10
C1DD	DDH	9	795.9	1978	8	1,153.56
C2DD	DDH	4	787.1	1979	13	2,996.48
C3DD	RC/DDH	11	3,788.2	1980	8	3,368.45
CH	DDH	2	237.30	1981	44	10,510.22
GT	DDH	8	1,974.20	1982	30	4,538.75
GW	DDH	4	420.00	1984	12	1,462.55
HP	DDH	215	43,805.77	1985	11	1,410.32
JM	DDH	39	2,454.55	1988	2	370.00
KF	DDH	1	104.60	1990	5	755.95
LD	DDH	7	1,125.95	1991	59	6,794.25
NC	DDH	2	359.70	1993	11	924.40
NE	DDH	8	780.25	1994	4	652.60
RC	RC	458	52,635.0	1996	42	6,164.68
TC	DDH	1	114.50	1997	117	10,701.00
UG	DDH	229	34,403.35	1998	9	1,549.00
VT	DDH	1	186.00	1999	28	8,898.80
				2000	10	762.00
				2001	23	2,952.66
				2002	248	38,408.12
				2004	9	650.00
				2005	34	3,522.93
				2006	49	6,412.00
				2007	15	3,234.00
				2008	19	3,594.90
				2010	119	9,239.00
				2011	6	315
				2012	66	12,751.3
Grand Total		1003	144,459.02	Grand Total	1003	144,459.02

Note: The updated Mineral Resource model database of 67 additional holes includes one hole completed in 2011.

14.4 Block Model

Coded block model centroids registering the interpreted estimation domains were loaded into Isatis geostatistical software. The dimensions of the Mineral Resource block model are given in Table 14.2.

Table 14.2
Mineral Resource Block Model Limits

Item	Minimum (m)	Maximum (m)	Parent Cell Dimension (m)	Min Sub-Block Dimension (m)
Easting	8,800	11,360	20	5
Northing	9800	14920	20	5
RL[1]	200	1,480	5	5

Note:
(1) RL = Reduced Level and relates to elevation

14.5 Geology and Domaining

General

The Greenbushes lithium deposits are hosted within a very large pegmatite body. Lithium domains represent volumes with elevated concentrations of spodumene within the broader pegmatite, probably related to different phases of intrusion. Geological models of both the pegmatite and the lithium domains within the pegmatite have been interpreted and modelled in Leapfrog software by Talison and QG. The domains were based on cross-sectional interpretations of the pegmatite and lithium mineralization. Lithium mineralisation was modelled at thresholds of 0.7% and 2.8% Li_2O. In addition, a domain at 0.1% Li_2O was also constructed to constrain low grade interpretations. A distinction is made between the mineralogical zones described in Section 7.8 – Mineralogy and the lithium domains used for Mineral Resource estimation, which are defined by Li_2O content, but, in general, the lithium domains can be considered a sub-set of the spodumene zone.

Talison staff reviewed the domains generated by QG using Leapfrog and suggested improvements to bring the domains in line with known geological structures and mineralisation trends before transferring the solids to Surpac.

Pit Areas

The Greenbushes deposit has historically been mined as a series of separate pits which has influenced the collection of drilling data and the development of models. This separation, to some extent, reflects differences within the pegmatite geology, although the differences are not great. Geological interpretations have historically been organized by deposit.

In this estimate, for the first time, the geological model has been developed seamlessly across the entire deposit. This seamless model has then been separated into sub-domains based on grade characteristics and orientation. The resulting boundaries are close to the previous pit boundaries, but not identical.

Modelling Approach

In this Mineral Resource estimate there has been a fundamental change in the method of domain construction. Previous Mineral Resource models have been based on conventional wireframe solid models constructed by linking together digitised sectional interpretations. In this Mineral Resource estimate, solid models of geological and estimation domains have been constructed using the Leapfrog implicit modelling software.

In the Leapfrog approach to modelling, coded data, geological control lines and estimation parameters are used to interpolate a unique, continuous mathematical function. This function is then converted into a wireframe mesh by gridding at a specified resolution. The advantage of this method is that, once the geological control lines and estimation parameters have been defined, it is simple to incorporate new data (correctly coded) into the models.

The successful implementation of this method requires:

- Careful and accurate initial coding of data into coherent categories;
- Careful interpretation and digitising of geological ‘controls’;
- Correct choice of interpolation parameters; and
- Choice of appropriate resolution in gridding of the underlying function to generate wireframes

Many geologists are initially discouraged by the results of Leapfrog models due to the rounded closures, which are an inevitable feature of the underlying interpolation process. To many these can seem like unrealistic artefacts. However this is largely a question of familiarity – the more usual method of closing interpretations in conventional modelling by pushing interpretations half drill spacing beyond the last drillhole, and closing with square ends is no more geologically realistic than that seen in Leapfrog models.

The development of new Leapfrog models of geology at Greenbushes was an iterative process. Orlando Rojas (OR) of QG visited Greenbushes to gain familiarity with the geology and data, and subsequently created a preliminary model. This was taken back to site to show the geologists, and further modifications were made to the model before final solids were agreed. Drill-hole data, photos of the pit walls, pit wall mapping, blast hole logging and assays were all used in conjunction with the resource drilling holes when interpreting domains.

The order of model construction is

- Pegmatite;
- Mafic dykes; and
- Li_2O grade shells

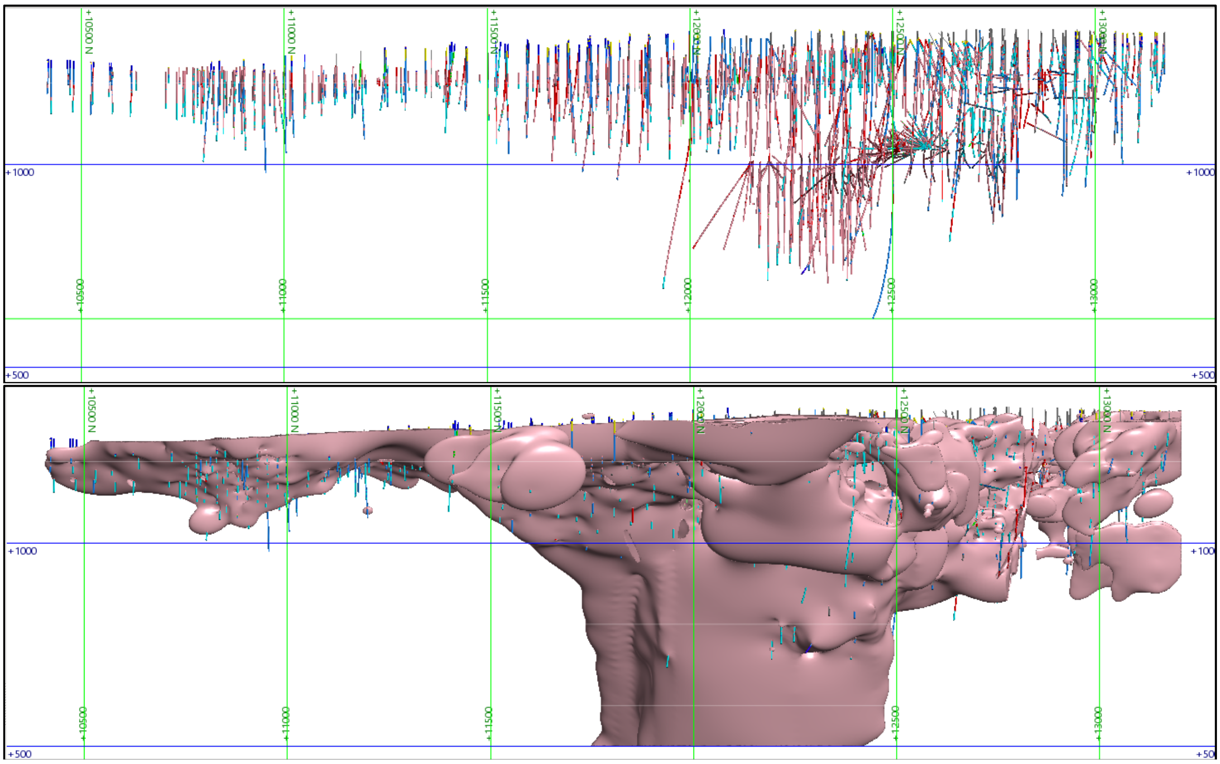
Pegmatite

The pegmatites, host to all lithium, tantalum and tin mineralisation at Greenbushes, generally dip moderately to steeply westwards. The main pegmatite unit is some 50-100m in width, and is generally laterally continuous. There are numerous smaller discontinuous pegmatite bodies in the footwall of the main unit. The lateral extent of these is generally poorly constrained by drilling. There is some evidence of folding of the pegmatites, particularly between C3 and Cornwall pit, but no folds have been specifically interpreted.

Interpolation and wire framing of the pegmatite volume used an anisotropic, west dipping search. The lateral and down-dip extension of the pegmatite is largely controlled by availability of data rather than geological closure.

Solid interpolation only extended some 50m beyond the limits of data. Long-sections of the pegmatite solid and drill hole data distribution are shown in Figure 12.

Figure 12: Lateral and Vertical Limits of Data and Pegmatite Model.



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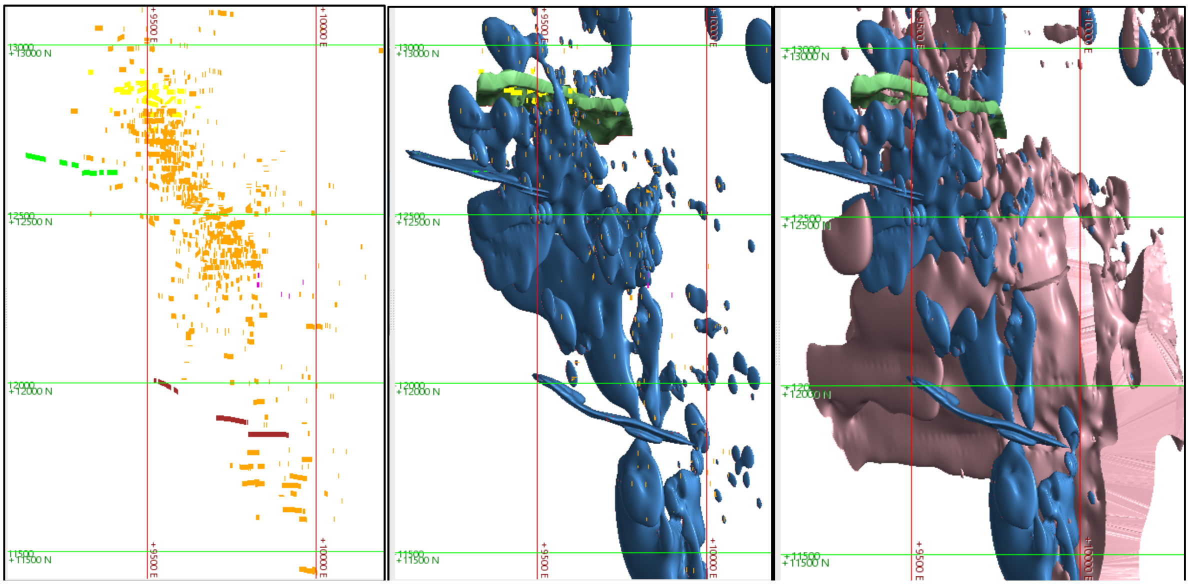
Dykes and Internal Waste

Within the hosting pegmatite there are a number of cross-cutting dykes, which range in width from a few centimetres to a few metres. The dykes are of basic composition, and have substantially different chemistry to the pegmatites. Lithium values in the mafic dykes are relatively low, and dyke material is separated from lithium pegmatite during mining to avoid contamination of the final lithium products. Assay data from dykes are identified by significantly higher calcium oxide ("CaO") and Fe_2O_3 values.

Identification of intervals as dyke rather than as pegmatite was based on both logging, and also on flagging and interpretation from multi-element geochemistry.

Volumetrically the dykes form an insignificant proportion of the total pegmatite volume. In previous estimates, the volume relating to these has been ignored. In this estimate, dykes have been modelled. This has been done by interpolation of geometry from flagged dyke intervals - four different 'families' of dykes that cross-cut have been identified; three that cross cut the pegmatite at a high angle (and in fact continue into the host dolerites), and one that is concordant to the general orientation of the pegmatites. Each of the different sets are then interpolated and wire-framed separately. The results are shown in Figure 13.

Figure 13: L to R: Coded Dyke Intercepts, Dyke Volumes, Dyke+Pegmatite Volumes



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After pegmatites and dykes have been modelled, the dyke volume is intersected away from the pegmatite, and the resultant volume exported to Surpac for coding.

Li_2O Grade Shell Wireframes

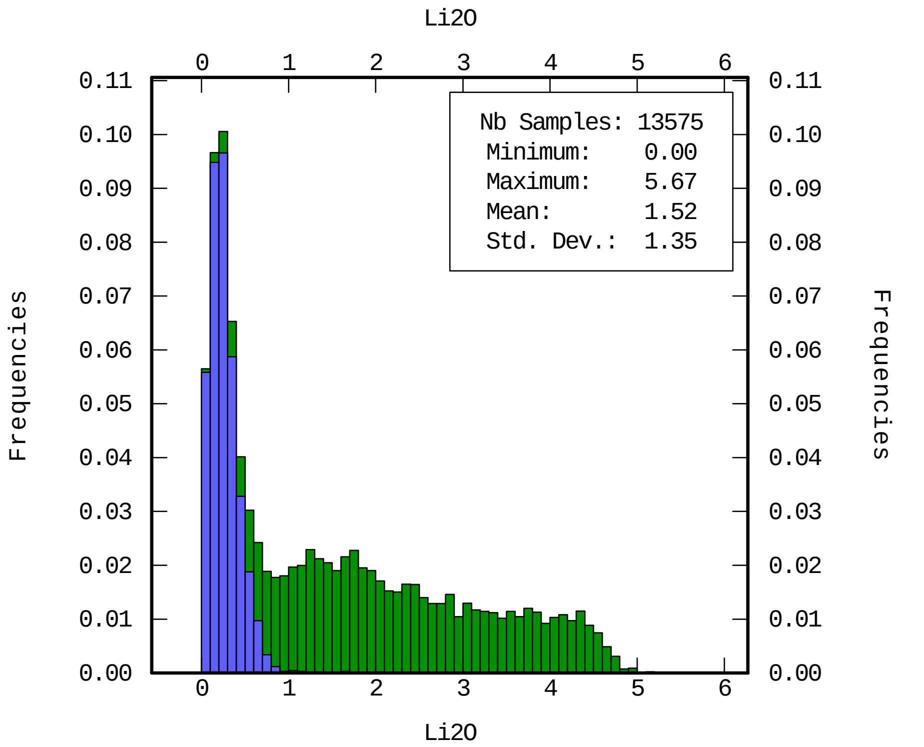
Lithium occurs within distinct zones internal to the pegmatite, characterised by enrichment of spodumene. There is not sufficient detail present within logging to enable identification of spodumene enrichment directly, but these zones are clearly defined by elevated Li_2O grades. When examined in histogram (Figure 14) there is clearly a substantial population of low Li_2O grades present. When examined spatially, there are a number of sharply differentiated internal contacts where Li_2O grade jumps from the range 0.2-0.7% to +1%. Consequently, a threshold of 0.7% Li_2O was used to differentiate Li_2O mineralization.

In the past, a 2.8% Li_2O threshold has been used to control the estimation of high lithium grades. However, on further examination there is little obvious differentiation in the statistical population, and this threshold does not clearly relate to regular definable internal boundaries within the 0.7% Li_2O volume, apart from the footwall of a zone of elevated (+4%) Li_2O in the hanging wall of the C3 pit area. However, in this area drilling is of sufficient density, that block estimation is well constrained by data and honours the distribution seen in drillhole grades well.

A further lower grade boundary was imposed at 0.1% Li_2O. This threshold was used to both isolate some very low grade areas of the pegmatite, and to restrict the estimation of Li_2O grades to a reasonable distance beyond data.

The choice of a 0.7% Li_2O threshold to constrain estimation of Li_2O and other grades is felt to be robust: there is clearly some basis in mappable geology, and the threshold is well below a current economic cut-off for Li_2O, which enables creation of estimates that retain sensitivity to choice of cut-off grade. The declustered histogram of Li_2O samples within the pegmatite body is shown in Figure 14.

Figure 14: Declustered Histogram of Li_2O in Pegmatite



Note: Blue = outside 0.7% Li_2O envelope; Green = inside 0.7% Li_2O envelope

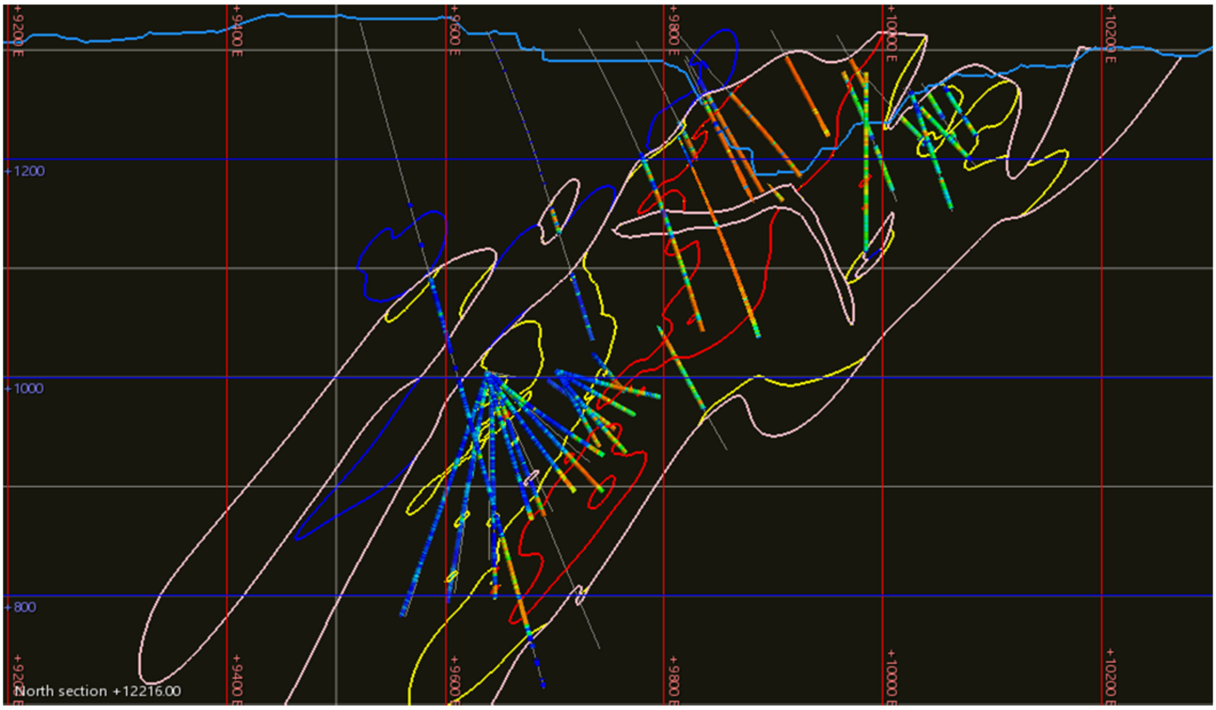
The domain wireframes were built in Leapfrog by QG with input from Talison personnel. The solids were then imported into Surpac and interrogated on site by Talison staff, both for geological sense, and for integrity and validity. The Solids Validation feature was used to check for solids for closure and integrity, and the Report Volume feature was used to check that individual volumes were correctly designated as solids or voids. Coding of drillhole intervals and blocks was carefully checked.

The implicit nature of the Leapfrog modelling approach (wireframe models are created by gridding of an underlying mathematical function) can inherently produce a large number of solids if fine resolution is used in the gridding process (in this case over 600 solids). This is usually resolved by either reduction in grid resolution, or by limiting the volume of solids during export. In this case, grid resolution was important, so a minimum volume limiting was used. Most of these solids are very small, contain few (if any) composites and have very limited material impact on the definition of a resource.

For the Li_2O > 2.8% solid for example, there were 347 individual solids, the largest 8 of which total 15.112Mt or 98.8% of the total volume. The remaining 339 solids account for only 0.178Mt or 1.2% of the total volume. In the interests of materiality the approach taken in this model was to:

- Export solids for the Li_2O > 2.8% with volumes less than 10,000m^3 or approximately 5 model blocks. This threshold volume was determined after visual checking.
- Positive solids - those that are outside the main Li_2O volumes - use to set coding of both composites and block model centroids back to Li_2O_0.7-2.8%
- Negative solids - small waste zones within the main Li_2O zone - use to set coding of composites and blocks back to Li_2O > 2.8%. This results in a more coherent coding around the main +2.8% Li_2O zones
- This process is repeatable, and auditable. It does not change the locations of existing sub-blocks; and
- Talison staff used the Solids Validation feature in Surpac to check wireframe domains were closed and valid and the report volume feature used to check models were correctly designated solids or voids.

Figure 15: Section 12200mN +/- 50m, Showing Pegmatite Outline and Li_2O Grade Shells



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The final set of wireframe files applied in the estimation is listed in Table 14.3.

Table 14.3
Geological Domain Names

N	Leapfrog Name	Geological Unit	Wireframe Name (surpac format)	Date	Notes
1	Pegmatite	3D Pegmatite unit	PegmatiteV2.dtm	8-Aug-12	Original model
2	Dolerite Dykes	3D Dyke unit	DykesV2.dtm		
3	Host rocks	3D Host rock unit	hostrx.dtm		
4	Li_2O_0.0-0.1	3D grade shell Li_2O_0.0-0.1	Li_2OA.dtm		
5	Li_2O_0.1-0.7	3D grade shell Li_2O_0.1-0.7	Li_2OB.dtm		
6	Li_2O_0.7-2.8	3D grade shell Li_2O_0.7-2.8	Li_2OC.dtm		
7	Li_2O_0.7-2.8 (vol positive)	3D grade shell Li_2O_0.7-2.8	Li_2OC_positive.dtm		
8	Li_2O_0.7-2.8 (vol negative)	3D grade shell Li_2O_0.7-2.8	Li_2OCnegative.dtm		
7	Li_2O_gt_2.8	3D grade shell Li_2O_gt_2.8	Li_2OD.dtm		
9	Pegmatite	3D Pegmatite unit	Peg_less.dtm	15-Aug-12	3D model discounting volume shapes less than 10,000m^3 (~5 block of 20x20x5)
10	Li_2O_0.7-2.8	3D grade shell Li_2O_0.7-2.8	Li_2OC_less.dtm		
11	Li_2O_gt_2.8	3D grade shell Li_2O_gt_2.8	Li_2OD_less.dtm		
12	Sector1	Open pit resource & Indicate class	Sector1.dtm	10-Sep-12	Two surface have been used to subdivide the pegmatite solid:
13	Sector2	Open pit resource & Inferred class	Sector2.dtm		a) Open pit versus underground resources; and
14	Sector3	Underground resource & Inferred class	Sector3.dtm		b) Indicated from Inferred Mineral Resources
15	Sector4	Underground resource & Indicate class	Sector4.dtm		

14.6 Composite Files

Compositing of drill hole data was undertaken in Surpac software by Talison personnel.

The most common sampling length within the pegmatite domain is 1m and the average length is 1.3m with sample lengths of 1.5m and 2m also common. The 2012 drilling contributed more 1m sample intervals to the dataset. A compositing interval of 5m was selected for this resource estimate as this corresponds to the grade control flitch height of 5m currently used in mining. A 5m length exceeds the average and common sample lengths thus minimising sample splitting. This composite length represents an acceptable trade-off between sample lengths, bench height, geological detail, and variance reduction. Because not all variable are informed at all location, each variable (10 in total) was composited separately.

Surpac outputs the 'full length' composites (above a length threshold) as string 1, and the short composites as string 2. Short composites generally occur on the downhole side of geological units, at the end of holes, or when there is missing sample within a unit. There are no binding conventions about how to treat short composites. Some practitioners advocate discarding them, because of difference in support, and because they can cause bias in mean grade if there is persistently higher or lower grades on the margins of the domain. Others argue that they should be retained, because the potential loss of information outweighs the geostatistical gain of having common support. In this case, the average grade of short composites was compared to full length, and it was decided to retain these composites in the data set for analysis and estimation.

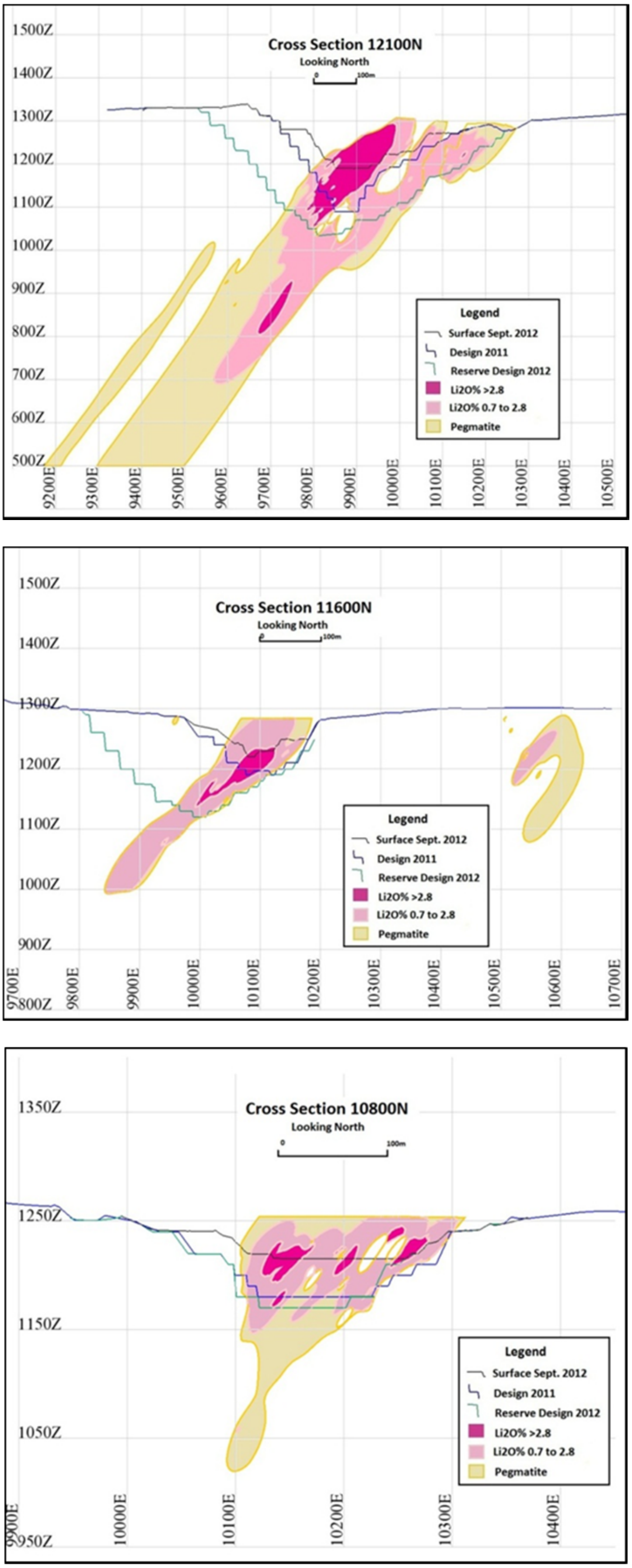
Composite statistics for all domains by estimation variable are shown in Table 14.4.

Table 14.4
Composite Statistics by Domain

Grade Shell2{Li_2O greater than 2.8% all}						
Variable	**Count**	**Min**	**Max**	**Mean**	**Std.Dev.**	**Var**
Li_2O	3,144	1.29	5.68	3.75	0.54	0.29
Ta_2O_5	3,207	5	2,889	87	91	8,231
Na_2O	3,137	0.04	6.79	1.00	0.64	0.41
As_2O_3	2,777	0.001	0.393	0.014	0.021	0.000
CaO	3,013	0.009	4.46	0.23	0.26	0.07
Femod	1,793	0.02	0.56	0.14	0.05	0.00
Fe_2O_3	3,171	0.03	6.88	0.61	0.49	0.24
K_2O	3,127	0.01	9.01	1.06	0.88	0.78
MgO	2,901	0.00	2.68	0.12	0.16	0.02
MnO	1,819	0.01	0.60	0.05	0.03	0.00
P_2O_5	2,856	0.01	1.37	0.14	0.11	0.01
Sn	2,831	8	6,867	118	167	27,945

Grade Shell2{Li_2O 0.7% to 2.8% all}						
Variable	**Count**	**Min**	**Max**	**Mean**	**Std.Dev.**	**Var**
Li_2O	6,405	0.03	4.47	1.58	0.65	0.42
Ta_2O_5	7,131	5	1,652	161	110	12,121
Na_2O	6,652	0.12	9.76	2.91	1.40	1.96
As_2O_3	5,807	0.001	2.270	0.018	0.046	0.002
CaO	6,556	0.003	13.82	0.73	0.97	0.94
Femod	-	0.00	0.00	0.00	0.00	0.00
Fe_2O_3	6,740	0.03	14.49	1.27	1.44	2.07
K_2O	6,652	0.03	11.78	2.84	1.74	3.03
MgO	6,409	0.00	8.60	0.36	0.64	0.41
MnO	4,222	0.01	2.58	0.09	0.13	0.02
P_2O_5	6,265	0.01	7.08	0.33	0.36	0.13
Sn	6,982	8	4,288	277	300	90,024

Figure 16: Cross Sections Showing Domaining and Pit Design Changes; 2011 to 2012



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14.7 Exploratory Data Analysis

All geostatistical analysis and spatial modelling was carried out in Isatis software. Composites from Surpac were first exported to ASCII CSV format, and then loaded into Isatis. Checks on number of samples and average grade were performed to ensure the integrity of this process.

Treatment of outliers in grade populations

It is well recognised that the treatment of extreme grades in Mineral Resource estimation can have a material impact on project economics. If grade distributions are highly skewed, and contain grades that are either much lower, or more commonly much higher, than the average grade, estimates of tonnage, grade and metal at block scale can be locally (and globally) unrealistic. Numerous examples can be found to illustrate the problem and a number of techniques have been developed to counter this problem. The most pragmatic of these simply restrict the influence that outlying grades can have in estimation of block grades.

- Top cutting involves removal of grades above a defined threshold from estimation (essentially these are lost to the estimate);
- Capping (often incorrectly referred to as top-cutting) involves replacing grades above a defined threshold with the threshold value; or
- Outlier Restriction involves limiting the use of samples above a defined grade threshold to within a defined distance from a block.

The necessity to control the use of outlier grades in an estimate is dictated by the purpose and nature of the model, the quantity and location of data, and the nature of the underlying grade distribution. Ultimately all of these solutions are subjective decisions - there is no definitive method to choose a top-cut.

For the current estimation no top-cuts, caps or outlier restrictions were applied. For the main economic variables, the populations are not highly skewed and there are no values regarded as outliers. For secondary variables, the number of outlier values is small, and the impact of these is mitigated by averaging during estimation. Secondary variables are not directly used in material classification, and while the presence of outliers may result in local overestimation of the grades of secondary variables, this does not affect definition of Mineral Resource, and within larger volumes the average grades will be accurate.

Variography

Experimental variograms were calculated for all variables by deposit. Calculations examined the continuity between holes in the generalised plane of dip in two directions (along strike and down dip), as well as examining continuity perpendicular to the plane using a lag equal to the composite length. The same parameters were used to calculate all variograms for all variables within a domain.

In general, the variograms of both value variables (Li_2O and Ta_2O_5) and the major elements show good spatial structure, and variogram models can be fitted to these variables with a relatively high level of confidence.
Some examples of experimental variograms and the fitted variogram models are shown below in Figure 17 and Figure 18.

Summary information for all fitted variogram models is given in Table 14.5.

Figure 17: Experimental and Modeled Variogram, Li_2O in Lithium Domain C3

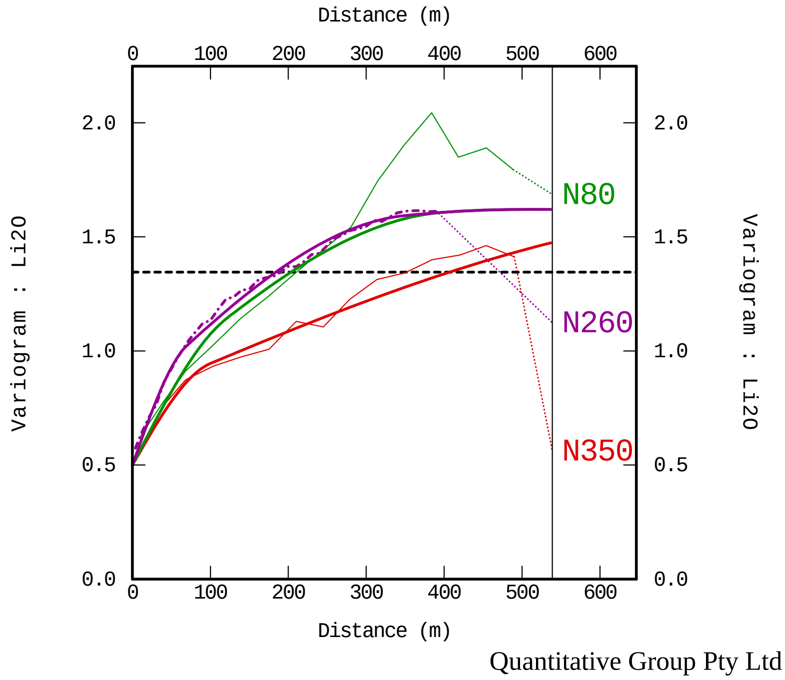


Figure 18: Experimental and Modeled Variogram, Ta_2O_5 in C3 Domain

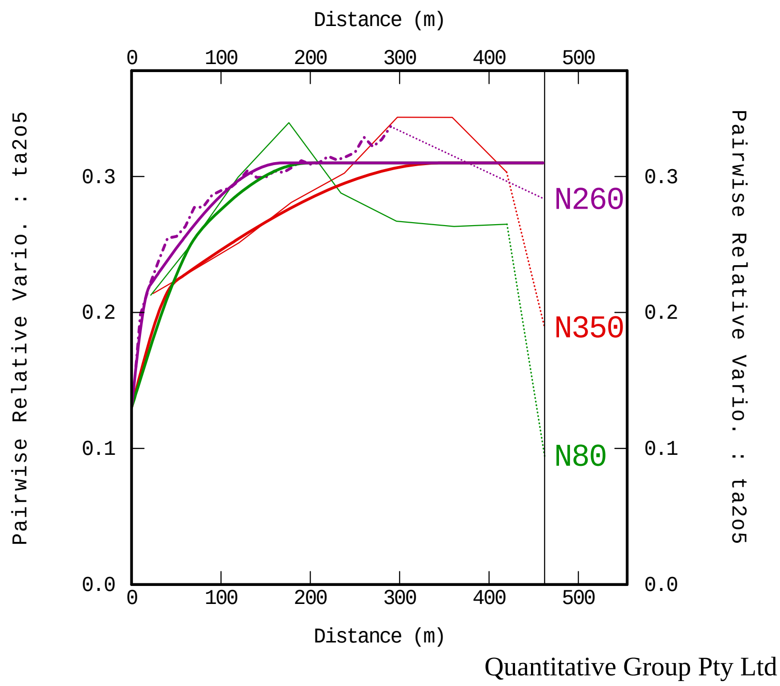


Table 14.5

Summary of Fitted Variogram Models

Var	Set Name	Selection	Glob Rotation			Nugget	Structure 2				Structure 3			
			N	Dip	Pl	Nugget	Sill	R1	R2	R3	Sill	R1	R2	R3
Li_2O	vmodel C1 Li2O gt 0.7	C1 All	175	55	-180	0.208	0.92	42	35	25	0.43	400	63	100
	vmodel C3 Li2O gt 0.7	C3 All	170	55	-180	0.5	0.3	100	120	70	0.6	800	400	350
											0.22	1000	500	500
	vmodel North C3 Li2O gt 0.7	North C3 All	140	55	-180	0.1997	0.522	41	76	66	0.2177	11835	11	6.7
	vmodel li2o Peg_bkg	peg_bkg	170	60	-180	0.0804	0.1091	18	10	10	0.08	76	80	65
										S4	0.03	100000	100000	300
Na_2O	vmodel C1 na2o HG	C1 HG	180	30	-180	0.06225	0.15	45	30	30	0.02	800	360	50
	vmodel C1 na2o LG	C1 LG	180	30	-180	0.5	0.5	38	45	40	1.45	900	160	190
	vmodel C3 na2o HG	C3 HG	160	55	-180	0.1539	0.04715	39	17722	404	0.1724	541	164	147
	vmodel C3 na2o LG	C3 LG	160	55	-180	0.05	0.0333	5.0	5.0	21	0.1539	607	221	238
	vmodel North C3 na2o HG	North C3 HG	0	0	0	0.07	0.3	400	400	400				
	vmodel North C3 na2o LG	North C3 LG	150	55	-180	0.4921	0.669	18	18	23	0.992	223	347	236
	vmodel na2o Peg_bkg	peg_bkg	160	60	-180	0.4723	2.5	100	120	70	2.5	800	800	300
										S4	4	1000	1200	20000
MnO	vmodel C1 mno HG	C1 HG	0	0	0	0.0334	0.0334	25	25	25	0.0334	50	50	50
	vmodel C1 mno LG	C1 LG	0	0	0	0.001467	0.000471	77						
	vmodel C3 mno HG	C3 HG	160	60	-180	0.0321	0.06	100	120	18	0.1	180	139	150
											0.05	1000	300	100000
	vmodel C3 mno LG	C3 LG	160	60	-180	0.0754	0.1	280	150	150	0.18	300	170	160
	vmodel North C3 mno HG	North C3 LG	150	50	-180	0.0291	0.08	25	25	20	0.11	150	150	80
	vmodel North C3 mno LG	North C3 LG	150	50	-180	0.02912	0.08	25	25	20	0.11	150	150	80
	vmodel mno Peg_bkg	peg_bkg	165	60	-180	0.00426	0.00965	18	56	27	0.0055	1000000	152	157
P_2O_5	vmodel C1 p2o5 HG	C1 HG	0	0	0	0.00178	0.00175	30						
	vmodel C1 p2o5 LG	C1 LG	170	55	-180	0.00103	0.0105	113	75	59	0.0071	844	75	685
	vmodel C3 p2o5 HG	C3 HG	160	55	-180	0.0075	0.008	250	180	140				
	vmodel C3 p2o5 LG	C3 LG	160	55	-180	0.02	0.1466	245	113	111				
	vmodel North C3 p2o5 HG	North C3 HG	0	0	0	0.0104	0.0249	127						
	vmodel North C3 p2o5 LG	North C3 LG	0	0	0	0.025	0.1016	109						

Var	Set Name	Selection	Glob Rotation			Nugget	Structure 2				Structure 3			
	vmodel p2o5 Peg_bkg	peg_bkg	160	60	-180	0.1363	0.1469	27	23	843	0.2176	852	289	52
Ta_2O_5	vmodel C1 ta2o5 HG	C1 HG	0	0	0	0.12	0.1063	22						
	vmodel C1 ta2o5 LG	C1 LG	160	55	-180	0.0418	0.1465	15	15	16	0.0674	226	15	62
	vmodel C3 ta2o5 HG	C3 HG	170	40	-180	0.13	0.07	50	80	20	0.11	350	200	170
	vmodel C3 ta2o5 LG	C3 LG	170	40	-180	0.09	0.0525	36	1000000	497	0.1229	454	94	102
	vmodel North C3 ta2o5 HG	North C3 HG	130	55	-180	0.1225	0.1425	28	95	31				
	vmodel North C3 ta2o5 LG	North C3 LG	130	55	-180	0.1	0.0264	1900	19457	32	0.125	93	107	111
	vmodel ta2o5 Peg_bkg	peg_bkg	180	55	-180	0.1357	0.1132	56	60	47	0.1164	593	543	263
Sn	vmodel C1 sn HG	C1 HG	180	60	-180	0.0857	0.06	10	80	20	0.15	320	120	300
	vmodel C1 sn LG	C1 LG	180	60	-180	0.2	0.4916	354	165	195				
	vmodel C3 sn HG	C3 HG	350	60	0	0.1858	0.1161	39	104	389	0.1615	905	106	66
	vmodel C3 sn LG	C3 LG	350	60	0	0.1385	0.0768	25	34	28	0.4258	1290	304	574
	vmodel North C3 sn HG	North C3 HG	0	0	0	0.1766	0.0993	119			1.7503	1417		
	vmodel North C3 sn LG	North C3 LG	320	60	0	0.17	0.15	48	41	53	0.1321	325	717	244
	vmodel sn Peg_bkg	peg_bkg	0	60	0	0.18	0.3407	300	100	200				
Fe_2O_3	vmodel C1 fe2o3 LGHG	C1 All	0	0	0	0.192	0.0998	39			0.2161	670		
	vmodel C3 fe2o3 HG	C3 HG	0	0	0	0.0418	0.1526	45			0.309	113		
	vmodel C3 fe2o3 LG	C3 LG	0	0	0	0.1483	0.1611	358			0.0881	64		
	vmodel North C3 fe2o3 LGHG	North C3 All	0	0	0	0.1446	0.1894	54						
	vmodel fe2o3 Peg_bkg	peg_bkg	0	0	0	0.1415	0.2043	404			0.0728	51		
As_2O_3	vmodel as2o3 Shell Li2O gt 0.7%	Shell Li_2O gt 0.7%	150	60	-180	0.173	0.17	35	35	20	0.14	550	240	280
	vmodel as2o3 Peg_bkg	peg_bkg	160	60	-180	0.268	0.18	15	35	20	0.1	255	255	255
CaO	vmodel All cao HG	Shell Li_2O gt 2.8%	0	0	0	0.0367	0.01758	53			32.3483	1000000		
	vmodel All cao LG	Shell Li_2O 0.7 - 2.8%	0	0	0	0.2377	0.2776	91			117.9	420000		
	vmodel cao Peg_bkg	peg_bkg	160	60	-180	0.45	0.35	70	30	30	0.5	700	370	350
K_2O	vmodel All k2o HG	Shell Li_2O gt 2.8%	170	50	-180	0.4678	0.1529	12	16	3749	0.3808	976	178	99
	vmodel All k2o LG	Shell Li_2O 0.7 - 2.8%	170	50	-180	0.8	1.01	30	50	50	1.2	500	195	180
	vmodel k2o Peg_bkg	peg_bkg	140	60	-180	0.4789	1.4505	51	28	38	3.0077	217	366	184

14.8 Grade Estimation

Block Models

The 2012 model limits are shown in Table 14.2.

Talison's in-house Mineral Resource modelling is carried out in Surpac software, which uses sub-blocking for control of volume. The parent cell size is 20x20x5m while the smallest sub-block allowed is 10x2.5x5m, or 1/16th (6.25%) of the parent cell.

The 2012 grade estimation was undertaken in Isatis software. Isatis does not support sub-blocking, so the coded sub-block centroids from Surpac were imported into Isatis as points, then migrated up into an Isatis grid with dimensions equivalent to the parent cells in Surpac. Upon completion of estimation, grade values were then registered onto the appropriate Surpac sub-block point locations, exported to ASCII, and loaded back into the original Surpac block model.

Kriging Estimation

Estimation was performed using OK, with each variable being estimated independently. Quantitative Kriging Neighbourhood Analysis was used to guide the choice of sensible kriging estimation parameters. The choice of search ellipsoid dimensions and rotations was based on the geometry of the domain, mineralization, data distribution and modelled spatial continuity. Choice of sample selection parameters within the search ellipsoid was guided by iterative testing of different input parameters and examination of estimation outputs.

No alternative estimation methods were tested. The use of OK is considered adequate for the purpose of this estimate, and has resulted in local estimates that are sufficiently accurate for the classification level applied. Although a linear estimate will always be smooth with respect to reality, testing was performed to show this method adequately represents the tonnage/grade relationships at mining cut-offs.

The search parameters used in estimation of all domains are tabulated below (Table 14.6). For Li_2O, estimation was carried out in 3 passes of increasing dimensions to ensure all blocks were filled. Other variables were estimated in a single pass, with a search of sufficient radius to ensure filling of blocks. Note that anisotropic search ellipsoids have been used to ensure selection of samples from adjacent holes and limit the number of samples taken out of an individual hole. These ratios were guided by the overall geometry of the lithium domains.

Estimation Validation

The general purpose of validation is twofold:

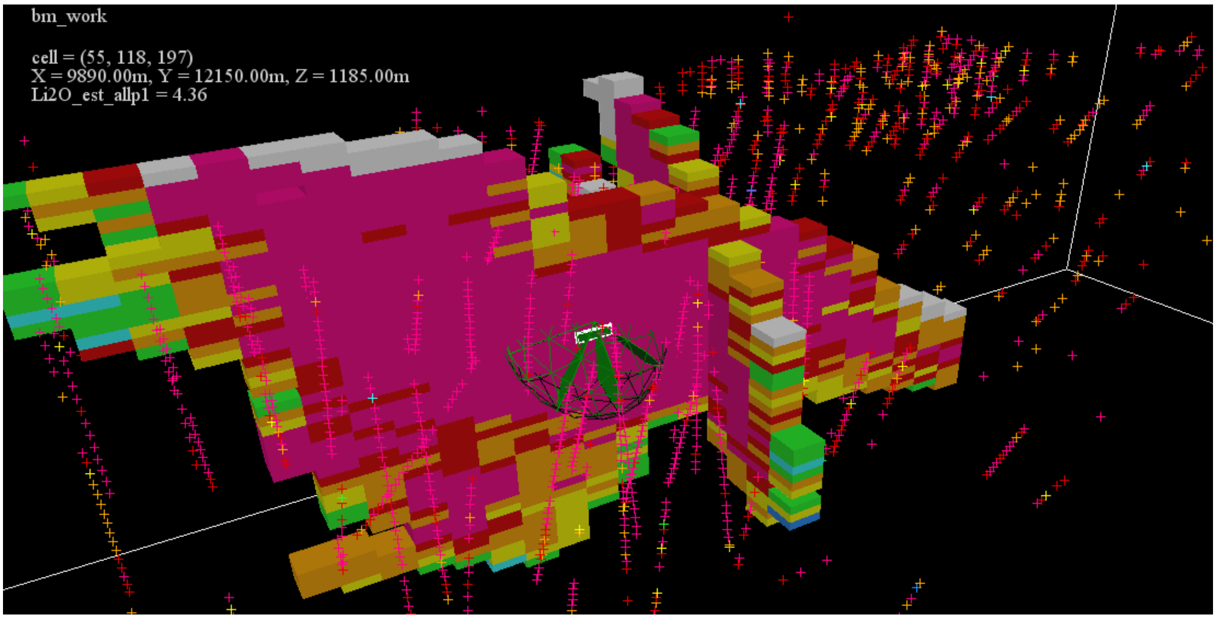
- To detect errors in implementation, for example:
  - Whether all blocks intended have been filled;
  - Whether rotation parameters have been correctly applied;
  - Whether the selections of data and blocks are as intended; and
- To ascertain whether the estimates are geostatistically sound (whether the variance of block estimates is reasonable).

For the former, the most reliable method is visual validation. Each domain estimate was opened as a 3D block view in Isatis software, along with the composites used to inform it. This allows rapid assessment of domain selections, and whether any blocks have not been filled by the search applied. In addition, the search ellipsoid and samples selected were visualised in 3D - an example is shown in Figure 19.

Table 14.6
Search Parameters by Variable and Domain

Variable	Domain	Selection			Search			
		Min	# sectors	Opt/sect	Rot (Isatis math)	Dist strike	Dist Dip	Dist Perp
Li_2O	C1 Pass1	4	8	4	95,0,-55	100	80	50
	C1 Pass2	4	10	4	95,0,-55	100	80	50
	C1 Pass3	3	6	10	95,0,-55	250	220	80
	C3 Pass1	3	8	1	100,0,-55	50	50	10
	C3 Pass2	4	10	4	100,0,-55	70	65	20
	C3 Pass3	3	6	10	100,0,-55	280	280	50
	C3N Pass1	3	8	1	130,0,-55	50	50	10
	C3N Pass2	4	10	4	130,0,-55	70	65	20
	C3N Pass3	3	6	10	130,0,-55	280	280	50
	Background	4	12	2	100,0,-60	350	350	120
Na_2O	C1	8	12	10	0,-30,0	150	150	50
	C3	8	12	10	110,0,-55	150	150	50
	C3N	8	12	10	120,0,-55	150	150	50
	Background	4	12	2	110,0,-60	350	350	120
MnO	C1	8	12	10	0,-55,0	150	150	50
	C3	8	12	10	110,0,-60	150	150	50
	C3N	8	12	10	120,0,-50	150	150	50
	Background	4	12	2	115,0,-60	350	350	120
P_2O_5	C1	8	12	10	110,0,-55	150	150	50
	C3	8	12	10	110,0,-55	150	150	50
	C3N	8	12	10	110,0,-55	250	250	50
	Background	4	12	2	110,0,-60	350	350	120
Sn	C1	8	12	10	0,-60,0	150	150	50
	C3	8	12	10	100,0,-60	150	150	50
	C3N	8	12	10	130,0,-60	150	150	50
	Background	4	12	2	90,0,-55	350	350	120
Fe_2O_3	C1	8	8	10	110,0,-60	200	200	80
	C3	3	4	4	110,0,-60	200	200	80
	C3N	8	8	10	110,0,-60	200	200	80
	Background	4	12	2	110,0,-60	350	350	120
K_2O	HG	8	12	10	100,0,-50	150	150	50
	LG	8	12	10	100,0,-50	150	150	50
	Background	4	12	2	130,0,-60	350	350	120
CaO	HG	8	12	10	110,0,-60	150	150	50
	LG	8	12	10	110,0,-60	150	150	50
	Background	4	12	2	110,0,-60	350	350	120
As_2O_3	>0.7Li_2O	4	12	5	120,0,-60	300	300	100
	Background	4	12	2	110,0,-60	350	350	120
Ta_2O_5	LG C1	8	12	10	110,0,-55	100	80	35
	LG C3	8	12	10	100,0,-40	100	80	35
	LG C3N	8	12	10	140,0,-55	100	80	35
	HG C1	8	12	10	110,0,-55	100	80	35
	HG C3	8	12	10	100,0,-40	100	80	35
	HG C3N	8	12	10	140,0,-55	100	80	35
	Background	4	12	2	90,0,-55	350	350	120

Figure 19: Example of Visualisation of Search Ellipsoid Applied and Sample Selection.



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Checks on statistical validity begin with global checks on grade reproduction. Declustered input composite grades are compared to average block grades per domain.

Because drilling is generally not evenly distributed in space, an arithmetic average of composite grades will generally not represent the grade of the entire volume well, whereas block grades are estimated into the entire volume of the domain. To account for this, sample grades are normally assigned spatial declustering weights – there are a number of different methods available for doing this, all with their own advantages and disadvantages, and sensitivity to choice of parameters.

At Greenbushes, the method adopted for declustering was the moving window option from Isatis software. In Table 14.7 this is compared to the average grade estimated by Ordinary Kriging. Note that OK is itself a declustering method – and in fact, if OK weights are stored back to samples and used to decluster, then reproduction of input grades by output is guaranteed by construction. In general however, it is more useful to decluster samples by an alternative method. Large differences should be examined to determine whether the issue lies in implementation of estimates, or in the declustering applied.

For the estimates compared below, the reproduction is, in general, adequate. The large differences observed can be explained by low domain volumes, or by difficulties in declustering.

An alternative check of the performance of the estimate is to plot average grades of inputs and outputs in moving window slices. Examples of this type of plot for Li_2O estimation in the Main C3 lithium domain are presented in Figure 20 (10m horizontal slices) and Figure 21 (25m Northing slices). The blue line represents average Li_2O grade of input data, the red line represents average estimated Li_2O grades, the green line represents the number of data points per slice, and the orange line represents the average slope of regression (a measure of estimation quality). Note that slice plots only provide a partial (2D) de-clustering, evidence of which can be seen in these plots. For example, the departure between data and estimate above 1,150m RL is due to the closer drill spacing in the high grade hanging wall section of the lithium domain compared to the lower grade footwall, and consequently the average grade of data in a horizontal slice in this zone is predictably higher than the average grade of estimates. That said, slice plots provide a useful visual check of the relative degree of smoothing present in the estimate. A full set of slice plots were created for all other variables.

Table 14.7
Comparison of Declustered Composite Grade versus Estimated Block Grade by Domain

Variable	Sort	Count	Max	Mean	StDev	Count	Max	Mean	StDev	%diff
Li_2O	C1 All	1,535	5.68	**2.37**	1.25	5,014	4.40	**2.40**	0.75	1%
Li_2O	C3 All	6,804	5.51	**2.28**	1.16	48,905	4.93	**2.14**	0.79	-6%
Li_2O	North C3 All	1,210	4.83	**1.67**	0.92	8,922	4.46	**1.55**	0.50	-7%
Na_2O	C1 HG	686	3.74	**1.05**	0.49	1,871	2.10	**1.05**	0.22	0%
Na_2O	C1 LG	891	8.30	**2.61**	1.44	4,519	5.57	**2.41**	0.92	-8%
Na_2O	C3 HG	2,491	6.79	**1.00**	0.67	10,514	3.35	**1.07**	0.47	8%
Na_2O	C3 LG	5,337	9.76	**2.89**	1.35	43,209	6.20	**2.85**	0.89	-1%
Na_2O	North C3 HG	239	5.10	**0.89**	0.65	**341**	1.23	**0.66**	0.17	-26%
Na_2O	North C3 LG	1,785	9.33	**3.37**	1.50	7,780	7.63	**3.42**	0.98	1%
MnO	C1 HG	554	0.22	**0.04**	0.02	1,871	0.08	**0.04**	0.01	5%
MnO	C1 LG	774	0.68	**0.06**	0.04	4,519	0.13	**0.06**	0.01	0%
MnO	C3 HG	1,282	0.60	**0.05**	0.04	9,992	0.17	**0.05**	0.02	-2%
MnO	C3 LG	3,249	2.58	**0.10**	0.15	38,476	0.91	**0.08**	0.06	-20%
MnO	North C3 LG	63	0.13	**0.05**	0.02	75	0.06	**0.05**	0.00	6%
MnO	North C3 LG	895	1.25	**0.09**	0.10	5,353	0.34	**0.08**	0.03	-12%
P_2O_5	C1 HG	686	0.82	**0.10**	0.06	1,871	0.27	**0.10**	0.02	-2%
P_2O_5	C1 LG	891	0.92	**0.22**	0.11	4,519	0.60	**0.19**	0.08	-11%
P_2O_5	C3 HG	2,210	1.37	**0.15**	0.12	10,500	0.37	**0.17**	0.06	7%
P_2O_5	C3 LG	5,048	7.08	**0.36**	0.39	42,917	3.06	**0.34**	0.21	-5%
P_2O_5	North C3 HG	235	1.37	**0.18**	0.15	341	0.43	**0.18**	0.06	1%
P_2O_5	North C3 LG	1,631	4.58	**0.34**	0.35	8,694	2.10	**0.33**	0.16	-3%
Ta_2O_5	C1 HG	689	2,889	**113**	154	1,871	602	**109**	33	-3%
Ta_2O_5	C1 LG	902	1,076	**166**	108	4,519	408	**156**	37	-6%
Ta_2O_5	C3 HG	2,552	1,117	**80**	61	10,525	245	**85**	29	6%
Ta_2O_5	C3 LG	5,670	1,652	**157**	106	45,527	623	**142**	45	-10%
Ta_2O_5	North C3 HG	259	518	**75**	59	**341**	104	**58**	13	-22%
Ta_2O_5	North C3 LG	2,115	1,633	**175**	119	8,873	580	**164**	52	-6%
Sn	C1 HG	689	516	**114**	71	1,871	260	**120**	35	5%
Sn	C1 LG	901	3,863	**303**	431	4,519	1,743	**252**	199	-17%
Sn	C3 HG	2,185	6,867	**121**	185	10,525	728	**117**	67	-3%
Sn	C3 LG	5,532	4,288	**261**	259	43,884	1,772	**242**	127	-7%
Sn	North C3 HG	168	990	**111**	134	341	374	**108**	75	-3%
Sn	North C3 LG	2,048	4,196	**327**	331	8,664	1,751	**317**	180	-3%
Fe_2O_3	C1 HGLG	1,530	14.49	**1.09**	1.49	8,586	6.48	**1.38**	0.68	27%
Fe_2O_3	C3 HG	2,525	6.23	**0.62**	0.50	10,525	3.31	**0.60**	0.32	-3%
Fe_2O_3	C3 LG	5,424	14.25	**1.25**	1.35	45,158	5.15	**1.21**	0.57	-3%
Fe_2O_3	North C3 LGHG	1,238	13.69	**1.39**	1.52	8,586	6.48	**1.38**	0.68	0%
As_2O_3	Shell Li_2O gt 0.7%	8,584	2.27	**0.02**	0.04	62,803	0.53	**0.02**	0.01	0%
CaO	Shell Li_2O gt 2.8%	3,013	4.46	**0.23**	0.26	12,732	1.01	**0.24**	0.12	4%
CaO	Shell Li_2O 0.7 - 2.8%	6,556	13.82	**0.73**	0.97	55,503	4.30	**0.73**	0.42	0%
K_2O	Shell Li_2O gt 2.8%	3,127	9.01	**1.06**	0.88	12,734	2.47	**1.11**	0.39	4%
K_2O	Shell Li_2O 0.7 - 2.8%	6,652	11.78	**2.84**	1.74	55,850	8.28	**2.70**	1.10	-5%

Figure 20: Slice Plot, C3 Lithium Domain, Li_2O Data versus Estimate in 10m Elevation Slices

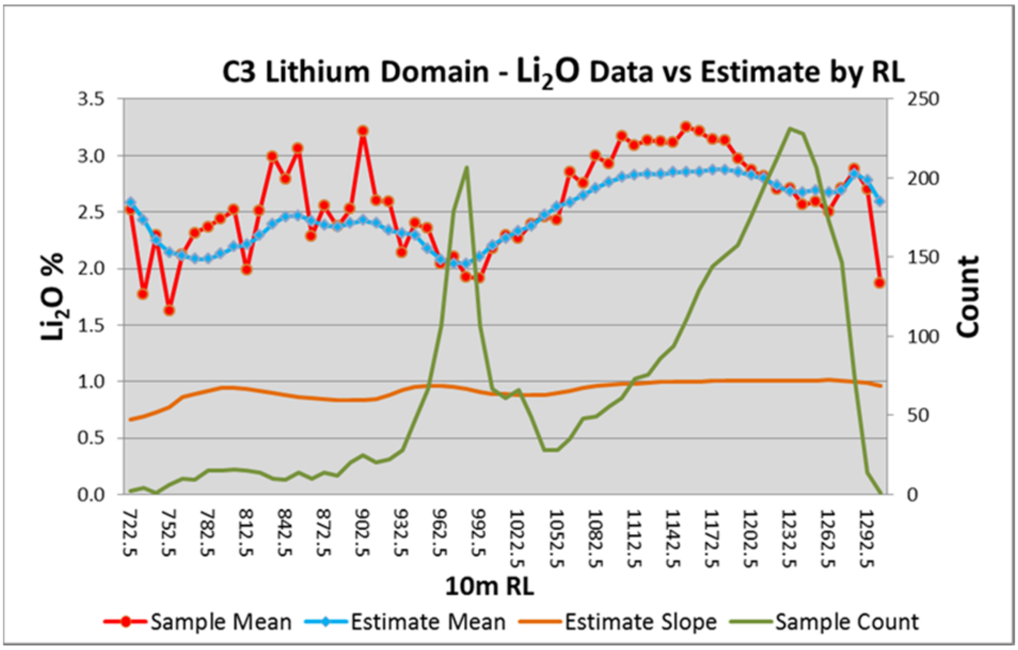

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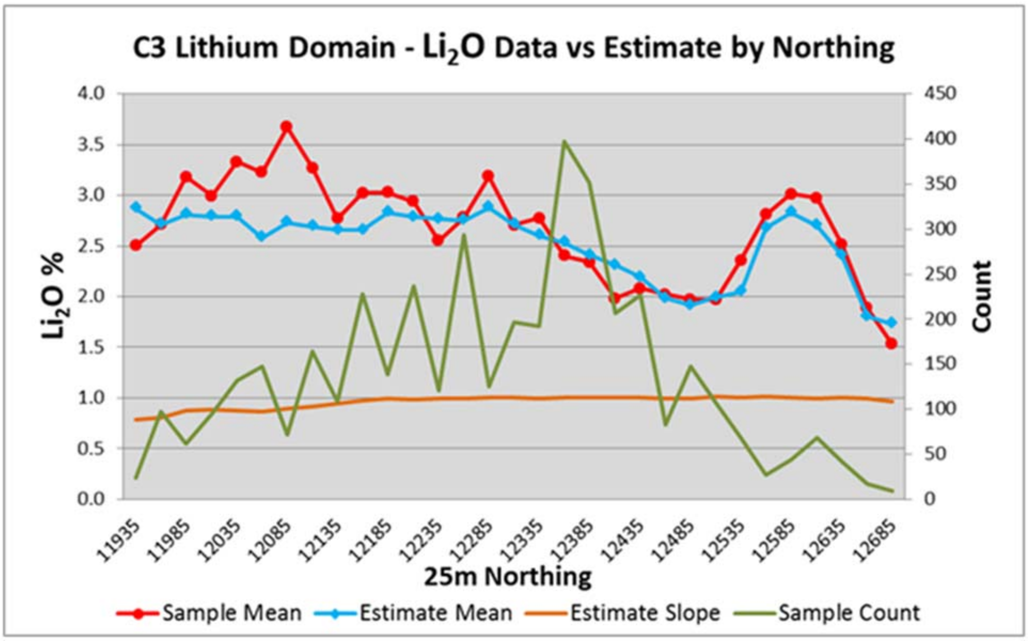
Figure 21: Slice Plot, C3 Lithium Domain, Li_2O Data versus Estimate in 25m Northing Slices



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14.9 Bulk Density

Bulk density for different rock types has been assigned to the block model based on an analysis of site material over a considerable time-frame.

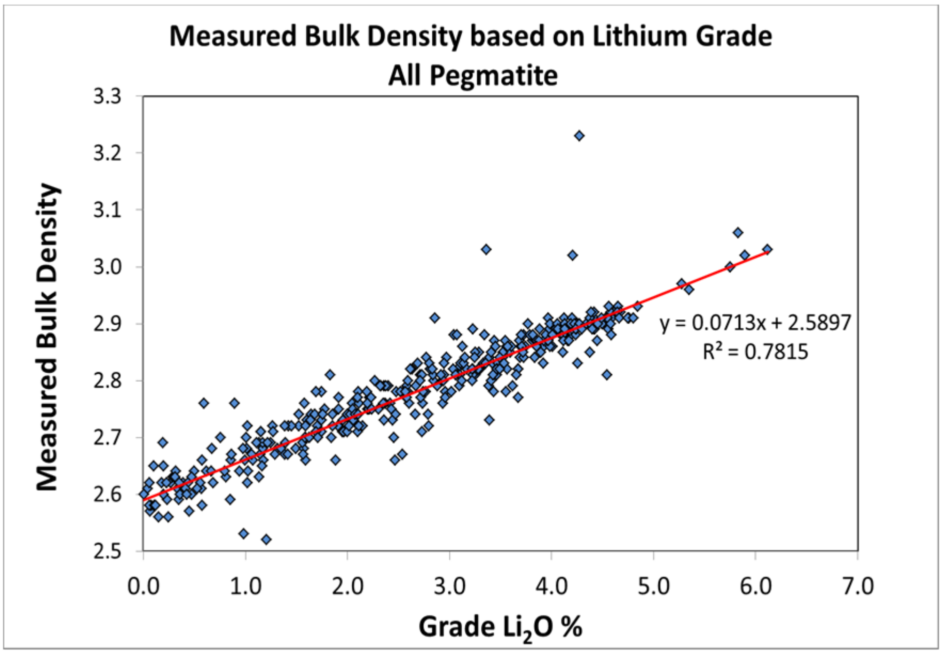
Past Mineral Resource and Mineral Reserve modelling has utilised bulk densities for the major unweathered rock types as follows: pegmatite 2.64 tonnes per cubic metre ("t/m^3"); granofels and amphibolite $2.90t/m^3$; and dolerite $3.1t/m^3$. Oxide material is more variable and difficult to measure; a significant range of density values is to be expected due to variable degrees of rock decomposition. The oxide material has been assigned a bulk density of $1.8t/m^3$, which appears to be the most reliable estimate for this type of material and is supported by mining records.

The bulk composition of the pegmatite is spodumene (SG~3.1) and quartz+feldpars (SG~2.65) and as the proportion of spodumene varies from 0% to +50% throughout the pegmatite, the bulk density also significantly varies from ~2.6 to ~2.9 within the pegmatite. The Li_2O assay indicates the proportion of spodumene from which the SG can be calculated.

Bulk density for pegmatite has been assigned to blocks in the 2012 Mineral Resource model based on Li_2O assays using the formula **Bulk Density = 2.59+0.7*%** Li_2O. The formula is derived from bulk density measurements of drill core prior to assay and subsequently relating the bulk density measurement to the Li_2O assay.

As shown in Figure 22, the measured values show good correlation with Li_2O grades and are considered an improvement on the previously assigned value of 2.64 across the whole pegmatite.

Figure 22: Bulk Density of Pegmatite Based on Li_2O Grade



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Bulk density, which takes into account air/pore spaces in the material, is considered a better measure of the 'mass' of oxidised material. Over time, production truck counts versus survey measurements can be a reliable indicator of material bulk density. The bulk density of oxide material has been assigned the value of 1.8, which is considered to be the best and most reliable estimate for this type of material. Table 14.8 below summarises the densities applied to the model.

Historical mining values were used for weathered clays = 1.8 and fresh greenstone waste = 2.9. A value was not assigned to dolerite due to its less significant volume and inexact location in the deposit.

Table 14.8
Bulk Densities Applied to the Model

Material	No of Samples	Analysis	Density	Estimation
Oxide/Transitional Pegmatite	N/A	Truck/Survey	1.8	Assigned
Fresh Pegmatite	385	Experimental	~2.6~2.9	Calculated
Oxide/Transitional Greenstone	N/A	Truck/Survey	1.8	Assigned
Fresh Dolerite	22	Wax[1]	3.1	Not Used
Fresh Granofels	27	Wax[1]	2.9	Assigned
Fresh Amphibolite	16	Wax[1]	2.9	Assigned

Note:
(1) "Wax" = core samples, wax coated to avoid absorbing pore water, weighed in air and then in water.

14.10 Mineral Resource Classification

The C3 pit constitutes the largest part of the lithium Mineral Resource and the C3 area above 1,100mRL has been the source of the majority of the recent lithium production. Mineral Resource classification of the lithium domains was based on the data density, geological confidence and estimate quality of the Li_2O estimate. It was assumed that ore will be extracted only via open pit methods.

Essentially, for the lithium domains, blocks with good quality Li_2O estimates and with a drill density of around or higher than 50x50m were classified as Indicated Mineral Resource. No material inside the lithium domains has been classified as Measured Mineral Resource. Only one small area in the south of the C3 zone, where the strike swings approximately 15°, is classified as Inferred Mineral Resource, as the data density and estimation quality in this area is poorer.

14.11 Mineral Resource Calculation

The September 2012 Greenbushes Mineral Resource estimate has been constrained within the limits of an economically optimised Whittle pit shell. This pit shell has been selected from a series of sequentially nested shells based on the same commercial and physical parameters and providing a range of Net Present Values.

The optimised shell selected to support the Greenbushes open pit design and subsequently the Mineral Reserves at Greenbushes is also from the same series of nested shells. This relationship ensures the Mineral Reserves can remain a subset of the Mineral Resources.

The process followed to determine Mineral Resources in September 2012 is as follows:

- A pit optimisation was run on the updated 2012 resource model in Whittle 4X software using revised commercial inputs and processing criteria. This optimisation process produced a consecutive enveloping series of pit shells (49 in this run) relating to varying discounted and undiscounted NPVs, and with a range of revenue factors relating resource block costs to block revenues.
- The Whittle optimisation used a series of discrete material types including lithium ores, tantalum mineralisation and pegmatite designated as waste. All contain varying levels of lithium mineralisation.
- The pit shell selected for constraining Mineral Resources includes Indicated and Inferred Mineral Resource blocks and has a limiting revenue factor of 1.0 (i.e. costs vs. revenues for each block are break-even or better).
- The pit optimisation run producing the pit shell selected for mine design and Mineral Reserves excludes Inferred Mineral Resource blocks and is fully within the Mineral Resource shell, so the Mineral Reserves remain a valid sub-set of the Mineral Resources. The Mineral Reserves shell has the maximum NPV from the average of best and worst case DCFs, and a cost based revenue factor of 0.575.

The Mineral Resources within the selected Mineral Resource shell are further constrained by being:

- Inside the 0.7% and 2.8% Li_2O grade domains;
- Below the 30th September 2012 mine surface;
- Indicated or Inferred Mineral Resource classifications (none of the in-situ Mineral Resource has been classified as Measured Mineral Resource)
- lithium ore and pegmatite waste material types
- Above 950RL (70 metres below the design floor of the new Mineral Reserves pit).

As outlined in Section 14.9, the approach to bulk density of the lithium ore types has changed from a standard value in previous calculations to a variable value in this 2012 calculation based on spodumene content determined by Li_2O grade This has introduced a tonnes-weighted average increase of approximately 4% across the Mineral Resource grade range.

This process produces an in-situ Mineral Resource of 120Mt at 2.42% Li_2O. There is no Measured Mineral Resource in-situ. The translation rate of the September 2012 Mineral Resources to Mineral Reserves is approximately 51%, compared with 43% in the previous calculation.

The lithium Mineral Resources reported across the C1, C2 and C3 pit areas are listed in Table 14.13 and show that the bulk of the Mineral Resource is contained in the C3 area, where most of the pit development has occurred.

14.12 Review of the 2012 Mineral Resource Model

A major Mineral Resource drilling program totalling approximately 12,800m was completed in the Greenbushes pegmatite and flanking structures in early 2012. The drilling program was directed at upgrading Mineral Resources and increasing Mineral Reserves by improving the confidence of the block model estimates and extending the lithium mineralisation boundaries in the mining areas, particularly in the southern C3 area. The increased Mineral Reserves were to support expansion plans in the processing plants with improved ore feed options at a wider range of lithium grades.

The drilling information and continuing mining and milling experience in C3 and C1 pits lead to a review of pegmatite structures, geological interpretation and lithium grade domaining in the pegmatite body. The lithium domains have been constructed at 0.7% Li_2O and 2.8% Li_2O boundary conditions. The 0.7% Li_2O domain and the Mineral Resource block model extend continuously from 9,800mN in the south of C1 to 14,620mN in the north of C3. Estimation of the block model inside the 0.7% Li_2O domain shows improvement in estimation confidence reclassifying blocks from Inferred Mineral Resources to Indicated Mineral Resources and consequently providing increased volumes potentially available to Mineral Reserves.

Geological and mineralogical variations exist for lithium mineralization between the C1, C2 and C3 areas. All areas contain the ore types that constitute feed for the CGP. C3 has a higher lithium grade core more suitable for feed to the TGP, and not found in C1 or C2. Lithium grade distributions and population statistics differ between the areas, and there are grade trend and structural orientation variations between the three areas. Construction of the 2.8% Li_2O domain is limited to the C3 area and improves the definition of high grade lithium mineralisation forming the feed for the Technical Grade processing plant.

The Mineral Resource estimates forming the tables below remain current.

14.13 C3 Area Mineral Resource Summary

The C3 pit constitutes the largest lithium Mineral Resource and the C3 area has been the source of the majority of recent lithium production. The Mineral Resource table for the C3 area is presented in Table 14.9. The table is generated from Surpac software after export from Isatis. The Surpac model is used as the input to Mineral Reserve estimation. Lithium estimates within the pegmatite zones outside the lithium domains are not classified or reported.

All Mineral Reserves are contained within the Mineral Resources.

Table 14.9
Mineral Resource Summary for the C3 Area – as at September 30, 2012

C3 Lithium Domain Resources; North of 11,800mN			
Category	**Tonnes**	**Li_2O %**	**LCE (Mt)**
Measured Mineral Resource	0	0	0.00
Indicated Mineral Resource	86.0	2.4	5.18
Total Measured and Indicated Mineral Resources	86.0	2.4	5.18
Inferred Mineral Resource	0.9	1.7	0.04

Note:
(1) There are no reportable Measured Mineral Resources; Lithium domains are drawn at a 0.7% Li_2O grade boundary; Lithium Mineral Resources are quoted above 950mRL; Mineral Resources are estimated by OK into 20mNx20mEx5mRL parent blocks; some rounding errors in totals.

Mineral Resources are reported as at September 30, 2012. The Mineral Resource models have been cut with the surveyed ground surface at September 30, 2012. The Mineral Resource estimates forming the basis of the above table remain current at the time of this report.

14.14 C1 and C2 Mineral Resource Summary

Current Mineral Resources in the C1 and C2 areas are presented in Tables 14.10 and 14.11 respectively. The tables are generated from Surpac software after export from Isatis. The Surpac model is used as the input to Mineral Reserve calculation. Lithium estimates within the Pegmatite zones outside the Lithium domains are not classified or reported.

All Mineral Reserves are contained within the Mineral Resources.

C1 Area Mineral Resource Summary

The C1 area Mineral Resource is drawn from the block model south of 11,200mN. There is no Measured Mineral Resource defined and no ore types outlined that meet the current conditions required to provide feed to the TGP. Mineral Resources reported for the C1 deposit as of September 30, 2012 are shown in Table 14.10.

Table 14.10
Mineral Resource Summary for the C1 Area – as at September 30, 2012

C1 Lithium Domain Resources; south of 11,200mN			
Category	Tonnes	Li_2O %	LCE (Mt)
Measured Mineral Resource			0.00
Indicated Mineral Resource	8.8	2.7	0.59
Total Measured and Indicated Mineral Resources	8.8	2.7	0.59
Inferred Mineral Resource	1.2	2.2	0.06

Note:
There are no reportable Measured Mineral Resources; Lithium domains are drawn at a 0.7% Li_2O grade boundary; Lithium Mineral Resources are quoted above 950mRL; Mineral Resources are estimated by OK into 20mNx20mEx5mRL parent blocks; some rounding errors in totals.

C2 Area Mineral Resource Summary

Recent drilling in the C2 area has increased the pegmatite volume available to the lithium Mineral Resource. The 2012 Mineral Resource block model covers this narrower structurally complex pegmatite zone between 11,200mN and 11,800mN linking the C1 area in the south and the C3 area to the north. The geological and modelling conditions described above for C1 also generally apply to the C2 area. There is no Measured Mineral Resource defined and no ore types outlined that meet the current conditions required to provide feed to the TGP. The Mineral Resource estimates shown in Table 14.11 are reported from the 2012 Mineral Resource model using Surpac software.

Table 14.11
Mineral Resource Summary for the C2 Area - as at September 30, 2012

C2 Lithium Domain Mineral Resources 11,200mN to 11,800mN			
Category	Tonnes	Li_2O %	LCE (Mt)
Measured Mineral Resource			0.00
Indicated Mineral Resource	23.1	2.3	1.31
Total Measured and Indicated Mineral Resources	23.1	2.3	1.31
Inferred Mineral Resource			0.00

Note:
There are no reportable Measured Mineral Resources; Lithium domains are drawn at a 0.7% Li_2O grade boundary; Lithium Mineral Resources are quoted above 950mRL; Mineral Resources are estimated by OK into 20mNx20mEx5mRL parent blocks; some rounding errors in totals.

14.15 Greenbushes Lithium Mineral Resources

Qualified Persons Responsible for Mineral Resource Estimates

The Mineral Resource estimates for the Greenbushes C1, C2 and C3 lithium deposits as of September 30, 2012 were carried out under the guidelines of the JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101.

Data collection, validation and construction of the constraining geological and grade boundaries was undertaken on site and in Perth, WA. This work was overseen by Andrew Purvis of Talison who is a Competent Person as defined by the JORC Code and who is a Qualified Person under NI 43-101. QG undertook statistical and geostatistical analysis of the data, and constructed the 3-D Mineral Resource block model. The QG work was undertaken or supervised by Scott Jackson of QG, who is the Competent Person as defined under the JORC Code and who is a Qualified Person under NI 43-101. Data collection and data quality were also reviewed by Scott Jackson of QG.

Basis of Mineral Resource Classification

The mineralization was classified according to the definitions of NI 43-101 and the guidelines published by CIM. The relevant definitions for the classifications are as follows:

A Mineral Resource is a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

An Inferred Mineral Resource is that part of a Mineral Resource, for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

The Mineral Resource estimates are derived using assay information from surface drilling and are based on geological interpretation from mapping and drilling. The Mineral Resource category reflects the degree of confidence in the block, based both on the quantity, reliability and consistency of the data and the confidence in the geological interpretation. The Mineral Resource is stated inclusive of Mineral Resource material used in the Mineral Reserve estimate. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

QG is not aware of any aspects of the Mineral Resources that may be materially affected by mining, metallurgical, infrastructure and other relevant factors.

Mineral Resource Statement

Table 14.12 reports the current Greenbushes lithium Mineral Resources held by Talison by category. Table 14.13 sets out those lithium Mineral Resources within each area, excluding the stockpiles of ore which make up the total of all Measured Mineral Resources.

Ore stockpiles are surveyed at the end of each month by the mine surveyor. The stockpiles are defined as Run of Mine (“ROM”) or Fine Ore (post-crushing). Broken rock specific gravities are applied to calculate tonnes. The stockpile grades are a balance between grade control sampling grades on to the stockpiles and mill feed grades off the stockpiles. The validity of the results is monitored during the monthly reconciliation process.

Table 14.12
Greenbushes Lithium Mineral Resources by Category - as at September 30, 2012

Category	Update – September 30, 2012			Previous - March 31, 2011		
	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)
Measured Mineral Resources	0.6	3.2	0.04	0.2	3.9	0.02
Indicated Mineral Resources	117.9	2.4	7.08	70.2	2.6	4.55
Total Measured and Indicated Mineral Resources	**118.5**	**2.4**	**7.13**	**70.4**	**2.6**	**4.56**
Total Inferred Mineral Resources	2.1	2.0	0.10	2.0	2.2	0.11

Notes:
1. *There may be some rounding errors in totals.*
2. *The derivation of lithium carbonate equivalent is tonnes x (%Li_2O/100) x 2.473 = tonnes LCE.*
3. *For the updated estimate (as of September 30, 2012) the lithium Mineral Resources are within lithium domains drawn at a 0.7% Li_2O grade boundary, constrained by an optimized pit shell, and above 950mRL; and Measured Mineral Resources comprises the Run of Mine and Fine Ore stockpiles. For the previous estimate (as of March 31, 2011) the lithium Mineral Resources are within lithium domains drawn at a 1.0% Li_2O grade boundary and above 1000mRL.*
4. *Mineral Resource estimation was performed using Ordinary Kriging into 20mNx20mEx5mRL parent blocks, with each variable Li_2O, calcium oxide (CaO), ferric oxide (Fe_2O_3), potassium oxide (K_2O), manganese oxide (MnO), sodium oxide (Na_2O), phosphorus oxide (P_2O_5),arsenic oxide (As_2O_3), tin (Sn), and tantalum oxide (Ta_2O_5)) being estimated independently. The geostatistical analysis of the data and construction of the 3-D Mineral Resource block model was undertaken or supervised by Scott Jackson of QG, who is the Competent Person as defined under the JORC Code and who is a Qualified Person under NI 43-101. Data collection, validation and construction of the geological models was overseen by Andrew Purvis, a full-time employee of Talison, who is “Qualified Person” in accordance with National Instrument 43-101 and a ‘‘Competent Person’’ as defined by the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2004 Edition (the JORC Code.*
5. *Mineral Reserves are included in Mineral Resources. Mineral Resources are not Mineral Reserves and, as such, do not have demonstrated economic viability.*
6. *Mineralization was classified according to the definitions in National Instrument 43-101 and the guidelines published by the Council of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM Standards). Categorisation of Mineral Resources under NI 43-101 is consistent with the JORC Code.*

All Mineral Resources are reported as of September 30, 2012 using the end of month mining survey. Subsequent production has occurred, but the impact on total Mineral Resources is not significant.

Table 14.13
Greenbushes Lithium Mineral Resources by Category and Area - as at September 30, 2012

C1 Lithium Domain Resources; South of 11,200mN			
Category	**Tonnes**	**Li_2O %**	**LCE (Mt)**
Measured Mineral Resource			0.00
Indicated Mineral Resource	8.8	2.7	0.59
Total Measured and Indicated Mineral Resources	**8.8**	**2.7**	**0.59**
Inferred Mineral Resource	1.2	2.20	0.06
C2 Lithium Domain Resources; 11,200mN to 11,800mN			
Category	**Tonnes**	**Li_2O %**	**LCE (Mt)**
Measured Mineral Resource			0.00
Indicated Mineral Resource	23.1	2.3	1.31
Total Measured and Indicated Mineral Resources	**23.1**	**2.3**	**1.31**
Inferred Mineral Resource	0.0	0.0	0.0
C3 Lithium Domain Resources; North of 11,800mN			
Category	**Tonnes**	**Li_2O %**	**LCE (Mt)**
Measured Mineral Resource			0.00
Indicated Mineral Resource	86.0	2.4	5.18
Total Measured and Indicated Mineral Resources	**86.0**	**2.4**	**5.18**
Inferred Mineral Resource	0.9	1.7	0.04

Notes:

1. *There may be some rounding errors in totals.*
2. *The derivation of lithium carbonate equivalent is tonnes x (%Li_2O/100) x 2.473 = tonnes LCE.*
3. *For the updated estimate (as of September 30, 2012) the lithium Mineral Resources are within lithium domains drawn at a 0.7% Li_2O grade boundary, constrained by an optimized pit shell, and above 950mRL; and Measured Mineral Resources comprises the Run of Mine and Fine Ore stockpiles. For the previous estimate (as of March 31, 2011) the lithium Mineral Resources are within lithium domains drawn at a 1.0% Li_2O grade boundary and above 1000mRL.*
4. *Mineral Resource estimation was performed using Ordinary Kriging into 20mNx20mEx5mRL parent blocks, with each variable Li_2O, calcium oxide (CaO), ferric oxide (Fe_2O_3), potassium oxide (K_2O), manganese oxide (MnO), sodium oxide (Na_2O), phosphorus oxide (P_2O_5),arsenic oxide (As_2O_3), tin (Sn), and tantalum oxide (Ta_2O_5)) being estimated independently. The geostatistical analysis of the data and construction of the 3-D Mineral Resource block model was undertaken or supervised by Scott Jackson of QG, who is the Competent Person as defined under the JORC Code and who is a Qualified Person under NI 43-101. Data collection, validation and construction of the geological models was overseen by Andrew Purvis, a full-time employee of Talison, who is "Qualified Person" in accordance with National Instrument 43-101 and a ''Competent Person'' as defined by the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2004 Edition (the JORC Code.*
5. *Mineral Reserves are included in Mineral Resources. Mineral Resources are not Mineral Reserves and, as such, do not have demonstrated economic viability.*
6. *Mineralization was classified according to the definitions in National Instrument 43-101 and the guidelines published by the Council of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM Standards). Categorisation of Mineral Resources under NI 43-101 is consistent with the JORC Code.*

ADDITIONAL REQUIREMENTS FOR ADVANCED PROPERTY TECHNICAL REPORTS

15 MINERAL RESERVE ESTIMATES

15.1 Qualified Persons Responsible for Mineral Reserves

The Mineral Reserve calculations for the Greenbushes Central Lode lithium deposits have been carried out under the guidelines of the JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

The mining team at the Greenbushes Lithium Operations undertook the determination of Mineral Reserves. This team was led by Stephen Green of Talison, who is a Competent Person as defined by the JORC Code. Peter Ingham of BDA, a Qualified Person under NI 43-101, has reviewed the Greenbushes Mineral Reserves process and determined that the assumptions and parameters used in the preparation of the Mineral Reserves are appropriate, and that the Mineral Reserves statement fairly represents the Mineral Reserves at Greenbushes. For the purposes of this independent technical report, Peter Ingham is the Qualified Person responsible for the Greenbushes Lithium Operations Mineral Reserves calculation and is independent of Talison. Peter Ingham is a mining engineer with over 30 years' experience in the mining industry, with particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves.

15.2 Basis of Mineral Reserves Classification

In accordance with NI 43-101, Proven and Probable Mineral Reserves are derived from Measured and Indicated Mineral Resources, respectively, once it has been shown that those Mineral Resources can be extracted at a profit. Mining, metallurgical, engineering and cost studies have been completed, and legal and environmental aspects confirmed. Inferred Mineral Resources cannot be converted to Mineral Reserves.

15.3 Mineral Reserves Basis

The Mineral Reserves for the Central Lode area comprises open pittable material, and were developed through Whittle Four-X pit optimization software ("Whittle software") of Indicated Mineral Resources contained within the 2012 Mineral Resource model. Mine design was completed in accordance with established slope stability criteria, using Surpac mining software. The Central Lode pit has been designed with 30m benches, 18m bench widths and overall wall angles of between 30° and 50°. Local berm angles vary with local ground conditions. Ramp width is 18m for single-way and 24m for two-way traffic. Ramp gradient is 1:10. The pit design floor is at 1,020mRL, with a high wall of approximately 310m.

Product yields in the Whittle software vary according to the product specification, and, in the case of CG material, the plant producing the product. Consequently, no single yield figure can be applied to the various plant feed types and classes. Total product yield over the life of the project is estimated to be approximately 35%.

Based on a review of reconciliation data, Talison has allowed for the recovery of 93% of the mining tonnes at 100% of the grade.

The Mineral Reserves estimates forming the basis of Table 15.1 below remain current.

Table 15.1
Greenbushes Lithium Mineral Reserves by Category – as at September 30, 2012.

Category	Update – September 30, 2012			Previous - March 31, 2011		
	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)	Tonnage (Mt)	Li_2O Grade (%)	LCE (Mt)
Proven Mineral Reserves	0.6	3.2	0.04	0.2	3.9	0.02
Probable Mineral Reserves	61.0	2.8	4.2	31.3	3.1	2.4
Total Proven and Probable Mineral Reserves	**61.5**	**2.8**	**4.3**	**31.4**	**3.1**	**2.4**

Notes:
1. *There may be some rounding errors in totals.*
2. *The derivation of lithium carbonate equivalent is tonnes x (%Li_2O/100) x 2.473 = tonnes LCE*
3. *For the updated calculation (as of Sept 30, 2012) a 1.8% Li_2O cut-off grade has been applied; for the previous calculation (as of March 31, 2011) a 2% Li_2O cut-off grade was applied.*
4. *Proven Mineral Reserves comprises the Run of Mine and Fine Ore stockpiles. All the Probable Mineral Reserves are contained within the Indicated Mineral Resources.*
5. *Mineralization was classified according to the definitions in National Instrument 43-101 and the guidelines published by the Council of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM Standards).*
6. *BDA does not consider the Mineral Reserves will be materially affected by foreseeable permitting, title, environment, or metallurgical issues based on the information supplied by Talison.*
7. *Ore stockpiles are surveyed at the end of each month by the mine surveyor. The stockpiles are defined as ROM or Fine Ore (post-crushing). Broken rock specific gravities are applied to calculate tonnages. The grades are a balance between grade control sampling grades on to the stockpiles and mill feed grades off the stockpiles. The validity of the results is monitored during the monthly reconciliation process.*

16 MINING METHODS

16.1 Pit Optimization and Designs

The defined lithium Mineral Reserves are contained within the Central Lode zones. The design of the Central Lode open pits which contain all the lithium Mineral Reserves was based on optimization work undertaken by Talison and an independent consultant and then reviewed by BDA. Whittle software with the Lerch-Grossman algorithm was used to create optimized pit shells from the Mineral Resource block model. A 1.8% Li_2O cut-off grade has been applied to the Mineral Reserves.

The mining cost parameters used in the modelling were based on the site's existing drill and blast, and load and haul contract costs adjusted to current rates via the rise and fall formulae within the contracts. The assumption for the pit slopes for all walls was 45º; the basis of slope angles is further discussed under geotechnical assessment. Based on recent results of the C3 pit reconciliations of the mine production against the Mineral Resource model, the mining input parameters for the optimization were set at 0% dilution and 93% recovery of ore; further discussion of grade control and mine to mill reconciliation is set out below.

The other key parameters used in the optimization were processing costs of between A$20 and A$48/t depending on grade and product specifications. Product yields, production rates and product pricing used in the optimization were reviewed by BDA and were considered appropriate for the optimization modelling. With the need to balance total production and corporate marketing requirements, the scheduling modelling considered both TGP and CGP feed requirements.

The selected Whittle shells from the optimization modelling were used to design mineable pits that satisfied the design criteria of the site Slope Stability Management Plan (Sons of Gwalia, 2005), utilized parts of the existing ramps, minimized narrow mining widths and met the required bench mining widths. The final pit has been designed with 30m bench heights, 18m bench widths and overall wall angles of between 30º and 50º. Local batter angles vary with local ground conditions summarized in Table 16.1. Ramp width was set at 18m single lane and 24m for two way traffic. Haul road gradient was set at 1:10 or approximately 6º. The final pit floor is at 1,020mRL, with a high wall of approximately 310m.

Table 16.1
Pit Wall Design Parameters

Pit	Wall Orientation	Lithology	Maximum Batter Angle (Degrees)	Maximum Bench Height (metres)	Minimum Berm Width (metres)
C1	All Walls	Weathered to Moderately Weathered	45	30	8
	West	Pegmatite	75	30	8
	South	Pegmatite	65	30	8
	East	Pegmatite	55	30	8
	North	Pegmatite	65	30	8
C3	West	Amphibolite and Pegmatite	85	30	15
	West	Pegmatite	85	30	15
	South	Pegmatite	85	30	15
	East	Pegmatite	55	30	15
	North	Pegmatite	75	30	15

The Central Lode pit is planned to be mined in stages to ensure continuity of TGP and CGP feed requirements and to minimize waste removal over the life of the pit. The stages are designed to be mined concurrently. The mining parameters used in determining the Mineral Reserves were the same as used in the optimization modelling; mining dilution of 0% and a mining recovery of 93%. The final Central Lode pit design crest is shown on Figure 4 and on Figure 6.

The volumes, tonnes and grade for the pit design for the Central Lode pit excluding stockpiles at September 30, 2012 are summarized in Table 16.2.

Table 16.2
Central Lode Total Material Designation

Material Type	Volume (Mbcm)[1]	Tonnes (Mt)	Li_2O %	Ta_2O_5 ppm
Lithium Ore	21.9	61.0	2.80	116
Tantalum Ore (waste)	3.6	9.4	1.10	146
Waste	45.2	125.6		
Total	70.8	196.0		
Waste : ore	2.2:1	2.2:1		

Note:
(1) "Mbcm" = million bank cubic metre.

16.2 Geotechnical and Hydrological

The geotechnical parameters including slope angles used in the optimization were drawn from recommendations in the BFP Consultants Pty Limited slope stability report (BFP, 1999) and subsequent annual design reviews by independent consultants. Allowances for haul road segments were included in the design parameters. The designs are consistent with current operating practices for the C3 pit, which include steeper batters with more horizontal catchment on the berms. The Cornwall pit, which is adjacent and to the north of the C3 pit, was mined to a depth of 270m between 1992 and 2003 using the same overall slope angles and its walls remain stable.

On-going geotechnical data collection, test work and review are planned as the pits increase in depth to ensure the risk of slope failure is minimized. Slope profiles have been designed for the various geotechnical domains within the Mineral Resource model and are summarized in Table 16.1.

No recent hydrological studies for the pit have been undertaken; however, based on the current open pit and underground tantalum mining below the open pit mining of the C3 pit, there is no evidence of ground-water being a potential problem for Greenbushes. In view of a larger rainfall catchment area, as the 'footprint' approaches the final pit shell, additional pumping from the pit will be required.

16.3 Grade Control

Talison's grade control procedure is based on sampling of blast holes drilled by open-hole percussion drills on a spacing of 3m x 3m or less depending on blasting requirements. However, prior to drilling the lithological boundaries between pegmatite and waste (greenstone) are identified from blast hole logging and geological bench mapping. For those holes within pegmatite, grab samples are collected for analysis from cuttings at the collar representing the 5m drill length. Duplicate samples are subsequently collected at a ratio of approximately 1:20 and submitted for analysis for QA/QC purposes.

16.4 Ore Blocking

Ore outlines are based on interpretation of blocks above the Li_2O cut-off grade, which is presently 2.0% Li_2O, taking account of practical mining limitations, with blocks providing feed for the TGP being identified from Li_2O grade and estimated Fe_2O_3 product content. Predicted mining tonnes and grade are calculated in Surpac software.

In order to maximize the recovery and quality of blocks providing feed for the TGP, these blocks are blasted separately from CGP feed where possible. A further precaution to reduce iron contamination is the practice of covering these blast blocks with lithium tailings prior to blasting of adjacent ore or host rock areas. The tailings are then removed prior to mining the block. The final control is visual ore spotting with ore movement restricted to daytime operations wherever possible.

16.5 Production Reconciliation

Process

Reconciliation between the Mineral Resource model, mine production (from grade control blast hole data) and mill production is carried out routinely and reported monthly. The reconciliation trends are used to monitor performance of the Mineral Resource model and to determine factors translating Mineral Resources to Mineral Reserves. Talison provided records of Mineral Resource to grade control to mill production reconciliation for the 12 month period from July 2011 to June 2012. Reconciliation has been reasonably consistent over this period.

Mine, stockpile and mill daily and monthly production data are stored in a database tracking system. The reconciliation process uses the 2012 Mineral Resource model and matches lithium ore streams from in-situ Mineral Resources through the stockpiles to the mill, applying end-of-month pit and stockpile surveys, mine ore movements, stockpile balances and mill processing figures. The outcome is a back-calculated mine production tonnage and grade based on mill figures balanced by stockpile movements. This tonnage and grade is then reconciled against the depleted Mineral Resource in the pits, and, as a secondary check, against the cumulative daily trucking figures. The reconciliation of Mineral Resource against back-calculated mine production figures guides mill-based factors used to translate Mineral Resources to Mineral Reserves in the pit optimization and design process.

The weaknesses inherent in the reconciliation process over short time periods are the relatively low tonnages moved each month compared to the Mineral Resource model block size, the potential for stockpile survey error, and the definition of the blend fed to the mill. The results and trends gain credibility as the time period increases. The mill figures are taken as fixed and any reconciliation issues sheeted back to the Mineral Resource block model and/or mine performance. As mine production relies on blast hole sampling for grade control and ore blocking there is a natural separation between the Mineral Resource model and the production stream common to many mining operations.

Results

Over the 12 months July 2011 to June 2012 the lithium grade control cut-off in ore fed to the mill has been 2.0% Li_2O. Therefore the 2012 Mineral Resource model has been reported at 2.0% Li_2O and compared to mine production figures back-calculated from stockpile balanced mill tonnes and grade. Lithium-bearing material less than 2.0% Li_2O cut-off is identified during grade control and moved to low grade stockpiles.

The reconciliation summary over the 12 month period from July 2011 to June 2012 at the nominal cut-off of 2.0% Li_2O is shown in Table 16.3 below.

Table 16.3
Reconciliation of Lithium Ore - July 2011 to June 2012

Period	2012 Resource Model					
	Mineral Resource Model		Reconciliation		Stockpile-Balanced Mined	
	Tonnage (Mt)	Grade (Li_2O %)	Tonnage (%)	Grade (%)	Tonnage (Mt)	Grade (Li_2O %)
July 2011-June 2012	1.369	3.08	**85**	**110**	1.160	3.39

Mineral Resources to Mineral Reserves Conversion Factors

Talison has adopted a tonnage factor of 93% and a grade factor of 100% for the ore types feeding the TGP and CGP. These factors imply 0% dilution and 93% mining recovery. In practice, the pit based grade control processes that define ore types feeding the mill at the time of mining are anticipated to result in the overall recovery of the tonnage in the Mineral Resource model that is depleted by mining activity, at the grade of those tonnes depleted from the Mineral Resource model. Talison is aware of the ore definition issues and consider these factors as representative of ore recovery trends. Considering the low tonnages of material mined, it is not possible to determine the recovery and dilution factors to a high degree of accuracy, but the increasing complexity of ore type definition anticipated from the 2011 and 2012 Mineral Resource models suggests that there will be growing challenges facing grade control in identifying and blocking out ore types below the current pit floor.
The following mining parameters have been used in the optimisation:

- Mining dilution of 0%
- Mining Recovery of 93%

These parameters effectively denote a recovery of 93% of the resource model tonnes at 100% of the Mineral Resource model grade.

The 2012 reconciliation calculated over the 12 months from July 2011 to June 2012 shows 85% tonnage and 110% grade recoveries of the Mineral Resource model in the mill, which equates to a 93% contained Li_2O reconciliation from model to mill. Over this time the mine was processing the higher grade ores and stockpiling lower grade ores, which has the potential to distort the reconciliation outcomes. Talison determined that rather than applying a positive lithium grade reconciliation factor to convert Mineral Resources to Mineral Reserves, the positive grade reconciliation would be incorporated in the tonnage reconciliation to calculate an overall mining recovery.

BDA has reviewed the production and reconciliation data and agrees that the definition of lithium ore distribution in the Mineral Resource model blocks from drilling at 50m intervals is not particularly accurate compared to the detailed grade control drilling. However, significant improvement has been introduced to the model from the 2010 and 2012 Mineral Resource drilling programs and the subsequent review of the Mineral Resource model estimations. BDA considers that Talison's decision to use the 93% recovery and 0% dilution factors for Mineral Resource blocks for use in mine design and production planning can be justified on the basis of the recent reconciliation data and the review of additional ore availability, although it is possible that there may be a declining trend in future for feed to the TGP due to the increasing geological complexity at depth in C3. These assumptions have been adjusted from the March 2011 parameters of 100% recovery and 0% dilution.

16.6 Mining Operations

Since completion of the Cornwall open pit in 2003, open cut mining has moved to the Central Lode open pits to the south of the Cornwall pit. The higher grade lithium ore is mined from a distinct zone within the pegmatite on the hanging wall side of the C3 (North) zone and from the large zone within the C1 (South) zone. The mining plan for C3 involves a series of stages. The various stages of the pit are a western cutback, southern cutback and eastern cutback; the western cutback is staged between the north and south sections to allow waste movements to be scheduled within current haulage capacity. The C2 zone becomes the access to the C3 zone to allow the pit to be deepened. The current final Central Lode pit will be approximately 310m deep, 2,000m north-south and up to 650m east-west.

The open pit operation currently utilizes conventional mining methods with drilling and blasting both ore and waste. Within ore, the drill pattern is either 2.3m x 2.7m or 2.5m x 2.9m for 5m benches with nominal 115mm diameter blast holes. Within the greenstone waste the drill pattern is 4.1m x 4.8m for 10m benches with nominal 127mm diameter blast holes. Emulsion explosives are used for blasting.

The load and haul fleet consists of a 120t hydraulic excavator, four 100t dump trucks (with six trucks available but requiring four trucks for most hauls) and an auxiliary fleet including front end loader, two track bulldozers, water truck and grader. Ore is taken to the ROM pad where it is stockpiled according to ore type, mineralogical characteristics and grade. Tantalum mineralisation mined as a consequence of lithium mining is either stockpiled separately or within the open pit as Talison has no rights over the tantalum ore types. Waste is taken to the waste dump to the east of the pits. Total material movement is between 1.2Mbcm and 1.5Mbcm per annum. Material movements will peak at between 6Mbcm and 7Mbcm per annum between years 12 and 15.

Near the base of the Cornwall open pit there is adit access to the underground tantalum mine. The underground operation was put on care and maintenance in 2002. Subsequently the operation was restarted in 2004 due to increased demand but again placed on care and maintenance the following year. GAM currently maintains the pumping system within the mine to maintain access. The southern limit of the current underground mine extends beneath the central area of the C3 pit.

For annual mine production rates over the life of mine reference should be made to Table 21.1, Section 21 - Capital and Operating Costs; and to Table 22.1, Section 22 – Economic Analysis.

17 RECOVERY METHODS

17.1 Introduction

As noted in Section 13 – Mineral Processing and Metallurgical Testing, two lithium mineral processing plants are located adjacent to the open pits.

The two plants produce a range of lithium concentrate products. SC6.0 is CG lithium concentrate produced from the CGP. Four other lithium concentrates (SC5.0, SC6.5, SC7.0 and SC7.5) are produced from the TGP.

The grades of the lithium products reflect the relatively low lithium content of lithium minerals. Naturally occurring spodumene can contain 7% - 8% Li_2O while pure spodumene from the Greenbushes Lithium Operations contains close to 8% Li_2O. The SC7.5 lithium concentrate is a high grade concentrate comprising around 94% spodumene.

At about 4% Li_2O, Greenbushes lithium TG ore contains 50% spodumene and is regarded as very high grade, compared to other hard rock lithium deposits which contain about 1-2% Li_2O. The mineral suite in the ore includes quartz, sodium and potassium feldspars, micas (muscovite, biotite and lepidolite), phosphates (apatite, amblygonite and lithiophilite), tourmaline, minor carbonates, tantalum minerals, cassiterite and arsenic minerals.

Overall production is tailored to meet market demand.

For the requirements for water, energy and processing reference should be made to Section 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography.

Talison considers the design of the two lithium processing plants to be commercially sensitive and the description below is restricted to generalities. However, BDA has inspected the two plants, has had access to recent production reports and has been provided with information on the plant upgrades which are planned so that plant production can be progressively increased. BDA considers that the two lithium processing plants have the capability to produce the projected tonnages of lithium concentrates provided that the proposed upgrades are carried out as planned.

17.2 Crushing Plant

The two lithium plants receive crushed ore from a four stage crushing plant which also processes tantalum ore when required. The crushing plant comprises a 1600mm x 2500mm Nordberg C160 jaw crusher, a Nordberg 1560 Omnicone secondary cone crusher, a Schenck 3.6m x 7.6m double deck vibrating screen fitted with a 25mm aperture upper deck and 6 or 12mm aperture lower deck, a Nordberg 1560 Omnicone tertiary cone crusher and two Nordberg HP500 quaternary cone crushers. Lower screen deck undersize is the crushing plant product and is conveyed to stockpiles for the TGP and CGP. Upper deck oversize is fed to the tertiary crusher and lower deck oversize is fed to the two quaternary crushers.

Tantalum ore is not currently being processed and a portion of the spare crushing capacity is utilized when the ore is dry by changing the lower screen deck to 6mm aperture. This enables a finer feed to be presented to the CGP.

The crushing plant generally operates at a throughput of 650 tonnes per hour ("tph") on tantalum ore and 250tph on lithium ore to minus 6mm and has an availability of 78%, giving it an annual throughput capacity of approximately 3.5Mtpa. About 30% of the available crushing plant operating time is required for crushing the lithium ore and this proportion may increase with time as the tonnage of lithium ore processed increases.

17.3 Technical Grade Plant

The TGP is fed with lithium ore types in which the iron content of the spodumene is sufficiently low to enable production of higher grade lithium concentrates containing low levels of Fe_2O_3.

Crushed ore is fed by front-end loader from stockpiles to a feed bin from which it is discharged at a rate of between 27tph and 30tph to the wet grinding circuit. The grinding circuit comprises two ball mills (300 kilowatts ("kW") and 200kW installed power) closed by 700 µm aperture vibrating screens, which produce material ground to 80% finer than approximately 450 µm.

Ground TG feed is treated in a series of gravity, magnetic separation and flotation stages to produce the range of TG concentrates before these are filtered and dried.

TG concentrates scheduled for bulk shipment are stored in silos from which it is discharged into trucks for transport to Talison's storage sheds in the Bunbury area to await shipment to customers. Lithium concentrates are also bagged in bulk bags, containerised and transported to Fremantle for shipment on container vessels.

17.4 Chemical Grade Plant

The CGP is fed with ore in which the iron content of the spodumene is too high to produce lithium concentrates meeting the specifications of TGP products. CG ore is processed at a rate of 160tph through milling to 3mm and processing by gravity separation and floatation. The SC6.0 chemical grade product is filtered and transported to Bunbury Port for bulk shipment.

17.5 Production Capacity

In FY 2012, approximately 785,000t of ore was processed to produce 357,000t of lithium concentrates. The lithium TG processing plant is currently operating at full production capacity. The CG plant was upgraded in 2011/2012 to enable processing of 1.3mtpa bringing the total capacity at the Greenbushes operation to 1.5mtpa. The concentrate product capacity for the two plants is approximately 740,000tpa.

18 PROJECT INFRASTRUCTURE

Project infrastructure for the Greenbushes Operations is described in Section 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography and reference should be made to this section.

19 MARKET STUDIES AND CONTRACTS

19.1 Lithium Market

Background

Lithium is currently commercially produced from two sources: lithium rich salt brines and lithium bearing minerals (spodumene, petalite and lepidolite).

Two distinct markets for lithium exist, based on chemical products and on technical products. Lithium chemicals are used in a wide range of applications including primary (non-rechargeable) and secondary (rechargeable) batteries, greases, aluminium production, air-conditioning systems, catalysts, pharmaceuticals, polymers and cements. The lithium technical market comprises the glass, ceramics and metallurgical industries which typically require products with low iron content.

Production from brines is the major source of lithium chemicals, while minerals can either be consumed directly in the technical market or converted into lithium chemicals.

Lithium Supply Outlook

Lithium market supply information has been compiled from various sources of publicly available information as well as Talison's view on the outlook for the supply of lithium.

Existing Producers

Global production of lithium is highly concentrated by geography, corporate ownership and source of lithium (brine lakes or mineral deposits). Roskill Information Services Limited ("Roskill"), an international marketing research group, estimated total global lithium production in 2010 to be approximately 123,000t LCE. Roskill estimates that in 2010 Talison was the world's largest producer of lithium, with an approximately 28% market share, and Sociedad Quimica y Minera de Chile SA ("SQM") was the world's second largest producer, with an approximately 25% market share. Figure 23 provides Roskill's estimate of global lithium supply by company in 2010.

The major global producers of lithium from mineral deposits are:

- Talison, located in Australia;
- Galaxy Resources Limited, located in Australia;
- Sociedade Mineira de Pegmatite, LDA, located in Portugal;
- Bikita Minerals (Pvt) Ltd, located in Zimbabwe; and
- Various producers located in China.

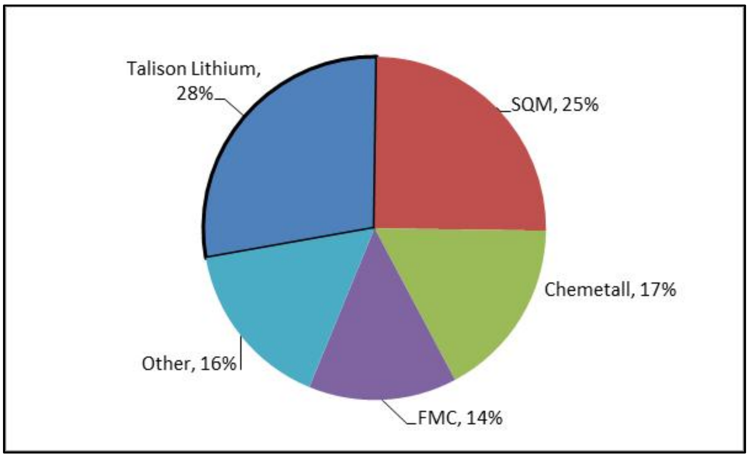
Lithium minerals are converted into lithium chemicals in China. The majority of these chemicals are consumed domestically in China; however, lithium carbonate, lithium hydroxide and high purity lithium chemicals sourced from minerals are also exported by the Chinese chemical converters.

The major global producers of lithium from brine lakes are:

- SQM, which has operations in the Salar de Atacama region in Chile;
- Rockwood Lithium (previously known as Chemetall GmbH), which has operations in Chile adjacent to SQM's Salar de Atacama facility, as well as the Silver Peak plant in Nevada, United States of America;
- FMC Corporation, which has operations at the Salar del Hombre Muerto in north west Argentina;
- Tibet Zabuye Lithium Industry High Technology Co., Ltd., which has operations in Zabuye Salt Lake in western Tibet; and
- Qinghai CITIC Guoan Science and Technology Co., Ltd., which has operations near Golmud in central Western China.

Most of the lithium production from brines is used in the chemicals market with a small amount in the glass and ceramics technical markets. However, the lower price per unit of lithium minerals compared to chemicals as well as the inherent benefits of the alumina and silica content makes minerals the preferred feedstock in the glass and ceramics market.

Figure 23: Estimated Lithium Supply by Company, 2010



Roskill

Potential New Projects

The growth in lithium demand has resulted in renewed interest in the development of new and previously known lithium resources worldwide. There are a number of lithium brine deposits currently being assessed in Argentina, Bolivia, Chile, China and the United States of America. The development of lithium mineral projects is also being actively pursued in China, Canada, Finland, the United States of America and Australia. Alternative sources of lithium other than brines and traditional minerals are also being investigated, including hectorite clays in the United States and jadarite in Serbia.

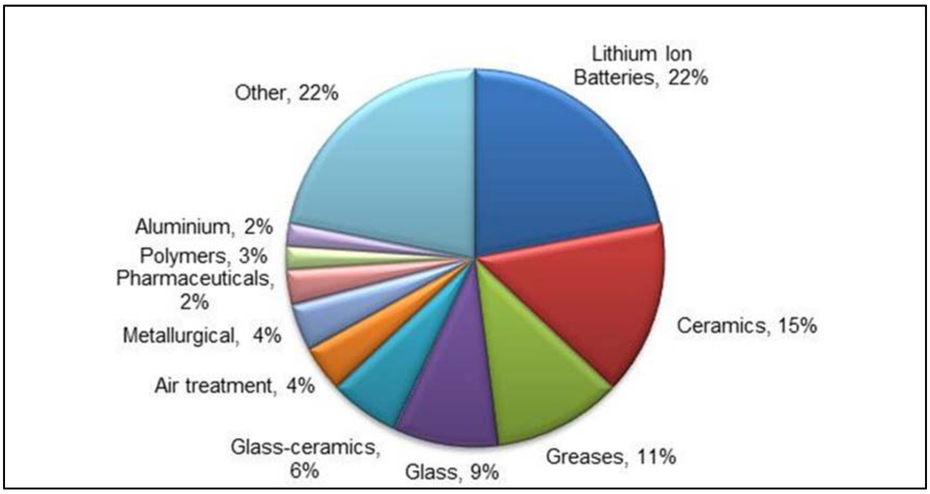
Talison considers that the key reason these potential new projects have not been developed in the past is economic, as most of these new projects have lower grade deposits than the existing producers and therefore require high product prices in order to be viable. Talison believes that the timelines published for development of some of these new projects are optimistic, that it will take longer to commence production of lithium at the maximum designed capacity than anticipated, and that the cost of production will be higher than anticipated. As such, Talison considers that some market commentators are overestimating the potential supply from new projects.

Lithium Demand Outlook

Future lithium demand estimates have been prepared on the basis of various sources of publicly available information as well as Talison's view on the outlook for demand for lithium.

Roskill estimated total global lithium demand in 2011 to be approximately 125,000t LCE, with the largest markets for lithium estimated to be glass and ceramics (30%) and lithium-ion batteries (22%). Figure 24 provides Roskill's estimate of global lithium demand by application in 2011.

Figure 24: Estimated Lithium Demand by Application, 2011



Roskill

Growth in demand for lithium since 2000 has been primarily driven by demand for lithium chemicals in the secondary lithium battery market, where lithium batteries have become the primary power storage source for hand-held electronic equipment such as cell phones and portable entertainment devices as well as laptop computers and high-powered cordless tools.

Talison anticipates that global growth in demand for lithium will continue, driven by demand for lithium chemicals for use in lithium-ion batteries for consumer applications and electric vehicles.

Lithium Chemicals

Strong growth in lithium consumption is expected to continue, driven primarily by the secondary lithium battery market. As a sign of confidence in future market growth, many of the large secondary battery manufacturers, such as Sony, Panasonic, LG Chem, and Samsung, have announced significant expansions to their production capacity.

As well as the traditional hand-held electronic and laptop markets for secondary batteries, there are further growth opportunities in a number of new applications, including electric bicycles and scooters, large format batteries for electric grid storage, such as storage for eco-power sources such as wind and solar energy. There is also potential growth in demand for lithium for use in nuclear reactors and large scale solar thermal power.

The most significant potential upside in demand is the development of electric vehicles powered by lithium-ion batteries. Major battery producers and vehicle manufactures around the world are currently developing lithium-ion batteries and electric vehicles, and several have entered into long term off-take agreements with lithium producers to secure supply of lithium. As a result of concerns about energy security, as well as to reduce dependence on imported oil and assist in reducing carbon dioxide emissions, many governments across the world have publicly announced policies and stimulus packages to advance the development and production of electric vehicles.

Technical Market

While growth in the technical market for lithium is expected to be more modest than the chemical market, there are a number of growth areas, including using lithium as a replacement for lead in lighting glass and its use in new fibreglass applications. The superior strength to weight ratio of lithium fibreglass is expected to allow significant increases in the size of wind turbine blades, thereby improving power efficiency. The introduction of lithium into the production of glass and ceramics lowers the melting temperature, thereby assisting to reduce energy consumption and carbon dioxide emissions.

In 2009, the supply of lithium minerals into the technical market declined with the closure of Tantalum Mining Company of Canada Ltd.'s ("TANCO") spodumene operation at Bernic Lake in Canada. Talison believes it is now the sole supplier of low-iron lithium minerals into this market.

19.2 Contracts

Talison has various contracts providing services for mining and product shipments for the Greenbushes Lithium Operations. The major contracts are summarized in Table 19.1. BDA has reviewed these contracts and considers that they are in line with current industry practice and the rates are generally in line with Australian mining industry. Those contracts that are based on a schedule of unit rates for the various activities include rise and fall formulae to allow for changes to the major contract components, such as labour costs and consumables, and reflect the structure of the contractors' inputs. The original terms of the contracts are up to five years (with up to one year remaining) and the lease agreement with the Bunbury Port Authority was originally for a 21 year period and expires in 2018. All contracts have the capacity to be extended at the consent of both parties which is within the expected terms for such contracts and lease agreements.

Table 19.1
Summary of Major Contracts at the Greenbushes Lithium Operations

Company	Activity	Basis of Contract
NRW Drill and Blast Pty Ltd	Open Pit Drill and Blast	Unit of Drilling and Blasting (Schedule of rates)
SG Mining Pty Limited	Open Pit Mining	Unit of Mining (Schedule of rates)
Giacci Bros. Pty Limited	Road Haulage	Unit Hauled (Schedule of rates)
Bunbury Port Authority	Bulk Storage	Lease Agreement

Talison sells the majority of its various lithium concentrates through sales contracts/agreements with a number of overseas customers under terms of between per shipment and three years. These sale agreements are based on specific shipment volumes per year and specify grain size and the minimum and maximum chemical composition of various minerals within the products.

Lithium concentrate pricing is generally set in the agreement and is either bulk shipments or bagged product depending on specifications. Lithium concentrate pricing can be based either free on board at the port of shipment or cost of goods, marine insurance and all transportation (freight) charges paid to the foreign point of delivery. The various contracts and sales agreements are considered by BDA to be in line with the norms for the industrial minerals industry. Quality control of products is essential in meeting the terms of sales contracts especially for some of the TG lithium concentrates; Talison has advised BDA that since Talison took ownership of the Greenbushes Lithium Operations, the specifications have generally been met on shipments with the occasional element being outside specification but with no recorded rejection of lithium concentrate by customers.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Considerations

Waste Rock Storage

The site's main waste rock dump is located immediately east of the open pits and is an approved facility. The LOM plan will require an approval from the DMP to lift the current waste dump by 10m to 20m and to extend the dump to the south. Discussions have commenced with the DMP in relation to this proposal and a mining proposal will be submitted before the limit of the existing waste dump capacity is reached. Approvals to clear native vegetation will also be required for the southern extension. An application for this clearing has been submitted and is currently being assessed.

On commencement of tantalum operations by GAM, Talison and GAM will agree on the cost of any waste dump expansions to meet joint future requirements. Any capital cost in expanding the dumps will likely be offset by the contractor unit cost benefits (i.e. reductions) from the increased joint volume movement
.

Tailing Storage Facilities

Tailings are stored on site in tailings storage facilities ("TSF") 1 and TSF 2. These two TSFs are located to the south of the plant with sub aerial deposition from the peripheral embankments, and water released from the tailings returned to the plant through centrally located pump-out decant.

TSF 2, the latest storage facility, was commissioned in 2006. At present, TSF 2 provides adequate capacity and beaching area without the need to also operate TSF 1. Further increases in the height of both TSF 1 and TSF 2 are allowable under the current approval. Geotechnical work is currently being carried out to determine the ultimate heights and capacities of the TSFs.

Environmental Management

Talison's Greenbushes Lithium Operation has stringent environmental operating conditions which are managed through an Environmental Management System which is certified under ISO 14001:2004 Environmental Management Standards.

Water for processing is sourced from rainfall and stored in several site process dams, with the majority of the water used being recovered and recycled throughout the site. Surface water quality is measured and reported on a monthly basis. Water quality monitoring bores located around the process plant and tailing dams are monitored quarterly to ensure the operation has minimal impact on ground water quality.

Water Management

Water management on site aims to recycle and reuse as much water as possible. The main process water flows circulate between the tantalum primary processing plant and lithium plants, the TSFs and the Austin's/Southampton Dams. Additional flows exist between other constructed water storage facilities (including Cowan Brook Dam, the site's largest water storage), the tantalum secondary plant and the mining pits.

Environmental Bond

A statutory requirement of the DMP is the deposit of a site rehabilitation bond prior to the commencement of mining operations. This bond is largely determined by the area of site disturbance and rehabilitation unit costs. The bond is eventually discharged by approval of DMP at the completion of mining, site decommissioning and final rehabilitation. The current environmental bond quantum calculated for the Talison mine tenements by the DMP is A$3.91M. Talison has lodged this bond amount with the DMP. The Western Australian Government is currently legislating to introduce a Mine Rehabilitation Fund into which mining companies will pay an annual fee based on mine disturbance. This will replace the current bond system.

Plant Decommissioning and Site Rehabilitation Plan

The objective for closure, decommissioning and reclamation is to ensure, as far as practicable, that reclamation achieves a stable and functioning landform that is consistent with the surrounding landscape and other environmental values.

Adequate closure planning is required in all phases of project development to ensure that Talison and its key stakeholders are fully aware of the requirements of closure and that appropriate provisions are made to ensure that decommissioning and rehabilitation is completed. Talison has calculated an estimated closure cost of A$16.4M based on the current site disturbance documented in the 2011-2012 Annual Environmental Review Report.

There are areas of historic mining disturbances of which about half the area is subject to hand-back negotiations with regulators which are expected to be completed within two years. Of the total 1,800ha disturbed by mining it is expected that 1,200ha will be required to be excised from the State Forest. An appropriate provision to purchase an equivalent area of land to exchange with the State has been included in the closure cost estimate.

21 CAPITAL AND OPERATING COSTS

21.1 Life of Mine Production Plan

The LOM production plan is prepared from the start of the FY 2013, taking into account the Mineral Reserves and the actual production during the third quarter of 2012 (July to September). As part of the production plan, an estimate of the feed tonnages to the two plants, TGP and CGP, has been made. The following paragraphs set out the procedure of defining the TG feed tonnages, with the remaining feed going to the CGP.

Definition of Technical Grade Ore Feed in the Processing Plant

TG ore types feed a specific circuit in the processing plant to produce lithium products with specific chemical and physical characteristics. The TG ore type has been defined in previous Mineral Resources and Mineral Reserves by limits placed on contained iron, sodium and potassium for a specific range of lithium contents. Characterisation of the TG ore type in the mine production stream assists in managing the scheduling of production of TG lithium concentrate from the TGP.

The in-pit definition of the ore types that will produce TG lithium concentrates in the processing plant is becoming increasingly complex as the pit progresses and complexity of ore type distribution in the pit increases. Ore blending opportunities from the ROM stockpiles have also increased the flexibility of the TGP to produce TG lithium concentrates. Due to the wide range of chemical variables that impact on the quality and specific characteristics of the TG lithium concentrates, a high degree of flexibility is required in the selection of ore types to feed the TGP and produce TG lithium concentrates suitable to customer requirements.

In addition, the updated 2012 Mineral Resource model is based on lithium domains constructed with 0.7% Li_2O and 2.8% Li_2O boundary conditions whereas the previous Mineral Resource model applied a 1.0% Li_2O boundary condition. The updated 2012 Mineral Resource model produces a better supported and smoother estimate at average and low lithium grades. Further, by applying at 2.8% Li_2O boundary condition it also supports the tonnage and grade distribution relationships at the higher Li_2O grade ranges which are the sources of the ore types that feed the TGP.

As in the 2011 Mineral Resources and Mineral Reserves, a separate definition of the tonnage and grade of both TG and CG ore types is not included in the updated 2012 Mineral Resources or the Mineral Reserves. A schedule of feed material to the TGP, including tonnage and grade, is required for the operational plan. To achieve this, in the 2012 mining and processing schedules TG ore types are defined by experience-based criteria for Li_2O and Fe_2O_3 contents. This quantity of TG ore type is approximately 3.4Mt at 4.2% Li_2O.

Production Forecast

Table 21.1 provides a forecast production schedule based on the Proven and Probable Mineral Reserves contained within the current pit designs. The orebody is already exposed in both the C1 and C3 pits and the current LOM strip ratio of waste to ore is 2.2:1.

Table 21.1
Forecast Production Schedule

Period Ending June 30	Ore Mined (kt)	Strip Ratio (Waste:Ore)	Lithium concentrate (kt)
2013	1,185	2.6	412
2014	1,253	2.4	453
2015	1,026	3.1	547
2016	1,696	1.4	645
2017	1,617	1.7	701
2018	2,141	1.0	704
2019	1,926	2.1	780
2020	2,071	1.9	870
2021-36	48,380	2.3	17,068
Total	61,296[1]	2.2	22,179

Note: (1) Total ore mined exceeds the in-pit Mineral Reserves due to the inclusion of three months production from July to September in FY 2013.

Talison's development strategy is to continue to maintain Mineral Reserves in excess of a 20 year mine life at any point in time. Further opportunities exist to either increase production or extend mine life with additional exploration drilling, as the orebody remains open both along strike and at depth.

Production in previous years has been limited by the capacity of Talison's processing plants. In 2009, Talison's processing plants were upgraded to nominal production capacity of approximately 260,000tpa of lithium concentrate then in 2010 they increased further to a nominal production capacity of approximately 315,000tpa of lithium concentrates and in mid-2012 they increase to the current nominal production capacity of approximately 740,000tpa of lithium concentrates to meet the anticipated demand for lithium concentrate. The lithium industry is driven by market demand. Talison's production assumptions are based on increasing production in line with an anticipated strong demand growth, particularly in China. The expanded CGP is not operating at full capacity; however, the expanded CGP provides Talison with the capacity to respond quickly to meet the expected strong growth in demand and to maintain market share.

21.2 Capital and Operating Costs

Capital Costs

Total capital expenditure in FY 2012 was A$68.5M which was mainly related to the expansion of the CGP, and A$4.4M is estimated to be spent in FY 2013, of which, A$0.8M is for research and development and A$3.7M is estimated to be spent on sustaining capital.

Capital expenditure of A$201M is forecast to be expended over the LOM from and including FY2013. A breakdown of the proposed capital expenditure is presented in Table 21.2.

Table 21.2
Forecast Capital Expenditure

Activity	LOM Total (A$M)
Research and Development	11
Process Improvements	11
Capacity Expansions	136
Sustaining Capital	43
Total	201

Operating Costs

A summary of the estimated average LOM operating costs is listed in Table 21.3. Projected average operating costs over the LOM are lower than expected operating costs in FY 2013, as rates of production are expected to be higher and economies of scale achieved as production increases.

Table 21.3
Projected Average LOM Operating Costs

Activity	Unit	Unit Cost
Mining	A$/t ore mined	18
Processing	A$/t ore processed	23
G&A	A$/t ore processed	2
Selling Expenses	A$/t lithium concentrate	80

Mining costs vary between A$12/t and A$28/t of ore, depending on the waste to ore strip ratio, over the LOM.

Selling expenses include packaging, land transport, storage, ship loading, royalties and marketing development costs as well as shipping freight costs.

Operating costs do not include Talison's corporate costs.

22 ECONOMIC ANALYSIS

22.1 Economic Analysis

Talison has developed a detailed LOM cash flow forecast model for the Greenbushes Lithium Operations using only Proven Mineral Reserves and Probable Mineral Reserves based on the following macroeconomic assumptions.

Exchange Rates

The product prices in US$ have been converted into A$ using an exchange rate of US$/A$1.01 for FY 2013, US$/A$0.98 for FY 2014 and US$/A$0.96 thereafter; the exchange rate forecast has been provided by Talison's management.

Prices

BDA notes that spodumene is not a publicly traded commodity and therefore limited publicly available reference prices are available for the range of lithium concentrates produced by Talison. The weighted average real (2012) price, over the entire range of lithium concentrates, used in the economic analysis, averages US$346/t over the LOM.

The basis for the pricing is as follows:

FY 2013 prices reflect contracted pricing achieved by Talison and Talison management's forecasts for unpriced sales for the year.

Global production of TG lithium concentrates declined in 2009 with the closure of TANCO's spodumene operation. During FY 2011, supply tightened and Talison was not been able to meet global demand; however, in 2012 demand has been affected by poor global economic conditions, particularly in Europe Despite the softening in demand, Talison achieve a 15% price increase across all TG lithium concentrate products in January 2012. Talison management is forecasting prices of TG lithium concentrates to increase in FY 2013, FY 2014 and FY 2015 before remaining flat thereafter. Production of TG lithium concentrates is currently scheduled to finish in FY 2028.

The price of CG lithium concentrate was reduced in late 2008 in response to the global financial crisis and the announcement by SQM in late 2009 of a 20% reduction in lithium carbonate prices kept prices subdued in calendar 2010 and 2011. Global demand for lithium increased during calendar 2012 and Talison management expects it to continue to increase, driven primarily by the secondary lithium battery market for consumer applications in the next few years and by demand for batteries for electric vehicles from around 2015. Talison management is forecasting prices for CG lithium concentrate to increase in FY 2013 and in FY 2014 before remaining flat in real terms thereafter.

Tax and Royalty

In WA, a royalty of 5% is paid to the State Government for lithium mineral production and is described in Section 4.4 – Royalties. Royalties are included in Operating Expenditure in Table 22.1.

The Australian tax system is controlled by the Australian Taxation Office. Corporate income tax is applied at a rate of 30%. The economic analysis of the Greenbushes Lithium Operations has been prepared on a pre-tax basis.

The Australian Government introduced carbon price tax on 1 July 2012 at an initial rate of A$23 per tonne of carbon emitted above a certain level. The Greenbushes Lithium Operations does not emit sufficient carbon to trigger the carbon tax; however, it is expect that the carbon tax will indirectly lead to a one time increase in costs throughout the Australian economy which will impact on the Greenbushes Lithium Operations.

Forecast Cash flows

The project's real, before tax, ungeared project cash flows are presented in Table 22.1

Table 22.1
Forecast Cash Flows

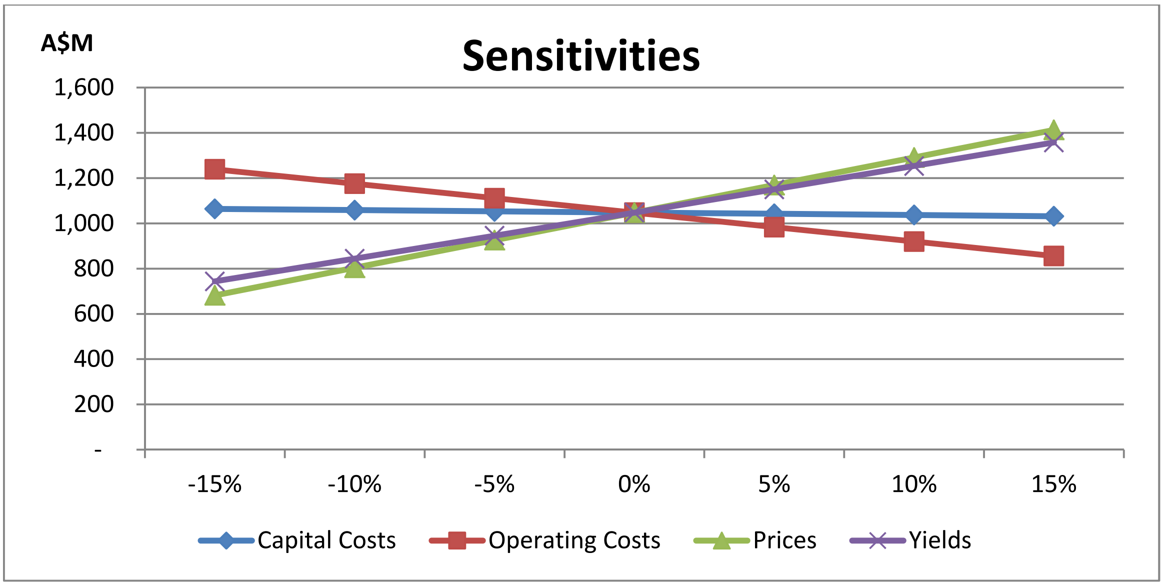
Item	Unit	Financial Year 2013	2014	2015	2016	2017	2018	2019	2020	2021-36	Project Total
Product Sales	Mt	0.36	0.43	0.49	0.54	0.56	0.55	0.63	0.72	14.91	19.19
Revenue	A$M	133	169	192	211	217	215	240	275	5,245	6,897
Operating Expenditure	A$M	(83)	(98)	(105)	(106)	(106)	(107)	(125)	(138)	(2,859)	(3,728)
Capital Waste Mining	A$M	(8)	(3)	(5)	-	-	(0)	(0)	-	-	(16)
Closure Costs	A$M	-	-	-	-	-	-	-	-	(30)	(30)
Capital Expenditure	A$M	(4)	(11)	(12)	(8)	(13)	(102)	(2)	(2)	(47)	(201)
Cash Flow (pre-tax)	A$M	37	57	70	97	98	5	113	134	2,309	2,920

Based on Talison's cost and production projections, the operation remains cash flow positive throughout the LOM. The NPV of the Greenbushes Lithium Operations, based on the projected pre-tax cash flows and applying a real discount rate of 9%, is A$1,043M.

The sensitivity of the NPV to ±5%, ±10% and ±15% changes to capital costs, operating costs, product yields (metric for grade) and prices is presented in Figure 25.

The yield and prices sensitivities are similar given that changes to yield, providing more or less product to be sold at base case pricing, provides a similar result to holding production constant and varying prices.

Figure 25: Sensitivity of NPV to Capital and Operating Cost, Prices and Yield Changes.



Talison Lithium Ltd

23 ADJACENT PROPERTIES

Greenbushes is the only major lithium deposit of its type in the southern portion of the Western Gneiss Province of WA. Tenements adjacent to the Talison properties do not contain any reported lithium Mineral Resources and are therefore not relevant to this assessment.

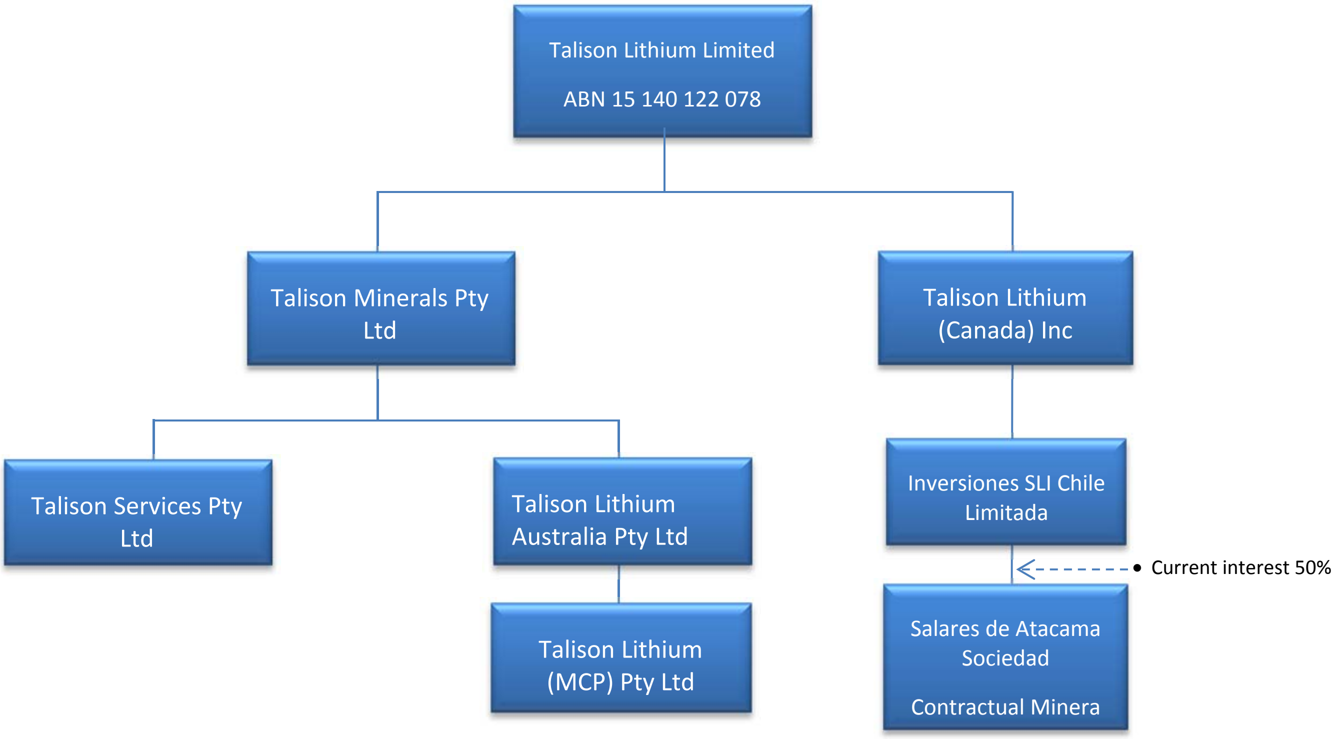
24 OTHER RELEVANT DATA AND INFORMATION

24.1 Company Structure

The following details of property and mineral rights over the Greenbushes Lithium Operations and associated tenements are provided to give clarification of the rights applying to Talison.

Talison has six wholly-owned subsidiaries as set out in Figure 26. Talison owns and operates the Greenbushes Lithium Operations through its wholly-owned subsidiaries TLA, Talison Services and Talison Minerals, which are each incorporated under the Corporations Act 2001 (Commonwealth of Australia).

Figure 26: Talison Lithium Limited Corporate Structure



Talison Lithium Ltd

Talison acquired the Greenbushes Lithium Operations comprising real property, mining tenements, intellectual property, goodwill, contracts, and plant and equipment, including two lithium ore treatment plants, three open pit mines, and associated infrastructure at Greenbushes in south-west WA in 2010 upon completion of the reorganization of the lithium and tantalum businesses previously held by the Talison Minerals Group.

As a result of the reorganization the tantalum business was acquired by GAM, including the rights to all other minerals other than lithium on the Greenbushes tenements, the crushing facility, the tantalum primary and secondary plants and access to the Greenbushes tenements. The lithium Mineral Reserves and Mineral Resources and the tantalum mineralization and related processing facilities are located on the same tenements at Greenbushes. GAM's operations are currently on care and maintenance.

Talison and GAM, through their respective subsidiaries, are party to a series of agreements entered into in connection with the reorganization relating to development, production and operational matters at Greenbushes.

While Talison is the registered owner of the mining tenements, a Reserved Mineral Rights Agreement dated November 13, 2009 provides GAM with the rights to access the Greenbushes tenements to explore for all minerals other than lithium and, if economically viable, to mine and process these minerals. Included within this agreement are the mechanisms for both parties to agree on exploration and mining for their respective minerals.

The crushing license agreement dated November 13, 2009 provides Talison with a license to crush its ore though the crushing facility owned by GAM. In the event that GAM re-starts the tantalum operations at Greenbushes, Talison may either negotiate to continue crushing its ore through the facility or source an alternative facility to crush lithium ore. GAM must provide Talison with 12 months' notice if it intends to re-start the tantalum operations and utilize the crushing facility.

Talison owns the infrastructure for the Greenbushes Lithium Operations, including the buildings, utilities (gas, water supply, power) waste dumps and tailings dams. A shared services agreement dated November 13, 2009 provides a mechanism for GAM to access and share these facilities.

The areas containing the crusher, tantalum primary and secondary plants on Talison's tenements are sub-leased to GAM.

24.2 Mine Life and Exploration Potential

Talison's Greenbushes Lithium Operations has a LOM plan for 24 years after completion of a further expansion to treat 3.0mtpa of ore in 2018.

No significant Mineral Resource or Mineral Reserve extensions to the ore types providing feed to the TGP are known at this time. However, there is potential for additional Mineral Resources providing feed to the CGP to be developed:

- From existing Indicated Mineral Resources not currently included in the mine schedule - some 57Mt of lithium Indicated Mineral Resources remain outside the current pit designs and above 950RL, primarily in the C3 area. These Mineral Resources are not translating to Mineral Reserves under current operating parameters, but further improvement in lithium prices, plant performance or operating costs could allow their development. Equally, re-opening of tantalum mining in the C3 area would provide low cost access to the adjacent lithium Mineral Resources.

- North of, and at depth in the C3 mining area, south of the C1 mining area, and in the footwall of the Central Lode, based on current Inferred Mineral Resources, and on recent exploration targeting under the weathering surface.

In addition, there is lithium contained within the tantalum mineralization areas which is currently not being mined. If the tantalum operation is reactivated, lithium can be recovered as a by-product from the tantalum tailings stream under an agreement with GAM, provided the grade and recovery are sufficient.

As this report has been prepared in connection with the recent update of Talison's lithium Mineral Resources and Mineral Reserves at its Greenbushes Lithium Operations, no capital is required to be spent in the future in relation to this update of Mineral Resources and Mineral Reserves, and therefore the calculation of and discussion in relation to a payback period is not relevant.

24.3 Glossary

Term/Abbreviation	Description
AAS	Atomic Absorption Spectroscopy
acQuire	acQuire Technology Solutions Pty Limited
Al_2O_3	Aluminium Oxide (also called Alumina)
AMSL	Above Mean Sea Level
As_2O_3	Arsenic Oxide
ASCII	American Standard Code for Information Interchange
AusIMM	Australasian Institute of Mining and Metallurgy
AWOR	Analytical Work Order Number
B	Boron
BaO	Barium Oxide
bcm	Bank Cubic Metre (in situ volume)
BDA	Behre Dolbear Australia Pty Limited
Be	Beryllium
Bi_2O_3	Bismuth Oxide
BMB	Balingup Metamorphic Belt
C1 Pit	Central Lode 1 Open Pit
C3 Pit	Central Lode 3 Open Pit
CaO	Calcium Oxide (also called Lime)
CG	Chemical Grade lithium concentrate
CGP	Chemical Grade Plant
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CoO	Cobalt Oxide
Cr_2O_3	Chromium Oxide
Cs	Caesium
csv	File name - comma-separated values
CuO	Copper Oxide
DEC	WA Department of Environment and Conservation
DMP	WA Department of Minerals and Petroleum
F	Fluorine
Fe_2O_3	Ferric Oxide
FY	Financial Year
Ga	Gallium
GAM	Global Advanced Metals Greenbushes Pty Ltd
Greenbushes Lithium Operations	Talison's lithium mine and processing operations located at Greenbushes in Western Australia
ha	Hectare
HARD	Half Absolute Relative Difference
ICP	Inductively Coupled Plasma Spectrometry
K	Potassium
K_2O	Potassium Oxide
km	Kilometre
kg	Kilogram
km^2	Square Kilometre
kt	Thousand Tonnes
kW	Kilowatt
lcm	Loose Cubic Metre
LCE	Lithium Carbonate Equivalent
LCT	Lithium-Caesium-Tantalum
Li_2O	Lithium Oxide
Lithium Business Sale Agreement	Agreement between Talison, GAM and Talison Minerals Group, pursuant to which Talison acquired the Greenbushes Lithium Operations.
LOM	Life of Mine
m	Metre
M	Million
m^3	Cubic Metre
MgO	Magnesium Oxide (also called Magnesia)
μm	Micron (m x 10-6)
MnO	Manganese Oxide
MRRT	Mineral Resource Rent Tax
MW	Megawatt
Na	Sodium
Na_2O	Sodium Oxide
Nb	Niobium
Nb_2O_5	Niobium Oxide
NiO	Nickel Oxide
NOI	Mining Notice of Intent
NPV	Net Present Value

Term/Abbreviation	Description
NYF	Niobium-Yttrium-Fluorine
OK	Ordinary Kriging
P	Phosphorous
P_2O_5	Phosphorous Oxide
PbO	Lead Oxide
psi	Pounds per Square Inch
QA/QC	Quality Assurance/ Quality Control
QG	Quantitative Group Pty Limited
Rb	Rubidium
Rb_2O	Rubidium Oxide
RC	Reverse Circulation
REE	Rare Earth Element
RL	Reduced Level
ROM	Run of Mine
Roskill	Roskill Information Services Ltd
Sb_2O_3	Antimony Oxide
Sc	Scandium
SC	Spodumene Concentrate
SG	Specific Gravity
SiO_2	Silicon Dioxide (Silica)
Sn	Tin
SnO_2	Tin Oxide
SO_3	Sulphur Tri-Oxide
SQM	Sociedad Quimica y Minera de Chile SA
SrO	Strontium Oxide
Surpac	Gemcom Surpac Software Company
t	Tonne
t/m^3	Tonnes per Cubic Metre
Ta	Tantalum
Ta_2O_5	Tantalum Oxide
Talison	Talison Lithium Limited and its wholly-owned subsidiaries
Talison Minerals	Talison Minerals Pty Limited, ACN 125 581 473
Talison Minerals Group	Talison Minerals and its subsidiaries prior to the reorganization in October 2009, which split its lithium and non-lithium assets into separate corporate entities
Talison Services	Talison Services Pty Ltd, ACN 125 608 684
TG	Technical Grade lithium concentrate
TGP	Technical Grade Plant
Th	Thorium
ThO_2	Thorium Oxide
TiO_2	Titanium Dioxide (also called Titania)
TLA	Talison Lithium (Australia) Pty Limited, ACN 139 401 308
tpa	Tonnes Per Annum
tph	Tonnes Per Hour
TSF	Tailings Storage Facility
U	Uranium
U_3O_8	Uranium Oxide
UGDD	Underground Diamond Drill holes
Ultra Trace	Ultra Trace Pty Limited
V_2O_5	Vanadium Oxide
WA	Western Australia
XRF	X-Ray Fluorescence
Y_2O_3	Yttrium Oxide
ZnO	Zinc Oxide
Zr	Zirconium
ZrO_2	Zircon Oxide

25 INTERPRETATION AND CONCLUSIONS

The geology of the Greenbushes deposit is reasonably well understood.

The data that has been used to estimate lithium Mineral Resources and Mineral Reserves have been checked and validated. Assay precision for Li_2O is considered acceptable and on-going work is aimed at improving precision further.

The Mineral Resources total 0.6Mt at 3.2% Li_2O of Measured Mineral Resource (stockpiles), 117.9Mt at 2.4% Li_2O of Indicated Mineral Resource and 2.1Mt at 2.0% Li_2O of Inferred Mineral Resource at a 0.7% Li_2O domain boundary condition. The majority of the Mineral Resources lie within and adjacent to the C3 and C1 pits.

The Mineral Reserves total 0.6Mt at 3.2% Li_2O of Proven Mineral Reserves and 61.0Mt at 2.8% Li_2O of Probable Mineral Reserves at a 1.8% Li_2O cut-off grade. All Mineral Reserves are contained within the Mineral Resources.

The open pit ore zones are relatively wide, with typical mining block (blasting) widths of between 20-30m and ground conditions are good. BDA considers the mine design generally appropriate and the mine schedule achievable. The estimated mine recovery and dilution factors appear optimistic, but are in line with historical reconciliation data and are therefore accepted as generally reasonable.

The future recovery of feed for the TGP may be slightly optimistic and require some improvement to grade control and mining practices to achieve the same recovery as previously achieved, given that the C3 deposit becomes more complex at depth. The operation has a history of reliable production over more than twenty five years. Talison's projections of future production include progressive increases in the tonnage of products. These increases are justified by market research which predicts continuing growth in lithium consumption driven primarily by the lithium secondary battery market which included batteries for the developing electric and hybrid vehicle market.

There is potential for additions to the Greenbushes lithium Mineral Resource along strike to the north and south of the current mining areas, and at depth.

26 RECOMMENDATIONS

Further investigation into the definition of ore types suitable as feed to the TPG in situ and in the block model is recommended.

QG recommends that Talison considers improvement in grade control procedures for the determination of TGP feed within the orebody in the C3 pit to minimize any potential risk to the production schedule from dilution due to the added complexity of the mineralization at lower levels within the planned open pit. The cost of this recommendation is expected to be minimal and absorbed into the unit costs of grade control. The sampling and analysis QA/QC procedures applied to grade control and Mineral Resource drilling should continue to be assessed and upgraded to help define sampling errors at each stage of the process and to improve the accuracy with which grade and material quality boundaries can be drawn.

It is recommended that drilling and modelling continue to be carried out to improve planning and design options leading to improved recovery of the resource, and to upgrade the Mineral Resource category of the known Inferred Mineral Resources. The cost of such drilling and modelling is estimated at around A$0.3M in FY 2013.

Further opportunities for extensions to the current Mineral Resources and additions to the current Mineral Reserves exist within and around the current mining areas. Drilling programs are proposed over the next three years to test these opportunities. The cost of the programs outlined above is not considered significant and Talison has indicated that they can be funded from operating cash flow.

While there has been on-going geotechnical review of the open pit over many years and there have been no significant issues with wall stability, it is recommended that a review of the open pit slope design of the final Mineral Reserve pit be carried out. It is envisaged that the review would determine whether the parameters used in the design could be further optimised and whether the risk levels are appropriate. This work should occur over the next 10 years prior to commencement of the final pit cutback.

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