Level 1, 135 Fullarton Road
Rose Park, SA 5067
Australia
Telephone +61 (0) 8 8364 3188
Facsimile +61 (0) 8 8364 4288
info@pnxmetals.com.au
www.pnxmetals.com.au

**ASX Announcement**
09 February 2017

# Upgrade to Mt Bonnie Zinc – Gold – Silver Resource, Hayes Creek

- **Updated Mt Bonnie Mineral Resource estimate (reported in accordance with JORC Code, 2012) completed for:**
  - **1.55 million tonnes @ 3.8% Zn, 1.34 g/t Au, 127 g/t Ag, 1.1% Pb, and 0.2% Cu**
- **Significant increase in contained metals; gold up by 28%, silver up by 15%, and zinc up by 7%, resource tonnes up by 20%**
- **90% of the resource now converted to the higher confidence Indicated category**
- **Resource occurs near-surface from approximately 25 m to 170 m depth with detailed open-pit mining studies underway**
- **Updated Mineral Resource for the larger Iron Blow deposit located just 3km north due in March 2017**
- **Hayes Creek PFS on target to be completed by mid-2017, to incorporate updated resources for Mt Bonnie, Iron Blow and new metallurgical data**

PNX Metals Limited (ASX:PNX) is pleased to announce an upgraded Mineral Resource estimate for its 100% owned Mt Bonnie zinc-gold-silver deposit, which is located on granted Mineral Leases (Figures 1 and 5) within the Pine Creek region of the Northern Territory.

Independent mining consultancy group CSA Global Pty Ltd ("CSA Global") have reported the Mineral Resource estimate in accordance with the JORC Code[1], which is summarised in Table 1. A summary report prepared by CSA Global also forms part of this ASX release (refer Appendix), including JORC Table 1.

***Table 1**: Mt Bonnie Mineral Resources by JORC Classification as at 08 February 2017*

| JORC Classification | Domain | Cut-off grade | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | Zn_Eq (%) | Au_Eq (g/t) |
|---|---|---|---|---|---|---|---|---|---|---|
| Indicated | Oxide/Transitional | 0.5g/t Au | 195 | 0.94 | 2.43 | 0.18 | 171 | 3.80 | 11.50 | 9.44 |
| Indicated | Fresh | 1% Zn | 1,180 | 4.46 | 0.94 | 0.23 | 121 | 1.02 | 9.60 | 7.88 |
| **Total Indicated** | | | **1,375** | **3.96** | **1.15** | **0.23** | **128** | **1.41** | **9.87** | **8.11** |
| Inferred | Oxide/Transitional | 0.5g/t Au | 32 | 0.43 | 1.33 | 0.29 | 74 | 2.28 | 6.37 | 5.23 |
| Inferred | Fresh | 1% Zn | 118 | 2.91 | 0.90 | 0.15 | 135 | 0.54 | 7.61 | 6.25 |
| Inferred | Ag Zone | 50g/t Ag | 21 | 0.17 | 0.03 | 0.04 | 87 | 0.04 | 2.36 | 1.94 |
| **Total Inferred** | | | **171** | **2.11** | **0.87** | **0.16** | **118** | **0.80** | 6.73 | 5.53 |
| **Total Indicated + Inferred Mineral Resource** | | | **1,545** | **3.76** | **1.12** | **0.22** | **127** | **1.34** | **9.53** | **7.82** |
| **Total Contained Metal** | | | | **58,000t** | **17,300t** | **3,400t** | **6.3Moz** | **66.8koz** | **147,000t** | **388.6koz** |

[1] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).

**Notes relating to Table 1**

Due to effects of rounding, the total may not represent the sum of all components.

Metallurgical recoveries and metal prices have been applied in calculating zinc and gold equivalent grades.

Zinc domains are reported above a cut-of grade of 1% Zn, gold domains are reported above a cut-off grade of 0.5 g/t Au and silver domains are reported above a cut-off grade of 50 g/t Ag.

| Metals | Unit | Price | Recovery |
|---|---|---|---|
| Zn | USD / t | 2,450 | 80% |
| Pb | USD / t | 2,100 | 60% |
| Cu | USD / t | 6,200 | 60% |
| Ag | USD / troy ounce | 20.50 | 70% |
| Au | USD / troy ounce | 1,350 | 55% |

In order to assess the potential value of the total suite of minerals of economic interest, formulae were developed to calculate metal equivalency for the gold and zinc (see below). Metal prices were derived from average consensus forecasts from external sources for the period 2017 through 2021 and are consistent with those used in PNX's March 2016 Scoping Study.

Metallurgical recovery information was sourced from test work completed at the Mt Bonnie deposit, including historical test work. Mt Bonnie and Iron Blow have similar mineralogical characteristics and are a similar style of deposit. The formulae below were applied to the estimated constituents to derive the metal equivalent values:

Gold Equivalent (field = "AUEQ") (g/t) = (Au grade (g/t) * (Au price per ounce/31.10348) * Au recovery) + (Ag grade (g/t) * (Ag price per ounce/31.10348) * Ag recovery) + (Cu grade (%) * (Cu price per tonne/100) * Cu recovery) + (Pb grade (%) * (Pb price per tonne/100) * Pb recovery) + (Zn grade (%) * (Zn price per tonne/100) * Zn recovery) / (Au price per ounce/31.10348 * Au recovery)

Zinc Equivalent (field = "ZNEQ") (%) = (Au grade (g/t) * (Au price per ounce/31.10348) * Au recovery) + (Ag grade (g/t) * (Ag price per ounce/31.10348) * Ag recovery) + (Cu grade (%) * (Cu price per tonne/100) * Cu recovery) + (Pb grade (%) * (Pb price per tonne/100) * Pb recovery) + (Zn grade (%) * (Zn price per tonne/100) * Zn recovery) / (Zn price per tonne/100 * Zn recovery)

*PNX Managing Director James Fox said: "The completion of this favourable Resource upgrade at Mt Bonnie is another important achievement in the development of the Hayes Creek Project. 90% of the deposit has been categorised as Indicated, and contained gold, silver and zinc have all increased. Detailed open-pit mining studies are underway at Mt Bonnie, as is the finalisation of an updated resource for the larger Iron Blow deposit. The close proximity of the Project to essential services and infrastructure, and high zinc and gold equivalent grades make for a potentially low cost, high margin operation that features an attractive mix of readily extractable commodities for investors. We look forward to finalising the studies required for the PFS, which will feature new metallurgical data, and is on schedule and due for completion mid-2017."*

## Geology & Resources

The Mt Bonnie Mineral Resource estimate is based on analysis of information collected from diamond and reverse circulation (RC) drilling, and geological mapping over the period from 1973 through to late 2016. PNX has conducted 3 drill programs at Mt Bonnie over the past 18 months, most recently an approximate 1,900 m, 27 hole RC and diamond drill program completed in September 2016 (Figure 2).

Drilling has defined a tabular north-west dipping zone of high-grade massive sulphides surrounded by a larger halo of lower grade brecciated and carbonate altered rocks. A flat-lying silver-rich supergene zone has been identified near-surface to the north of the historical open-pit. These three mineralised zones have been modelled and reported separately as zinc, gold and silver domains.

Importantly, 90% of the Mineral Resource is classified in the higher confidence Indicated category. Upon completion of the PFS the Company expects to convert much of this Indicated Resource to Probable Ore Reserve.

The majority of the Mineral Resource is comprised of sulphide ore and occurs from approximately 25 m to 170 m below surface directly beneath the historical oxide pit. As such, the Mineral Resource will be readily accessible by open pit mining methods.

The resource model generated through interpretation of the drilling data has shown excellent geological continuity and consistency of mineralisation sufficient to support the Mineral Resource classification levels. Recent drilling has intersected new mineralisation to the south of the pit which shows that mineralisation continues further south than previously anticipated and beyond the limit of current drilling. Potential also exists for a high-grade shoot(s) to extend underneath the current extent of drilling and the Resource estimate. Further drill testing is required to potentially extend these mineralised zones.

The highest base metal and gold grades in the deposit are contained within the massive sulphide unit, which is up to 15 m thick below the pit and appears to narrow with depth. The brecciated, carbonate-altered unit below the massive sulphides contains lower grade disseminated mineralisation, often with a coarse blebby appearance. A long section showing metal accumulation (Au_Eq* downhole thickness, approximately 95% of true width) is shown in Figure 3.

Within the primary massive sulphide mineralisation there has not been any notable metal zonation observed, and metal grades appear to be remarkably uniform. In the oxide zone, there was lead and gold enrichment and zinc depletion. Towards the south of the deposit, the massive sulphides appear to break into two separate units, likely to be fold or fault repetition, and remains open to the south and at depth (Figure 3).

Gold mineralisation also occurs in a separate association outside of the massive sulphide zones, mostly in the Footwall Series.

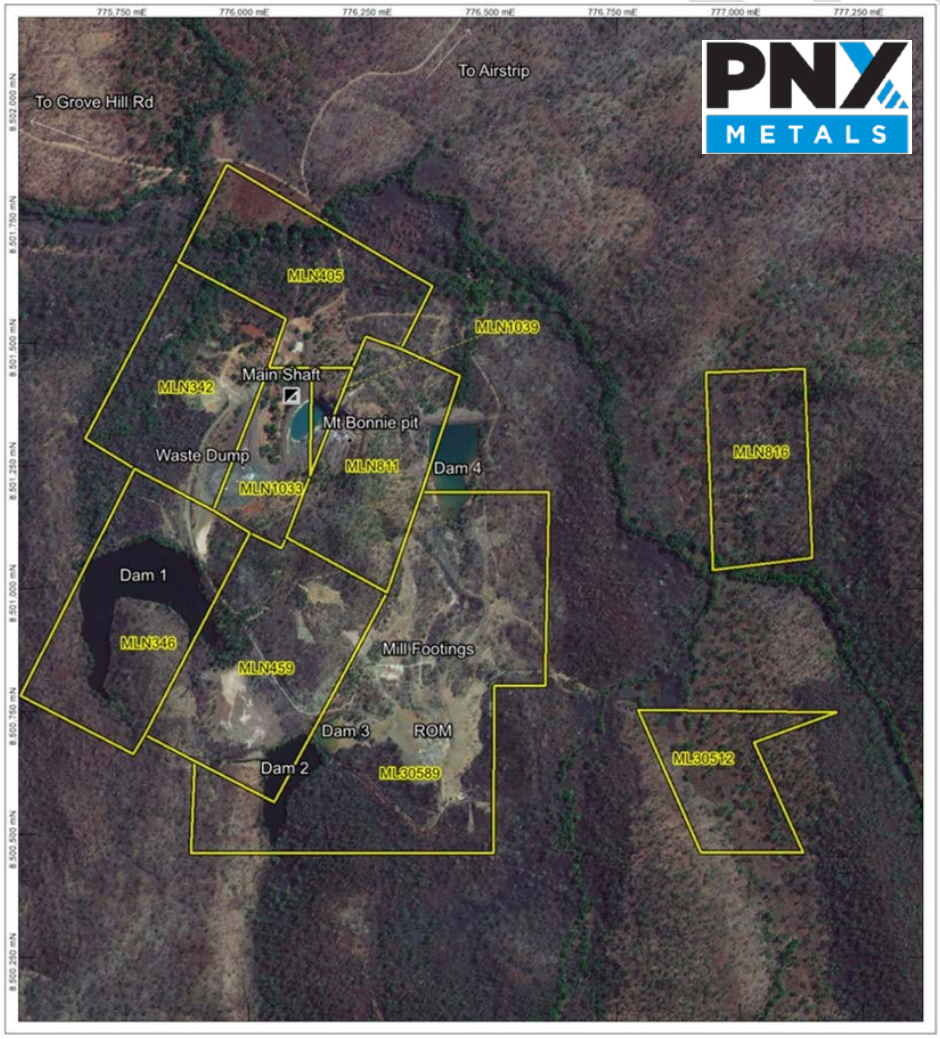


**Figure 1***: Mt Bonnie Mineral Leases and existing infrastructure*

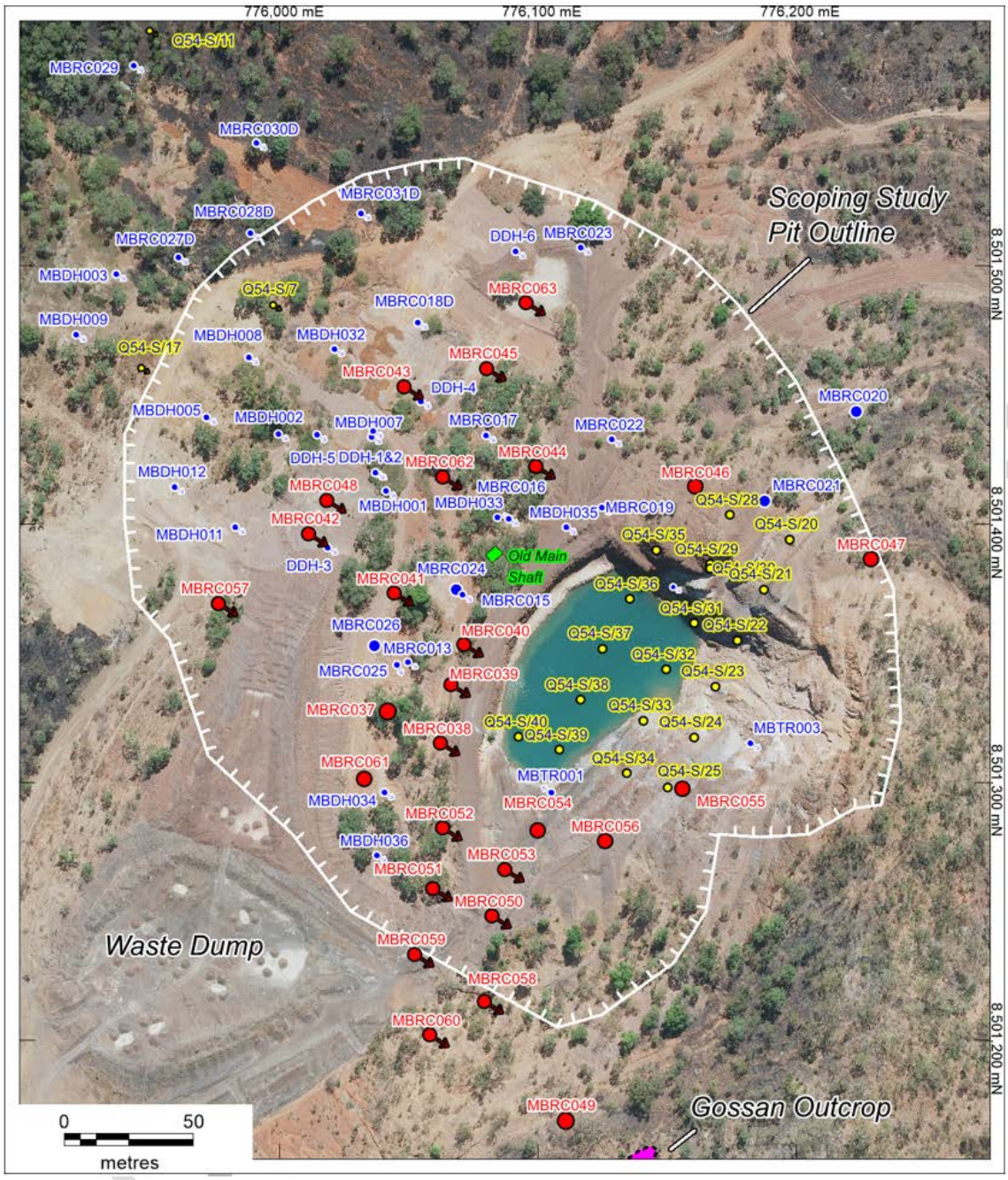


**Figure 2:** *Mt Bonnie drill collar plan on aerial photograph*

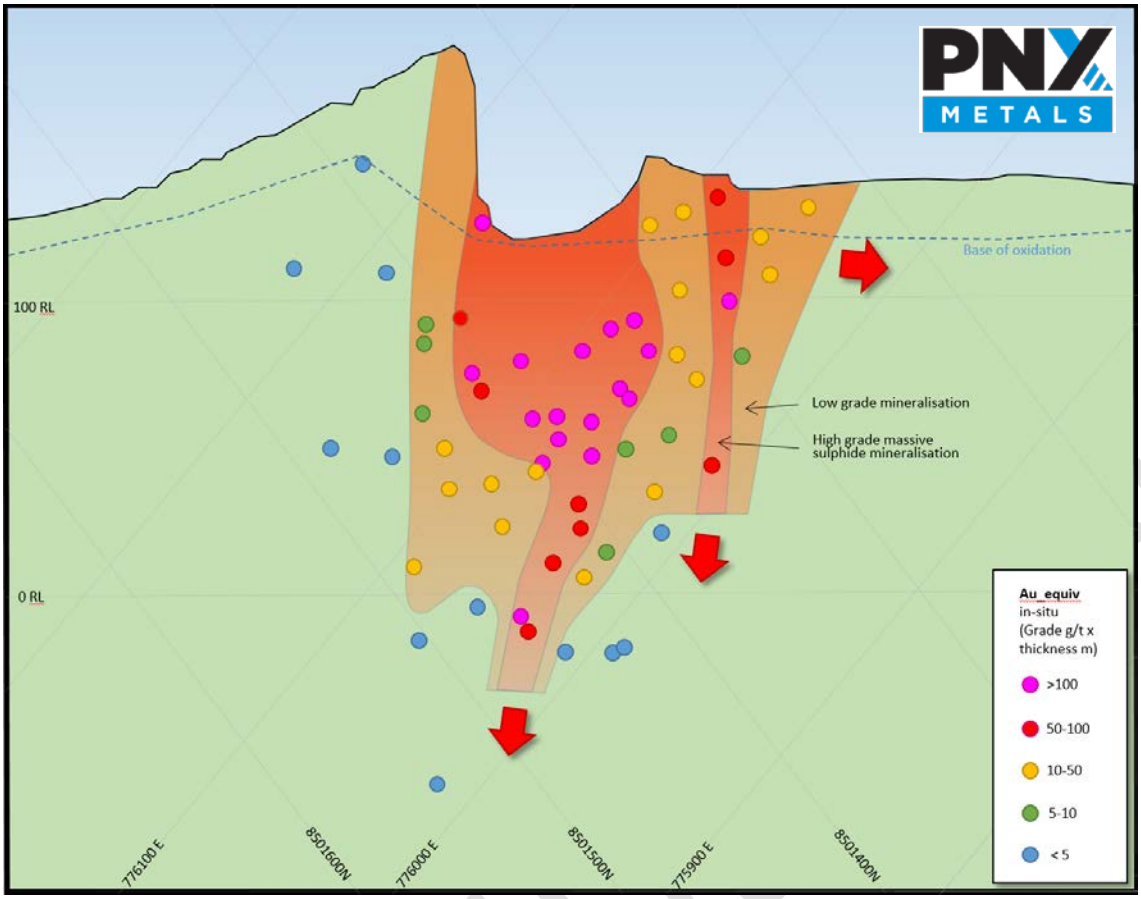


**Figure 3:** *Mt Bonnie orthogonal long section showing grade x thickness, looking towards 122$^{o}$ in a plane dipping approximately 40$^{o}$*

**Figure 4:** *Mt Bonnie aerial view (2011) looking east showing low grade stockpile in the foreground, historic open-pit centre, and water storage dam at the back of view*

## Hayes Creek Pre-Feasibility

The Mt Bonnie and Iron Blow deposits which form part of the Hayes Creek Project are located less than 3 km apart and are situated on granted Mineral Leases. An updated Mineral Resource will be completed for Iron Blow based on the successful 2016/2017 drilling program, expected March 2017. These Mineral Resources, along with those estimated at Mt Bonnie and new metallurgical data from both deposits will be included in the Hayes Creek PFS.

The Hayes Creek PFS is fully funded and due for completion by mid-2017. It will expand on the Scoping Study completed in March 2016, which found that mining and processing ore derived from the proposed open-pit and underground operations at Hayes Creek would generate strong financial returns for PNX.

The Hayes Creek Project is located in a favourable mining jurisdiction in the Pine Creek region of Northern Territory, less than two hours by road from Darwin (Figure 5). The development strategy includes the use of existing infrastructure, designed to boost economics and reduce Project risk.

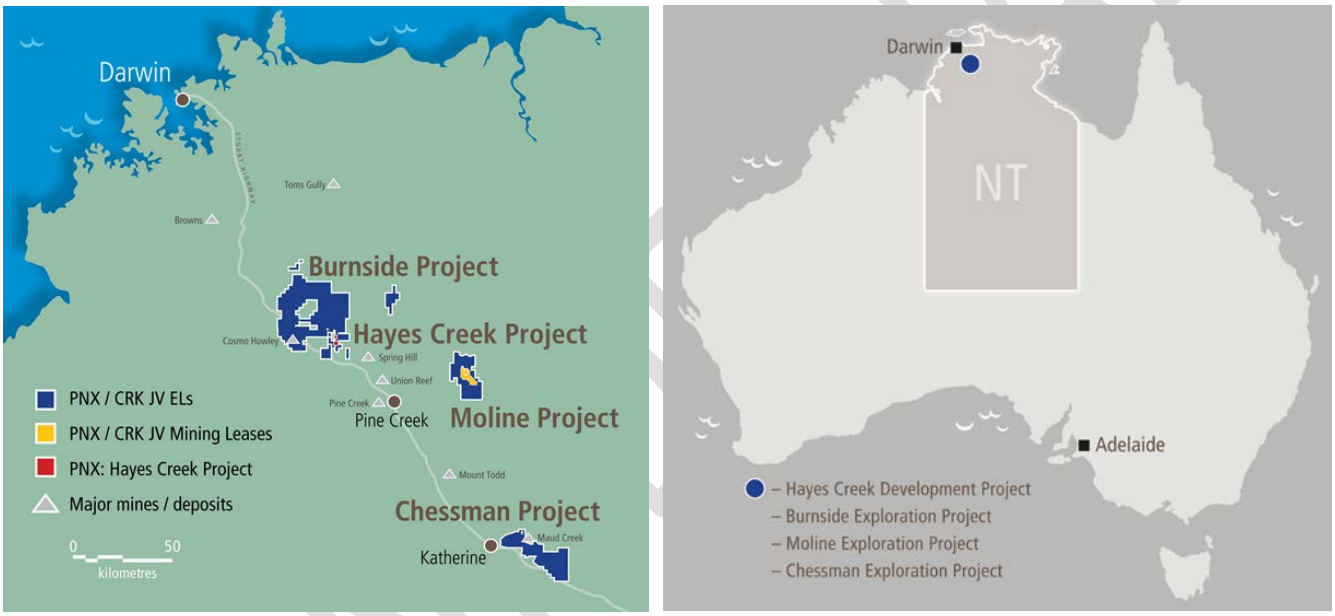


**Figure 5:** *PNX NT Project locations*

**Competent Person's Statement**

The information in this report that relates to Mineral Resources is based on information compiled by Mr Aaron Meakin and Mr Andrew Bennett. Mr Aaron Meakin is a full-time employee of CSA Global Pty Ltd and is a Member of the Australasian Institute of Mining and Metallurgy. Mr Andrew Bennett is a full-time employee of PNX Metals Ltd and is a Member of the Australasian Institute of Mining and Metallurgy. Mr Aaron Meakin and Mr Andrew Bennett have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC code). Mr Aaron Meakin and Mr Andrew Bennett consent to the inclusion of this information in the form and context in which they occur.

The information in this report that relates to Exploration Results is based on information compiled by Mr Andrew Bennett who is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Bennett has sufficient experience relevant to the style of mineralisation and the type of deposits under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Bennett is a full time employee of PNX Metals Ltd and consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

**James Fox**
Managing Director & CEO
Telephone: +61 (0) 8 8364 3188

# MEMORANDUM

CSA Global Pty Ltd
Level 2, 201 Leichhardt Street
Spring Hill QLD 4000

PO Box 1077
Spring Hill QLD 4004
Australia

T +61 7 3106 1200
E csaqld@csaglobal.com

ABN 67 077 165 532
www.csaglobal.com

**To:** Andrew Bennett

**Cc:** James Fox

**Date:** 8th February 2017

**From:** Aaron Meakin

**CSA Global Report Nº:** R125.2017

**Re:** **Mount Bonnie Mineral Resource estimate**

## SUMMARY

CSA Global Pty Ltd (CSA Global) was engaged by PNX Metals Ltd (PNX) to prepare a Mineral Resource estimate for the Mount Bonnie polymetallic deposit (Mount Bonnie), located in the Northern Territory, Australia. The Mineral Resource estimate was required to be reported in accordance with The JORC Code[1].

The Mineral Resource estimate is shown in *Table 1*. The Mineral Resource contains approximately 58 kt of Zn metal, 18 kt of Pb metal, 4 kt of Cu metal, 6.5 Moz of Ag and 70 Koz of Au.

*Table 1:* Mount Bonnie Mineral Resource estimate, February 2017

| JORC Classification | Domain | Cut-off grade | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | ZnEq (%) | AuEq (g/t) | Density (t/m³) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indicated | Main Oxide/ Transitional | 0.5 g/t Au | 195 | 0.94 | 2.43 | 0.18 | 171 | 3.80 | 11.50 | 9.44 | 2.70 |
| | Main Fresh | 1% Zn | 1,180 | 4.46 | 0.94 | 0.23 | 121 | 1.02 | 9.60 | 7.88 | 3.32 |
| **Total Indicated** | | | **1,375** | **3.96** | **1.15** | **0.23** | **128** | **1.41** | **9.87** | **8.11** | **3.23** |
| Inferred | Main Oxide/ Transitional | 0.5 g/t Au | 32 | 0.43 | 1.33 | 0.29 | 74 | 2.28 | 6.37 | 5.23 | 2.55 |
| | Main Fresh | 1% Zn | 118 | 2.91 | 0.90 | 0.15 | 135 | 0.54 | 7.61 | 6.25 | 3.14 |
| | Ag Zone | 50 g/t Ag | 21 | 0.17 | 0.03 | 0.04 | 87 | 0.04 | 2.36 | 1.94 | 2.91 |
| | Stockpile | 0.5 g/t Au | 100 | 0.18 | 0.62 | 0.09 | 55 | 0.76 | 2.97 | 2.44 | 1.50 |
| **Total Inferred** | | | **271** | **1.40** | **0.78** | **0.13** | **95** | **0.79** | **5.34** | **4.38** | **2.45** |
| **GRAND TOTAL** | | | **1,646** | **3.54** | **1.09** | **0.21** | **123** | **1.31** | **9.13** | **7.49** | **3.10** |

** Due to the effects of rounding, the total may not represent the sum of all components*

[1] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).

# DATA COLLECTION TECHNIQUES AND METHODOLOGY

High-quality diamond core and reverse circulation (RC) samples have substantially informed the Mineral Resource estimate. Drilling data has been collected during numerous drilling campaigns, commencing in 1973. The drilling history is summarised in *Table* 2.

*Table* 2: Mount Bonnie drilling history

| Year | Company | Holes | Type | Metres | Hole IDs | Supporting documentation and program rationale |
|---|---|---|---|---|---|---|
| **Historical Drilling** | | | | | | |
| 1917 to 1918 | NTGS | 3 | Diamond (size unknown) | unknown | 1 to 3 | 1917 annual report of the Mines Department. No position or orientation recorded. |
| 1973 | Horizon | 6 | Diamond (size unknown) | 640.44 | DDH-1 to DDH-6 | McNeill, 1973. Mostly underneath current pit. |
| 1979 | Geopeko | 11 | Diamond (size unknown) | 2,606.38 | Q54/S7 to Q54/S18 | No report (some information in Eupene, 1982). Looking for primary zone extensions. |
| 1980 | Geopeko | 19 | Diamond (HQ3) | 633.96 | Q54/S20 to Q54/S40 | Incomplete data available (Eupene, 1982). Oxide zone drill out. |
| **Modern Drilling** | | | | | | |
| 2008 | GBS | 2 | Diamond (HQ3) | 286.8 | MBDH001 to MBDH002 | No report – program terminated. |
| 2011 | Kirkland Lake | 7 | Diamond (HQ), * 1 NQ | 1,309.55 | MBDH003, MBDH005*, MBDH007-9, MBDH011-12 | Baile and Edwards (2013). |
| May 2015 | PNX | 12 | RC | 1,114 | MBRC013 to MBRC024 | Target shallow mineralisation under pit. |
| September 2015 | PNX | 16 | RC (3), diamond (5), diamond with RC pre-collar (5), in-pit trenches (3) | 1,815.14 (886.4 RC/DD, 539 DD, 341.7 RC and 48.04 trench) | MBDH032-36, MBRC018D, MBRC025-26, MBRC27D-28D, MBRC029, MBRC030D-31D, MBTR001-3 | Test depth and lateral extensions prior to scoping study. |
| 2016 | PNX | 29 | RC (27), diamond with RC pre-collar (2) | 1,984.7 (1,826 RC, 158.7 DD) | MBRC037-039, MBRC039D, MBRC040-041, MBRC041D, MBRC042-063 | Test depth and lateral extensions, and infill drilling prior to prefeasibility study. |

Northern Territory Geological Survey (NTGS) drill holes were not used to prepare the Mineral Resource estimate given that very limited information is available for these holes.

Assay results for drilling undertaken by Horizon Explorations Ltd (Horizon) are available and complete, however collar locations have a lower degree of certainty than modern holes. All Horizon results (six drill holes) were retained for Mineral Resource estimation.

Geopeko drilling was largely removed from the analytical database used in the Mineral Resource estimate for the following reasons:

- Collar locations are approximate
- Most drill holes only partially sampled the mineralisation

- The holes returned poor recoveries
- No QC data is available to support the database.

The following Geopeko holes were included however for the reasons provided:

- Q54/S7 (complete assay data at depth to the south of the deposit)
- Q54/S21 (oxide zone – no modern drilling able to be completed for access reasons)
- Q54/S29 (transitional zone – no modern drilling able to be completed for access reasons)
- Q54/S30 (transitional zone – no modern drilling able to be completed for access reasons)
- Q54/S31 (transitional zone – no modern drilling able to be completed for access reasons)
- Q54/S32 (oxide and transitional zone – no modern drilling able to be completed for access reasons)
- Q54/S37 (transitional zone – no modern drilling able to be completed for access reasons)
- Q54/S38 (transitional zone – no modern drilling able to be completed for access reasons).

Although a decision was made to remove most Geopeko drill holes from the analytical database used in the Mineral Resource estimate, all data was utilised to aid in interpretation of the mineralisation boundaries in areas not tested by other drilling.

All other available drilling data was used to prepare the Mineral Resource estimate.

A large continuous zone of mineralisation has been delineated. The main mineralisation has a high-grade massive sulphide core and a lower grade brecciated carbonate alteration halo. This has been considered during mineralisation modelling.

The relative abundance of the economic constituents of interest varies according to oxidation status. Within both the massive sulphide (gossan) and outer breccia, the oxide zone is depleted in Zn and contains higher concentrations of Au and Pb, whereas in the transitional and fresh zones, Zn is the primary economic constituent of interest. A separate zone of supergene Ag mineralisation has also been delineated and reported.

A 3D block model of the mineralisation has been created using Datamine software. Samples were used to interpolate grades into blocks using ordinary kriging for the main mineralisation and inverse distance squared for Ag mineralisation. The block model was validated prior to being reported.

Both Au equivalent and Zn equivalent were calculated and reported using the metallurgical recovery and commodity price assumptions shown in Table 3. Metal prices were derived from forward price estimates.

*Table* 3: Metal equivalent parameters

| Parameter | Unit | Value |
|---|---|---|
| Zn price | US$/t | 2,450 |
| Pb price | US$/t | 2,100 |
| Cu price | US$/t | 6,200 |
| Ag price | US$/troy ounce | 20.50 |
| Au price | US$/troy ounce | 1,350 |
| Zn recovery | % | 80 |
| Pb recovery | % | 60 |
| Cu recovery | % | 60 |
| Ag recovery | % | 70 |
| Au recovery | % | 55 |

The formulae below were applied to the estimated constituents to derive metal equivalent values:

*Gold Equivalent (field = "AUEQ") (g/t) = (Au grade (g/t) * (Au price per ounce/31.10348) * Au recovery) + (Ag grade (g/t) * (Ag price per ounce/31.10348) * Ag recovery) + (Cu grade (%) * (Cu price per tonne/100) * Cu recovery) + (Pb grade (%) * (Pb price per tonne/100) * Pb recovery) + (Zn grade (%) * (Zn price per tonne/100) * Zn recovery) / (Au price per ounce/31.10348 * Au recovery)*

*Zinc Equivalent (field = "ZNEQ") (%) = (Au grade (g/t) * (Au price per ounce/31.10348) * Au recovery) + (Ag grade (g/t) * (Ag price per ounce/31.10348) * Ag recovery) + (Cu grade (%) * (Cu price per tonne/100) * Cu recovery) + (Pb grade (%) * (Pb price per tonne/100) * Pb recovery) + (Zn grade (%) * (Zn price per tonne/100) * Zn recovery) / (Zn price per tonne/100 * Zn recovery)*

## REASONABLE PROSPECTS HURDLE

Clause 20 of the JORC Code requires that reported Mineral Resources must have reasonable prospects for eventual economic extraction, regardless of the classification of the Mineral Resource.

The Competent Persons deem that there are reasonable prospects for eventual economic extraction of mineralisation on the following basis:

- The project is located close to road and port infrastructure, approximately 145 km southeast of Darwin
- The mineralisation contains elevated Zn, Pb, Cu, Au and Ag grades over a reasonable strike length
- The mineralisation forms a continuous coherent zone which should allow mining with only moderate dilution, subject to the adoption of robust grade control processes
- The mineralisation reported lies within approximately 210 m of surface and is therefore amenable to open pit mining
- There is significant potential to recover Au, Pb, Zn and Ag in addition to Cu
- The Mineral Resource is in close proximity to the Iron Blow deposit which is wholly owned by PNX, hence common infrastructure could be developed
- There is some potential to increase the Mineral Resource with additional drilling.

## MINERAL RESOURCE CLASSIFICATION

The Mineral Resource has been classified in accordance with guidelines contained in the JORC Code. The classification applied reflects the author's view of the uncertainty that should be assigned to the

Mineral Resources reported herein. Key criteria that have been considered when classifying the Mineral Resource are detailed in JORC Table 1 which is included in Attachment 1.

After considering data quality, data distribution, and geological and grade continuity, the following approach was adopted when classifying the Mineral Resource:

- Areas of the deposit were classified as Indicated where the deposit is tested on a pattern which approximates 25 m E by 25 m RL by modern drilling with supporting QC data. Geological evidence is considered sufficient to assume geological and grade continuity between points of observation where data and samples are gathered. A wireframe was created to capture this area.
- Areas of the deposit were classified as Inferred where drilling had been completed on a 50 m E by 50 m RL pattern (or denser). Geological evidence is considered sufficient to imply but not verify geological and grade continuity.

Areas of the deposit within the oxide and transitional zone underneath the current Mount Bonnie pit were classified as Indicated even though the mineralisation is not tested by modern drilling. In this area, seven Q series holes completed by Geopeko were included in the database used to interpolate grades into the block model. Although analytical results from these holes are subject to greater uncertainty than the modern holes, the Competent Persons consider that trench sampling completed in the pit and visual inspection of the mineralisation increase confidence and justify an Indicated classification. Note that there remains some uncertainty regarding the location base of the current open pit given that the base of the pit is covered with water.

## MINERAL RESOURCE TABLES

The Mineral Resource estimate for the Zn rich fresh mineralisation is shown in Table 4 and the Mineral Resource estimate for the Au rich oxide/transitional mineralisation is shown in Table 5. The Mineral Resource estimate has been depleted to exclude historical underground and open pit mining.

*Table* 4: Mount Bonnie Mineral Resource estimate by JORC classification – Zn domain, >1% Zn

| JORC classification | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | ZnEq (%) | AuEq (g/t) | Density (t/m³) |
|---|---|---|---|---|---|---|---|---|---|
| Indicated | 1,179 | 4.46 | 0.94 | 0.23 | 121 | 1.02 | 9.60 | 7.88 | 3.32 |
| Inferred | 118 | 2.91 | 0.90 | 0.15 | 135 | 0.54 | 7.61 | 6.25 | 3.14 |
| **Total** | **1,298** | **4.32** | **0.93** | **0.23** | **123** | **0.97** | **9.42** | **7.74** | **3.30** |

** Due to the effect of rounding, the total may not represent the sum of all components*

*Table* 5: Mount Bonnie Mineral Resource estimate by JORC classification – Au domain, 0.5 g/t Au

| JORC classification | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | ZnEq (%) | AuEq (g/t) | Density (t/m³) |
|---|---|---|---|---|---|---|---|---|---|
| Indicated | 195 | 0.94 | 2.43 | 0.18 | 171 | 3.80 | 11.50 | 9.44 | 2.70 |
| Inferred | 32 | 0.43 | 1.33 | 0.29 | 74 | 2.28 | 6.37 | 5.23 | 2.55 |
| **Total** | **227** | **0.87** | **2.28** | **0.20** | **157** | **3.59** | **10.79** | **8.86** | **2.68** |

** Due to the effect of rounding, the total may not represent the sum of all components*

The Mineral Resource estimate for the Ag mineralisation is shown in *Table* 6.

*Table* 6: Mount Bonnie Mineral Resource estimate by JORC classification – Ag domain, >50 g/t Ag

| JORC classification | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | ZnEq (%) | AuEq (g/t) | Density (t/m³) |
|---|---|---|---|---|---|---|---|---|---|
| Inferred | 21 | 0.17 | 0.03 | 0.04 | 87 | 0.04 | 2.36 | 1.94 | 2.91 |
| **Total** | **21** | **0.17** | **0.03** | **0.04** | **87** | **0.04** | **2.36** | **1.94** | **2.91** |

** Due to the effect of rounding, the total may not represent the sum of all components*

The Mineral Resource estimate for the stockpile mineralisation is shown in *Table* 7.

*Table* 7: Mount Bonnie Mineral Resource estimate by JORC classification – Stockpile, >0.5 g/t Au

| JORC classification | Tonnage (kt) | Zn (%) | Pb (%) | Cu (%) | Ag (g/t) | Au (g/t) | ZnEq (%) | AuEq (g/t) | Density (t/m³) |
|---|---|---|---|---|---|---|---|---|---|
| Inferred | 100 | 0.18 | 0.62 | 0.09 | 55 | 0.76 | 2.28 | 1.36 | 1.50 |
| **Total** | **100** | **0.10** | **0.62** | **0.09** | **55** | **0.76** | **2.97** | **2.44** | **1.50** |

** Due to the effect of rounding, the total may not represent the sum of all components*

## RECOMMENDATIONS

CSA Global recommends the following actions are completed to support the ongoing exploration effort at Mount Bonnie:

- A grade control pattern of 5–10 m by 5–10 m is recommended initially over a 25 m or 50 m block, located in an area critical to early cash flow. This should be completed prior to pit start-up and would give a high level of confidence in the start-up phase. This will enable detailed assessment of the geometry and grade of the mineralisation and allow drill spacing to be further assessed.
- In order for the Mount Bonnie project to progress to higher Mineral Resource classification levels, further infill drilling will be required. This should involve diamond drilling. CSA Global recommends a drill spacing of 15 m E (along strike) by 15 m RL (down dip) to allow Mineral Resources to be considered for Measured classification, a drill spacing of 25 m E (along strike) by 25 m RL (down dip) for Indicated Mineral Resources and a drill spacing of 50 m E (along strike) and about 50 m RL (down dip) for Inferred Mineral Resources.
- There is limited modern drill hole information immediately beneath the existing open pit (approximately 30 m vertically) at Mount Bonnie. This area of the Mineral Resource, which largely correlates with the transitional weathering zone, should be drill tested as a matter of priority given the importance of early production on project economics.
- PNX should investigate base metal certified reference material (CRM) results from the 2016 drilling program as a matter of priority. If there are issues with the CRMs, a complete set of new CRMs should be sourced from a supplier.
- Data storage systems, including back-up and security should be externally audited.
- Although the controls to the mineralisation are relatively well understood, continued development of the geological model is recommended to support future Mineral Resource estimation and establishment of the mine geology function. Further refinement of the massive sulphide model and a better understanding of the mineralogical characteristics of the transitional zone is required.
- Establishment of the mine geology system should be considered well in advance of mining. Systems to ensure development of the geological model, high-quality sampling, rapid capture and storage of data, quality control assessment, robust ore block interpretation, minimisation of ore loss and dilution, production tracking and reporting, and reconciliation should be established.

## COMPETENT PERSONS STATEMENT

The information in this report that relates to Mineral Resources is based on information compiled by Mr Aaron Meakin and Mr Andrew Bennett. Mr Aaron Meakin is a full-time employee of CSA Global Pty Ltd and is a Member of the Australasian Institute of Mining and Metallurgy. Mr Andrew Bennett is a full-time employee of PNX Metals Limited and is a Member of the Australasian Institute of Mining and Metallurgy. Mr Aaron Meakin and Mr Andrew Bennett have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Aaron Meakin and Mr Andrew Bennett consent to the disclosure of the information in this report in the form and context in which it appears.

# Attachment 1: JORC Table 1

## JORC Table 1 Section 1 – Key Classification Criteria

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Sampling techniques* | *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* | Samples used in the in situ Mineral Resource estimate were mainly obtained through reverse circulation (RC) and diamond drilling methods collected from campaigns completed by several companies from 1973 through 2016. Limited wall samples collected by PNX Metals Limited (PNX) from the base of the Mount Bonnie open pit have also been used.<br>Sampling was also carried out around the edges of the waste stockpile by taking shovels of dirt from the tip to toe (typically eight to 12 individual locations at 1 m to 2 m intervals in a straight line from bottom to top) to fill a large bag weighing approximately 20 kg to 25 kg each. This was completed at regular intervals around the stockpile edge. |
| | *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* | Diamond core has been sawn in half or quarter using a core saw. The cut line for drill core is along the apex of the foliation or mineralisation.<br>RC samples were collected using a riffle or cone splitter mounted at the bottom of the cyclone at regular 1 m intervals to collect a 1/8$^{th}$ fraction for assay and a 7/8$^{th}$ fraction for logging. |
| | *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. "RC drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay"). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.* | RC, diamond drilling and waste dump samples were used to obtain 0.5 m to 2 m samples which were pulverised and submitted for inductively coupled plasma optical emission spectrometry (ICP-OES) or inductively coupled plasma optical mass spectrometry (ICP-MS) for base metals and fire assay with determination by atomic absorption spectrometry (FA/AAS) for gold. |
| *Drilling techniques* | *Drill type (e.g. core, RC, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).* | RC and diamond (primarily HQ and NQ) drilling were completed to support the preparation of the Mineral Resource estimate.<br>Horizon completed six diamond holes in 1973 mostly underneath the current pit.<br>From 1975 through 1979, Geopeko Ltd (Geopeko) in joint venture with BP Minerals Ltd, completed 11 diamond holes for 2,606.4 m at what was then called the Quest 54 prospect. In late 1980, Geopeko re-accessed and sampled the old workings and drilled a further 20 diamond drill holes totalling 785 m.<br>GBS Gold Australia (GBS) completed 286.8 m of diamond drilling in 2008, however then went into receivership and the program was terminated.<br>In 2011, Crocodile Gold Australia (now Kirkland Lake) completed a seven hole, 1,309.55 m diamond drilling program.<br>During 2015, PNX completed approximately 1,445.7 m of RC drilling, 1,218.7 m of diamond drilling and 46.24 m of trenching. PNX then completed 1,826 m of RC drilling and 158.7 m of diamond drilling in 2016.<br>RC and diamond drilling dominate the database. Recent coring completed by PNX has been oriented using a Reflex ACE tool. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Drill sample recovery* | *Method of recording and assessing core and chip sample recoveries and results assessed.* | Drilling recoveries are recorded by PNX for both RC chips and diamond core. In RC chips, recovery is visually estimated based on the size and weight of the sample bag and residue. Excellent recoveries were observed in dry samples and reasonable recovery was observed in wet samples with some loss of fines. Recoveries in diamond core were excellent below the limit of oxidisation. In rare holes that have intersected the mineralisation in the oxide zone, larger core losses were observed due to washing of clays. This material has been assigned a lower confidence category when classifying the Mineral Resource. |
| | *Measures taken to maximise sample recovery and ensure representative nature of the samples.* | Triple tube drilling has occasionally been used in addition to larger (HQ) diameter core sizes to maximise sample recovery. RC drilling utilised an external booster typically keeping samples dry to about 60 m and maximising recoveries. |
| | *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | No relationship between grade and recovery has been identified. |
| *Logging* | *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* | Comprehensive logs capturing lithological, mineralogical, magnetic susceptibility, geotechnical, and portable x-ray fluorescence (pXRF) data are available for all recent drilling (2008 onwards).<br>Historical drilling (completed from 1973 through 1980) has been logged, however in most cases the logs are not available and the core location is unknown. The ability to test the veracity of this data is therefore limited. Logging codes are available however, hence the historical data is useful to assist interpretation outside of areas tested by modern drilling. |
| | *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.* | Logging is generally qualitative in nature. All core stored at Brocks Creek has been photographed wet and dry. |
| | *The total length and percentage of the relevant intersections logged.* | All diamond core and RC drilling has been geologically logged. |
| *Subsampling techniques and sample preparation* | *If core, whether cut or sawn and whether quarter, half or all core taken.* | Diamond samples are generally half-core, with core sawn in half using a core-saw. Occasionally quarter-core samples are taken. |
| | *If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.* | RC samples were collected using a riffle (2015) or cone (2016) splitter mounted at the bottom of the cyclone at regular 1 m intervals to collect a 1/8$^{th}$ fraction for assay. The splitter was blown out and cleaned after each 6 m drill rod to reduce contamination. |
| | *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* | All samples submitted by PNX were prepared at North Australian Laboratories Pty Ltd (NAL), which is an independent laboratory based in Pine Creek in the Northern Territory. Upon arrival at the laboratory, samples are sorted, reconciled against the accompanying sample despatch notice and dried in a gas fired oven at 130°C for three hours. Samples are removed from the oven and cooled prior to being crushed using a 200 by 125 Jacques Jaw Crusher, which is cleaned with compressed air between each sample.<br>Nominal particle size discharge is 3 mm to 5 mm. Approximately 1 kg of sample is split from the crushed sample using a Jones riffle splitter. The 1 kg subsample is pulverised to a nominal 100 µm particle size in a vertical spindle pulveriser. The pulverised sample is roll mixed on a rubber mat to ensure the sample is |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | homogenised and a 400 g and 50 g cut is taken from the mat rolled sample for base metals and gold analysis respectively.<br>Waste dump samples were crushed to –3 mm and split to create a 3 kg subsample. Subsequent sample preparation procedures were consistent with those used for the drill hole samples. |
| | *Quality control procedures adopted for all subsampling stages to maximise representivity of samples.* | Subsampling is performed during the preparation stage according to the assay laboratories' internal protocol. |
| | *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* | RC field duplicates were inserted in the sample stream at a rate of one in every 25 samples. Results give confidence in sample collection procedures during the 2015 and 2016 RC drilling programs completed by PNX. |
| | *Whether sample sizes are appropriate to the grain size of the material being sampled.* | Sample sizes are considered to be appropriate to the grain size of the material being sampled. |
| *Quality of assay data and laboratory tests* | *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* | The techniques are considered total.<br>For samples submitted from 2015 through 2016, the analytical methods vary according to tenor of the mineralisation.<br>For very high grade samples, separate sample submissions are requested using the "G340" code, in which ammonium acetate is added to keep the Pb in solution. The "G300" and "G400" methods have lower detection limits and better precision for concentrations of the analyte below 1% compared with the G340 method. Once the concentration exceeds 1%, the G340 method is used which is an "ore grade" procedure and has a better precision. Determination is by ICP-OES or ICP-MS depending on the element.<br>For gold, fire assay fusion with a lead oxide flux and various other reagents is used depending on the mineral type followed by cupellation of the recovered lead button in a magnesium oxide cupel. The dore prill is parted and the Au content analysed by AAS.<br>Kirkland Lake's drill samples were submitted in 2011 and assayed at NTEL in Darwin. Gold assay results were based on 50 g fire assay. Base metal analysis was by ICP-MS.<br>CSA Global understands drill samples were submitted in 2008 by GBS to NAL in Pine Creek using similar techniques to those applied in 2015 and 2016.<br>Some sampling of core not assayed by Kirkland Lake and GBS was undertaken by PNX using NAL.<br>Assay results for drilling undertaken by Geopeko also are available and complete. Analabs reports indicate that Cu, Pb, Zn, Ag and Cd and Fe were prepared using the "A6" code, which utilised a hydrofluoric acid mixture digestion with AAS finish. As, Sb, Sn and Bi were analysed using XRF on pressed powder. Au was analysed according to the "RG50" code, which is a 50 g fire assay and S was analysed by LECO. Standards and repeats were reported by Analabs in each batch.<br>Assay results for drilling undertaken by Horizon are available and complete, however analytical techniques are not known.<br>Quality assurance (QA) processes, which were likely to be in place at the time of the historical drilling, are not known. |
| | *For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the* | Portable XRF instruments are used to assist with selection of the appropriate analytical technique. No XRF data was used however in the preparation of the Mineral Resource estimate. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* | |
| | *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.* | Kirkland Lake and GBS submitted duplicate samples at a rate of 1:25, certified reference materials (CRMs) at a rate of 1:25 and blanks at a rate of 1:50.<br>PNX used the same QA processes, except blanks are submitted at a rate of 3:100. PNX also submitted a batch of samples to an independent laboratory (Bureau Veritas) for umpire analysis.<br>QC results from the Horizon and Geopeko drilling are not available.<br>Given all available QC results, CSA Global considers that a relatively high level of confidence can be placed in the precision and accuracy of the analytical data used in the preparation of this Mineral Resource estimate. Some concern exists with the 2016 base metal CRM results, given that most results lie below the expected range. PNX is currently liaising with the primary laboratory regarding these results. Given the results are below the expected range, if any issue exists with the analysis, the analytical bias is likely to be low and therefore have a conservative effect on the Mineral Resource estimate. |
| *Verification of sampling and assaying* | *The verification of significant intersections by either independent or alternative company personnel.* | Significant intersections have been verified by alternative PNX company personnel. |
| | *The use of twinned holes.* | No twinning has been completed to verify historical intersections, however the location and tenor of historical intersections is broadly consistent with modern holes. |
| | *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* | Templates have been set up to facilitate geological and geotechnical logging. Prior to the import into the central database, logging data is validated for conformity and overall systematic compliance by the geologist.<br>Assay results are received from the laboratory in digital format.<br>Once data is finalised it is transferred to an Access Database on the PNX server, which is backed up and stored offsite weekly. |
| | *Discuss any adjustment to assay data.* | No adjustments were made to the analytical data, other than replacing below detection results with a value equal to half the detection limit. |
| *Location of data points* | *Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* | Drill holes completed from 2008 onwards been surveyed by qualified surveyors using a differential global positioning system (DGPS) instrument, to a nominal +/- 20 cm accuracy in the X and Y directions.<br>Downhole deviations have been measured by downhole survey instruments. In most cases, this has been by single shot camera, however a multi-shot camera and gyroscope have also been used. Where data is affected by magnetic interference, the azimuth readings have been adjusted manually based on adjacent values.<br>Collars from historical drilling undertaken by Horizon and Geopeko were georeferenced from available plans, and are probably accurate to +/- 10 m. The location of these holes is therefore subject to greater uncertainty than the holes completed from 2008 through 2016. |
| | *Specification of the grid system used.* | MGA Zone 52 is the adopted grid system. |
| | *Quality and adequacy of topographic control.* | An aerial photography and topographic survey was undertaken by drone in 2014 with a Canon Power Shot ELPH110HS camera |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | flown with an average ground sampling distance of 5.26 cm. The topography file is considered extremely accurate. |
| *Data spacing and distribution* | *Data spacing for reporting of Exploration Results.* | The data spacing is irregular, but overall averages 23 m section spacing over a strike length of about 300 m, with holes spaced approximately 25 m apart on section. |
| | *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* | The Competent Persons believe the mineralised domains have sufficient geological and grade continuity to support the classification applied to the Mineral Resource given the current drill pattern.<br>Mineral Resource estimation procedures are also considered appropriate give the quantity of data available and style of mineralisation under consideration. |
| | *Whether sample compositing has been applied.* | Samples were composited to 1 m prior to grade interpolation. This was considered appropriate given that most the samples have been collected over this interval. This allowed the natural variability of the sample data to be maintained prior to grade interpolation. |
| *Orientation of data in relation to geological structure* | *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* | The sectional azimuth is grid 122° and most holes are dipping 60° southeast. This allows the holes to intersect the mineralisation approximately perpendicular to its strike.<br>Some holes are drilled vertically due to topographical constraints. A few holes intersect mineralisation more parallel to the orientation where there is local folding or other structural disruption of the dominant mineralisation trend. |
| | *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | The relationship between the drilling orientation and the orientation of key mineralised structures is not considered to have introduced a sampling bias. |
| *Sample security* | *The measures taken to ensure sample security.* | A PNX geologist and field assistant are always present at the RC drill rig while samples are being drilled and collected. On completion of logging, samples were bagged and tied for transport to either the Brocks Creek compound for holding, or directly to the laboratory by PNX personnel.<br>For diamond drilling, core is collected daily from the rig and transported to the Brocks Creek compound. The cut samples are bagged and tied and transported directly to the laboratory by PNX or laboratory personnel for analysis. The Brocks Creek compound is locked and has 24-hour camera security when no personnel are present.<br>Sample security measures for drilling programmes completed prior to 2015 are unknown. |
| *Audits or reviews* | *The results of any audits or reviews of sampling techniques and data.* | No audits or reviews of sampling techniques and data have been carried out. |

## JORC 2012 Table 1 Section 2 – Key Classification Criteria

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Mineral tenement and land tenure status* | *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* | The Mount Bonnie prospect comprises nine granted Mineral Leases totalling 116.84 hectares. All are 100% owned by PNX. The Mineral Leases include MLN 342, MLN346, MLN 405, MLN 459, MLN 811, MLN 1033, MLN 1039 and MLN 30589.<br>The Mineral Leases are currently underlain by Exploration Leases (ELs) EL25748 to the north and east, EL23431 to the west and EL9608 to the south. All are subject to an earn-in arrangement with Kirkland Lake, whereby PNX can earn 90% interest through staged expenditure commitments. All mineral titles are situated within Pastoral Lease No. 903, Douglas. |
| | *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | Native Title has been extinguished over the Mineral Leases, nevertheless PNX are taking cultural heritage into consideration during project development studies, and engaged consultancy group "In Depth Archaeology" to undertake a field assessment and archaeological report.<br>The Mount Bonnie leases show evidence of extensive mining disturbance, however in undisturbed areas there is evidence for Aboriginal occupation consistent with the broader region. Given the significant extent of disturbance within the leases, the assessment concluded that there is very low risk of further Aboriginal sites within the work area. |
| *Exploration done by other parties* | *Acknowledgment and appraisal of exploration by other parties.* | The Mount Bonnie deposit has been subject to sporadic exploration by numerous parties since 1917. A summary of the drilling history only is provided below.<br>The Northern Territory Geological Survey (NTGS) completed three holes in 1917, however no drill hole location details were located.<br>Horizon completed six diamond holes in 1973 mostly underneath the current pit.<br>From 1975 through 1979, Geopeko, in joint venture with BP Minerals Ltd, commenced a significant base metals exploration program targeting the sulphide lodes in the region. Eleven diamond holes were drilled in 1979 at what was then called the Quest 54 prospect for 2,606.4 m. These holes targeted the down-dip extension of the lode defined during the Horizon drilling.<br>In late 1980, Geopeko re-accessed and sampled the old workings and drilled a further 20 diamond drill holes totalling 785 m in order to investigate the known high gold and silver contents in the oxide portion of the deposit.<br>GBS commenced diamond drilling in 2008 and 286.8 m were drilled, however GBS then went into receivership and the drilling program was terminated.<br>In 2011, Kirkland Lake completed a seven hole, 1,309.55 m diamond drilling program which targeted depth extensions to the massive sulphide lode concentrated on the southern portion of the deposit.<br>Since 2015, PNX has been actively testing the deposit with both RC and diamond drill holes with a view to providing sufficient quantity and quality of data to enable a Mineral Resource to be reported in accordance with the JORC Code (2012 Edition). During 2015, PNX completed approximately 1,445.7 m of RC drilling, 1,218.7 m of diamond drilling and 46.24 m of trenching. PNX then completed 1,826 m of RC drilling and 158.7 m of diamond drilling in 2016. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Geology* | *Deposit type, geological setting and style of mineralisation.* | Mount Bonnie is located on the eastern flank of the Margaret Syncline. The key sedimentary units consist of dark grey, silicified felsic tuff and tuffaceous siltstone (the Gerowie Tuff), overlain by a sequence of turbidity current-related mudstones, siltstones and grey sandstones (the Mount Bonnie Formation).<br>Mineralisation is located near the base of the Mount Bonnie Formation. Later intrusion of granite batholiths in the region has not substantially affected the Mount Bonnie mineralisation. The area has remained structurally stable since Proterozoic times and has been more or less under continuous erosion. The Mount Bonnie Formation is interpreted as a transitional sequence between low energy sediments of the Koolpin Formation and overlying high energy sediments of the Burrell Creek Formation.<br>There are three main elements identified in the mine sequence. The "Hangingwall Series" comprises a monotonous sequence of mudstone and greywacke-dominant turbidites with weak siliceous alteration near the base. A thick greywacke is a distinctive marker horizon within the Hangingwall Section. The "Mineralised Series" occurs at a sharp contact, probably an unconformity subject to shearing. Typically, the section comprises a massive sulphide unit, which in places appears to separate into two or three zones separated by altered mudstone or breccia, and a siliceous and carbonate altered brecciated tuff unit below the sulphide unit. This has also been described as the "silicate lode" by previous workers. The "Footwall Series" occurs below the mineralised zone. Alteration and brecciation is initially intense but decreases with depth until the section phases back to monotonous turbidites.<br>Mount Bonnie is interpreted to be a volcanogenic massive sulphide (VMS) deposit formed at or near the sea floor by submarine felsic volcanic activity.<br>The highest base metal and gold grades in the deposit are contained within the massive sulphide unit, which is up to 15 m thick below the pit, but gradually pinches out with depth. The brecciated tuff unit below the massive sulphides contains lower grade disseminated mineralisation, often with a coarse blebby appearance. Within the massive sulphide unit, mineralisation appears to be relatively uniform, with no notable zonation.<br>The mineralogy of the massive sulphides in the primary zone is dominated by pyrrhotite and sphalerite, with subordinate pyrite, galena, chalcopyrite, arsenopyrite, marcasite and tetrahedrite. Sulphide minerals range in grain size from 0.5 mm to 5 mm and are massively textured. The gangue minerals are dominated by dolomite, chlorite, talc, actinolite and quartz. |
| *Drill hole information* | *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*<br>• *Easting and northing of the drill hole collar*<br>• *Elevation or RL (Reduced Level – Elevation above sea level in metres) of the drill hole collar*<br>• *Dip and azimuth of the hole*<br>• *Downhole length and interception depth*<br>• *Hole length.* | Exploration results are not being reported. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | Exploration results are not being reported. |
| *Data aggregation methods* | *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* | Exploration results are not being reported. |
| | *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* | Exploration results are not being reported. |
| | *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | Exploration results are not being reported. |
| *Relationship between mineralisation widths and intercept lengths* | *These relationships are particularly important in the reporting of Exploration Results.* | Exploration results are not being reported. |
| | *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* | The sectional azimuth is grid 122° and most holes are dipping 60° southeast which means they generally intersect the mineralisation approximately perpendicular to its strike. Some holes are drilled vertically due to topographical constraints and a few holes intersect mineralisation more parallel to the orientation where there is local folding of the mineralisation. |
| | *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. "downhole length, true width not known").* | Exploration results are not being reported. |
| *Diagrams* | *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drillhole collar locations and appropriate sectional views.* | Relevant maps and diagrams are included in the body of the report. |
| *Balanced reporting* | *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | Exploration results are not being reported. |
| *Other substantive exploration data* | *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock* | No substantive exploration data not already mentioned in this table has been used in the preparation of this Mineral Resource estimate. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *characteristics; potential deleterious or contaminating substances.* | |
| *Further work* | *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* | Further work will be focused on testing for dip extensions and strike extensions and to confirm grade and geological continuity implied by the current block model. |
| | *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | Diagrams have been included in the body of this report. |

## JORC 2012 Table 1 Section 3 – Key Classification Criteria

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Database integrity* | *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* | Logging is completed onto templates using standard logging codes. Analytical results are imported directly into the Access database by a database specialist. |
| | *Data validation procedures used.* | CSA Global completed numerous checks on the data. Absent collar data, multiple collar entries, suspect downhole survey results, absent survey data, overlapping intervals, negative sample lengths and sample intervals which extended beyond the hole depth defined in the collar table were reviewed. Only minor validation errors were detected which were communicated to PNX and corrected prior to the preparation of the Mineral Resource estimate. |
| *Site visits* | *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* | Site visits have been completed by Andrew Bennett who assumes responsibility for the data and geological modelling components of the work. Aaron Meakin assumes responsibility for grade interpolation and reporting of the Mineral Resource estimate and has not completed a site visit. |
| | *If no site visits have been undertaken indicate why this is the case.* | Andrew Bennett has undertaken a site visit. |
| *Geological interpretation* | *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* | Geological interpretation was completed by Andrew Bennett from PNX. Peer review of the interpretation was completed by Aaron Meakin from CSA Global.<br>Anomalous concentrations of Cu, Pb, Zn, Ag and Au are located toward the base of the Mount Bonnie Formation. Geological mapping in the open pit at Mount Bonnie reveals relatively unaltered and bedded hangingwall and footwall siltstone and mudstone units of the Mount Bonnie Formation enclosing a highly structured mineralised zone.<br>The mineralised zone comprises lenses of gossanous mineralised breccia and highly altered, rotated and sheared blocks of siltstone and tuffaceous mudstone. The mineralised zone has been tilted to the west at between 30° and 75°. Geological modelling has aimed to separate massive sulphide and brecciated/carbonate altered styles of mineralisation. |
| | *Nature of the data used and of any assumptions made.* | Geological logging in conjunction with assays has been used to assist with the mineralisation interpretation. Three main domains were defined.<br>A cut-off grade of 1% Zn in addition to elevated Au and Ca concentrations has been used to define an outer breccia envelope |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | to the main mineralisation. This area is a zone of carbonate alteration.<br>Within the carbonate altered breccia, a zone of massive sulphide exists. The massive sulphide domains have been interpreted from logging in addition to a "step change" increase in Zn and Ag grades.<br>A separate Ag zone has also been interpreted based on logging and elevated Ag concentrations. |
| | *The effect, if any, of alternative interpretations on Mineral Resource estimation.* | Alternative interpretations are likely to materially impact on the Mineral Resource estimate on a local but not global basis. |
| | *The use of geology in guiding and controlling Mineral Resource estimation.*<br>*The factors affecting continuity both of grade and geology.* | Geological logging and mapping from the Mount Bonnie open pit has been used to guide mineralisation interpretations.<br>Continuity of mineralisation is good, however there is limited modern drilling data in some areas of the Mineral Resource, particularly in the oxide and transitional zones. Additional drilling is required to confirm geological and grade continuity in these areas. |
| *Dimensions* | *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.* | The Mineral Resource is contained within an area defined by a strike length of 300 m and across-strike width of approximately 2 m to 40 m, which often includes several lodes. The reported Mineral Resource lies within approximately 210 m of surface, which makes the deposit amenable to open pit mining. |
| *Estimation and modelling techniques* | *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* | The Mineral Resource estimate has been completed using two main grade estimation domains, which were broadly defined using cut-off grades of 1% Zn and 6% Zn.<br>Upper cuts were applied to Ag only following statistical analysis. An upper cut of 300 g/t Ag and 800 g/t Ag were applied to the carbonate alteration/breccia zone and massive sulphide domains respectively. These grades represent the 99 percentile (carbonate alteration zone) and 98.5 percentile (massive sulphide zone) of the dataset and are coincident with changes in the slope of log-probability plots.<br>Quantitative kriging neighbourhood analysis was undertaken to assess the effect of changing key kriging neighbourhood parameters on block grade estimates. Kriging efficiency and slope of regression were determined for a range of block sizes, minimum/maximum samples, search dimensions and discretisation grids.<br>A three-pass search ellipse strategy was adopted whereby search ellipses were progressively increased if search criteria could not be met. Dynamic anisotropy was used to ensure undulation in the mineralisation was captured by the search ellipses.<br>Ordinary kriging was adopted to interpolate grades into cells, with variogram rotations consistent with the search ellipse rotations.<br>The Ag domain was interpolated using inverse distance squared techniques. No upper cuts applied to the data and a three-pass search ellipse strategy was adopted using a single ellipse orientation.<br>Statistical analysis was completed using Supervisor software. All geological modelling and grade estimation was completed using Datamine software. |
| | *The availability of check estimates, previous estimates and/or mine production records and whether the* | Several previous grade tonnage estimates have been made at Mount Bonnie, however only one previous Mineral Resource estimate was reported in accordance with the JORC Code in 2015. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *Mineral Resource estimate takes appropriate account of such data.* | The Mineral Resource reported herein is larger in tonnage than the 2015 Mineral Resource estimate, which is understandable given the significant drilling program that was completed in 2016. |
| | *The assumptions made regarding recovery of by-products.* | Mount Bonnie is a polymetallic deposit. It is assumed that Zn, Pb, Cu, Ag and Au can be recovered. |
| | *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).* | As, Fe and S have been estimated to allow consideration of deleterious elements in future mining studies. |
| | *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* | A 2.5 m E by 5 m N by 5 m RL parent cell size was used with sub-celling to 0.5 m E by 1 m N by 1 m RL to honour wireframe boundaries. The drill hole data spacing is highly variable but approximates 25 m along strike by 15 m by 50 m down-dip. |
| | *Any assumptions behind modelling of selective mining units.* | No assumptions were made regarding selective mining units. |
| | *Any assumptions about correlation between variables* | No assumptions have been made regarding correlation between variables. |
| | *Description of how the geological interpretation was used to control the resource estimates.* | Interpretation of massive sulphide lenses from geological logging and mapping was used to constrain grade estimation of this domain. Structural data from drill core and open pit mapping was used to confirm the broad geometry of the mineralisation. |
| | *Discussion of basis for using or not using grade cutting or capping.* | There were no significant outliers in the dataset and therefore grade cutting was not considered necessary for all estimated constituents apart from Ag. |
| | *The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.* | Drillhole grades were initially visually compared with cell model grades. Domain drill hole and block model statistics were compared. Swath plots were then created to compare drillhole grades with block model grades for easting, northing and elevation slices throughout the deposit. The block model reflected the tenor of the grades in the drill hole samples both globally and locally. |
| *Moisture* | *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.* | Tonnages are estimated on a wet basis. |
| *Cut-off parameters* | *The basis of the adopted cut-off grade(s) or quality parameters applied.* | The Mineral Resource reported above a cut-off grade of 1% Zn for the fresh zones and 0.5 g/t Au for the oxide and transitional zones.<br>The Ag zone has been reported above a cut-off grade of 50 g/t Ag.<br>The adopted cut-off grades are considered reasonable for Mineral Resources which are likely to be extracted by open pit methods. |
| *Mining factors or assumptions* | *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.* | In selecting the cut-off grades, it was assumed that open pit mining methods would be applied at Mount Bonnie.<br>Some internal dilution exists within the interpreted mineralisation boundaries but this material was not modelled. Further drilling is required to ascertain if these zones are continuous and can therefore be selectively removed during mining. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| *Metallurgical factors or assumptions* | *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.* | A metallurgical test work programme is underway for the Mount Bonnie deposit. Work is being carried out to establish the optimal processing route.<br>A representative metallurgical composite sample was collected from diamond drill core collected from 2015 through 2016. Quarter core of mineralised sections of holes MBDH001, 002, 007, 008, 032, 033 and 034 were selected, bagged in 1 m intervals and sent to Nagrom Laboratories in Perth for compositing. BHM Process Consultants in conjunction with PNX established a metallurgical test work programme. The test work is still in progress, with final optimisation batch flotation testing and locked cycle testing to be completed.<br>Preliminary recovery results have been used to calculate metal equivalent grades. |
| *Environmental factors or assumptions* | *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.* | Environmental considerations have not yet been considered due to the early stage of this project. It is therefore assumed that waste could be disposed in accordance with a site-specific mine and rehabilitation plan. |
| *Bulk density* | *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* | Bulk density determinations adopted the water displacement method. |
| | *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.* | Both historical and recent core has been subject to density determinations. PNX have set up a specific gravity station at Brocks Creek for water immersion determinations. Porosity is generally not an issue with the determinations, at least below the limit of oxidation, although samples are soaked for at least 24 hours prior to measuring wet weights, or longer until they stop bubbling. |
| | *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.* | Density has been applied based on both mineralisation type and oxidation status. The following values were applied:<br>• Carbonate Zone Oxide 2.86 g/cm$^3$<br>• Carbonate Zone Transitional 2.90 g/cm$^3$<br>• Carbonate Zone Fresh 2.96 g/cm$^3$<br>• Massive Sulphide Oxide (gossan) 2.55 g/cm$^3$<br>• Massive Sulphide Transitional 3.00 g/cm$^3$<br>• Massive Sulphide Fresh 3.85 g/cm$^3$ |
| *Classification* | *The basis for the classification of the Mineral Resources into varying confidence categories.* | The Mineral Resource has been classified following due consideration of all criteria contained in Section 1, Section 2 and Section 3 of JORC 2012 Table 1. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | After considering the integrity of all input data, available QC results, data distribution, geological and grade continuity, areas of the deposit were classified as Inferred where geological continuity is good and the deposit has been drilled on a 50 m E by 50 m RL pattern (or denser). Areas of the deposit were classified as Indicated where geological continuity is good and the deposit has been drilled on a 25 m E by 25 m RL pattern (or denser).<br>Areas of the deposit within the oxide and transitional zone underneath the current Mount Bonnie pit were classified as Indicated even though the mineralisation is not tested by modern drilling. In this area, seven Q series holes completed by Geopeko were included in the database used to interpolate grades into the block model. Although analytical results from these holes are subject to greater uncertainty than the modern holes, the Competent Persons consider that trench sampling completed in the pit and visual inspection of the mineralisation increase confidence and justifies an Indicated classification. |
| | *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* | Appropriate account has been taken of all relevant criteria including data integrity, data quantity, geological continuity, and grade continuity. |
| | *Whether the result appropriately reflects the Competent Person's view of the deposit.* | The Mineral Resource estimate appropriately reflects the Competent Person's views of the deposit. |
| *Audits or reviews* | *The results of any audits or reviews of Mineral Resource estimates.* | The current model has not been audited by an independent third party but has been subject to CSA Global's internal peer review processes. |
| *Discussion of relative accuracy/ confidence* | *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* | The Mineral Resource accuracy is communicated through the classification assigned to this Mineral Resource.<br>The Mineral Resource estimate has been classified in accordance with the JORC Code, 2012 Edition using a qualitative approach. All factors that have been considered have been adequately communicated in Section 1 and Section 3 of this Table. |
| | *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* | The Mineral Resource statement relates to a global tonnage and grade estimate. Grade estimates have been made for each block in the block model. |
| | *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.* | No detailed production figures are available for Mount Bonnie. |