TODD RIVER RESOURCES

**ASX Announcement**
14 November 2017

# SIGNIFICANT HIGH-GRADE COPPER POTENTIAL OUTLINED AT McARTHUR RIVER PROJECT, NT

***Extensive copper anomalism within basal shale unit of the Wollogorang Formation with grades of up to 44.5% Cu from surface rock chips in the Southern Copper Area***

## HIGHLIGHTS

- **Rock chip samples taken during mapping in the Southern Copper Area at Todd River's McArthur River Project in the NT returned values of up to 44.5% Cu:**
  - **50% of the samples submitted returned copper values exceeding 0.5% Cu**
  - **Copper mineralisation in the basal shale of the Wollogorang Formation also has:**
    - **Silver (to 56.7 g/t Ag); and**
    - **Bismuth (to 2350 ppm Bi) multi-element association**
  - **Dolomite-hosted mineralisation has copper values of up to 6.3% Cu, 990ppm molybdenum, and 1300ppm arsenic**

- **Geological mapping has outlined the extent of the basal shale to the south and west, with over 6km of strike better defined. The prospective stratigraphy continues to the east, south and south-west under shallow cover.**

- **This work is assisting in the interpretation of the recent airborne EM survey data, which will be reported shortly, prior to planning a 2018 program.**

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Todd River Resources Limited (ASX: TRT) is pleased to advise that it has outlined an extensive and highly prospective copper target at its 100%-owned **McArthur River Project** in the Northern Territory with results from mapping and sampling identifying significant copper anomalism in the basal shale unit of the Wollogorang Formation, one of the main prospective geological units.

The McArthur River Project is located 450km south-east of Katherine, within the Mallapunyah, McArthur River and Kiana pastoral stations. Todd River has recently expanded its strategy land-holding in the area by pegging of two adjacent licenses, ELAs 31703 and 31704 (*see ASX announcement – 28 September 2017*), increasing the area to 584.32km$^2$.

The Company's exploration team is actively targeting the Wollogorang Formation, which contains both stratiform/stratabound copper (see *TNG ASX Announcement – 9 June 2015*) and zinc-lead-silver mineralisation.

Both the Wollogorang Formation and the Barney Creek Formation (which hosts the HYC McArthur River deposit and Teena discovery) were deposited in a near-shore rifted epicontinental basin environment under euxinic (sulphide-rich) conditions, and contain significant thicknesses of organic-rich sulphide-bearing shales. Work completed in 2016 extended the known anomalous stratigraphy on the tenements to a strike length of 25km (*see TNG ASX announcement – 14 July 2016*).

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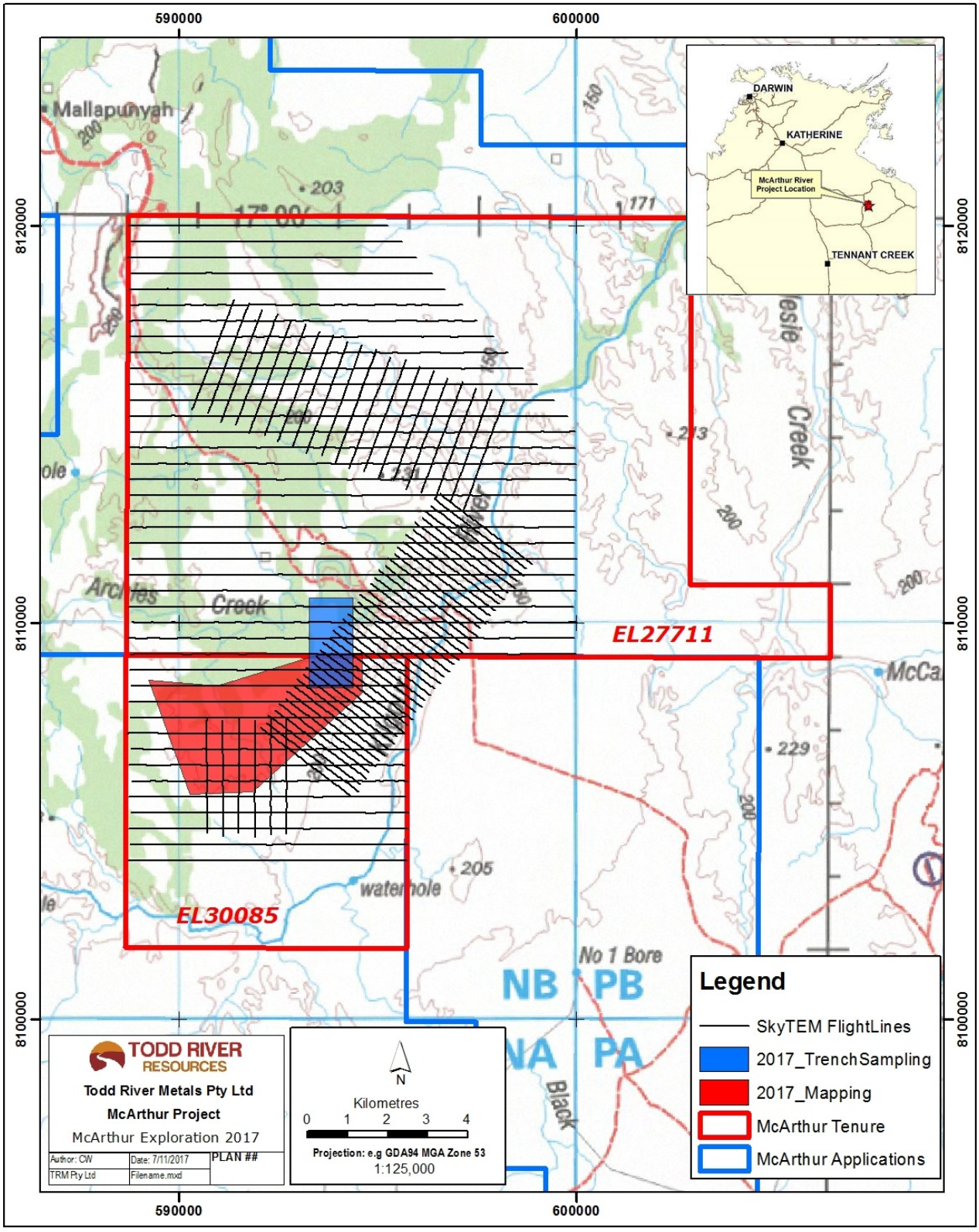


**Figure 1.** **Location of the McArthur River Project, showing the area mapped, the rock and trench sampling area, The SkyTEM survey area, and adjoining new tenure. Figure 3 below covers the area outlined in the blue rectangle.**

The location of TNG's McArthur River Project is shown on Figure 2 in relation to the Batten Fault Zone, Glencore's McArthur River zinc mine (60km to the north-east), and the recently outlined Teena Zn-Pb Mineral Resource. Teena is owned by Teck Australia and has an **Inferred Mineral Resource of 58Mt @ 12.7% Zn+Pb**, for a **contained 6.5 million tonnes of zinc** and 0.9Mt of lead (*see Rox Resources ASX Announcement – 1 June 2016*).

**Program of Work Completed**

Todd River completed a program of geological mapping and rock and channel sampling over the copper anomalous lower portion of the Wollogorang Formation stratigraphy on the southern side of the Mallapunyah Dome, during October.

Mapping and rock results are discussed in detail below.

***Geological Mapping***

Geological mapping following the Wollogorang Formation, and specifically the lowermost shale sub-unit (Pto1), was completed to the south and west of the trenching area (Figure 1). A

A total area of 11km$^2$ was mapped, with all units cropping out: basement Settlement Creek Dolerite, four mappable sub-units of the Wollogorang Formation, the Gold Creek Volcanics, and the ridge-forming Warramana Sandstone/Masterton Sandstone hangingwall sequence outlined.

The basal shale was followed to the south and west, with 6km of strike outlined. The unit dips to the south and east at very low angle (less than 15 degrees) over much of the southern part of the Mallapunyah Dome, making it a good geophysical target under shallow cover (<200m deep) for large parts of the tenement package.

Better definition of the Wollogorang Formation in the south of the Mallapunyah Dome area will assist in the ongoing assessment of the recently acquired (*see ASX announcement 14 August 2017*) SkyTEM data (Figure 1).

***Rock Chip Sampling***

A suite of 16 rock samples were submitted for analysis from within the mapping and trenching area, and significant results are shown on Figure 3.

Eight of the samples exceeded **0.5% Cu**, with **five samples with above 20% Cu**, and a **maximum value of 44.5% Cu.**

All anomalous samples have visible malachite, minor chrysocolla and, rarely, chalcocite copper species present, indicating that all are supergene copper carbonate accumulations.

The Pto1 basal shale samples have a **Cu-Ag-Bi multi-element association**, with highest results for each element being: **56.7 g/t Ag, and 2350 ppm Bi**.

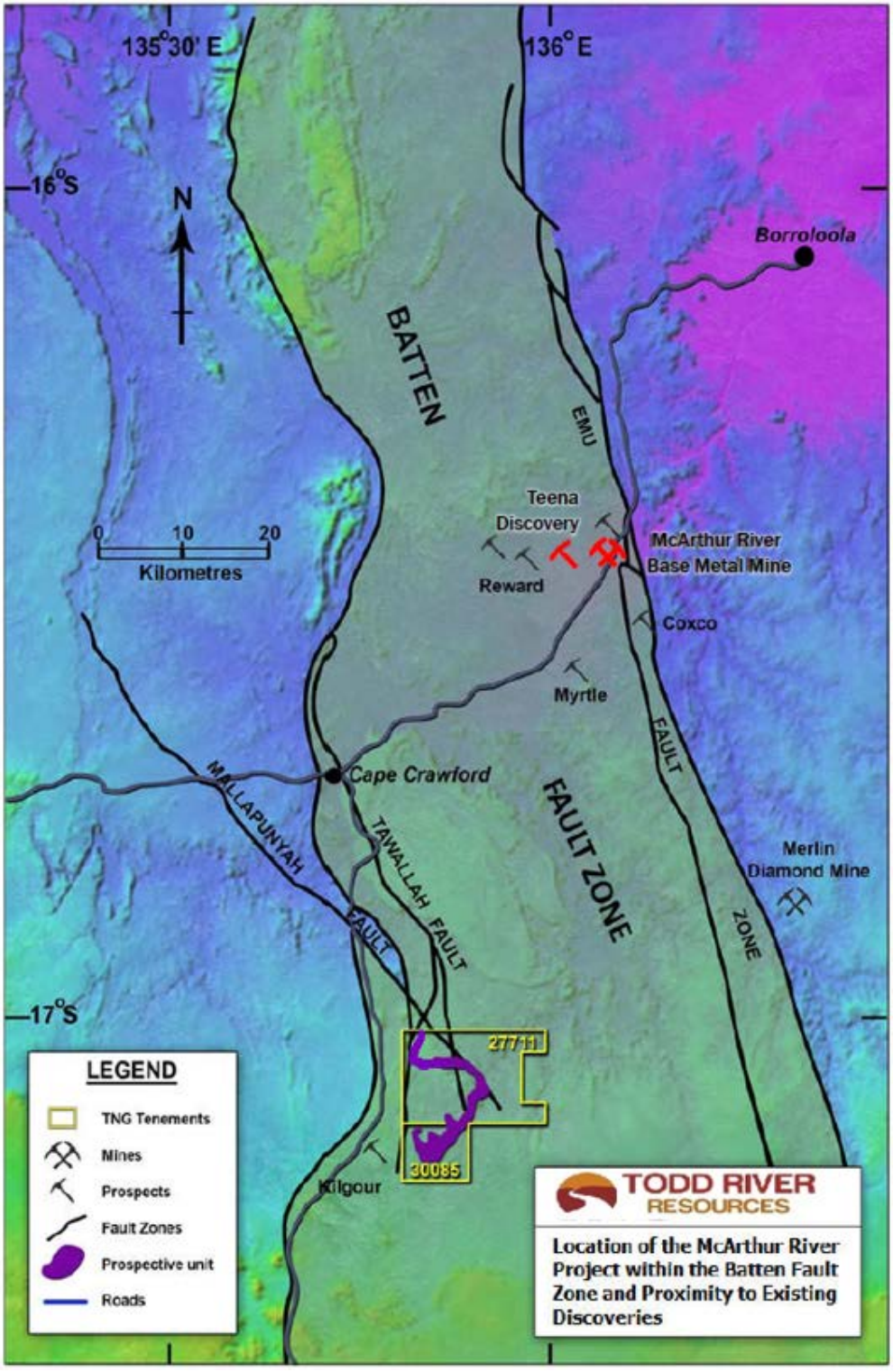


**Figure 2.** **Location of the McArthur River tenure in relation to the prospective stratigraphy, significant regional faults within the Batten Fault Zone, the HYC McArthur River zinc mine, and the Teena Mineral Resource area.**

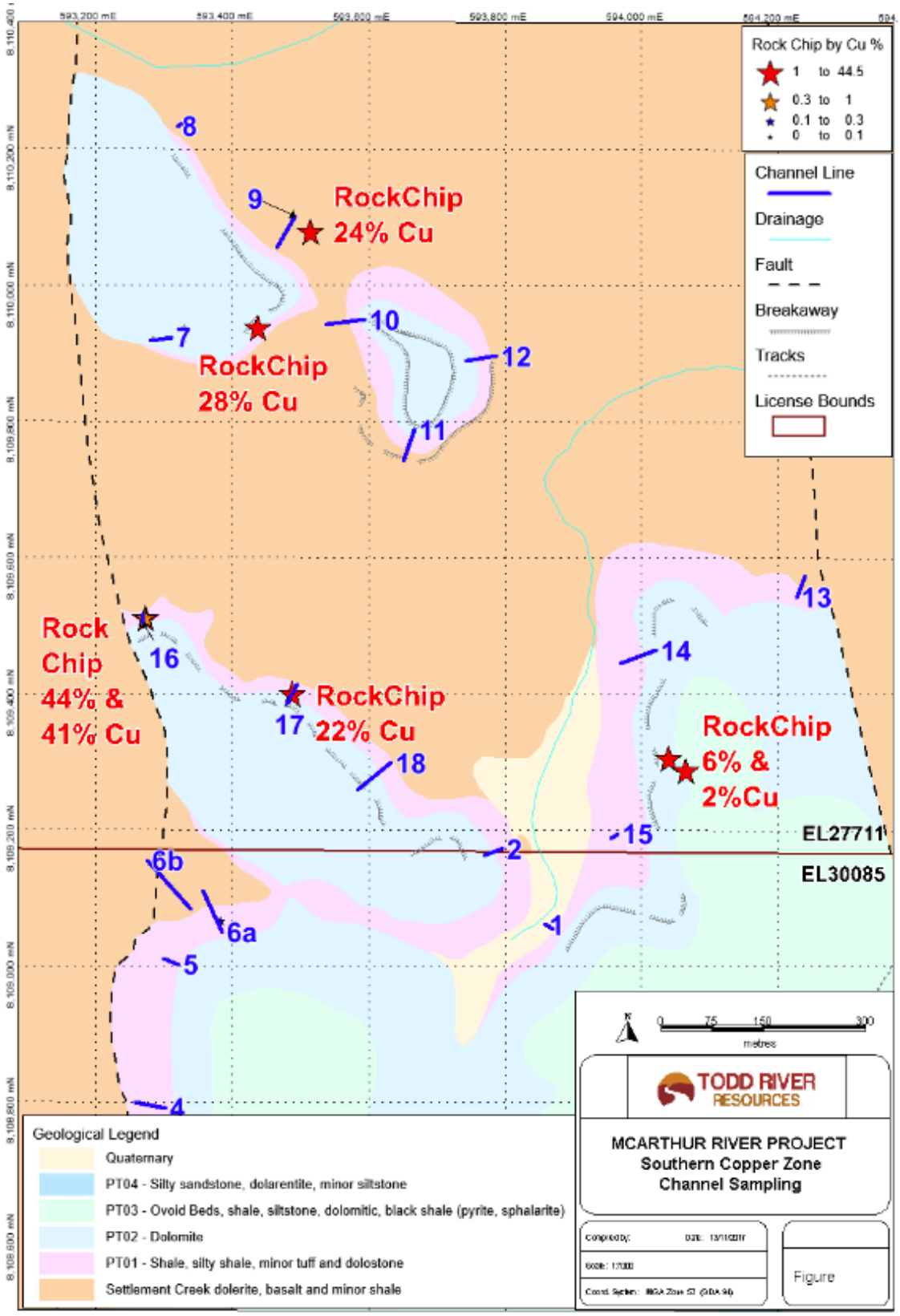


**Figure 3.** **Copper zone geological map showing rock sampling locations, trench locations and rock chip copper results. Map area shown on Figure 1.**

The overlying calcareous unit samples with anomalous copper have a **Cu-As-Mo-Sb-Zn-Pb multi-element association**, with maximum values of:

**6.3% Cu and 1300 ppm As;**
**990 ppm Mo and 80 ppm Sb; and**
**1465ppm Zn and 569ppm Pb.**

***Trench Sampling***

A total of 18 trenches were sampled (Figure 3), with the area based on mapping completed in 2015 (*see TNG ASX Announcement - 9 June 2015*) where rock chip sampling results of up to 48% copper were returned in the lowermost shale unit of the Wollogorang Formation (Pto1).

This mapping outlined an area of 1.6 x 1.0km where there were numerous exposures of the Pto1 unit, due to the shallow dipping stratigraphy and breakaways forming in the overlying dolomite (Pto2 unit). The intent was to quantify the thickness and magnitude (grade) of the copper in the basal shale in the area where it was known to be both anomalous and broadly exposed.

A total of 218 channel samples were submitted for ICP base metal analysis. Results are being assessed, and will be reported separately.

**Discussion**

The significant rock chip anomalous results are distributed over an area of 800m x 800m and encompass the previous anomalous results (*see TNG ASX announcement – 16 February 2015*).

This area has been patchily distributed, but very high-grade supergene carbonate copper associated with a specific portion of the stratigraphy – stratabound and stratiform copper mineralisation.

The significant copper values recorded in the rock chip sampling highlight the potential of this horizon in the lowermost Wollogorang Formation. Ongoing assessment of the trench sampling and geophysical survey data will determine if this unit has potential economic grade and thickness to warrant drill testing, either in the near-surface or at depth in the SkyTEM data.

**Next Steps**

- The results of channel sampling will be reported shortly.
- The geological mapping work outlined above will be useful to assist in the geological interpretation and assessment of the recently acquired airborne EM data, which will also be reported shortly.
- A program of work for the 2018 season will be based on this work and the assessment of the geophysics.

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**14 November 2017**

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Competent Person Statement

The information in this report that relates to Exploration Results is based on, and fairly represents, information and supporting documentation compiled by Exploration Manager Mr Kim Grey B.Sc. and M. Econ. Geol. Mr Grey is a member of the Australian Institute of Geoscientists, and an employee of Todd River Resources Limited. Mr Grey has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Grey consents to the inclusion in the report of the matters based on his information in the form and context in which it appear.

Forward-Looking Statements

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## Appendix A - JORC Table One - Sampling Techniques and Data

### McArthur River – Mapping and Rock Chip Sampling

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Sampling techniques | Nature and quality of sampling (eg 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.<br>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.<br>Aspects of the determination of mineralisation that are Material to the Public Report. | Trenches were cut with shovel and pick to 20-50cm deep on outcropping shale or residual soil/thin scree slopes to expose weathered shale. Sampling was by continuous channel samples collecting 2-4kg of rock from 2m to 5m long samples on trench lines of up to 70m long. Sample sites were determined by GPS position.<br>1-4kg Rock Chip samples were taken.<br>No sample preparation was conducted.<br>All samples submitted to ALS with industry standard crushing and pulverisation (>90% <75um). |
| Drilling techniques | Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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). | Not relevant |
| Drill sample recovery | Method of recording and assessing core and chip sample recoveries and results assessed.<br>Measures taken to maximise sample recovery and ensure representative nature of the samples.<br>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. | Not relevant |
| 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.<br>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.<br>The total length and percentage of the relevant intersections logged. | Rock samples had a full geological description recorded. All logging was qualitative. |
| Sub-sampling techniques and sample preparation | If core, whether cut or sawn and whether quarter, half or all core taken.<br>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.<br>For all sample types, the nature, quality and appropriateness of the sample preparation technique.<br>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.<br>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.<br>Whether sample sizes are appropriate to the grain size of the material being sampled. | Sample preparation included the complete sample being crushed and pulverized (>90% <75 microns) prior to any sub-sampling.<br>Sample preparation is “industry standard” and appropriate for the sample medium.<br><br>No sub sampling was conducted.<br>No field duplicate readings were taken.<br>Standard samples (Certified for base metals) and Blank samples were inserted into all sample batches. Results were acceptable. |
| 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.<br>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.<br>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established. | Samples have been analyzed at ALS laboratory Perth by method ME-ICP61a – with a four acid digest which is considered a near total digest for most silicate matrices.<br>QC procedures included: the use of certified standards and blank material within the pXRF sampling procedure, and the insertion of certified standards into the laboratory sample sequence at a rate of 1 in 25.<br>Base metal certified standards GBM399-7, |

| | | |
|---|---|---|
| | | GBM399-2, GBM908-10, and Blank GLG312-2 were used. Results were acceptable.<br>No calibration factors have been applied. |
| Verification of sampling and assaying | The verification of significant intersections by either independent or alternative company personnel.<br>The use of twinned holes.<br>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.<br>Discuss any adjustment to assay data. | Sampling was conducted by the field geologists and field assistants, under the supervision of the exploration manager.<br>All data was entered into standardized spreadsheets on field laptops and uploaded into the company Access database.<br>No adjustments have been made to the primary assay data |
| Locations of data points | Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.<br>Specification of the grid system used.<br>Quality and adequacy of topographic control. | All sampling locations were located up using a standard GPS unit to an accuracy of ca. 3-5m for Easting, Northing and RL.<br>All coordinate data for the McArthur River project are in MGA_GDA94 Zone 53. |
| Data spacing and distribution | Data spacing for reporting of Exploration Results.<br>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.<br>Whether sample compositing has been applied. | Sampling was of an exploratory and reconnaissance nature and spacings are insufficient to establish continuity or define Mineral Resources. |
| 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.<br>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. | Rock chip samples were point sampled and so do not relate to the orientation of the mineralisation noted.<br>Trench sampling included mapping of the surrounding stratigraphy and dips and so all trench areas have measured true thicknesses reported. Trenches were oriented to provide sampling as perpendicular to the stratigraphy as outcrop allowed. |
| Sample security | The measures taken to ensure sample security. | All samples were under company supervision at all times prior to delivering to ALS laboratories in Alice Springs. |
| Audits or reviews | The results of any audits or reviews of sampling techniques and data. | No sampling audits have been conducted at the McArthur River project to date. |

## Section 2 Reporting of Exploration Results

| 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.<br>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. | The McArthur River project is located on tenements EL 27711 and 30085, held 100% by Todd River Metals Pty Ltd, which is a wholly-owned subsidiary of Todd River Resources Limited.<br>The tenement is in good standing with no know impediments. |
| Exploration done by other parties | Acknowledgment and appraisal of exploration by other parties. | The most significant previous work looking for base metals in the area was completed in the late 1960's by AGPL and is available on NTGS open file.<br>Work from 2011 to 2016 by TNG is outlined in the Todd River Resources Prospectus. |
| Geology | Deposit type, geological setting and style of mineralisation. | The main target for this project is Zn-Pb-Cu-Ag mineralisation of a similar style to that found at the McArthur River Mine, some 60km NNE of the project location. |
| 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>o Easting and northing of the drill collar<br>o Elevation of RL (Reduced Level – elevation above sea level in metres) of the drill collar | Not relevant |

| | | |
|---|---|---|
| | o Dip and azimuth of the hole<br>o Down hole length and interception depth<br>o Hole length | |
| Data aggregation methods | In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.<br>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.<br>The assumptions used for any reporting of metal equivalent values should be clearly stated. | No aggregation or averaging was conducted on the data reported here. |
| Relationship between mineralisation widths and intercept lengths | These relationships are particularly important in the reporting of Exploration Results.<br>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.<br>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known'). | Trench sampling has reported calculated true widths. |
| 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 drill hole collar locations and appropriate sectional views. | See Figures 1, and 3. |
| 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. | Rock and trench results are shown on Figure 3.<br>See Appendix B for full assay listings of the rock chip and trench data. |
| 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 characteristics; potential deleterious or contaminating substances. | No substantial new information is available other than that reported above. |
| Further work | The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).<br>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. | Geophysical assessment is continuing and will be reported shortly, prior to planning a program for the 2018 field season. |

# Appendix B – Sample Results
## Rock Chip Sample Data

| Sample_ID | Easting | Northing | Stratigraphy | Ag_ppm | As_ppm | Bi_ppm |
|---|---|---|---|---|---|---|
| **MC17302** | 593382 | 8109066 | Pto1 | -0.5 | 8 | -2 |
| **MC17303** | 593330 | 8109939 | Pto2 | -0.5 | -5 | -2 |
| **MC17304** | 593285 | 8109922 | Pto2 | -0.5 | -5 | -2 |
| **MC17305** | 593330 | 8109919 | Pto2 | -0.5 | -5 | -2 |
| **MC17306** | 593285 | 8109922 | Pto2 | -0.5 | -5 | -2 |
| **MC17307** | 593437 | 8109938 | Pto1 | 11.6 | 33 | 1300 |
| **MC17308** | 593514 | 8110079 | Pto1 | 36.4 | 45 | 82 |
| **MC17309** | 594040 | 8109306 | Pto2 | 12.8 | 1125 | -2 |
| **MC17310** | 594064 | 8109288 | Pto2 | 4.2 | 1300 | 18 |
| **MC17311** | 593273 | 8109511 | Pto1 | 45.9 | 47 | 2350 |
| **MC17312** | 593273 | 8109511 | Pto1 | 46.6 | 27 | 2300 |
| **MC17313** | 593273 | 8109511 | Pto2 | 0.6 | 46 | 46 |
| **MC17314** | 593488 | 8109400 | Pto1 | 56.7 | 8 | 631 |

| Sample_ID | Ca_% | Cu_ppm | Cu_% | Fe_% | Mg_% | Mo_ppm |
|---|---|---|---|---|---|---|
| **MC17302** | 14 | 1150 | 0.115% | 1.65 | 3.65 | 1 |
| **MC17303** | 5.96 | 45 | 0.005% | 1.05 | 2.85 | -1 |
| **MC17304** | 18.3 | 32 | 0.003% | 0.22 | 14.55 | -1 |
| **MC17305** | 11.4 | 103 | 0.010% | 4.08 | 5.51 | 2 |
| **MC17306** | 13.8 | 101 | 0.010% | 1.99 | 6.53 | 1 |
| **MC17307** | 0.73 | 281000 | 28.1% | 22.4 | 0.39 | 7 |
| **MC17308** | 0.26 | 241000 | 24.1% | 1.93 | 0.73 | 81 |
| **MC17309** | 27.7 | 23800 | 2.4% | 4.65 | 0.39 | 990 |
| **MC17310** | 19.6 | 63200 | 6.3% | 9.24 | 0.35 | 680 |
| **MC17311** | 0.61 | 445000 | 44.5% | 5.01 | 0.27 | 18 |
| **MC17312** | 2.07 | 411000 | 41.1% | 4.29 | 0.68 | 8 |
| **MC17313** | 6.27 | 7510 | 0.751% | 3.74 | 1.91 | 5 |
| **MC17314** | 1.37 | 223000 | 22.3% | 4.7 | 0.82 | 6 |

| Sample_ID | Pb_ppm | S_% | Sb_ppm | Zn_ppm | Cu_% | Au_ppm |
|---|---|---|---|---|---|---|
| **MC17302** | 9 | 0.12 | -5 | 32 | | 0.008 |
| **MC17303** | 3 | 0.12 | -5 | 9 | | 0.002 |
| **MC17304** | 4 | 0.04 | -5 | 6 | | 0.007 |
| **MC17305** | 21 | 0.04 | -5 | 18 | | 0.002 |
| **MC17306** | 7 | 0.05 | -5 | 15 | | 0.001 |
| **MC17307** | 101 | 1.84 | -5 | 11 | 28.1 | 0.112 |
| **MC17308** | 72 | 0.58 | -5 | 9 | 24.1 | 0.484 |
| **MC17309** | 569 | 0.02 | 80 | 850 | 2.38 | 0.004 |
| **MC17310** | 331 | 0.03 | 41 | 1465 | 6.32 | 0.005 |
| **MC17311** | 29 | 1.24 | -5 | 24 | 44.5 | 0.061 |
| **MC17312** | 30 | 1.44 | -5 | 24 | 41.1 | 0.052 |
| **MC17313** | 26 | 0.25 | -5 | 13 | | 0.002 |
| **MC17314** | 27 | 0.88 | -5 | 12 | 22.3 | 0.047 |