

## **ADDITIONAL BRECCIATED SULPHIDE ZONE INTERSECTED AT MOUNT HARDY COPPER-ZINC PROJECT, NT**

***Further interval of significant base metal sulphide mineralisation ~50m up-dip of the recent thick high-grade intercept – further consolidating the emerging discovery***

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### **Highlights:**

- **Diamond hole 18MHDDH0037, drilled 50m south of recently reported discovery hole 18MHRCDH031A intersects 4m of brecciated sulphide from 135m down-hole with portable XRF (pXRF) analysis indicating base metal mineralisation.**
- **The new intersection, which is up-dip of the intercept in 18MHRCDH031A (25.15m @ 2.4% Cu, 4.0% Zn, 3.1% Pb including 9.15m @ 4.5% Cu, 7.6% Pb, 8.8% Zn), includes chalcopyrite, sphalerite and galena within a silica breccia.**
- **Drilling is continuing to test for further sulphide mineralisation both down-dip and along strike, with down-hole geophysics to commence**

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Todd River Resources Limited (ASX: TRT; “Todd River” or “the Company”) is pleased to advise that ongoing diamond drilling at its 100%-owned **Mt Hardy Copper-Zinc Project** in the Northern Territory (Figure 1) has intersected additional massive sulphides at the EM1 geophysical target.

Recently completed diamond hole 18MHDDH037, which was drilled 50m south of the discovery hole 18MHRCDH031A (see ASX announcement 20 June), has intersected a 4m interval of brecciated sulphides approximately 50m up-dip of the intercept in hole 031A (Figure 2).

The new sulphide intersection comprises chalcopyrite, galena and sphalerite with minor pyrrhotite and silica. Portable XRF scanning of the core indicates the presence of significant base metal mineralisation in the core, and samples will be submitted for laboratory analysis.

Commenting on this additional drilling, Todd River CEO Will Dix said:

*“This is another very encouraging development which has extended the sulphide zone approximately 50m up-dip to the south of the original hole. This shows that our exploration model for Mt Hardy is robust and confirms that the mineralisation remains open in a number of directions. We will continue to step-out from the intersection in the discovery hole 31A, both along strike and down-dip, and see where the drilling and geophysics takes us.*

*“We will model each drill hole as we go to build up our knowledge of the geometry of the sulphide zone, which will assist with the planning process for ongoing drilling. We are also planning to add to our exploration team next week to allow us to keep drilling at Mt Hardy while also progressing our other projects.”*



Figure 1 – Mt Hardy Project showing the location of drill target areas EM1 and EM2.

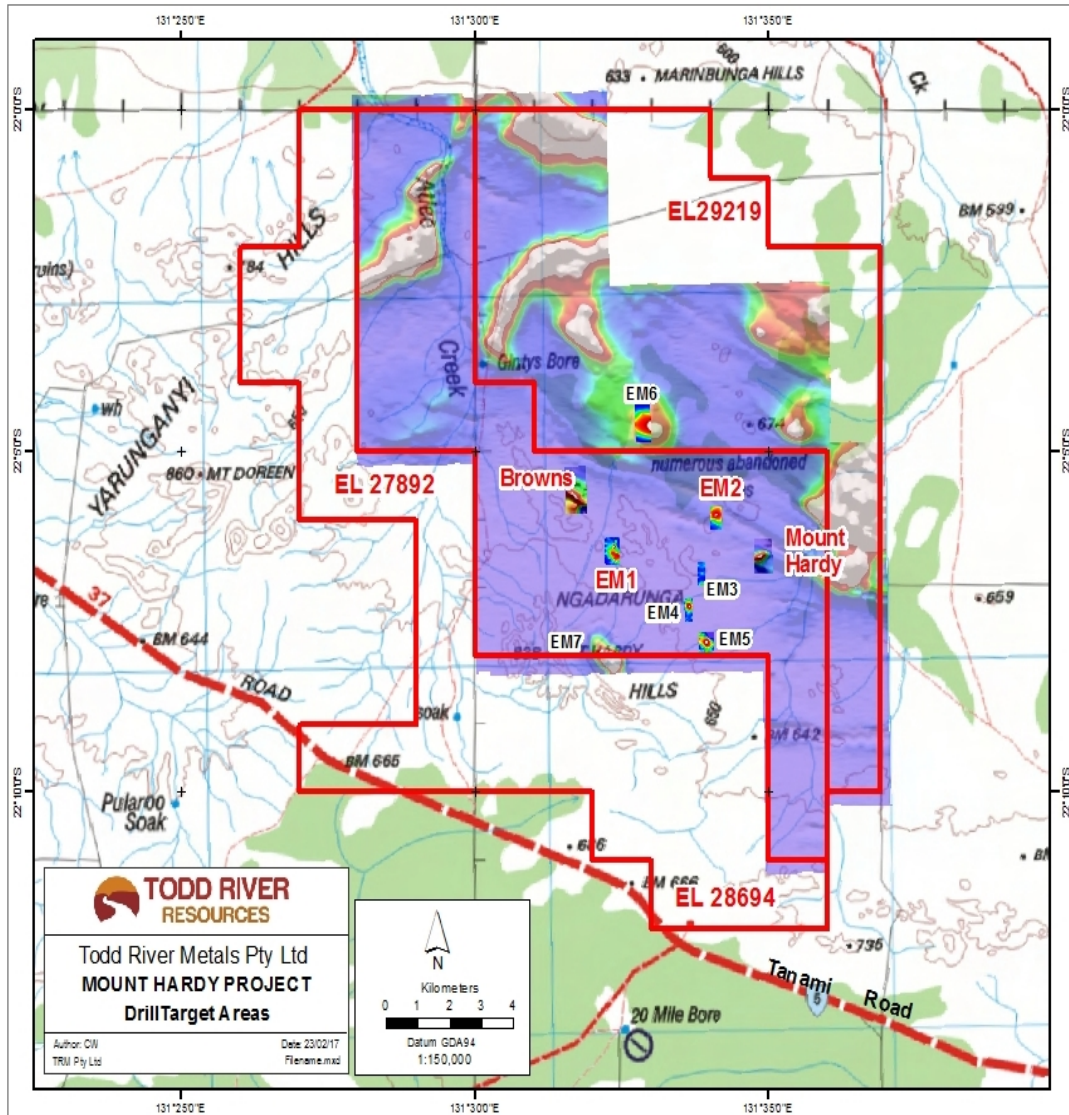


Table 1 – Collar information of the completed holes at Mt Hardy

HOLE_ID	Prospect	EASTING (GDA94Z52)	NORTHING (GDA94Z52)	AHD (m ASL)	DEPTH (m)	DIP	AZIMUTH (True)
18MHRCDDH030	EM1	761940	7552963	638	245.9	-47	105
18MHRCDDH031A	EM1	761930	7552912	633	261.4	-47	98
18MHRCDDH032	EM1	761925	7552998	635	315.2	-62	90
18MHRCDDH033	EM2	764996	7554079	636	420.1	-65	115
18MHRCDDH034	EM1	761922	7552913	634	252.6	-58	90
18MHDDH035	EM1	761944	7552867	634	227.8	-48	80
18MHDDH037	EM1	761956	7552837	637	188.9	-47	64



### Portable XRF readings for 18MHDDH037

The following interval is reported based on averaging 9 portable XRF (pXRF) readings taken systematically at 0.5m intervals through the mineralised zone. Analyses were taken on an Olympus Delta Pro unit on GEOCHEM mode with a 60 second read time.

Standards and Blank samples were used to calibrate the results. Details of the sampling is outlined in Appendix A, and all pXRF results used in the below composite interval are listed in Table 2 below.

<b>HOLE ID</b>	<b>FROM</b>	<b>TO</b>	<b>INTERVAL</b>	<b>Cu%</b>	<b>Pb%</b>	<b>Zn%</b>	<b>Combined BM%</b>
<b>18MHDDH037</b>	<b>135.0</b>	<b>139.0</b>	<b>4m</b>	<b>0.7%</b>	<b>1.1%</b>	<b>4.7%</b>	<b>6.5% BM</b>

Based on averaging nine pXRF readings

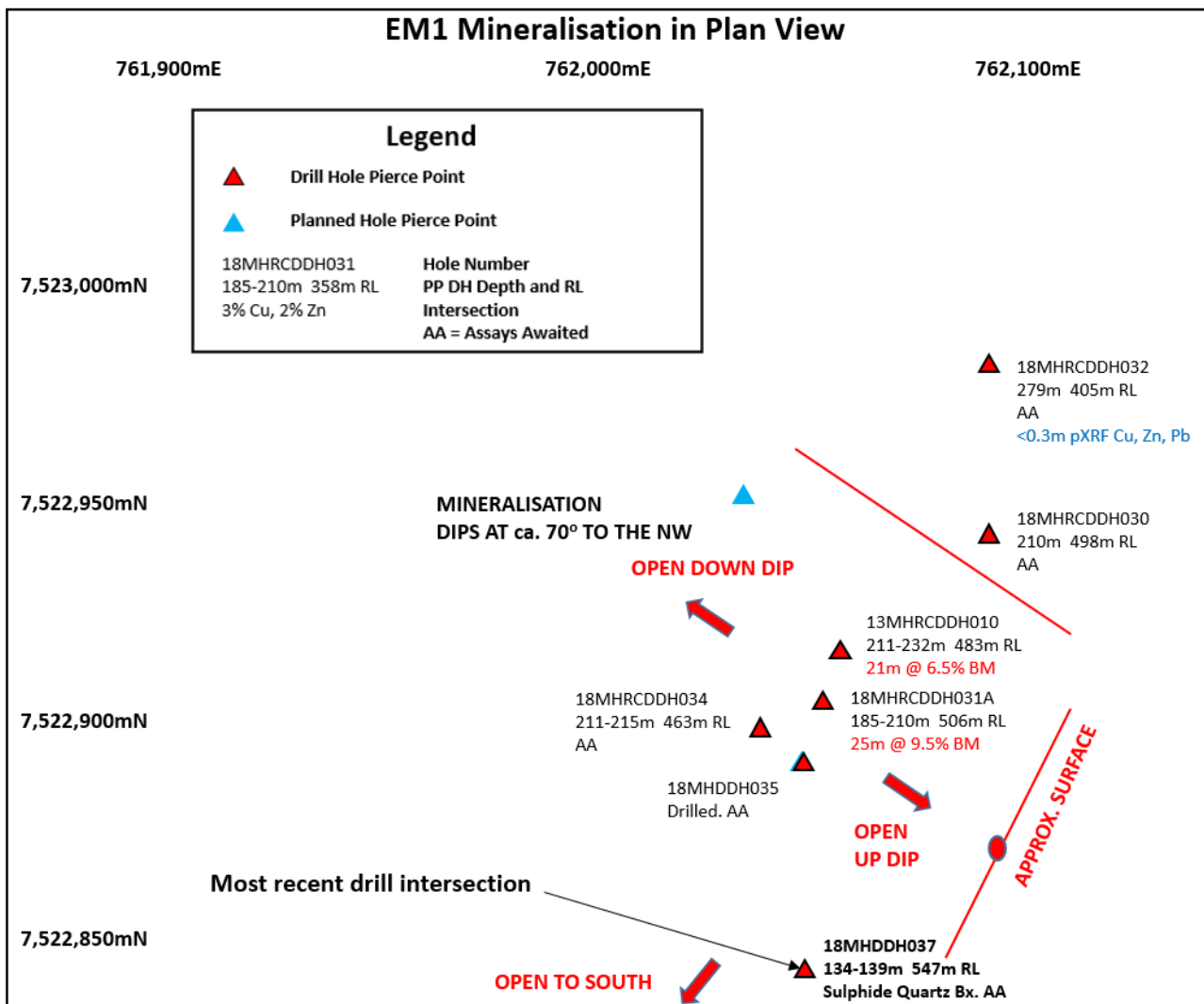
As indicated above, the mineralisation averages around 6% combined base metals (Cu+Pb+Zn) over a 4.0 metre interval, with values of up to 11% zinc, 5% lead and 2.8% copper indicating significant sphalerite, galena, and chalcopyrite.

**Table 2 – Listing of all portable XRF results taken through the mineralised interval in hole 18MHDDH037, with copper zinc and lead results.**

Hole ID	DEPTH	Cu	Zn	Pb	SumBM
		(ppm)	(ppm)	(ppm)	(%)
18MHDDH037	132.5	0	120	56	0.02%
18MHDDH037	133.0	0	69	116	0.02%
18MHDDH037	133.5	0	59	87	0.01%
18MHDDH037	134.0	66	322	164	0.06%
18MHDDH037	134.5	81	185	86	0.04%
18MHDDH037	135.0	28012	42001	1100	7.11%
18MHDDH037	135.5	57	497	316	0.09%
18MHDDH037	136.0	0	135	119	0.03%
18MHDDH037	136.5	2749	87120	2740	9.26%
18MHDDH037	137.0	63	205	991	0.13%
18MHDDH037	137.5	18674	117765	20587	15.70%
18MHDDH037	138.0	1687	97110	50353	14.92%
18MHDDH037	138.5	13498	78623	20656	11.28%
18MHDDH037	139.0	2538	3154	4484	1.02%
18MHDDH037	139.5	0	64	77	0.01%
18MHDDH037	140.0	0	142	66	0.02%
18MHDDH037	140.5	0	84	37	0.01%
18MHDDH037	141.0	0	63	52	0.01%
18MHDDH037	141.5	0	81	58	0.01%
18MHDDH037	142.0	0	77	48	0.01%
18MHDDH037	124.0	0	38	10	0.00%
18MHDDH037	124.0	0	384	80	0.05%



Figure 2 – Plan view of part of the EM1 area, covering the mineralisation in holes 010 031A and the new intersection 037 showing the high-grade zone is open to the south and both up- and down-dip.





## **Will Dix, CEO – Todd River Resources**

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## **Competent Person Statements**

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.

## **About Todd River Resources**

Todd River Resources (ASX: TRT) is an Australian-based resources company that holds a large, highly prospective zinc and base metals exploration portfolio in the Northern Territory. The Company was formerly a subsidiary of ASX-listed strategic metals company TNG Ltd (ASX: TNG), and was spun-out of TNG in 2016 to advance and develop TNG's significant portfolio of non-core base metals assets.

With a strong management team and tight capital position, Todd River is well placed to pursue exploration activities across its exploration portfolio, which are aimed at establishing the Company as a leading force in Australian zinc exploration and development.

Todd River's extensive base metal portfolio includes the large Manbarrum Zinc Project, the Mount Hardy Copper-Zinc Project, the Stokes Yard Zinc Project and the McArthur Copper-Zinc project, as well as a number of other exploration projects covering base metals and other commodities.



## Appendix A JORC Table One – Section One. Sampling Techniques and Data

### Mount Hardy Drilling – Reverse Circulation and Diamond Drilling – Visual and pXRF Results

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. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report.	Reverse Circulation (RC) drill samples were taken from the rotary splitter mounted on the rig cyclone. Diamond drill samples were half core cut and sampled on 1m intervals. All samples from 2018 drilling have been submitted to Genalysis/Intertek Laboratories for industry standard preparation (whole sample crushed to >85% <75um) and analysis by both ICP for base metals and Fire Assay for precious metals. Portable XRF results reported here are taken from whole core analyses at 0.5m intervals.
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).	Reverse Circulation (RC) drilling of pre-collars with NQ sized diamond drill tails. Most intervals has been oriented, except where broken ground in encountered.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. 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.	Average of >90% recovery in all intervals. No issues of fines loss were observed. No issues relating to preferential loss/gain of grade material have been noted.
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. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged.	RC chips and core was geologically logged for lithology, mineralogy, colour, weathering, alteration, structure and mineralisation. All holes were logged in full.
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. 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. Whether sample sizes are appropriate to the grain size of the material being sampled.	Portable XRF analyses reported here are taken with CRM Standard samples and Blanks samples inserted into the sequence at 1 in 25 and 1 in 50 samples respectively. Results reported here are averages of multiple pXRF analyses to give a reasonable representative result.  All RC holes were sampled from the rotating splitter under the drill cyclone, taking a 2-4kg split from the bulk 15-25kg 1m interval. All sampled core was sawn and half core submitted. The sample preparation for all samples follows industry best practice, with oven drying of samples prior to coarse crushing and pulverization (to >85% passing 75 microns) of the entire sample Field duplicates have been taken every 50 <sup>th</sup> sample. Further sampling (second half, lab umpire assay) will be conducted if it is considered necessary. The sample size (2-5 kg) is considered to be adequate for the material and grainsize being



		sampled and the style of mineralisation being drilled
Quality of assay data and laboratory tests	<p>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</p> <p>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. 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.</p>	<p>Portable XRF results reported here are taken with an Olympus Delta Pro unit (2014) with a 60 second read time (30 seconds beam 1 and 30 seconds beam 2) in GEOCHEM mode.</p> <p>Three certified base metal standards and a certified blank sample were analysed during pXRF sampling, at a rate of 1 in 25 samples. Standards were GBM399-7, GBM399-2, and GBM908-10 – low, medium and high grade for base metal respectively. Blank GLG312-2 was used. pXRF results for the standards and the blank were acceptable, and no calibration factors have been applied.</p> <p>All samples are to be analysed at Genalysis Intertek by ICP technique, lab codes 4A/OE33 and FA25/OE04. The four acid digest for the ICP data is considered a "total" result. Base metal standards and Blanks were inserted into the laboratory batch, results are awaited.</p> <p>Given the above QA/QC work the pXRF soil data is considered to be a total result for the base metals reported (Cu, Pb, Zn), and to have acceptable levels of accuracy and precision.</p>
Verification of sampling and assaying	<p>The verification of significant intersections by either independent or alternative company personnel.</p> <p>The use of twinned holes.</p> <p>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.</p>	<p>Sampling was conducted by the field geologist and verified by the Exploration Manager on site prior to cutting/dispatch.</p> <p>All data was entered into standardized spreadsheets on field laptops and uploaded into the company database.</p> <p>No adjustments have been made to the primary assay data</p>
Locations of data points	<p>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.</p> <p>Specification of the grid system used.</p> <p>Quality and adequacy of topographic control.</p>	<p>All drilling collars were located up using a standard GPS unit with accuracy of ca. 5m for Easting, Northing and RL</p> <p>All coordinate data for the Mount Hardy project are in MGA_GDA94 Zone 52.</p>
Data spacing and distribution	<p>Data spacing for reporting of Exploration Results.</p> <p>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.</p> <p>Whether sample compositing has been applied.</p>	<p>At this early stage of exploration hole spacings vary as dictated by target size and position.</p> <p>No compositing has been applied to the exploration results.</p> <p>Sampling was of an exploratory and reconnaissance nature and spacings are insufficient to establish continuity or define Resources.</p>
Orientation of data in relation to geological structure	<p>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</p> <p>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.</p>	<p>Drilling intersections at Mount Hardy vary in the relationship to the mineralisation orientation. All holes were designed to give the best possible (as close to perpendicular) intersection, however most drilled prospects only have a few holes and so the orientation is not well defined. In practise the intersections are at worst oriented at 45 degrees to the plane of the mineralisation (when it is known).</p>
Sample security	<p>The measures taken to ensure sample security.</p>	<p>All core and samples were under company supervision at all times prior to delivering to Genalysis/Intertek laboratories in Alice Springs</p>



Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No sampling audits have been conducted at Mount Hardy
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## 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. 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 Mount Hardy prospects are located on tenements EL 27892, EL 29219 held by Todd River Metals Pty Ltd, which is wholly-owned River Resources Limited. All tenements are in good standing with no known impediments
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	Between 2012 and 2016 significant work was conducted by TNG Limited, and has been reported to the ASX in several ASX Releases (Mentioned in the text). In 2017 Todd River completed one drilling program and has reported results in several ASX releases (such as
Geology	Deposit type, geological setting and style of mineralisation.	Exploration at Mount Hardy conducted by Todd River Resources has aimed to identify structurally controlled base metal mineralisation, similar to that already outlined at Mount Hardy and elsewhere in the Arunta at Jervois or Barrow Creek. Both areas are underlain by the Paleoproterozoic Lander Rock Beds schists and gneisses and have been intruded by Mesoproterozoic granites and are cut by major shear zones.
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: <ul style="list-style-type: none"> <li>o Easting and northing of the drill collar</li> <li>o Elevation of RL (Reduced Level – elevation above sea level in metres) of the drill collar</li> <li>o Dip and azimuth of the hole</li> <li>o Down hole length and interception depth</li> <li>o Hole length</li> </ul>	Three holes have been completed to date in 2018 at Mount Hardy. Hole location details are shown in Table 1. Interval and grade values reported here have been determined from averages of multiple portable XRF results and so approach a representative result. Laboratory analyses will be reported as available.
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. 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. The assumptions used for any reporting of metal equivalent values should be clearly stated.	No grade results are reported here. No maximum or minimum cuts applied.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. 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').	Orientation not well defined. Expected true thickness ca. 60-80% of drill/intercept interval.
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.	Detailed diagrams and sectional views of the mineralisation will await final laboratory results ASX release in late June - July 2018.
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.	Portable XRF results are reported here. ALL data used is included in Appendix B.





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). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Samples from the EM2 drilling have been submitted for analysis and will be reported when available. Drilling will continue at EM1 at Mount Hardy over the coming few weeks, with sample submission and analytical results reported as available.



**Appendix B**  
**Portable XRF Sample Results**

Hole ID	DEPTH	Cu (ppm)	Zn (ppm)	Pb (ppm)	Combined BM (%)
18MHRCDDH031A	180.5	0	64	75	0.01%
18MHRCDDH031A	181.5	0	57	30	0.01%
18MHRCDDH031A	183.5	0	40	23	0.01%
18MHRCDDH031A	184.0	0	64	31	0.01%
18MHRCDDH031A	184.5	0	66	31	0.01%
18MHRCDDH031A	185.0	0	108	37	0.01%
18MHRCDDH031A	185.5	59361	12633	5687	7.8%
18MHRCDDH031A	186.0	26611	111234	17758	15.6%
18MHRCDDH031A	186.5	3280	2304	12511	1.8%
18MHRCDDH031A	187.0	9627	407	99	1.0%
18MHRCDDH031A	187.5	50865	1660	176	5.3%
18MHRCDDH031A	188.0	5865	679	512	0.71%
18MHRCDDH031A	188.5	4315	260	371	0.49%
18MHRCDDH031A	189.0	644	120	288	0.11%
18MHRCDDH031A	189.5	0	39	140	0.02%
18MHRCDDH031A	190.0	557	204	70	0.08%
18MHRCDDH031A	190.5	0	19	57	0.01%
18MHRCDDH031A	191.0	0	47	429	0.05%
18MHRCDDH031A	191.5	1502	2089	2343	0.59%
18MHRCDDH031A	192.0	11988	10500	1548	2.4%
18MHRCDDH031A	192.5	7545	256	72	0.8%
18MHRCDDH031A	193.0	12390	11580	2438	2.6%
18MHRCDDH031A	193.5	227	1484	654	0.2%
18MHRCDDH031A	194.0	990	44201	1653	4.7%
18MHRCDDH031A	194.5	360	4707	6225	1.1%
18MHRCDDH031A	195.0	0	206	81	0.03%



Hole ID	DEPTH	Cu (ppm)	Zn (ppm)	Pb (ppm)	Combined BM (%)
18MHRCDDH031A	195.5	123	68	26	0.02%
18MHRCDDH031A	196.0	585	52	39	0.07%
18MHRCDDH031A	196.5	0	94	19	0.01%
18MHRCDDH031A	197.0	251	85	27	0.04%
18MHRCDDH031A	197.5	5676	67	10	0.58%
18MHRCDDH031A	198.0	103	107	22	0.02%
18MHRCDDH031A	198.5	0	81	23	0.01%
18MHRCDDH031A	199.0	70	90	30	0.02%
18MHRCDDH031A	199.5	0	108	23	0.01%
18MHRCDDH031A	200.0	390	119	335	0.08%
18MHRCDDH031A	200.5	166190	137144	55765	35.9%
18MHRCDDH031A	201.0	133451	158073	64562	35.6%
18MHRCDDH031A	201.5	114202	133834	56480	30.5%
18MHRCDDH031A	202.0	21749	12267	4609	3.9%
18MHRCDDH031A	202.5	27489	55124	51520	13.4%
18MHRCDDH031A	203.0	439	524	318	0.1%
18MHRCDDH031A	203.5	4045	43621	12881	6.1%
18MHRCDDH031A	204.0	79732	95703	33785	20.9%
18MHRCDDH031A	204.5	0	133	182	0.03%
18MHRCDDH031A	205.0	171	1613	367	0.22%
18MHRCDDH031A	205.5	518	240	353	0.11%
18MHRCDDH031A	206.0	97	232	1140	0.15%
18MHRCDDH031A	206.5	22622	71800	13846	10.8%
18MHRCDDH031A	207.0	12890	67397	22876	10.3%
18MHRCDDH031A	207.5	173382	164086	63629	40.1%
18MHRCDDH031A	208.0	17612	34565	12634	6.5%
18MHRCDDH031A	208.5	14843	2681	243	1.8%
18MHRCDDH031A	209.0	0	64	120	0.0%
18MHRCDDH031A	209.5	10335	405	27	1.1%
18MHRCDDH031A	210.0	0	66	71	0.01%
18MHRCDDH031A	210.5	0	52	51	0.01%
18MHRCDDH031A	211.5	0	95	392	0.05%