



AMI Resources Pty Ltd

Annual Report on Mineral Tenement EL27811

For period: 13/07/2017--12/07/2018

The Winnecke Project (gold-copper)

Alice Springs Region, Australia

Contact:

AMI Resources Pty Ltd

A.C.N. 140 405 992

Ph: +61 3 9807 9972

Fax: +61 3 9654 2031

Level 5, 545 Collins Street

Melbourne, Vic 3000, Australia

Email: haishun_sun198@hotmail.com

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Abstract:

This is a technical report providing the updated information on geological exploration activities undertaken by AMI Resources for the period from 13 July 2017 to 12 July 2018, including geological mappings on mineralised areas in the EL 27811 area, and profile and trenching samplings by our geologist team for geochemical analysis. Thirty-six bags of rock-chip samples were collected during our field prospecting work in 2017-18. This report is based on the latest geochemical assay results delivered by Australian Laboratory Services (ALS). It outlines the local geology, and then presents a technical review and interpretation of the geochemical results. This is followed by proposals of further exploration work for the next stage. AMI Resources will undertake further exploration activities, mainly for geophysical and drilling exploration in the targeted areas identified by geologists. A refined drilling exploration program in this tenement area is already in place for the next 12 months to implement.

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1. The Mineral Tenement

This document is the 7th annual report on EL27811 held by AMI Resources Pty Ltd. It presents an outline of work progress in geological exploration in the tenement area covered by the license in the year from 13 July 2017 to 12 July 2018, and provides independent geological report prepared by Discovery and Exploration Pty Ltd, and presents geochemical assay results for rock samples collected in our field prospecting. This report then presents a proposed work program in the subsequent years, mainly for drilling exploration in the Winnecke Goldfield area.

2. Management Report: Year 7

AMI Resources Pty Ltd (AMI) has made a considerable progress in conducting geological survey, research and fieldworks and geochemical exploration, using samples collected during fieldworks in 2017-2018.

The major progresses made in 2017-2018 are listed below:

- Completed further research and analysis of existing data on EL27811 tenement area, especially target generation and drilling planning based on existing geochemical analysis results. After reviewing previous drilling results, we have generated targets and prepared a plan of drilling exploration for the next year.
- Conducted considerable fieldworks and prospecting activities, with 36 rock samples collected from prospective sites in the EL area for geochemical analysis. This assists the generation and identification of targets for further explorations.
- Completed geochemical tests and analysis by Australian Laboratory Services (ALS) for rock samples collected from fieldworks. The geochemical results are analysed by geologists in the following technical report.

3. Geological Analysis: the Winnecke Goldfield Project¹

3.1. Regional Geological Setting²

¹ This geological report was prepared by Ross Caughey, Discovery and Exploration Pty. Ltd. (ACN 074 693 637), Suite 2, 337A Lennox Street, (PO Box 2236) Richmond South, Victoria, 3121 Australia. Phone: +61 3 8420 6200, Fax +61 3 8420 6299. Email: postman@flagstaff-geoconsultants.com..

ii. Note: Most of the discussion of the geology and mineralisation of the Winnecke and Arltunga Goldfields is from the NTGS Report on 'Gold Deposits in Northern Territory', 2009.

AMI's Exploration Licence EL27811 is about 65 km northeast of Alice Springs, extending about 60 km east-to-west. The project is in the central-eastern part of the Arunta Region, a resources-rich area extending from the Tanami region goldfields near the Western Australia border to the Harts Range (*Irindina Province*) gem-fields and Jervois copper region in the southeast of the Northern Territory. Mineralisation in the Arunta includes gold, copper, other base metals, uranium, rare earth elements (*REE*), gemstones and industrial minerals (e.g. vermiculite, garnet sands)

Part of AMI's project covers nearly all of the historic Winnecke Goldfield. Documented gold production from the Winnecke goldfield is about 1300 oz, but it was actively mined for a brief period only (ca. 1900 to 1917, and again briefly in the 1930s), and actual production should have been much higher, since much of the early mining was not officially recorded. Reports by Western Desert Resources Limited, the prior tenement-holder over the Winnecke Goldfield, claim historic gold production of 12,000 oz. Modern exploration appears to have been limited. In the mid-1980s, Australian Anglo-American Ltd obtained encouraging results from underground sampling, but drilled only four shallow drill-holes, averaging less than 100 m deep. Western Desert Resources was actively exploring the goldfield until struck by the global financial crisis in late 2008.

The project lies in the central *Strangways Metamorphic Complex* ("SMC"). The SMC consists of Proterozoic crystalline metamorphic rocks of the Arunta Block and is unconformably overlain in places by nappes and folded outliers of the NeoProterozoic Heavitree Quartzite and Bitter Springs Formation of the Amadeus Basin. A narrow belt of such younger rocks passes through the Winnecke Goldfield. *Figure 3* shows the more detailed geology of the project area, plus known mineral occurrences (*from the Northern Territory Geological Survey 'MODAT' database*¹). The narrow belt Amadeus Basin rocks is shown in brown, running through the Winnecke Goldfield.

The EL 27811 area is interpreted to be mainly underlain by Cadney Metamorphics, just to the north of a wide corridor of intense and complex, laterally continuous east-west-trending greenschist facies shear zone within a predominantly gneissic terrane. This corridor is known as the Winnecke Shear Zone, and is bounded by two major northwest-trending lineaments, the Woolanga and Pinnacles Shear zones to the east and west, respectively. The shear formed during the Alice Springs Orogeny when NeoProterozoic Amadeus Basin sediments to the south were thrust over the Palaeoproterozoic Arunta basement to the north.

The Cadney Metamorphics (1770 Ma) are interpreted to overlie the Narwietooma Package in the central Arunta region, and are dominated by calc-silicate rocks, marbles and sillimanite and biotite-bearing gneiss.

3.2. The Winnecke Goldfield

The Winnecke Goldfield is about 70 km northeast of Alice Springs (*Figure 2*), and forms an east-west belt extending for about 15 km, southwest of *The Garden* homestead, in the headwaters of the Hale River .

As noted in the previous section, the Winnecke Goldfield straddles the structural contact between the Palaeoproterozoic Arunta Province and the basal Neoproterozoic sequence of the Amadeus Basin. The Arunta Province rocks belong to several distinct units of Divisions One and Two of the Arunta Central Zone², including:

- 1) the Erontonga Metamorphics (cordierite -garnet sillimanite gneisses, calc-silicate and amphibolites) and the Anuma Schist (staurolite-kyanite-mica schist and gneiss) of the Winnecke Block;
- 2) the Ankala Gneiss (biotite schist and gneiss, calc-silicate and marble, quartzofeldspathic gneiss and amphibolites), of the Ankala Block North of the Amadeus Basin;
- 3) the Irindina Gneiss (quartzofeldspathic gneiss, biotite schist and amphibolite) of the Ankala Block;
- 4) the Mulga Creek Granitic Gneiss (muscovite-biotite granitic gneiss and minor amphibolites) of the Ankala Block.

The overall metamorphic grade is upper amphibolite facies. However, retrograde greenschist facies rocks occur within schist zones, which are related to faulting and thrusting along deformation zones within the Arltunga Nappe Complex during the Devonian Carboniferous Alice Springs Orogeny.

The *Heavitree Quartzite* (quartzites with grits and conglomerates) and the *Bitter Springs Formation* (shales and dolomites) represent the basal sequence of the Amadeus Basin. These units unconformably overlie Arunta Province rocks at Mt Laughlen to the south of Winnecke, but have been thrust over the Arunta Province rocks to the north, in the Winnecke area, where they are strongly deformed.

The Winnecke gold deposits occur in greenschist retrograde schist zones, mainly within rocks of the Arunta Province. The dominant type of mineralisation is auriferous quartz

veining, with gold concentrated in those portions of the quartz veins that are composed of cellular and limonitic quartz, the limonite being derived from the oxidation of pyrite which occurs at depth.

Documented gold production from the Winnecke goldfield is small (about 1300 oz) but it was actively mined for a brief period only (ca. 1900 to 1917, and again briefly in the 1930s) and actual production may have been much higher, since much of the early mining was not officially recorded. Most mining at Winnecke and the Arltunga Goldfield ceased before the end of the First World War.

The Goldfield is within AMI's EL 27811. Twenty-five gold workings and occurrences are identified (several are copper- or lead- dominant), mostly over an 18 km long ESE-WNW trend along the Palaeozoic Winnecke Thrust zone, from *Sloans Gully* in the west to *Ciccones* in the east. Eleven of the occurrences are identified as abandoned mines, and these are all along a 5 km long zone in the east. As noted previously,

Previous explorer Western Desert Resources noted that some of the auriferous quartz occurrences were hosted by strongly calcareous Arunta Block metasediments, calcsilicate, and marble, and postulated that there may be potential for disseminated low-to-medium grade gold mineralisation in carbonate-rich stratigraphy, of the "Carlin" type (*WDR Prospectus, 2007*).

4. Geochemical Test Report

The following is a brief report of geological fieldwork, prospecting and sample collections by AMI Resources in September 2017, and a review of the geochemical results of 36 rock samples assayed by Australian Laboratory Services (ALS).³ It also interprets the indications for mineral deposits in the licensed area and proposes work programs for geological exploration for the next stage in the EL27811 Winnecke area.

4.1. Sampling Conducted.

Rockchip samples: A total of 36 rock samples were collected for geochemical analysis during our fieldwork in 2017-18, with sample descriptions and assay results are provided in Appendix 1.

Areas sampled:

Our field prospecting and sampling were focused in five sub-areas within the Winnecke Goldfield area:

Area A1: Golden Goose area.

Area B: the area between Golden Goose and Black Eagle area.

Area A3: also termed as 320g area, which is about 1.2km southwest to Golden Goose.

Area N: about 4km northeast to Golden Goose area, and

Area E: about 9 km northwest to Golden Goose.

All the rock samples are presented in the following table and plotted on map (Figure 1):

Table 4-1: Areas Sampled and Sample IDs

Sampled location	Sample IDs	Number of samples
Area A1: (Golden Goose)	A1-1, A1-2, A1-3, A1-4, A1-5, A1-6, A1-7, A1-8 and A1-9	9
Area B: east to Golden Goose) and Black Eagle area (BG)	B1, B2, B3, BG1, BG2, BG3	6
Area A3: 1.2 km southwest to Golden Goose, including Melb area	A3-1, A3-2, A3-3, A3-4, A3-5, A3-6, and MB1	7
Area E 9 km northwest to Golden Goose	E1, E2, E3, E4, E5, E6, E7, E8, E9 and E10	10
Area N: 4km northeast to Golden Goose	N1, N2, N3 and N4	4
	Total samples	36

The locations of samples:

The locations of rock-chip samples collected in our prospecting in 2017 are shown in Figure 1. The detailed coordinates and descriptions are provided in Appendix Table 1.

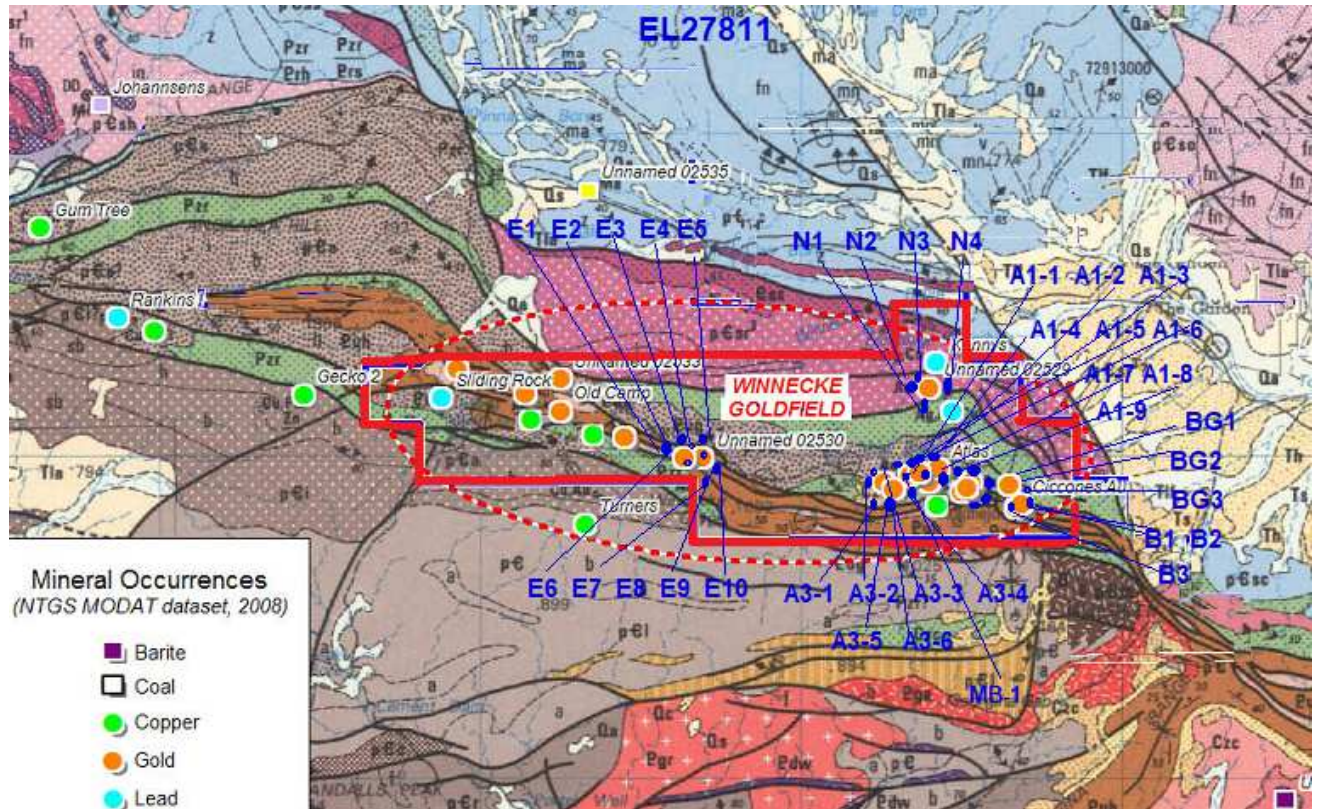


Figure 1: The Locations of Rock Samples Collected by AMI Resources in September 2017.

Photo 1: Mineralized quartz vein in *Golden Goose*.



Photo 2: Mineralized quartz vein in Area E



4.2. Geochemical analysis results

Winnecke is an area with most quartz veins widely distributed. The geochemical results returned from sample assays show Au grade at 0.5-12.7g/t, more than 10 quartz veins can be seen, each 100 - 400m long, 3-10m thickness, local limonite is not strong, pyrite crystals and aggregate distribution in grey quartz veins in the oxidation.

- a. **The Golden Goose and surrounding areas (A1):** It is located in a big shear zone, where mylonite and sericite quartz schist cataclastic rocks developed, and the structure is complex. Quartz veins distributed intensively and widely, developed at least for 2-3 stages/periodically. A major mineralised vein extends over 400 meters long and more than 120 meters wide (to be covered by Quaternary aged rock body). The tilt angle 65-85° northing. Local fault shear thrust reversal. This confirmed what we found previously. Sample A1-2 show high grades of Au at: 12.68g/t.
- b. **A3 area** show promising high grade of Au. Seven rock samples were collected from bed-rock using geophysical engineering methods such as trenching and pitting. Six samples show Au grade higher than 1g/t, only sample A3-3 presenting a grade of Au below 1g/t. All the seven rock samples show an average grade of Au at 2.66g/t. The results indicate the continuity and wide distribution of mineralised quiz veins.
- c. **Area B (Black Eagle and eastern area):** Six rock samples were collected from Area B, but the assay results show no significant level of mineralisation.
- d. **Area E (east to Old Camp and adjacent area):** Ten rock samples were collected from Area E located in the northeast of the tenement. Three samples – E4, E6 and E7 show high grade of gold mineralization at 3.16/t, 1.57g/t and 0.45g/t respectively.
- e. **Area N:** It is located about 4 km northeast to Golden Goose. Four rock-chip samples were collected in 2017-17 to randomly test the gold mineralisation in this area. The geochemical test results show the high grade of gold mineralisation from 0.63g/t (N3) to 12.15g/t (N2). N1 and N4 present 6.56g/t and 2.56g/t respectively. The rock samples were assayed 5.48g/t Au on average. In addition, all these four rock samples present higher grade of Cu, as shown in Table 4-2.
- f. To better understand the deep mineralization, we need to collect deep borehole data, and the underground geological mineralization information from previous work and current work results. Drilling exploration is required to further investigate the underground mineralisation.

Table 4-2: Geochemical analysis results of rock samples collected from five targeted areas within Winnecke Goldfield, September 2017

Sample IDs	Au-AA26	ME-ICP61						Coordinates	
	Au ppm	Cu ppm	Bi ppm	Fe %	Mn ppm	Pb ppm	Zn ppm	EAST (mga53)	North (mga53)
A1-1	0.01	49	3	7.08	404	18	76	433723	7419314
A1-2	12.68	29	22	3.03	119	16	17	433531	7419504
A1-3	0.01	7	<2	1.46	204	4	8	433723	7419318
A1-4	<0.01	25	<2	2.85	361	15	32	433719	7419317
A1-5	<0.01	37	2	2.66	236	10	17	433645	7419329
A1-6	<0.01	47	2	24.2	1430	36	412	433617	7419328
A1-7	<0.01	95	2	14.1	588	39	356	433617	7419324
A1-8	0.29	177	<2	44	2410	112	1428	433617	7419320
A1-9	<0.01	88	<2	32.6	1280	59	601	433631	7419315
A3-1	2.58	44	24	3.67	60	180	21	433143	7418747
A3-2	1.01	38	34	3.97	104	94	32	433161	7418782
A3-3	0.25	7	4	0.84	79	16	3	433260	7418862
A3-4	2.88	53	16	4	159	162	30	433268	7418871
A3-5	3.12	75	36	6.23	104	174	45	433279	7418882
A3-6	2.71	69	15	7.05	329	245	58	433313	7418795
MB-1	3.43	36900	426	6.67	112	80	22	433010	7419235
BG1	0.13	133	7	3.09	751	21	47	435164	7419086
BG2	0.04	60	2	3.9	417	19	47	435193	7419079
BG3	0.09	65	6	1.68	249	6	9	435217	7419100
B1	0.03	106	<2	8.95	711	7	82	436697	7419050
B2	<0.01	46	3	5.91	1730	6	18	437019	7418989
B3	0.32	8	<2	5.03	3960	6	22	437299	7419120
E1	<0.01	7	2	0.83	181	<2	2	424539	7421000
E2	<0.01	9	<2	0.81	87	<2	2	424590	7420854
E3	<0.01	5	<2	0.67	71	2	<2	424547	7420819
E4	3.16	10	4	1.62	40	2	5	424684	7420794
E5	0.03	3	<2	1.7	91	2	2	424796	7420382
E6	1.57	12	3	1.04	85	2	3	424802	7420390
E7	0.45	4	3	0.88	68	3	4	424485	7420893
E8	0.03	4	2	0.44	73	<2	<2	424490	7420899
E9	0.02	4	2	0.8	59	<2	2	424496	7420904
E10	0.01	4	<2	1.75	529	3	12	424500	7420909
N1	6.56	9352	123	31	1290	25600	943	435515	7421810
N2	12.15	13576	56	24.8	2290	16880	2560	435548	7421763
N3	0.63	1829	27	39.5	1980	4980	420	435549	7421762
N4	2.59	989	7	32.9	3930	2790	1740	435575	7421812

4.3. Follow-up Work.

The current sampling confirms that the Winnecke Goldfield warrants further investigation. In particular, drilling exploration is required and is currently scheduled to be undertaken in the next 12 months.

The principal concern in identifying the potential of the Winnecke Goldfield is to identify the nature and extent of known mineralisation, and any controlling geological structures or stratigraphy.

The high-grade gold-bearing quartz veins are the obvious target, but near-surface mineralisation is likely to have been mined already and deeper deposits might be small, which would make their identification (e.g. by drilling) difficult, and might mean they are uneconomic to mine. If the structures hosting and controlling this mineralisation can be properly identified, however, it may be possible to predict the more prospective areas, and possibly identify areas of intersecting or converging structures, which might prove to host larger targets, under cover or at depth. Systematic geochemical sampling (with follow-up drilling where warranted) is also the most practical way to try to locate possible large lower-grade targets, if they exist.

Further work at this project should include

- a) Review and assessment of current exploration activities being undertaken by companies on adjoining licences.
- b) Do further geological mapping of known mineralisation, with the objective of identifying structures hosting or controlling mineralisation and identifying possible strike-extents or repetitions of such structures.
- c) Detailed low-level air-borne (or ground) geophysical surveying, to better define geological structures which might host or control mineralisation. Targeted costeaning
- d) Geochemical sampling (rock-chip sampling, including channel sampling if possible) of recognised host/control structures (and possible strike-extents) to better define the nature, scale and variability of mineralisation.
- e) Drilling exploration as designed in the Golden Goose, A3 and N areas can be justified from geochemical analytical results available in order to test the nature and structure of the underlying gold mineralisation.

Ross Caughey, *B.Sc.(Hons)*
Geological Consultant

(Exploration & Discovery Services Pty Ltd)
Flagstaff GeoConsultants Pty. Ltd.

Member:
Australasian Institute of GeoScientists (AIG),
Geological Society of Australia (GSA),
Society of Economic Geologists (SEG)

APPENDIX:**Table 1: Descriptions of rock samples collected from EL27811 Area, September, 2017**

Sample order	Sample IDs	Coordinates		Description
		EAST (mga53)	North (mga53)	
1	A1-1	433723	7419314	Mineralized quartz vein
2	A1-2	433531	7419504	quartz vein
3	A1-3	433723	7419318	quartz vein
4	A1-4	433719	7419317	quartz vein with pyritization
5	A1-5	433645	7419329	quartz vein with pyritization
6	A1-6	433617	7419328	quartz vein with pyritization
7	A1-7	433617	7419324	quartz vein with pyritization
8	A1-8	433617	7419320	quartz vein with pyritization
9	A1-9	433631	7419315	quartz vein with pyritization
10	A3-1	433143	7418747	Quartz veins containing quartz sandstone
11	A3-2	433161	7418782	Mineralized quartz veins
12	A3-3	433260	7418862	Quartz sandstone
13	A3-4	433268	7418871	Mineralized quartz veins
14	A3-5	433279	7418882	Quartz sandstone
15	A3-6	433313	7418795	Mineralized quartz veins
16	BG1	435164	7419086	quartz veining in quartz schist - in old workings
17	BG2	435193	7419079	quartz veining in quartz schist - in old workings
18	BG3	435217	7419100	quartz veining - in old adit workings
19	B1	436697	7419050	Quartz veins
20	B2	437019	7418989	Quartz veins
21	B3	437299	7419120	Quartz veins
22	E1	424539	7421000	Quartz veins
23	E2	424590	7420854	Quartz gneiss
24	E3	424547	7420819	Quartz gneiss
25	E4	424684	7420794	Quartz veins
26	E5	424796	7420382	Quartz gneiss
27	E6	424802	7420390	Quartz gneiss
28	E7	424485	7420893	Quartz veins containing limonite
29	E8	424490	7420899	Quartz gneiss
30	E9	424496	7420904	Quartz gneiss
31	E10	424500	7420909	Quartz veins
32	MB-1	433010	7419235	Quartz veins
33	N1	435515	7421810	Limonite quartz schist
34	N2	435548	7421763	Quartz sericite schist
35	N3	435549	7421762	limonitic veinlets/fractures
36	N4	435575	7421812	Quartz sericite schist

References:

- ¹ Northern Territory Department of Resources –Minerals and Energy, MODAT Mineral Deposit Database, <http://dmetis.nt.gov.au/tis/OLQ.ASP?WCI=Geoset&WCE=frmGeoset&WCU>.
- ² M.S. Skwarnecki and S.J. Fraser (2002), Geochemical Orientation and Soil-Lag Traverse at the Garland Gold Mine, Winnecke Goldfield, Northern Territory, CRC Lem Open File Report 83.
- ³ AMI Resources has carried out geological exploration work jointly with China Hebei Bureau of Geology and Mineral Resources in September 2017.