ASX Announcement (ASX:AXE) 15 August 2019

Bartels gold discovery update

Highlights

- Widespread alteration geochemistry indicates that Bartels is located within a low sulphidation hydrothermal (epithermal) alteration system.
- The area of known alteration covers 1.5km x 1.2km within a larger exploration target area of 25km^2.
- Previous drilling by Archer at Bartels intercepted gold from the surface.
- Bartels is located close to main roads, power, water and other critical infrastructure.

Archer Exploration Limited ("Archer", "Company") is pleased to provide an update on the Bartels Epithermal Gold Prospect, located 15km north of the township of Cleve on South Australia's Eyre Peninsula.

Commenting on the Bartels Project, Archer Executive Chairman Greg English said, "We have known about the Bartels Gold Project for a while but have been focussed on other projects and our growing Advanced Materials Business. The recent sharp increase in gold price and renewed investor interest in gold projects has prompted us to review the Bartels Gold Project.

"We believe Bartels to be a low sulphidation epithermal style gold project. Bartels is a very large gold target covering an area of 25km^2 and Archer will be seeking a partner to assist in the exploration of Bartels".

Background

The Bartels area contains three low sulphidation epithermal systems: Teresa, Bartels and Patricia (Fig. 1). Furthermore, the Bartels geochemical fingerprint points to a possibly alkalic magmatic association, which would be consistent with formation during extension and crustal thinning related to development of the Adelaide Rift Complex.

The area of known alteration at Bartels is very large being at least 1.5km x 1.2km in dimensions and is seen to extend under cover. Geological mapping has defined the Teresa breccia trend over a strike length of 13.5km. Teresa lies a short distance to the NW from the drilled Bartels structural corridor. A second parallel breccia body, the Patricia breccia, has also been identified 4.6 km to the SE. This feature lies along strike from the Emu Plain copper-molybdenum occurrence previously reported by Archer (ASX announcement 9 May 2011).

The Bartels regional geological setting is atypical of other low sulphidation epithermal districts, including:

Geological features	Bartels	Pajingo	Coromandel Volcanic Zone	Carlin Trend
Deep Plumbing	✓	✓	✓	✓
Boiling Textures	✓	✓	✓	✓
Multiple Breccias	✓	✓	✓	
Magnetite Destruction	?	✓	✓	
Faulting	✓	✓	✓	✓
Host rock	Sedimentary + Volcanic	Volcanic	Volcanic	Sedimentary
Geochemistry	As, F, Sb, Tl Th	As, F, Sb, Tl Hg, Te	As Cd, Sb	As, Sb, Tl Ba, Hg
Approximate area	25 km^2	10 km^2	12 km^2	+500 km^2

Table 1: Key features of low sulphidation epithermal gold projects. While it cannot be assumed that deposits of similar size to those above will be present at Bartels, these deposits provide geological signatures that will act as a guide to further work at Bartels.

Evidence for a low sulphidation system at Bartels

Regional Setting

Bartels is not the only epithermal-style mineral occurrence on the Northern Eyre Peninsula, these projects include Parkinson Dam and Baggy Green. Like Bartels, the presence of breccias with epithermal textures and epithermal-style mineralization occur in dolomitic and other host units within the crystalline basement rocks. Hydrothermal brecciation and veining is associated with kaolinite, chlorite and muscovite alteration and has a Ag, As, Sb, Bi, Se, Cu, Mo, Zn and Pb trace element association. Textural evidence for an epithermal environment includes quartz healed jigsaw breccias, colloform quartz and lattice bladed quartz (after calcite). Clearly the Lake Gilles area displays some interesting similarities to Bartels.

Heat source

There is little evidence for contemporaneous igneous activity at Bartels, although it may exist. The presence of fluorite at Bartels suggests magmatic input and pegmatites, particularly tourmaline-bearing ones tend to be F-rich: therefore, a possible connection. Another possibility is increased heat flow caused by crustal thinning related to the early stages of the Adelaide Rift. The NE structural control at Bartels and Lake Gilles is consistent with rift parallel extensional faulting. One thing that is characteristic of epithermal systems in rift settings is a bismuth and tellurium signature and the presence of barite and fluorite gangue. Both pathfinder elements and fluorite are present at Bartels.

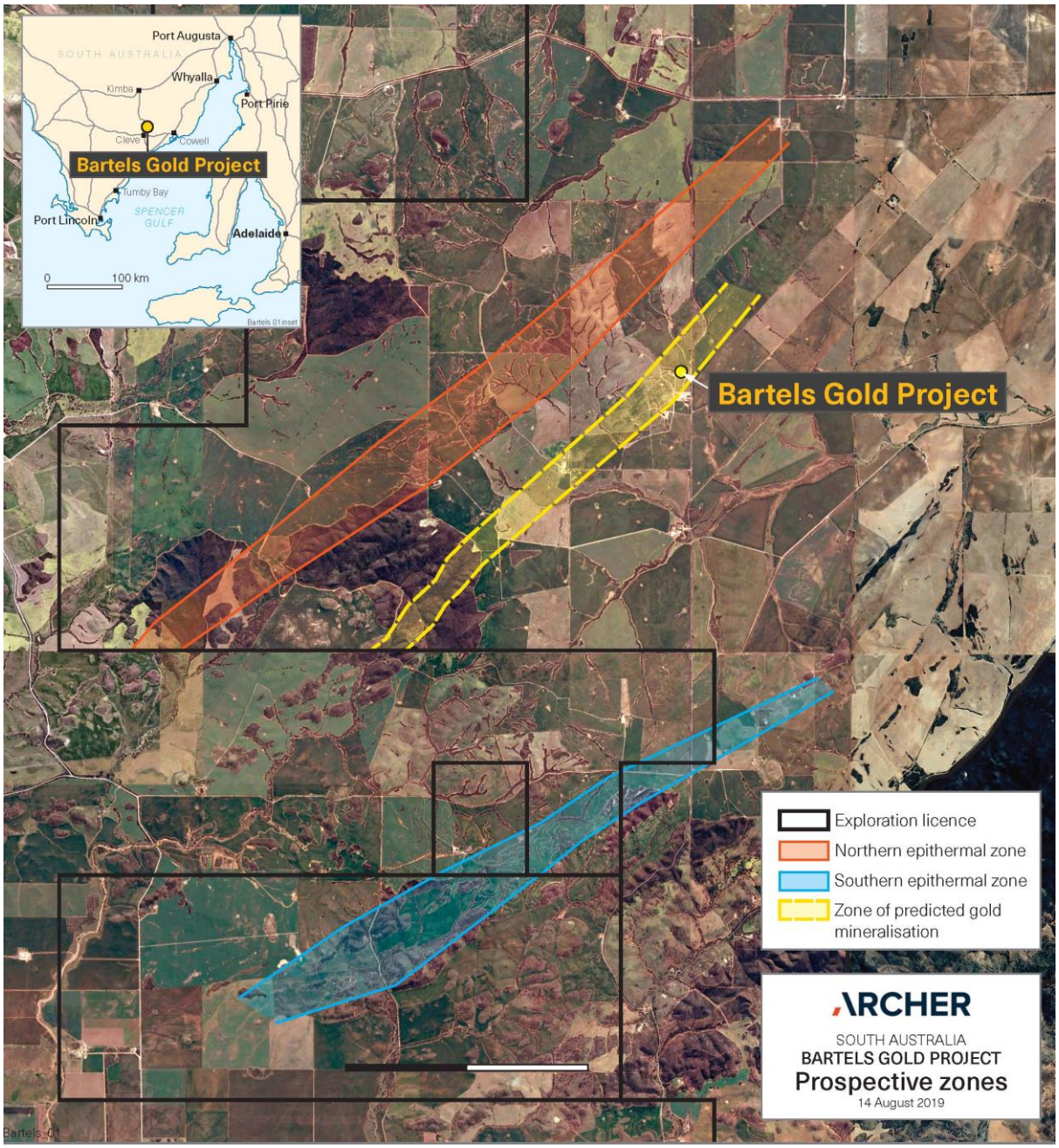

Fig. 1 Map showing location of Bartels, Teresa and Patricia gold targets.

Presence of alteration and epithermal textures

Drilled epithermal mineralization at Bartels lies within 60-100 m wide NE-SW trending structural corridor following a regional dolomite unit. The dolomite is brecciated and locally altered close to shear faults.

Geochemical samples from drilling and rock chips has revealed anomalous levels of Th, Mn, As and Ag. Petrographic studies of rock chips and 2012 drill cores confirmed the presence of low-temperature epithermal-style alteration in rocks adjacent to Bartels and one silicified dolomite sample was found to contain free gold (Image 1).

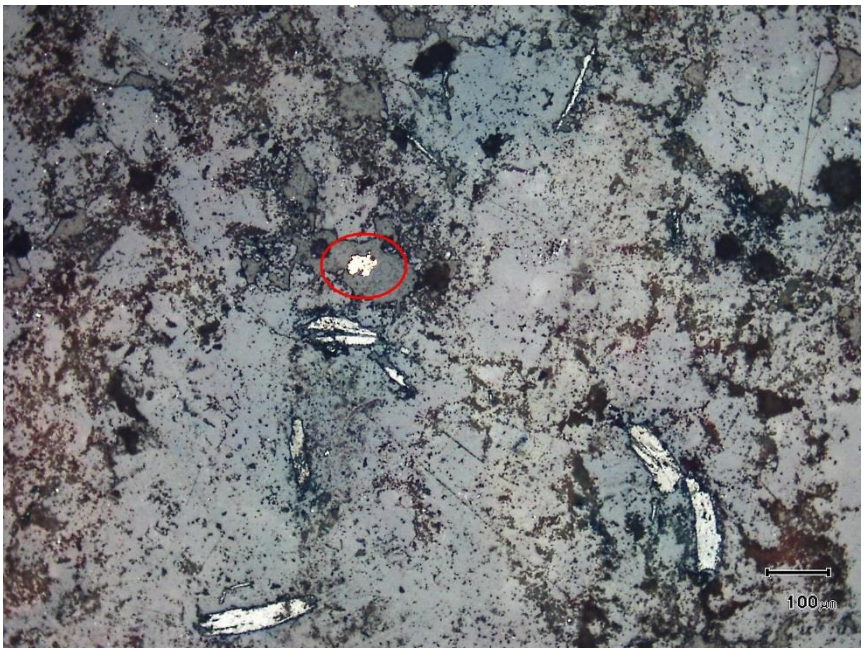

Image 1. Carbonate breccia largely replaced by quartz, carrying a one grain of free gold associated with an equally fine soft grey metallic mineral which is possibly antimony.

Image2. Fluorite at Bartels

Image3. Bladed silica textures

Image4. Intense Brecciation

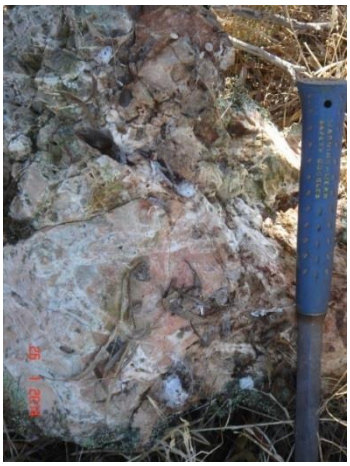

Image5. Replacement textures

Historic Exploration

The immediate Bartels area was seen by early explorers as a likely uranium target. Kerr McGee completed diamond drilling on what they designated as the A405 target but did not report the presence of uranium. Archer re-sampled the available drill core and in October 2010 reported anomalous gold (ASX announcement 8 March 2012). The most significant results from the sampling of the six Kerr McGee diamond holes were:

- A405/2 32.3m to 48.8m 16.5m @ 0.32 g/t Au; 7.43 g/t Ag; 146ppm Mo
- A405/3A 31.4m to 37.2m 5.8m @ 0.48 g/t Au; 2.93 g/t Ag

Archer drilled three RC drill holes (EPIRC12_001 to 003) at Bartels in 2012 (ASX announcement 29 August 2012) and an additional two RC drill holes in 2014 (ASX announcement 28 May 2014). The best results from this drilling include:

- EPIRC12_001 intersected a highly anomalous gold interval of 29m grading 0.57g/t Au from 79m downhole (including 1m @ 2.15g/t Au from 84m) within a chlorite rich shear zone. The gold anomalism and alteration appears to correspond with the EM data. The host lithology is a dolomitic unit that has undergone stylolitic quartz and manganese veining and brecciation.
- EPIRC14_002 intersected 22m @ 0.33g/t Au from surface and an additional 8m @ 0.14g/t Au from 26m downhole.

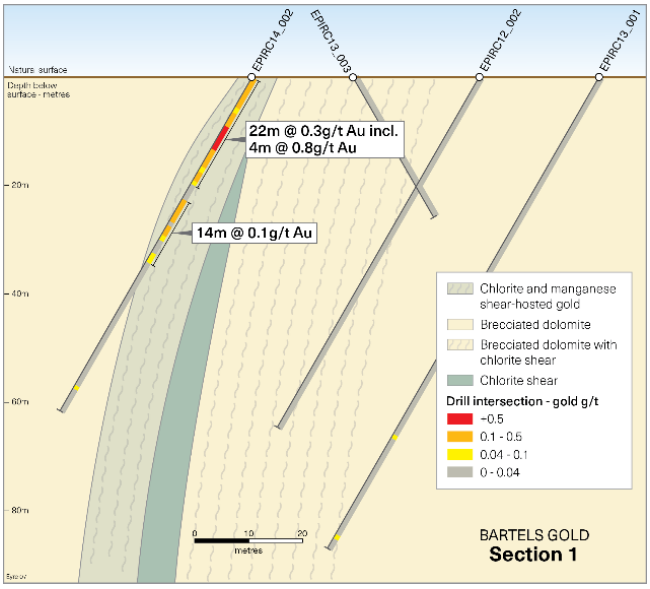

Fig. 2 Eastern Section showing drill hole EPIRC14_002

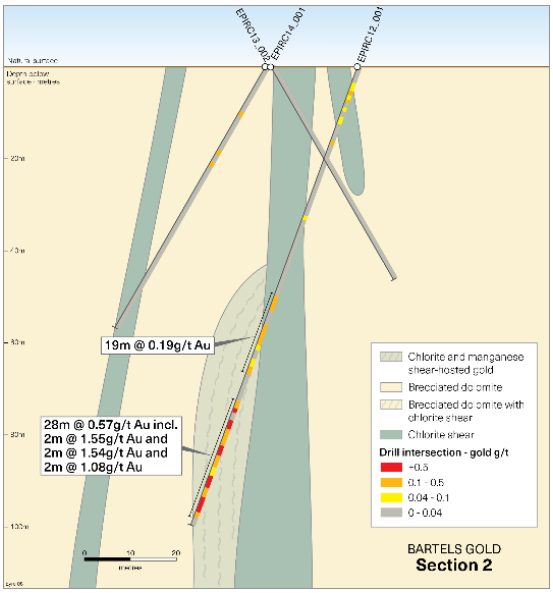

Fig. 3 Western Section with drill hole EPIRC14_001 shown, with gold mineralised hole EPIRC12_001

Next Steps

Bartels is a very large and compelling gold target that warrants further exploration. The Company will commence the search for a partner who will be able to assist in the exploration of Bartels.

The Company is focussed on the development of its Advanced Materials Business and the exploration and/or divestment of the Company's other exploration assets. With the recent increase in gold price and heightened interest in Australian gold projects, Archer is looking to develop the Bartels project with a joint venture partner.

About Archer

Archer provides shareholders exposure to innovative technologies and the materials that underpin them. The Company has a focused strategy targeting globally relevant materials markets of human health, reliable energy, and quantum technology.

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Competent Person Statement

The information in this announcement that relates to Exploration Results is based on information compiled by Mr Wade Bollenhagen, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and is a full-time employee of Archer Exploration Limited.

Mr Bollenhagen has sufficient experience that is relevant to the style of mineralisation and type of deposit 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. Bollenhagen consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Archer confirms that it is not aware of any new information or data that materially affects the historic drill information referenced by Archer in this announcement.

JORC Code, 2012 Edition – Table 1 Section 1 Sampling Techniques and Data *(Criteria in this section apply to all succeeding sections.)*

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 downhole 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. • In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation 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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Drilling Techniques	• Drill type (e.g. core, reverse circulation, 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.).	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula". •
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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".

Criteria	JORC Code Explanation	Commentary
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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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. • 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 (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".

Criteria	JORC Code Explanation	Commentary
Verification of Sampling and Assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Location of Data Points	• Accuracy and quality of surveys used to locate drillholes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Data Spacing and Distribution	• Data spacing for reporting of Exploration Results. • 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. • Whether sample compositing has been applied.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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. • 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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Sample Security	• The measures taken to ensure sample security.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Audits or Reviews	• The results of any audits or reviews of sampling techniques and data.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

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.	• Tenement status confirmed on SARIG. • All work being reported is from EL5804, Archer Energy & Resources (a subsidiary of AXE) has earned rights to 100% of all other commodities excluding uranium. • The tenement is in good standing with no known impositions.
Exploration Done by Other Parties	• Acknowledgment and appraisal of exploration by other parties.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
Geology	• Deposit type, geological setting and style of mineralisation.	• It is believed that the alteration of the dolomite hosts is some form of epithermal alteration, the associated crustiform structures support this. Elemental information such as fluorite (at surface) elevated arsenic and antinomy support the mineralisation setting.
Drillhole 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: – Easting and northing of the drill hole collar – Elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar – Dip and azimuth of the hole – Downhole length and interception depth – Hole length • 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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".

Criteria	JORC Code Explanation	Commentary
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. • 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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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 downhole lengths are reported, there should be a clear statement to this effect (e.g. 'downhole length, true width not known').	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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.	• For details see Table 1 ASX Release 28th May 2014. Highly anomalous gold mineralisation continues at Bartels, Eyre Peninsula".
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.	• The reporting is considered to be balanced.
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.	• None to report at this stage of the review.
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). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• Ongoing exploration is proposed, to investigate the nature of the apparent increase in gold grade deeper in the mineralised structure.