MINCOR RESOURCES NL:
Prospectivity Report
for the Georgina Project Area,
Northern Territory

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MINCOR RESOURCES NL: PROSPECTIVITY REPORT

EXECUTIVE SUMMARY

Mincour Resources N.L. contracted CSA Australia to conduct a study on the prospectivity of their Georgina Project in central Australia. The aims of the study were to conclude whether or not the area was prospective for base metals and other minerals, and if the basin was thought to be prospective, to then identify the most prospective areas. The main conclusion was that the project area is prospective for MVT-style mineralization. By applying genetic models to the known and interpreted geology, three sub-areas were identified as having the highest prospectivity. Recommendations are made on how best to advance the project.

The study examined the stratigraphy and structure of the Georgina Basin to assist in identifying appropriate mineralization models. The Georgina Basin was likely on the margin of a Neoproterozoic rift that formed south of the preserved basin, as part of the Centralian Superbasin. Early basin fill was mostly clastic until rifting ceased in the latest Neoproterozoic when the Petermann Orogeny resulted in a change to a dominantly compressional regime in central Australia that continued through the Cambrian. During this time, fine-grained siliciclastics and carbonates were the dominant sediments, deposited in a shelf setting. In the Ordovician, there was a short-lived rifting event that resulted in the formation of the Larapinta Seaway but this was followed by the Late Ordovician to Early Carboniferous Alice Springs Orogeny, which terminated deposition in the Georgina Basin in the Middle Devonian.

The project area is under-explored with less than 20% having been covered by stream sediment geochemistry, and only 10 soil samples and 140 rock chip samples having been collected in previous exploration. The Tarlton area, in the east of the project area has a number of stream sediment sample anomalies that were not followed-up with soil sampling or drilling, but otherwise the available geochemistry is too sparse to identify prospect-scale targets for immediate follow-up. There is regional geophysical coverage with government gravity, aeromagnetic and aeroradiometric images being available. They are good for assisting in the interpretation of the basin but otherwise the data is too coarse for identifying prospect-scale targets.

From the review of the geology and previous exploration, several possible mineralization models were considered as being applicable to the Georgina Basin with MVT-style Pb-Zn being the most relevant. This style of mineralization is carbonate hosted, typically within or near major faults and associated with dolomitization and brecciation of the host rock. The Thorntonia Limestone which hosts narrow low-grade mineralization in the Baldwin 1 drill hole and the Arrinthrunga Formation which hosts Pb-Zn mineralization at the Box Hole Bore and Trackrider prospects, are thought to be the most prospective units. Northeast and to a lesser degree, northwest trending faults are interpreted to control mineralization.

Models for MVT-style mineralization were combined with geological interpretation of the project area to divide the project area into 14 sub-areas for prospectivity analysis. Three priority 1, six priority 2 and five priority 3 sub-areas were identified. Two priority 1 sub-areas have evidence for all of the model criteria, but the third was identified from previous exploration which outlined several stream sediment anomalies that were not follow-up at the time. Priority 2 sub-areas have some but not all of the model criteria and priority 3 sub-areas have none of the criteria or have insufficient information to advance the project quickly.
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1 INTRODUCTION

Mincor Resources NL contracted CSA Australia to conduct a review of the prospectivity of their Georgina Project. It is located in the southern part of the Georgina Basin of central Australia, about 200 km northeast of Alice Springs (Figure 1) and comprises seven tenements with a total area of about 9508 square kilometres (Figure 2). Mincor supplied CSA Australia with a Northern Territory Geological Survey (NTGS) data set for the Georgina Basin including; GIS data, geophysical images, geochemical data, drill hole data, information on mineral prospects and the results of the Seebase study conducted by SRK Consultants. CSA Australia was to use the data set to:

- assess the prospectivity of the area;
- identify possible exploration targets within the project area;
- and prioritize target areas.

The Georgina Basin is a Neoproterozoic to Devonian intracontinental sedimentary basin in central Australia (Figure 3) and has been subject to sporadic exploration for both minerals and petroleum. The only economic mineralization found to date is the Duchess phosphate mine in the northeastern part of the basin, however lead - zinc mineralization is present in numerous small occurrences throughout the basin. The Box Hole prospect, which is probably the best known of the occurrences, is situated in a tenement excised from the project area (Figure 2). Copper occurrences, mainly as turquoise are widespread across the basin in the Arthur Creek Formation. On-going diamond exploration has not resulted in the discovery of any diamondiferous kimberlites or lamproites.

This lack of discoveries may be attributed to limited exploration in the Georgina Basin as a whole as well as the geological complexity of the area. Several reasons for the limited exploration include:

- Remoteness of the area;
- A complex geology and poor understanding of the geological development and;
- Low base-metal prices over the past 20 years.

The Georgina Basin is hundreds of kilometres from the coast and until recently the nearest rail head was at Alice Springs to the southwest or Mt Isa to the northeast (Figure 1). However, the completion of the Alice Springs to Darwin railway brings the nearest railway line to about 150 km from the centre of the project area. Recent work by the NTGS in the Georgina Basin has greatly improved the understanding of the geology and they have developed several genetic models for base metal mineralization which they think are applicable to the basin. Their work can be built on to quickly develop and test possible targets. Base metal prices have more than tripled since the late 1990’s to early 2000’s, and increased demand and a lack of recent major discoveries to replace current resources suggest that they will remain high. Hence the greater geological knowledge of the area, improved infrastructure and increased metal prices improve the prospect of discovering an economic mineral deposit in the Georgina Basin.
Figure 1. Map showing the locality of the Georgina Project.

This report first examines the geology of the Georgina Basin, in terms of stratigraphy and structural development. Previous exploration is discussed within the context of the data provided, concentrating on the geochemical studies and regional geophysical data sets. The prospectivity of the project area is discussed, building on the geological framework to identify appropriate mineralization models and previous exploration to identify possible targets that have not been fully tested. Finally the project area is divided into sub-areas for prioritizing possible exploration targets.
2 Location and Access

The Georgina Project is located in the southern part of the Georgina Basin of central Australia (Figure 1). It comprises seven tenements aligned WNW - ESE, sub-parallel with the southern margin of the basin and spread over an area of approximately 280 km long x 100 km across, with the total project area being about 9508 square kilometres.

The project area is mainly on the Huckitta (SF53-11), Tobermory (SF53-12) and Elkedra (SF53-07) 1:250,000 map sheets, with small areas on the Barrow Creek (SF53-06) and Hay River (SF53-16) sheets. Three native title claims exist over parts of the project area. The northwest is partly covered by the Sandover Native Title Claim, the northeast by the Ooratippra Native Title Claim and the Dulcie Range Native Title Claim lies within EL25093. All native title claims are administered by the Central Land Council.

Access to the southeastern tenements of the project area is by the Plenty Highway and by the Sandover Highway to the northwestern tenements (Figure 2). Within the area, access is by station tracks. The project area is spread over six stations; Ammaroo, Tarlton Downs, Marqua, Jervois, Derry Downs, Arapunya and Lucy Creek, and there are a number of Aboriginal communities within and close to the project area.

Figure 2. Locality plan showing the Georgina Project area, with tenements, known Pb – Zn occurrences, access and locations.
3 GEOLOGY OF THE PROJECT AREA

3.1 Introduction

The Georgina Basin is part of Centralian Superbasin (Figure 3: Walter et al., 1995) which was initiated at about 850 Ma, at the onset of the break-up of Rodinia. Other basins within the Centralian Superbasin are the Amadeus, Officer and Ngalia Basins. The Centralian Basin was an intracontinental basin that formed near the eastern margin of Rodinia. Continental break-up occurred along a rift that formed at an unknown distance to the east. All the basins of the Centralian Superbasin have several features in common, including a basal sandstone unit, evaporitic sections near the base and also all record the Sturtian and Marinoan Glaciations. Of these basins, the Amadeus Basin has the most complete stratigraphy, with deposition continuing until the Alice Springs Orogeny in the Late Devonian. Although the Georgina Basin records deposition over a similar time span, its history is marked by extended periods of non-deposition, especially in the Cryogenian, and Ordovician to Lower Devonian (Figure 4). It is also likely that some stratigraphy may have been removed in one or more of the major tectonic events that affected the Centralian Superbasin between the latest Neoproterozoic and the Carboniferous. The Centralian Superbasin ended as a single entity at the end of the Proterozoic when uplift caused by the Petermann Orogeny separated the Amadeus Basin and the Officer Basin. However, the Georgina, Amadues and Ngalia Basins were likely contiguous during the Cambrian and they were not separated until the Alice Springs Orogeny, beginning in the Silurian and extending into the lowest Carboniferous.

Figure 3. The Centralian Superbasin and the component basins and the project area.
Figure 5 shows the geology of the Georgina Basin surrounding the project area. To the south in grey is the Palaeoproterozoic Arunta Block and north, outside the area shown in the map is the Palaeoproterozoic Tennant Creek Block. The centre of the project area is underlain by the Arrinthrunga Formation, which hosts mineralization at the Box Hole Bore and Trackrider Prospects. In the west, the Dulcie Sandstone crops out in the northwest-trending Dulcie Syncline. The eastern third of the project is mainly underlain by the Tomahawk Beds. However, in both the northwest and southeast, there are large areas of younger cover overlying the Georgina Basin.

3.2 Stratigraphy

3.2.1 Introduction.
The following brief description of the stratigraphy of the Georgina Basin is primarily from Freeman (1986) and based on the Huckitta 1:250,000 map sheet, with some input from Stidolph et al (1988). A recent presentation by the NTGS (Dunster, 2006b) has redefined the stratigraphy (Figure 4) although this does not appear to have been published as yet. The changes will be discussed in the appropriate sections.

3.2.2 Basement
The Arunta Block forms the basement to the Georgina Basin. In the south it comprises Palaeoproterozoic high grade metamorphics and on the northern margin is the Palaeoproterozoic Hatch’s Creek Group. From geophysics, the contact between these two basement blocks is interpreted to be below the Dulcie Syncline. The Arunta Block south of the Georgina Basin is considered prospective for Mo, W and Sn, associated with the Jervois and Jinka Granites. To the north, the Hatch’s Creek Group is prospective for gold.

3.2.3 Neoproterozoic.
The basal units of the Georgina Basin are thought to have been deposited in a series of northwest trending half grabens, with the sedimentary rocks displaying faulted contacts on the northeastern boundaries and on-lapping basement on the southwest (Walter, 1980). A basal fluvial sandstone is overlain by an evaporitic unit and together they are named the Yackah Beds and have an overall thickness of 26 m on the Huckitta 1:250,000 map sheet but elsewhere reach a maximum thickness of 350 m. The correlative to the Yackah Beds in the Amadeus Basin, the Heavitree Quartzite and the Bitter Springs Formation, reach a maximum thickness of about 3,000 m.

A glaciogenic unit named the Mt Cornish Formation on the Huckitta map sheet and the Yardida Tillite on the Hay River map sheet together comprise the Aroota Group. It lies unconformably on the Jinka Granite where it occurs as lenses preserved in depressions in the granite and has an maximum thickness of 680 m in its type section. From global correlations with the older Neoproterozoic glaciogenic units, it is about 725 Ma. A second glaciogenic group, the Keepera Group comprising the Sun Hill, Black Stump and Oorabra Arkoses, overlain by the Boko Formation and Little Burke Tillite is interpreted to be Marinoan in age. It overlies the Mt Cornish Formation and is overlain by the Wonnadinna Dolomite, a cap
Figure 4. A stratigraphic column for the Georgina Basin compiled by the Northern Territory Geological Survey. On the left is the stratigraphy for the entire basin, divided into the main geographical areas and on the right is a detailed diagram for the Cambrian stratigraphy (From Dunster, 2006b).
Figure 5. The geology of the Georgina Project area (note that the colour scheme used here and in subsequent maps differs from that of the stratigraphic column).
carbonate unit that can be correlated around the world. The dominant rock-type in the Oorabra Arkose is a poorly sorted arkose to lithic arkose, but it may also contain a wide range of lithologies at some localities. It was deposited in a series of half grabens, reaching a maximum thickness of 1,000 m, but thins rapidly over a strike length of two kilometres to about 80 m.

The Mopunga Group is the uppermost Neoproterozoic group within the Georgina Basin. It comprises the Elyuah, Grant Bluff and Elkera Formations and marks the first widespread deposition in the Georgina Basin. The Elyuah Formation has a thin conglomerate at its base but is mainly grey, green or red fissile shale, and is about 100 m thick in its type section. Overlying the Elyuah Formation with a transitional boundary is the Grant Bluff Formation. It consists of laminated to thinly bedded fine-grained arenite. When fresh, it is grey and contains disseminated fine-grained pyrite. The Elkera Formation overlies the Grant Bluff Formation with a transitional boundary. It consists of siltstone and sandstone with a distinctive stromatolitic dolomite marker horizon.

3.2.4 Cambrian.

Mild folding occurred at the end of the Neoproterozoic in the Georgina Basin, contemporaneous with the Petermann Range Orogeny on the southwestern margin of the Amadeus Basin. In the Georgina Basin, the deformation is termed the Huckitta Movement (Figure 4).

The Mt Baldwin Formation was deposited following the Huckitta Movement, in the earliest Cambrian. It is confined in extent to the Jervois, Johannsen and Elua Ranges in the eastern half of the Huckitta 1:250,000 map sheet, where it disconformably overlies the Elkera Formation. It consists of red medium- to fine-grained quartz arenite to litharenite, with rare granule beds. The Errara Formation disconformably overlies the Mt Baldwin Formation. It comprises dolostone, limestone, sandstone, siltstone and minor shale, and contains abundant fossils, including stromatolites, hyoliths and archaeocyaths, as well as brachiopods, tommotiides and phosphatic tubes. Barite pseudomorphs after hyoliths are found near Gap Bore. After the limited area of deposition of the Mt Baldwin Formation, it represents a return to widespread deposition across the Georgina Basin on a carbonate platform. In the new NTGS stratigraphy, the Errara Formation is not retained, with the rocks previously ascribed to this unit now being placed within the Red Heart Dolomite, which previously had been restricted to the Hay River 1:250,000 map sheet.

The Arthur Creek Formation is a widespread unit consisting of fossiliferous calcareous siltstone, limestone and quartzose limestone. The siltstone is dark grey to black in colour, with a high organic content and disseminated pyrite. It conformably overlies the Errara and Mt Baldwin Formations but rarely crops out. Poor quality turquoise has been mined from this unit at several localities on the Barrow Creek 1:250,000 map sheet. The new NTGS stratigraphy interprets the Thorntonia Limestone to be underlying the Arthur Creek Formation in the project area whereas previously it was not thought to occur in the southern part of the basin. In the context of this study, the renaming is important because Pb-Zn mineralization has been intersected close to the contact between the Arthur Creek Formation and the Thorntonia Limestone in the Baldwin 1 drill hole. This will be discussed further in Section 5. Conformably overlying the Arthur Creek Formation is the Arrinthrunga Formation. It
consists mainly of algal limestone, with minor sandstone and mudstone, deposited in shallow to emergent conditions. Halite and pseudomorphs are found in the middle of this unit. A sandstone unit named the Eurowie Sandstone crops out extensively on the Huckitta 1:250,000 map in the centre of the project area (Figure 5). The Arrinthrunga Formation reaches a maximum thickness of 975 m. It hosts stratabound Pb-Zn-Ba mineralization at the Box Hole Bore prospect in the centre of the project area and at the Trackrider prospect north of the project area (Figure 5). These are discussed more fully below.

The Tomahawk Beds were deposited conformably on the Arrinthrunga Formation in the latest Cambrian to early Ordovician. They consist of sandstone, siltstone, dolomite and limestone and crop out only in the northeast of the Huckitta 1:250,000 map sheet and along the flanks of the Dulcie Range. A major feature of the Tomahawk Beds is they may be folded over undeformed Arrinthrunga Formation. This folding is attributed to the collapse of the Tomahawk Formation into the Arrinthrunga Formation and is thought to have been caused by the dissolution of carbonate beds in the latter. Similar features are seen in the Eurowie Sandstone Member of the Arrinthrunga Formation. At the interface between the two units, there may be a hard black ferricrete, and galena has been noted in the Tomahawk Formation above one of these collapse structures at one locality. Freeman (1986) has suggested that the collapse occurred in the Cretaceous to Mid-Tertiary, however from his Figure 17 (page 41, Freeman, 1986), the deformation seems to have occurred with minimal fracturing of the sandstone. If this is the case it is difficult to see how a hard brittle rock could have deformed in a ductile manner and so it is likely that the dissolution occurred prior to the complete lithification of the sandstone. As such, these zones may be prospective for MVT-style mineralization (see below).

3.2.5 Ordovician to Devonian.

The Kelly Creek Formation conformably overlies the Tomahawk Beds. It comprises quartzose and dolomitic quartz sandstone, siltstone, dolostone and minor conglomerate and reaches a maximum thickness of 250 m. The new NTGS stratigraphy (Figure 4) has the Kelly Creek Formation overlying the Tomahawk Beds whereas the old stratigraphy has it correlating with the upper part of the Tomahawk Beds on the Hay River 1:250,000 map sheet. Figure 5 shows the Kelly Creek Formation overlying the Tomahawk Beds in the Toko Syncline.

The Nora Formation conformably overlies the Kelly Creek Formation. It crops out beneath the escarpment formed by the Dulcie Sandstone, where it is typically covered by colluvium and it only occurs in the southeast Dulcie Range. It consists of green-grey siltstone, red sandstone and oolitic ironstone, and was likely deposited in a shallow marine environment. The top of the formation has been eroded prior to deposition of the Dulcie Sandstone, probably due to uplift during the Rodingan Movement.

The Dulcie Sandstone is the uppermost unit of the Georgina Basin. It crops out only in the Dulcie Range, on the Huckitta map sheet. It was deposited in the Dulcie Syncline, a narrow northwest - southeast trending shallow basin that formed by rifting during the Silurian to Devonian. The Dulcie Sandstone consists of cross-beded medium to very thick bedded quartz arenite and is 621 m thick at its type section.
3.3 Structural Evolution of the Georgina Basin.

The Georgina Basin has had a long and complex evolution, from initiation in the Neoproterozoic to its final closure in the Devonian. During the Neoproterozoic, there were three separate rift events that resulted in the formation of small west-northwest trending half grabens however none of these reached the through-going fault stage of rift development and consequently deposition was largely confined to a series of small basins. It was not until the latest Proterozoic that deposition was extensive across the entire basin. In contrast, the uplift in the Huckitta Movement, which resulted in only a small amount of erosion. During the Cambrian, a limited amount of accommodation space was created as a response to tectonic loading caused by the Petermann Orogeny, with no active rifting.

At the end of the Neoproterozoic, the locus of the major deformation associated with the Petermann Orogeny, was on the southern margin of the Amadeus Basin. In the Georgina Basin, it is recorded by minor uplift in the Huckitta Movement, which resulted in only a small amount of erosion. During the Cambrian, a limited amount of accommodation space was created as a response to tectonic loading caused by the Petermann Orogeny, with no active rifting.

During the Mid to Late Ordovician, extensive intracontinental rifting occurred in central Australia, forming the Larapinta Seaway, a narrow seaway linking to oceans to the northwest and southeast of Australia. Between the Amadeus and Georgina Basins, a metamorphic core complex formed in response to the rifting, with Neoproterozoic to Cambrian sediments being metamorphosed to high grades. It is possible that the area between the two basins was a Neoproterozoic to Cambrian rift that was exhumed at this time.

During the Alice Springs Orogeny, which lasted from the Late Ordovician to the Early Carboniferous, the Georgina Basin was not deformed to the same degree as the Amadeus and Ngalia Basins. The northern margin of these basins were overturned with the basement being thrust south over the basin margin. As a result of the thrusting, deep foreland basins developed in which several kilometres of sediment was deposited. In the Georgina Basin, north-directed thrusting has over-turned the stratigraphy along its southern margin. The Dulcie Sandstone was deposited in the foreland basin to the thrust front but in contrast to the Amadeus and Ngalia Basin, it is less than one kilometre thick. A reason for this is that the main movement in the Alice Springs Orogeny was to the south and so the faults bounding the southern margin of the Georgina Basin had the wrong orientation to accommodate the north over south movement. Instead they likely were re-activated as back thrusts with considerably less movement than along the north-dipping faults on the northern margins of the other basins.
Hence during its entire history, the Georgina Basin (as preserved today) was always at the margins of major deformational events. In the Neoproterozoic, it was on the rift margins, with the major rift being to the south. It was distal to the Petermann Orogeny, and recorded only minor uplift, with subsequent subsidence due to tectonic loading resulting in about 1500 m of sediments being deposited. It was on the northern margin of the rift that formed the Larapinta Seaway and in the Alice Springs Orogeny, the basin bounding faults were orientated in the wrong direction to accommodate the mainly north over south movement.

The mainly quiet basin development of the Georgina Basin influences the prospectivity of the basin. It favours the formation of deposit styles typically found at basin margins and rift shoulders. The long periods of stability allows basinal fluids to react with the sediments and the periods of deformation (either rifting or thrusting) provides the opportunities for the fluids to move up and out of the basin. Examples of this these mineralization styles are sediment hosted base metals and in particular MVT Pb-Zn mineralization. A negative point is that this stability may not have allowed the exhumation of prospective units during basin inversion, except along the southern margin.
4 Previous Exploration

Previous mineral exploration in the Georgina Project area has been limited to geochemical methods and minor geophysical surveys with drilling confined to a few prospects. There have also been government-sponsored regional gravity and aeromagnetic surveys. Several diamond core holes have been drilled by the NTGS but they have all been north of the project area. Oil exploration also provides some useful information for the project area. The following discussion will mainly be focussed on the project area and the immediate surrounds.

4.1 Geochemistry.

4.1.1 Stream Sediment Sampling

A total of 864 stream sediment samples have been collected within the project area (Figure 6a). There are three main areas of sampling:

1. an area targeting the Dulcie Sandstone in EL25093
2. a group of samples that were part of a larger survey targeting the Tomahawk Beds in the southeast of EL25093 and,
3. an area in EL25094 targeting the Tomahawk Beds in the Tarlton area.

The former was likely targeting uranium whereas the latter two were likely targeting base metals. Otherwise there are scattered, widely spaced samples covering large areas of the Dulcie Sandstone and Arrinthurunga Formation across the remaining tenements.

All the highest stream sediment results for Zn, Pb and Cu come from the Tarlton area (Figure 6b, 6c, 6d). By comparison, the samples collected from the other areas have Zn, Pb and Cu concentrations that are below the 50th percentile (for all samples). Figure 7 shows the Tarlton area with recalculated statistics using samples from only that area. Zn-Cu anomalism occurs in the southwest of the area (Figure 7). Cu-Pb anomalism in the north with scattered anomalism elsewhere. The Zn anomalism in the east lies roughly along a NE trend.

4.1.2 Soil Sampling

A total of 12 soil samples have been collected in the project area. All are in EL25092, targeting the Arunta Block. Other soil samples from the immediate surrounding area were in the Arunta Block and are not discussed further.
Figure 6. Stream sediment sampling in and around the Georgina Project area.

Figure 6a. (top left) All stream sediment samples. Figure 6b. (top right) Stream sediment sample sites from the project area with Zn values classified by percentiles. Figure 6c (bottom left) Stream sediment sample sites from the project area with Pb values classified by percentiles. Figure 6d (bottom right). Stream sediment sample sites from the project area with Cu values classified by percentiles.
Figure 7. Stream sediment sample results from the Tarlton area.
Figure 7a. (top left) Stream sediment sample sites from the Tarlton area with Zn values classified by percentiles. Figure 7b. (top right) Stream sediment sample sites from the Tarlton area with Pb values classified by percentiles. Figure 7c. (bottom left) Stream sediment sample sites from the Tarlton area with Cu values classified by percentiles.
4.1.3 Rock Chip Sampling

A total of 140 rock chip samples have been collected in the project area (Figure 8). The majority were follow-up to the stream sediment sampling in E25094, spreading onto EL25092, with a second group in the north of EL25091 and a third concentration in the southwestern corner of EL25093. All appear to be targeting base metal mineralization in the Arrinthrunga Formation or Tomahawk Beds.

The highest results for Pb, Zn and Cu all come from the Tarlton area in EL25094 and EL25092, with lower level anomalism in EL25091 (Figure 8).

4.1.4 Drilling.

Figure 9 shows the holes drilled within, and surrounding the project area. Eight have been drilled within the project area, the majority being either BMR or NTGS holes. No down-hole assay data was provided with the data pack and so it cannot be evaluated. Outside the project area, Baldwin 1 intersected mineralization at the contact between the Arthur Creek Formation and the Thorntonia Limestone. Note also that no drill hole information was provided for the Box Hole Bore prospect. Figure 9 illustrates how little drilling has been completed in the project area, and in particular, the geochemical anomalism in the Tarlton area was not followed-up with drilling.

4.2 Geophysics

There is no information on prospect-scale geophysics in the project area in the available data, and the only geophysical data is regional-scale aeromagnetics and gravity. The gravity image does not provide the detailed information required to assist in targeting exploration (Figure 10). It shows the broader features such as the Dulcie Syncline, extending northward toward the Sandover River, which is interpreted to be a depositional trough. The Box Hole prospect lies on the edge of the gravity low. Interestingly the deep low under the Dulcie Syncline extends south of the contact with the basement suggesting that the Arunta Block has been thrust over the Georgina Basin. A second gravity low occurs beneath the basement south of Tarlton Downs. A gravity high lies to the north of the project area below the Trackrider Prospect and smaller highs are scattered through the centre of the area. Drill hole Baldwin 1 lies on the edge of a the gravity high.

Aeromagnetic data is dominated by a highly magnetic basement extending from the Hatches Creek Group in the north southward beneath the basin (Figure 11). It shows an area of shallow basement in the centre to east of the project area, with deeper basement to the northwest and southeast. A notable feature is the northeast trending structure that passes to the north of the Box Hole prospect (Figure 11a,c). To the west, the magnetic response becomes more diffuse suggesting deeper basement than the area to the east of the structure. This structure is also borne out in the geological map (Figure 5), where there is outcrop to the east but none to the west, suggesting a downthrown fault block to the west. From the geological map (Figure 5), the structure continues south of the outcrop of the Dulcie Sandstone, indicating that it is pre-Silurian in age. An interpretation of the structure is that to the west the
basin was deeper, with a more shallow platform area to the east, with the Box Hole Bore prospect lying on the platform side.

In addition to the major structure discussed above, the aeromagnetic image shows a number of other large structures that continue from the basement into the basin, affecting the buried long wavelength magnetic features (Figure 11c). Many of these features can be seen to offset the magnetic units and so are interpreted to be faults. Box Hole Bore lies in an area where several faults meet, Baldwin 1 is adjacent a north-trending structure and Trackrider is on what may be a basement high. The Tarlton area also occurs above an interpreted fault-bounded basement high.

The major structure in the centre of the area is also apparent on the aerial radiometric image (Figure 12). In this instance it likely reflects an area of outcrop to the east and sandy cover to the west. The outcrop of the Dulcie Sandstone is an area of low radiometric counts, indicating that there is little or no radiometric material at or near the surface. It suggests that the sandstone contains little K-feldspar and hence may not have been an aquifer to basin (ie K-bearing) fluids typical of most MVT districts whereas the likely removal of K-feldspar suggests acidic meteoric fluids. The area of highest radiometric response is in the areas of granite outcrop in the Arunta Block.

4.3 Conclusions

The stream sediment and rock chip sampling results all show that there is significant anomalism in Zn, Pb and Cu in the Tarlton area. It also shows how little geochemical exploration has been undertaken in the project area, with less than 20% having been subject to geochemical sampling. There has been little or no prospect scale geophysical prospecting undertaken in the area with the only available data being regional datasets. These show a number of major structures and provide information on the regional structure of the basin but provide no detailed information for identifying possible targets for drilling. As such, the previous work in the project area has only tested a small part of the area while indicating several areas may be prospective.
Figure 8. Rock chip sampling from the Georgina Project and surrounding area.

Figure 8a (top left). Rock chip samples within and surrounding the project area. Figure 8b (top right). Rock chip sample sites within the project area with Zn values classified by percentiles. Figure 8c (bottom left). Rock chip sample sites within the project area with Pb values classified by percentiles. Figure 8d (bottom right). Rock chip sample sites within the project area with Cu values classified by percentiles.
Figure 9. Drill hole locations from the Georgina project and surrounding area. (from the NTGS data package only, it excludes drilling in the vicinity of the Box Hole Bore prospect).
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Figure 10 (top left). Bouger anomaly gravity image of the Georgina Project area, showing the location of the known prospects.

Figure 11. Aeromagnetic images over the Georgina Project area.

Figure 11a (top right). An image of the first vertical derivative of the aeromagnetic data. Figure 11b (bottom left). An image of the total magnetic intensity over the project area. Figure 11c (bottom right). Interpreted major faults overlain on the first vertical derivative of the aeromagnetic data. The Box Hole Prospect is in an area of complex faulting, Baldwin 1 is adjacent a north-trending structure and the Trackrider prospect and the Tarlton area are above basement highs.

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Figure 12. A ternary aerial radiometric image of the project area. Note the area of low radiometric response over the outcrop of the Dulcie Sandstone in the west of the area.
5  Prospectivity

5.1 Known Mineralization.

The known mineralization within the project area is confined to three localities, two Cu occurrences within the basement close to the contact with the Georgina Basin in EL25092, and Pb at the Box Hole Bore prospect which is excluded from the exploration tenements (Figure 13). In the surrounding areas, there are a number of barite, barite - fluorite and barite - galena occurrences at the margins of the basin, hosted by Neoproterozoic units. There are also a number of metallic occurrences in the Arunta Block principally associated with the Jinka and Jervois Granites.

At Box Hole Bore, stratabound epigenetic replacement cavity-fill mineralization occurs in a stromatolitic dolostone over a strike-length of 6.5 km, within the uppermost part of the Arrinthetaunga Formation. Hand-picked ore returned an average grade of 65 - 70% Pb and 60 g/t Ag. Lead isotope data suggests that mineralization occurred during the Alice Springs Orogeny, between 420 - 280 Ma (Dunster et al., 2006).

Figure 13. Mineral occurrences in project area and surrounds.
At the Trackrider Prospect (7.6 km southeast of Ooratippa Homestead and outside of the project area), similar mineralization has been found, where the host is a vuggy siliceous limestone and manganiferous dolostone, also of the Arrinhrunga Formation.

In drill hole Baldwin 1 (just to the east of EL25091), visible Zn-Pb mineralization has returned assay results up to 1.2% Zn, just below a shale cap at the contact between the Thorntonia Limestone and the Arthur Creek Formation (Figure 14). Also in the Thorntonia Limestone, NTGS drilling intersected percent levels of Zn and visible galena near the Boat Hill Prospect (48 km east of EL25092), where a fault breccia contains percent levels of Zn. Dunster et al (2006) suggest that this may have similarities to the Century deposit.

5.2 Possible Exploration Targets

From the above discussion on the geology and deposit styles from literature, the Georgina Project area can be assessed in terms of possible exploration targets. Known mineralization in the Georgina Basin includes Pb-Zn, Cu and P. In the Amadeus Basin, Cu, Pb-Zn, Au and U mineralization has been found and the Ngalia Basin hosts U mineralization.

5.2.1 Zinc-Lead

Previous exploration in the Georgina Basin has discovered Zn-Pb mineralization at a number of localities. There are three major styles of Zn-Pb mineralization within sedimentary basins, MVT, Irish – type and Shale-hosted massive sulphide (SHMS). All are favoured by having feldspathic units within the lower part of the basin that may be a source of metals; a deep fault system that act as conduits to fluids and a suitable host-rock, carbonates in the first two styles and black shales in the latter.

MVT style mineralization is hosted by carbonates, typically but not always dolomitized and associated with dissolution of the carbonate, either hydrothermal or karst or a combination of both. There are two tectonic settings, deposits that are attributed to compression and those attributed to extensional settings. The former are more common and include the Mississippi Valley and Silesian deposits, whereas the Lennard Shelf is the major example of the latter. In the former, mineralization may be distal to the deformation front, with basinal fluids being pushed out of the basin in front of the advancing thrust front, in response to crustal loading. In the latter, extension creates space for basinal fluids to escape from the basin, possibly as a response to sediment loading or meteoric water forcing basinal waters to the edges of the basin. Both of these tectonic settings can be applied to the Georgina Basin at different times of its development, with rifting in the Orodovician and the compression in the Alice Springs Orogeny. The lead isotope evidence favours a mineralizing event during the Alice Springs Orogeny (Dunster et al., 2006). If this is so, the area to the north of the Dulcie Syncline would be favoured as the Arunta Block has been thrust north over the basin along the southern margin.

Irish - style mineralization, has many features in common with MVT-style and is hosted by dolomitized limestone adjacent major extensional faults. The majority of extensional faults on the southern margin of the Georgina Basin were re-activated as reverse faults during the Alice Springs Orogeny. Interpretation of the aeromagnetic images will assist in identifying likely faults but as the major extension event occurred in the Neoproterozoic where carbonate
deposition was minimal, and the main tectonic force was compressional during deposition of the carbonates in the Cambrian, there may be no carbonate rocks adjacent extensional faults. More work would be needed to evaluate the potential for Irish-style deposits.

In SEDEX style mineralization, Zn-Pb sulfides are hosted by fine-grained organic-rich sediments typically adjacent to major extensional faults, but there is also a more distal variant where a feeder fault may not be apparent. They are confined to deeper quiescent sub-basins on the hanging wall of syndepositional rifts and may have associated smaller vein- or MVT-style mineralization in the surrounding area. There are two sub-types; the Selwyn Basin type which occur within reduced basins and the McArthur River type which have dominantly oxidized footwall packages. Only the Arthur Creek Formation would be a suitable host to shale hosted mineralization but it was likely deposited in a compressional tectonic environment and the Georgina Basin may not be prospective for this style of mineralization.

Figure 14. Drill hole assay information from drill hole Baldwin 1, situated just outside the project tenements (see Figure 13). It shows minor mineralization at the contact between the Arthur Creek Formation and the Thorntonia Limestone (from NTGS presentation).

5.2.2 Copper

The Georgina Basin has been suggested to be prospective for sediment-hosted copper. In the best examples of this style of mineralization, copper sulfides are hosted by a range of
lithologies at a major redox boundary. The largest occurrences are at the first major redox boundary above the basement, typically at the scale of tens of kilometres. There is a spatial association with evaporites, typically above the deposit and more rarely below or lateral to mineralization. There is widespread low-grade mineralization of this style in the Amadeus Basin to the south, at several stratigraphic levels from the base of the Bitter Springs Formation to the Upper Cambrian Goyder Formation. The former example is an example of the more classical style of sediment-hosted Cu mineralization whereas the latter may be an example of the Dzherkazgan style. The Arthurs Creek Formation also hosts minor turquoise mineralization suggesting that there has been some movement of copper-bearing fluids.

The basal stratigraphy of the Georgina Basin is of a similar age to that which hosts the giant deposits of Central Africa. The Mount Cornish Formation and Yardida Tillite are correlatives of the Grand Conglomerate which lies above the rocks that host Cu mineralization. Hence, the underlying Yackah Beds are temporal equivalents to the Roan Group. There are some similarities between the Yackah Beds and the Lower Roan Group, in particular both being mainly arenites and being deposited in small rift basins prior to the fault linkage stage of extensional basin development. However, the Yackah Beds are considerably thinner than the Lower Roan Group and lack the large thickness of evaporitic rocks that comprise the Upper Roan Group and which seem to be necessary to form large Sediment-hosted Cu deposits such as the Copperbelt and the Permian, Kupferschiefer deposits. The absence of thick evaporites and salt tectonics also mitigate against the Dzherkazgan style of mineralization, which can form in multiphase basins. Therefore at best only small low-grade sediment-hosted copper is thought likely within the Georgina Basin.

5.2.3 Uranium

In the Amadeus Basin and the Ngalia Basin are several examples of roll-front style U mineralization. In the Amadeus Basin it occurs within the Undandita Member of the Brewer Conglomerate, the upper most unit of the Pertnjara Group, which is roughly equivalent to the Dulcie Sandstone (Borshoff and Faris, 1990). There U mineralization occurs in medium to coarse-grained feldspathic lithic arenite deposited within a foreland basin formed as the Arunta Block was thrust over the Amadeus Basin in the Alice Springs Orogeny. The Bigryli deposit is hosted by the Mt Eclipse Sandstone, occupying a similar stratigraphic level as the Angela and Pamela deposits, and having been deposited in a similar tectonic setting (Fidler et al., 1990).

The Dulcie Sandstone was deposited within a foreland basin but in contrast to the Brewer Conglomerate, it is a mature sandstone. It is also considerably thinner than both the Pertnjara Group and Mt Eclipse Sandstone. The radiometric image shows that the Dulcie Sandstone has the lowest radiometric response in the image. Therefore the potential to hosted uranium mineralization is thought to be very low.

5.2.4 Conclusions

Of the three major types of mineralization briefly considered here, the Georgina Basin is thought to be prospective for MVT-style Zn-Pb only. The Georgina Basin as preserved today is on the margin of a deeper rift to the south, and the several deformations that have affected the basin may have moved fluids out of the deeper part of the basin prior to its final
exhumation in the Ordovician rifting event. The inference is that carbonate rocks deposited prior to, or in the Ordovician have potential to host mineralization. Although the basal units are temporal equivalents of the units that host the Central African Copperbelt, deposited in a similar tectonic setting, the limited thickness of these units and the lack of thick evaporitic units mitigates against this style of mineralization being present. The presence of uranium mineralization cannot be ruled out but there are major differences between the hosts of uranium mineralization in the Amadeus and Ngalia Basin and the Dulcie Sandstone, particularly in the thickness of the potential host units and their lithologies.

From known mineralization in the Georgina Basin, and that the basin is prospective for MVT-style deposits, the features thought to be important for mineralization and hence exploration are:

- carbonate rocks of pre-Ordovician age
- proximity to a major structure
- brecciation
- dolomitization

The carbonate rocks of pre-Ordovician age are; the Red Heart Dolomite, the Errara Formation the Thorntonia Limestone and the Arrinthungra Formation. These latter two are known to host mineralization at Box Hole Bore and in drill hole Baldwin 1 and as such are considered to be most prospective. The Red Heart Dolomite is not known to host mineralization. It has limited outcrop on the southern side of the basin and was targeted by stream sediment and rock chip sampling which did not return regionally high values. It cannot be ruled out as a possible host but without further information, it cannot be thought to be of high priority. The Errara Formation hosts barite mineralization, replacing hyoliths and so too may be prospective for basemets.

The small number of known occurrences limits any assessment of relationships between structure and mineralization. There are a number of mineral occurrences at or near the contact with the basement along the southern margin of the basin and so west-northwest trending structures may be prospective. These were active during the Alice Springs Orogeny as reverse faults but are likely re-activated extensional faults. Of more interest is the relationship to the mineralization at Box Hole Bore and with the Baldwin 1 drill hole. Both are above the interpreted platform region to a possible northeast trending Cambrian Basin. Both are close to the northeast trending margin and the large fault that marks the margin. However, Box Hole Bore is on the interpreted footwall of the structure, with several magnetic features converging within the area and it is likely that cross-cutting structures to the larger structure may help localize mineralizing fluids. Baldwin 1 is several kilometres from a northeast trending structure but the mineralization intersected is low grade and may be distal to the structure controlling mineralization. It is along strike from a northwest-trending structure however and so it is possible that this structural orientation is important. The Trackrider occurrence is on an interpreted basement high controlled by northeast and northwest trending structures. Further east at Tarlton Downs, the Zn anomalism may have a northeast trend. Hence, proximity to northeast trending structures is thought to have a high prospectivity but major northwest trending structures may also be important and so intersections of these features would have the highest priority.
From the available data, the importance of brecciation in hosting mineralization is uncertain. Collapse breccias are known in the Arrinthrunga Formation and their localities can be identified by aerial photograph interpretation of the overlying Tomahawk Beds and the internal Eurowie Sandstone Member. Galena has been identified at one collapse breccia and they are known to have manganiferous ironstones associated with them. Their presumed Tertiary age suggests that they formed after the main tectonic events that may be responsible for moving fluids out of the basin which downgrades their importance. However, if the Tertiary age is incorrect or if it records the last in a series of collapse events, then they may still be possible hosts to MVT style mineralization. They require further examination to determine the nature and timing of the brecciation.

Dolomitization of limestone plays a major role in ground preparation of carbonates for MVT deposits. There is insufficient information on the occurrence of dolomite in the Georgina Basin and its origins (ie early diagenetic, late diagenetic, hydrothermal etc.) to use it to identify prospective areas at this stage. Further information could be obtained from oil well completion or government drilling reports to understand the types of dolomite present and then use these to further refine the target areas.

5.3 Prospectivity Sub-areas

To examine the prospectivity of the project area, it was divided into 14 sub-areas, based primarily on geology, and ignoring the tenement boundaries within the project area (Table 1, Figure 15). Each sub-area was then assessed with regard to prospectivity based on the possible exploration targets and prioritized.

The key features for prioritizing the areas are:

- the presence of carbonate rocks
- proximity to structures with the highest importance placed on northeast and northwest trending structures
- known mineral occurrences
- position within the basin (i.e. trough or shelf area).

It should be emphasized that these criteria are based on the available data but with additional work, other factors such as dolomitization, brecciation, lithogeochemistry will assist in refining the prospective areas. A major limitation in the assessment is the poor state of knowledge of the area, and the generally poor outcrop. As such higher priorities are given to those areas where a smaller amount of work could advance the project more quickly.

5.3.1 Priority 1 Sub-areas.

Sub-area E is on the main northeast trending structure with smaller northwest-trending structures along the northern margin of the Dulice Syncline. Cambrian carbonates crop out within the area or they are overlain by younger rocks. Sub-area F is on the major northeast trending fault zone, dividing the interpreted platform to the east and basin to the west.
Hole Bore is within this area and the Trackrider Prospect lies along the same trend to the northeast of the project area. The area is cut by northwest and north-trending structures that intersect the northeast trending structure. Sub-areas E and F could be quickly advanced by a regional gravity survey with a station spacing of less than five kilometres, to identify more precisely the position of major structures. Regional geochemistry such as close-spaced stream sediment sampling and/or soil sampling, with rock chip sampling would identify geochemically anomalous areas for follow-up.

Sub-area M is on Tarlton Station where stream sediment sampling has identified a number of anomalies that were not followed-up. This sub-area could be quickly advanced by assessing the open file reports covering the work shown so that the context of the results can be understood. A field visit would assist in understanding the geomorphology and thereafter a decision made on whether or not to follow-up the results with soil sampling in the anomalous catchments.

5.3.2 **Priority 2 Sub-areas.**

Priority 2 sub-areas all have most but not all of the model criteria and have a reasonable level of geological knowledge. They could be advanced by additional office studies to identify more prospective areas such as breccias or major structures, with a field visit to follow-up. Whether additional work should be necessary would depend on the results of these studies but it would likely be regional geochemistry such as soil or stream sediment sampling.

5.3.3 **Priority 3 Sub-areas.**

Priority 3 sub-areas have little or no geological information, primarily because of poor outcrop. It is thought that the prospective host rocks are buried by younger rocks and so are likely at uneconomic depths. They would benefit from further office studies but the lack of information requires that a major regional geochemical survey, combined with regional mapping, would need to be undertaken to advance these areas.

Areas excluded from the prospectivity map are either basement (in the southeast), areas where the Dulcie Sandstone crops out and hence the prospective units are prohibitively deep, or areas where there is no information. A considerable amount of work including drilling to identify underlying stratigraphy would be needed to advance these areas and at this stage this cannot be justified.
Figure 15. Map showing the Georgina Project area divided into smaller areas based on interpreted prospectivity. Table 1 gives details of the 14 areas.
Table 1. Prospectivity areas showing their priority, main prospective features, previous exploration and suggested exploration.

<table>
<thead>
<tr>
<th>Area</th>
<th>Priority</th>
<th>Reasons</th>
<th>Previous Data</th>
<th>To Advance</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>1</td>
<td>Shelf to Dulcie Syncline; transfer zone, NNE trending structure; limited outcrop, Tomahawk and Kelly Formations</td>
<td>a few stream sediment samples, none anomalous</td>
<td>define structure: regional gravity, mapping geochemistry: stream sediment or soil sampling stratigraphy: stratigraphic drilling</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>Shelf to pre-Dulcie Syncline basin, NE trending transfer zone, Arrinthrunga Fm outcropping, Box Hole Bore mineralization</td>
<td>rock chip sampling drill holes soil sampling</td>
<td>define structure: regional gravity, mapping geochemistry: stream sediment or soil sampling stratigraphy: stratigraphic drilling</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>Shelf to Toko Syncline? Kelly and Tomahawk’s; Arrinthrunga Fm. Basement high. Tarlton</td>
<td>550 stream sediment samples 62 rock chop samples (1.31%Pb, 834 ppm Zn)</td>
<td>soil sampling over ssed anomaly, shallow drilling, mapping</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Shelf to Dulcie Syncline; edge of basin, transfer zone, small sub-basin</td>
<td>a few stream sediment samples, none anomalous</td>
<td>Identify presence of Arrinthrunga Fm. (previous drilling, stratigraphic drilling). Regional geochemistry</td>
</tr>
<tr>
<td>G</td>
<td>2</td>
<td>Shelf to Pre-Dulcie Syncline basin and Dulcie Syncline, NE trending structure; Tomahawk Fm outcropping</td>
<td>a few stream sediment samples, none anomalous</td>
<td>define structure: regional gravity, mapping geochemistry: stream sediment or soil sampling stratigraphy: stratigraphic drilling</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>Distal Shelf to Pre-Dulcie Syncline Basin; NE and NW trending structure; Arrinthrunga Fm</td>
<td>a few stream sediment and rock chip samples, weak anomaly</td>
<td>regional geochemistry</td>
</tr>
<tr>
<td>H</td>
<td>2</td>
<td>Shelf to Dulcie Syncline, edge of the basin, Arrinthrunga Fm</td>
<td>a few stream and rock chip samples. Rock chips weakly anomalous in Cu</td>
<td>Identify presence of Arrinthrunga Fm. (previous drilling, stratigraphic drilling). Regional geochemistry</td>
</tr>
<tr>
<td>Area</td>
<td>Priority</td>
<td>Reasons</td>
<td>Previous Data</td>
<td>To Advance</td>
</tr>
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<td>------</td>
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<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>J</td>
<td>2</td>
<td>Distal Shelf to Pre-Dulcie Syncline Basin; NE and NW trending structures; Arrinthrunga and Arthur Ck Fm’s.</td>
<td>none</td>
<td>regional geochemistry</td>
</tr>
<tr>
<td>N</td>
<td>2</td>
<td>Shelf to Toko Syncline? edge of basin, Kelly, Tomahawk, Arrinthrunga and Arthur Ck Fm’s; ESE structure. Known mineralization</td>
<td>a few stream sediment, soil and rock chip samples. One rock chip sample anomalous in Cu, another weakly anomalous in Zn</td>
<td>extend stream sediment sampling from the north.</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>Shelf to Dulcie Syncline; no outcrop. Target Arrinthrunga; Thorntonia</td>
<td>none</td>
<td>Identify underlying stratigraphy (previous drilling, stratigraphic drilling) Structures? gravity, aeromagnetics</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>Shelf to Dulcie Syncline, basin margin to NE - SW basin: outcropping Tomahawk and Kelly Formations</td>
<td>few stream sediments; none anomalous</td>
<td>Identify presence of Arrinthrunga Fm. (previous drilling, stratigraphic drilling). Regional geochemistry</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>Shelf to Dulcie Syncline; edge of basin. no outcrop. Target Arrinthrunga; Thorntonia</td>
<td>none</td>
<td>Identify presence of Arrinthrunga Fm. (previous drilling, stratigraphic drilling). Regional geochemistry</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>Shelf to Toko Syncline? major ENE trending structure, basement high? Tomahawk Fm</td>
<td>none</td>
<td>regional geochemistry</td>
</tr>
<tr>
<td>L</td>
<td>3</td>
<td>Edge of basin; poor o/c; Kelly and Tomahawk Fm outcrop at N and E margins, on NW structure</td>
<td>none</td>
<td>regional geochemistry</td>
</tr>
</tbody>
</table>
6 CONCLUSIONS.

The study on the prospectivity of Mincor Resources Georgina Basin Project has examined the geology, geophysics and previous work completed within the area. The main conclusion from this study is that the Georgina Basin is prospective for base metal mineralization, particularly MVT-style deposits. This conclusion is based on the following points:

- For much of its evolution, the Georgina Basin has been on the northern margin of a major rift zone. Deposition within the preserved portion of the basin was confined to platform and shelf sediments.

- The basin contains a number of carbonate units, at least one of which, the Arrinthurunga Formation shows evidence of brecciation, and dolomite appears to be widespread.

- Many of the clastic units deposited in the Neoproterozoic to earliest Cambrian are feldspathic and immature, and are possible sources of lead and zinc.

- Interpretation of geophysical data suggests that there are a number of large, long-lived faults that could act as conduits for basin fluids, from the deep basin onto the shelf areas.

- There are three occurrences of lead and zinc within or close to the project area that have been interpreted to be MVT-style deposits.

A review of previous exploration has shown that it has been minimal, with less than 20% of the project area having been subject to regional geochemical exploration. There has been almost no soil sampling conducted and only 140 rock chip samples. As such the area is under-explored. Based on stream sediment sampling, the Tarlton area stands out as being prospective for lead – zinc mineralization. Otherwise there is insufficient data to use previous work to target future exploration.

Examination of regional geophysical data sets including aeromagnetics, gravity and radiometric images has indicated that northwest trending and northeast trending structures may be prospective. Interpretation of these datasets has also suggested that the centre of the project area may have been a platform area to deeper trough areas to the west and southwest, with a major northeast-trending structure controlling the margin. The Box Hole and Trackrider prospects lie close to this structure and hence this area is given the greatest priority for exploration. Other areas may be prospective but there is insufficient information available at this stage to advance a project quickly.

Potential for sediment-hosted Cu is limited because of lithological and stratigraphic factors and potential for roll-front uranium (based on examples from the Ngalia and Amadeus Basins) is limited due to sedimentological and lithological factors.
7 **RECOMMENDATIONS.**

Mincor Resources should continue to explore for lead-zinc mineralization in the Georgina Project area, particularly targeting MVT-style deposits. Because of the limited past work, geochemical exploration has potential for rapid low-cost definition of target areas. This should be combined with better geological characterization and targeting, which would include:

1. Refining the targeting model based on known mineralization in the Georgina basin and other comparable districts; i.e. definition and ranking of prospect scale and trend-scale targeting criteria (stratigraphic, lithological, structural, and alteration).

2. Improving the targeting framework in the priority areas identified in this study, through more detailed analysis of data already acquired (especially geophysics) and assessment of available open-file data.

Desk-top studies, focused on the priority areas identified in this report, should look more closely at the available data combined with new information gathered from open file reports and other regional data sets. This will assist in planning for field work and reduce the size of the priority target areas.

Field work should be undertaken to help identify prospect-scale targets within the prospective areas identified in this study. Initially emphasis should be placed in the Priority 1 Areas, E, F and M. As a first pass in Areas E and F, close-spaced stream sediment sampling and regional soil sampling should be undertaken where regolith conditions are appropriate. A regional gravity survey should be undertaken to provide more detailed information along the major northeast and northwest trending structures in this area.

Area M will particularly benefit from examining open file reports on the stream sediment and rock chip sampling completed. If this shows that the stream sediment anomalies in the Tarlton area were not fully explained, soil sampling should be used across the identified anomalous catchments.

In other areas, regional geochemical methods (stream sediment sampling if the topography allows, wide-spaced soil sampling where it does not) may be used to identify regionally anomalous areas and further target exploration.

No exploration is recommended in the area of outcrop of the Dulcie Sandstone or areas of no outcrop to the north at this time. These and the other low priority areas could be considered for immediate relinquishment.

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REFERENCES


