

**OAKAJEE EXPLORATION PTY LTD**

**GR521- GROUP TECHNICAL REPORT**

**EXPLORATION LICENCES 32051 and 32052**

**2nd OCTOBER 2020 TO 1st OCTOBER 2021**

<b>Titleholder</b>	Oakajee Exploration Pty Ltd
<b>Project Operator</b>	Oakajee Exploration Pty Ltd
<b>Titles/Tenements</b>	Els 32051 & 32052
<b>Tenement Manager/Agent</b>	AMETS
<b>Mine/Project Name</b>	Birrindudu Project
<b>Personal author(s)</b>	Reg Beaton
<b>Company reference number</b>	
<b>Target Commodity or Commodities</b>	Nickel, Copper, PGE
<b>Date of report</b>	9th November 2020
<b>Datum/Zone</b>	GDA94/Zone 52
<b>250 000 K Mapsheet</b>	Birrindudu SE5211
<b>100 000 K Mapsheet</b>	Styles 4961 Nongra 4861 Ware 4860 Mount Winnecke 4960
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## **1. Abstract**

The Birrindudu Nickel project area, comprises 3 Exploration licences covering approximately 1,116.05km<sup>2</sup> (363 Blocks) located about 620 kilometres south-south-west of Darwin, NT.

The project is 100% owned by Oakajee Exploration Pty Ltd a wholly owned subsidiary company of ASX listed Oakajee Corporation Ltd.

No field work was completed in the 2nd<sup>st</sup> reporting year due to the COVID19 pandemic restrictions on travel between States. Oakajee planned an AC drilling program with an approved Mine Management Plan however was unable to secure suitable drilling contractors and geological supervision to be able to complete the work prior to the northern wet season.

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## 2. Location and Access

The licence is located approximately 620 km south-south-west of Darwin and can be accessed from the Stuart Highway, thence via the Victoria Highway, thence via existing tracks.

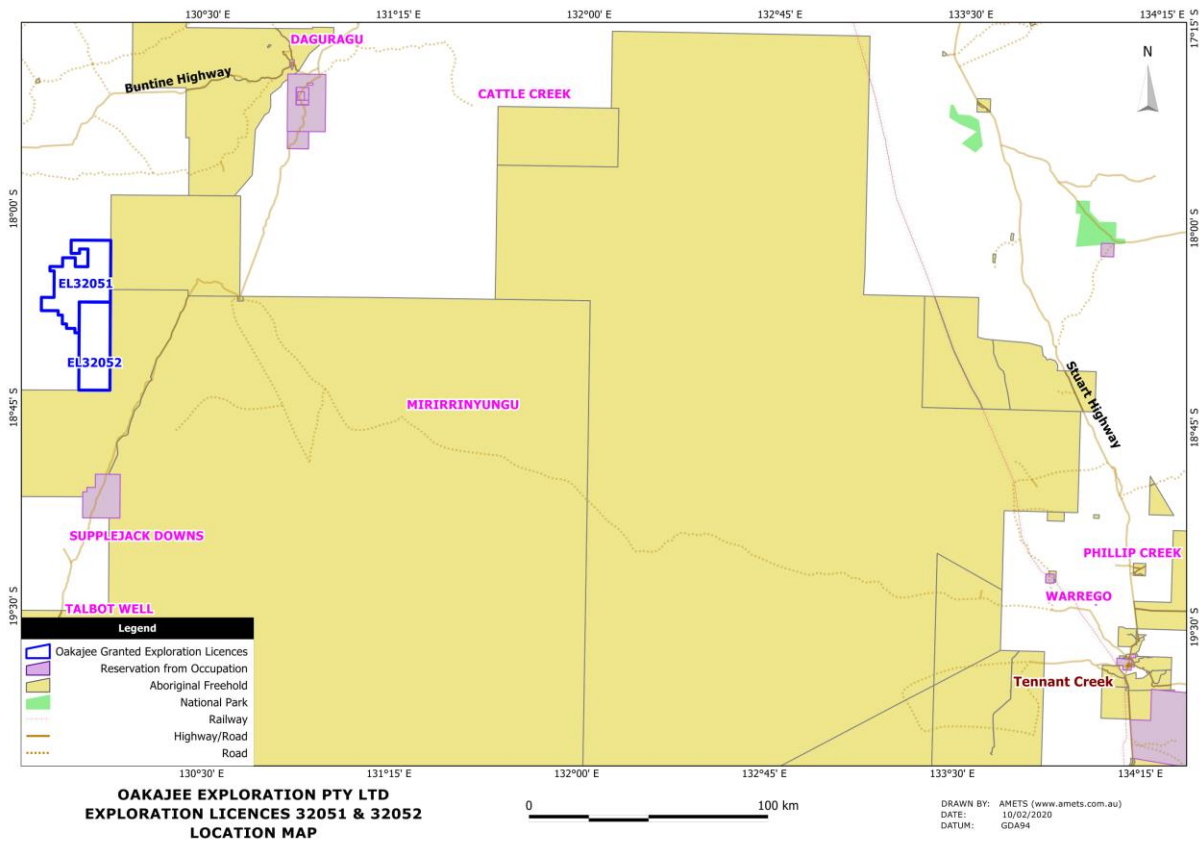


Figure 1 Birrindudu Ni Project Location Map

### 3. Tenure and Land Use

Tenure details are below:

**Table 1 Birrindudu Ni Project Tenements**

Licence	Area (Blocks)	Application	Grant	Expiry	Landholder
EL32051	203	11/12/2018	03/07/2019	02/07/2025	NT Portion 1598- Inverway Station NT Portion 479- Birrindudu Station NT Portion 4867- Riveren Station
EL32052	160	11/12/2018	03/07/2019	02/07/2025	NT Portion 479- Birrindudu Station

#### 4. Topography & Hydrology

The Birrindudu project area covers a flat almost featureless plane with elevation of 400 to 435m AHD that forms the watershed between the Sturt Creek to the west and the Hooker creek to the east. The vegetation is mostly grass with occasional small trees and scrubs, open savannah with larger trees along the edge of creeks beds.

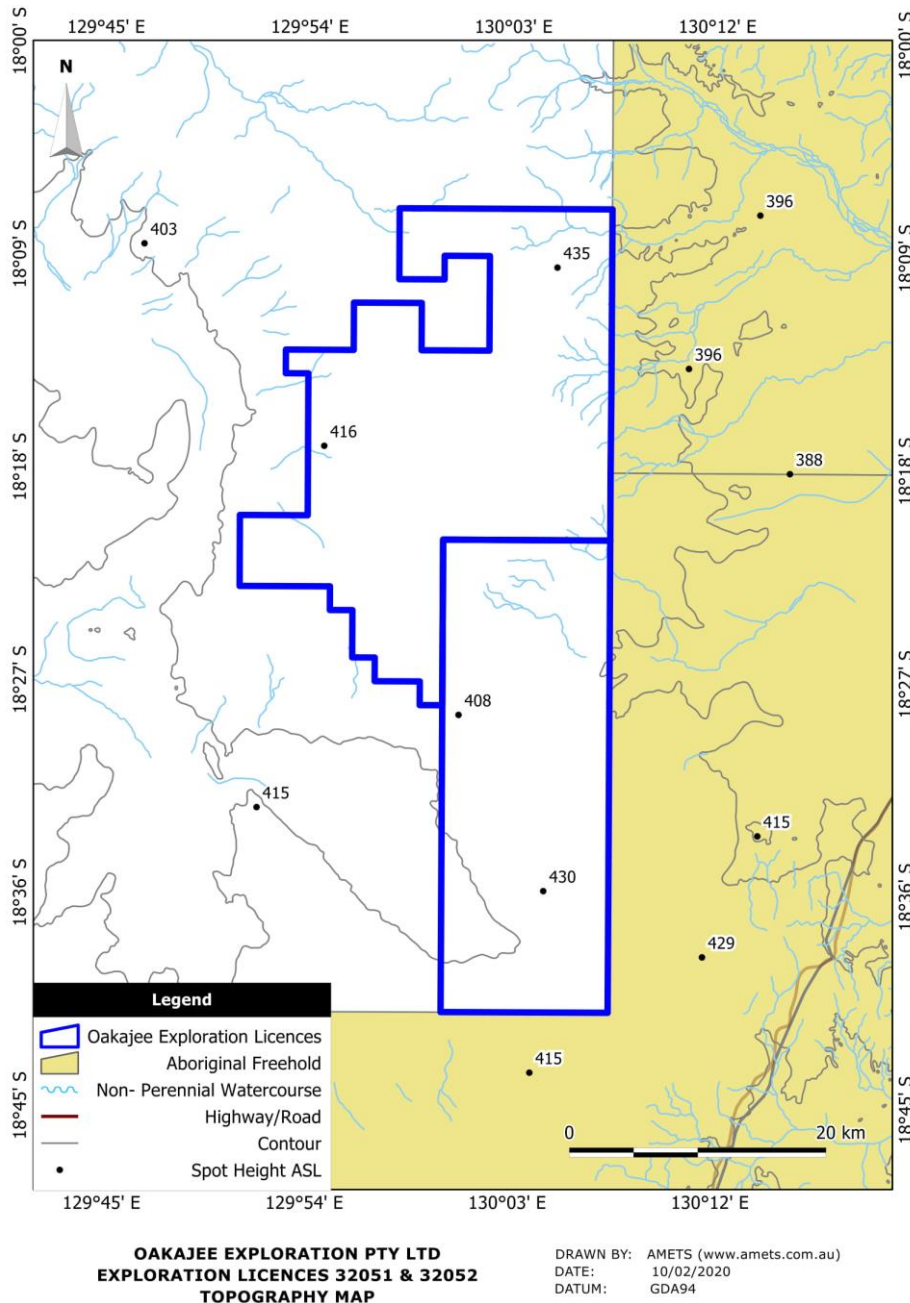


Figure 2 Birrindudu Project Tenement Plan

## 5. Geology

### 5.1 Regional Geology

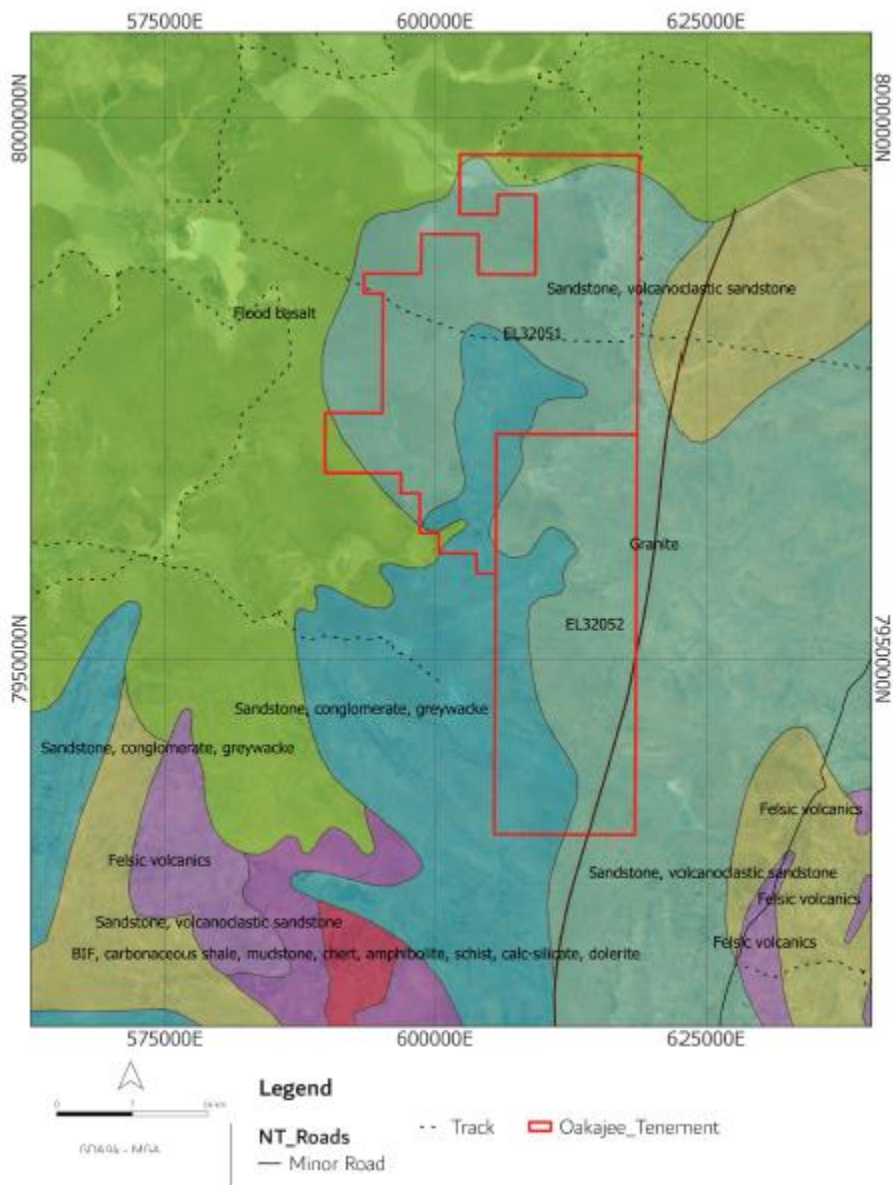
The Tanami Orogen sits within the North Australian Craton, between the Halls Creek Orogen and Arunta Orogen. Isolated inliers of the Neoproterozoic Billabong Complex and the undated Browns Range Metamorphics form the basement to the thick Paleoproterozoic successions of the Tanami Group.

The Tanami Group comprises the Dead Bullock and Killi-Killi formations. The Dead Bullock Formation is dominated by turbiditic sandstone, shale, and chert intruded by mafic sills. It was deposited at ca. 1865 Ma in a probable back-arc basin environment. The Killi-Killi Formation is a 4e5 km thick sequence of siliciclastic rocks that formed between ca. 1865 Ma and ca. 1825 Ma. Seismic reflection imagery and gravity and magnetic modelling shows that the Tanami Group occupies a series of partially inverted half-grabens.

Mineral deposits are overwhelmingly gold associated with the Tanami Orogeny. The Northern Territory contains several large deposits, including Callie, Groundrush, Buccaneer and Old Pirate but Western Australia hosts only one, Coyote. Almost all the gold deposits are hosted in the Dead Bullock Formation However Coyote is somewhat unusual, as it is hosted in the Killi-Killi Formation.

On a regional scale the oldest rocks in the immediate area belong to the Tanami Group (previously the Tanami Complex) and are mapped as Nongra and Helena Creek Beds. The latter are mapped as cropping out immediately east of the tenement where they occur as roof pendants within the Winnecke Granophyre.

The Palaeoproterozoic Tanami Group rocks are locally present in the south and centre of the Birrindudu Nickel Project. The Tanami Group rocks are intruded by the Winnecke Granophyre also of Palaeoproterozoic age. These are unconformably overlain by the Mesoproterozoic Gardiner Sandstone and associated units of the Birrindudu Group. The Early Cambrian (~505Ma) Antrim Plateau Volcanics are a flood basalt-dominant widely extensive unit over significant areas of WA and the NT, and form part of the Kalkarindji Large Igneous Province (LIP). Gravity anomalies suggest that the volcanics may be particularly thick in the region around and adjoining the Birrindudu Nickel Project tenure.



**Figure 3 Birrindudu NT Interpreted Geology 2500K**

## 5.2 Project Geology

The Birrindudu Nickel Project covers the Palaeo-Proterozoic Winnecke Granophyre which is overlain by Cambrian Antrim Plateau Volcanics (APV), composed of tholeiitic basalt.

On the Birrindudu 250k map sheet the Helena Beds are described as being composed of greywacke, tuff, phyllites, conglomerate, lithic arenite and acid porphyry. They form part of what has been reinterpreted as the Killi Killi Formation by Hendrick et al (2000).



The Winnecke Granophyre, together with the Nanny Goat Volcanics and other metasedimentary units, form the Mount Winnecke Group, which is unconformably overlain by the Gardiner Sandstone belonging to the Mesoproterozoic Birrindudu Group. The Gardiner sandstone is exposed in low ridges to the west of the Birrindudu Nickel Project at the southern end.

To the north and west, the Winnecke Granophyre is enveloped by a sheet of basalt of the Cambrian, Antrim Plateau Volcanics. The thickness of the basalt is not known but gravity contours on the Birrindudu mapsheet show a gravity high which indicates that the basalt is relatively thick compared to further west and could represent a feeder zone.

The Birrindudu Nickel Project has been mapped by the Northern Territory Geological Survey. The proportion of mapped outcrop in the tenure is about 5%. Most of the regolith, particularly over the west of the tenure is mapped as ferricrete with lesser sand, alluvial and other cover.

## **6. Exploration Rationale**

Oakajee is exploring The Birrindudu project area for magmatic style nickel sulphide deposits.

Previous drilling for gold and tin within the Birrindudu Nickel Project tenure intersected serpentine-bearing ultramafic intrusive rocks with strongly anomalous Ni-Cu-Pt-Pd (Table 2 & Fig). The age of this intrusive is not known but is likely to be associated with the Antrim Plateau Volcanics (Kalkarindji) event. Sub-volcanic intrusive rocks in major flood basalt provinces represent areas of interest for magmatic style nickel sulphide mineralisation.

## **7. Previous Exploration**

Since 1971, parts of the Birrindudu Nickel Project have been explored for a range of commodities. At different times parts of the current Birrindudu Nickel Project have been explored for uranium, diamonds, gold, and nickel-copper sulphides, but drilling has been minimal. Between 1971 and 1974, Trend Exploration investigated the Uranium potential of the Birrindudu Project, chiefly by radiometric surveys and follow-up of anomalies.

In 1984, Western Mining Corporation completed heavy mineral sampling exploring for diamonds over the eastern parts of the Birrindudu sheet which is within part of the current Birrindudu Nickel Project area. Between 1991 and 1997 Ashton Mining completed exploration for diamonds over part of the Birrindudu Nickel Project.

Otter Gold NL, and in joint venture with Newmont Australia Pty Ltd carried out soil sampling programs and drill testing of gold areas of interest in the east of the Birrindudu Nickel Project between 1996 and 2007. Stockdale Prospecting also joint ventured into parts of the Otter project area to explore for diamonds. At one of the diamond prospects Stockdale drilled, ultramafics were logged in the drill hole but no assays and no further follow up work was completed. Geochemical samples collected by Stockdale were re-analysed by Otter for low level gold. This work highlighted coherent anomalism in several areas. Otter completed follow up testing on the Happy Jack Prospect which included geological mapping and RAB drilling which returned anomalous gold results, but no further work was reported.

Independence Group (IGO) held part of the Birrindudu Nickel Project between 2010 and 2014 exploring for tin, gold and nickel. Work completed included stream sediment sampling, rock chip sampling and soil sampling. They also tested an area approximately 30 kilometres north of the Otter's Happy Jack Prospect with RAB drilling (241 holes for a total of 3,467.5 metres) with poor results. Air Core drilling (199 holes for a total of 7,995 metres) did intersect a serpentinite ultramafic unit interpreted by IGO as a sill approximately 250 meters wide that corresponds to a magnetic anomaly approximately 1200m in strike.

In 2008-2009 IGO re-examined and re-assayed approximately 100 heavy mineral concentrates and stream sediment samples collected by WMC and De Beers Australia Exploration in 1984 as part of their Australia-wide search for diamonds. Results were considered significant and in 2009, IGO completed two phases of stream sediment sampling locating the Birrindudu Sn Prospect. The first phase saw 54 samples collected. The second phase saw 77 samples collected. In addition, a total of 117 rock chip samples were collected for assay and rock type determination.

In 2010, a total of 270 soil samples were collected. The first 25 samples completed an orientation program, while the remaining 245 samples comprised a soil sampling program 'proper'.

Some of the Sn anomalies are located within drainage systems and it was interpreted that these anomalies do not represent in-ground mineralisation, instead providing a vector towards the possible source of Sn anomalism.

The Sn anomaly that is not located within a drainage system appears to directly flank a distinct magnetic feature, which may place it closer to the bedrock source.

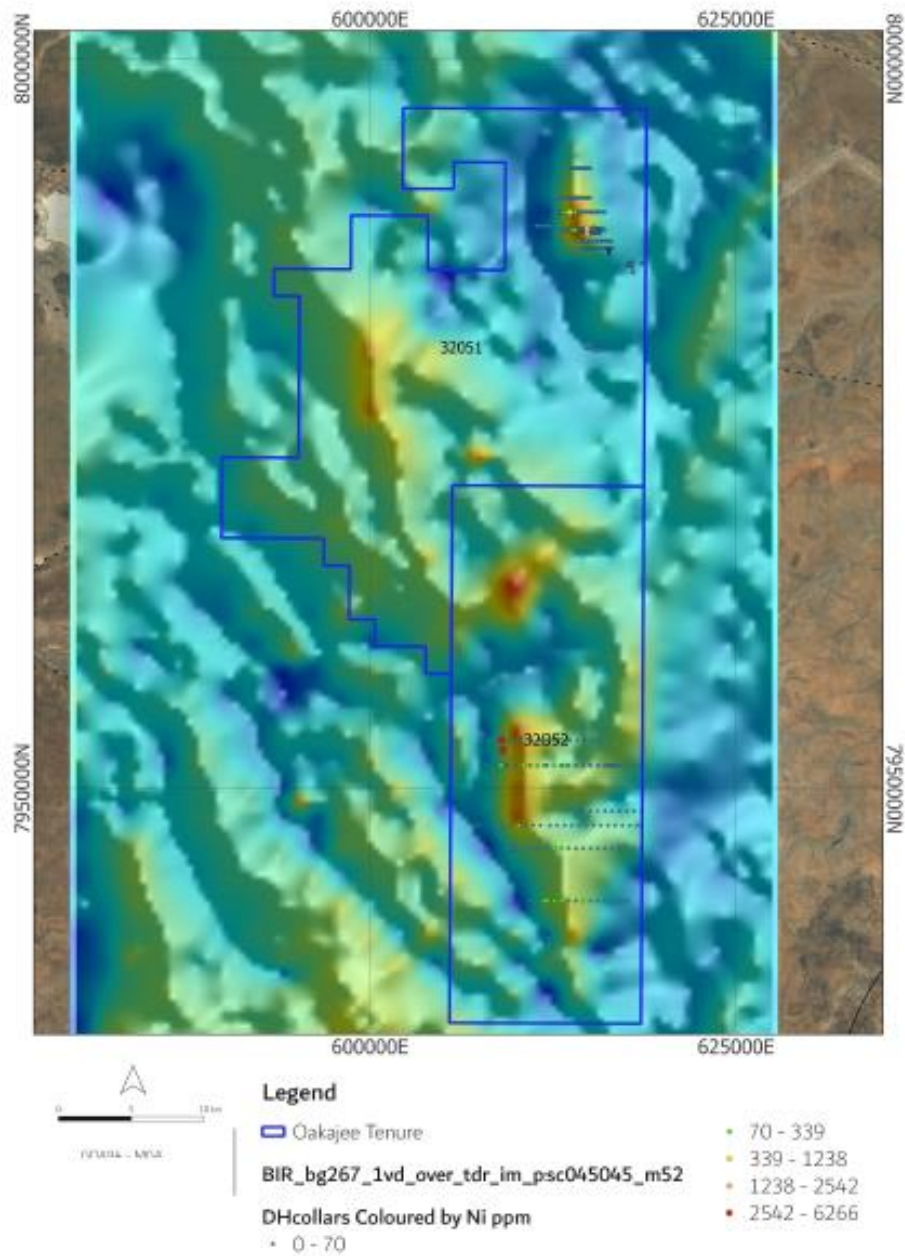
In September 2011 IGO carried out a RAB drilling program at the Birrindudu Sn Prospect targeting a distinct magnetic feature as a possible source of the Sn anomalism. A total of 220 holes were drilled over 8 traverses for 2,099m. The drilling intersected mostly feldspar- quartz-phyric granophyres. Overlying the granophyre is a zone of insitu laterite, typically 1-3m thick. Assay results were generally within the 10-20ppm Sn range which reflect normal background levels for a particular granite phase associated with the Winnecke Granophyre.

A total of 128 Air-Core (AC) drill-holes for 5,636 metres were drilled at the Jumping Jack prospect further south. Assay results from five of the holes returned anomalous Ni, Cu, Pt, Pd from a weathered ultramafic unit (See Table 2).

**Table 2 Anomalous Ni (>1000ppm) from IGO AC drilling at Jumping Jack**

Hole_ID	East	North	Depth m	Dip /Azimuth	From m	To m	Interval m	Ni ppm	Cu ppm	Pt+Pd ppb
JJAC016	609113	7953327	60	-90/0	36	48	12	1407	219	15
JJAC116	609100	7953324	72	-90/0	12	44	32	1715	328	15
JJAC117	609001	7953330	63	-90/0	32	36	4	1238	268	24

JJAC121	609101	7952652	64	-90/0	32	60	28	1694	128	35
JJAC125	609205	7952665	61	-90/0	16	61	45	2570	250	18
				including	20	24	4	6266	205	18



**Figure 4 Birrindudu Drilling Max Ni ppm over gravity**

## 8. Work Conducted During Reporting Term

Due to the COVID19 pandemic and variable travel restrictions between the states suitable drilling and geological contractors were not available for the planned drilling program during the 2nd<sup>st</sup> year of the project.

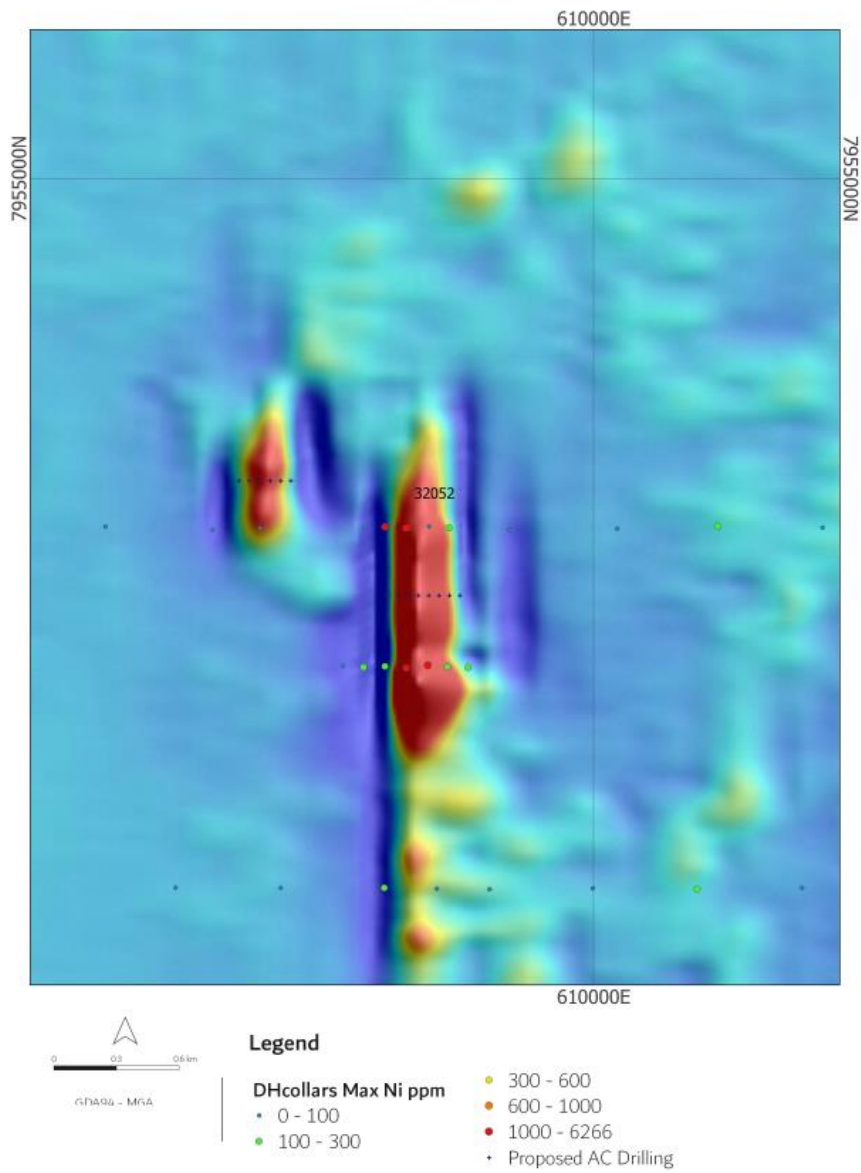
Exploration comprised:

1. Review of planned AC drilling program.
2. Preparation of a Field Program document for the AC drilling.
3. Search for suitable earth moving, drilling and geological contractors to complete the field program.

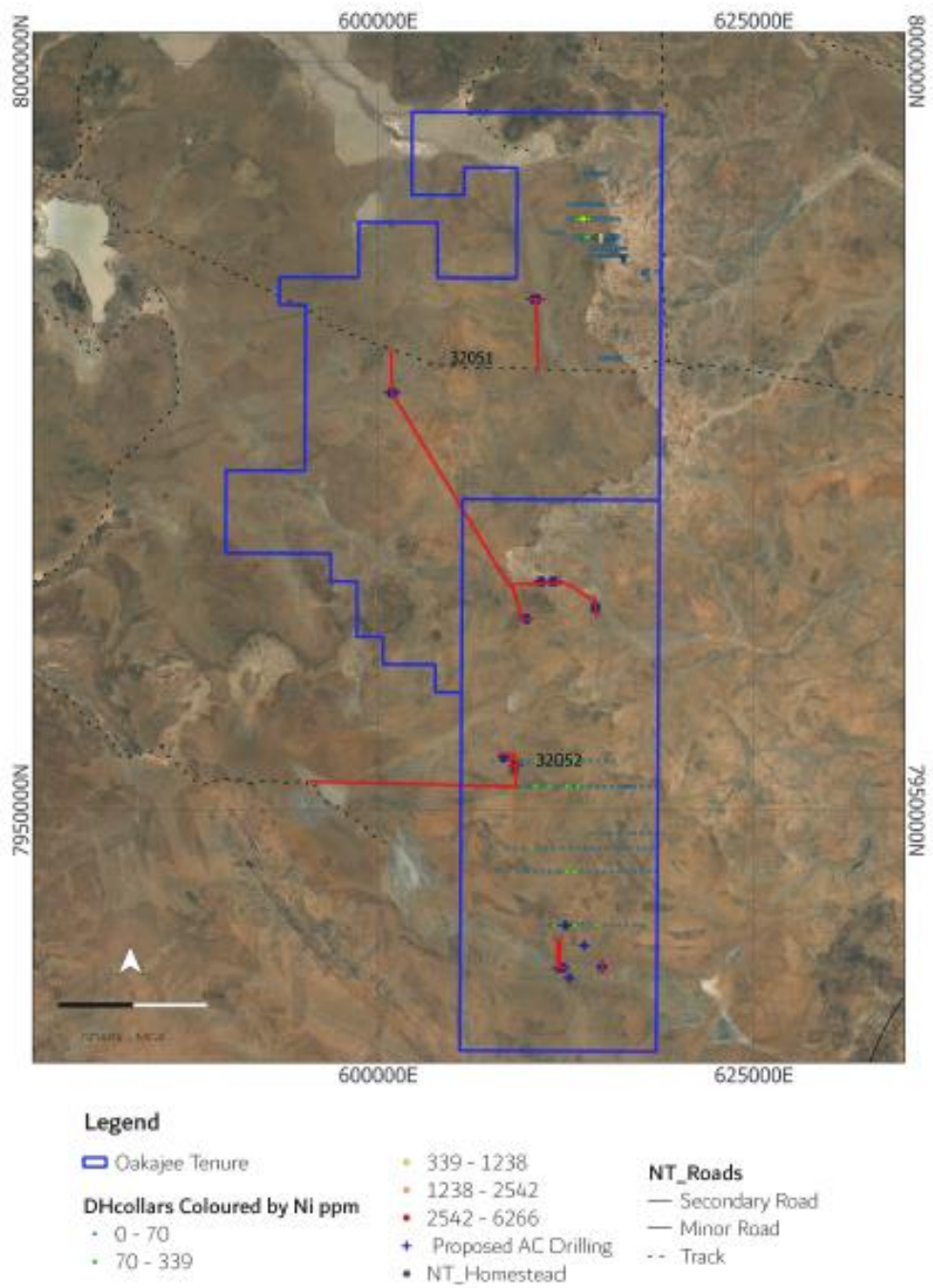
## **8.1 Exploration**

The AC drilling program is planned to test magmatic Ni-Cu-Pt-Pd targets identified from the historic data review summarised in Section 7: Previous Exploration. The most significant data is the IGO RAB and AC drilling completed at the Jumping Jack Prospect where strongly anomalous Ni-Cu-Pt-Pd (Table 2) was returned from an oxidized serpentinite ultramafic intrusive unit striking north over about 1500m x 200m wide. The ultramafic unit is clearly identified in the regional magnetics. Four drill holes on two 600m spaced line intersected anomalous Ni of >1000ppm (Figure 5). These results may indicate the presents of magmatic Ni sulphides within subvolcanic feeder dykes and warrants further testing.

The exploration plan is to drill additional AC holes over the Jumping Jack ultramafic intrusive to determine the presence of sulphides that may suggest a Ni-Cu-Pt-Pd deposit could be discovered. In addition, AC drilling will test a range of similar type magnetic high signatures throughout the Birrindudu project area (Fig 6).



**Figure 5: Jumping Jack IGO Drilling over Magnetics**



**Figure 6 Birrindudu Drilling coloured by Max Ni ppm with proposed AC drilling and permitted Access.**

## 8.2 Mine Management Plan

To facilitate drill testing of a range of magnetic high targets a Mine Management Plan for a proposed drilling program of about 101 air-core drill holes for 5600m was submitted to DPIR. The plan includes additional drilling at the Jumping Jack prospect where previous drilling intersected an ultramafic intrusive unit with anomalous Ni-Cu-Pt-Pd.

The Plan was approved on the 2<sup>nd</sup> of Nov 2020.

## **9. Conclusions and Recommendations**

The Birrindudu Nickel Project is considered to have potential to host magmatic nickel sulphide deposits within feeder dykes to the Cambrian Antrim Plateau Volcanics which are located to the north and west of the project area.

A Mine Management Plan for proposed drilling to test several magnetic targets thought to be mafic-ultramafic dykes was approved in November 2020. The drilling did not proceed in the 2021 period as planned due to a range of issues largely due to various State Border restrictions resulting in the company not being able to secure suitable field crews. The company is working towards completing the drilling in the 2022 field season.

## **10. References**

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