



# EL33389 Copper Queen Annual and Final Mineral Exploration Report 2024

## Reporting Period

15/09/2023 To 01/08/2024

## Distribution

Department of Industry, Tourism and Trade (NT)  
Digital EL33389\_2024\_F

Sandfire Resources Limited  
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## Bibliographic Data Sheet

Project Name:	Copper Queen Project
Tenement Number:	EL33389
Tenement Operator:	Sandfire Resources Limited
Tenement Holder:	Sandfire Resources Limited
Report Type:	Annual and Final Mineral Exploration Report
Report Title:	Copper Queen 2024
Reporting Period:	15/09/2023 – 01/08/2024
Report Date:	15/08/2024
Complied By:	L. Roche
1:250,000 map sheet:	Alice Springs (SF5314)
1:100,000 map sheet:	Riddoch (5851)
Target Commodity:	Au, Cu, Ag, Pb, Zn
Geodetic Datum:	GDA94
Prospects Drilled:	N/A
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## Abstract

Sandfire Resources Limited (**Sandfire**) completed data compilation and review during the term of EL33389.

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## 1 Introduction

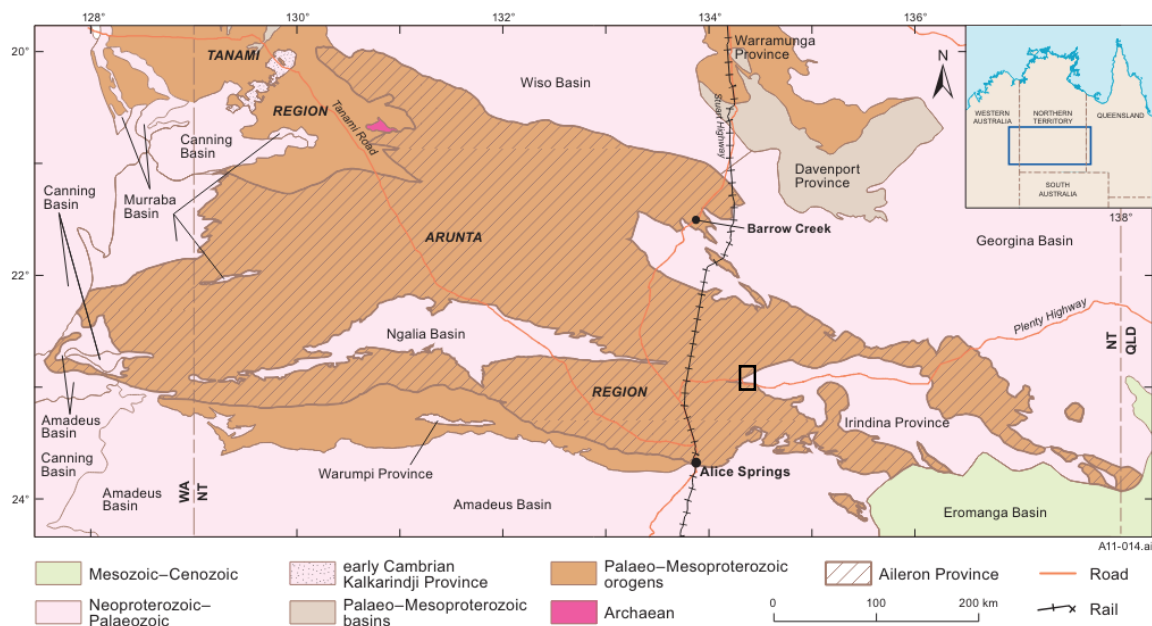
This is the Final Mineral Exploration Report and describes exploration activities conducted over the duration of tenure from grant on 15 September 2023 to relinquishment on 1 August 2024 (Table 1.1). The report includes preliminary activities, focussed on historic data compilation, undertaken in search for copper, zinc and lead targets within EL33389.

**Table 1.1. Tenement Schedule**

Tenement	Grant Date	Expiry Date	Area
EL33389	15/09/23	14/09/29	38 Blocks

## 2 Location and Access

The Copper Queen project is located 200km NE of Alice Springs. Access to the project area is via the Plenty Highway and station tracks.



**Figure 2.1 Location and geological setting of the Aileron Province with location of EL33389 outlined (Source: NTGS)**



## **3 Geology**

### **3.1 Regional Geology and Mineralisation**

The Arunta Region is a Proterozoic terrain in Central Australia. It is made up of three tectonic provinces called the 1860-1700 Ma Aileron, 1690-1600 Ma Warumpi and Neoproterozoic to Cambrian Irindina Provinces (Scrimgeour, 2013). EL33389 sits on the boundary between the Aileron and Irindina Provinces (Figure 3.1).

The project area contains outcropping gneisses (schistose biotite, muscovite-biotite, sillimanite-cordierite), calcsilicates, layered amphibolite, mafic granulite and marble. The main deformation fabric runs east – west (Figure 3.2).

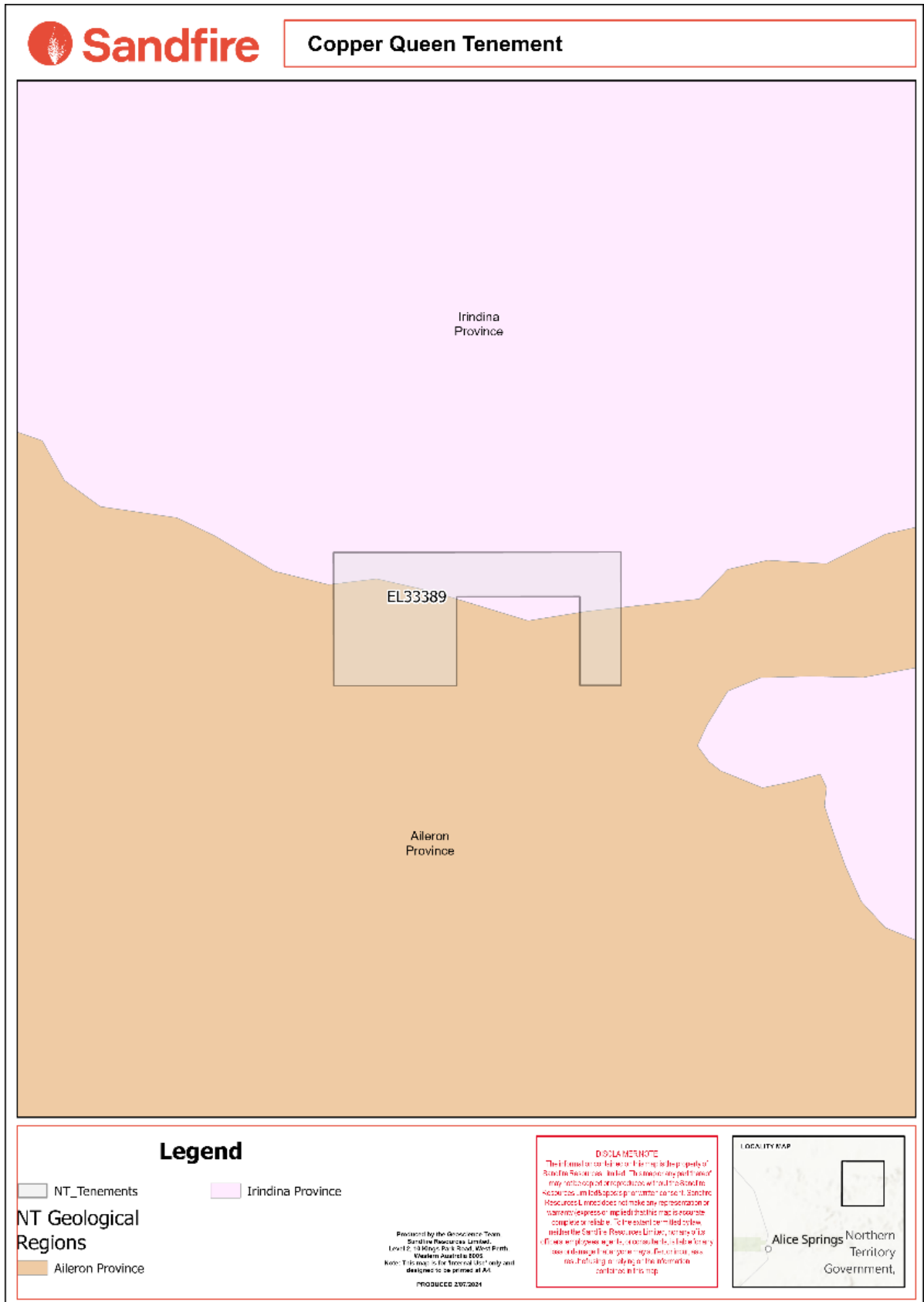


Figure 3.1 NT Geological Regions

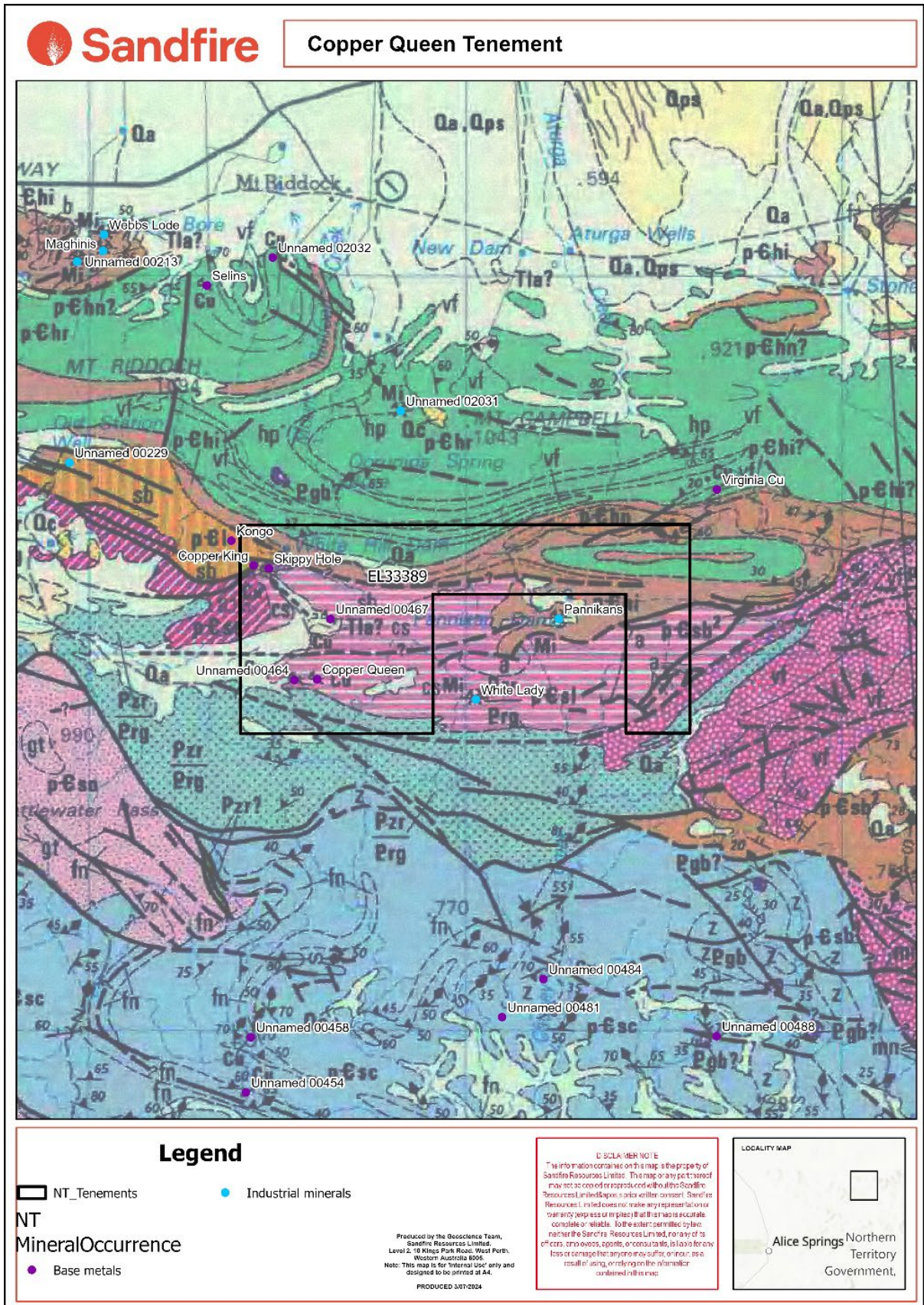


Figure 3.2. Regional Geology



### 3.1.1 Structure

Seven tectonothermal events are recognised in the eastern Arunta region including the Stafford (1810-1790Ma), Yambah (1780-1770Ma), Inkamulla (1770-1740Ma), Strangways (1730-1700Ma), Teapot (1150-1130), Larapinta (480-460Ma) and Alice Springs (450-300Ma) (Huston et al 2006). Two of these events, the Strangways and Larapinta are dominated by extensive high grade upper amphibolite to granulite facies metamorphism with minimal magmatism. The Alice Springs Orogeny contains localised low to high grade metamorphism, deformation and retrogression. The remainder are dominated by magmatism.

The project area sits along a major fault called the Florence Muller Shear Zone, which marks the boundary between the Aileron and Irindina Provinces.

### 3.1.2 Mineralisation

Mineral deposits in the Arunta region are of varying ages and commodities including: Nolans Bore REE, Mud Tank carbonatite, Jervis Zn-Pb-Cu metamorphosed VMS and several other Au-base metals deposits/prospects.

EL33389 includes two mineral occurrences called Copper Queen and Copper King, both are vein hosted occurrences of Cu-Au-Pd-Pt.

## 3.2 Exploration Rationale

Sandfire acquired EL33389 due to anomalous copper-base metal geochemistry, structural complexity and signs of possible VMS or IOCG style mineralisation.

# 4 Exploration Completed

## 4.1 Data Review

Historic Annual Reports were reviewed and historic drilling and surface sampling, where available, was digitised and loaded into Sandfire's database.

Base metal exploration for Cu, Au, Pt, Zn, Ni, Pd has been conducted in the area, the small-scale Copper Queen pit was mostly confined to surface scratching around malachite outcrops.

Tanami Gold NL (Tanami) held the western part of the Copper Queen pit exploring for vein hosted gold for a short period (2001) (Kavanagh and Smith 2002).

PNC explored the Harts Ranges in the Yambula area just east of the project for Uranium from 1992 (Drake-Brockman et al 1996).

## **5 Conclusions and Recommendations**

Sandfire acquired EL33389 due to anomalous copper-base metal geochemistry, structural complexity and signs of possible VMS or IOCG style mineralisation.

EL33389 was relinquished on 1 August 2024 due to changes in Sandfire's exploration strategy, which included the cessation of Australian exploration operations.

## **6 Data**

No additional data is submitted with this report.

## **7 List of References**

Drake-Brockman et al 1996, Annual Report Harts Range Project – 1995 Field Season, PNC Exploration

Huston, D.L., Maidment, D., and Hussey, K., 2006. Regional geology and metallogeny of the eastern Aileron and Irindina Provinces: a field guide. Geoscience Australia, Record 2006/13.

Kavanagh and Smith 2002, Annual Report EL10078, Tanami Gold

Scrimgeour IR, 2013. Chapter 12: Aileron Province: in Ahmad M and Munson TJ (compilers). 'Geology and mineral resources of the Northern Territory'. Northern Territory Geological Survey, Special Publication 5.