

# MICHAEL OUTHWAITE

**SUMMARY** I am a skilled technical geologist and mineral explorer, with experience across diverse geological terranes, and an ability to adapt to any scale or deposit style. My strengths include mapping, structural geology, mentoring/training, and communicating the implications of technical work – e.g. for exploration strategy, resource modelling, and mining.

I am credited with the 1.7 Moz Lake Roe greenfields gold discovery in Western Australia, and have significantly contributed to other gold, lithium and nickel-copper-PGE discoveries. My career motivations are to have a hand in more mineral discoveries, and to teach critical field skills to early-career geologists.

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**KEY SKILLS** Structural geology, mapping, drill core analysis, 3D modelling, geochemistry, target generation, communication, mentoring, illustrations, remote work, basic Spanish language

Software: Leapfrog, ioGAS, GIS software, MS Office, Sketchbook and Inkscape (illustrations)

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**EXPERIENCE** **DIRECTOR AND PRINCIPAL CONSULTANT GEOLOGIST – LITHIFY PTY LTD, PERTH**  
**February 2021 → present**

Independent technical consulting in multiple geological environments and deposit styles, including orogenic gold/gold-copper, komatiite nickel, lithium pegmatites, porphyry copper-gold and sediment-hosted base metals. Focus on rapidly advancing understanding of ore deposits/districts, and the implications for exploration, resource modelling and mining.

**Selected successes:** At the ~7.4 Moz Gruyere gold deposit (Gold Fields/Gold Road) established critical controls on mine-scale grade distribution (to be presented at Gold24 conference); At the >5 Moz Kundana gold camp (Evolution), built a detailed ~12 x 3 km 3D geology model, and used it to generate near-mine exploration opportunities; At the Widgiemooltha nickel district (Wyloo), documented structural modification of the komatiite-hosted Cassini nickel sulphide deposit, and implications for mining and near-mine targeting.

**Key Responsibilities:**

- Managing clients and contracts
- Outcrop, open pit and underground mapping
- Drill hole logging
- Production of integrated 2D interpretations and 3D models
- Training and mentoring client geologists

### **CONSULTANT GEOLOGIST – MODEL EARTH, PERTH**

**February 2015 → November 2022** (overlap with Lithify and Breaker)

Technical consulting in multiple geological environments and deposit styles, including orogenic gold, VMS copper-gold, IOCG copper, and sediment-hosted copper. Included work in Alaska, Chile and Mongolia. Focus on rapidly advancing understanding of ore deposits/districts, and the implications for exploration, resource modelling and mining.

**Selected success:** Established mineralisation controls at Genesis Minerals' Ulysses gold project (Leonora), which helped grow the resource from 151,000 oz @ 2.2 g/t (considered a small open pit mine) to 850,000 oz @ 3.4 g/t (now a major underground mine).

#### **Key Responsibilities:**

- Managing clients and contracts
- Working alone, in teams, and in remote areas
- Mapping and drill hole logging
- Geochemical analysis
- Production of integrated 3D models
- Training and mentoring client geologists

### **SENIOR GEOLOGIST – BREAKER RESOURCES NL, PERTH**

**April 2013 → June 2020** (part-time basis after January 2015)

Senior technical geologist at a junior gold explorer. Completed projected generation and early exploration that resulted in the greenfields discovery of the 1.7 Moz Lake Roe gold camp, 100 km from Kalgoorlie. Breaker was taken over by mid-tier gold producer Ramelius Resources (ASX:RMS), to secure the Lake Roe deposits. Also part of the team that discovered the greenfields Manna lithium pegmatite deposit (51.6 Mt @ 1.0% Li<sub>2</sub>O). Manna was sold to Global Lithium (ASX:GL1) in deals worth ~\$93M.

#### **Key Responsibilities:**

- Craton- to prospect-scale target generation
- Mapping, drill hole logging, 3D modelling
- Building a structurally valid model of a blind, virgin gold discovery
- Technical oversight of up to 10 geologists
- Safe management of exploration activities in remote environments
- Building analyst and investor relationships

**SENIOR CONSULTANT – JIGSAW GEOSCIENCE, PERTH**

**2007 → 2013**

Technical consulting in multiple geological environments and deposit styles, including orogenic gold, epithermal gold, VMS copper-gold, porphyry copper-gold, IOCG copper, sediment-hosted copper, magmatic nickel-copper-PGE(-vanadium), and iron ore. Included work in Finland, Armenia, Zambia, the Phillipines, Chile and Peru.

**Selected success:** Developed a left-field exploration concept that led to the discovery of a major near-surface extension of the Kevitsa Ni-Cu-PGE deposit in Finland, and improved the economics of the open pit mine.

**Key Responsibilities:**

- As for Model Earth, above

**PROJECT GEOLOGIST – PLACER DOME/BARRICK GOLD, KALGOORLIE**

**2004 → 2006**

Gold exploration in the Kalgoorlie region.

**GRADUATE GEOLOGIST – CROESUS MINING, NORSEMAN**

**2002 → 2004**

Gold exploration and resource definition in the Norseman region.

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**EDUCATION**

**MSC (GEOSCIENCE) WITH DISTINCTION – UNIVERSITY OF WESTERN AUSTRALIA**

**2015 → 2017** (part time)

Thesis: "Metamorphosed Mesoproterozoic Cu-Mo-Ag mineralization: Evidence from the Calingiri deposits, southwest Yilgarn Craton"

**BSC (MINERAL EXPLORATION AND MINING GEOLOGY) WITH 1ST CLASS HONOURS – WA SCHOOL OF MINES, KALGOORLIE (CURTIN UNIVERSITY)**

**1999 → 2002**

Thesis: "The geological setting and mineralisation characteristics of the Daisy gold deposit, Norseman, Western Australia"

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**PUBLICATIONS AND PRESENTATIONS**

**Do sweat the small stuff: Narrow structures controlling grade distribution in the 7.4 Moz Gruyere gold deposit, Western Australia**

M. Outhwaite, K. Cassidy, T. Knight, J. Robinson

Abstract and presentation to the Gold24 conference, Perth, 2024 (in press)

**The giant Calingiri Cu-Mo deposit, southwest Yilgarn Craton: Practical implications of a complex structural-metamorphic history**

M. Outhwaite, L. Barnes, A. Cooke, P. Pring

Abstract and presentation to the Structural Geology and Resources conference, Kalgoorlie, 2022

**Differentiated Archean Dolerites: Igneous and Emplacement Processes that Enhance Prospectivity for Orogenic Gold**

P. Hayman; I. Campbell; R. Cas; R. Squire; D. Douth; M. Outhwaite

Paper in Economic Geology, 2021

**But which way should I drill? Scale-dependent shoot controls at the White Foil gold mine, Kalgoorlie**

M. Outhwaite

Presentation to the Kambalda Geology Symposium, 2021

**Bombora: Part of a new Archean gold camp concealed by transported cover, 100 km east of Kalgoorlie, Western Australia**

M. Outhwaite; A. Barker; T. Sanders

Paper and presentation to the NewGenGold conference, Perth, 2019

**Metamorphosed Mesoarchean Cu-Mo-Ag mineralization: Evidence from the Calingiri deposits, southwest Yilgarn Craton**

M. Outhwaite

UWA thesis and Geological Survey of Western Australia Report 183, 2018

**Folds: The forgotten structures in structurally-controlled gold deposits**

M. Outhwaite

Abstract and presentation to the Brownfields Exploration: Deep and Meaningful conference, Kalgoorlie, 2016

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MEMBERSHIPS

Australian Institute of Geoscientists (member #5820)

Society of Economic Geologists (member #903414)

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OTHER INTERESTS

Sport (running, AFL football, cycling), gardening, reading, history, science, guitar, Spanish language (intermediate knowledge)