

Darren Holden BSc(Hons) PhD

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Geoscientist, Exploration Executive & Historian

- Award winning professional geoscientist with successful experience in mineral exploration discovery
- Respected leader with ability to get the absolute best out of people and teams
- Expert in the technical and scientific aspects of geology, geochemistry, geophysics and geography
- Leader and strategist able to communicate with verve and skill
- Published historian focused on history of science and interaction of science and politics

Skills

- Research
- Philosophy & history of science
- Executive company strategy
- Geological systems
- Mineral systems modelling
- Exploration targeting

Awards & Nominations

James Park Prize - Winner (University of Otago, 1993)
Talbot Gold Medal - Winner (UWA/Geological Society of Australia, 1994)
GoldCorp Challenge - Winner (as team member at Fractal Geoscience, 2001)
Best Emerging Explorer – Winner (on behalf of ABM Resources, Diggers and Dealers 2012)
Gavin Thomas Award - Nominee (Precious Metal Awards, Sydney, 2015)

Professional Positions (Current)

GEOSPY PTY LTD – Consulting and Advisory

Principal and Director, 2015 to Present

Consultant and advisor to:

Client **MCA Nominees, Icen Gold & MIA Nominees**: 2016 to Present

- Exploration advisory services on multiple projects across Western Australia
- Research and development
- Data integration and targeting

Client **Silver Mines Ltd** (ASX:SVL) 2015-present

- Exploration advisory services at the Bowdens Silver & Tuena Gold Projects in New South Wales
- Competent Person sign-off under JORC 2012
- Exploration strategy
- Mentoring geoscientists
- R&D Program and management

Client **Lion One Ltd** (TSXv:LIO), 2018 to Present

- Services as an advisor at the Tuvatu Gold Project, Fiji.
- Exploration strategy and planning
- Field mapping and sampling
- Leading a team of geoscientists

Client **Odessa Minerals** (ASX:ODE), 2022 to Present

- Services as an advisor to Gascoyne Li and REE projects
- Exploration strategy and planning

Recent & Current Directorships

AURUMIN LTD (ASX:AUN) – *Mineral explorer focused on Southern Cross district, WA*
Non-Executive Director, 2020 to April 2022

MARLEE MINERALS PTY LTD – *Project Generation for 'black swan' minerals projects , WA*
Technical Director, 2019-present:

- Marlee Base Metals sold to Todd River Resources
- Marlee Gold with quality early stage exploration targets

ODETTE GEOSCIENCE PTY LTD,– *Project Generation using data sleuthing*
Technical Director, 2020-present

- Developed multiple concepts into targets and projects including diamonds, Au, REE, Fe, Base-Metals and Lithium

OD6 METALS LTD – *Clay REE company developing the Splinter Rock project near Esperance*
Non Executive Chair, 2022-present

- IPO to first resource in 6 months.
- Discovery of new clay hosted REE deposits.

AUGUSTUS COPPER – *A copper-gold explorer focused on Gascoyne, WA.*
Non-Executive Director, 2021- present

- IPO in 2023
- Target generation and project planning

Past Roles

ABM RESOURCES, Perth – *Mineral Exploration and Development*
CEO, 2009 to 2015

I helped build ABM Resources from a listed shell company to peaking as an ASX300 company with multiple discoveries in the Northern Territory of Australia.

- Consolidated major land position in the Tanami and Arunta regions of the Northern Territory.
 - Negotiated access and built strong relationship with traditional owners and the Central Land Council
 - Drill out and bulk sampling of gold resource base at Buccaneer Porphyry and Old Pirate High-Grade Gold deposits.
 - Led in-house process of full Environmental Impact Assessment and permitting
 - Developed graduate field training programs for mapping and exploration.
 - Designed and implemented a risk-managed staged business model for development of a mine in a remote area without debt
 - Won the Best Emerging Company award at Diggers and Dealers Conference, 2012.
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GEOINFORMATICS LTD, Vancouver / Perth – *A collaborative exploration company that applied 3D modelling and GIS technology in mineral exploration from mine-scale to continental scale*

Executive Vice President of Geoscience, 2006-2009; Manager – Modelling Systems 2002-2009

Selected Accomplishments:

- Drill out to resource at the Whistler Porphyry Copper Gold Project in Alaska and satellite discoveries.
- Falcon Molybdenum Discovery in British Columbia.
- North Thunder Bay platinum-palladium project in Ontario.
- La Noria Copper-Silver-Molybdenum discoveries in Sinaloa, Mexico
- Regional targeting/3D GIS/modelling collaborations with:
 - Kennecott Exploration (Rio Tinto) – Western Cordillera including Alaska, British Columbia, Nevada, Utah, Arizona & Mexico (Cu-Au)
 - Anglo American – Superior Craton in Ontario, Michigan, Minnesota, Manitoba (Ni-PGE)
 - GoldCorp – Red Lake/Pickle Lake Greenstone Belts in Ontario (Au)
 - Codelco –Geophysical targeting in Chile (Cu-Au)
 - Glass Earth Ltd - Geoscience modelling for the Coromandel and Taupo Volcanic Zone, New Zealand for geothermal energy resources
 - Clancy Exploration Ltd – Target generation in the Lachlan Fold Belt, NSW

FRACTAL GEOSCIENCE, Perth– *A specialist consulting company that pioneered 3D modelling and 3D GIS technology in mineral exploration from mine-scale to continental scale.*

Senior Modelling Geologist, 1997-2002

Selected Accomplishments:

- Developed and delivered guest short-courses and lectures for industry and research in geophysical interpretation, digital terrain model interpretation, 3D GIS, and geological modelling. Delivered to:
- First prize (from 1500 entrants) in the GoldCorp Challenge resulting in 6Moz of discovery at the Red Lake Mine, Ontario.
- Research collaboration include regional scale modelling for the Australian Geodynamics Cooperative Research Centre and the Predictive Mineral Deposits Cooperative Research Centre.
- Digital Terrain Model / Geomorphology analysis of the Andes (Chile / Peru), the Yilgarn (W. Australia), British Columbia Coastal Range
- Leader of the team that developed the geophysical working technology for magnetics and gravity in collaboration with the CSIRO mathematical geophysics team.
- Team member for the development of targeting using Monte Carlo and Weights of Evidence in 2D and 3D GIS environments
- 3D geological models built at Kanowna Belle (Au), Kambalda Dome (Ni), Mt Magnet (Au), Rosia Montana (Au-Cu), Bullfinch (Au), Rosebery (Pb-Zn-Ag), Hellyer (Pb-Zn-Cu-Au), East Timmins (Au), Sunrise Dam (Au),
- Team member for the development of the FracSIS/FracViewer collaborative 3D GIS platform.

WESTERN METALS, Perth– *Base metal miner, Kimberley region, Western Australia*

Geologist – Computing Services, 1996-1997

Geologist in charge of technology for multi-mine company.

- 3D modelling and resource modelling on Goongewa, Pillara & Kapok Deposits
- GIS on the Lennard Shelf / Kimberley region including work on the Prices Creek discovery

WMC LTD, HILL 50 GOLD MINE-

Underground Geologist – Star Decline 1995-1996

- Underground mapping and grade control
 - In mine exploration
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Academic Experience

THE UNIVERSITY OF NOTRE DAME AUSTRALIA

Adjunct Post-doctoral research fellow – 2019-2022

- Academic research in history of science and geography
- Supervising 2x MPhil students & 1x MA student
- Sessional Lecturer in Physical Geography – 2017

Selected Publications

Burrows, L. **Holden, Darren**. Tynan, E. "Untangling Maralinga: Spatial and temporal complexities of Australia's atomic Anthropocene." *Journal of Australian Studies*. 47:3 (2023).

Holden, Darren. "The Indiscretion of Mark Oliphant: How an Australian Kick-Started the American Atomic Bomb Project." *Historical Records of Australian Science* 29, no. 1 (2018): 8.

Holden, Darren. "On the Oliphant Deign, Now to Sound a Blast: How Mark Oliphant Secretly Warned of America's Post-War Intentions of an Atomic Monopoly." *Historical Records of Australian Science* 29, no. 2 (2018): 130-37.

Holden, Darren. "How an Australian scientist tried to stop the US plan to monopolise the nuclear arms race", *The Conversation*, 96589. 15 May (2018).

Archibald, **Holden, Darren** et al, "Production of a 3D geological model of the part of the earth's crust in the Menzies to Norseman area, Western Australia". (2018) AGCRC Project 3021CO 98-03/5.

Holden, Darren et al, "Inferring geological structures using wavelet-based multiscale edge analysis and forward models" *Exploration Geophysics* 31, (2000) 617-621.

Boschetti, **Holden** et al, "Improved edge detection in potential field maps and graphical estimation of depth-to-the-top", *SEG Expanded Abstracts*, Calgary, (2000).

Horowitz, **Holden** et al, "Earthworms; "multiscale edges in the EGM96 global gravity fields" *SEG Expanded Abstracts*, Calgary, (2000).

Archibald, **Holden** et al, "Innovative 3D modelling for unlocking the value of mature mineral camps" Australian Institute of Geoscientists 25th anniversary conference (2006)

Archibald, **Holden** et al, Using 3D methods in the management of risk in exploration targeting. In "Proceedings of Exploration 07: Fifth Decennial International Conference on Mineral Exploration", (2007), pp. 561-568

Kreuzer, Etheridge, **Holden** et al, "Linking mineral deposit models to quantitative risk analysis and decision-making in exploration" *Economic Geology*, 103, 4, (2008) pp 829-850

Education & Academic Qualifications

THE UNIVERSITY OF NOTRE DAME AUSTRALIA, Fremantle

Doctor of Philosophy: 2017-2019

- Master of Philosophy course work 2016-17: 'High Distinction' on all course work.
- PhD complete 2019 – 'Mark Oliphant and the invisible college of the peaceful atom'

THE UNIVERSITY OF WESTERN AUSTRALIA, Perth

Bachelor of Science with Hons, 1994

- Major: Geology
- Thesis: Geology of Ledge Point and Herald Point, Albany Mobile Belt, Western Australia
- Graduated with 1st Class Honours
- Geological Society of Australia Award - Talbot Gold Medal

THE UNIVERSITY OF OTAGO, Dunedin, New Zealand

Bachelor of Science, 1991-1993

- Major: Geology
- Minors: Physics, Chemistry, Environment, Geography, Anthropology, Philosophy
- Average grade 'A-' (>80%) in Geology, Geography, Physics
- James Park Prize for Geology 1993.

Fellow of the Australasian Institute of Mining & Metallurgy (FAusIMM) since 2005
Competent Person under JORC 2012
Qualified Person under NI43-101