

Overview: Minerals



Mining and mineral exploration plays a prominent role in Tasmania's economy. Its history dates back to the early 1850s when the first payable gold was discovered at Nook.

Being one of the most heavily mineralised regions in Australia, Tasmania's west coast in particular has enjoyed a long and successful association with mining. Its geology resulted in the development of a very active and strong minerals exploration and mining industry, considered to be one of the cornerstones of the State's economy.

The Mt Lyell Mine at Queenstown, for example, was operated from 1893 until its closure in late 1994, while tin was first discovered in the Renison Bell area near Zeehan in 1890. Mining in the Rosebery area also began in 1893

with the discovery of mineralisation on the slopes of Mt Black. Today, Zinifex Australia Ltd operates a silver-lead zinc smelter in Hobart.

Coal mining also has a strong history in Tasmania, having first begun during European settlement.

By 1886 large-scale coal mining was underway in the Fingal Valley, and continues today – providing the majority of the State's coal.

While mining is far less labour intensive today than it once was, it remains a prominent contributor to Tasmania.

As well as a direct contribution through employment, the mining industry contributes through taxes and charges paid to the Tasmanian Government, local government and other authorities.

Payments are also made for other services, including electricity, freight and goods.

While mining of a range of minerals is conducted throughout Tasmania, gold and other base metals are high on the State's exploration agenda.

Importantly, the industry's expertise has developed beyond exploration and mining. Tasmania is home to a number of companies providing equipment to the mining industry around the world.

For example, Caterpillar-Elphinstone designs and manufactures underground mining machinery, Terratec Asia Pacific designs and builds tunnelling and drilling machines that work in mines around the world and MineCom Australia Pty Ltd is a world leader in underground communications.



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Case Study: ARC Centre of Excellence in Ore Deposits

Focus for Tasmanian Researchers

The search is on for new mineral deposits in the Waratah region of Tasmania's west coast – an area world renowned for VHMS (volcanic hosted massive sulphide) deposits.

In its 11 years of operation between 1989 and 2000, the Hellyer Mine near Waratah yielded more than 15 million tonnes of ore containing zinc, copper, lead, gold and silver, generating approximately \$1.3 billion in gross revenue and providing full-time jobs for up to 300 people.

Now, a researcher based at the Australian Research Council (ARC) Centre of Excellence in Ore Deposit and Exploration Studies (CODES) at the University of Tasmania campus in Hobart is using a technique

developed at the centre to identify new significant ore bodies in the region.

Canadian researcher Daniel Layton-Matthews, who holds a joint research position with CODES, the Geological Survey of Canada and the University of Ottawa, says the black shale that runs through the area may provide information regarding new ore bodies.

"We are using what is known as a laser ablation system to 'blast' holes in drill samples from the area, searching for subtle changes in the pyrite that may indicate proximity to ore and help determine exploration targets," he said.

"While there has been exploration in the area in the past, there has been no significant ore deposit find."

"We think there is an identifiable link between the trace elements in the pyrite and the proximity to the Que River shale, as it is known, formed at the same time as the ore on the sea floor."

Dr Layton-Matthews said there were only a handful of scientific instruments in Australia capable of undertaking this work, and only CODES had developed the necessary expertise.

"This is a relatively new project for CODES, but we are confident our methodology has application around the world," he said.

This sort of cutting-edge work is typical of the practical research conducted at CODES in close consultation with the mining industry, both in Australia and overseas.

Director Professor Ross Large, who established CODES in 1989 after working in the mineral exploration industry for 13 years and as a lecturer at the University of Tasmania, said the centre was recognised as one of the world's top ore deposit research centres.

"We work very closely with the international mining industry on a variety of projects throughout the world," he said.

"Fifteen years ago 90 per cent of our work was focused on solving problems in the Tasmanian mining sector.

"Today we are 10 times as big and only about 20 per cent of our work is Tasmanian-based."

Recently CODES received substantial new funding from the Australian Government and industry reflecting its status as an Australian Research Council (ARC) Centre of Excellence in Ore Deposits.

Professor Large said the world-class research team assembled at CODES, which includes 30 research geoscientists and more than 60 postgraduate students, was one of the principal reasons it was successful in gaining ARC status.

"CODES also receives very strong support from the University of Tasmania and the Australian and international minerals industry," Professor Large said.

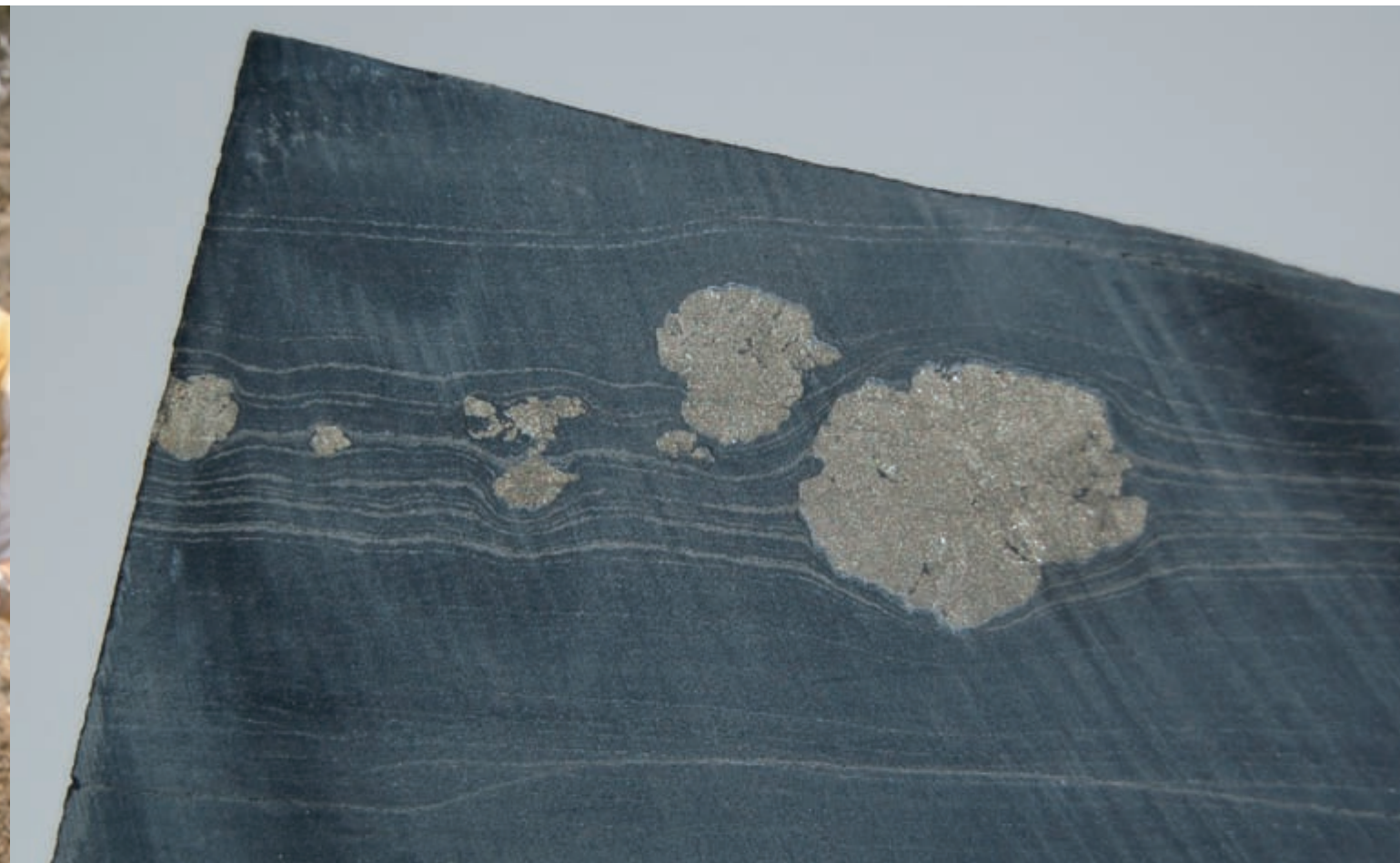
Over the next five years the ARC will provide CODES with \$15

million, with a further \$15 million provided by the Australian minerals industry, participating universities and the Tasmanian Government.

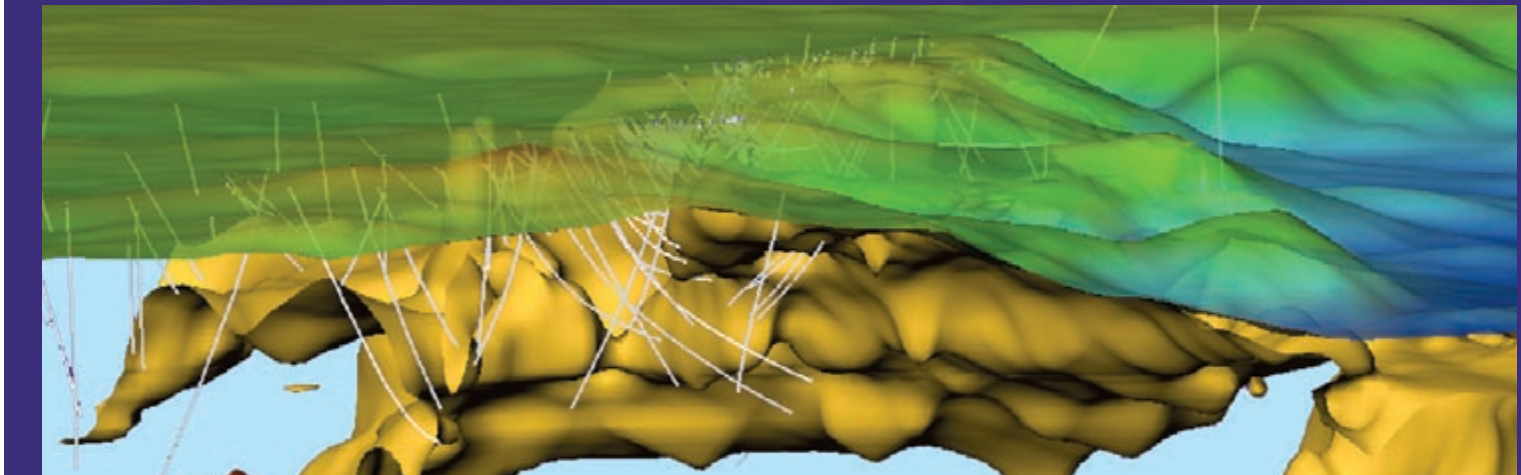
The minerals industry has guaranteed \$1.8 million a year towards CODES' research programs. The main contributors are BHP Billiton, Newcrest, Anglo American, Zinifex, Newmont, Barrick, Teck Cominco, St Barbara Mines, AngloGold Ashanti and RioTinto.

Following the ARC announcement, CODES will link with other internationally recognised groups including Colorado School of Mines, Johns Hopkins University, University of British Columbia, Julius Kruttschnitt Mineral Research Centre at the University of Queensland, University of Melbourne and CSIRO.

Photos: Courtesy of CODES



Case Study: 3-D Geological Model of Tasmania



A major Tasmanian Government and industry collaboration, which saw the development of a 3-D geological model of Tasmania, has played a positive role in attracting new mineral explorers to the State.

Geoff Green, the Managing Geologist of Metallic Minerals and Geochemistry at Mineral Resources Tasmania (MRT), said the Tasmanian mineral exploration industry was "struggling" between 2000 and 2002.

"In May of 2002 the Tasmanian Minerals Council called a meeting to discuss what could be done to stimulate exploration in Tasmania," he said.

"Bob Haydon, of the Predictive Mineral Discovery Cooperative Research Centre at the University of Melbourne, put forward the idea of developing a 3-D geological model.

"It was initially designed to cover the west coast but the concept was then expanded to include all of Tasmania."

Dr Green said the model was designed to provide a snapshot of the geology of Tasmania.

"The technology employed is cutting edge and has generated a lot of interest, raised the profile of Tasmania as an exploration target and generated a lot of activity in the State," he said.

"To my knowledge this is the first time in the world that a model of this size has been developed, although smaller regional models have been constructed in other parts of Australia."

Dr Green said it was important to note that all major Tasmanian-based mining companies provided information on their respective ore deposits which were then included in the database of information.

"These companies saw a need to stimulate exploration activity and provided their information with that in mind," he said.

Dr Green said while generally buoyant metal prices had played a role in reawakening exploration interest in Tasmania and its numerous niche opportunities, the information now available in the 3-D model had enhanced exploration effectiveness.

"In today's environment it's simply not enough to say Tasmania is a good place for exploration," he said.

"There are many other places in the world promoting and attracting exploration interest.

"The 3-D model provides real information for exploration companies to access and is ideally suited for use by smaller exploration companies that do not have access to significant resources."

"As a result of the new interest, eight new companies have listed on either the Australian Stock Exchange or the Alternative Investment Market of the London Stock Exchange based wholly or significantly on Tasmanian opportunities – TasGold Ltd, Lefroy Resources Ltd, Jaguar Minerals Ltd, Van Dieman Mines, Bluestone Tin Ltd, Zelos Resources NL, Bass Metals Ltd and Stellar Resources Ltd – with three others seeking to list," he said.

The 3-D model is a cooperative project between MRT, the Predictive Mineral Discovery Cooperative Research Centre, Geoinformatics Exploration Australia Pty Ltd and Geoscience Australia.

The model includes:

- Geological cross-sections covering the whole of Tasmania.
- 3-D surfaces and volumes of major faults and geological units.
- Images and datasets of airborne geophysics.
- Results of Geoscience Australia seismic surveys in Tasmania.
- Company datasets including 3-D ore shells for major mines and soil geochemistry images.
- A variety of reports including geological background, model development and prospectivity analysis.