

Browns Range Project Northern Minerals

Wolverine Underground Mining Method Analysis

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Project Summary

The Browns Range rare earth Project is located 160km southeast of Halls Creek in Western Australia, on the northern edge of the Tanami Desert.

orelogy were invited by Northern Minerals to undertake a summary comparison of the mining method costs and risks for the two different mining methods identified for the Wolverine underground deposit in the 2015 Browns Range DFS.

The Wolverine deposit accounts for 6.44Mt @ 0.96% TREO of the Browns Range MRE of 10.81Mt @ 0.76% TREO.

Northern Minerals plan to include an ore sorter to increase product grade and de risk mining dilution, as well as construct a commercial scale concentrate beneficiation plant.

Mining Engineering

Underground Mining
Method Analysis

Project

Browns Range Project,
Wolverine Underground
Deposit

Location

Western Australia

Client

Northern Minerals Limited





The Scope

- Compare sub-level stoping and sub-level caving physicals and costs.
- Compare material risk differences and changes, referencing the 2015 DFS risk register.
- Provide written report detailing cost differences of mining methods between 2015 and 2022.
- Build a drawpoint productivity calculator to assess the ability of SLC to meet the required production schedule due to drawpoint availability.
- Review mine access layouts and assess equipment types, number of units and remote loading over shift change.
- Report results of drawpoint productivity calculator, drawpoint and equipment requirements.
- Provide Mining method analysis report.

Challenge

- Updating the sub-level stoping physicals and costs from the 2015 DFS and converting into 2022 LHOS and SLC mining physicals and costs.
- Understanding the effects of online and offline activities on the availability of SLC drawpoints and the ability to meet the production schedule.

orelogy quote

“The Browns Range Project gave orelogy the opportunity to apply our operational experience and engineering smarts to build a simple yet effective drawpoint productivity calculator to make a high level assessment of the ability of the unique rare earth underground Wolverine deposit to meet the SLC production schedule whilst remaining within budget and ventilation constraints”

Buffy Davies
Senior Mining Consultant
orelogy



Business Benefits

Updated Risk Register: Controls were identified for each SLC risk event, with those proposed able to mitigate the risk back to the original residual ratings for the LHOS mining method.

SLC financial benefits: The investigation identified reduced capital and operating \$/TREO kg in 2022 when compared to the LHOS mining method in 2022.

Productivity and Design: The drawpoint productivity calculator exercise identified mine design improvements and operational activities to be managed to achieve the required production targets.

Stakeholder Benefits

Owner/Shareholder: Maximise project value for the transition from Open Cut to the Wolverine Underground mine through increased understanding of the material risk differences between the two proposed underground mining methods.

Mining Engineer: Provide mine design improvements, a drawpoint productivity calculator incorporating equipment requirements and an updated risk register for use in progressing the underground mine to the next stage.

Engineers/Metallurgists: Provide the optimum material feed through drawpoint management over the life of the project to maximise beneficiation via ore sorting.



Our number one goal is to unlock the true value of your mining project

Partners in Mine Planning

orelogy is a specialist mine planning and resource consultancy with extensive experience in the planning and management of a resource. orelogy personnel have operational and consulting experience throughout the world, in a range of different commodities.

Established in 2005, orelogy is an agile and innovative consultancy that adopts a partnership approach with clients to develop practical solutions within a strategic framework. This approach ensures the delivery of key client outcomes.

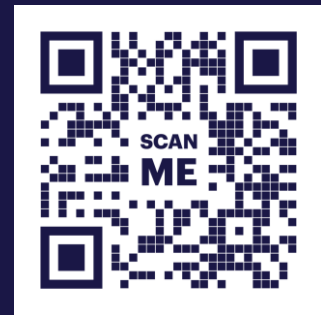
In February 2022 orelogy was acquired by idoba. idoba is an innovation ecosystem that identifies and solves problems by connecting technology offerings, expertise, and (mostly but not exclusively) energy and resources sector technical capability, to co-create a better future. We now provide idoba with crucial mining domain knowledge as part of their vision to co-create a better and more sustainable future, in mining and beyond.

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