



GEOSCIENCE

WITH DR LAURENT AILLERES
AND THE LOOP TEAM

Talking *points*

KNOWLEDGE

1. List four metals used in electric vehicle (EV) batteries.
2. In what year is Australia aiming to be carbon net-zero?

COMPREHENSION

3. How could pollutants from mines end up in drinking water?
4. How will Loop help mines reduce their mining footprint?

APPLICATION

5. What data would you need if you wanted to construct a Loop model of a potential new mine site?

ANALYSIS

6. What are some of the problems with current methods used to model mines? How does Loop overcome these?
7. What are Laurent's motivations behind starting a not-for-profit company? How would this benefit the Loop project?

SYNTHESIS

8. If you discovered that toxic waste from your mine was being washed into a near-by reservoir during periods of heavy rain, what measures could you take to stop this pollution?
9. Other than becoming more efficient, how else could mines reduce their impact on the climate and the environment?

EVALUATION

10. To what extent do you believe that the mining industry is doing enough to reduce its impact on the climate and the environment?
11. Do you believe that switching to EVs and renewable energy will be enough to prevent the worst effects of climate change? Why/why not? What else could we do, both as individuals and as a global community?

Activity

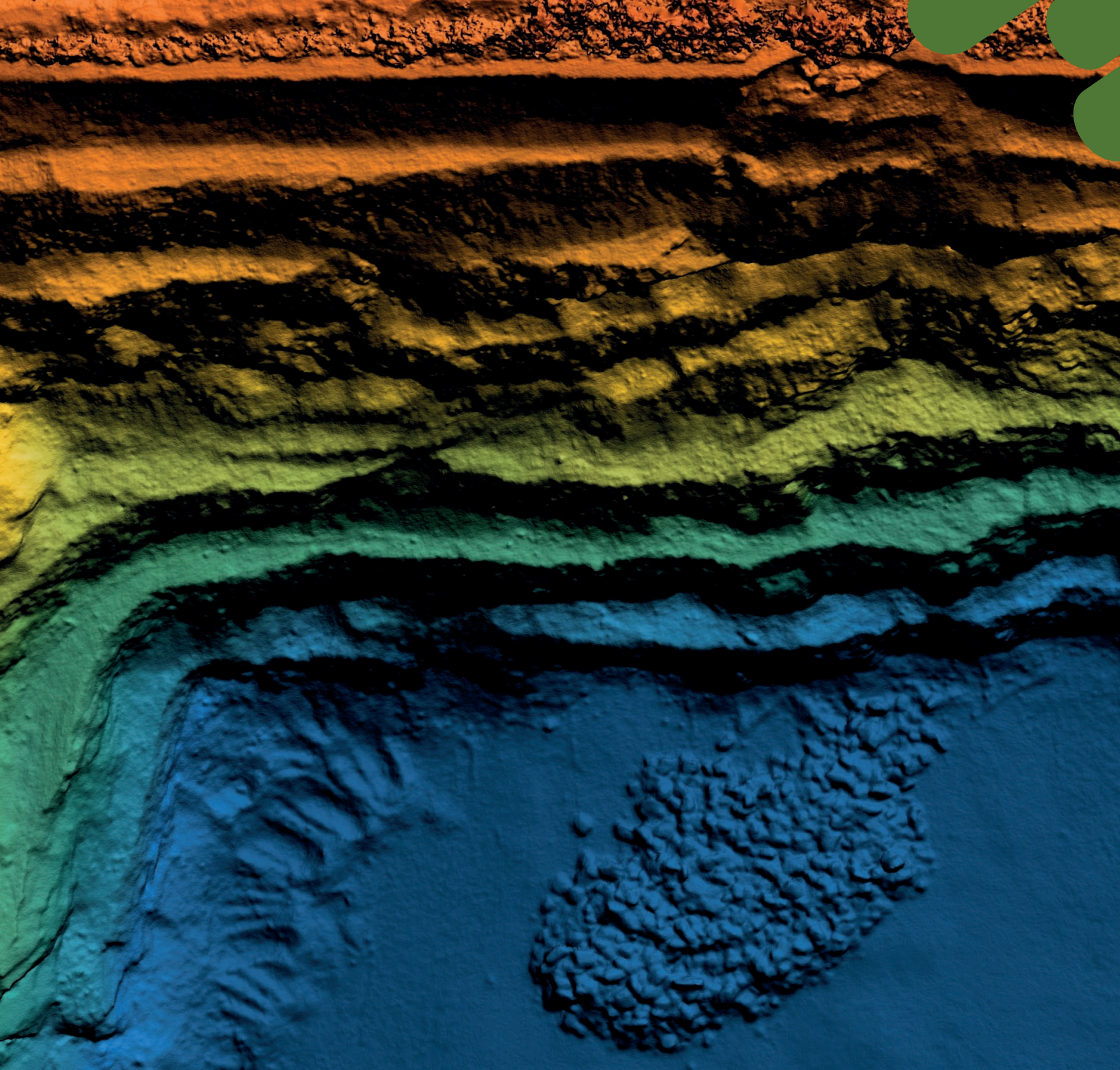
Make your mine up – a debate

Loop software can be used to assess whether mining activity will have any harmful impacts on the surrounding environment. For example, waste products that are created from the extraction of useful metals can be washed out of the mine and into near-by waterways. This poses an important question.

Which is more important – the extraction of useful metals, that will go on to be used in the manufacture of low-carbon technologies, such as solar panels and wind turbines, **or the protection of local waterways**, which are important to the health of local wildlife and human populations?

If you are working as a class, split into groups of five and debate this issue.

- One person should act as chair of the debate, whilst the other four should split into pairs, with one pair arguing for each side.
- In your pairs, take some time to conduct research and construct your arguments.
- If you are the chair, it is important that you are aware of both sides of this argument, so conduct some of your own research. At the end of the debate, it will be your job to make a decision about whether the mine can continue with its extractions or not.



When everyone is ready:

- The chair should start the debate by outlining the issue.
- Then, each pair should have 2 minutes to make an opening statement.
- Follow this with a 10-minute discussion between the two pairs.
- The chair should ensure that both sides of the argument are discussed and that everyone gets a fair chance to speak.
- At this stage, the chair can also pose questions to each pair.

At the end of this discussion, each pair should then prepare and deliver a closing statement. The chair of the debate should consider both sides and then decide whether the mine can continue extraction, whether it should be closed, or whether there is an alternative solution.

If you are working on your own, create a mind-map for and against the importance of extracting useful metals. Consider which side of the argument convinces you the most and prepare a three-minute speech arguing your point of view.

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More resources

- You can explore the Loop project in more detail here: loop3d.org
- You can explore other research being carried out by the School of Earth, Atmosphere and Environment at Monash University here: www.monash.edu/science/schools/earth-atmosphere-environment/research