

## Project 3.9

### Climate change induced risks for the performance of vegetation on mine rehabilitation soil covers in the Latrobe Valley

#### Why the project?

In a climate analysis, it was found that precipitation in the cooler months of the year have declined and the intensity of rainfall, primarily during summer months, has increased and has become more extreme (thunderstorm related rainfall). Important for uptake of rainfall into the soil is the intensity of rainfall and the proportion of rainfall that is able to infiltrate into the ground. The smaller the runoff coefficient, the more water can infiltrate and be stored in the soil and provide a buffer of soil moisture for vegetation.

An increase of soil drought conditions will affect plant growth and vegetation in the Latrobe Valley soil cover, which is exposed to magnification of the risk of drought. Vegetation established on a site or adapted to conditions at a site may survive conditions of reduced water availability and the composition of species may remain but will have to respond by reducing the vegetation cover to compensate for the reduced amount of soil moisture available.

The aim of the study is to unravel the possible consequences of climate change on the performance of vegetation on soil covers in a representative Latrobe Valley mine rehabilitation environment and the impact it may have long term on hydrology and landform stability of soil covers.

#### What are the project objectives?

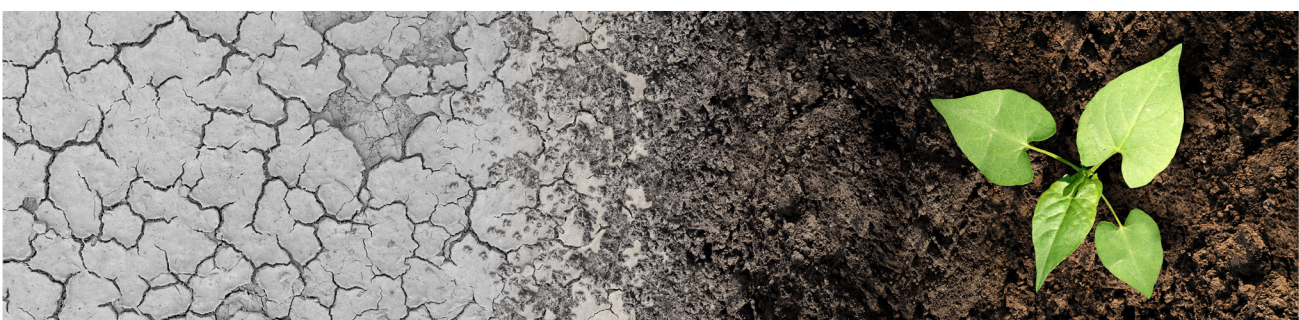
The objectives of the study are to:

- investigate the possible consequences of climate change on the performance of vegetation on soil covers in a representative Latrobe Valley mine rehabilitation environment.
- test the investigation in stages, beginning with an investigation in controlled environments and challenge in a follow-up research project the outcomes of climate response to vegetation for two – three years with field investigations.

#### What will the project deliver?

The scope of the work will cover three deliverables:

- a literature review, which will capture the state of the art in prediction of the consequences of climate change on plant growth, composition of vegetation communities and biodiversity in general
- a soil-plant study will be carried out under controlled environmental conditions
- numerical hydrological modelling of the linkage of vegetation and soil cover under specific conditions of the Latrobe Valley mining environment and future climate projections.



## Who are the end users?

The project findings will be beneficial for mining companies, government, regional and Aboriginal communities, the research and innovation sector and the mining equipment, technology and services sector.

## Opportunities to engage?

Discussions for sharing knowledge to the others involved in rehabilitation

## Timeline

2022 - 2023

## How does this align with CRC TiME Impact objectives?

Mines are closed in ways that deliver social, economic and environmental value

Closed sites are repurposed to enable a faster transition to diverse and resilient local economies

Mine closure business solutions drive new commercial and/or regional closure opportunities

Continued investment in Australian resources

Policy, decisions and management systems reduce risks



## Project Partners

### Partner Participants

Federation University Australia, Department of Energy, Environment and Climate Action (VIC)

### Advisory Participants

The University of Queensland



Australian Government  
Department of Industry,  
Science and Resources

**AusIndustry**  
Cooperative Research  
Centres Program