

Geological Survey Branch Mapping Program

2025–26 Field Season Summary



Mineral Resources Tasmania



Acknowledgment of Country

In recognition of the deep history and culture of this island, Mineral Resources Tasmania acknowledges and pays respect to all Tasmanian Aboriginal people, as the continuing custodians of lutruwita/Tasmania.

Photo credits and acknowledgments

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Above: Columnar jointing in Oligocene basalt, Gads Hill (photo: John Everard).

Cover: Sunrise near the helicopter drop zone at Donaldson River (photo: Tom Czertowicz).

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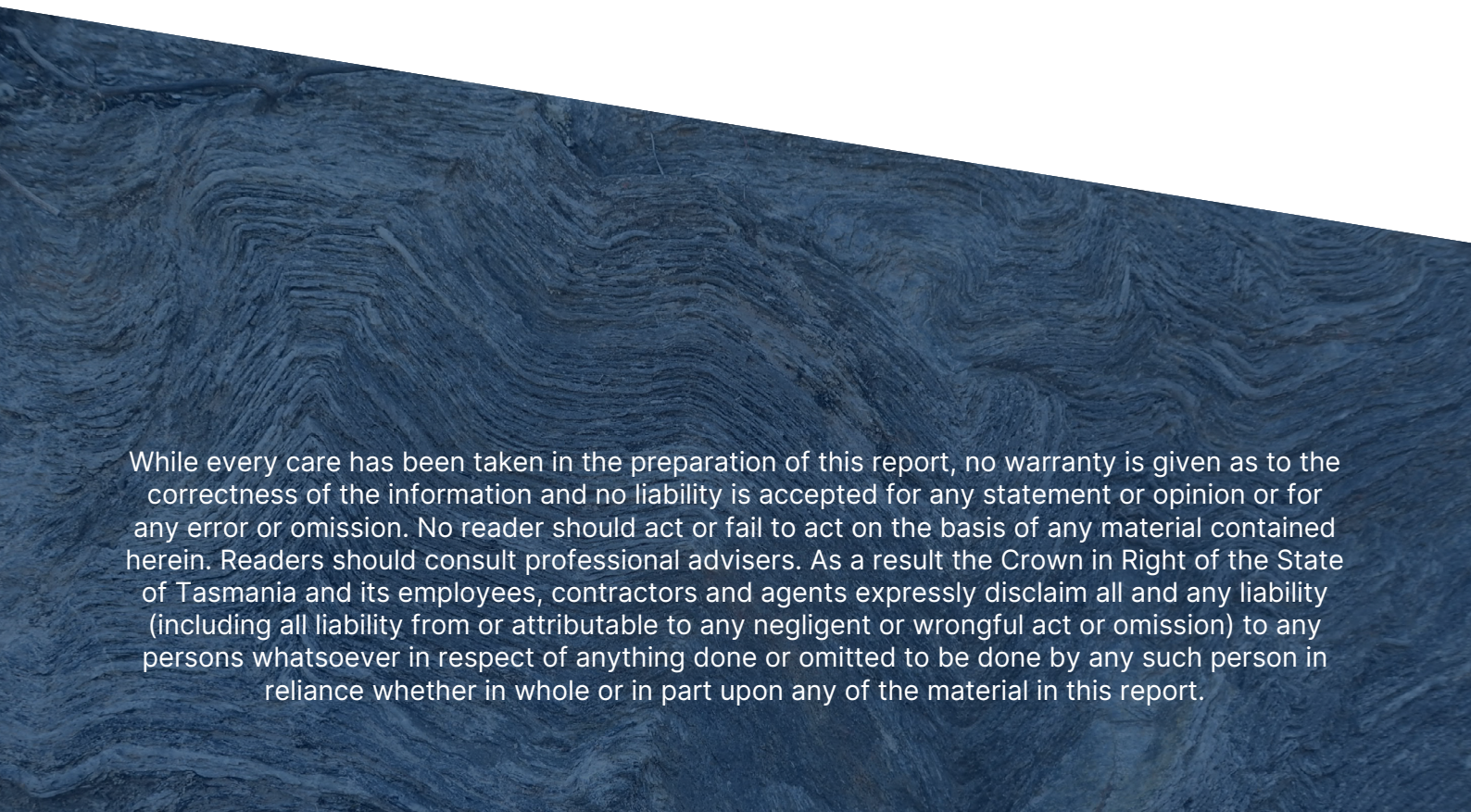
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Introduction

The Geological Survey Branch of Mineral Resources Tasmania (MRT) completed an extensive geological mapping program during the 2025–26 field season, focused on improving the geological understanding of several strategically important regions across Tasmania. The program included detailed bedrock and regolith mapping in western Tasmania and the Furneaux Group, together with compilation and publication activities associated with several new 1:25 000 geological map sheets. These projects support:

- mineral exploration
- regional geological interpretation
- infrastructure planning
- natural hazards assessments, and
- natural resource management.



Interview geological mapping team including: Tom Czertowicz, John Everard, Zeb Zivkovic, Carl Jackman, Chris Allen, Arianne Spencer, Bronwyn Kimber and Grace Cumming after completion of the successful mapping campaign.

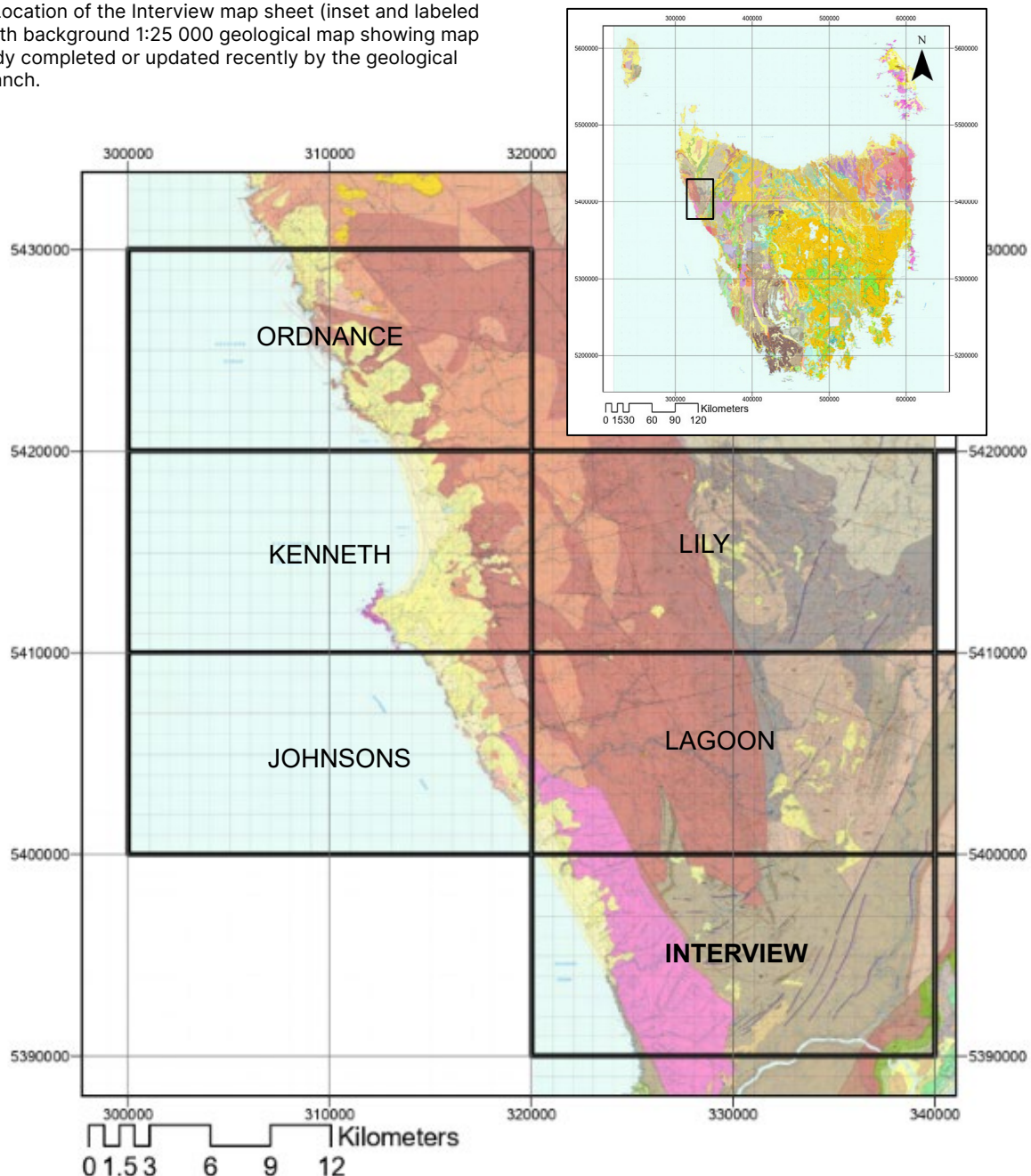
Missing: Travis Holmes and Jasper Fowler.
(Photo: Grace Cumming)

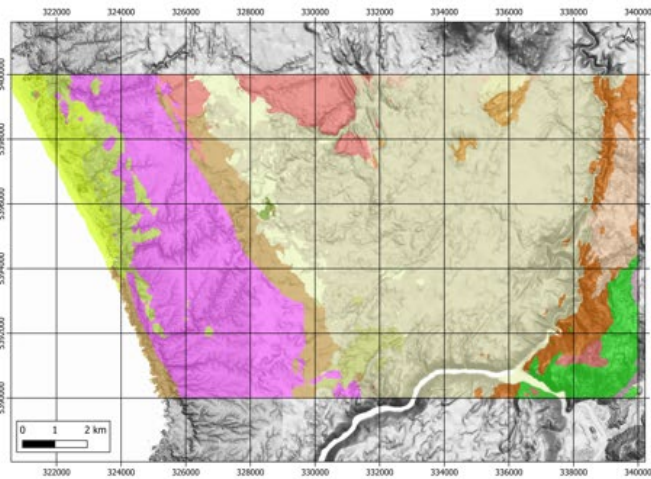
Interview Mapping Program

Following the extensive bushfires that affected the Pieman River region in February 2025, the Geological Survey Branch undertook a major mapping campaign within the Interview 1:25 000 map sheet (Figure 1), covering parts of the southern Rocky Cape Group. Prior to fieldwork, machine-learning outputs - generated using Random Forest algorithms - were used to identify discrepancies between existing geological interpretations and model predictions, helping to prioritise field investigations.

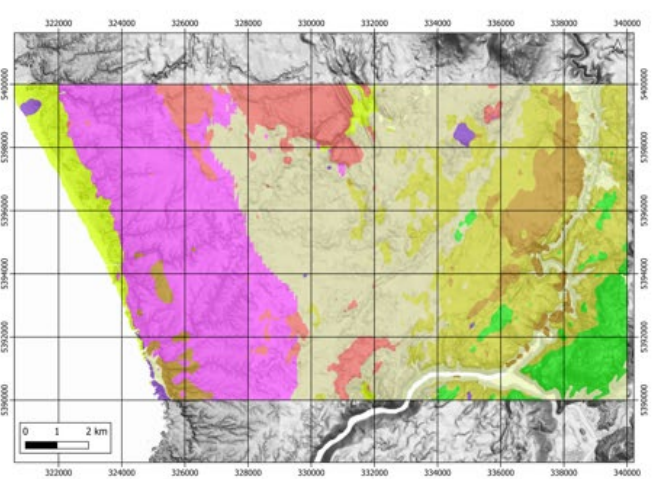
Random forest uses decision trees to combine the various input datasets. The model is then trained using existing geological mapping or sampling to produce a geology map, probability maps for each lithology, as well as an overall uncertainty map. K-means clustering was also trialled, which segments the data into a defined number of classes without the use of training data. Results can indicate where the geophysics disagrees with existing mapping, providing targets for follow-up. A snapshot of these maps is included in Figure 2.

Figure 1. Location of the Interview map sheet (inset and labeled in bold) with background 1:25 000 geological map showing map tiles already completed or updated recently by the geological survey branch.

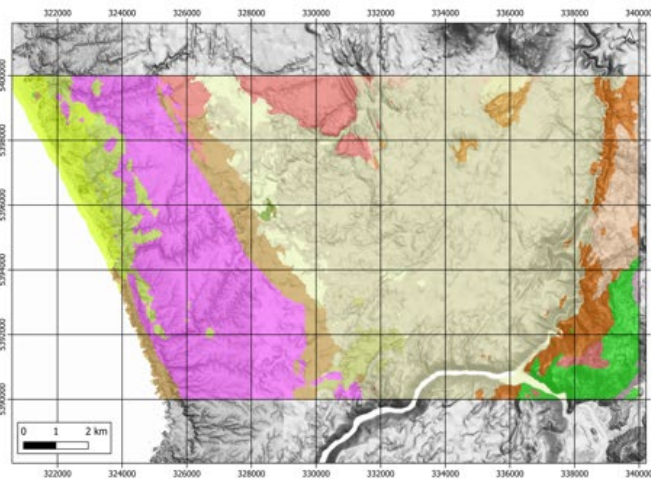




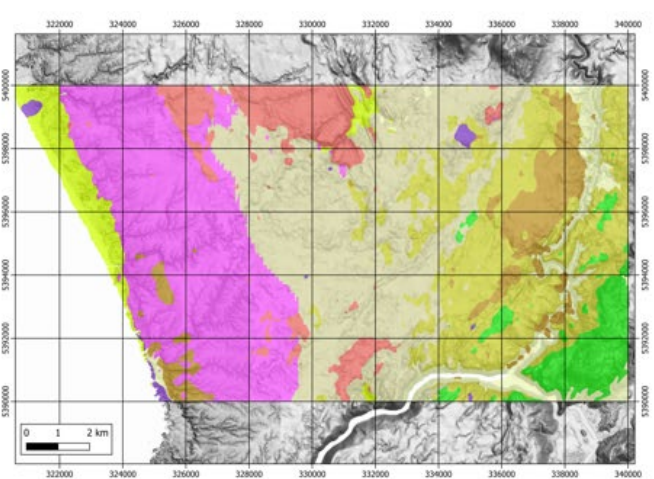
Random forest geology map



K-means geology map



Random forest uncertainty map



Probability of granite

Figure 2. Random forest geology map, K-means geology map, Random Forest uncertainty map and a probability map showing the extent of the Sandy Cape granite (as indicated by the bright pink polygon) were tested during field mapping.

Five mapping teams spent ten field days undertaking systematic geological mapping across the area. The recent fires provided exceptional bedrock exposure, enabling observations in areas that had previously been difficult to access or interpret. Particular attention was given to several copper and silver prospects (Figure 3) that were poorly represented in the Mornington rock and sample repository, with targeted sampling and mapping undertaken to improve geological understanding.

Fieldwork has now been completed and the project has entered the compilation phase. The resulting map will substantially improve understanding of the southern Rocky Cape Group and provide important new data for the Balfour 3D geological model currently in development.



Figure 3. A) Mullock heap at Silver Reward Ag prospect, Interview map sheet (photo: Tom Czertowicz).
 B) Tungsten prospect investigated near the Interview Granite (photo: Carl Jackman).

Donaldson Mapping Program

Seventeen field days were dedicated to geological mapping within the Donaldson 1:25 000 map sheet (Figure 4). Work concentrated primarily on the western third of the sheet and represents a continuation of mapping undertaken during the 2023–24 and 2024–25 field seasons.

Approximately two-thirds of the Donaldson Sheet has now been mapped in detail. The principal focus has been on refining and defining contact relationships between the Heazlewood Ultramafic Complex near 19-Mile Creek (Figure 5), and adjacent geological units, including the Luina Group, Oonah Formation, Keith Schist and units within the Arthur Metamorphic Complex.

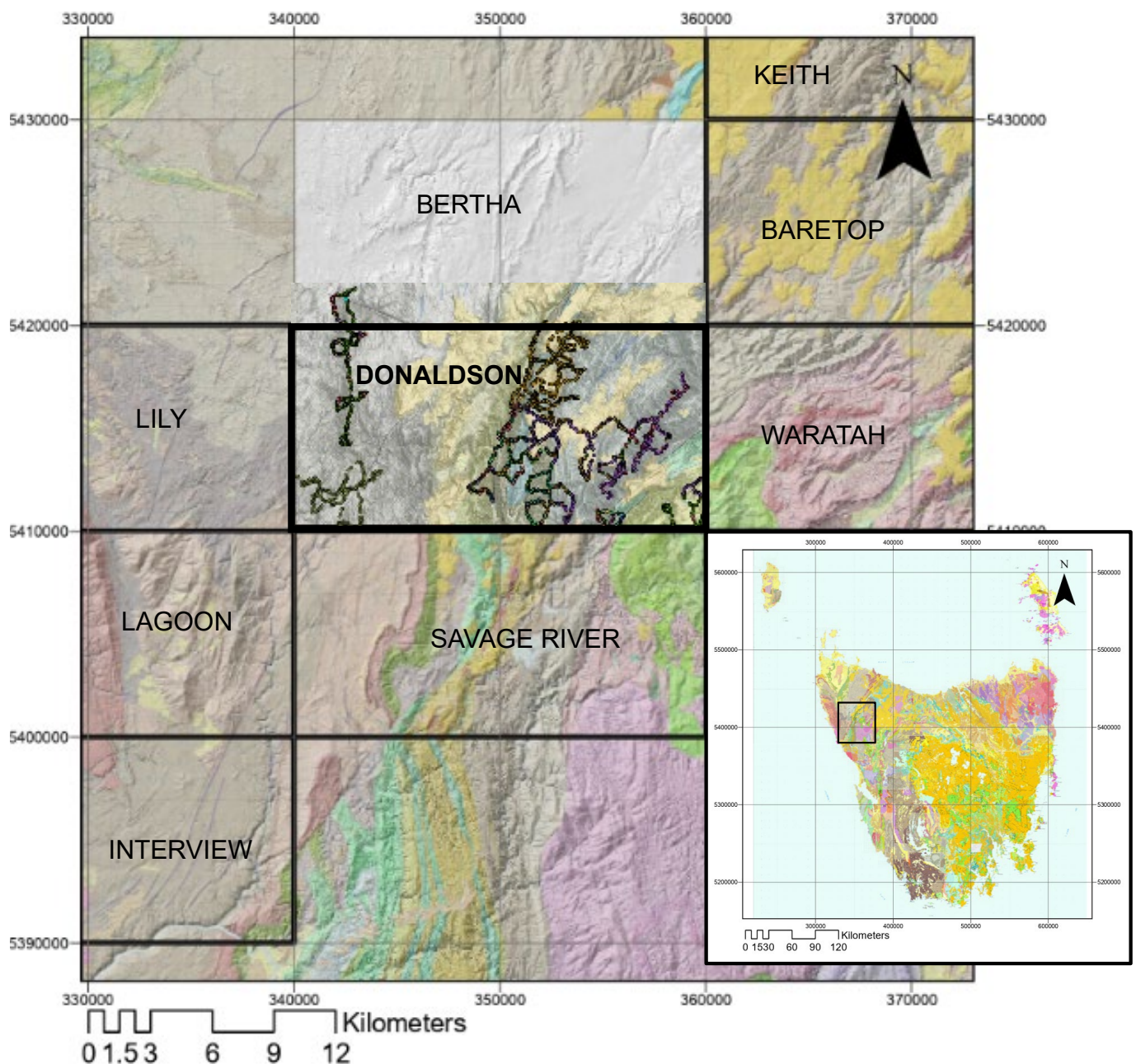


Figure 4. Location of the Donaldson map sheet (inset and labelled in bold) with field station locations and background 1:250 000 or 1:25 000 geological map showing map tiles already completed or updated recently by the Geological Survey Branch.



Figure 5. Osmiridium workings along 19 Mile Creek, near the contact between the Luina Group and Heazlewood Ultramafic Complex (photo: Grace Cumming).

These geological units are of considerable significance as they host a variety of mineral deposits elsewhere. Particular attention was given to defining the Bowry and Timbs Group stratigraphy and extent, which hosts the internationally renowned Savage River iron ore deposit. The host succession has been mapped northwards along strike and beneath cover in the Little Donaldson River area and parallel to Pipeline Road. Future work will focus on verifying geological relationships between the Western Ahrberg Group and the Rocky Cape Group, exposed in the far western portion of the sheet.

Once this work is complete, the Donaldson Sheet will be largely ready for preliminary compilation. Completion of the remaining field work is anticipated during the 2026–27 field season.

Furneaux Group (Flinders Island) Mapping Program

Significant progress has been made in improving geological understanding of Flinders Island, one of Tasmania's least sampled geological regions. Mapping commenced in early 2025, with initial efforts focused on the geologically complex area surrounding Whitemark (Figures 6 and 7). Key achievements include:

- identification of numerous previously-unmapped historic tin workings
- collection of new geological and geochemical samples
- completion of detailed geological traverses through areas where relationships between the granites and granodiorites of the Darling and Leventhorpe Ranges with the Mathinna Group were previously poorly understood
- characterisation of multiple dyke phases and fault networks, and
- improved understanding of the distribution and thickness of surficial cover sequences.

The project is now being compiled at 1:50 000 scale. MRT will pivot the scale of our geological maps in poorly understood regions where broader-scale coverage remains appropriate.

The work has important implications for assessing the prospectivity of critical minerals in northeast Tasmania and is also contributing to 3D geological models being developed to support hydrological investigations undertaken by Natural Resources and Environment Tasmania (NRE Tasmania).

Approximately half of the main island of Flinders has now been mapped in detail, extending from Whitemark south to Lady Barron. Future work will focus on further characterisation of cover sequences and geomorphic processes, drawing on the expertise of MRT geomorphologist and natural hazards geologist Dr Claire Kain.

Completion of mapping across northern Flinders Island is anticipated during the 2026–27 field season.

Figure 6. Fieldwork in the Darling Range, central Flinders Island. Mt Leventhorpe and Pillinger Peak in distance (photo: John Everard).



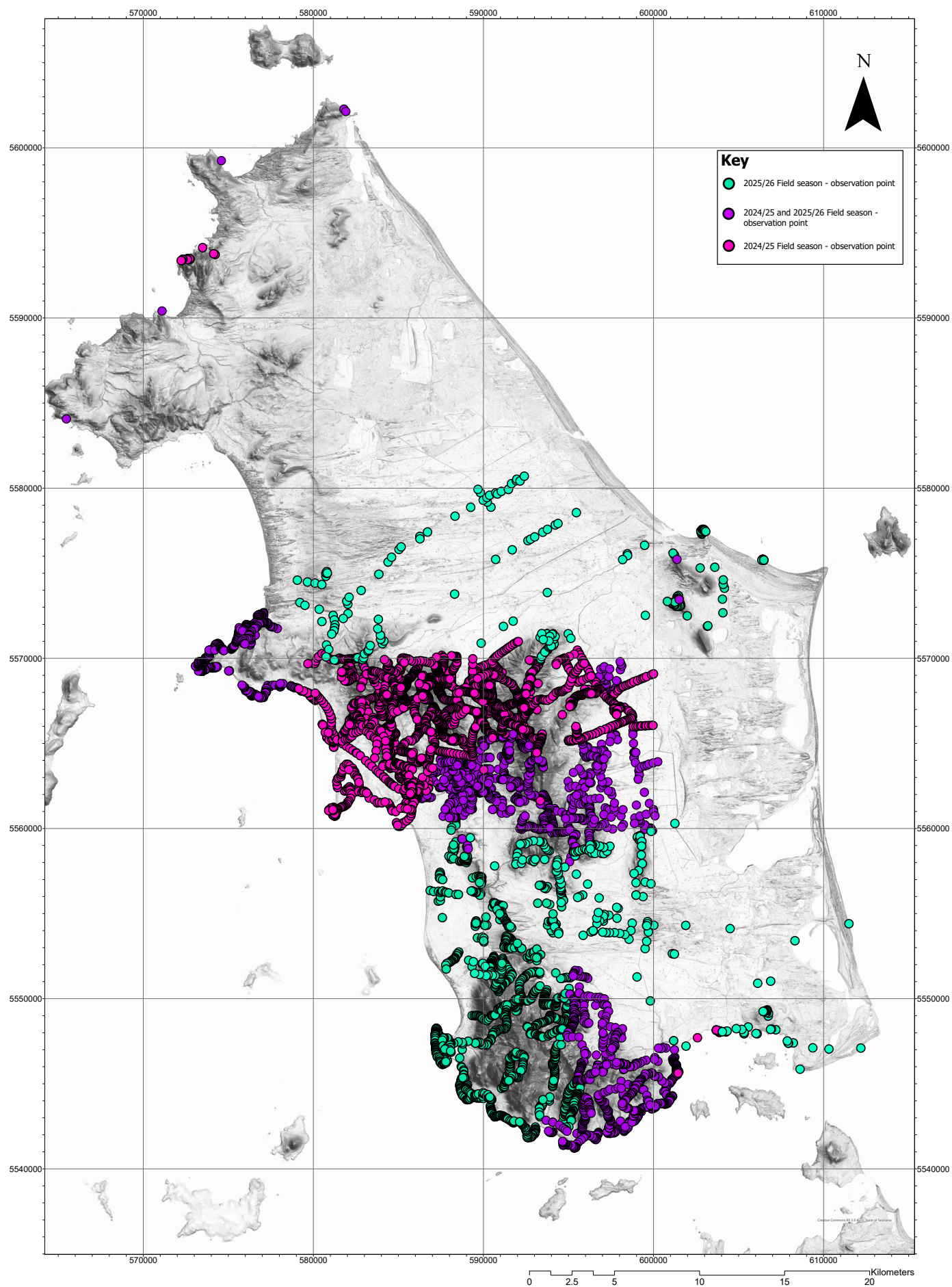


Figure 7. Flinders Island observation points 2024-2026.

Northern Tyennan and Mole Creek Mapping Programs

During previous field seasons, and as a part of the West Coast Geoscience Initiative funding, the Geological Survey Branch has either completed, or is nearing completion of four 1:25 000 geological map sheets across the Northern Tyennan region and areas south of Mole Creek (Figures 8, 9, 10, 11 and 12).

Liena

An updated geological map of the Liena Sheet is now in compilation. The sheet encompasses portions of the Mount Read Volcanics, which host several world-class volcanogenic massive sulphide (VHMS) deposits in Western Tasmania. The revised mapping provides an improved geological framework for understanding mineralisation and structural relationships within this highly prospective region.



Figure 8. Dolostone lenses (cream) in micritic Gordon Group limestone (grey), Liena (photo: John Everard).



Figure 9. Isoclinal fold in quartzite ("Fisher Group") near Colorado Creek, northern Tyennan Region (photo: John Everard).

Borradaile

A completely new Borradaile map sheet is nearing publication. The area encompasses some of Tasmania's oldest and most structurally complex rocks and is particularly significant from both geological and engineering perspectives.

The sheet (Figure 10) includes catchments associated with the Lemonthyme and Fisher power stations and contains several occurrences of tin and tungsten mineralisation linked to Devonian granitic intrusions.

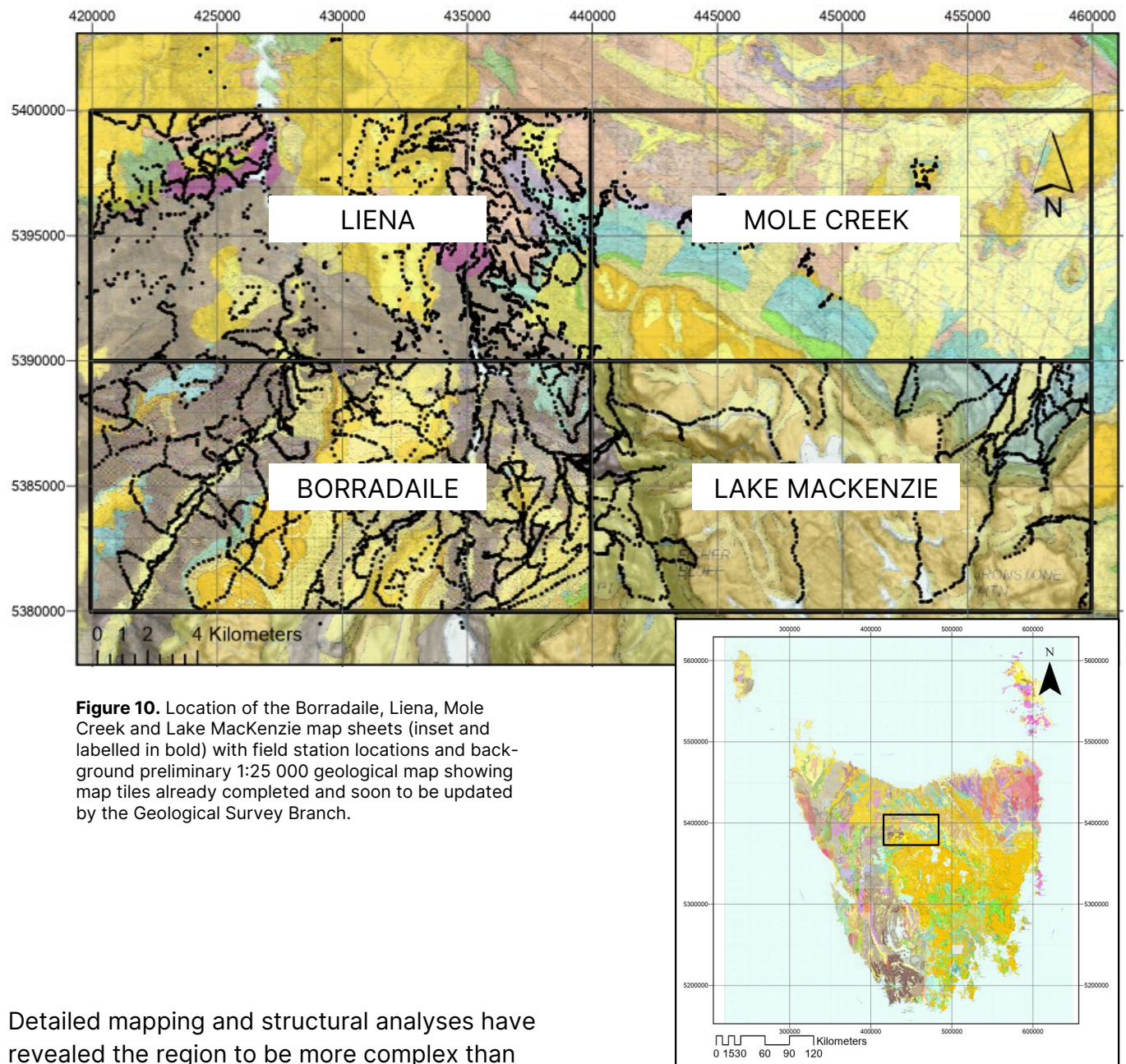


Figure 10. Location of the Borradaile, Liena, Mole Creek and Lake MacKenzie map sheets (inset and labelled in bold) with field station locations and background preliminary 1:25 000 geological map showing map tiles already completed and soon to be updated by the Geological Survey Branch.

Detailed mapping and structural analyses have revealed the region to be more complex than previously recognised. The Borradaile–Liena area records a polyphase deformation history developed during a collisional tectonic event.

The region is interpreted as a broad antiform, with structural complexity concentrated in hinge zones and major high-strain corridors that likely influenced deformation localisation and fluid flow.

These findings help to improve our understanding of the tectonic evolution of the Northern Tyennan region.



Figure 11. Chevron folds in albite-spotted quartzite, ~1 km NE of Rowallan power station, northern Tyennan Region, Borradaile map sheet (photo: Grace Cumming).



Figure 12. Borradaile Creek, northern Tyennan region (photo: Grace Cumming).

Lake Mackenzie and Mole Creek

Detailed mapping of the Lake Mackenzie Sheet is approaching publication. This work documents the Permian–Triassic sedimentary sequence of the Western Tiers, together with the extensive dolerite plateaus located south of the escarpment.

The new map provides substantially improved geological coverage of a region important for natural resource management, engineering geology, and landscape evolution studies.

In addition, an updated Mole Creek geological map is being prepared for the adjoining area to the north. This work complements the Lake Mackenzie mapping and contributes to the ongoing modernisation of geological coverage across northern Tasmania.

Conclusion

The 2025–26 field season delivered substantial progress across multiple geological mapping programs throughout Tasmania. Major achievements include:

- completion of field mapping on the Interview Sheet
- continued advancement of the Donaldson Sheet
- significant new geological understanding of the Furneaux Group on Flinders Island, and
- the completion, or near-completion, of multiple new map sheets within the Northern Tyennan, Mole Creek, and Western Tiers regions.

These projects are improving Tasmania's geological knowledge base, supporting mineral exploration and critical minerals assessment, contributing to infrastructure and hydrological studies, and providing high-quality geological datasets that will underpin future research and resource management decisions across the state.



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