



Curtin University



---

# Trinex Minerals Indicator Mineral Project

Tapanappa HM Results March 2024  
**Redacted**

---

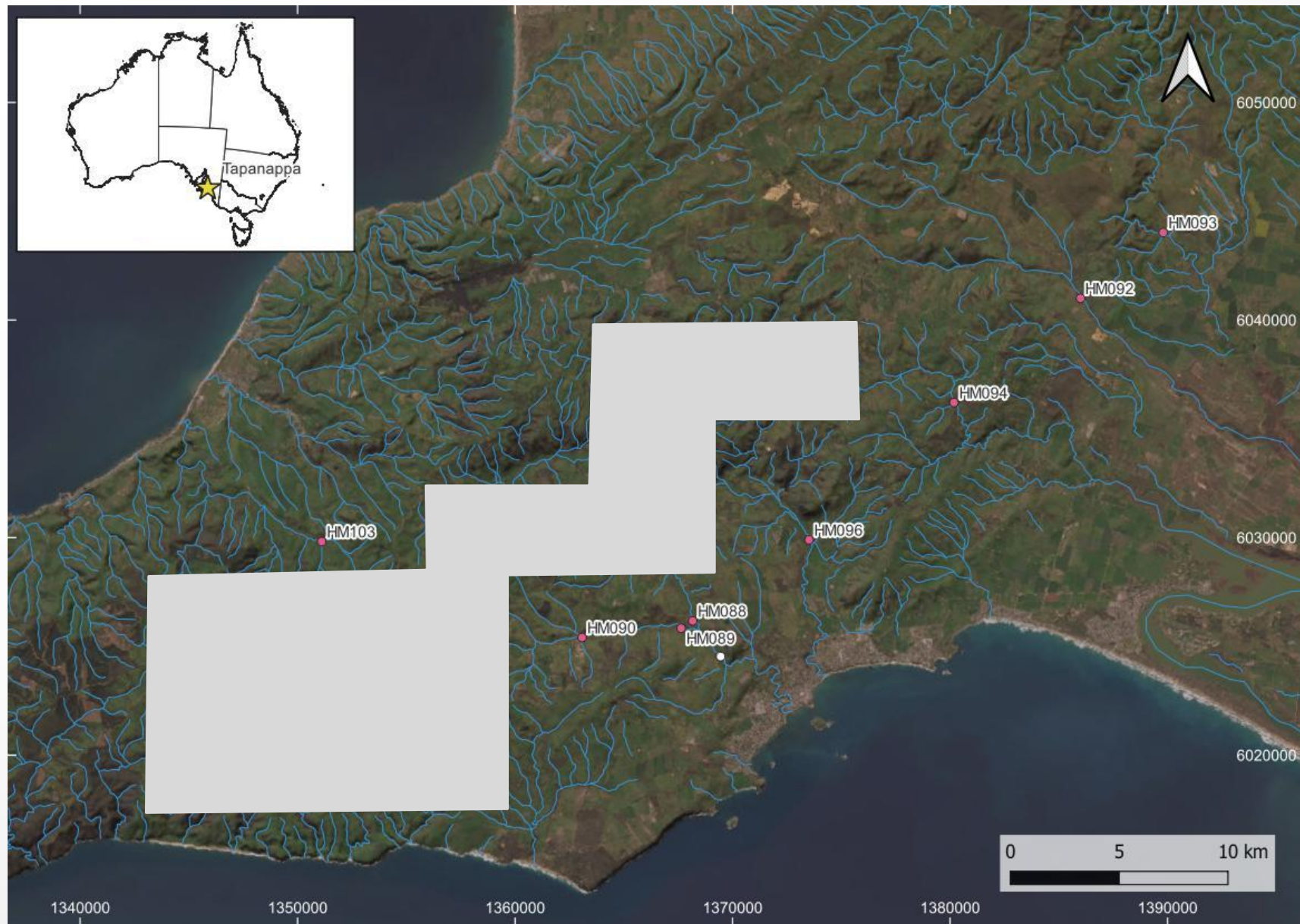
ALEX WALKER

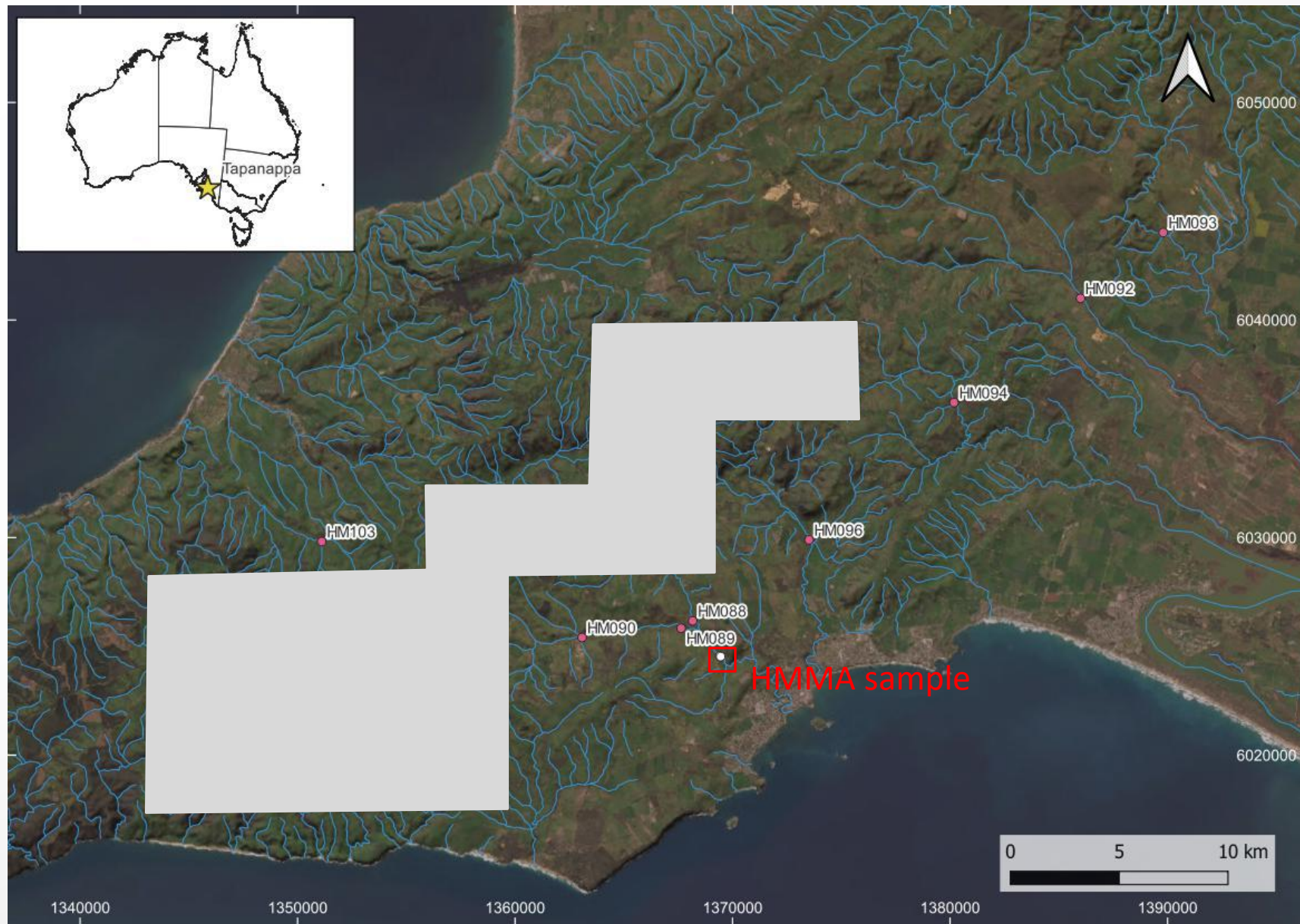
ON BEHALF OF THE JOHN DE LAETER CENTRE

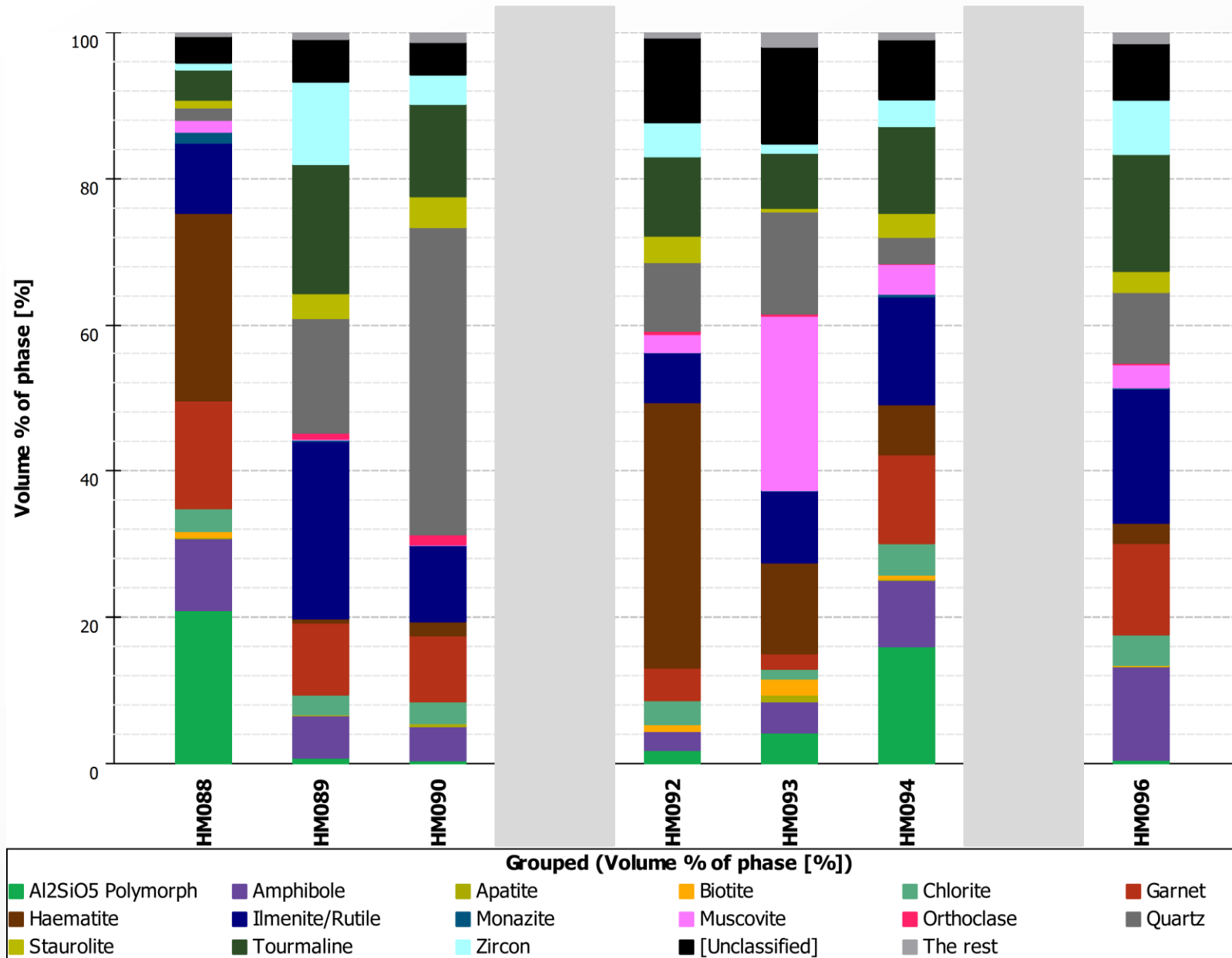
---

## Introduction

- Trinex Minerals have provided 17 samples of geological material collected from drainages in the Tapanappa locality, South Australia – 8 within surrendered area.
- Field descriptions indicate:
  - The sampling sites were relatively damp.
  - A risk of anthropogenic contamination in HM094.
- Changes in elevation apparent from sat imagery across majority of locality.



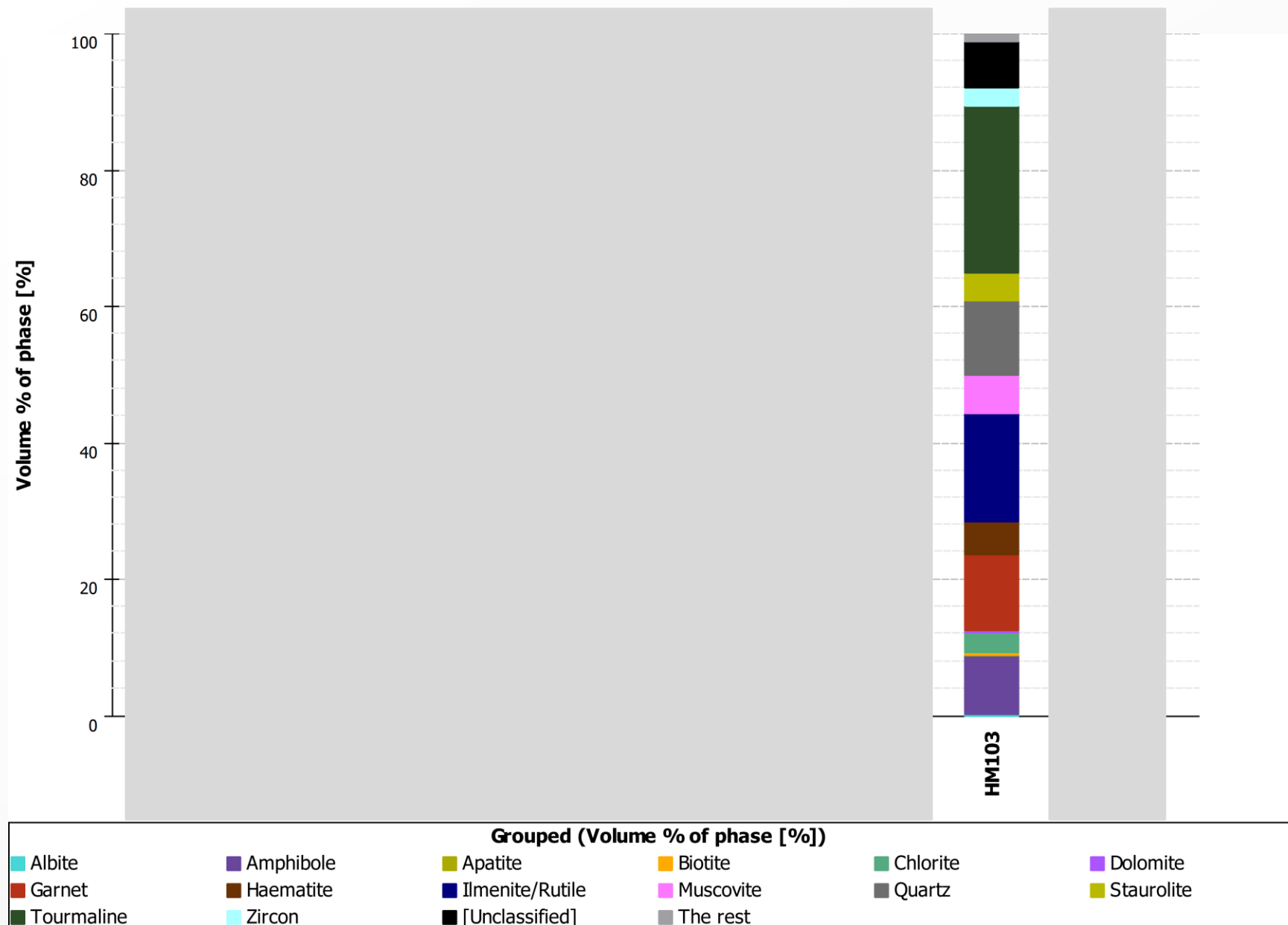




- For phases present at >1 volume percent abundance.

- Common mineralogy:

- Al<sub>2</sub>SiO<sub>5</sub> polymorphs
- Tourmaline
- Ilmenite/rutile
- Quartz
- Haematite
- Amphibole
- Garnet
- Zircon
- Muscovite/biotite
- Chlorite

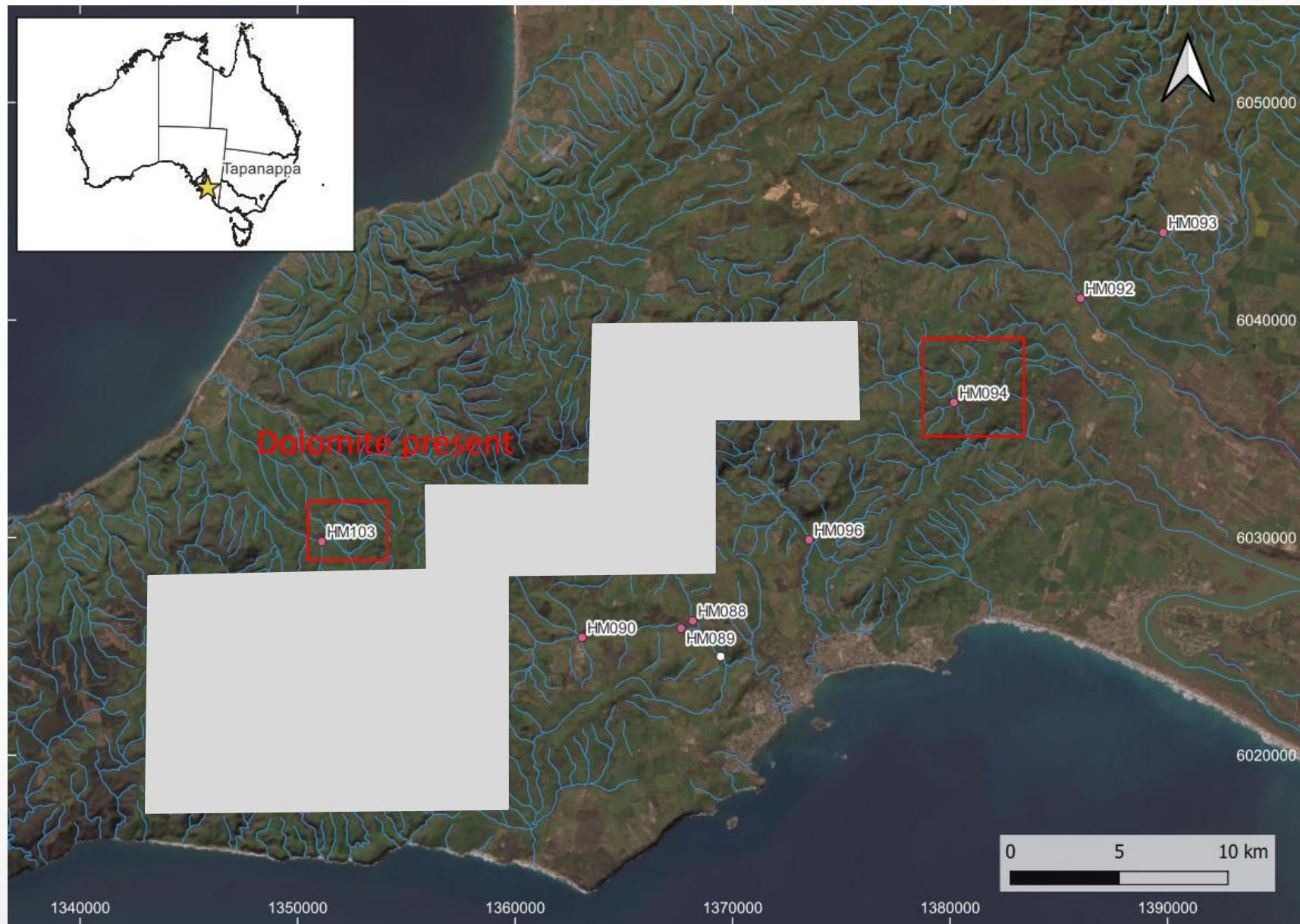


- For phases present at >1 volume percent abundance.

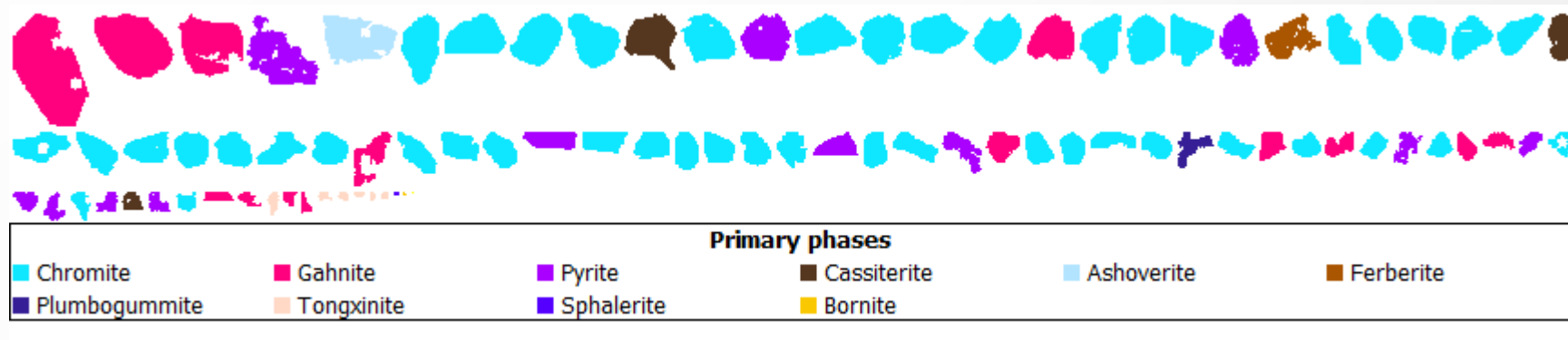
- Common mineralogy:

- $\text{Al}_2\text{SiO}_5$  polymorphs
- Tourmaline
- Ilmenite/rutile
- Quartz
- Haematite
- Amphibole
- Garnet
- Zircon
- Muscovite/biotite
- Chlorite

- 2x HM098 samples – low grain count on the original.

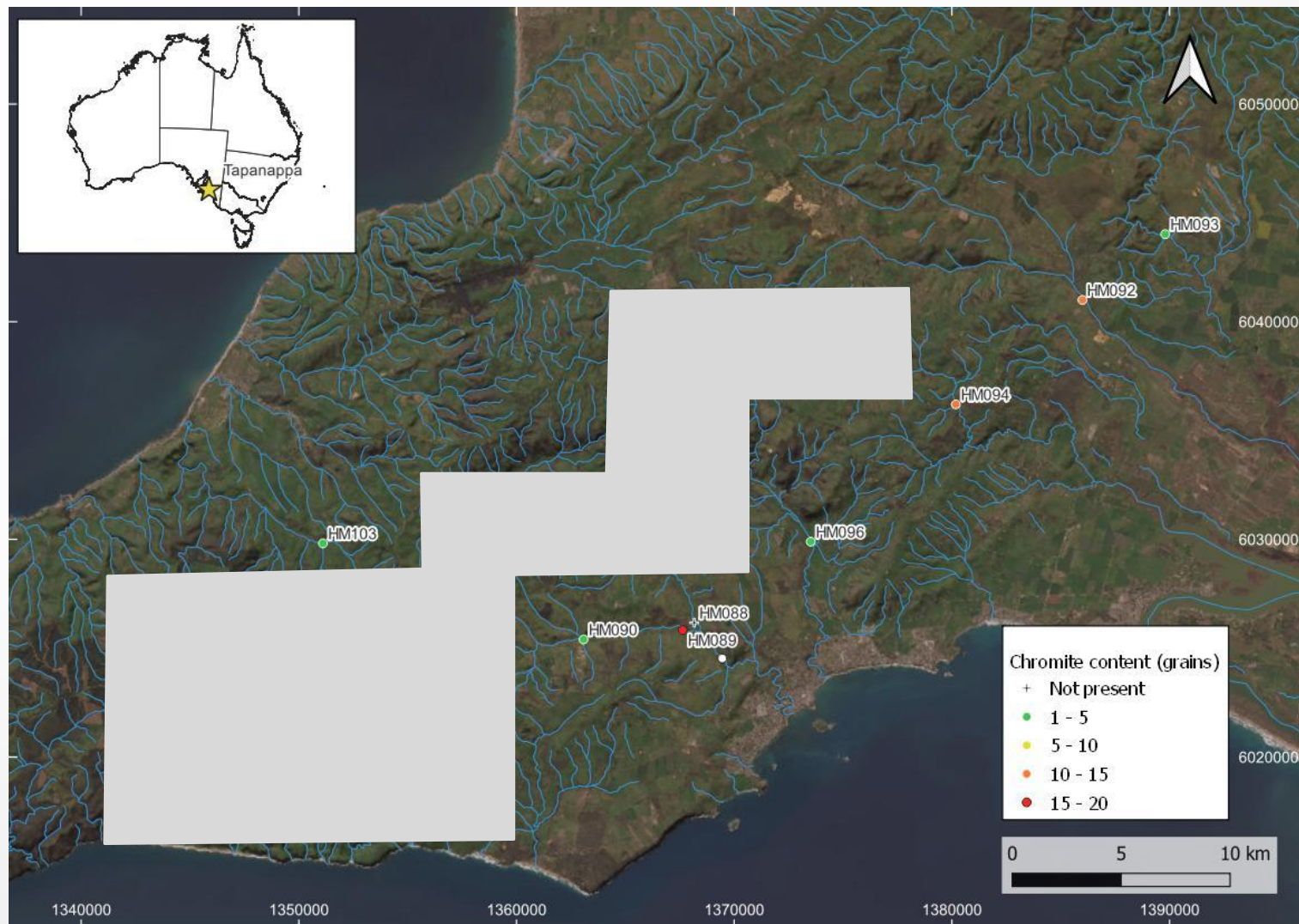


## Minerals of economic interest

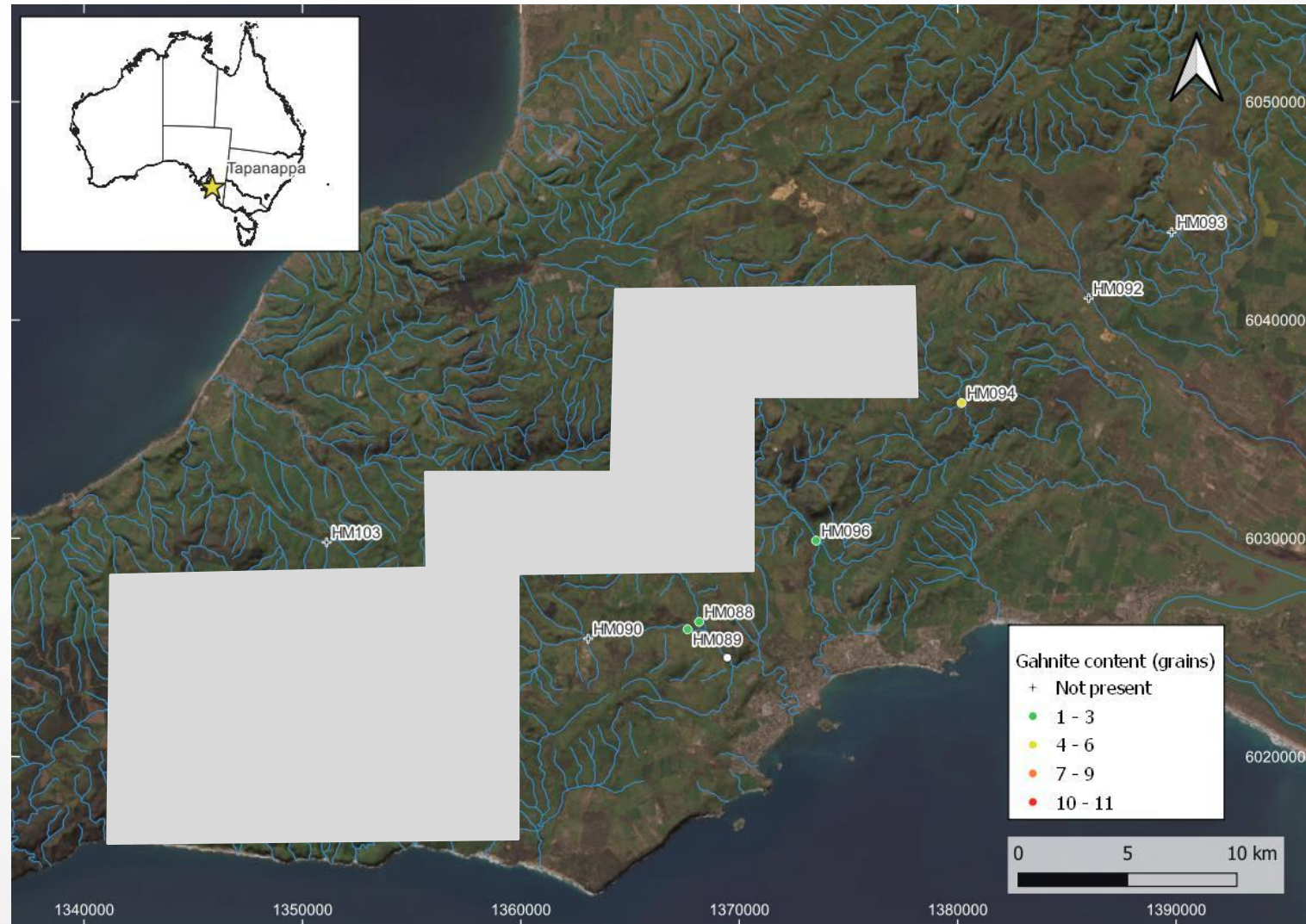


- Grains filtered to include those over ~50  $\mu\text{m}$  in size – reduced likelihood of counting partial or incorrect classifications.

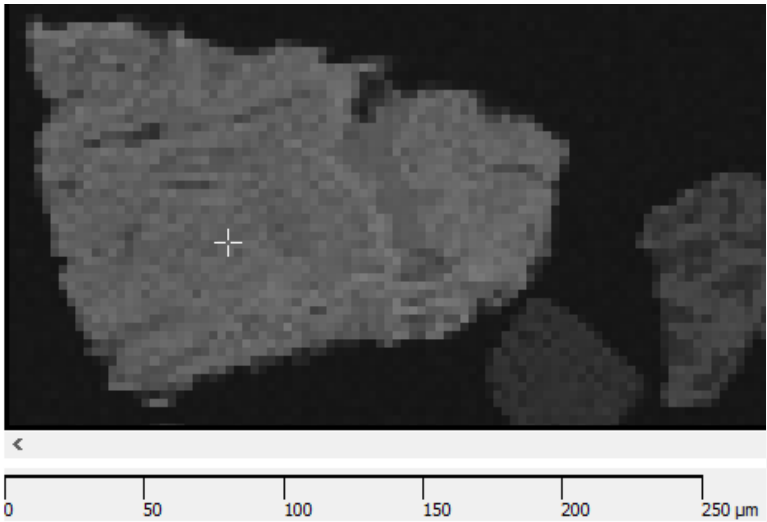
## Minerals of economic interest - chromite



## Minerals of economic interest - gahnite



# Tapanappa – Ashoverite or smithsonite?



Zinc mineral grain in HM094

Spectrum	Vis	H	C	O	Si	Zn
<input type="checkbox"/> Spc([Unclassified])_1	<input checked="" type="checkbox"/>			33.22	2.75	64.03
<input type="checkbox"/> Ashoverite (simulated from database @ 25 keV)	<input checked="" type="checkbox"/>	2.03		32.19		65.78
<input type="checkbox"/> Smithsonite (simulated from database @ 25 keV)	<input checked="" type="checkbox"/>		9.58	38.28		52.15

## Ashoverite/Sweetite/Wulfingite (Zn[OH]<sub>2</sub>)

Oxidised vein in limestone

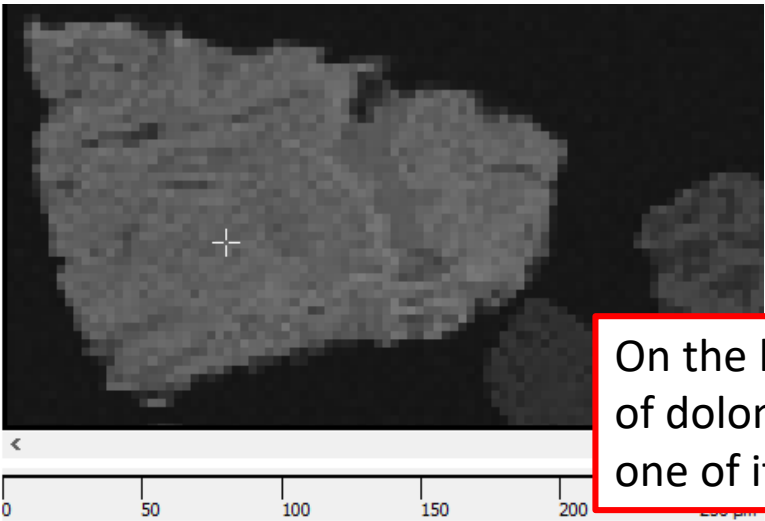


## Smithsonite (ZnCO<sub>3</sub>)

Oxidation product of Zn-bearing ores



# Tapanappa – Ashoverite or smithsonite?



Zinc mineral grain in HM094

Spectrum	Vis	H	C	O	Si	Zn
<input type="checkbox"/> Spc([Unclassified])_1	<input checked="" type="checkbox"/>			33.22	2.75	64.03
<input type="checkbox"/> Ashoverite (simulated from database @ 25 keV)	<input checked="" type="checkbox"/>	2.03		32.19		65.78
<input type="checkbox"/> Smithsonite (simulated from database @ 25 keV)	<input checked="" type="checkbox"/>		9.58	38.28		52.15

On the basis of composition and the presence of dolomite/ankerite in samples, ashoverite or one of its polymorphs seems likely.

## Ashoverite/Sweetite/Wulfingite (Zn[OH]<sub>2</sub>)

Oxidised vein in limestone

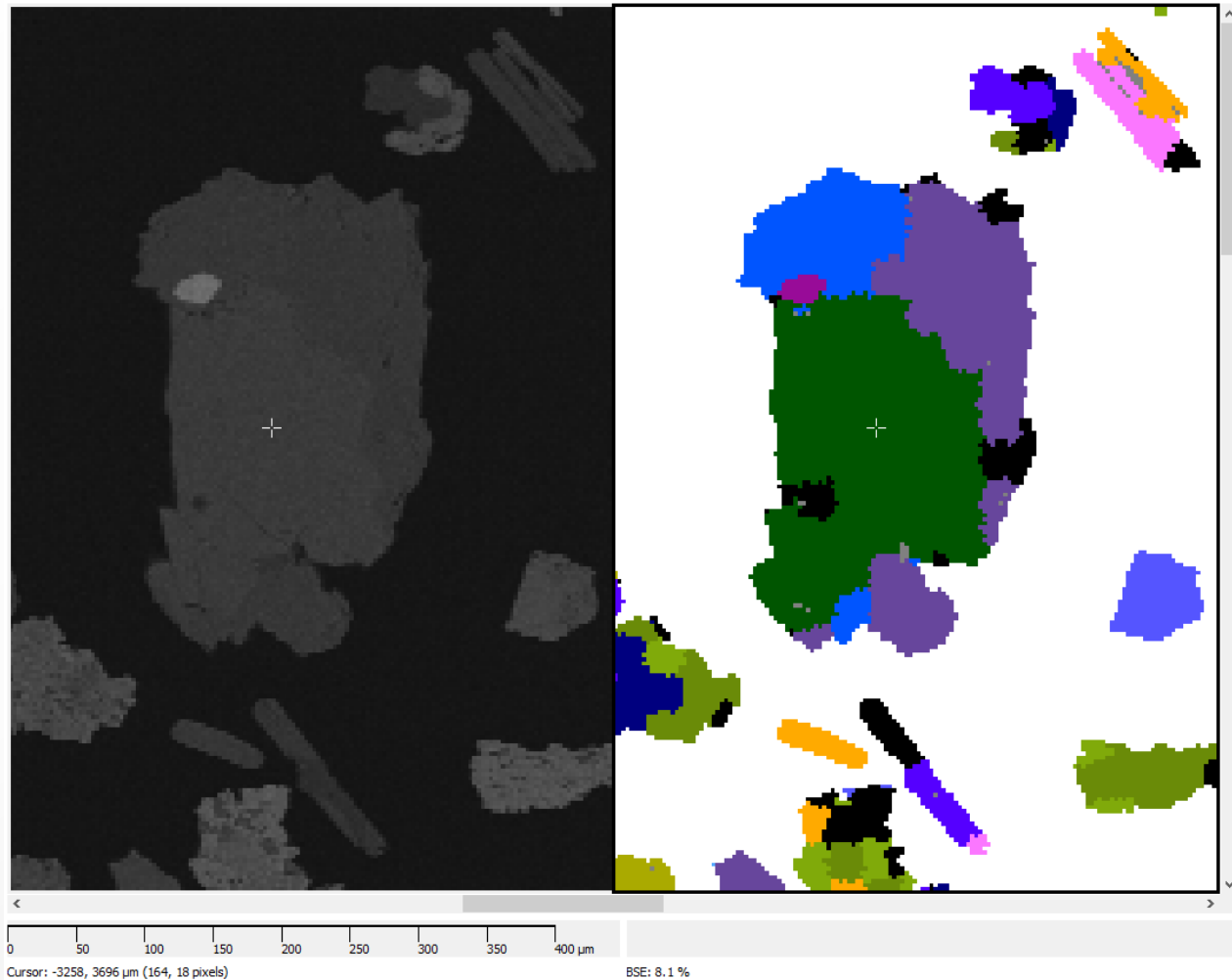


## Smithsonite (ZnCO<sub>3</sub>)

Oxidation product of Zn-bearing ores



## Evidence for mafic lithology



- Evidence limited but present
- Intergrowth of olivine/serpentine (green), pyroxene (blue), amphibole (dark purple), and pentlandite (singular grain, bright purple).
- Unable to reliably differentiate between olivine and serpentine via TIMA – similar chemistry.

## Conclusions

- Bulk mineralogy interesting – presence of grossular, dolomite and ashoverite suggest carbonate geology. Dolomite-rich samples are at opposite end of locality to ashoverite-bearing sample HM094 – different drainages.
- Spessartine present in many samples and can be associated with metamorphosed Zn-base metal deposits.
- Sulphides present limited primarily to pyrite. Chromite and gahnite present in multiple samples across Tapanappa locality. Gahnite-rich HMMA sample in sample area/catchment as Trinex gahnite-bearing samples.