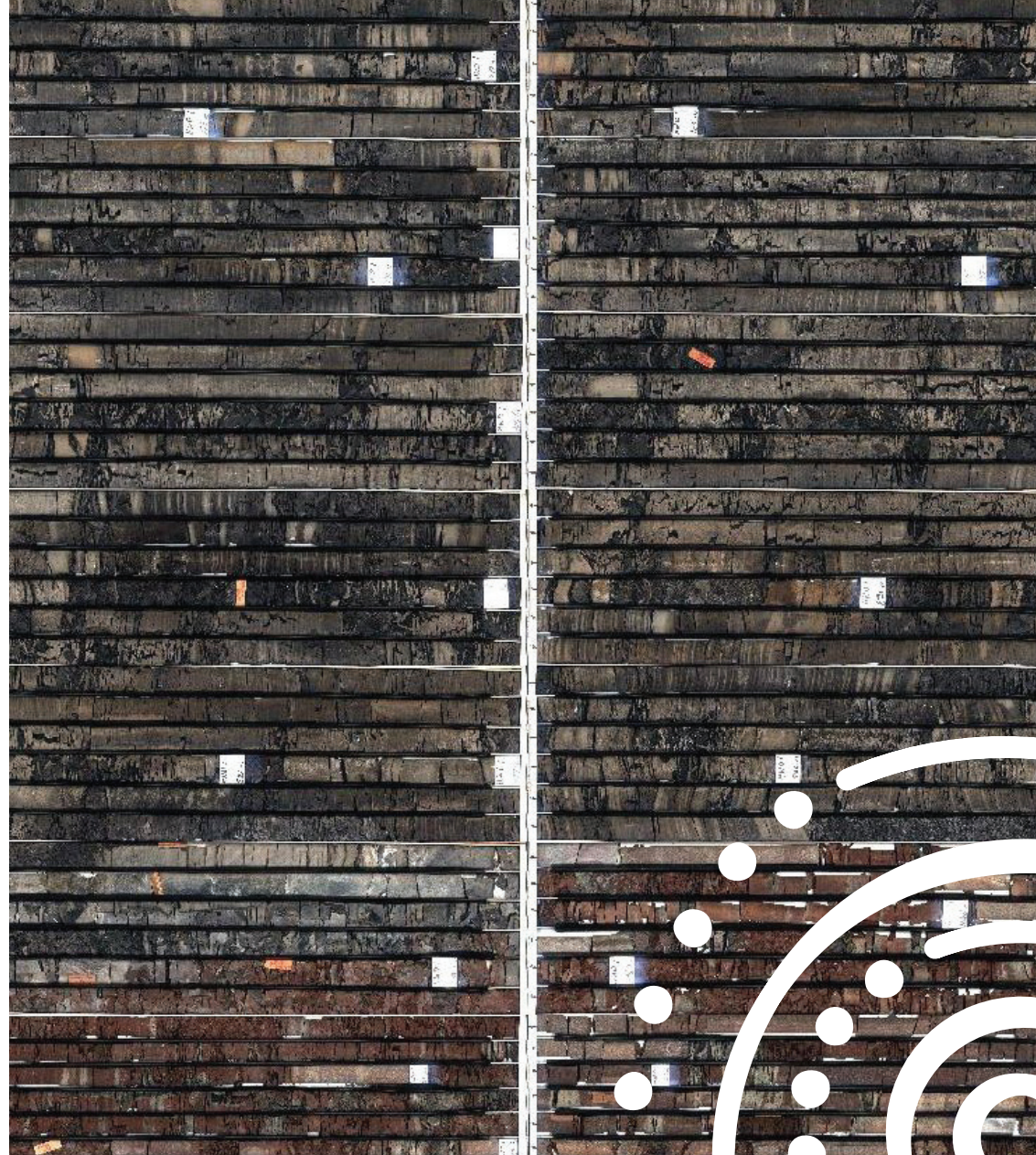




HWD 1 (DH 20770) drillhole report

Sedimentary Copper Mineral Systems of the Stuart Shelf
GSSA–CSIRO project

C Krapf, A Fabris, M Bockmann, G Gordon,
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C Krapf¹, A Fabris¹, M Bockmann¹, G Gordon¹,
S Schmid², V Crombez² and M Kunzmann^{2*}

1 Geological Survey of South Australia,
Department for Energy and Mining

2 CSIRO (*now FMG)

April 2023

Report Book 2023/00009



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Acknowledgement of Country

As guests on Aboriginal land, the Department for Energy and Mining (DEM) acknowledges everything this department does impacts on Aboriginal country, the sea, the sky, its people, and the spiritual and cultural connections which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

Preferred way to cite this publication

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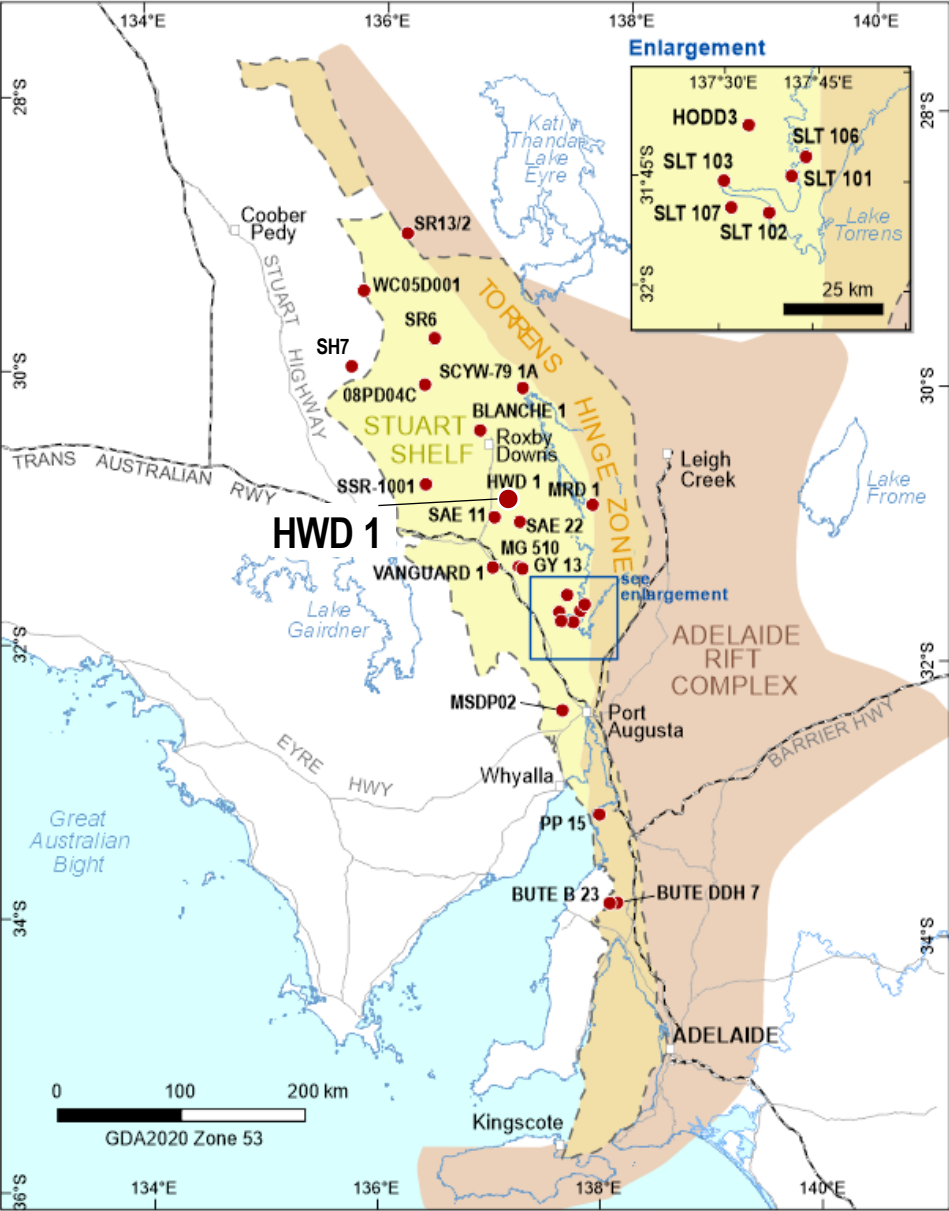
Drillhole information

Drillhole name	HWD 1	
Drillhole number	20770	
Tenement	EL 784	
Location	137.0505887 Long -30.9372164 Lat	695909.63E 6575553.25N GDA2020, Zone 53
Date drilled	16/06/1982	
Drillhole depth	1097.15 m	
Cored interval	1097.15 m	
Azimuth/Dip	n. a.	-90
Reference	ENV06562	

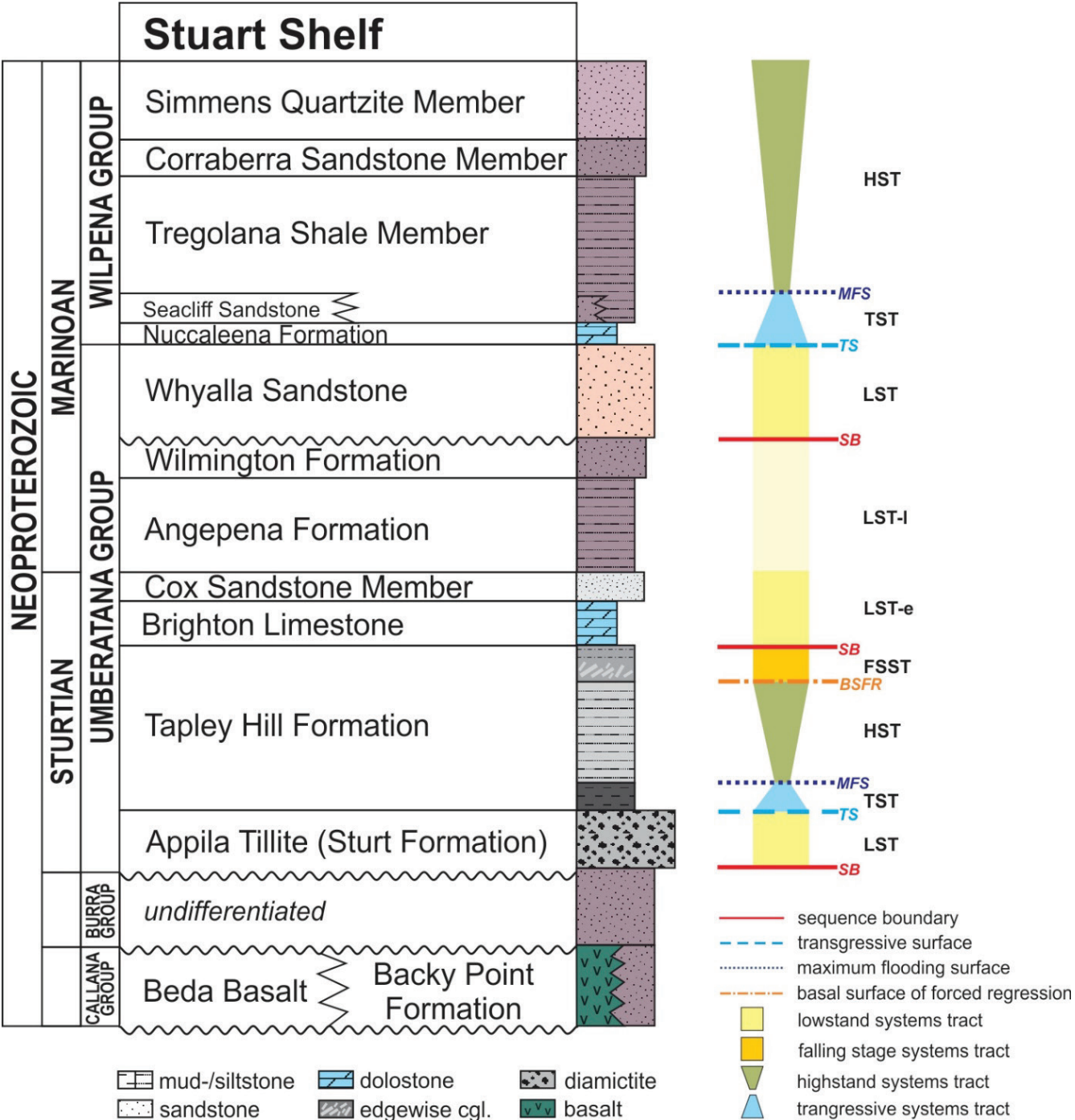
This drillhole report provides a summary of new logging and data collection undertaken as part of the Sedimentary Copper Mineral Systems of the Stuart Shelf GSSA-CSIRO project.

Associated newly collected handheld gamma, portable XRF and HyLogger™ data are available for download via the [blue hyperlinks](#) in this report.

Drillhole location



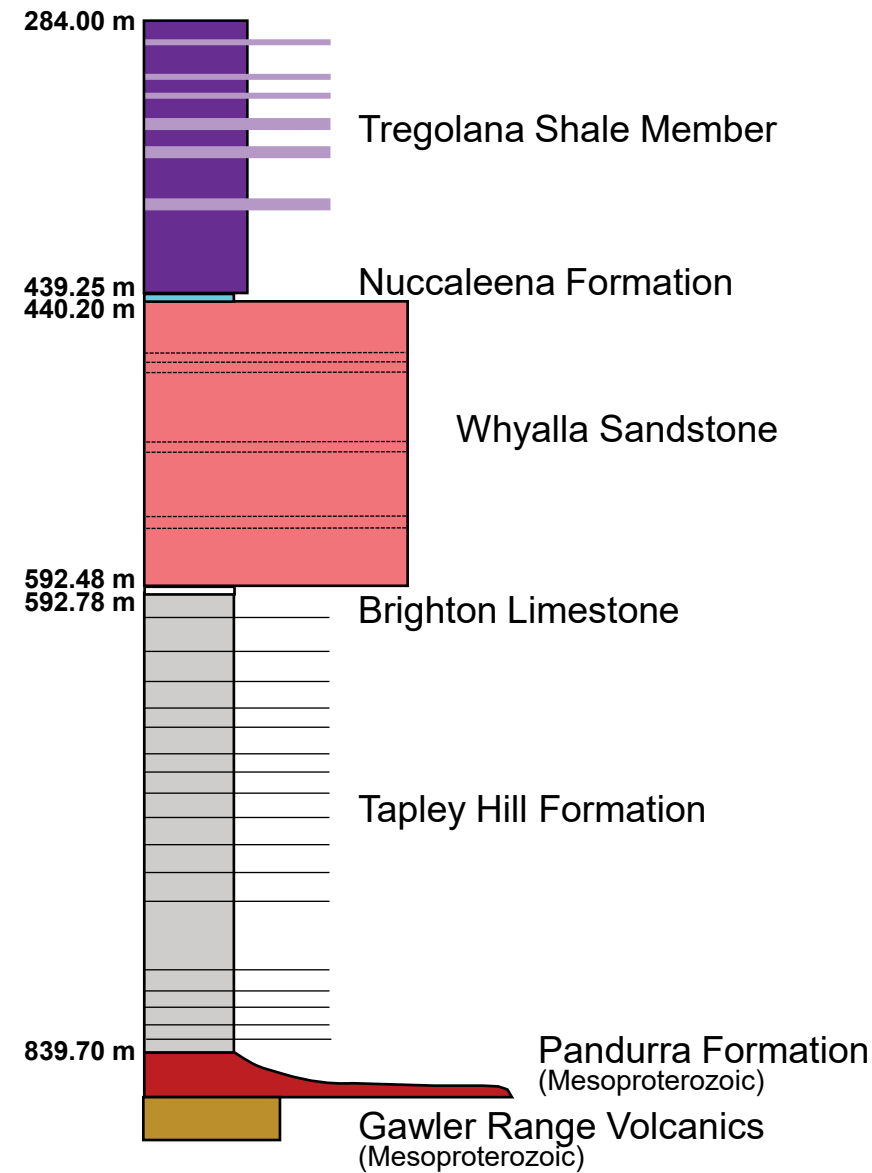
Generalised stratigraphy and sequence stratigraphy of the Stuart Shelf*



*Note: not all stratigraphic units were deposited or preserved throughout the Stuart Shelf

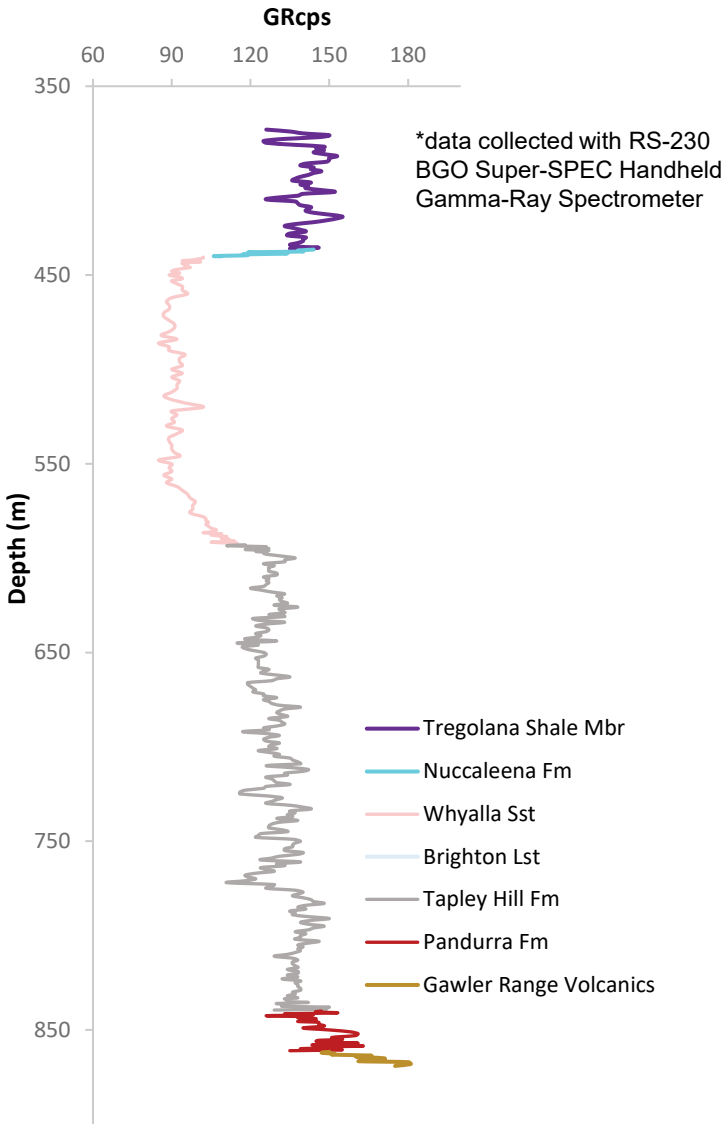
HWD 1

generalised stratigraphic log
(depth interval 284 – 861 m)



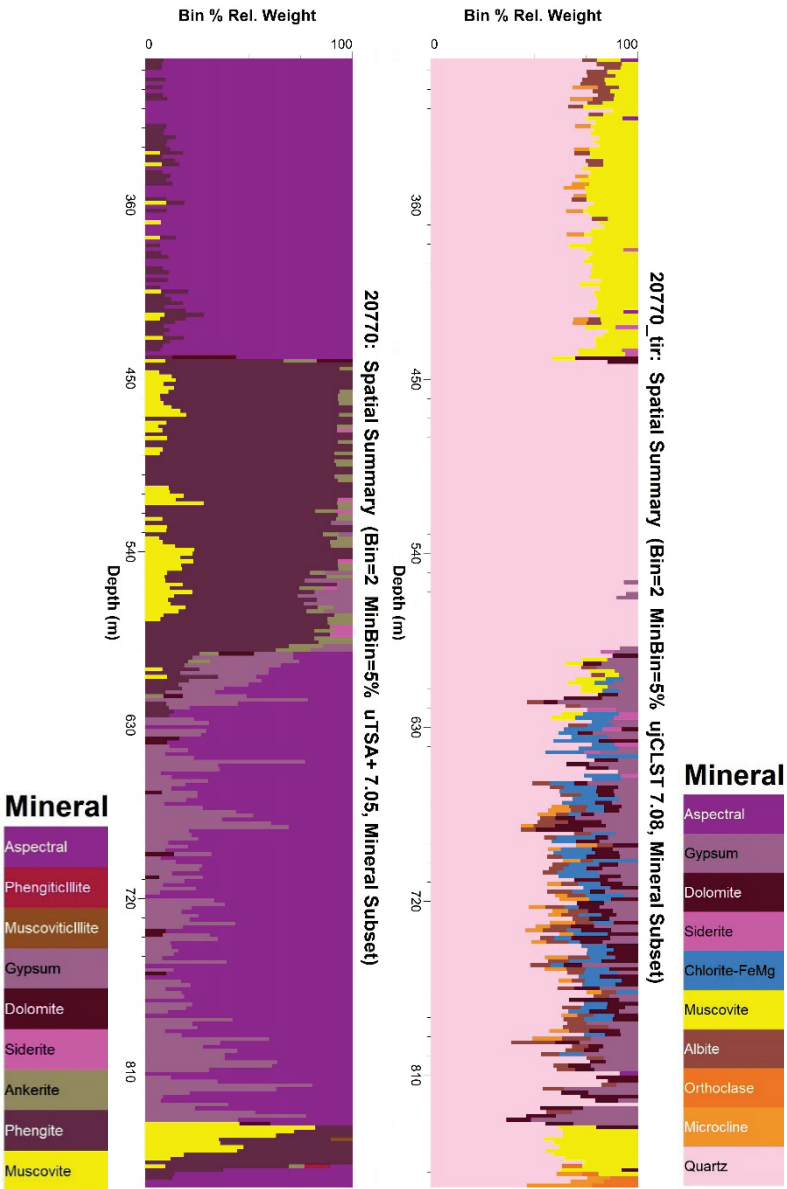
Handheld gamma*

[Download
gamma data](#)



HyLogger™

[Download
HyLogger™ data](#)

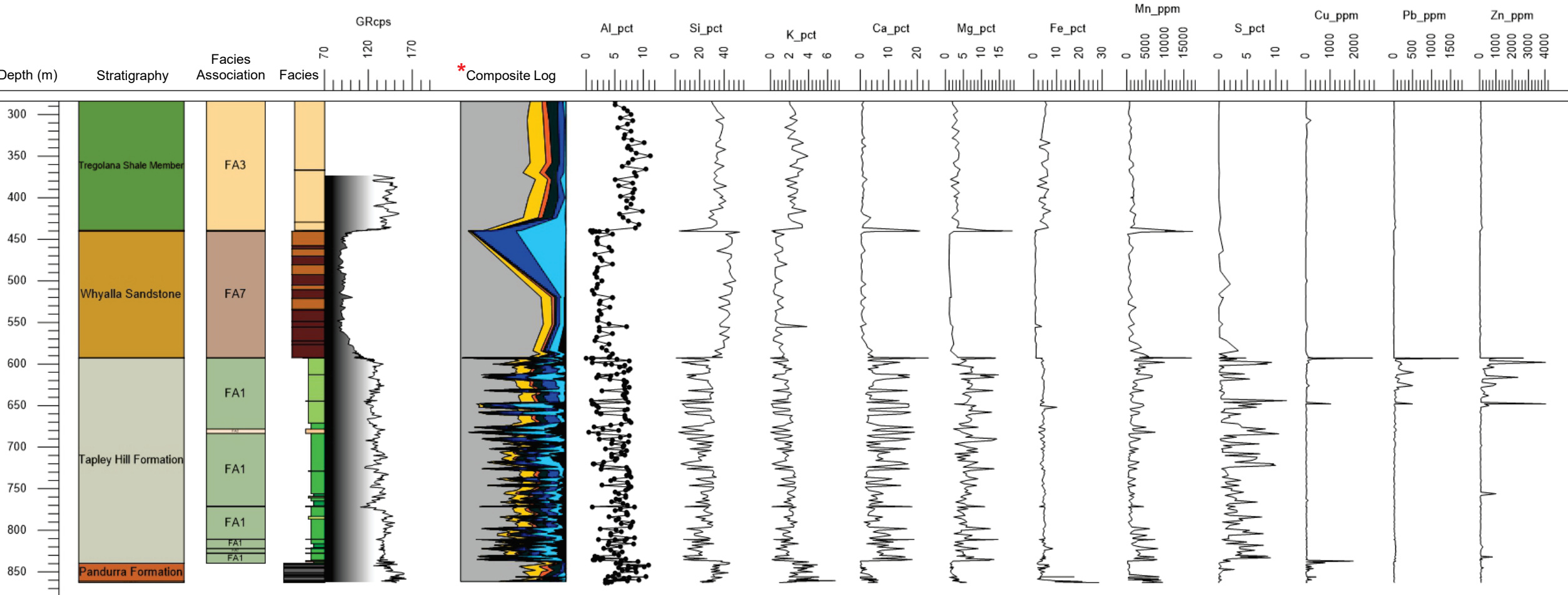


Combined STRATER log (stratigraphy, facies, gamma and handheld pXRF* - corrected)



[Download pXRF data](#)

HWD 1 (depth interval 284 – 861 m)



Facies Association (FA)

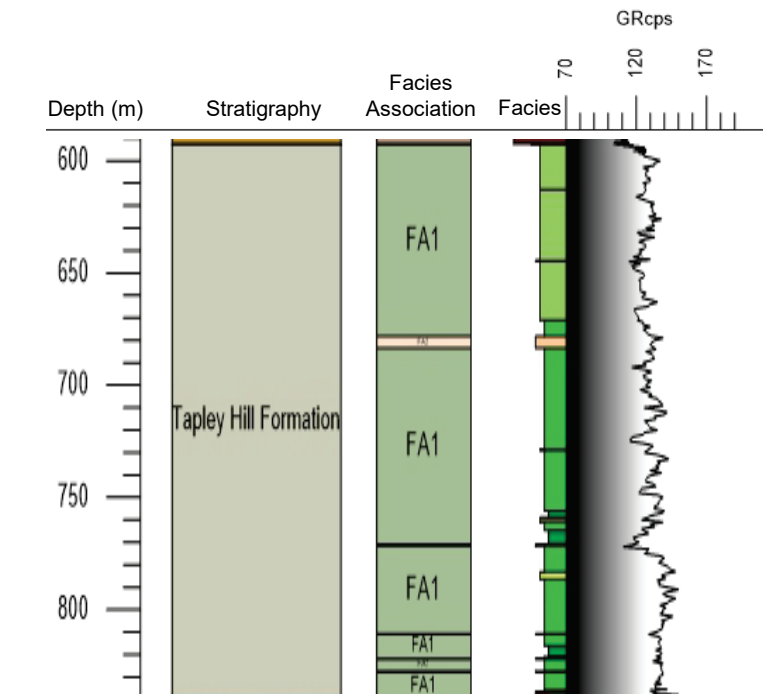
- FA1: offshore
- FA2: offshore transition
- FA3: lower shoreface - prodelta
- FA4: shoreface to delta front
- FA5: shallow subtidal to subtidal
- FA6: intertidal to supratidal
- FA7: glacial to fluvio-glacial

- * Mg_pct
- Al_pct
- Si_pct
- S_pct
- K_pct
- Ca_pct
- Fe_pct
- Cu_ppm
- Pb_ppm
- Zn_ppm

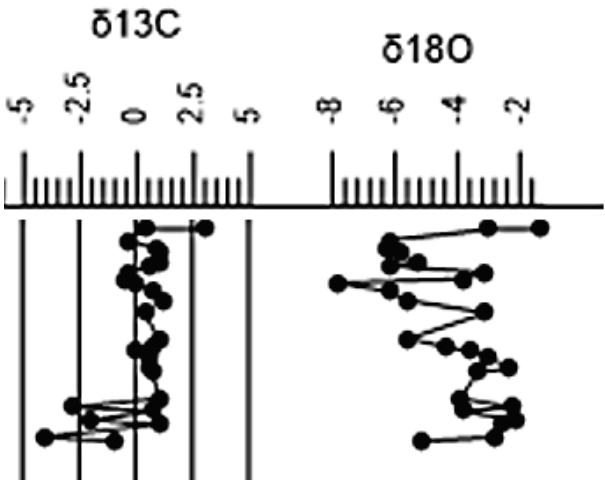
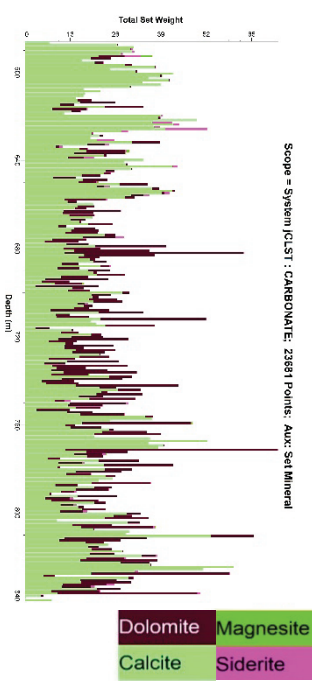
*data collected with Vanta™ Handheld XRF

HWD 1 Carbonate Content

Tapley Hill Formation and Brighton Limestone interval (592.48 – 839.70 m)



HyLogger™
TIR carbonates (1m res)



[Download HyLogger™ data](#)

Facies Association (FA)

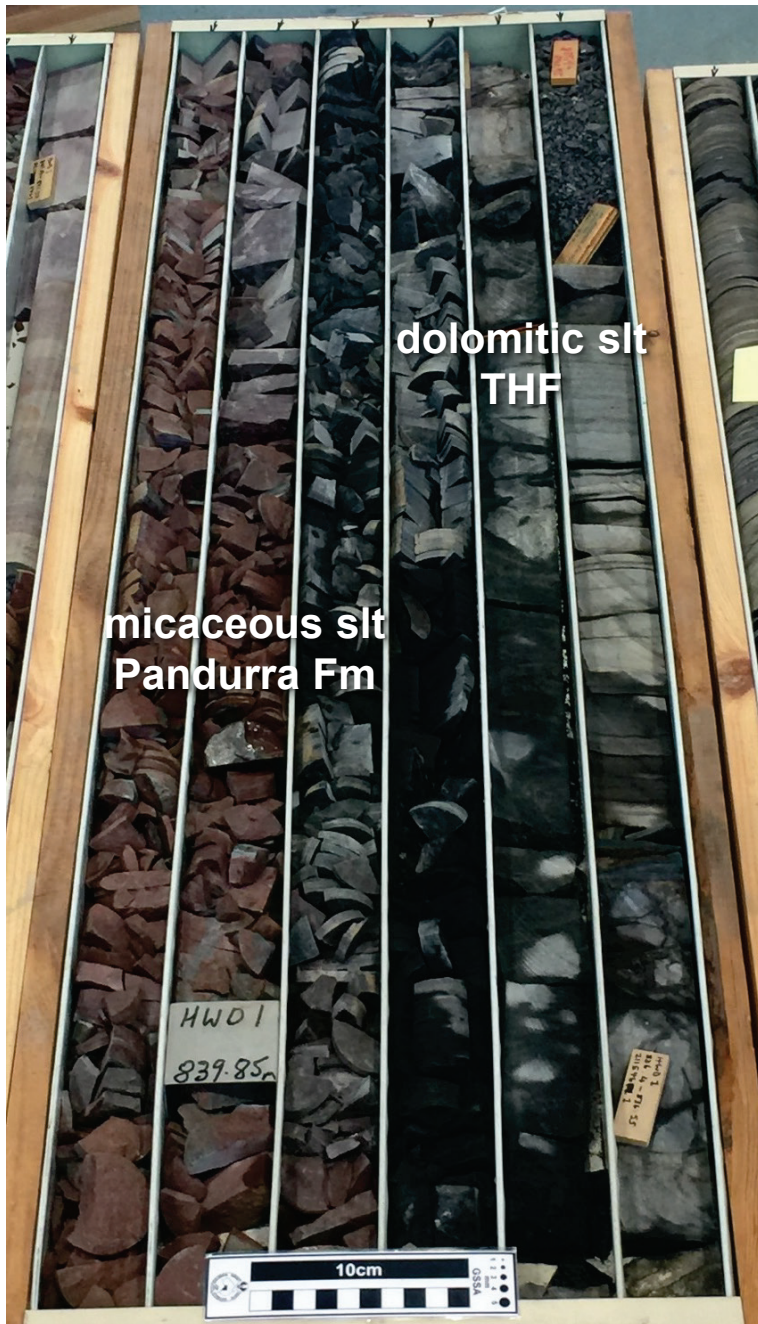
- | | |
|---------------------------------|-----------------------------------|
| FA1: offshore | FA5: shallow subtidal to subtidal |
| FA2: offshore transition | FA6: intertidal to supratidal |
| FA3: lower shoreface - prodelta | FA7: glacial to fluvio-glacial |
| FA4: shoreface to delta front | |

Pandurra Formation (depth 839.7 – 861.2 m)

micaceous sandstones and conglomerates fining upward into siltstones (fluvial redbed deposits)



Transition Pandurra Formation – Tapley Hill Formation (THF)



Tapley Hill Formation

offshore marine – below wave storm base

carbonaceous mudstones within laminated siltstones



1st order maximum
flooding surface @ ~808 m

2nd order maximum
flooding surface @ ~595 m



Tapley Hill Formation

offshore marine – below wave storm base

dm-scale carbonaceous siltstone and dolomitic siltstone and laminated siltstones



Tapley Hill Formation

offshore marine – below wave storm base

cm-scale interbedded dolomitic and carbonaceous siltstone, slumps and soft sediment deformation



sharp-based
fine-grained sandstone

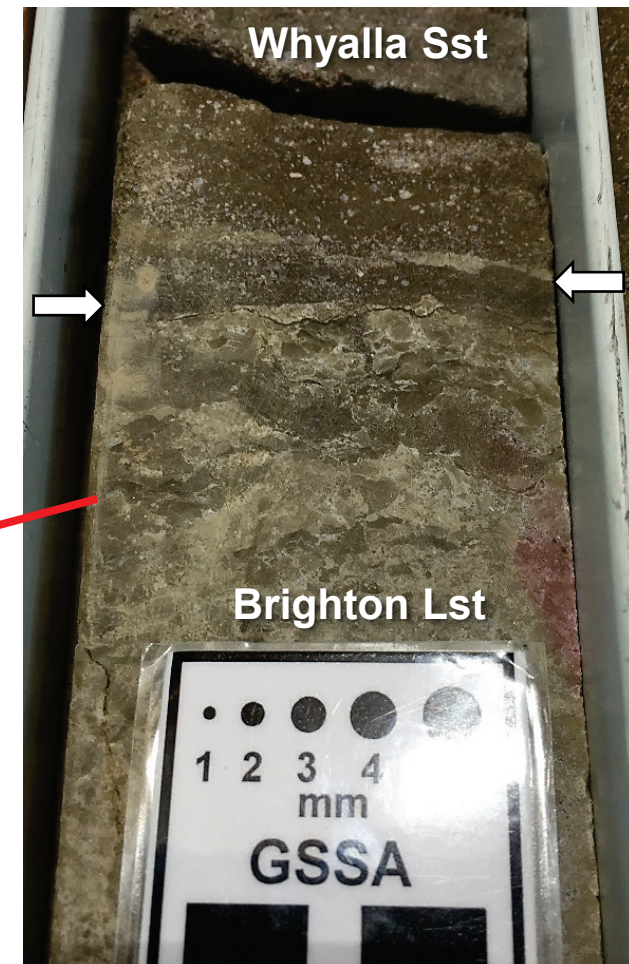
Tapley Hill Formation

offshore transition – between storm wave base and fair-weather wave base

edgewise conglomerate, debrite and rip up clasts



Transition Tapley Hill Formation – Brighton Limestone – Whyalla Sandstone

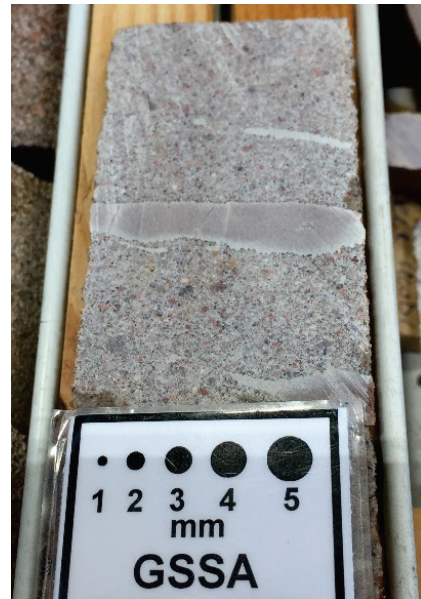


Whyalla Sandstone (depth 440.2 – 592.48 m)

interbedded fine- to medium-grained sandstones to coarse-grained sandstones



massive sandstones (medium- to very coarse-grained)



dolomite rip up clast
at top of Whyalla Sst

Nuccaleena Formation (depth 439.25 – 440.2 m)

cap dolomite



Transition Whyalla Sandstone – Nuccaleena Formation – Tregolana Shale Member



Tregolana Shale Member (depth 243 – 439.25 m)

fining upward laminated to ripple cross laminated siltstone and sandstone

