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SUPPLEMENTARY INFORMATION

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Constraints on ocean carbonate chemistry and p_{CO_2} in the Archaean and Palaeoproterozoic

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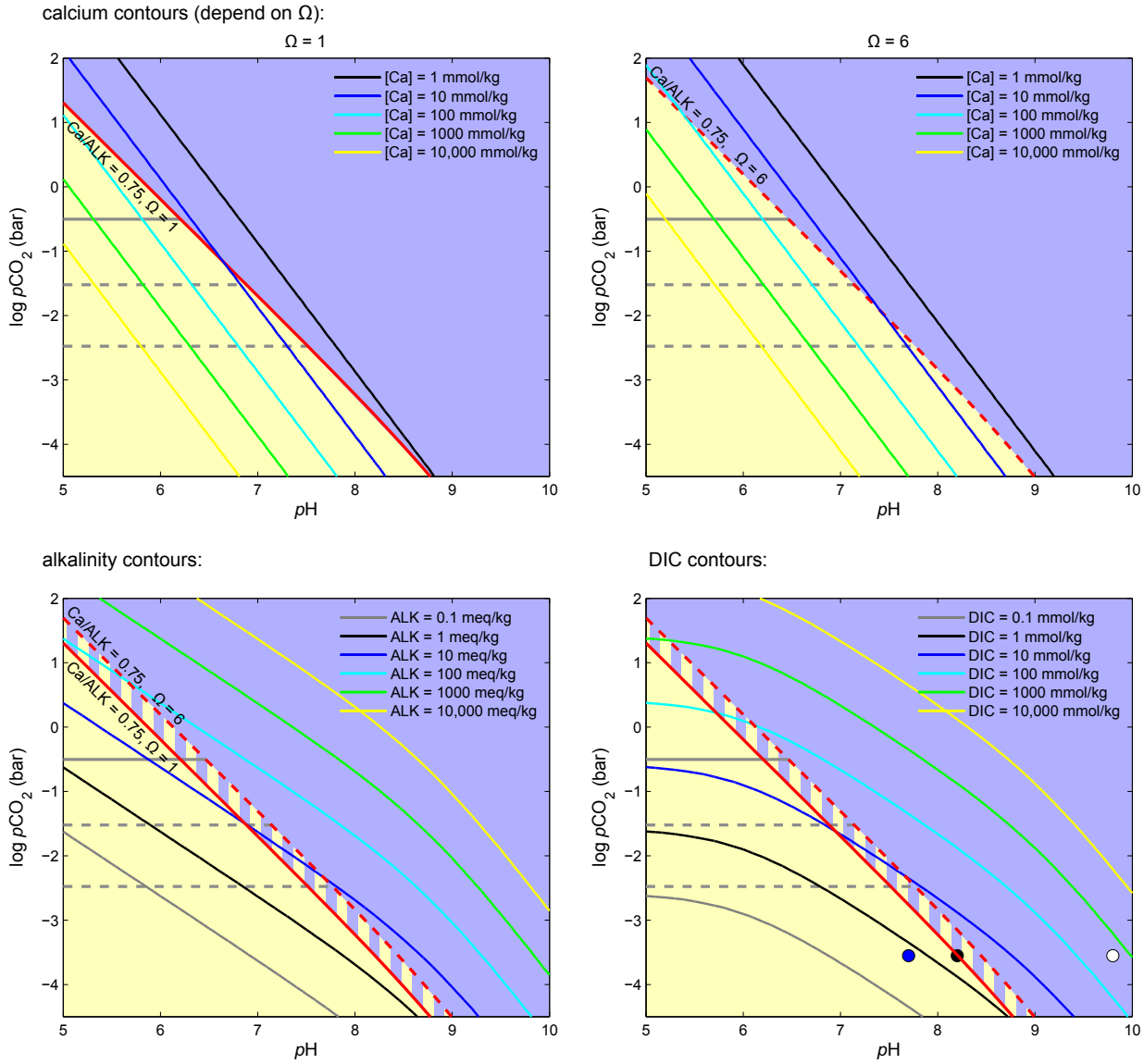
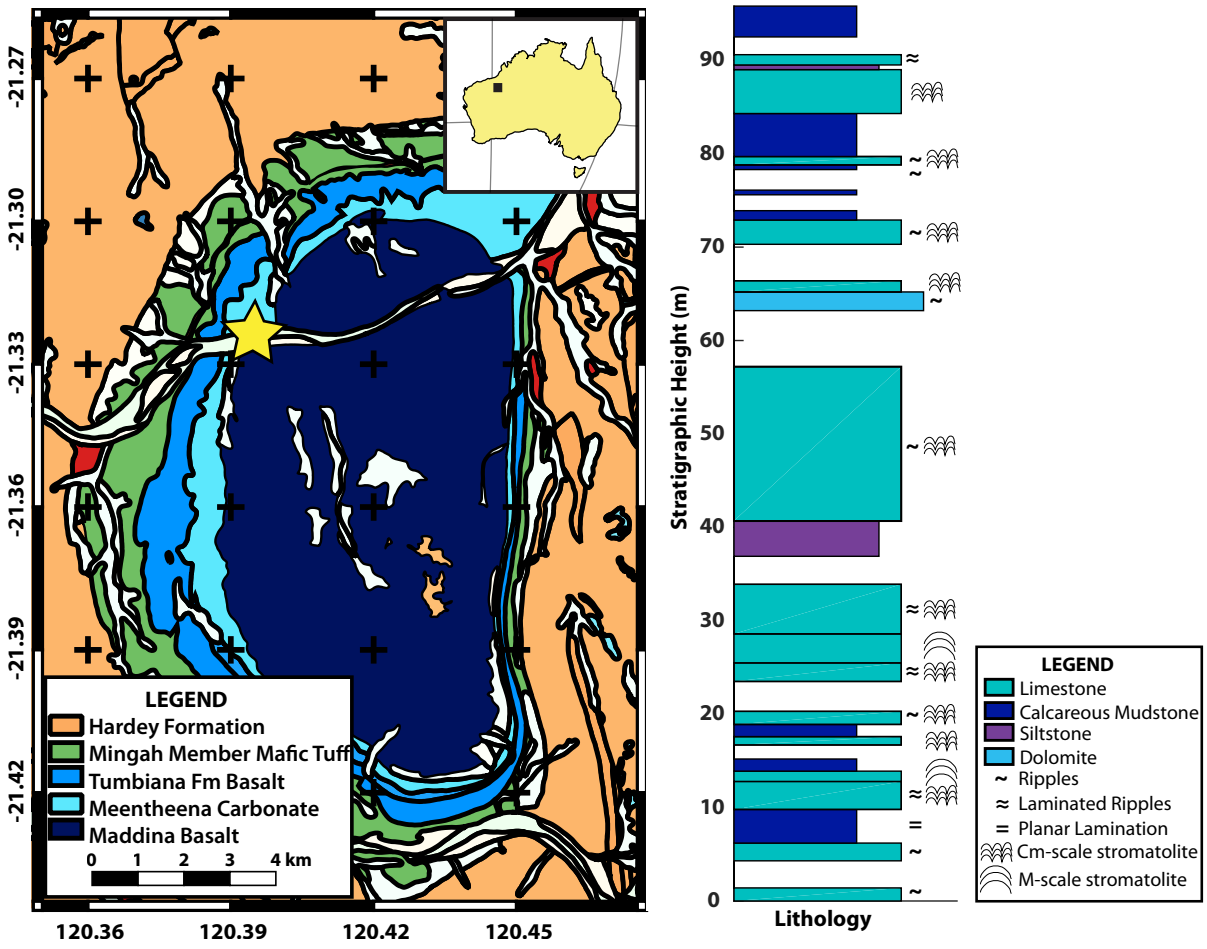
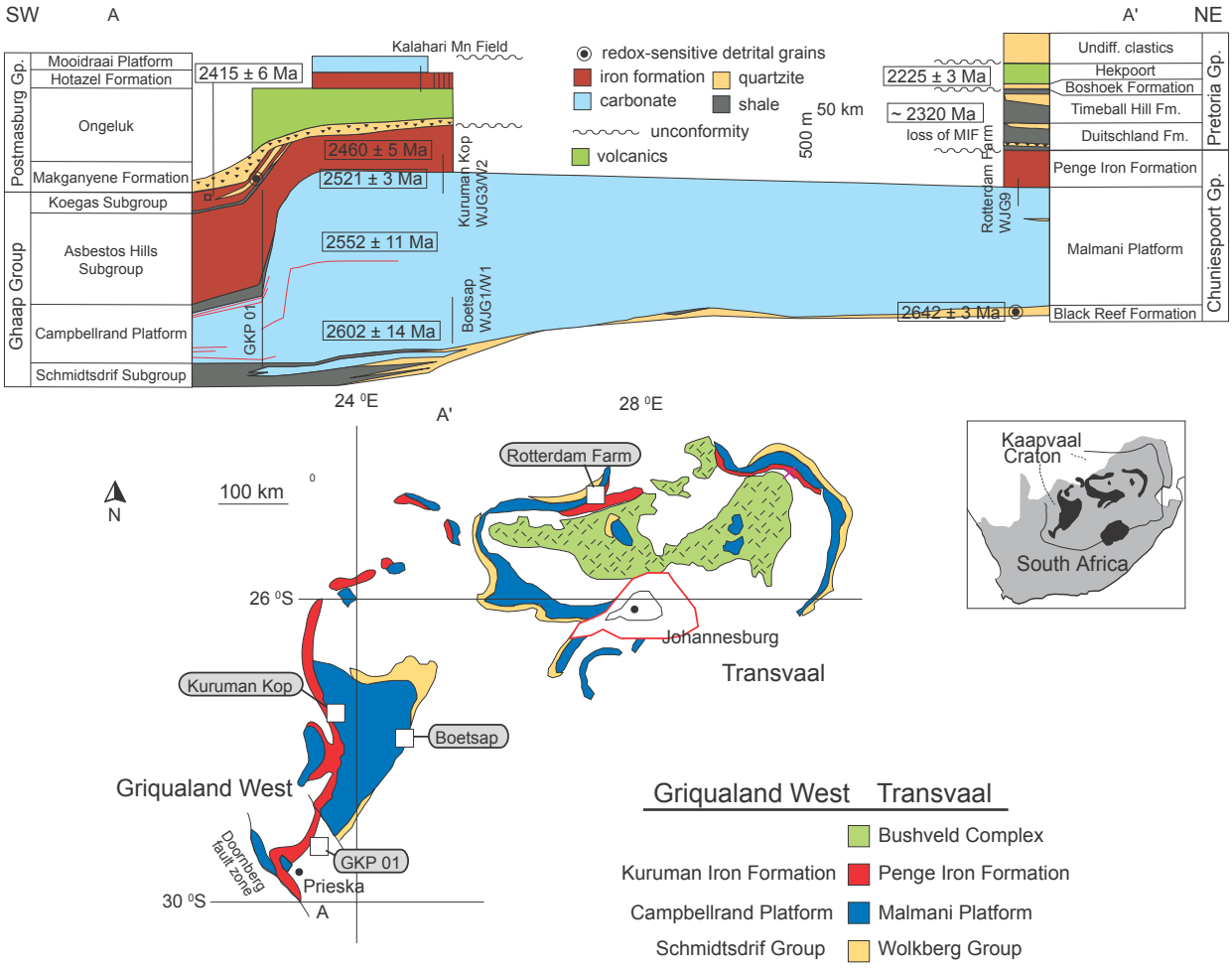


Supplementary Figure 1: Contours of calcium concentration ([Ca]), alkalinity, and DIC, as defined in the main text. Calcium contours are shown under conditions of $\Omega = 1$ and $\Omega = 6$. Note that contours are drawn at order-of-magnitude spacing, with remarkably (and improbably) high values at the upper end of the plotted range. Other features of the figure follow the description in Figure 3 (main text), with yellow areas reflecting the solution space consistent with calcium isotope data in this study.

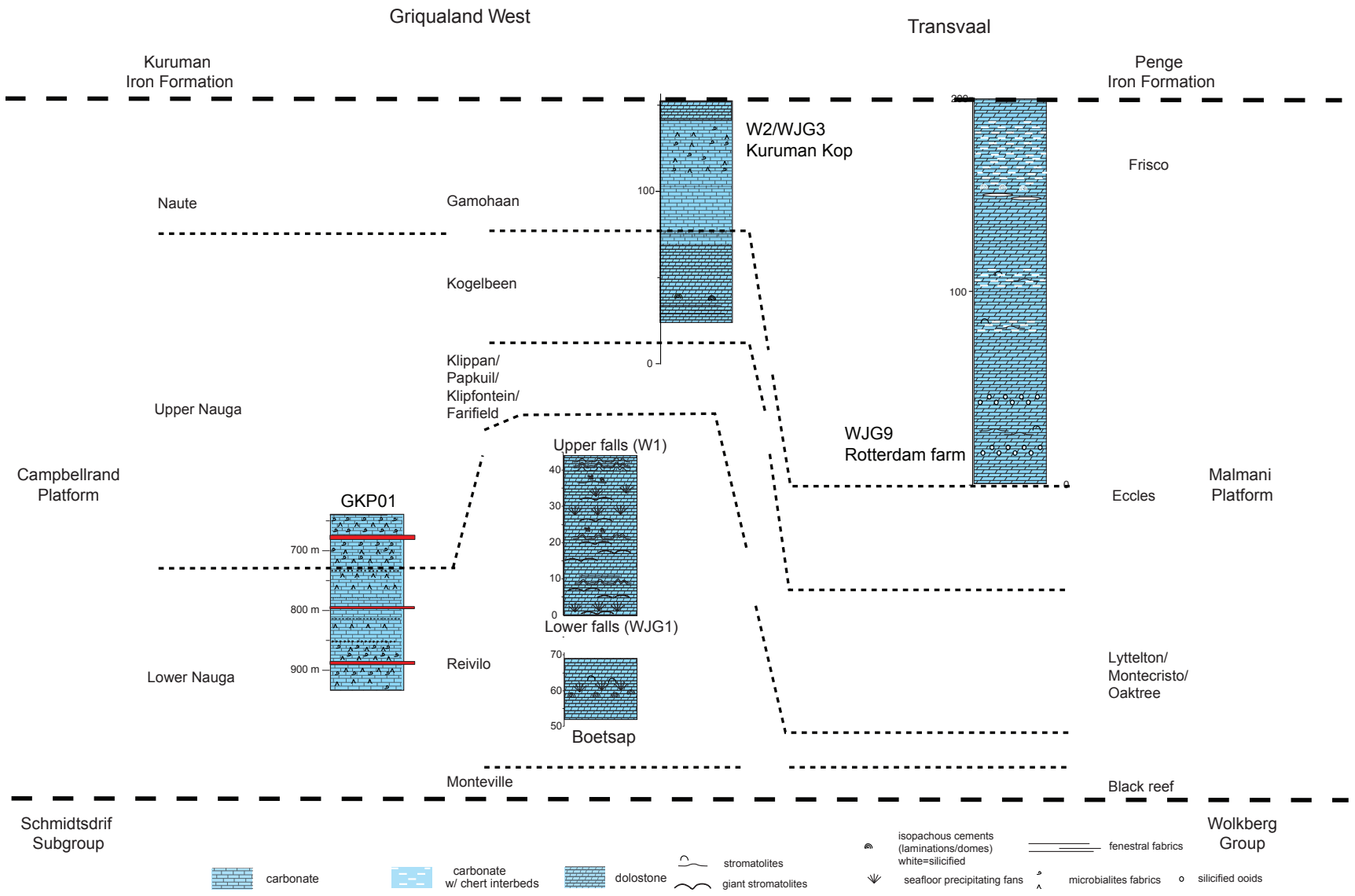


Supplementary Figure 2: Map of sampling locality for the Tumbiana Formation at Meentheena, Western Australia and stratigraphic log of the measured section.

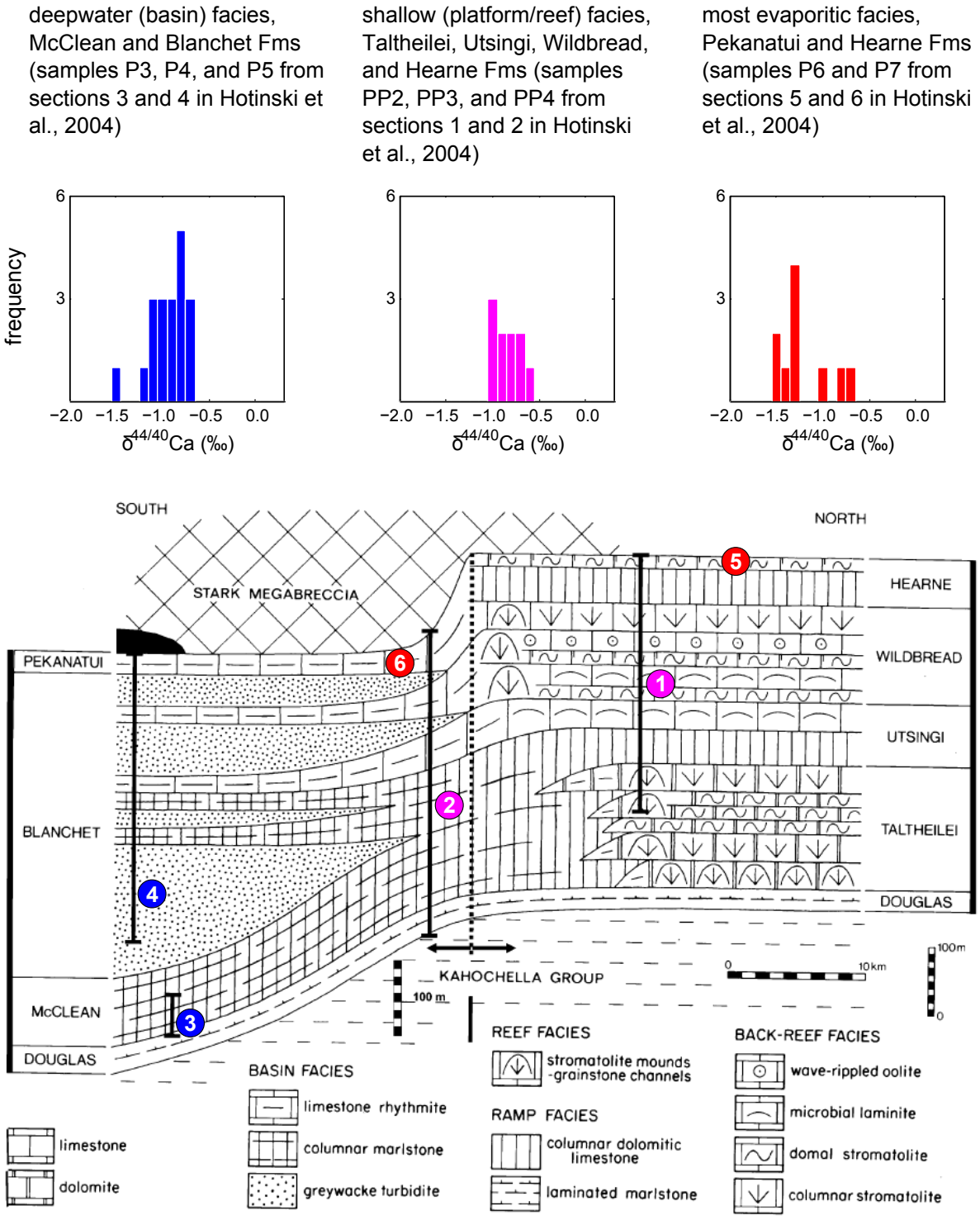
Supplementary Figure 3: Field photographs of representative stromatolitic facies, from cm- to m-scale, from the Tumbiana Formation.



Supplementary Figure 4: Regional geological map of the Campbellrand-Malmani Platform and cross-section showing sampled sections.



Supplementary Figure 5: Stratigraphic logs and correlations of sampled sections in the Campbellrand-Malmani Platform.



Supplementary Figure 6: Geological cross-section of the Pethei Group platform and slope, adapted from Hotinski et al.[21] with original architecture from Hoffman[16].