

Using UAVs for Rock Art Research in Arnhem Land, Northern Australia



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Arnhem Land archaeology

- Occupation from 65k at Madjebebe
- Art dated from 28k-post contact
- Extremely rich but inaccessible archaeological record

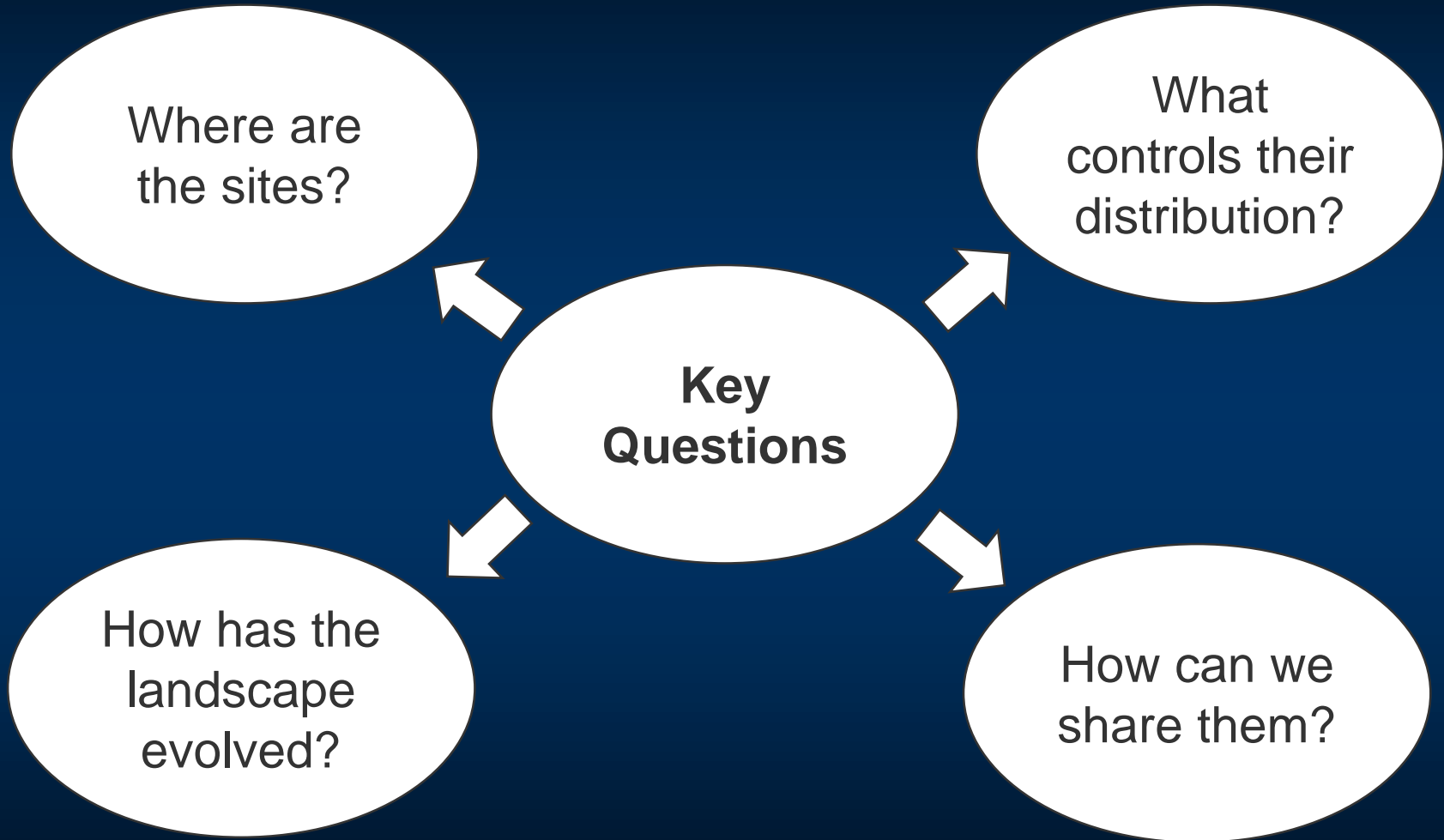


Why UAVs in Arnhem Land

- Difficult access
- Low resolution maps
- Hard to find sites
- Challenging field conditions
- Traditional Owner request



Key Research Questions

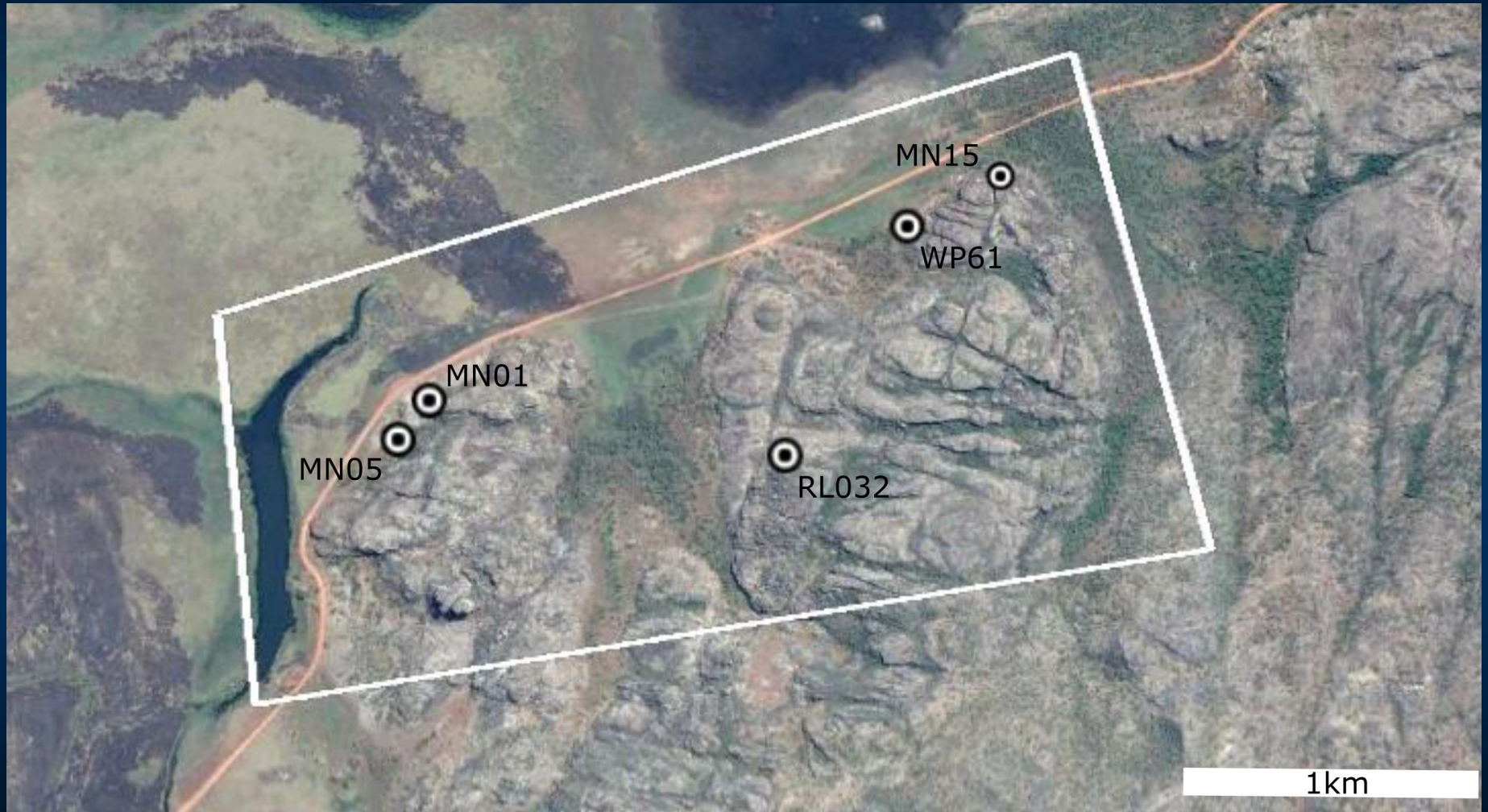


Red Lilly (Wulk) Lagoon Research

- Baseline mapping of potential rock art sites
- Detailed recording of individual shelters with ground and aerial photogrammetry



Study Area



Methodology

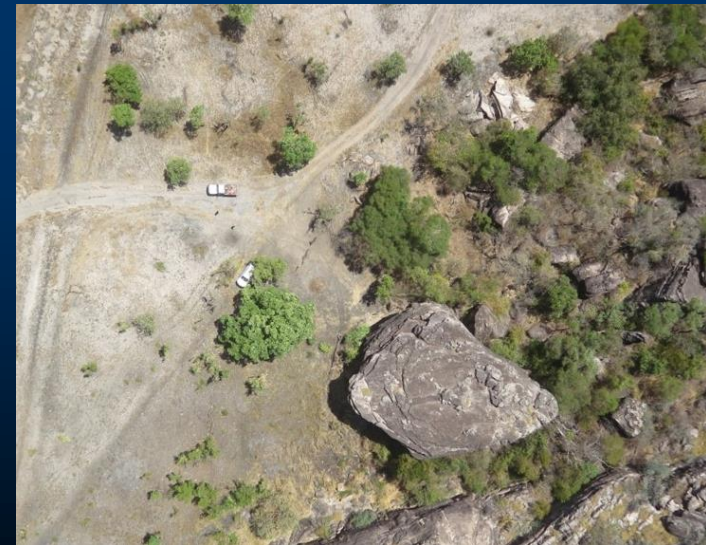
- Event38 E384 with post processed CHC 90+ Static GPS and Total Station for ground control
- Ground photos at specific rock art sites taken with Nikon D300 and stitched with georectified targets
- Models created with Agisoft Professional and shared with Sketchfab
- Now using Tuffwing UAV Mapper and DJI Mavic Air for infill surveys



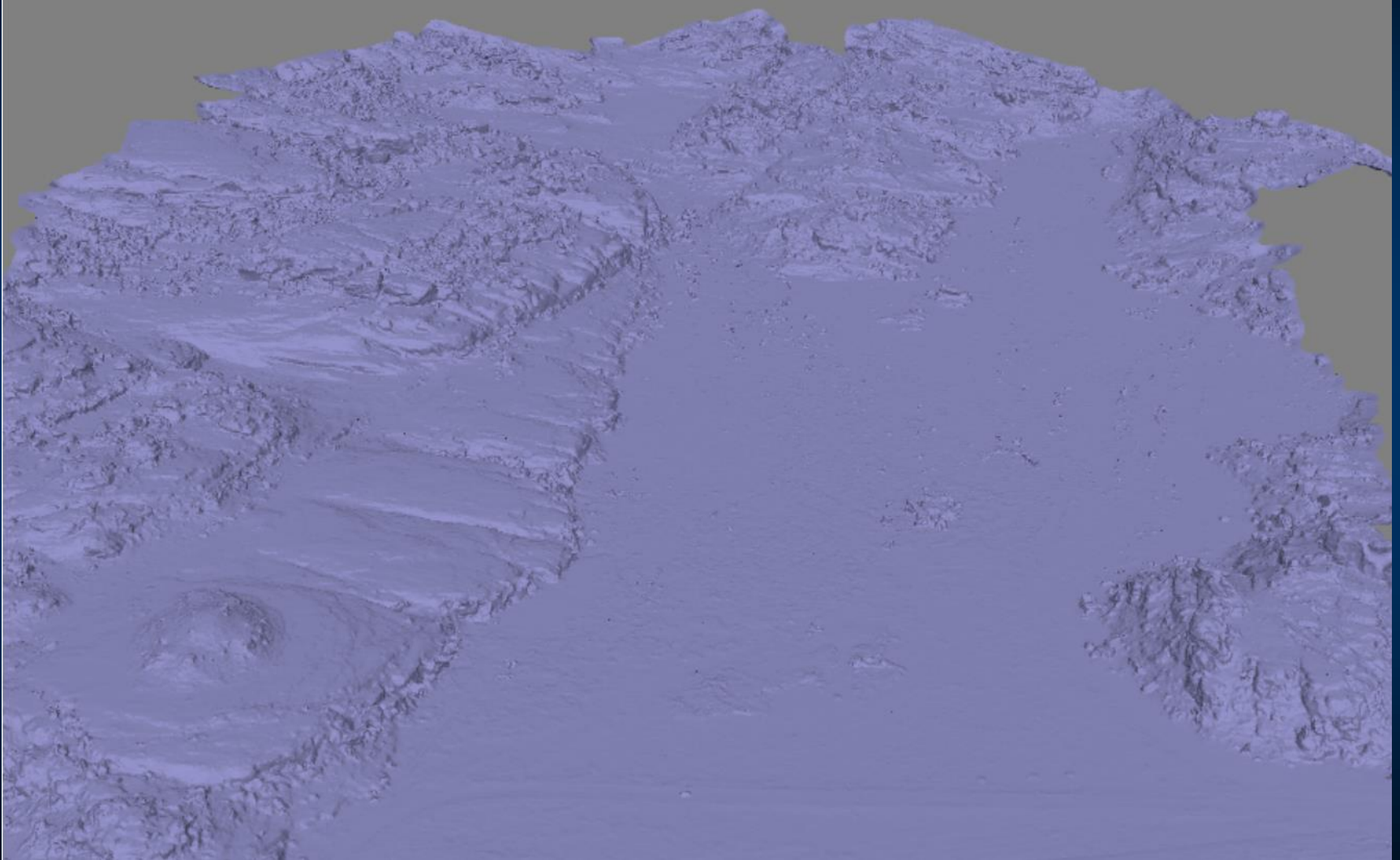
Study Area



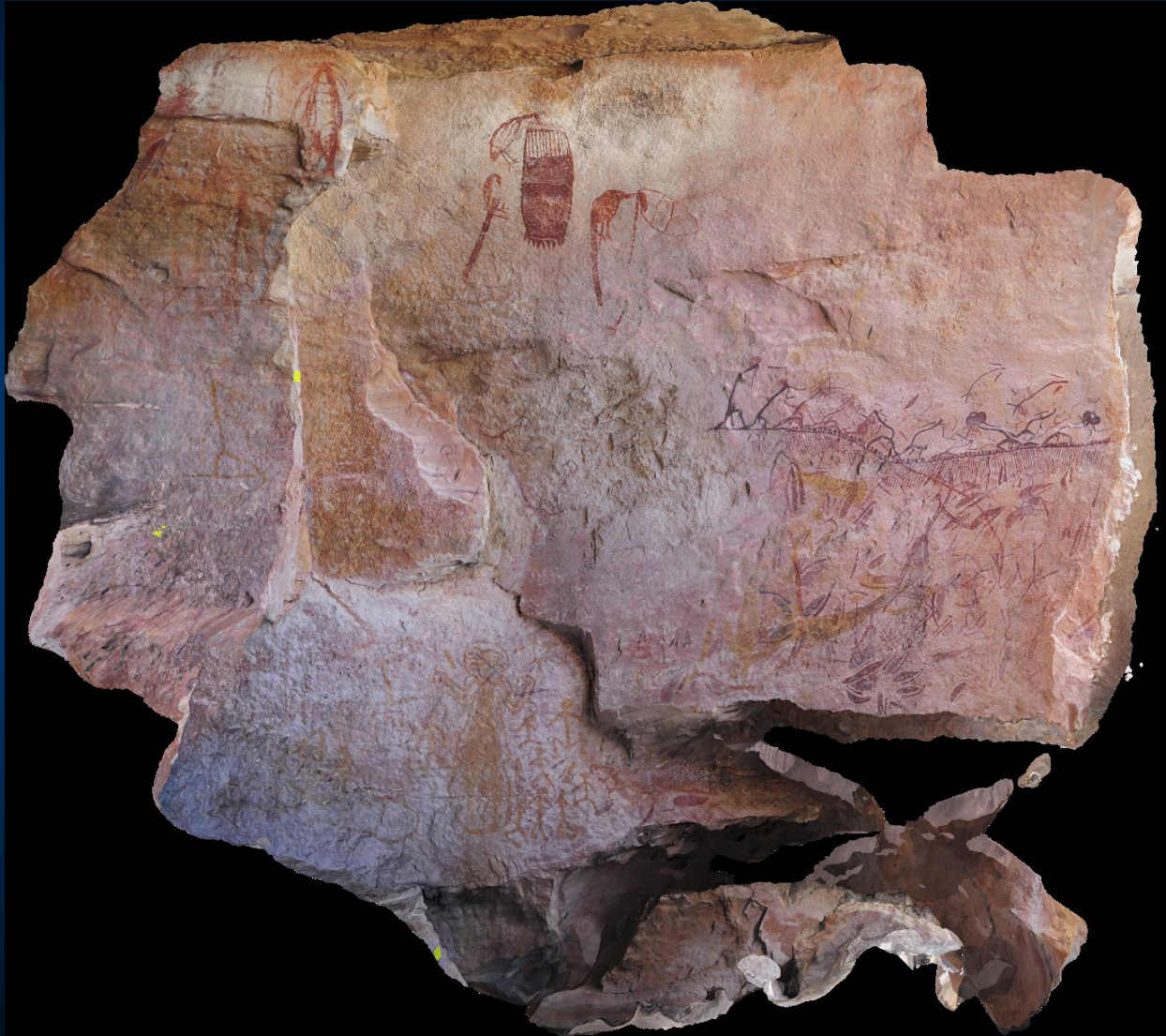
Broad Scale Landscape Mapping



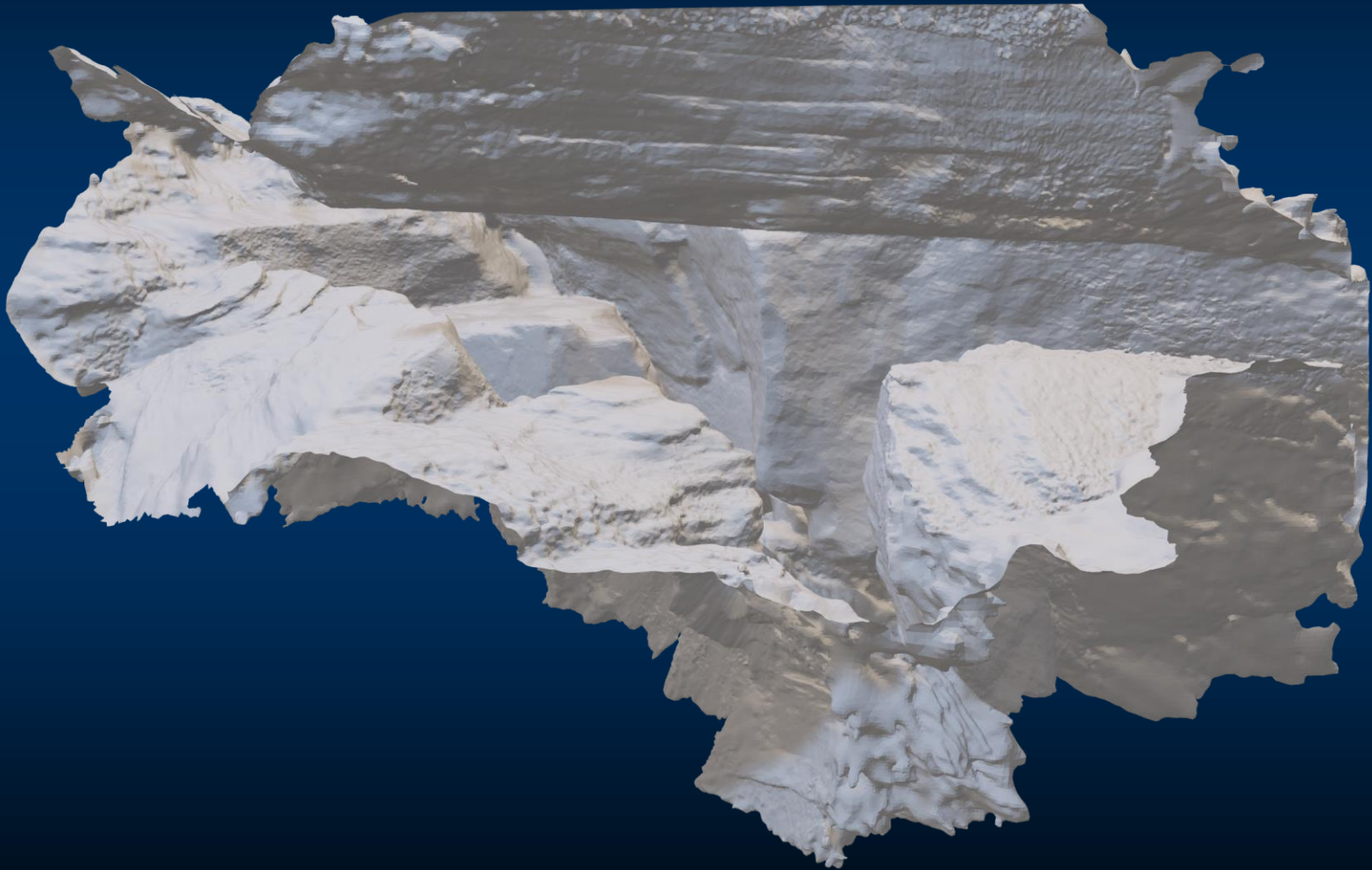
Creation of high resolution DEMs



Detailed Site Recording

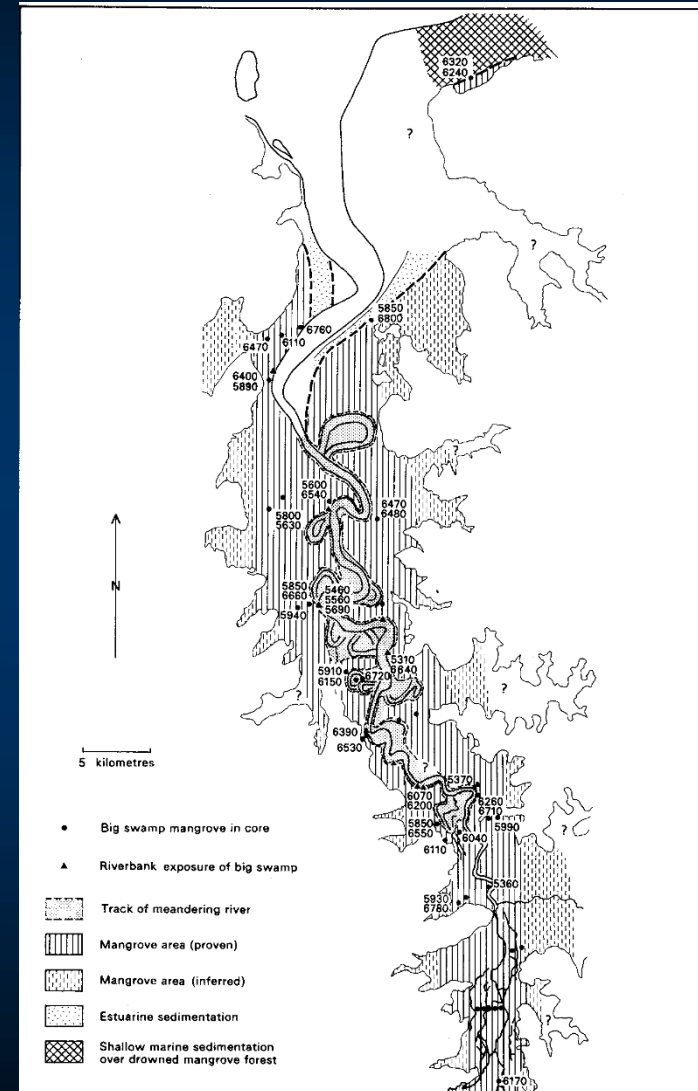


Detailed Site Recording



Landscape Reconstruction

- Dominated by mangroves during “Big Swamp” phase 8,000-6,000 BP
- This palaeo-landscape will be mapped using ERT
- This data will be used to create a series of 3D visualizations with Terragen



Public Engagement

- Facilitate culturally appropriate, community controlled access to these wonderful sites
- Ameliorate tourist pressure
- Preserve them for future generations
- Allow remote visiting by infirm or distant community members
- Launching website with community controlled password access
- Encouraging communities to build their own models



Conclusions



Questions?



ERA Energy Resources of Australia Ltd



Australian Government
Australian Research Council

