

Dampier Cargo Wharf Extension and Landside Redevelopment Project

Underwater Cultural Heritage Investigation

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Project Overview

Pilbara Ports Authority is planning to develop and operate an extension to the Dampier Cargo Wharf at the Port of Dampier in Murujuga, WA. To assess the potential impacts to submerged Aboriginal cultural heritage, an archaeological investigation, including test excavations, was conducted during Nov-Dec 2022.

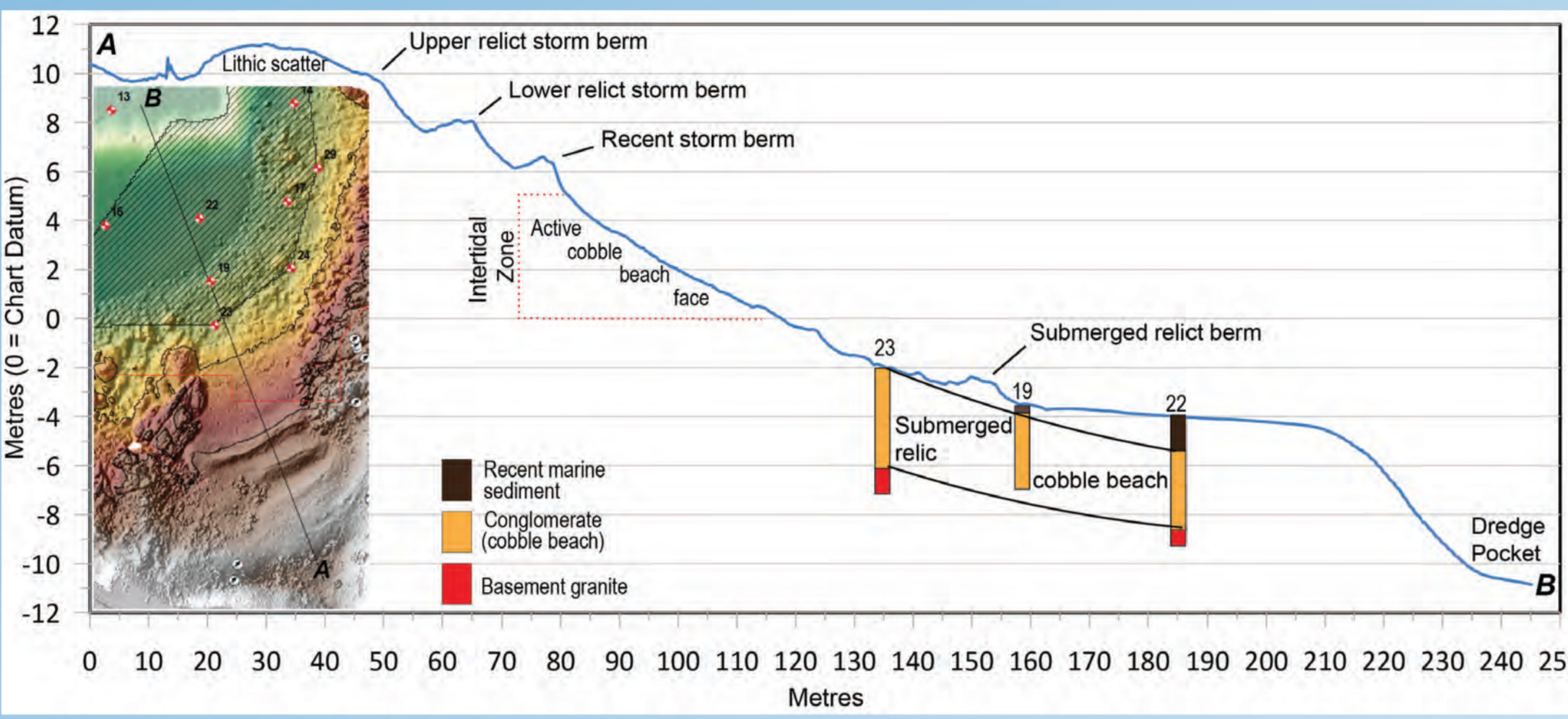


The study area for the archaeological investigations was located at the Port of Dampier, near the towns of Dampier and Karratha, on the Murujuga Peninsula on the north coast of Western Australia.

*****Please note that the investigations undertaken only assessed the scientific and archaeological significance and potential within the proposed DCWELR Project, the Murujuga Aboriginal Council (MAC) states that the site has high cultural significance for the Traditional Owners and First Nations People of Murujuga*****

Rationale and Scope

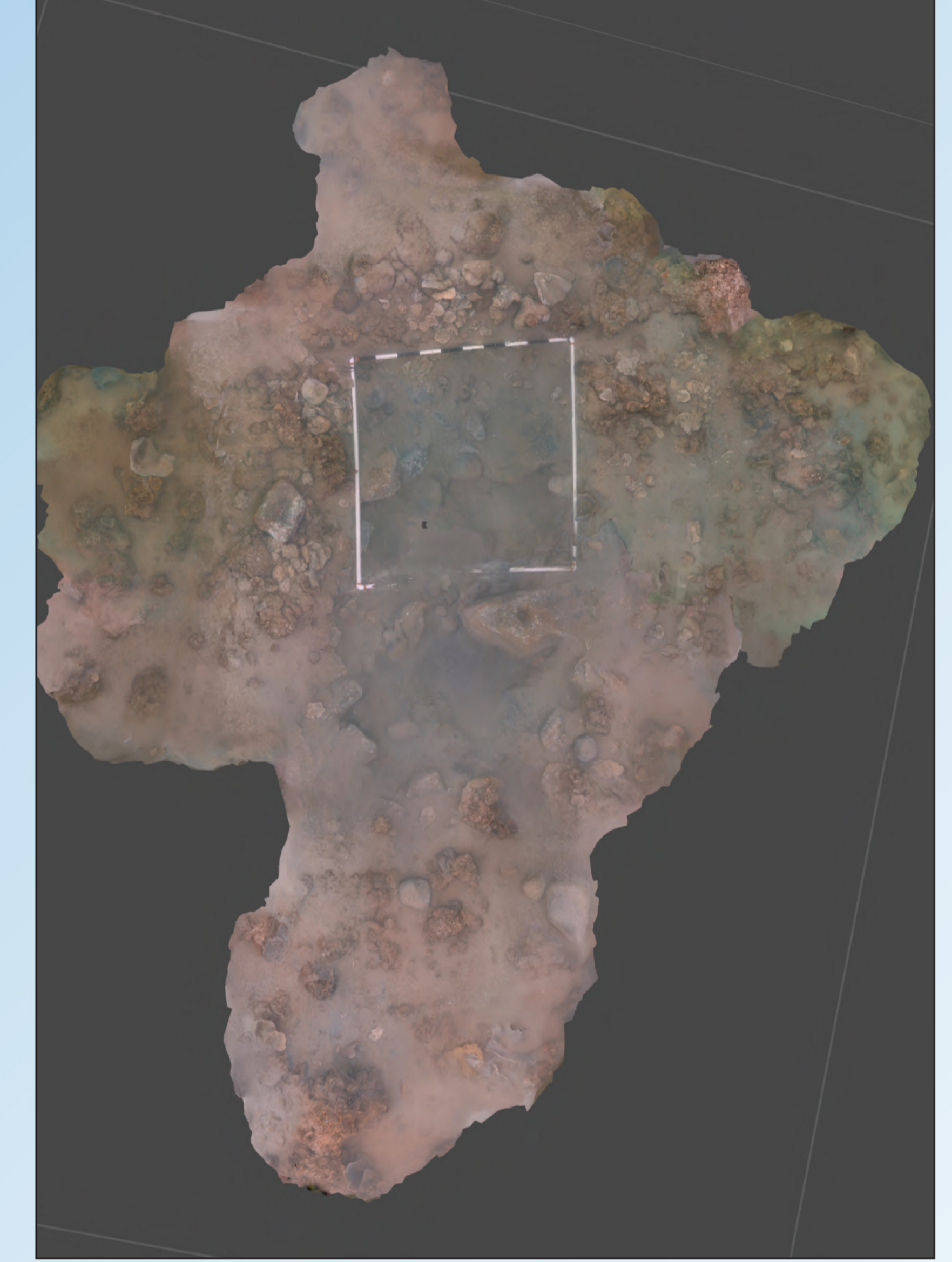
Development site is adjacent to a culturally and archaeologically significant cobble beach quarry site (DPLH 10303). It is known from geotechnical coring that the cobble beach geomorphic feature extends into the subtidal zone. Subtidal portions of this feature would have been exposed for tens of thousands of years of human occupation.



Elevation profile of the cobble beach, highlighting the continuation of the cobble beach through the intertidal and subtidal zones. Note the locations of three geotechnical cores, BH23, BH19, and BH22, which identified a clear continuation of the cobble beach feature under more recent marine sediments. Prior to subtidal excavations, a visual and probing survey was undertaken around BH19 to locate a suitable location for a subtidal trench. The location was chosen at a spot within the proposed development footprint that contained minimal coral growth and a sediment depth of <500 mm, approximately 10 m south of BH 19.

Methodology

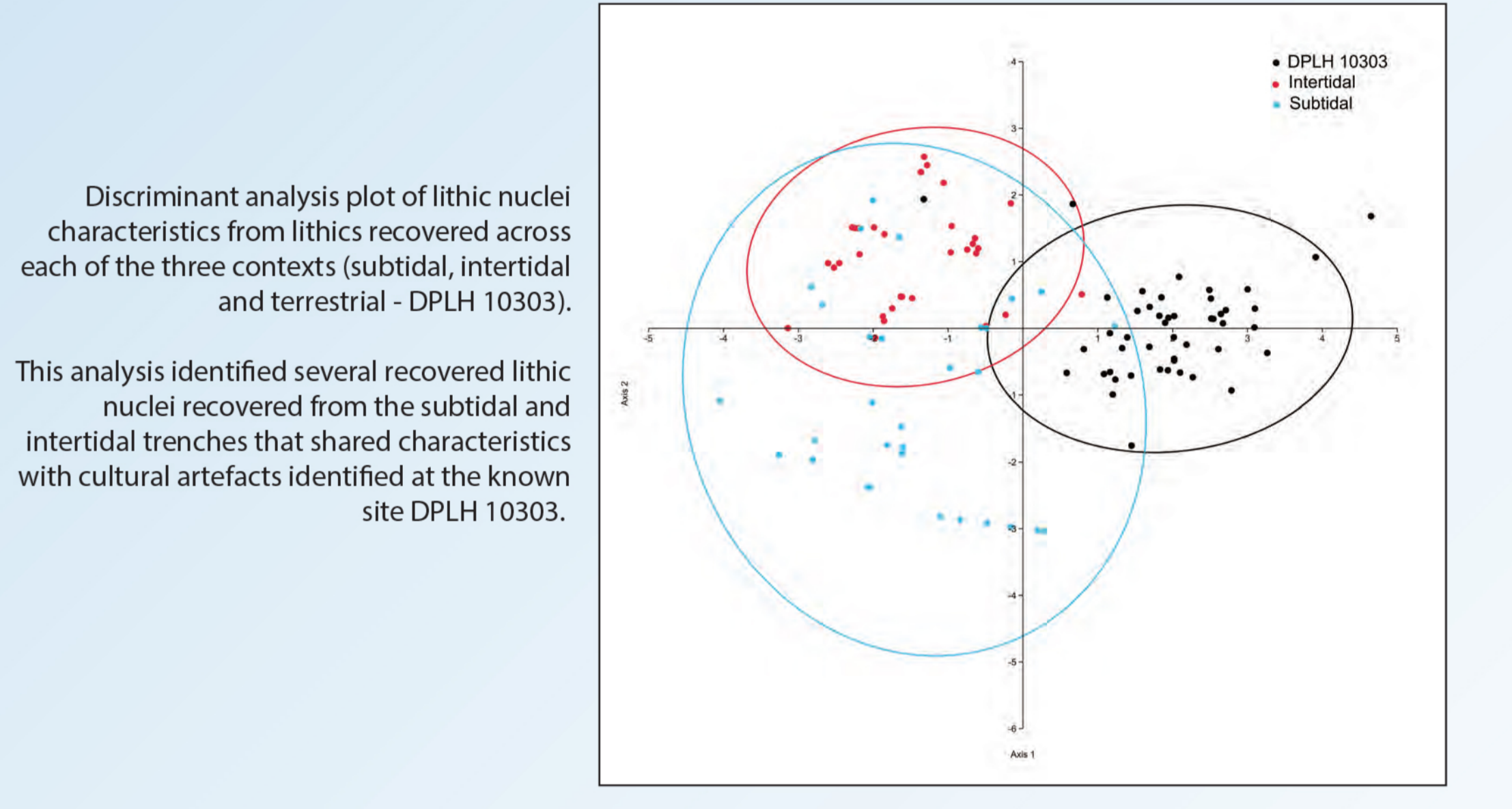
- Investigation of known site 10303 (terrestrial)
- Investigation of artefact potential in high energy intertidal zone (Intertidal)
- Investigation of geomorphology and artefact potential in development area (Subtidal)
- Determination of archaeological integrity of the depositional context at all three locations.



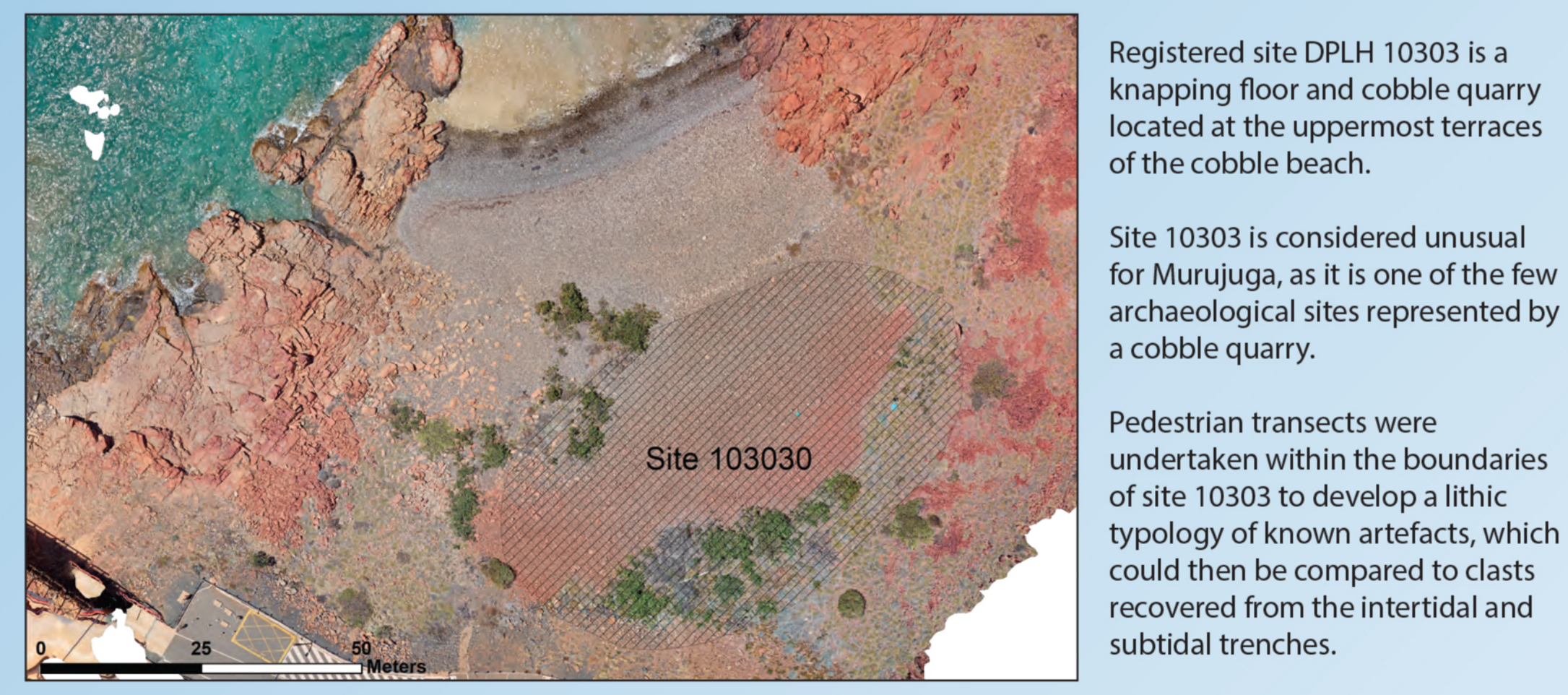
3D photogrammetric model of the subtidal trenches (ST02 outlined by PVC grid square, ST01 located just below). The seabed was covered by a silty matrix of marine sediment and dead coral to a depth of 300 mm below seabed surface, overlaying the cobble matrix beneath.

Results

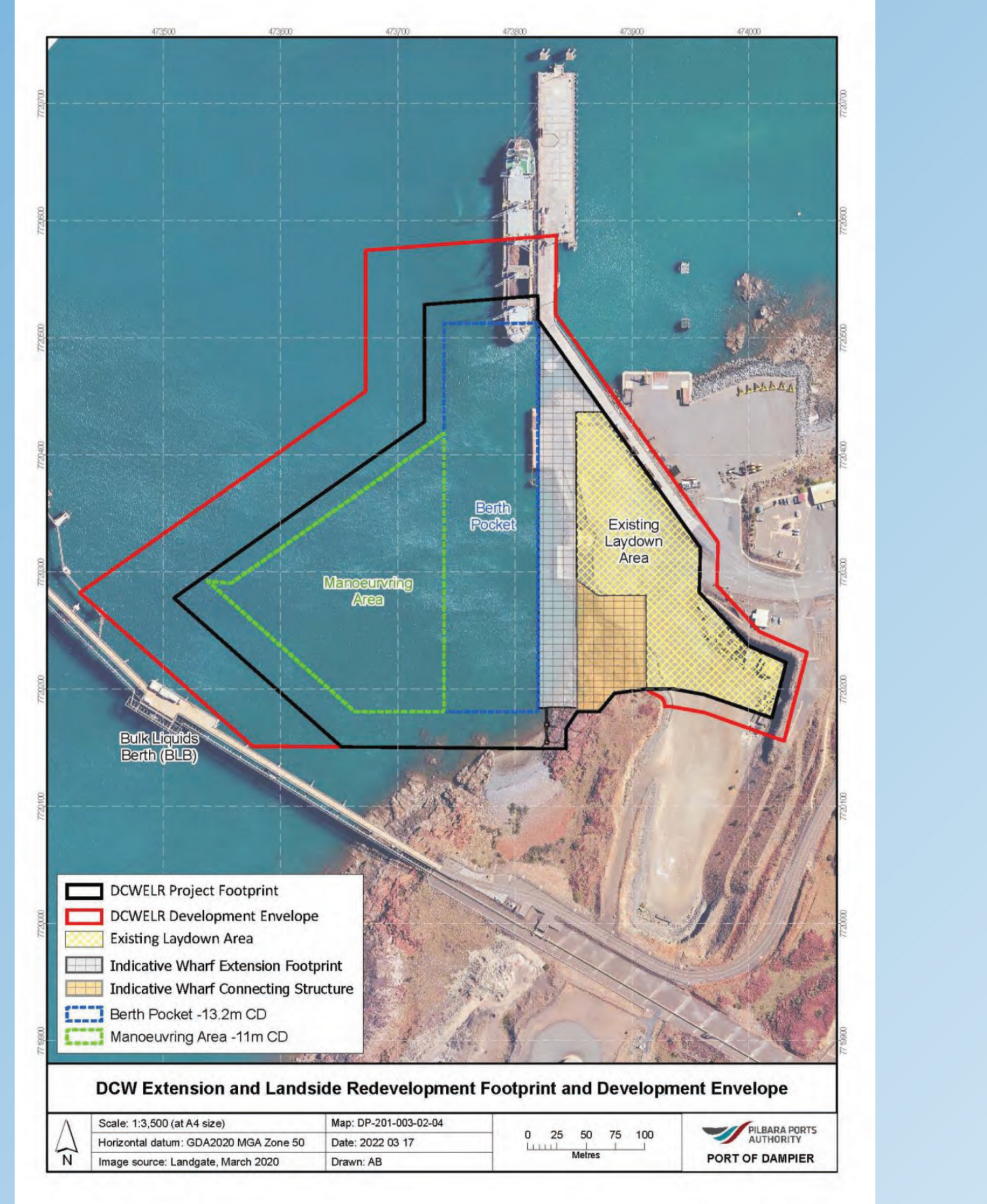
- The results of the lithic comparative analysis found that the subtidal trench had less heavily weathered material than the intertidal trench and had more similarities with Site 10303.
- No definite artefacts were identified, however it was observed that some of the lithics recovered from the subtidal trenches would have very likely have been recorded as artefacts if observed in Site 10303 and conversely some of the lithics recorded in Site 10303 would unlikely have been recorded as such if found in the subtidal trenches.



Discriminant analysis plot of lithic nuclei characteristics from lithics recovered across each of the three contexts (subtidal, intertidal and terrestrial - DPLH 10303). This analysis identified several recovered lithic nuclei recovered from the subtidal and intertidal trenches that shared characteristics with cultural artefacts identified at the known site DPLH 10303.



Examples of culturally worked lithic material identified during terrestrial pedestrian surveys of Site 10303. Note the red patination, which develops over a period of thousands of years of weathering. Cultural artefacts were identified with worked faces that were both patinated and unpatinated, indicating that the site had been in use continuously for an extended period of time. This also indicated that culturally worked material remained in its primary depositional context.



Plan overview of the proposed redevelopment of the Dampier Cargo Wharf. The location of proposed dredging to create a larger berth pocket is indicated by the dashed blue line. Based on the results of geotechnical coring, it was established that the cobble beach extends into the berthing pocket and is continuous with the beach at the upper terrace, where known cultural sites are located.

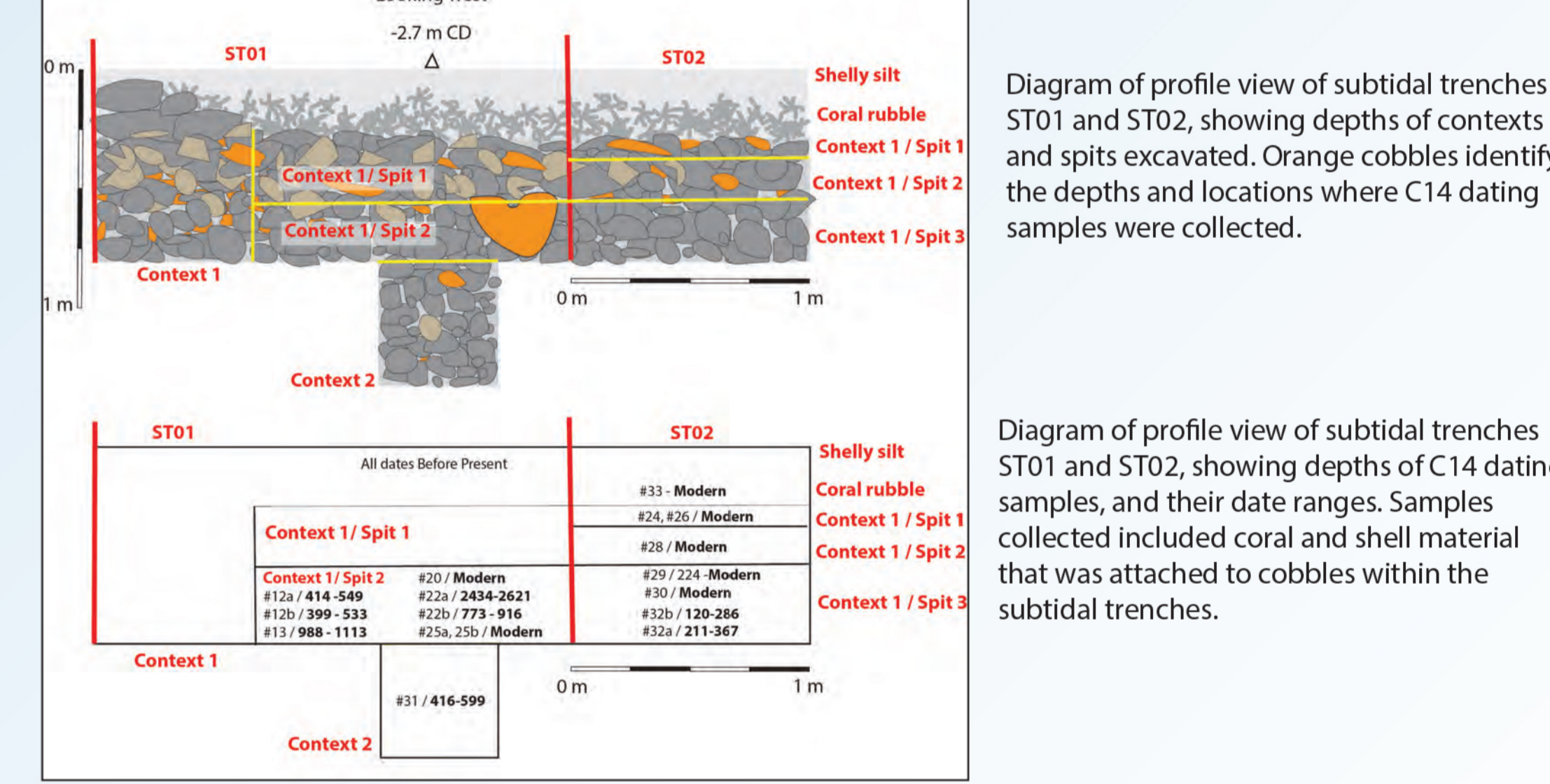
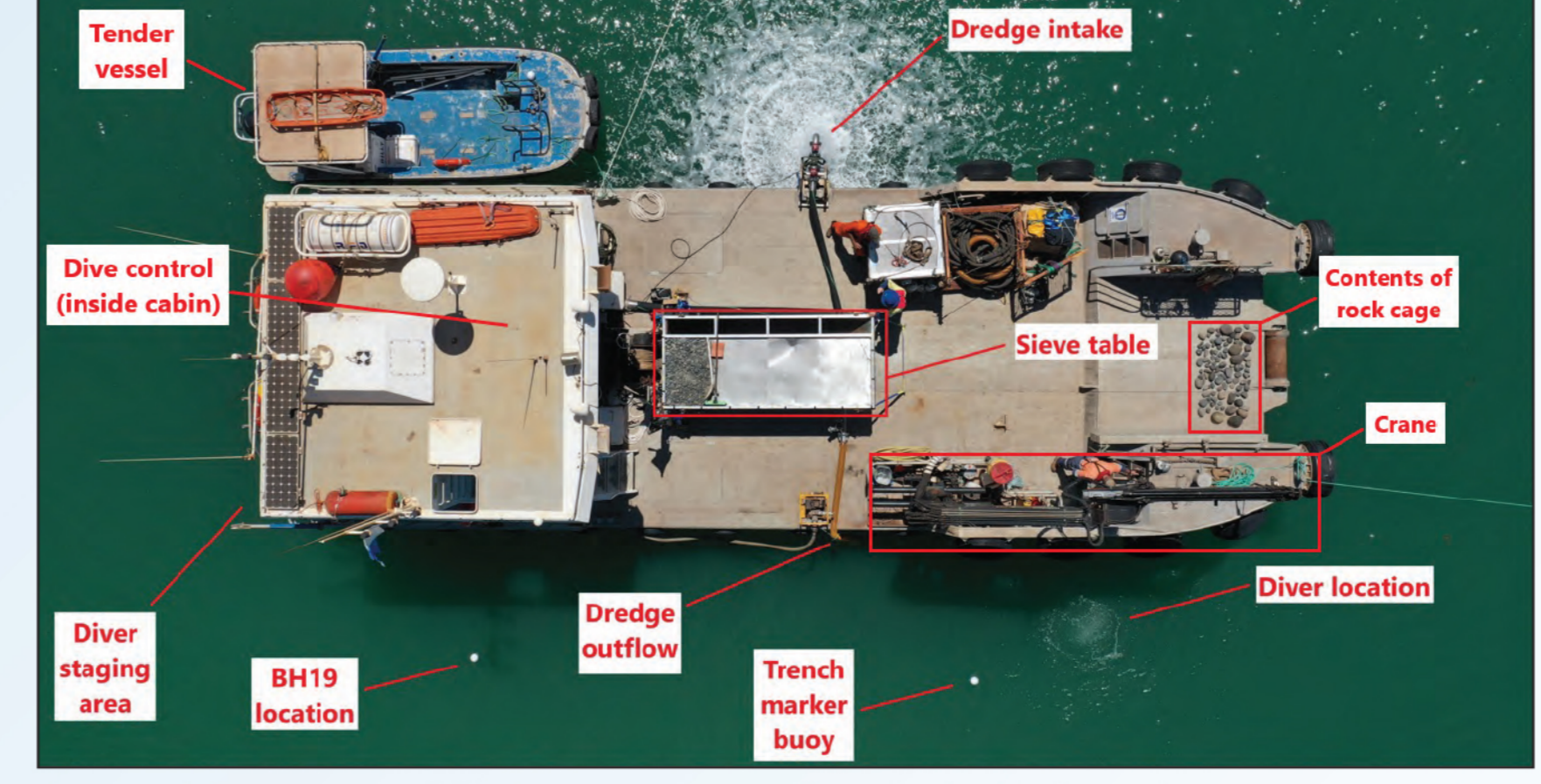
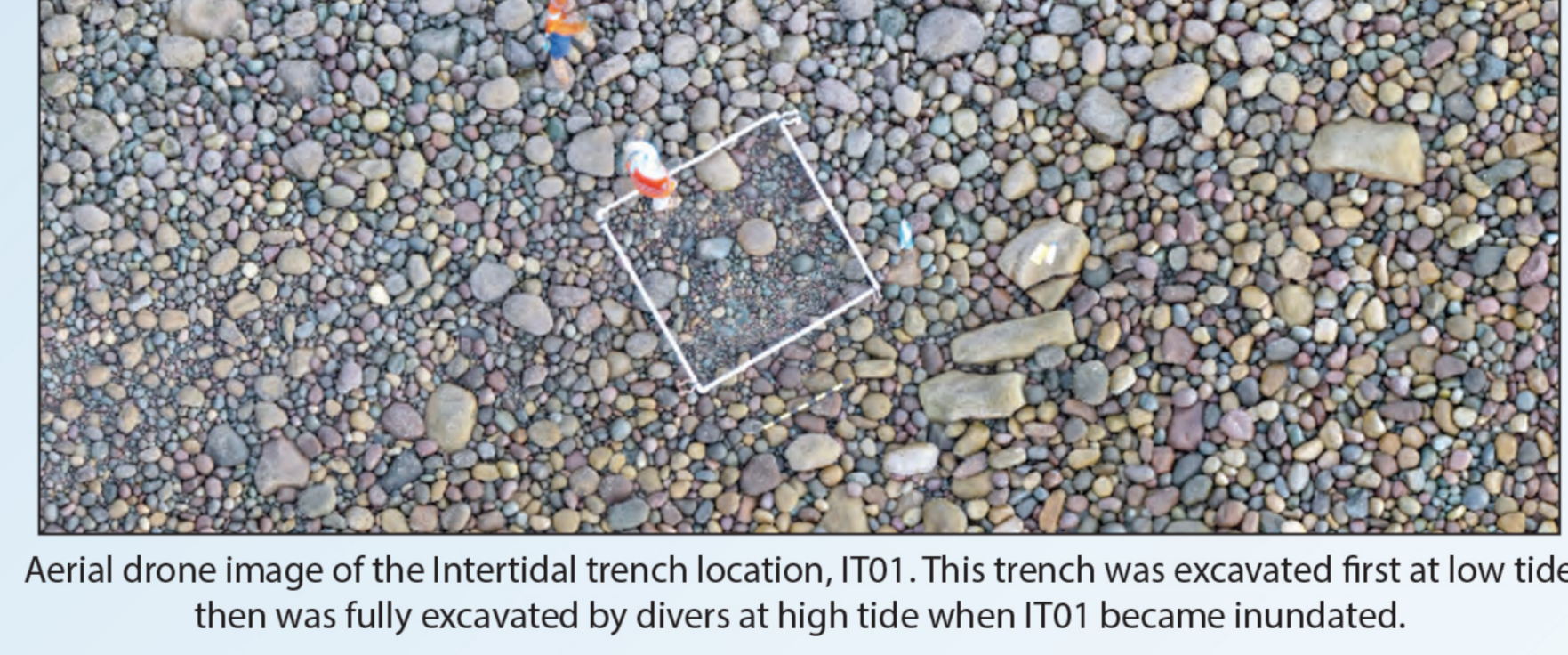
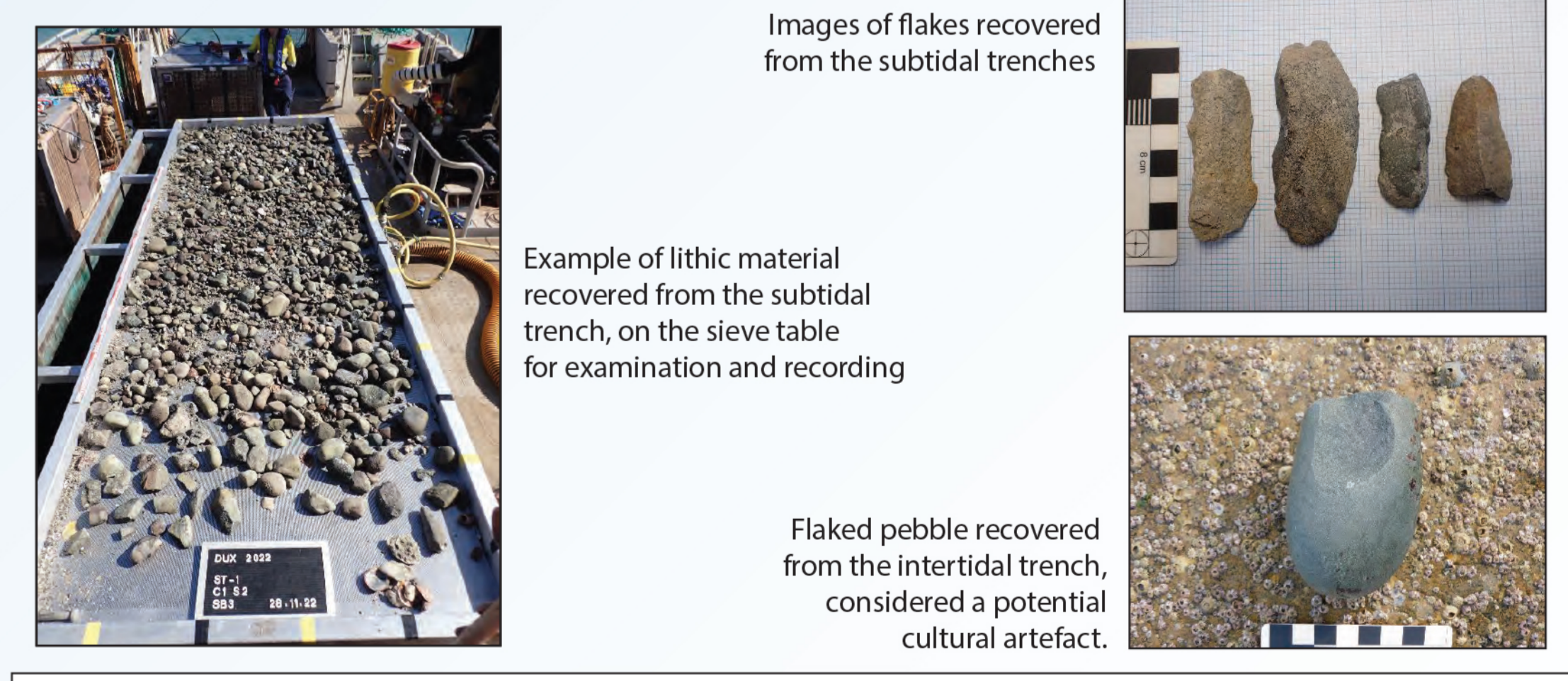


Diagram of profile view of subtidal trenches ST01 and ST02, showing depths of contexts and spits excavated. Orange cobbles identify the depths and locations where C14 dating samples were collected.

Diagram of profile view of subtidal trenches ST01 and ST02, showing depths of C14 dating samples, and their date ranges. Samples collected included coral and shell material that was attached to cobbles within the subtidal trenches.



Aerial drone image of the diver support vessel 'Mary V' highlighting the equipment used during the subtidal excavations. Excavation of ST01/02 and IT01 (at high tide) were conducted by ADAS certified maritime archaeologists and commercial divers on surface supply (SSBA) using an induction dredge.



Conclusions

- If the subtidal terrace was utilised as a place to manufacture stone tools, the findings of the subtidal excavations showed that cultural material would survive in a recognizable form.
- C14 dated shell and coral material showed that although the seabed is regularly disturbed, wave activity sufficient to move large rocks is infrequent