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### **Seminar for Arabian Studies**

c/o the Department of the Middle East, The British Museum

London, WC1B 3DG, United Kingdom

*e-mail* psas@thebfsa.org

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## ‘Ubaid-related sites of the southern Gulf revisited: the Abu Dhabi Coastal Heritage Initiative

MARK JONATHAN BEECH, KRISTIAN STRUTT, LUCY BLUE, ABDULLA KHALFAN AL-KAABI,  
WALEED AWAD OMAR, AHMED ABDULLA AL-HAJ EL-FAKI,  
ANJANA REDDY LINGAREDDY & JOHN MARTIN

### Summary

The Coastal Heritage Initiative of the Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi) aims to investigate the rich maritime history of Abu Dhabi Emirate. Since the establishment of TCA Abu Dhabi in February 2012, a new phase of archaeological research has been carried out. Systematic mapping of sites, their integration into the Abu Dhabi geographic information system (GIS geodatabase of archaeological sites for the Emirate), as well as further investigations of key sites by both geophysical prospection and excavation have been undertaken. Recent work has concentrated on the ‘Ubaid-related coastal sites on both Dalma Island (Jazīrat Dalmā) and Marawah Island (Jazīrat Marawah). A combination of both magnetometry and ground-penetrating radar (GPR) geophysical surveys, as well as follow-up excavations are discussed. These shed new light on the structure of ‘Ubaid-related coastal settlements between the mid-sixth and early fifth millennium BC.

**Keywords:** ‘Ubaid, sixth to fifth millennia BC, geophysics, excavation, house structures

### Introduction

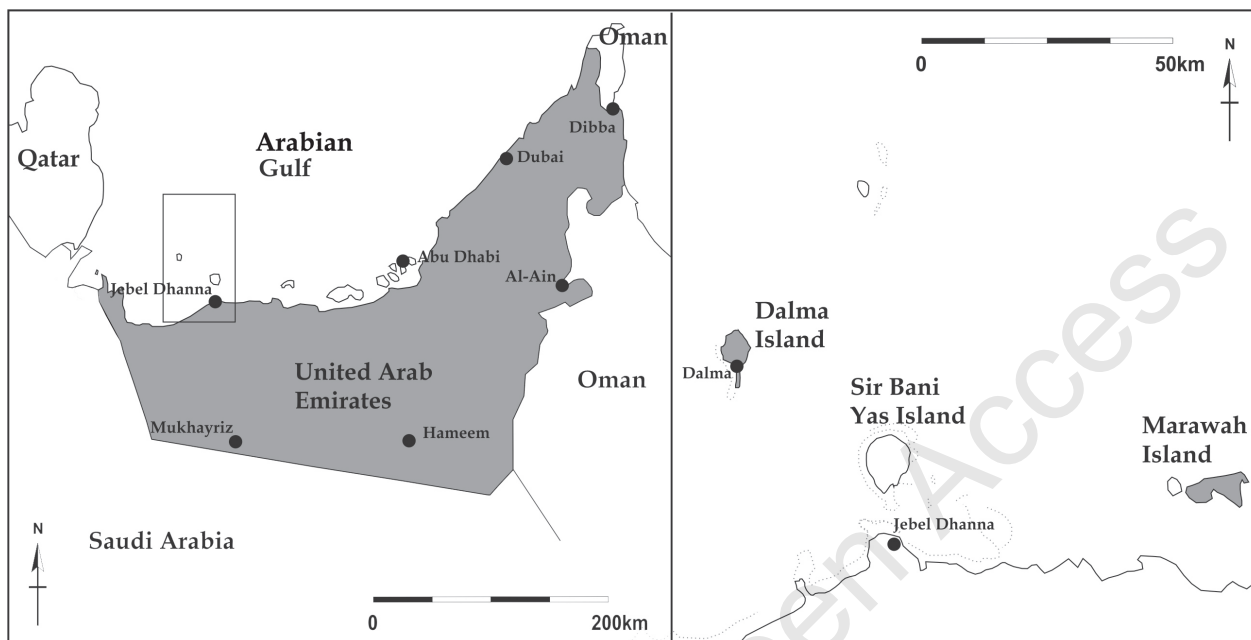
This introduction provides an update on the ongoing work being carried out by the Historic Environment Department from the Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi) between 2012 and 2015 to investigate the early maritime history of Abu Dhabi Emirate through the Coastal Heritage Initiative (CHI). Some of this research was previously highlighted at the Seminar for Arabian Studies (Blue et al. 2013). The work is being carried out in collaboration with the Maritime Archaeological Stewardship Trust (MAST)/Centre for Maritime Archaeology and Archaeological Prospection Services for Southampton (APSS) from the University of Southampton, UK.

The CHI has recently concentrated on renewing work at the well-known ‘Ubaid-related coastal settlements previously discovered on Dalma and Marawah Islands (Fig. 1). These sites were first discovered by the Abu Dhabi Islands Archaeological Survey (ADIAS) in 1992 (King 1998). ADIAS excavations subsequently took place at the Dalma ‘Ubaid-related settlement in 1993–1994 (Flavin & Shepherd 1994) and in 1998 and 2001 (Beech & Elders 1998; Beech et al. 2001). The Dalma site in the original ADIAS survey was given the site code DA11 for the main core area of the site, which was located

within the former Women’s Association compound. The site continued within the traffic island area, located to the north of the compound, where it was given the site code DA12.

This earlier work demonstrated that the Dalma site, dating to the late sixth to mid-fifth millennium BC, had some of the earliest house structures known in the UAE. Excavations revealed a semi-circular alignment of post-holes, with substantial quantities of pearl oysters, fish bones, mammal bones, and sea urchin spines in the associated layers (Beech 2004). Other finds included ‘Ubaid pottery, plaster vessel fragments, lithics, and beads.

On Marawah Island more detailed mapping and topographic surveys were carried out by ADIAS, followed by excavations of the MR11 site in 2003 and 2004 (Beech et al. 2005; 2008). This research demonstrated an even greater antiquity for both Marawah ‘Ubaid-related sites, with substantial stone structures being identified at both MR1 and MR11. Radiocarbon dating has indicated that these two Neolithic sites date back to at least the mid-sixth millennium BC with occupation continuing to the mid-fifth millennium BC. The detailed excavation of Room 1 at site MR11 recovered a rich arrangement of finds, including an almost complete ‘Ubaid pottery vessel, plaster vessel fragments, lithics, and many shell and stone beads, as well as parts of several skeletons.



**FIGURE 1.** The location of Dalma and Marawah Islands on the coastline of Abu Dhabi Emirate (graphics by Kristian Strutt).

## Methodology

Geophysical investigation of the Ubaid-related site on Dalma Island took place in October 2011. Archaeological excavations were then renewed on Dalma Island by the Coastal Heritage and Palaeontology section team from TCA Abu Dhabi's Historic Environment Department in May and September 2014, and then from April to May 2015.

Archaeological excavations were renewed at site MR11 on Marawah Island in February 2015, when the first geophysical survey ever carried out on the island also took place. This undertook magnetometry and ground-penetrating radar surveys of both MR1 and MR11, the two Ubaid-related settlements known on the island.

Topographic survey and gridding out of the sites was conducted using a Leica Real Time Kinetic (RTK) GPS. Gridding out of the sites on both Dalma and Marawah Island was carried out using the GPS to locate plastic pegs at 30 m intervals, establishing a grid for use in locating the results of the geophysical survey. For the topographic survey the instrument was used to record the elevation of points at 1 m intervals along traverses spaced *c.* 2 m apart over the site. These points were then used to model

the topography of the area. Significant breaks of slope were also recorded to increase the detail of the model. For the topographic survey data on Marawah Island, it was possible to integrate the point data from these surveys with the topographic models created during previous surveys (Beech et al. 2005).

Magnetometer surveys were conducted on both Dalma and Marawah Island using a Bartington Instruments Grad 601-2 fluxgate gradiometer with dual sensors. Data were collected on each grid along traverses spaced 0.5 m apart, with measurements recorded at 0.25 m intervals along each traverse. The traverses were walked in zigzag fashion, covering the different survey areas. The magnetometer data were processed using Geoplot 3.0 software. This was used to remove background spiking in the dataset caused by modern near-surface ferrous material. A zero mean traverse function was applied to counteract any drift in the data caused by variations in the balance of the instrument. Low pass filter and interpolation of the data were also applied. The results were then geo-referenced in relation to the extant topography.

Ground-penetrating radar (GPR) surveys on Marawah Island were conducted using a Sensors and Software Noggin Plus GPR Smartcart with 500Mhz antenna. Survey

profiles were collected along 0.25 m traverses, with traces of data being collected every 0.05 m. On Dalma Island the GPR survey was undertaken with a GSSI 200MHz antenna and SIR 3000 console. Data were collected along profiles spaced at 0.5 m intervals. All data for the survey were collated and processed in GPR Slice software. All of the profiles were processed using background noise and Bandpass Filter methods. The profiles were then integrated and sliced to produce a series of horizontal slices through the survey area, representing the data in plan at increasing depths over the survey area.

In addition to the topographic and geophysical survey techniques applied at the sites, a survey was conducted using rectified photography to record the visible extant remains of the prehistoric sites. This technique was applied to the MR11 site on Marawah Island. Instead of carrying out an intensive GPS survey of individual stones, it was decided to utilize a system of survey markers, and to take overhead photographs of the different areas of interest for later rectification. Black and white survey markers were positioned at approximately 1 m intervals across the area to be photographed. A series of photos were then taken across the area using a fully extended monopod with a gimbal attachment and a digital single-lens reflex (DSLR) camera at one end. Overlapping near-vertical photographs were taken, each encompassing an area on the ground some 2 x 3 m in size. Finally, the individual survey markers were all recorded using the Real Time Kinematic global positioning system (RTK GPS). The photographs were all imported into ArcGIS (a GIS for working with maps and geographic information), and the network of survey markers was used to provide geo-referencing source and destination points for the photos, with a projective transformation being performed on each one to locate it accurately. The geo-referenced and rectified photographs form a mosaic image of each of the survey areas.

Excavations on both Dalma Island and Marawah Island were carried out using a single context planning approach. The quantity of all excavated sediments was measured in litres by keeping a count on each relevant context record sheet. Sediments were mostly excavated using hand tools, for instance trowels, hand shovels, and brushes. All stratified sediments were dry-sieved using a rocking double A-frame sieve with 4 mm screen size. Any archaeological finds such as ‘Ubaid pottery sherds, decorated plaster vessel fragments, lithic artefacts, and beads were given Small Find (SF) numbers, and any diagnostic faunal remains discovered *in situ* were given Faunal Numbers (FN).

A number of environmental samples were taken during the excavation. These included three samples of ashy sand for potential radiocarbon dating, and a column sample through all stratigraphic layers in the best-preserved west-facing section of Trench 1 at the Dalma ‘Ubaid site. The analysis of these will be the subject of future publications.

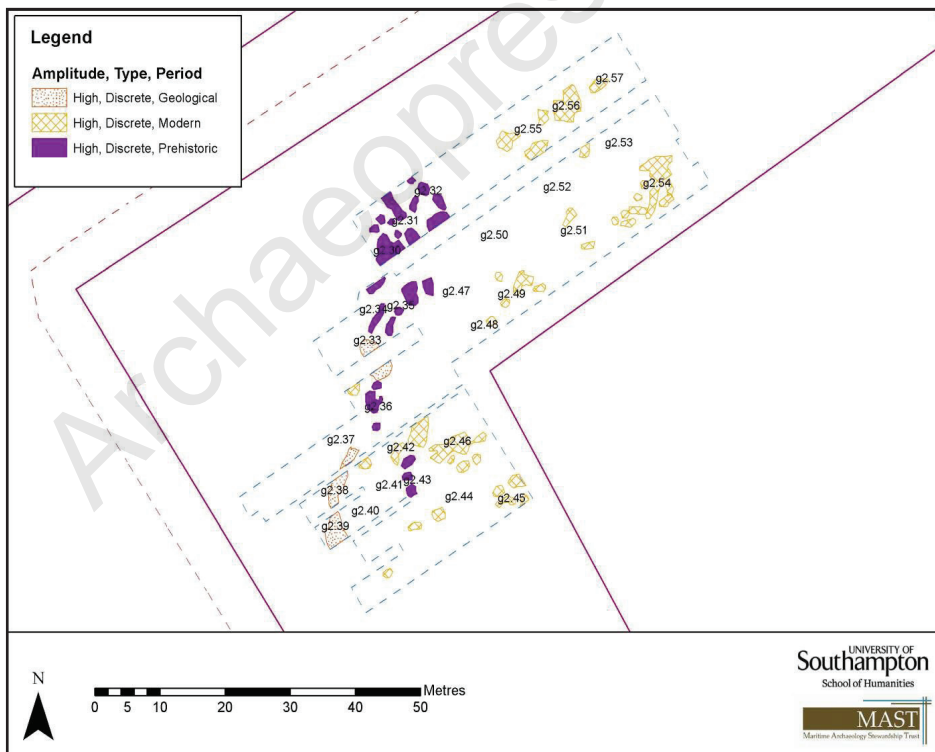
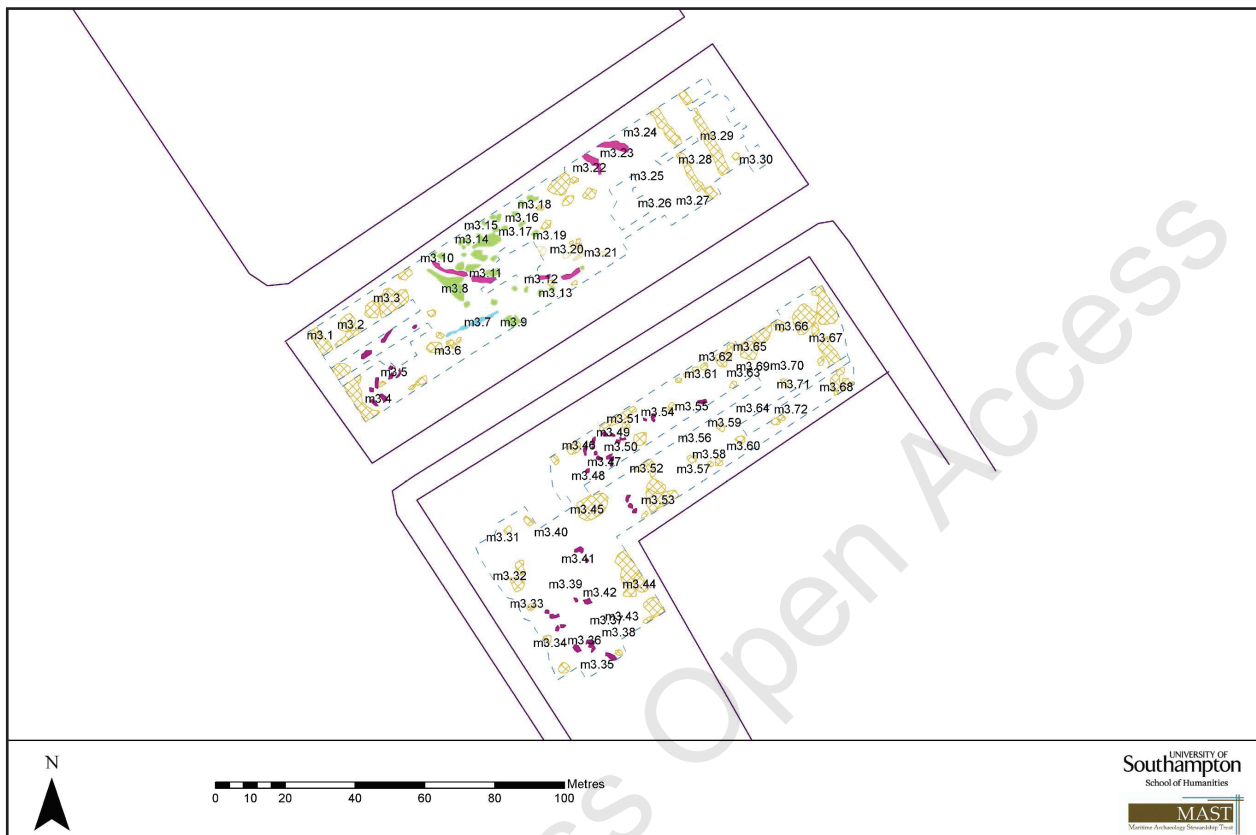
### Dalma Island: geophysics results

Geophysical surveys were carried out on the ‘Ubaid-related settlement both within the former Women’s Association compound, as well as within the northern extension of the site, which is located within a rectangular fenced traffic island (Fig. 2).

The magnetometer survey conducted within the northern traffic island area revealed the presence of strong linear features. These seemed to indicate the former boundary of an Islamic cemetery, and negative features suggesting grave tombs, providing a clear indication as to the later development of the area. Subtle features and anomalies are more difficult to interpret, however. In general, the negative features present seem to relate to cemetery activity, [m3.16], [m3.17], and [m3.21], that is to say excavated features where soil has been displaced, either by a cist or tomb or by a slightly different fill of sand. The fainter positive anomalies recorded in the area would seem to represent excavated features filled with anthropogenic material such as ceramic, burnt deposits, or other debris. Several concentrations of features over the two areas suggest possible Neolithic deposits. To the north, the faint positive anomalies [m3.4] and [m3.5] in the western portion of the garden area suggest deposits that may be prehistoric in date. Similar anomalies to the east, [m3.7] and [m3.8], may indicate similar materials.

In the area of the former Women’s Association compound, a rough circle of features, [m3.46], [m3.47], and [m3.49], seem to indicate possible burnt deposits. These features are in close proximity to the trench excavated in the compound, where occupation layers and a curvilinear formation of post-holes were discovered. The spread of readings for the area would indicate that further curvilinear and sub-circular features are present, although the resolution of the survey and the relative size of the post-holes would preclude their being represented as discrete features in the survey results. The distribution of small positive anomalies along the western part of the compound survey, [m3.35]–[m3.39], also suggests prehistoric features. Many of the discrete features elsewhere in the survey area, however, are too strong in





**FIGURE 2.** *Geophysical survey results of the Ubaid settlement on Dalma Island (graphics by Kristian Strutt). Top: magnetometer survey; bottom: ground-penetrating radar survey.*

terms of their nature to represent prehistoric material, for instance [m3.57]–[m3.60].

The results of the ground-penetrating radar (GPR) at an approximate depth of 0.8 to 1.0 m show a slightly different pattern of anomalies, with some consistent anomalies already visible in the shallower slice. An area of strong high-amplitude readings [g2.30] corresponds with an area of modern disturbance. The high-amplitude anomaly to the east [g2.31] corresponds to an area of negative polarity in the magnetometry, and may relate to possible prehistoric deposits over the area, similar to the responses to the east [g2.32], indicating a curvilinear response measuring 6 m in length. The strong area of high-amplitude readings to the west [g2.33] seems strong enough to be related to modern disturbance. The two fainter curvilinear anomalies [g2.34] and [g2.35], however, seem more likely to be associated with prehistoric deposits at the site. A spread of faint high-amplitude readings covering the area to the south, [g2.36] and [g2.37], measuring over 12 m across may mark a continuation of prehistoric features associated with ‘Ubaid activity at the site. A broad linear anomaly, [g2.38] and [g2.39], measuring 10 m in length and 2 m across runs from north to south across the western part of the survey area. A quiet area in the results [g2.40] is located to the east, with a curvilinear anomaly of high amplitude [g2.41] and a faint area of high amplitude immediately to the east, followed by a broad band of high-amplitude readings, [g2.42] and [g2.43], extending from north-west to south-east. These may indicate possible features associated with prehistoric activity at the site. The broader high-amplitude anomalies to the east, [g2.44], [g2.45], and [g2.46], all seem to be derived from modern disturbance at the site. A large spread of high- and moderate-amplitude measurements in the centre of the survey area, [g2.47], [g2.48], and [g2.49], comprises a linear anomaly running from west to east, and a broad area of anomalies measuring 10 m across. All of these seem to be derived from modern disturbance. These features continue into a broad area of high-amplitude readings, [g2.51] and [g2.54], which seem to represent either modern disturbance or massive variations in the underlying geology of the area. The area of faint higher amplitude to the north, [g2.50] and [g2.52], indicates a linear and curvilinear anomaly that may relate to the prehistoric material located immediately to the west. A series of faint high-amplitude anomalies to the north, [g2.53], [g2.55], [g2.56], and [g2.57], may represent a continuous spread of prehistoric occupation features, but the scale and extent of these, and the presence of [g2.56] as a strong anomaly, coupled with the results

of the magnetometry seem to indicate that these features relate to modern disturbance over the area.

### **Dalma Island: archaeological excavation**

The geophysical results encouraged us to return and continue archaeological excavations on the ‘Ubaid-related settlement site located within the former Women Association’s compound. Strong anomalies were noted immediately adjacent to the 1998 excavation trench, which had earlier identified a structure consisting of a number of post-holes. Earlier excavations conducted in 1993–1994 (Flavin & Shepherd 1994) and in 1998 and 2001 (Beech & Elders 1998; Beech et al. 2001) had identified a coastal settlement dating to the ‘Ubaid period, which was inhabited between the mid-sixth and early fifth millennium BC, that is, 7500–6500 years ago. The local economy at that time was based on fishing, mollusc gathering, and the keeping of domestic sheep and goat, as well as some hunting (Beech & Glover 2005). The evidence pointed towards the processing and preparation of fish, shellfish, and the presence of mammal and bird remains on the site itself, alongside the circular house structure (first identified in the 1998 excavations), while flint tools, plaster vessels, and beads were made in the vicinity. Remarkable evidence was also discovered at the same site for the early consumption of dates in the form of carbonized date stones (Beech & Shepherd 2001).

More recently, archaeological excavations were conducted in 2014–2015 by a team of archaeologists from the Abu Dhabi Tourism and Culture Authority. The aim of this excavation was to expose the trench (Trench 1) excavated in 1993 down to the deepest level and to extend the trench in order to uncover the ‘complete circle’ of post-holes that comprised one half of the house structure unearthed in 1998. The 2014 season began with the uncovering of the 1993 trench back-fill material in order to expose the circular post-holes of the house structure. Following this, the trench was extended eastwards by a further 3 (E–W) x 5 (N–S) m to make Trench 1 now 5 x 5 m.

The initial material removed from the Trench 1 extension was wind-blown sand. Archaeological finds within it included shell, faunal remains, plaster vessel fragments, and lithics. Below the initial wind-blown surface layers (context 115) interesting structural features were noted in the form of two parallel ditches or linear features associated with a gypsum surface (contexts 118–121). These indicate a continuation of similar features identified during the earlier excavation

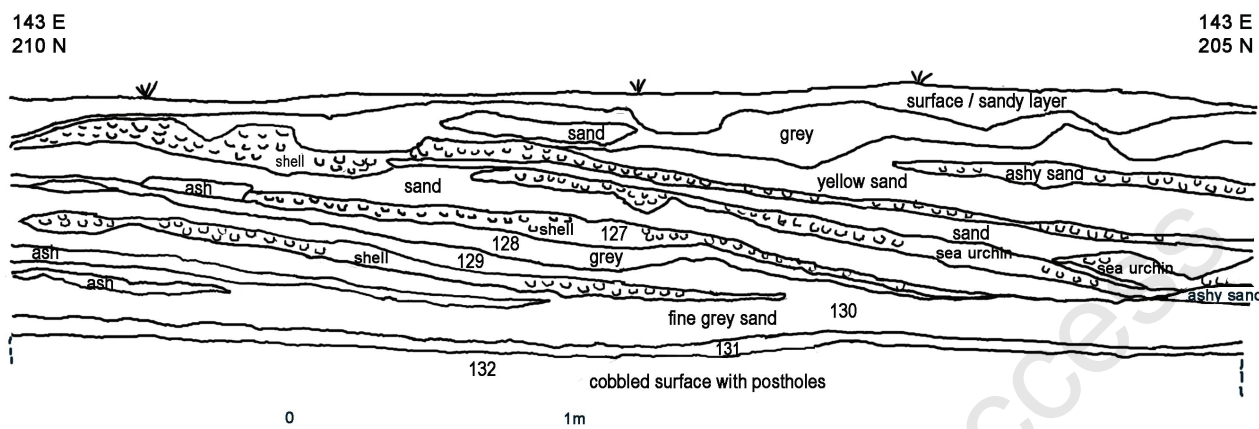


FIGURE 3. The west-facing section through the 'Ubaid settlement area on Dalma Island, May 2015 (planned and illustrated by Nurcan Yalman and Melis Gumusoglu).

of Trench 1 in 1993 and 1998 (contexts 5–8). These linear gully features may indicate the presence of some sort of trace of former 'arish (date-palm frond) walls, associated with a gypsum surface (context 116) in the upper part of the stratigraphic sequence. This gypsum surface does not extend over the entire area, only over 1.8 m of the southern part of Trench 1. The remaining part of the trench is covered by an ashy/shelly deposit (context 117). Subsequent layers are mostly ashy shelly deposits that are rich in pearl oysters (*Pinctada radiata*) (contexts 122–127).

Clusters of faunal remains, mostly *in situ* fish bones, then become more common (from context 124 onwards), together with ashy deposits, indicating some sort of cooking activity and occupation detritus. This is followed by layers of loose, fine sandy-grey deposits with occasional ashy lens indicating some burning activity (contexts 128–129). A fine grey sand layer (context 130) is then followed by a more compact layer (context 131). This compact layer lies immediately above the main occupation floor (context 132) (Fig. 3).

It should be pointed out that the number of archaeological finds increased as the excavation approached the occupation level (context 132). A large number of plaster vessel sherds and lithic artefacts, as well as stone debitage, and notably beads (both finished and proto-beads) were recorded from the compact layer immediately overlying the floor (context 131).

The original post-holes (contexts 93–107) identified in Trench 1 from the 1998 season cut into the cobbled surface (context 132) are now joined with the remainder

of the post-holes making an apparently heart-shaped house structure (contexts 137–138; 139–146) (Fig. 4). The entrance area to this structure appeared to be on its eastern side, where there was a particular concentration of small finds, including stone drills, shell and stone beads and proto-beads, with a significant number of worked *Engina mendicaria* shells. This is interesting as such shells were extremely valued in some parts of the Gulf and Indus Valley civilization (Gensheimer 1984). A similar workshop exploiting *Engina mendicaria* was identified at Ra's al-Khabbah in Oman (Charpentier, Cremaschi & Demnard 1997).

Some fragments of haematite were also recovered from the floor in the same area.

Of particular interest was the fact that there were three very similar post-holes centrally positioned within this structure (contexts 134–136) about 1 m apart from each other. These all had similar triangular to sub-triangular arrangement of stones and plaster fragments used as wedges in the sides of the post-hole to support posts, which may have formed a joint support system for the roof of the structure. These three posts may have been lashed together at the top to support some sort of pitched roof.

One of the post-holes on the southern side of the structure (context 138) contained an 'Ubaid sherd used to pack its post. Between some of the post-holes are a number of stone clusters, which are in some cases arranged over burnt areas, perhaps indicating the locations of former hearths. In other cases, the stone arrangements may relate to internal structural compartments within the floor of the structure.



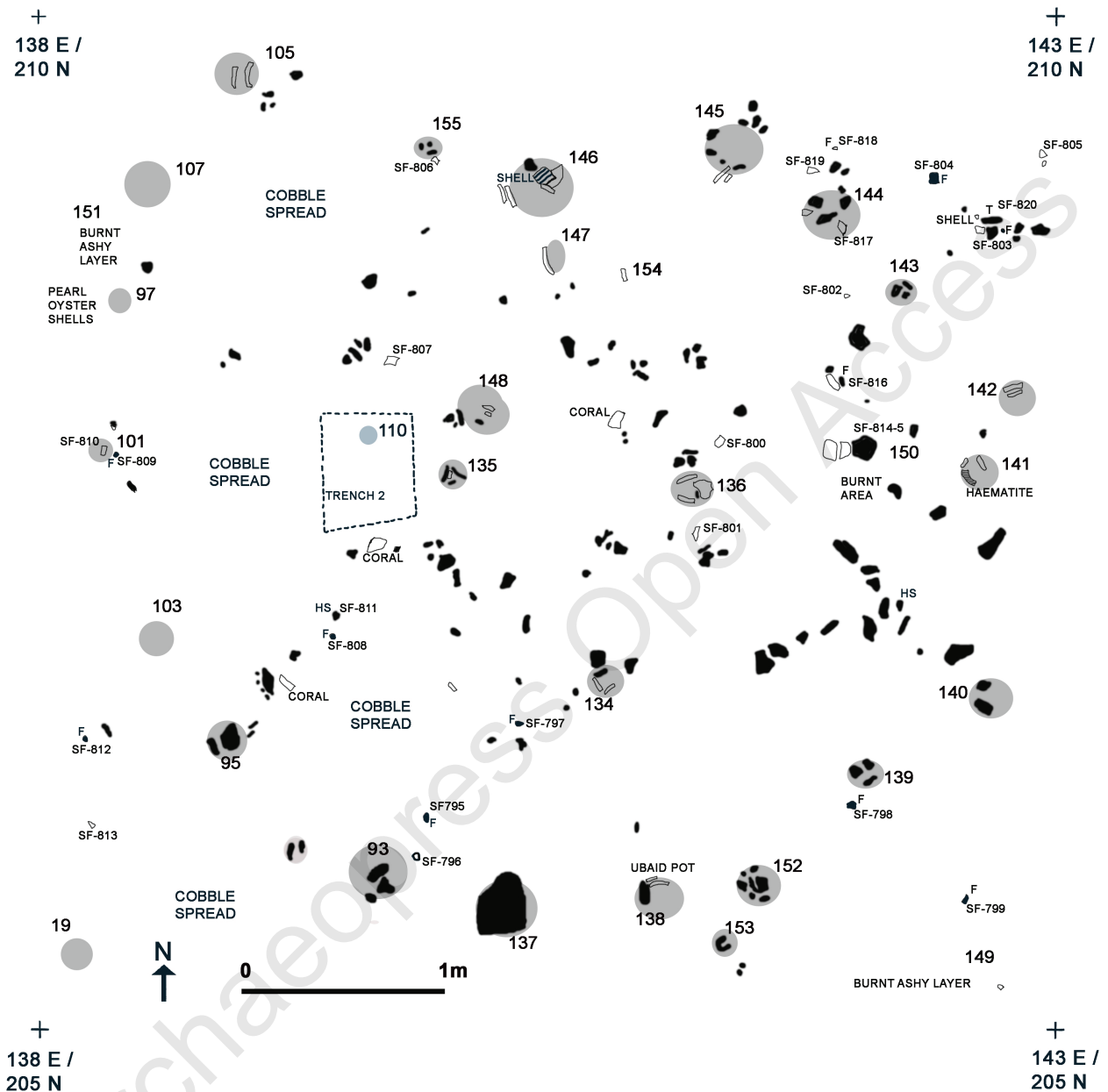
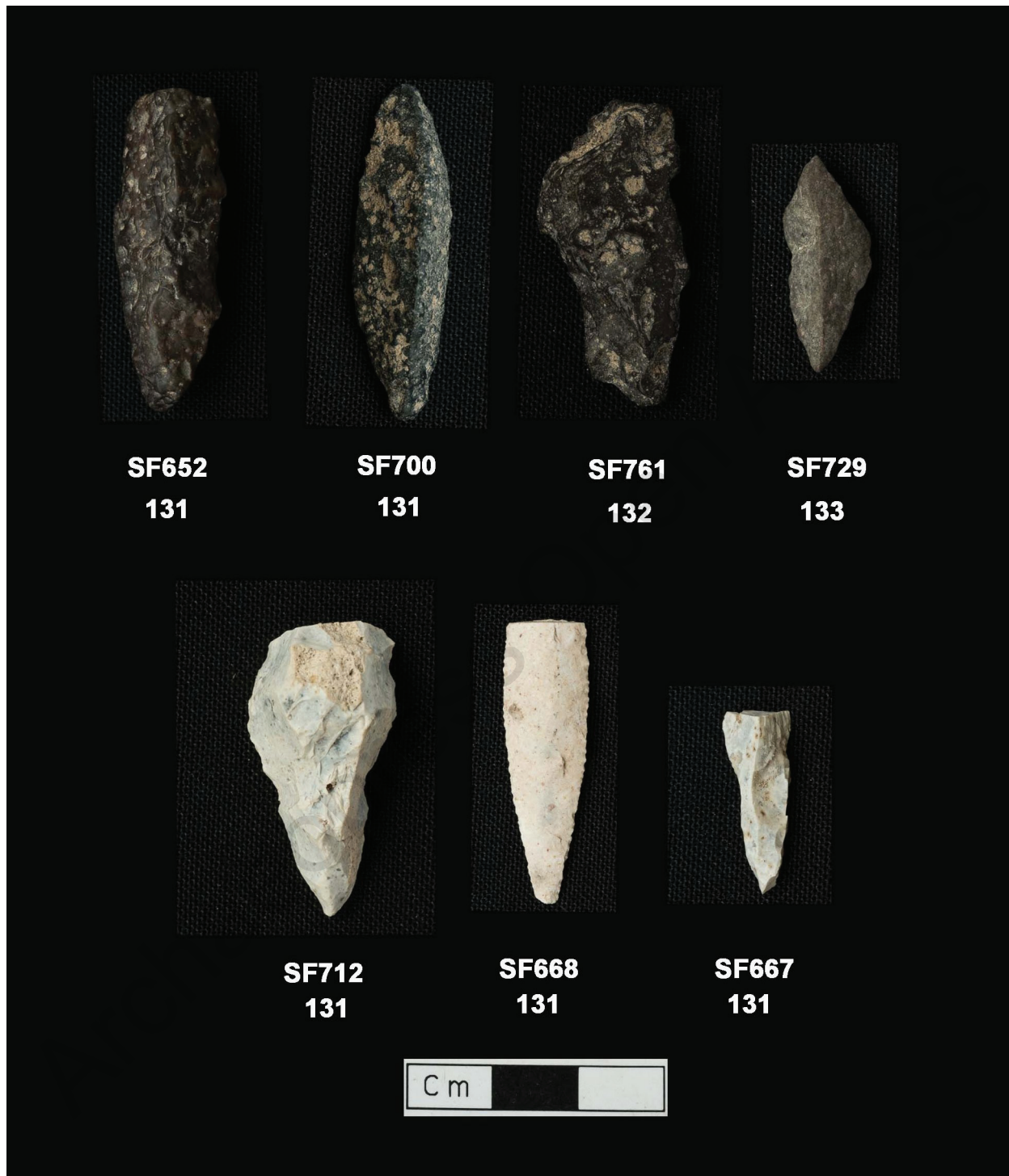


FIGURE 4. A plan of the house structure excavated at the ‘Ubaid settlement on Dalma Island, May 2015 (planned and illustrated by Mark Beech).

The stone drills recovered within and in the vicinity of this structure were manufactured from a dark hard type of stone (as yet unidentified), probably collected from the core of the island, as well as being made from locally sourced silvery blue flint (Fig. 5). These appeared to have been used for the drilling and manufacture of a large number

of beads and other artefacts such as pendants. Some of the beads were proto-beads or semi-products, probably discarded during the manufacturing process. It was clear that it was possible to view the entire *chaîne opératoire*. It seems likely that this structure was actually primarily utilized as a bead-manufacturing workshop.



**FIGURE 5.** *A selection of lithic drills recovered from the May 2015 excavations on Dalma Island (photographs by Simon Bold).*

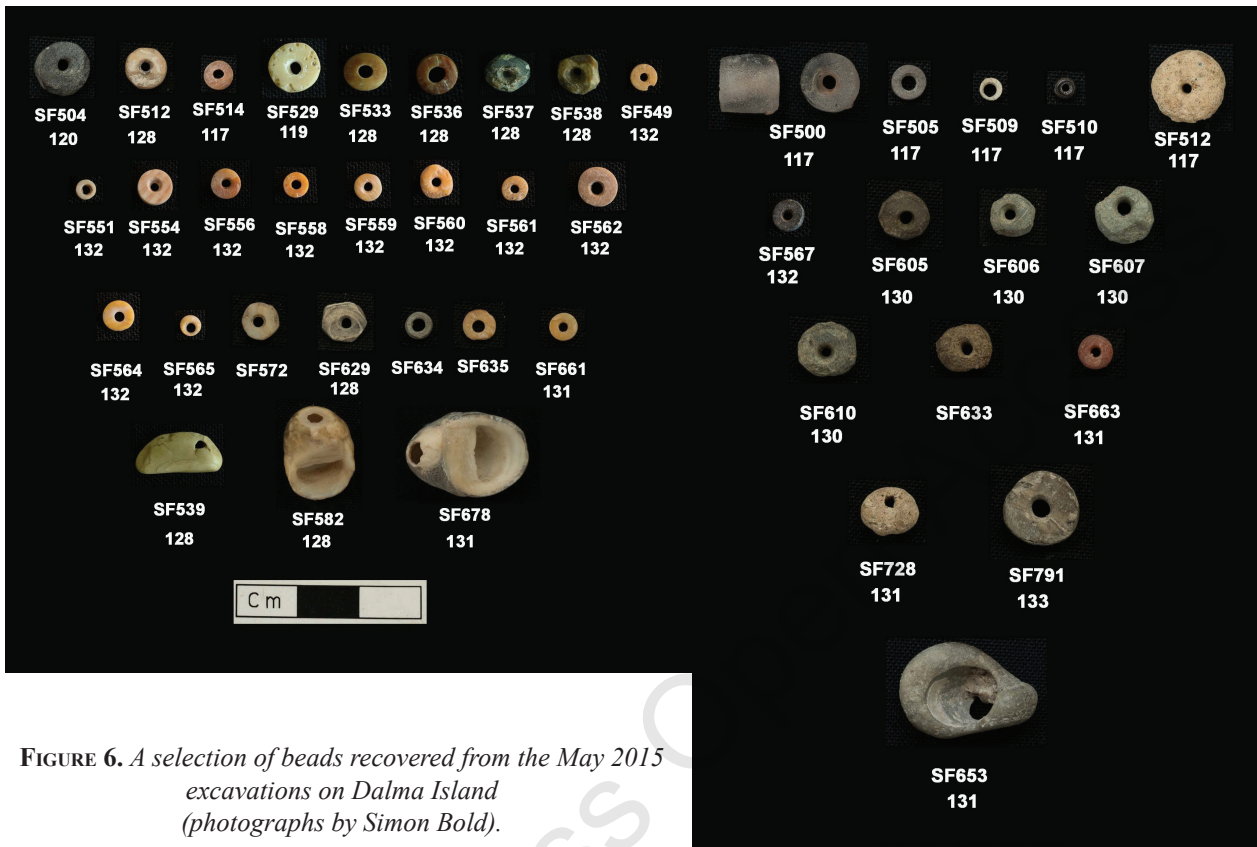


FIGURE 6. A selection of beads recovered from the May 2015 excavations on Dalma Island (photographs by Simon Bold).

The majority of the lithic remains were debitage, and a number of broken fragments of hammer-stones were identified. Besides this there were a number of anvil/burnishing stones. These were flattened beach quartzite-type pebbles, which had been deliberately selected to use as anvil stones. Percussive damage could be seen on the surface of some of these, where drilling activities had been carried out against them. The surface of some of the other stones was polished, indicating that they had been used for burnishing activities. A few fragments of tile knives made from the local available flint on the island were also identified. These would have been general-purpose tools used for various activities, including butchery and the processing of fish and other food remains.

A complete study of the beads recovered from the Dalma excavations has not yet been completed, but some preliminary remarks can be made (Fig. 6). Beads, proto-beads, and pendants were produced in a range of shapes, sizes, and materials. The materials they were made from included shell and stone, including rock crystal. The commonest type was shell disc beads. Pendants were

mostly oval. A brief examination of the drilling method indicates that drilling was carried out from both sides.

Preliminary analysis of the fish remains from the 2014–2015 excavations reveals a wide range of species present at the site (Fig. 7). The taxa represented include sharks and stingrays (*elasmobranchii*), needlefish (*Belonidae*), groupers (*Serranidae*), jacks/trevallies (*Carangidae*), and tuna (*Scombridae-Thunninae*). Many of the fish remains consisted of dentaries, as well as articulated segments of abdominal and caudal vertebrae. The presence of vertebrae of larger species such as shark and tuna, as well as the occurrence of sea turtle carapace fragments and dolphin mandibles and vertebrae, may indicate that some deep-sea fishing was practised by the inhabitants of Dalma Island some 6000 to 7000 years ago.

#### Marawah Island: geophysics results

Results of the magnetometry and GPR at sites MR1 and MR11 on Marawah Island indicate the strength of GPR in identifying the stone structures on the island, although magnetometry also proved useful in locating hearths and fired material over the sites.





**FIGURE 7.** *Various fish remains discovered in situ during the excavations on Dalma Island (photographs by Mark Beech).*

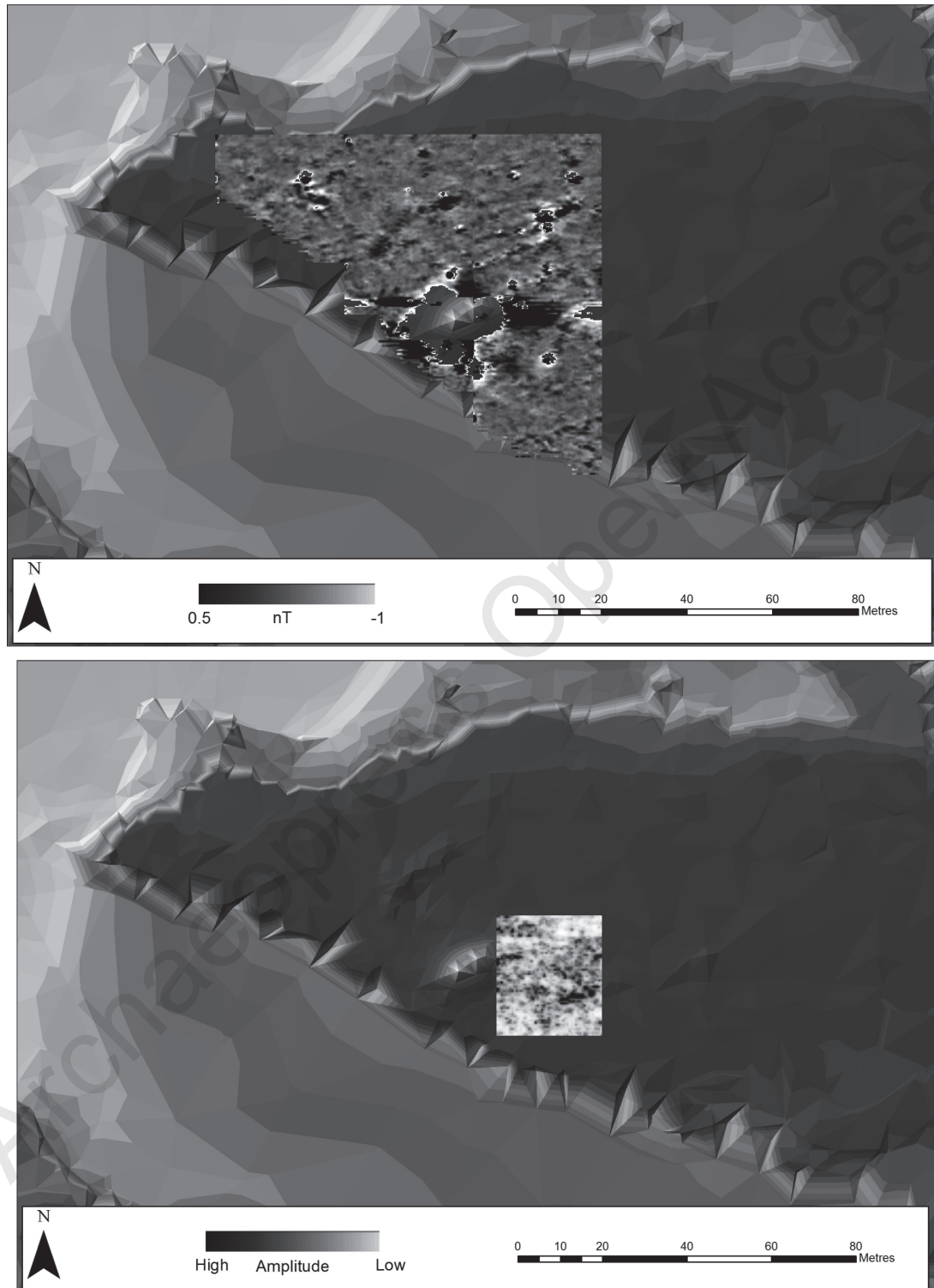
The survey results from MR1 indicate a number of possible stone structures from the results of the magnetometry, together with a series of positive anomalies, each measuring some 2 m across, marking possible hearths. These features correspond in part with concentrations of surface material, including worked flint. The GPR survey was conducted over an area where a particularly high concentration of lithics had previously been collected. The results indicate the presence of a possible stone structure measuring some 8 m across (Figs 8 & 9).

At MR11, a more intensive and better-preserved collection of archaeological anomalies is visible, corresponding to structures in the vicinity of the previously excavated trenches A and B. The magnetometry results indicate a number of possible hearths and at least two very clear ovate structures in the northern part of the site. The structures measure between 8 and 10 m in length, and are similar in plan to the excavated remains of the Neolithic structure previously identified in Area A. Several further possible stone structures are visible in the southern part of the site, together with a series of linear anomalies that appear to mark geological striations in the bedrock. These may also represent rock-cut features associated with water management relating to the Neolithic settlement. The results of the GPR survey, which targeted the area around

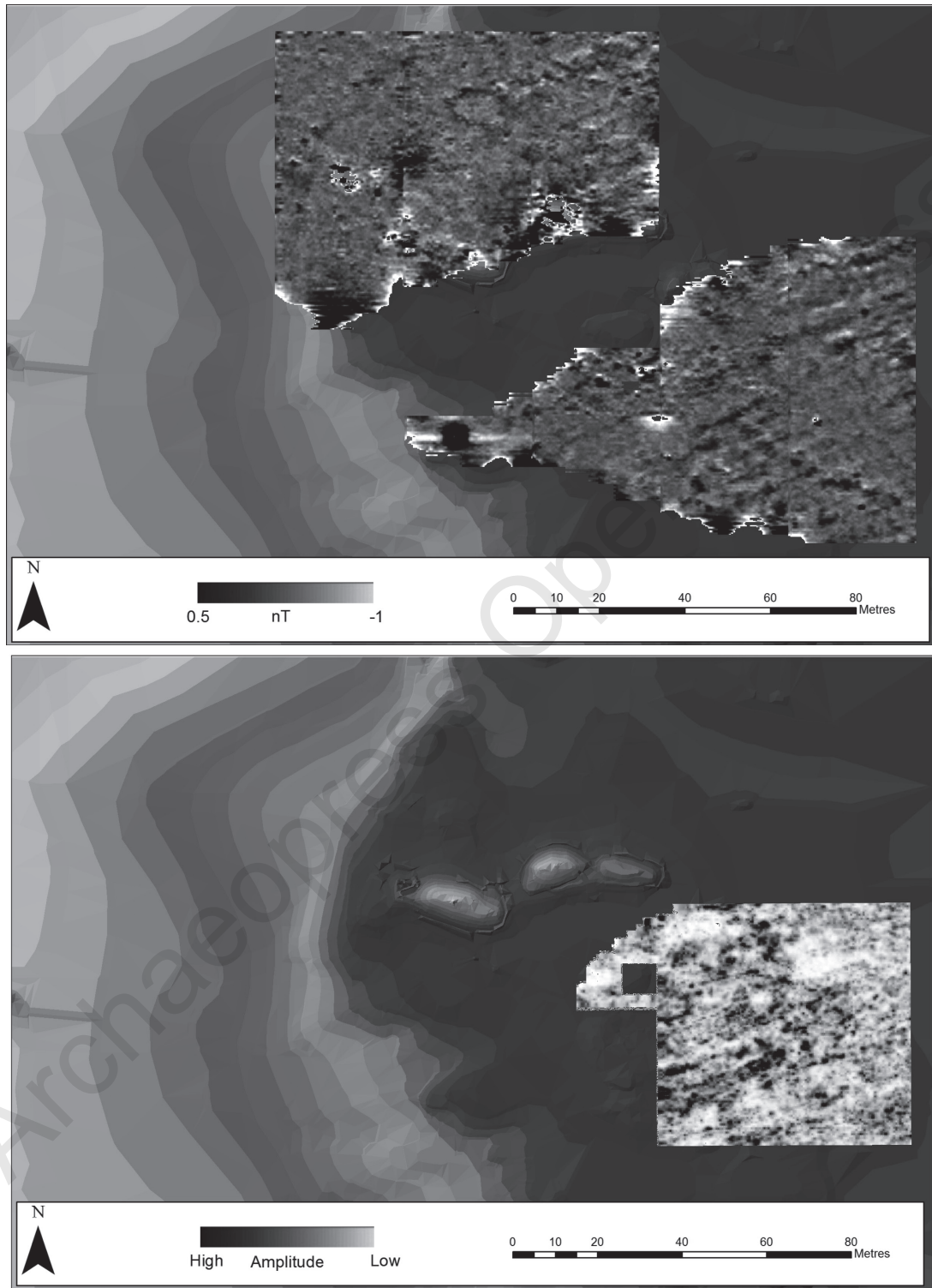
and to the east of the excavation at Area A, reinforce the presence of several stone structures in the area.

#### **Marawah Island: excavation results**

The October 2014 and February 2015 archaeological excavations on Marawah Island were limited to a small trench at site MR11. This cleared an area about 5 x 5 m to the southern side of Room 1, which had been fully emptied down to bedrock during the earlier excavations (Beech et al. 2005; 2008). A two-week excavation enabled the clearing of a large amount of stone rubble to the south and south-west of Room 1. Finds were relatively sparse and only included a flint tile knife, two more examples of trihedral flint projectile points, some general stone debitage fragments, and a few beads (Fig. 10). The excavation, however, revealed that the main structure of Room 1, and its associated rooms, was indeed built directly onto the local limestone bedrock. The trench also revealed two other significant features: (1) a significant hearth area located outside the structure, which had no diagnostic finds; samples of ash have been taken from this hearth, but the results of radiocarbon dating are not yet known; (2) a further apsidal-ended chamber, similar in appearance to Room 1, was noted immediately to the west/south-west of Room 1. This will be the target of excavation in future seasons.

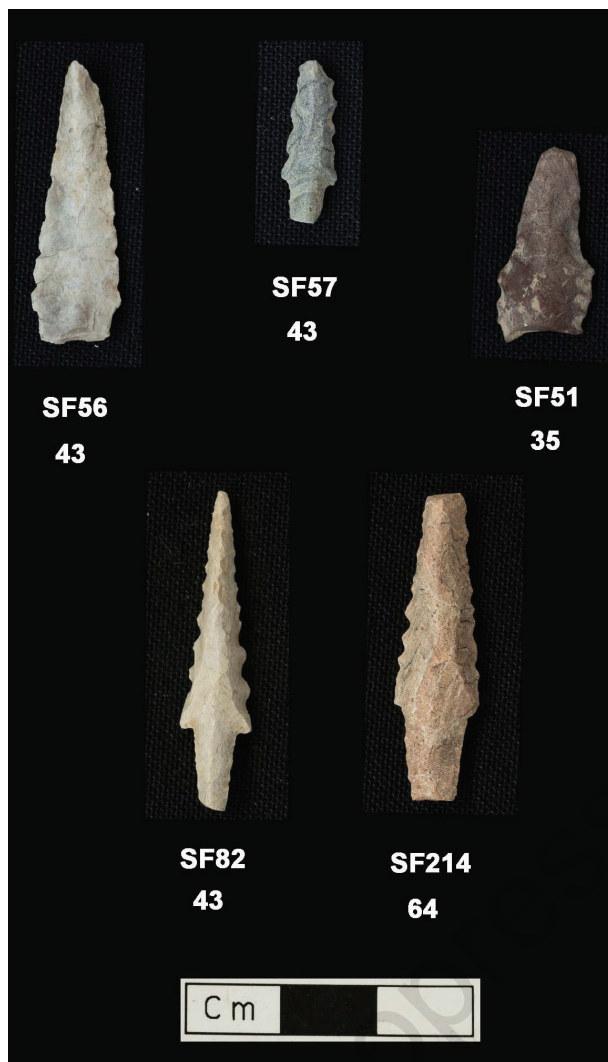


**FIGURE 8.** Geophysical survey results of site MRI, the ‘Ubaid-related settlement on Marawah Island (graphics by Kristian Strutt). **Top:** magnetometer survey; **bottom:** ground-penetrating radar survey.



**FIGURE 9.** Geophysical survey results of site MR11, the <sup>c</sup>Ubaid-related settlement on Marawah Island (graphics by Kristian Strutt). **Top:** magnetometer survey; **bottom:** ground-penetrating radar survey.





**FIGURE 10.** A selection of lithic artefacts recovered from the 2004 and 2015 excavations at site MR11 on Marawah Island (photographs by Simon Bold).

## Conclusion

Recent work on both Dalma and Marawah Islands on the coastline of Abu Dhabi Emirate in the UAE have shed new light on the structure of ‘Ubaid-related coastal settlements between the mid-sixth and early fifth millennium BC. A combination of magnetometry and ground-penetrating radar (GPR) geophysical surveys, as well as follow-up archaeological excavations, was carried out. These have provided valuable new information about sub-surface

anomalies, which indicate that an extensive range of further prehistoric structures are present at Dalma, as well as at both MR1 and MR11 sites on Marawah Island.

In the case of Dalma Island, an ‘Ubaid-related settlement site, some of these anomalies indicate the presence of further potential similar-sized house structures, linear boundary features, as well as areas of burning. In the case of Marawah Island and the two ‘Ubaid-related settlement sites, some of the anomalies demonstrate that there are further apsidal-ended chambers within some of the occupation mounds at the site, as well as other much larger oval structures and linear features requiring further archaeological investigation.

This new information is extremely valuable for the future management of these sites and for the future placement of archaeological trenches, which can aid our understanding of these important sites.

Archaeological excavations on Dalma Island have, for the first time, revealed a complete plan of an ‘Ubaid-related structure, which was occupied during the late sixth to the mid-fifth millennium BC. The well-preserved floor of this structure was rich in finds. The combination of numerous shell and stone beads (and proto-beads), stone pendants, stone drills, hammer-stone fragments, anvil and burnishing stones, leads us to believe that this structure was primarily utilized as a special workshop for manufacturing jewellery. Similar workshops have been discovered elsewhere, such as Ra’s al-Khabbah in Oman (Charpentier, Cremaschi & Demnard 1997).

Excavations at the MR11 site on Marawah Island have demonstrated that the area to the south of Room 1 appeared to be external to the main building. There were relatively few finds and the excavation cleaned the entire area down to the local bedrock. Further examples of trihedral flint projectile points, however, were discovered. These are similar to those reported by Charpentier, Cremaschi and Demnard (1997) and Charpentier (2004). A significant hearth area was discovered within this open courtyard area within the south-east corner of the trench. Future excavations will concentrate on investigating a further apsidal-ended chamber discovered to the west of Room 1.

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*Authors’ addresses*

Mark Jonathan Beech, Head of Coastal Heritage and Palaeontology section, Historic Environment Department, Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi), PO Box 94000, Abu Dhabi, UAE.

*e-mail* mark.beech@tcaabudhabi.ae

Kristian Strutt, Archaeological Prospection Services for Southampton (APSS), Archaeology, Faculty of Humanities, University of Southampton, SO17 1JB, UK.

*e-mail* kds@soton.ac.uk

Lucy Blue, Maritime Archaeological Stewardship Trust (MAST), Centre for Maritime Archaeology, Archaeology, Faculty of Humanities, University of Southampton, SO17 1JB, UK.

*e-mail* lkb@soton.ac.uk

Abdulla Khalfan Al Kaabi, Coastal heritage archaeologist, Historic Environment Department, Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi), PO Box 15715, Al Ain, UAE.

*e-mail* abdulla.alkaabi@tcaabudhabi.ae

Waleed Awad Omar, Geophysical Manager, Historic Environment Department, Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi), PO Box 15715, Al Ain, UAE.

*e-mail* waleed.omar@tcaabudhabi.ae

Ahmed Abdulla Al Haj El Faki, Coastal heritage archaeologist, Historic Environment Department, Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi), PO Box 15715, Al Ain, UAE.

*e-mail* ahmed.elfaki@tcaabudhabi.ae

Anjana Reddy Lingareddy, Coastal heritage archaeologist, Historic Environment Department, Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi), PO Box 94000, Abu Dhabi, UAE.

*e-mail* anjana.lingareddy@tcaabudhabi.ae

John Martin, 8 Regents Way, Minehead, TA24 5HW, UK.

*e-mail* dijon.martin@virgin.net