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Archaeological Rescue Excavations on Packages 3 and 4 of the Batinah Expressway, Sultanate of Oman

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with

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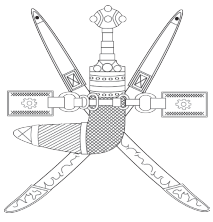

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Cover: A landscape from the Batinah bajada zone
Back cover left image: Unexcavated tomb, south-west of Sohar
Back cover right image: Survey team conducting pole photography of tomb in Package 4

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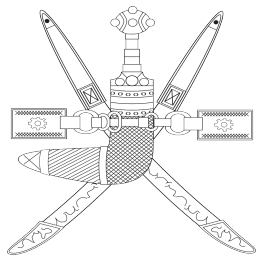
Report produced for the Ministry of Heritage and Culture, Sultanate of Oman



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Series Editors' Note

One of the aims of the BFSA Series, when it was set up in 2004, was to facilitate the rapid publication of archaeological fieldwork carried out in the Arabian Peninsula. In such cases, which are known as 'BFSA Field Reports', where the publication consists predominantly of a descriptive presentation of field data, the emphasis is on prompt publication rather than detailed, scholarly, comparative analysis. The standards required by the peer review process are adjusted accordingly.

DK & StJS

Abstract

This report presents the results of rescue excavations conducted during the spring and summer of 2014 in preparation for the construction of the Batinah Expressway (Packages 3 and 4) on the Batinah coastal plain in al-Batinah North Governate, Sultanate of Oman. Through previous survey work by the Ministry of Heritage and Culture and a team from Durham University and Sultan Qaboos University, it was known that the development footprint included upwards of sixty archaeological sites, the vast majority of which are stone cairn burials. The project was designed to recover and record as much information from these sites as possible through rectified photography, survey, excavation, and study of finds and human bones prior to their destruction. In addition to this primary function, the results of the excavations also present a useful archaeological cross section of the foothills of the Hajar Mountains where they meet the Batinah plain. They represent various archaeological periods from the Neolithic through to the post-Iron Age 'Samad' and Sasanian periods and — along with the results of the rescue excavations in the other packages of the Expressway and ongoing research projects around the Batinah — emphasize the previously unrecognized richness of the area's archaeological record. The data from the excavations has also suggested something of a rethinking of Omani tomb forms in this area, in particular in relation to possible Iron Age burial traditions, in addition to the previously recognized Hafit tradition.

Acknowledgements

Most sincere thanks are due to the Ministry of Heritage and Culture especially to the minister His Highness Sayyid Haitham bin Tariq Al Said, His Excellency Salim bin Mohammed Al Mahruqi, Undersecretary for Heritage Affairs, and His Excellency Hassan Mohammed Ali Al-Lawati, Adviser of His Highness the Minister for Heritage and Culture for Special Projects. Grateful thanks are also due to the Ministry of Transport and Communications who were key in implementing this project. The team is also extremely grateful to Mr Sultan Saif Nasser Al-Bakri, Adj. Director General for Archaeology and Museums who was extremely supportive and helpful, and to all his staff at the Ministry for their support during the project. The team would like to thank all those from Simplex-Konstruktor (Package 3), from Larson & Toubro (Package 4), and from Parsons International (consultants for both packages) who assisted them, arranged their accommodation, food, and vehicles and assisted with numerous other unforeseen problems. In particular Mr Verghese of Simplex-Konstruktor and Mr Elias al-Khouri of Larson & Toubro worked tirelessly to ensure the team was well looked after. The respective Resident Engineers for Parsons International in Package 3 and 4, Mr Ibrahim Ali and Mr Suresh Babu, were both supportive and understanding, providing the team with workmen to assist them and helping to complete the project without problems. The Accounts Departments of Simplex-Konstruktor and Larson & Toubro were helpful and efficient. Survey on site was organized by Mr Goutam Basi in Package 3 and by Mr Balakhrishnan in Package 4.

The field team consisted of Dr Julian Jansen van Rensburg, Anne Mortimer, Othman al-Wardi, Vince Cherubini, Jack Outram, Adam Fraser, Alyson Caine, Adil al-Muqbasi, and Hafel al-Muqbasi, directed in the field by Ben Saunders. In addition, illustration work in the field was carried out by Dr Julian Jansen van Rensburg and Anne Mortimer, while the final drawings were completed by Vicki Herring.

Section I

Introduction

The project

Project Background

This report presents the findings from the rescue excavations carried out between 6 April and 17 June 2014 in the Sultanate of Oman along the route of Packages 3 and 4 of the Batinah Expressway, a multi-lane highway which will run across the Batinah coastal plain from Muscat in the south to Suhar and the UAE border in the north.

The project recorded and excavated all known archaeological sites (excluding Islamic burial sites which were dealt with by the Ministry of Endowments and Religious Affairs) within the Right of Way (ROW) of Package 3 (forty-eight sites) and the majority of sites within the ROW of Package 4 (sixteen sites).

The project partners were the Omani Ministry of Heritage and Culture, the Omani Ministry of Transport and Communication, Parsons International LLC (Consultants for Packages 3 and 4), Simplex-Konstruktor JV (Contractors for Package 3), and Larson & Toubro LLC (Contractors for Package 4). The project was overseen by Dr Nasser al-Jahwari of Sultan Qaboos University and Dr Derek Kennet of Durham University/ Sultan Qaboos University (Project Directors) and the fieldwork was directed by Ben Saunders (Field Director).

Summary of results

The project encountered a wide variety of pre-Islamic graves and tombs, demonstrating different forms, construction techniques, and locations as well as a small number of other types of archaeological site. Excavation of all tombs along with half-sections of a selection allowed the team to investigate the construction methods and techniques used. The form and construction are the main criteria for dating many of the tombs, as artefacts were extremely scarce. From this study a number of tomb types have been identified, which are presented here in Section II. One key conclusion derived from the work is to suggest that many of the tombs do not date to the Hafit or Early Bronze Age period (*c.*3200–2700/2500 BC) as was previously thought. While a number of good examples of such tombs were certainly present, it is suggested that a large number of the tombs can in fact be dated much later to the mid-Iron Age (*c.*1000–600 BC). In addition a small number of tombs datable to the Wadi Suq period (*c.*2000–1650 BC) were also excavated. Together, these results help to inform us about the density and nature of human exploitation and occupation of the Batinah plain during different periods of Oman's past.

Skeletal and artefact survival in the area was generally very poor. The vast majority of the tombs contained either nothing or a few very fragmentary bone pieces and no finds. Only twenty-seven tombs contained human remains and sixteen of these only contained very fragmentary remains, which allowed minimal analysis. This left eleven tombs containing partially articulated human remains, amounting to approximately seventeen partially complete individuals, with six female or probable female skeletons, four male or probably male skeletons, and seven unidentifiable skeletons. These are discussed fully in Section IV. A total of fifty-two small finds of various materials including chlorite, copper, and glass were recovered along with 549 sherds of ceramics dating to various periods. These included 303 sherds from the exterior of tomb L3-06 and small amounts of ceramics from outside and within the chambers of other tombs. These ceramics range from an almost complete probable Wadi Suq goblet to individual sherds of late Islamic pottery and a large number of Iron Age II sherds which were often found within the rubble covering the tomb. It is thought likely that the majority of the tombs had previously been disturbed by tomb robbers during antiquity and prehistory. Artefactual evidence from the thirteenth–twentieth century AD for this in the form of beads was found at several tombs, as discussed in Section V.

Dates

The team arrived in Oman between 4 and 6 of April 2014 and began fieldwork on 8 April. D. Kennet was present until 12 April, having been involved in setting the project up. Fieldwork in Package 3 was completed by 21 May and Package 4 was complete by 29 May. The team then completed paperwork and other aspects of post-excavation work until 16 June. The team palaeopathologist continued to work on the human remains until 7 July.

Location

The project dealt with Packages 3 and 4 of the Batinah Expressway route. All archaeological sites were located within the ROW corridor, which included the 80 m

roadway itself and up to 100 m (occasionally more where topography dictated) either side of the roadway centreline. Package 3 began approximately 20 km inland from al-Suwayq, running north-east to approximately 20 km inland from Hafeet. Package 4 continued from this point to *c.*15 km inland from Suhar. Figure 1 shows the location of the two packages.

The Batinah plain is a coastal gravel plain lying between the Hajar mountains to the south-west and the coast to the north-east. It is approximately 250 km long and varies from 10 to 50 km in width. Close to the foot of the mountains the undulating topography of the bajada zone is formed of uncultivable boulders, cobbles, and large gravels but the flatter, distal parts of the plain close to the sea are formed of silt, which is more easily cultivated. This predominates in a band about 5 km wide close to the sea where the water table is also at its highest, and this area is densely covered with modern cultivation and settlement (cf. Costa & Wilkinson 1987: 23–27; Costa 1985: 109).

The route of the Expressway runs largely through the outer bajada zone, parallel to the coast to the north-east and the mountains to the south-west. It does not involve the more densely occupied cultivated, coastal zone mentioned above or the foothills of the mountains but focuses on the least densely occupied area of large gravels in the middle of the plain, where cultivable areas exist only in and around a few wadi beds. It is thought that human occupation has generally been quite sparse in this area for most of antiquity. The route does not therefore provide a representative cross section of human exploitation of the whole Batinah plain.

The topography of the Expressway route is made up of areas of flat boulder/gravel plains dissected by wadi valleys into interfluvial ridges and plateaus. The wadi valleys run roughly south-west–north-east through the landscape, channelling the flow of water from the mountains to the coast. Some of the wadis run through wide flat valleys with gravel terraces, and in such cases it is clear that the path of the wadi channel varies from year to year. Other valleys are narrower and the wadi gullies appears to be more permanent. The majority of the tomb sites that were excavated are located on ridges overlooking the larger valleys, possibly because the continually changing course of the wadi made construction of tombs problematic or their survival unlikely. This may not be the only factor in tomb

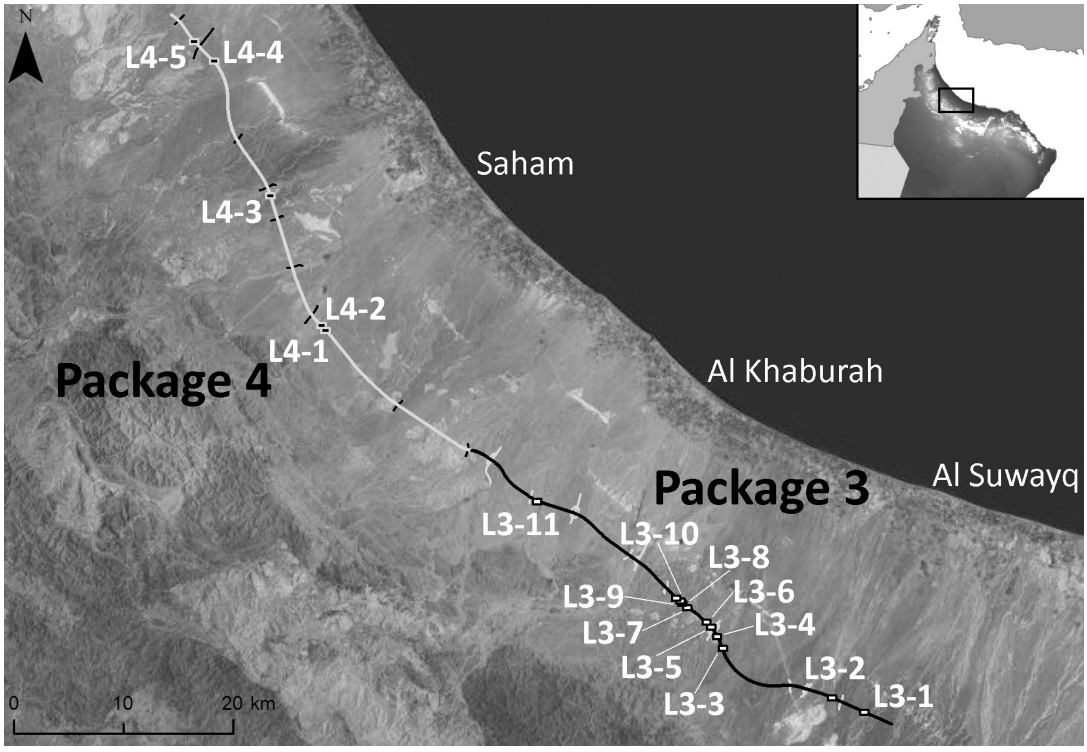

Figure 1. Location of Packages 3 and 4, and the locations of groups of tombs within each Package (map by W. Deadman, Imagery Source: ESRI, Digital Globe © 2014).

placement, however; alongside practical concerns, it is likely that tombs were deliberately constructed in commanding positions within the landscape, often on ridge tops dominating views over a large area. These tombs were in some cases a significant distance from the material utilized to build them and therefore demonstrate a substantial investment of time and effort in their construction (see Type 2 tombs below). The variation in tomb placement within the landscape will be discussed later in Section VI.

The area of investigation is therefore a landscape where movement and occupation would have been easiest within the wadi valleys and at least slightly restricted by the ridges and hills that are located between them. It could be argued that the wadi valleys therefore formed communication routes of the area, even before any formal routes existed (cf. Deadman 2014: 143–144). This will be discussed more fully in Section VI.

Preliminary survey

The rescue excavations were based on sites located by preliminary surveys conducted during the winter of 2013/14. Package 3 was surveyed by Mr William Deadman and other members of the Rustaq-Batinah Archaeological Survey team, while Package 4 was surveyed by Mr Khamis al-Aufi of the Ministry of Heritage and Culture.

The preliminary surveys involved inspection of satellite imagery, which identified a number of potential sites that were then ground-truthed. The entirety of the ROWs of both packages were also inspected by individuals or groups in vehicles who focused on identifying visible cairns, tombs, earthworks, and other structures. No detailed or systematic inspection of the ground surface was carried out in either package, meaning that archaeological sites consisting only of unmounded scatters of surface artefacts, such as lithics or pottery, would not normally have been detected. A limited number of small sites not found by the preliminary surveys came to light during the excavation work in both Packages (e.g L3-59, L3-60, and L4-08b).

Site locations

The preliminary surveys and the excavations demonstrated that most tombs are located within groups of similar tombs in cemetery-style groupings across the landscape (the various types of tombs that were defined will be discussed below). The tombs will therefore be presented in these groupings in Section IIIa/b.

The forty-eight Package 3 sites were divided into eleven locations of which six were ridgelines, three were wadi terraces, one was an isolated hillside tomb, and one was a hilltop graveyard.

The sixteen Package 4 sites were divided into five locations of which one was a ridgeline, three were wadi terrace locations, and one on the slopes of a narrow valley. No isolated tombs were located within this Package.

Package 4 also contained a potential occupation site based on a widespread flint scatter close to L4-12, a wadi terrace site. No obvious structures related to the artefacts were present, suggesting the pick-up related to a much more nomadic period.

Methodology

Excavation strategy and method

As stated above, the project recorded and excavated all known archaeological sites (excluding Islamic burial sites) within the ROW of Package 3 (forty-eight sites) and the majority of sites within the ROW of Package 4 (sixteen sites). A number of sites were not excavated in Package 4 as they were deemed far enough away from the road line not to be threatened; they will be protected by fencing and appropriate signage by agreement with the contractors.

The project was run according to current UK commercial standards using single-context recording adapted from the *Museum of London Archaeological Manual* (MOLAS 1994). This system, along with various adaptations for local conditions, is used widely throughout British and European archaeological investigations. It was agreed between the Ministry of Heritage and Culture and the Ministry of Transport and Communications that the project would fully excavate and record (or protect if possible) all known archaeological sites within the ROW, to allow road construction to go ahead. The project was funded by the Ministry of Transport and Communication, with support from the Ministry of Heritage and Culture.

The recording system

Five different types of written recording sheet were used during the excavation of the tomb chambers: a deposit sheet for soil-based deposits connected with the tomb; a masonry sheet for stone structures; a cut sheet for any cuts/interfaces present; a skeleton sheet; and a 'general deposit' sheet for the collapse around the tombs (example in Figure 2).

Sections were recorded at either 1:10 or 1:20, depending on which was most applicable, on UK standard permatrace using a 4H or 6H pencil. These were then digitized in Adobe Illustrator, Corel Draw, or AutoCAD and saved as .ai files.

Plans were digitally completed using the rectified pole photographs taken of each tomb, before and after full excavation, with appropriate scales and cardinal points.

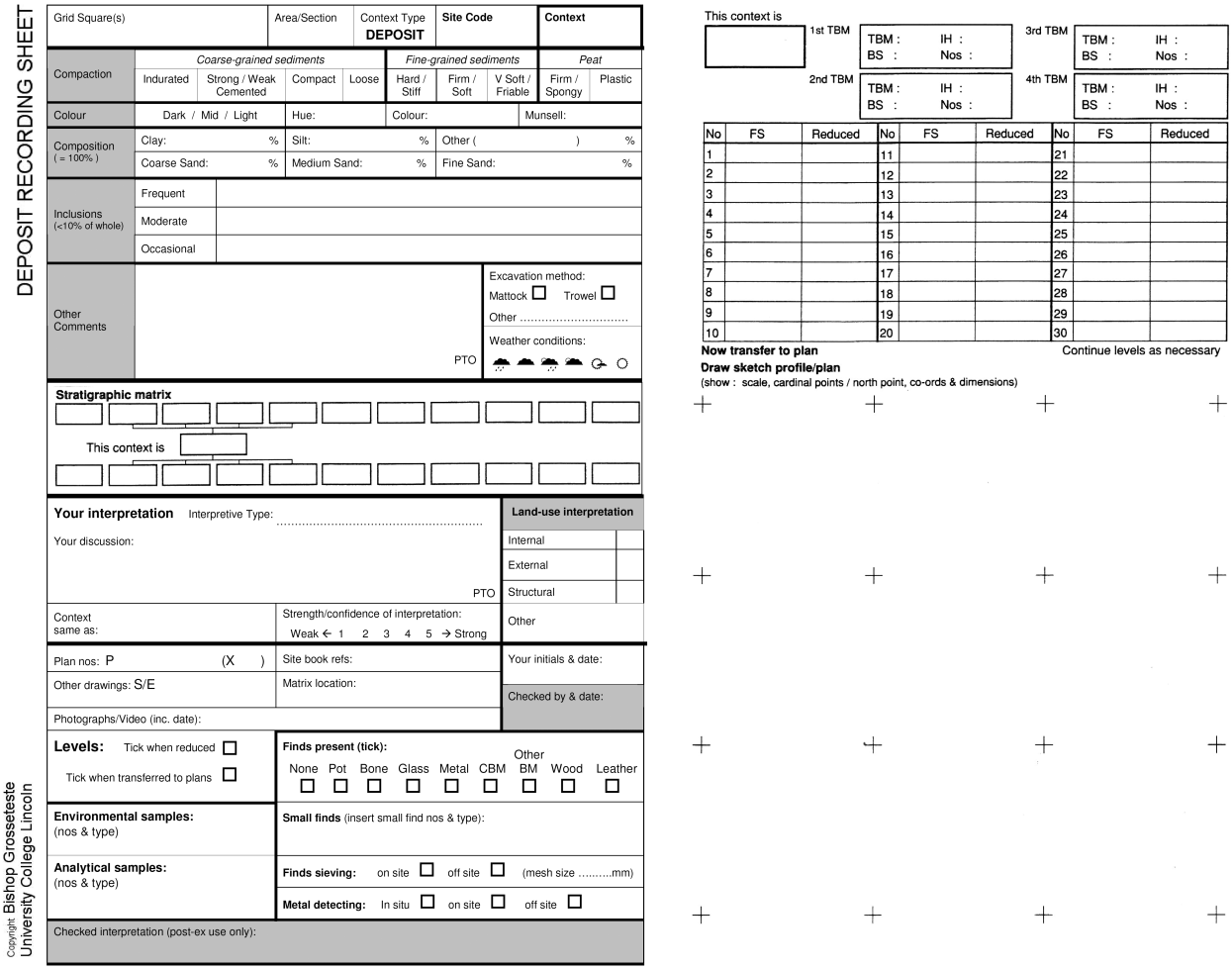

Figure 2. Example of a context-recording sheet (deposit).
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Both plans and sections were completed in line with the drawing conventions set out in the MOLAS manual (MOLAS 1994).

All record photographs, excluding pole photographs, contain an appropriate scale, north arrow, and photoboard detailing the specifics of the photograph. Pole photographs differ only when a site's size required multiple photographs to be taken. In these cases, the first photograph contained a north arrow, appropriate scale, and photoboard, which were then removed from all other photographs to avoid problems in processing. All photographs were recorded in a register.

The resulting written, drawn, and photographic records thereby provide a very detailed description of the tombs and the overlying deposits.

Excavation system

Due to the logistics of the project and in order to make the work as efficient as possible, a 'production line' system of excavation was developed. The team was split into three sub-teams for the majority of the project, each with its own specific role.

The recording and excavation of each tomb was divided into the following stages:

Stage 1

A team of two to three people set up an appropriately sized grid around each tomb, including placing a Temporary Bench Mark (TBM) on the south-west point of each grid. A series of pre-excavation pole photos

and cardinal photos was then taken, including scales, north arrows, and a chalkboard with the site number on it.

Stage 2

A second team of two to three people accompanied by most of the workmen then removed the loose and collapsed stones and other deposits that covered the remaining structure of the tomb. This was a difficult process in some cases, as the upper structures of the tombs are unbonded and judgement had to be used about whether any particular stone was an *in situ* part of the structure or was part of the rubble collapse covering the structure. To deal with this, it was generally found best to isolate a segment of clearly defined tomb wall and to work around the outside of the tomb from this point, clearing back to the wall face. The top of the chamber was then cleared using a similar method. This was extremely difficult on the badly damaged tombs that were present in both packages but in general this part of the work did not present many problems. During this process the excavators completed a context sheet for any removed deposits including levels taken from the TBM on the south-west gridpeg, which was then passed on to the tomb excavation team (see below). If it was noticed that part of a tomb had either been over-cleared or under-cleared, this was noted down and any extra clearance required took place at that point. Generally the area around the tomb within the grid was also cleared of loose stones and trowelled back to expose the old land surface. The chamber was then cleared to the upper sand/soil deposit within it ready for full excavation. Cardinal photos were taken and the team then moved on to the next tomb.

Stage 3

A third team of two to three people with a small number of skilled workmen then excavated the tomb chamber, using single-context excavation and recording methods (see Figure 2 for an example of the recording sheet and MOLAS 1994 for a complete description of the single-context recording system). This allowed the excavation team to keep control of the occasionally quite complex archaeology present in the chambers, as well as providing a complete paper record of the excavations, which was presented to the Ministry of Heritage and Culture at the end of excavations, along with the preliminary report.

The excavation team excavated each chamber down to the old land surface, and recorded any intact *in situ* human remains, artefacts, or later disturbances (although the first two of these were relatively rare). *Ex situ* finds were bagged up according to context. Once the chamber had been fully excavated, post-excavation pole and cardinal photos were taken.

Stage 4

After excavation of the chamber a decision was taken about whether the tomb was well preserved or interesting enough to warrant half-sectioning. If it was, the excavation team would decide which section through the tomb was most likely to provide information about the construction. A corresponding line was then marked out across the tomb and the entire structure on one side of this was removed down to the old land surface. The standing section through the tomb was photographed, drawn, and a final pole photograph was taken.

Stage 5

Finally, surveyors from the contractors for each package surveyed in the grid points around each tomb, locating them to UTM 40Q (Package 3) and to UTM 40R (Package 4) with a 5 mm accuracy, and the heights to mean sea level, giving each site a bench mark of known height on the south-west gridpeg.

The first team consisted of JJvR, JO and, when free, BJS. The second team consisted of VC, AJF, OaW, and HaM, along with a team of nine to fifteen workmen supplied by the contractors. The final team consisted of AEM and AaM along with a team of six to seven skilled workmen. As teams one and two finished their work, they were added to the excavation team. In the case of VC, AJF, OaW, and HaM it was decided that they would conduct the majority of the excavation in Package 4, as it was necessary for teams to work in both packages simultaneously. This 'production line' method of excavation and recording allowed the team to deal rapidly and effectively with the sites within the Package areas.

Photographs of the excavation process

This series of photographs show the excavation process for a typical tomb (L3-11). The first (Figure 3) presents the tombs before excavation work had begun (Stage 1: pre-excavation pole photo), demonstrating the scatter of rubbles covering the tomb and the immediate area. Figure 4 shows the same tomb after Stages 2 and 3 (rock clearing and excavation of the chamber). Finally, Figure 5 shows the final post-excavation photograph of the tomb after half-sectioning (Stage 4).

These photographs demonstrate the process of excavation used throughout the project. As mentioned, not all tombs were half-sectioned — badly damaged examples and those of a known construction type were left complete. Out of thirty-six tombs with a stone superstructure in Package 3, twenty were half-sectioned. In Package 4, eight out of sixteen potential tombs with stone superstructures were half-sectioned. The smaller percentage in Package 4 is due to a large proportion of

Figure 3. Tomb L3-11 before excavation (Stage 1: pre-excavation pole photograph).

Figure 4. Tomb L3-11 after clearing and excavation of the chamber (Stages 2 and 3).

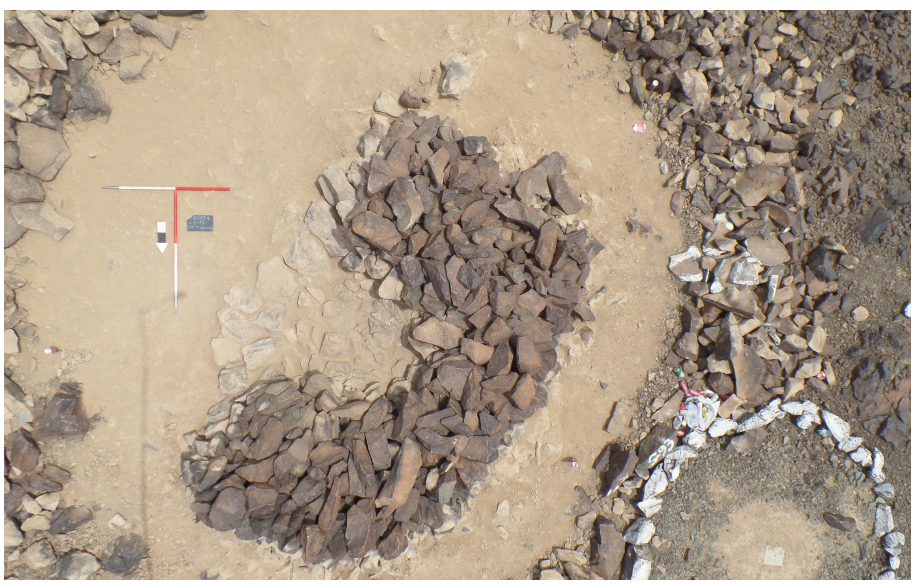

Figure 5. Tomb L3-11 after half-sectioning (Stage 4).

the tombs being very badly deflated and robbed, making half-sectioning less effective in relation to the amount of effort invested.

Glossary of terms used in the report

This report contains a number of technical excavation terms that are either not commonly used in English or have multiple meanings. Their definitions as used within this work are listed below:

Bonding: this refers to the material used to hold together masonry, brick, or other building material in a structure. In most cases here, this was wet mud/silt but in modern structures mortar was used.

Boulder: a large stone/rock measuring more than 260 mm on any axis. Boulders were generally used in the construction of tomb walls and for building foundation platforms.

Cardinal photos: photographs taken facing north, east, south, and west, showing the main aspects of the structure.

Cobble: a medium-sized stone measuring between 70 and 260 mm on any axis. Cobbles are generally used as building material in the walls of smaller tombs; they also make up the rubble core between the outer walls in larger tombs.

Corbelling: this is a basic roofing technique common in prehistoric stone tombs in Oman and elsewhere in the Arabian Peninsula. Long, thin boulders, generally between 400 and 600 mm in length, are placed in courses with a short end facing in to the chamber, with each course slightly overhanging the one below to create a stepped ceiling. The boulders are kept in place by the counterweight of stones placed on them in the interior of the wall (the rubble core). Once the gap to be roofed is narrow enough, flat lintel stones are placed across to complete the roof.

Deposit: soil, sand, gravel, stone, or other material laid down through either anthropogenic or natural processes.

Half-sectioning: this describes the excavation of one half of a tomb or other feature leaving a standing section revealing the sequence of deposits and, in the case of the tombs, the construction methods.

In situ: literally meaning 'in place', this term describes an archaeological find that is in its original location rather than having been moved or redeposited.

Manganese patination or 'desert varnish': the local limestone, when exposed to the air, slowly develops a dark brown patination or surface colouring formed of particles of clay along with iron and manganese oxides. The presence of such patination normally indicates that the rock has been exposed to the air for a considerable period of time and not subject to rapid erosion.

Old land surface: this term describes a buried ancient land surface, for example the original surface on which a particular tomb was constructed. The excavations generally aimed to expose this surface around and within the tombs.

Pebble: a small stone measuring less than 70 mm on all axes. Pebbles were generally used in the construction of tombs as packing in tomb walls made up of larger boulders and cobbles, or as a covering material for the whole tomb, as seen in L4-13.

Platform: the walls of a large number of tombs were not built directly onto the old land surface, but instead onto a soil-bonded stone foundation platform, referred to simply as a 'platform' throughout this report. These platforms were generally wider than the tombs, and seem to have been intended to provide a stable, flat base for construction of the tomb walls.

Pole photo: in addition to normal photography, the project also used a remotely operated camera on an extendible pole up to 6.5 m long in order to take overhead vertical or oblique photographs of the tombs before, during, and after excavation.

Unbonded: This term indicates that no bonding material was obviously present in a wall or other structure — effectively suggesting the walls were built using a 'drystone' walling technique.

Robbing: all the tombs excavated by this project had been damaged and disturbed to some degree. There are two reasons for this, firstly the removal of the stones making up the tomb for the construction of other structures, possibly for other tombs in some cases (spoliation); the second is the retrieval of potentially valuable grave-goods such as metal or beads.

Temporary Bench Mark (TBM): a fixed point (generally the south-west grid point on each tomb), which was used to measure the levels of excavated deposits and parts of the tomb structures.