

THE FIRST PRELIMINARY REPORT OF THE SOUTH JORDAN IRON AGE II SURVEY AND EXCAVATION PROJECT (SJIAP): THE 2004, 2005 AND 2006 SEASONS OF EXCAVATION AT KHIRBAT AD-DABBA

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Introduction

This report presents the results of the 2004, 2005 and 2006 seasons of excavation at the late Iron Age (seventh and sixth century BC) site of Khirbat ad-Dabba (**Fig. 1**), which is situated in the Wādī al-‘Arjā on the south Jordanian Plateau between ash-Shawbak and Wādī Mūsā. The site was first identified by the Dana Archaeological Survey directed by George Findlater (Findlater 2000).

Khirbat ad-Dabba is approximately 4.6ha in size and is situated at the highest point of a long spur surrounded on all sides by deep wadi cuts feeding into the Wādī al-‘Arjā. The site comprises a large circular casemate wall enclosure, which intersects with a later rectilinear casemate wall system. The walls are built of large flint blocks up to 2.5 x 1 x 1m in size and are preserved up to five or six courses in places. The walls surround substantial stone-built structural remains including at least two large-scale rectilinear buildings. Within the context of the Iron Age sites surrounding it, Khirbat ad-Dabba represents a major site in terms of size and complexity and provides important insights into the lifeways and subsistence patterns of late Iron Age communities in the area.

Project Aims

The South Jordan Iron Age II Project (SJIAP) seeks to enhance our understanding of the nature of late Iron Age settlements in southern Jordan as a springboard for reassessing traditional models of late Iron Age society in the region.

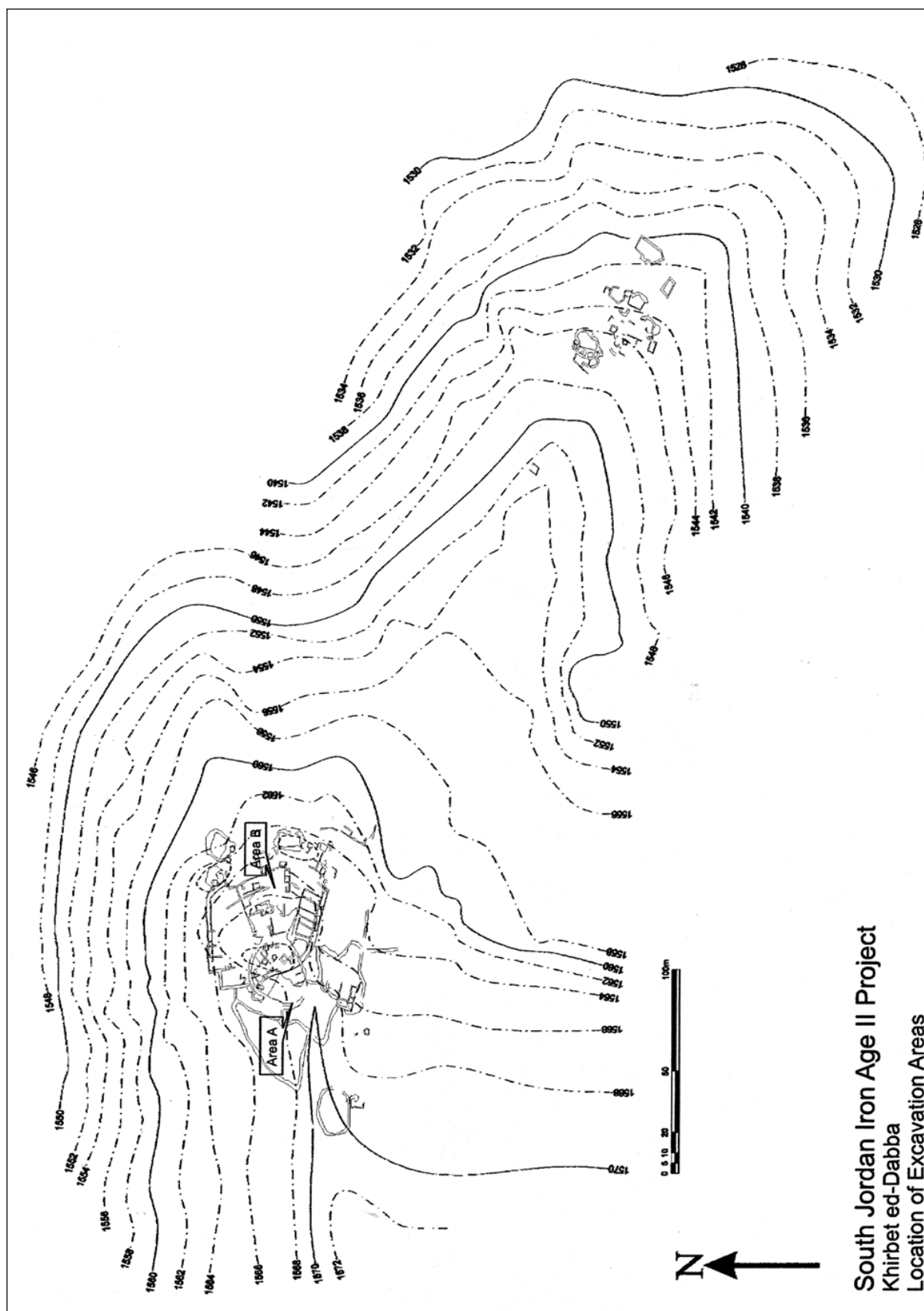
Current models focus on the existence of ethnic groups, the very existence of which derives

directly from historical sources. By thinking in terms of bounded, homogenous ethnic groups, such as the ‘Edomites’ in the case of southern Jordan, explanatory frameworks have been severely constricted. This approach has led to a circular, self-referential use of historical and archaeological evidence to produce a history of Iron Age southern Jordan. Traditional archaeological theory — which associates material culture with ethnic groups and relies on frameworks provided by literary evidence in which to place archaeological data — has been successfully challenged in other areas of archaeology but remains unquestioned in the study of Iron Age Jordan.

In addition, recent studies have criticised the interpretation of national or ethnic material culture groups in Iron Age southern Jordan, based on the increasing recognition of regional variation in the Iron Age ceramics from this area (Bienkowski 2001a, 2001b; Whiting 2007). Furthermore, it has been demonstrated that the diverse patterning of ceramic use in Iron Age southern Jordan reveals that, in as much as pottery is indicative of social practices, particular styles of pottery were integrated within local Iron Age social practices in a variety of ways, with sites and their inhabitants participating differently in the available material culture (Whiting 2007). This implies that we must think in terms not of a homogenous Iron Age ‘culture’ but of an Iron Age world that encompassed the coexistence of diverse communities and lifestyles, from the standpoint of which particular types of pottery could be drawn upon to greater or lesser degrees.

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1. Plan of Khirbat ad-Dabba and main areas of excavation.

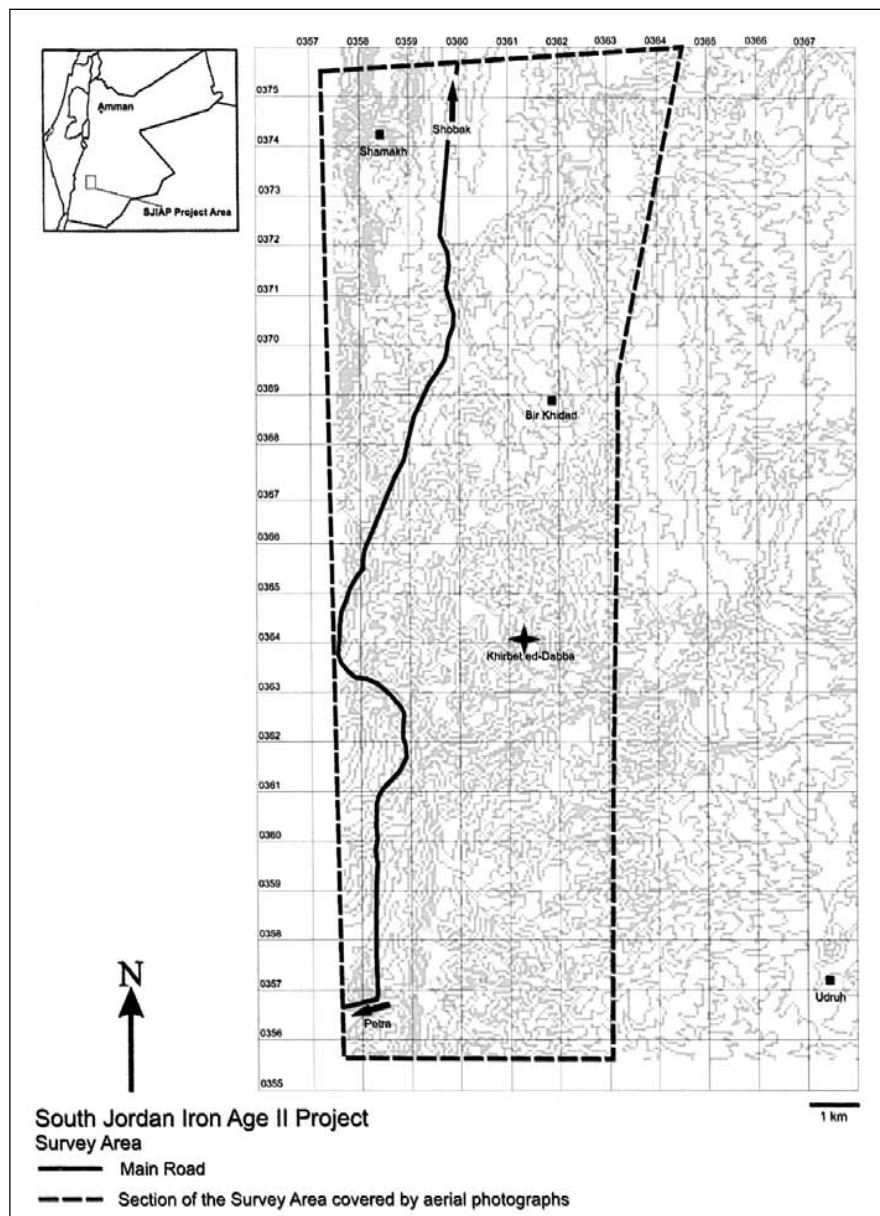
In line with these recent developments in Iron Age research on southern Jordan, SJIAP aims to provide a suitable dataset with which to explore these new ideas in more detail.

Fieldwork Strategy and Methods

In order to pursue these aims, the fieldwork strategy had a double emphasis, focusing on the one hand on the excavation of Khirbat ad-Dabba, as well as the surface survey of a 400km²

area surrounding the site based on aerial photographs and satellite imagery (**Fig. 2**). The results of the survey were mapped using GIS, with an emphasis on correlating this data with topographical, geological, hydrological, climatological, and vegetational information to allow detailed investigation of landscape use through time, especially with regard to the Iron Age II period².

The combined use of excavation and sur-



2. Map of the SJIAP survey area showing the location of Khirbat ad-Dabba.

2. This report presents the preliminary results of the excavations at Khirbat ad-Dabba, the surface survey and GIS data will be published in a separate preliminary re-

port. Full integration of both datasets and their implications will be presented in the final report.

vey was to allow a macro-scale (regional) and micro-scale (site-by-site) approach to enable a detailed contextual analysis of the dynamics of individual sites and their local environs to be undertaken. By combining different scales of analysis, the project not only investigates the nature of economic and social structures at individual sites, but places them within a regional context. As a result, this research has implications for modelling late Iron Age society on both a local and a regional scale. At a local scale, the research investigates the nature of Iron Age lifeways at individual sites in southern Jordan. On a regional level, this research offers the opportunity to evaluate new and alternative models for understanding the nature of late Iron Age society in the southern Levant.

With these aims in mind, two areas of excavation were opened at Khirbat ad-Dabba to target specific areas of archaeological interest. The excavation of these areas was also determined to a large extent by the relative lack of structural collapse and unstable wall remains, which formed a hazard for excavation across large parts of the site. The western sector of the site, Area A, was excavated as Trenches A1 to A4 (**Fig. 3**). The eastern sector of the site, Area B, was sounded as Trenches B1-B3 (**Fig. 3**).

Area A revealed well-preserved architecture and associated floor surfaces with excellent finds relating to both the round and the rectilinear casemate wall systems. Area B revealed clear domestic structures with associated floor surfaces and superb finds, as well as valuable evidence for the use of external spaces.

Following removal of topsoil, the excavation and recording of definable archaeological layers and features followed the system of single context recording, according to the system established by the Museum of London Archaeology Service (Westman 1994), with minor alterations. A total station was used to map the site and the excavated areas. Soil samples for flotation were taken from all definable features such as hearths, pits, floors, and *ṭābūn*(s). Samples of all floors were also dry-sieved using 5mm screens.

Architecture and Stratigraphy

Trenches A1 and A2³ (SA)

In 2004, two test trenches were opened to investigate the depth of deposit and to establish the date of the major structural features on the site. Trench A1 was positioned across a section of the rectilinear casemate wall system (**Fig. 3**). A second, smaller, probe Trench A2⁴ was located against the interior face of the circular casemate wall (**Fig. 3**).

Trench A1 revealed 2 parallel walls forming an outer [1] and inner [2] casemate wall. These two walls were separated into casemate rooms by a dividing wall [3]. The interior spaces bounded by this casemate structure were formed by long walls running into the interior of the site (a segment of which was excavated as wall [4]), forming a continuation with the casemate dividing walls and creating a series of long, rectilinear rooms (see **Fig. 3**).

After removal of topsoil, the section of casemate room that was excavated revealed large structural tumble in a matrix of light brown sandy soil. This overlay a compact earth surface [8] overlying bedrock. The area external to the outer casemate wall [1] revealed a similar sequence of deposits, except that after the removal of the tumble deposit, a compact plaster deposit was found overlying bedrock. The plaster did not form a smooth, flat surface and may therefore have formed some kind of bonding for the foundation of the walls rather than an occupational surface. The ceramics from both surfaces provide a secure Iron Age date for the walls.

Trench A3 (JV)

In 2005, Trench A3⁵ (7 x 4m) was opened to investigate the circular casemate wall and the interior space it enclosed (**Fig. 4**). The placement of the trench was determined by the location of exploratory Trench A2 from the 2004 season (see above) and by the location of visible structural remains from the surface.

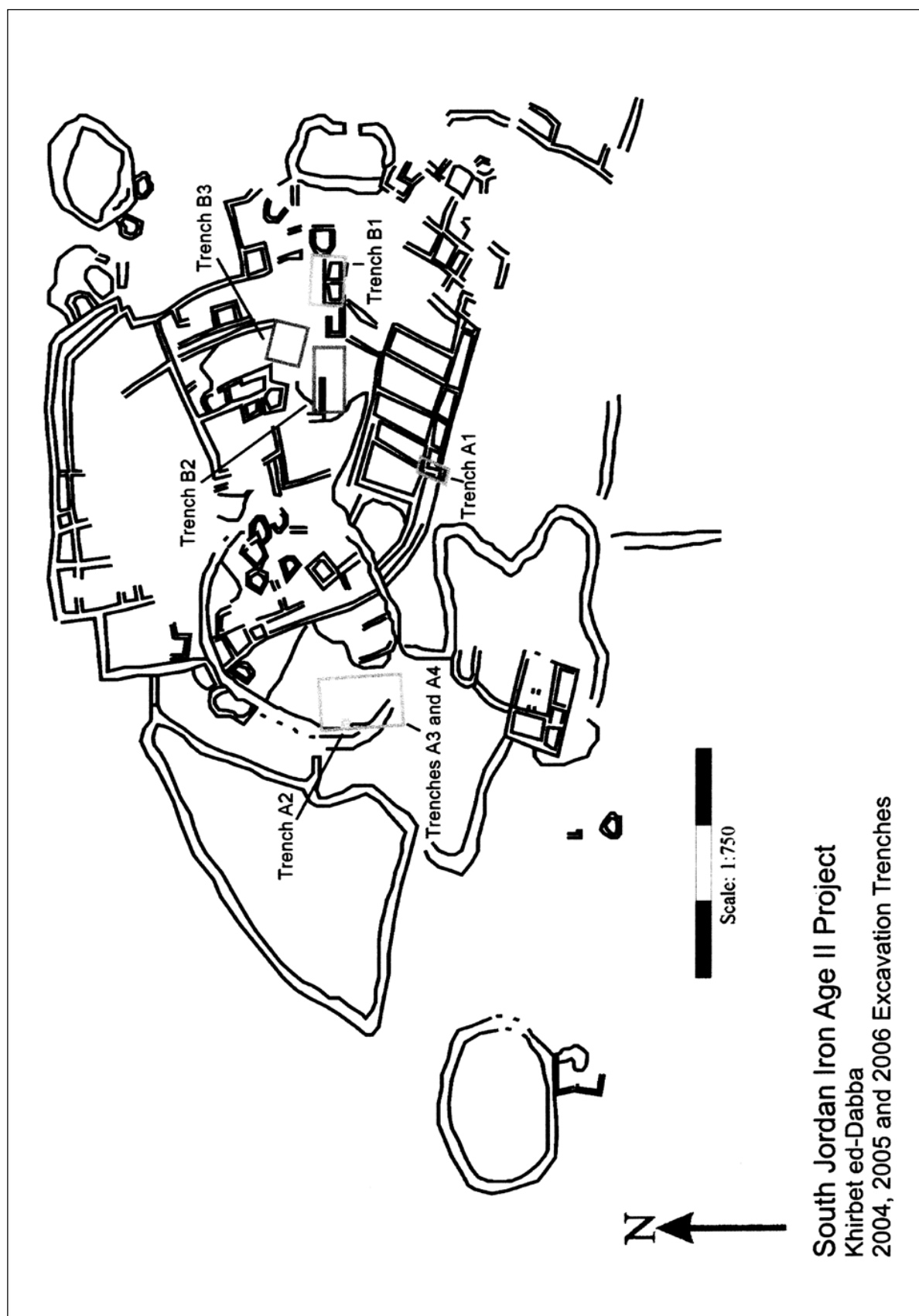
The massive circular outer casemate enclosure wall [24] appears to have been the first structure built in this part of the site and was visible prior to excavation. Its maximum width

3. Excavations in Trenches A1 and A2 were supervised by S. Alderson.

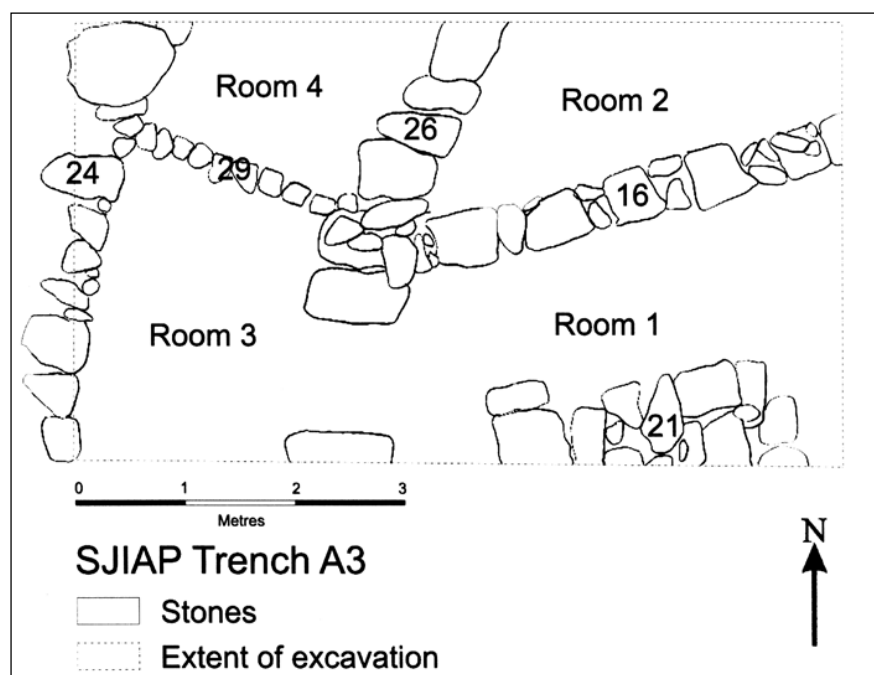
4. This trench was expanded into Area A3 in the 2005 sea-

son, the results of which are discussed below.

5. Excavations in Trench A3 were supervised by J. Visona.



3. Plan of the 2004, 2005 and 2006 excavation trenches.



4. Plan of Trench A3.

is 4.55m. Its outer face was constructed of large, well-hewn rectangular blocks, the largest one measuring 2.13 x 0.48 x 0.60m. These blocks all lay above ground in the north-western and western part of Trenches A3 and A4. The inner face consisted of stones measuring 20-30cm in diameter, but the central part consisted of large flat rectangular slabs of roughly hewn stone, forming a middle wall face and measuring up to 0.82 x 0.61m. The space between the outer and middle faces was filled with rubble and smaller stones. It is possible to see circular wall [24] as consisting of two components: an inner wall with large rectangular slabs on the outside, reinforced in its north-western part by another parallel stretch of much larger rectangular blocks.

Following the removal of topsoil in Area A3, the tops of walls emerged dividing the area into 4 separate rooms. Rooms 3 and 4 represented the outer casemate rooms forming part of the casemate wall structure (Fig. 4). They were all bounded by a massive, outer casemate wall [24] and by a smaller, interior wall [26] that ran parallel to the outer casemate wall. The rooms were divided by a small wall [29], running at right-angles between the outer and inner casemate walls. Radiating from wall [26] was straight wall [16], which extended from wall [26] towards the settlement's centre. This wall divided the interior space enclosed by the casemate wall into

2 rooms (Rooms 1 and 2). All the walls were founded on bedrock. Doorway [28] was placed in wall [26] allowing access between the outer and inner casemate rooms. The doorway was blocked in antiquity.

The sequence of deposits in the outer casemate Rooms 3 and 4 was identical. The floor of all these rooms appears to have been bedrock [22]. Just above this was a deposit of heavily mottled fill, consisting of lenses of very loose ash with charcoal inclusions interspersed with dense structural rubble, burnt mudbrick and domestic refuse. This deposit was an intentional fill or packing of the rooms, which bonded together external wall [24] and internal wall [26] to create a single massive enclosure wall measuring 4.55m in width. It coincided with the doorways being blocked at the time of filling.

Rooms 1 and 2 represented internal rooms of the site enclosed by the circular casemate wall system. Similar to outer Rooms 3 and 4, the sequence of deposits in the inner rooms was identical. They were both founded on bedrock [22]. Just above this was a compact surface deposit of grey ashy material with thick lumps of white-greyish plaster [20] and [25]. This layer was rich with artefacts including pottery vessels, figurines, and ground stone objects flattened on the surface in Room 1 and two large storage jars with stamped handles crushed *in situ* adjacent to

wall [16] in Room 2 (see **Fig. 11.7**). The highest concentration of these artefacts came from the interface between the ashy surface layers [20] and [25] and tumble and rubble deposit [17] and [18] above it. This suggests that the artefacts on the interface were lying in place at the time of abandonment. The ash layer was sealed by tumble deposit [17] and [18] which comprised of two discrete layers. The lower one consisted of architectural rubble and small cobbles while the upper one consisted of architectural tumble with much larger boulders. These two layers are deposits suggesting collapse after abandonment. Rooms 1 and 2 appear to be contemporaneous, based on the uniformity of their deposits. The same applies to Rooms 3 and 4.

Trench A4 (MM)

In 2006, Area A3 was expanded by Trench A4⁶ (10 x 7m; **Fig. 5**), which was placed immediately adjacent to Trench A3. The architecture formed a continuation of the findings in Area A3 with a series of outer casemate rooms (Rooms 1-3) surrounding three interior spaces (Rooms 4-6).

The sequence of deposits in Trench A4 was also similar to that in Area A3. The floor of the outer casemate rooms was bedrock, above which was an intentional deposit of heavily mottled fill, consisting of lenses of very loose ash with charcoal inclusions interspersed with dense structural rubble, burnt mudbrick and domestic refuse. The interior Rooms 4-6 were also founded on bedrock, above which a compact surface deposit of grey ashy material with thick lumps of white-greyish plaster [36] and [18] was present. Although producing less spectacular finds than the surfaces in Trench A3, Iron Age ceramic sherds were found trampled flat into the upper surface of this deposit as well as a worked *Tridacna gigas* (giant clam) shell (see discussion of small finds below; **Fig. 11.8**). Three doorways were found providing access between Rooms 1 and 4, Rooms 4 and 5, and Room 1 to the north.

In the north-western corner of Room 5, a stone-built structure [27] was present. It was filled with very dark ash and burnt pottery and was constructed directly above bedrock. Sur-

rounding this installation, a white greyish deposit forming a hard compact layer had accumulated from bedrock into a 40cm thick layer.

Feature [17] abutted the eastern face of interior casemate wall [3] / [47]. It sloped upwards towards the north-west, and consisted of roughly hewn rectangular blocks laid in alternate courses of headers and stretchers. It is tempting to see it as a ramp or, possibly, a staircase. Structure [17] was contemporary with floor [36] since this surface lapped up against [17].

Feature [12] was a curving structure parallel to walls [3] / [47] and [24] and was constructed of roughly square blocks. It was disturbed by the digging of a foundation trench [42] for Feature [40], a structure of unknown function built of haphazardly placed stone blocks of varying sizes.

Trench B1 (JF)

In 2005, excavations were undertaken in Trench B1⁷ (5.5 x 6.0m) to investigate an area thought to represent a possible entrance to the site (**Fig. 6**). Walls 1, 2, 3 and 5 were visible on the surface and divided the trench into three distinct spaces: Room 1, Room 2, and an external area between these rooms and the north baulk of the trench.

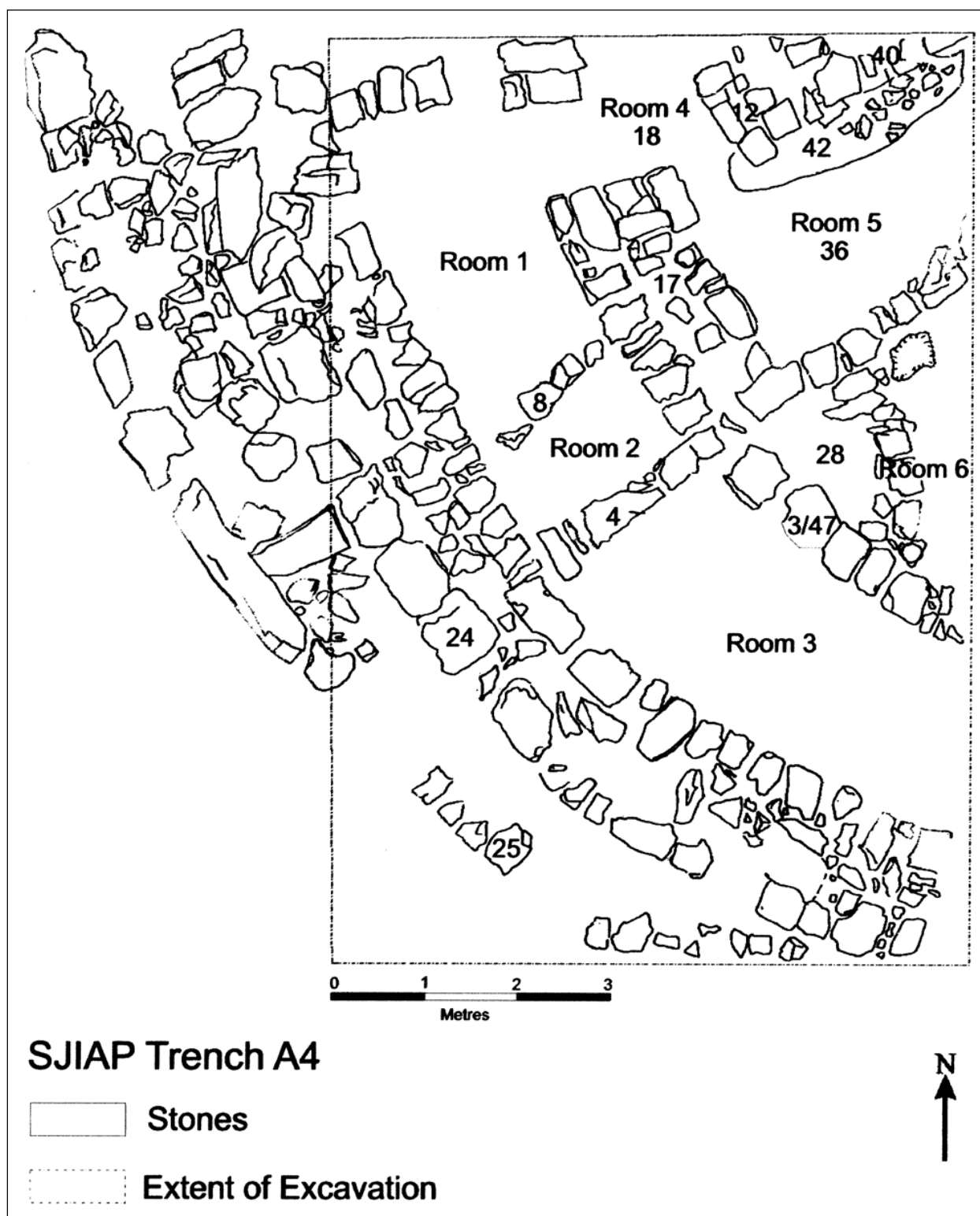
Room 1: Room 1 was defined by Walls [1], [2], [3] and [4]. Following the removal of topsoil, a layer of rubble packing [6] dating to the Nabataean period was excavated sitting on a series of Iron Age surfaces and associated deposits. The latest surface [14] had been cut in places by three shallow cuts [15], [16] and [17] in the fills of two of which were found a clay bovine figurine (see discussion of small finds below; **Fig. 11.11**) and a copper-alloy fibula (*idem*; **Fig. 11.3**).

Surface [14] overlay an earlier surface [22], separated by a thick ashy deposit [19]. The ashy deposit had accumulated from *tābūn* [21], which sat on surface [22]. Surface [22] was very thin, and very quickly bottomed onto virgin soil [23], which in turn overlay bedrock [24]. Walls 1, 2, 4 and 6 all sat on either virgin soil or bedrock, depending on the slope of the bedrock and the shallowness of virgin soil.

Room 2: Room 2 was located west of Room 1,

6. Excavations in Trench A4 were supervised by M. Makinson.

7. Excavations in Trench B1 were supervised by J. Fraser.

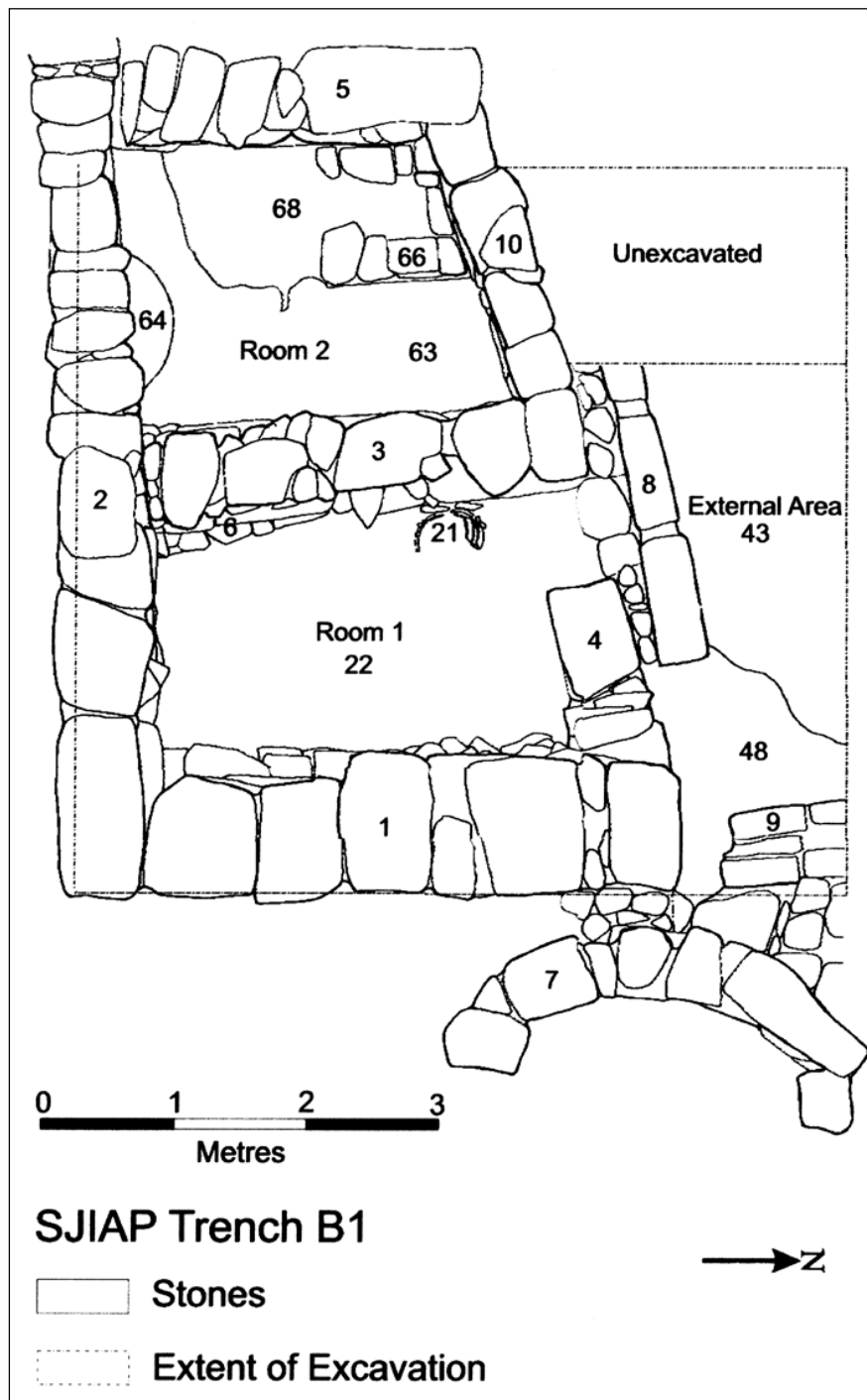


5. Plan of Trench A4.

and was bounded by Walls [2], [5], [10] and [3]. A doorway between Wall [2] and Wall [5] acted as the doorway into Room 2 from an unexca-

vated room to the immediate west.

The removal of topsoil and layers of structural tumble revealed surface-like yellow sandy-



6. Plan of Trench B1.

silt deposits [59] and [61], which were overlain by a lensing brown fill [60]. These levels overlay a plastered surface [63] in the eastern half of the room, which ran across to the doorway and up to Walls [10], [6] and [2]. The surface had been shallowly cut north-south for 1.00 m from Wall [10], into which stone feature [66] had been constructed. This feature consisted of a series of

medium stones in a U-shape in the junction between Wall [10] and Wall [5] and was filled by an ashy-silt [62]. An identical ashy-silt deposit [64] filled a pit against Wall [2], which was also cut from the plastered surface [63].

Feature [66], its fill [62], and the plastered surface [63] overlay a compact earthen surface [68]. This surface extended across the western

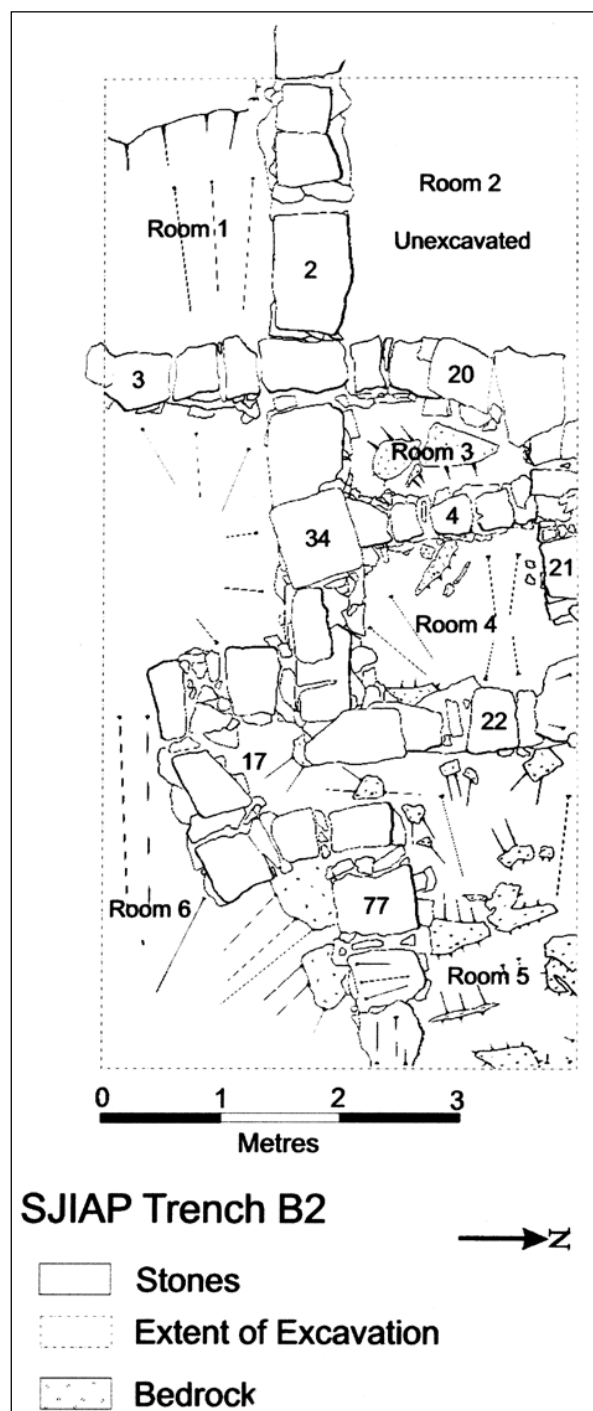
half of the trench, whereas the top of bedrock began to emerge in a NW-SE diagonal across the centre of the trench. The bedrock dived to the NE, and a brown ashy-silt [69] filled this depression. The surface [68] marked the earliest occupation of Room 2. This is despite the fact that surface [68] overlay an earlier surface [70]. This thin, clean surface ran beneath Wall [5] and was therefore probably a construction surface for Wall [5] rather than an occupation surface pre-dating the room itself. All four walls sat directly on the virgin soil, on bedrock, or on both. *External Area:* An area (4.80 x 2.25m) was opened to the immediate north of Room 1 in the hope of excavating an external area in contrast to the two rooms. Far fewer wall lines had been mapped in a large area north of Rooms 1 and 2, and there was far less architectural tumble in the area. This situation suggested that this area of the site was clear of architecture, and may have served as a broad, external space. In addition, a large rectilinear structure protruded from, and beyond, the enclosure wall of the site that defined the east side of this apparent open area, and this structure may have marked an entrance-way into the site from the gentle saddle to the east and south-east (see **Fig. 3**).

The area excavated to the north of Room 1 contained a series of laminating Iron Age surfaces that are likely to have been external, probably representing street-surfaces. Indeed, they all gently sloped to the northeast, all were thin and ephemeral, all were reasonably clean of material, and all lensed off each other.

Trench B2 (IKM)

Trench B2⁸ (4.0 x 8.0m) was opened during the 2006 season (**Fig. 7**). The trench was located in the closest possible place to the centre of the site enclosed by the rectilinear casemate wall to investigate the occupation activities of this area. Most of the area enclosed by both the circular and rectilinear casemate walls was inaccessible and unsafe for excavation due to the presence of large amounts of structural tumble and unstable standing wall remains.

The layout of Trench B2 focused on a central wall line [2], visible at the modern surface level, running E-W. This wall was bonded with a large



7. Plan of Trench B2.

visible wall line running N-S, which was connected to a large, collapsed structure located in the centre of the site, which was not suitable for excavation due to safety reasons. Following the removal of topsoil and structural tumble, Trench

8. Excavations in Trench B2 were supervised by I.K.

McRae.

B2 featured 6 rooms, or parts of rooms (Rooms 1-6). As in the other trenches, the walls were founded on bedrock or virgin soil, or both.

All the rooms featured a similar sequence of superimposed occupation surfaces associated with the walls. The first of these surfaces were composed of a packed orange matrix overlying bedrock or natural. The undulating nature of the bedrock meant that these initial deposits appear to have served as a form of packing layer above the bedrock and natural virgin soil. At the same time these deposits appear to have been occupational in nature. The deposits varied dramatically in thickness (in respect to the depth of bedrock/natural) but their upper surface was flattened and each deposit had built up against corresponding wall lines.

Following these initial deposits, further superimposed surface layers were discovered in each of the rooms. Each of these layers comprised of a packed, mixed deposit with patches of organic material and burnt charcoal, representing several surfaces built up over time. At this stage, 2 stone-built features were also constructed. Feature [17] was a large square storage installation composed of 3 walls, 1 to 3 courses high, built against walls [34] and [77]. Feature [57] was a small rectilinear feature, a single course high, built against walls [21] and [04]. Feature [17] most likely served as a large storage installation, whereas the small size of feature [57] suggests a function other than storage (possibly a hearth or something similar).

Following this, another series of occupational surfaces of a similar composition to the earlier packed superimposed layers was found. However, in Room 1 two superimposed plaster floors were found, the upper one of which was heavily damaged by the layer of structural tumble which overlay it. Contemporary with these occupation surfaces were 2 features. The most significant of these was the blocking [73] between walls [34] and [77] after which a storage installation, a sub-circular stone lined pit [38], was constructed butting up against the western edge of feature [17]. Above the packed occupation layers (except in Room 1), a loose fill of windblown silt was found which may represent abandonment of the site. Overlying these loose

fills in all the rooms was structural tumble, a further indication of collapse and abandonment.

Trench B3 (GR)

In 2006, Trench B3⁹ (6.0 x 6.0m) was opened to further investigate the external and internal spaces uncovered in Trench B1 and to examine visible wall lines thought to form structures as close as possible to the centre of the site (**Fig. 8**).

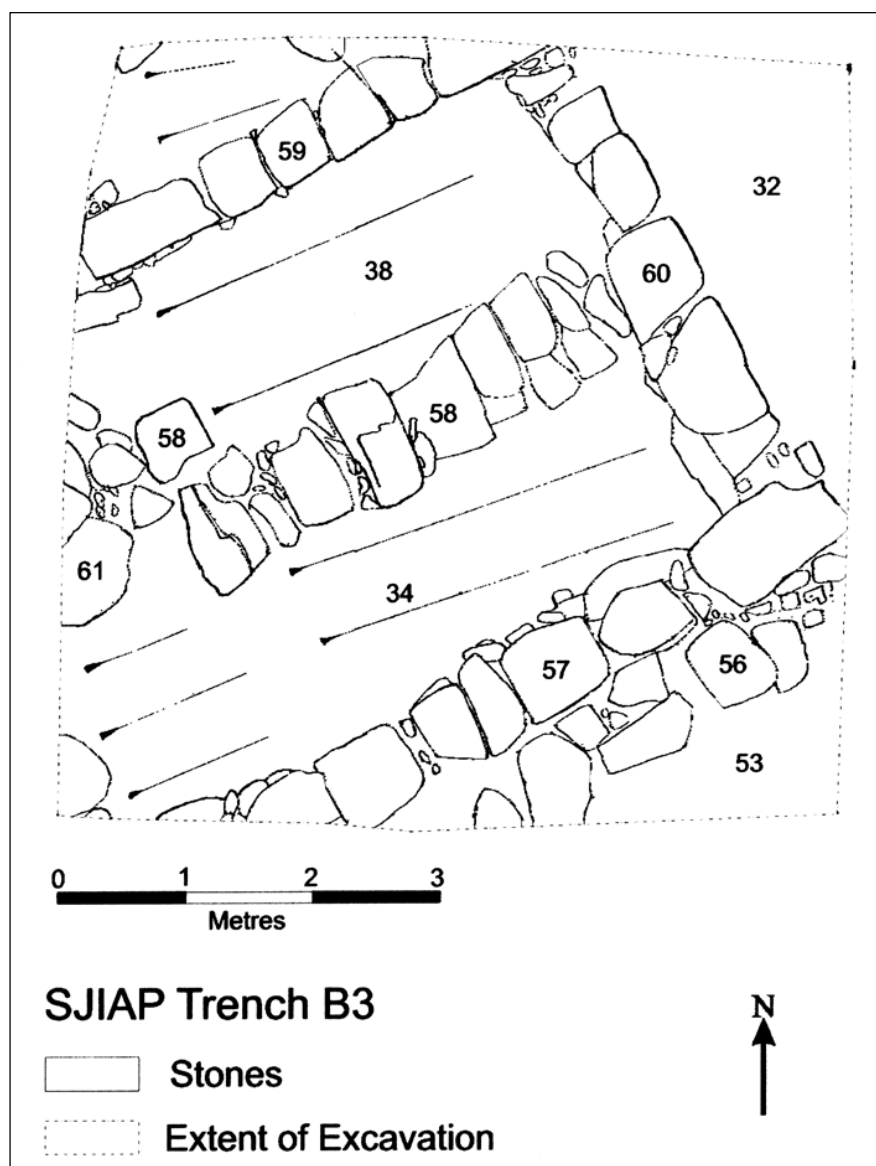
Topsoil and surface rubble were removed revealing wall lines [56]-[60]. Walls [57] and [58] formed a room 6m long and 1.5m wide. These walls both turned northeast at the western end forming a "corridor" linking the southern room with the central room. Structure [59] also appeared to terminate on a similar plane. This formed two cell-like rooms, with access from the West and North. Surfaces [38], [34], and [32] were present in the central room, the southern room and the eastern room respectively. Each surface was made of plaster and based on levelling material spread over the bedrock.

A pit [55] cut from surface [34] was present in the southern room and had a single fill with no significant finds. Subsurface features [41] and [39] beneath surface [38] in the central room were deposits within natural bedrock hollows. They were shallow fills but both contained finds including a bead, ground stone, and pottery from feature [39]. They appeared after the removal of all other layers down to bedrock.

Three features were identified as structures within the main walls of Trench B3. At the east end of the central room the remains of the foundation of a small storage bin [37] were found. Two further stone features were found, most likely indicative of subsurface packing and make-up than of structures. This is supported by the fact that the similarity in the excavated layers in both the central and southern rooms tends to imply only a single phase of use without later structural boundaries.

In the central, southern and eastern rooms a layer of rubble had collapsed directly onto the surface shortly after disuse (or possibly during use). In the central and southern rooms this appears to have been levelled off by the laying of a consolidated mud and plaster compound (22)

9. Excavations in Trench B3 were supervised by G. Rees.



8. Plan of Trench B3.

and (20). These layers contained rubble but in general were workable surfaces. They may represent a second phase of use, potentially as external surfaces between roofless buildings. These layers were particularly significant for the amount of ground stone they produced. This may provide evidence for a secondary function of area B3 in a later phase. These layers were then themselves abandoned as the surrounding walls tumbled in two phases, whilst being filled by wind blown and water born silt.

To the north of wall (59) packing layers (24) and (25) demonstrate that this area was used as a levelled external surface at the time when the plaster floors were in use.

Ceramics (CMW)

The ceramic assemblage from the Khirbat ad-Dabba excavations is generally similar to other Iron Age sites in the area and fits in well with Oakeshott's classification of the late Iron Age ceramics in southern Jordan (Oakeshott 1978). The formal classification of Iron Age vessels presented here therefore follows the terminology used in Oakeshott 1978).

Nabataean sherds were retrieved from the later phases of the site, as were very occasional handmade medieval wares from topsoil contexts. All excavated architecture and associated occupational deposits clearly date to the Iron Age however. Although all the ceramics from

the site have been analysed in full, only a basic discussion of fabrics and forms is presented here to provide a sense of the nature of the assemblage. Parallels and a detailed breakdown of fabric form and surface treatment according to context type and excavation area will appear in the final report.

The Assemblage

The assemblage contains the standard range of bowl, jar, jug, and cooking pot forms found at late Iron Age sites in southern Jordan. In addition, a considerable number of 'Negev Ware' vessels were present.

Fabrics were generally similar to other Iron Age sites in the area, the majority of vessels falling into the fabric category described by Oakeshott (1978: 59-61) as Fabric 1. The main inclusion in this fabric is calcite, followed by basalt, quartz and grog. Size, quantity and frequency of inclusions vary from well levigated fine wares to coarse wares. The fine to medium versions of Fabric 1 were used for bowls, jugs and juglets, while the coarsest version was used for storage jars. Cooking pots were almost all produced from Fabric 3c (Oakeshott 1978: 59-61). The clay in this fabric has a high silica content, with quartz forming the main inclusion. The rough handmade 'Negev ware' vessels were all produced from medium to coarse versions of Fabric 1, with the methods of construction and firing lending it a distinctive coarse appearance and feel. Several other fabrics were present in the assemblage, but occurred much less commonly. Particularly striking was the range of fabrics represented among the jars with stamp seal impressions, many of which were different from the local common wares. This implies that they may have been produced elsewhere (this is currently being investigated by Neutron Activation Analysis, the results of which will be presented in full in the final report). All fabric types will be described in detail in the final report.

Decoration is present mainly in the form of painted bands applied in combinations of red, white, and black paint both on the interior and exterior of vessels. Geometric designs in the same paint colours are also present on certain vessel forms, although less commonly. Similarly less common are slipping and burnishing,

as well as plastic decoration in the form of denticulated edges applied to the rims of flat open bowls. The majority of decoration was applied to bowls (see percentage breakdown below).

Bowls: Bowls form the majority of the ceramic assemblage at 36%. In addition, like other Iron Age sites in the region, the bowl repertoire at Khirbat ad-Dabba comprises the widest range of forms (15) in the ceramic assemblage as a whole. Bowl D represents the most common bowl form (34%), followed by significant numbers of Bowl N (13%), Bowl F (10%) and Bowl J (8%). Negev Ware bowls also form an important part of the assemblage (10%). In quantity, these forms are followed by Bowls A (5%) and B (5%). Although present in smaller proportions, it is significant that rarer bowl forms such as Bowls H, K, O are present at Khirbat ad-Dabba. These forms occur at Buṣayra, located to the north of Khirbat ad-Dabba, but are less commonly found at smaller Iron Age sites. 28% of bowls were decorated, thus rendering bowls the most highly decorated form category in the assemblage.

Cooking Pots: Cooking pots form 16% of the assemblage. The cooking pots are present in 4 distinctive forms, the most common of which are Cooking Pot A (38%) and Cooking Pot B (38%). Less common are Cooking Pot C, cooking jugs, cooking pots with folded rims, and frying pans with a long flat loop handle. Although the largest amount of pottery overall was found in Area B2 - and hence the largest number of bowls, jars and jugs derive from this area - the largest number of cooking pots was found in Area A3. 0.7% of cooking pots were decorated.

Jars: Jars make up 17% of the assemblage and comprise of 4 different forms. The most common jar form is Jar A, its rim sometimes marked by a distinctive triple-ridge on its upper surface. This is followed by jars with a folded rim (8%) and Jar form C (2%). However, a large proportion of jars (61%) fall into a miscellaneous category as bases, bases with side profile, or jar handles indicate the presence of a jar, but do not allow for precise form classification. The proportions of Jar form A, Jar form C and so on, are therefore probably much higher in reality. 5% of jars were decorated.

The largest proportion of jars was excavated in Areas A3-A4 and B2. Although the archi-

texture of Area B2 suggests a focus on storage, which tallies with the high proportion of jars found in good contexts from this area, the outer casemate rooms in Area A3-A4 seem to have functioned as dumps for domestic refuse which produced a large proportion of the jar sherds present in this area. This suggests less of a focus on storage in this area.

Jugs: A small 5% of the assemblage is made up of jugs. The low proportion of jugs in the overall assemblage may in part be due to the fact that in many cases rim sherds were classified as jug/jars, since it was impossible to tell from fragmentary rim sherds whether the vessel represented a jug or a jar. The jugs can be split into 5 form categories of which the most common is Jug B (18%), followed by jugs with folded rims (14%). One example of a less common jug form — Jug Form C — was also found at Khirbat ad-Dabba. This is in addition to several less common forms of juglet. The latter two form categories all derived from contexts in Area B2, the area closest to the centre of the site and the source of many of the interesting figurines and other small finds. Only 3% of jugs were decorated.

Chipped Stone (HM)

Overall, the chipped stone materials from the Iron Age site of Khirbat ad-Dabba, Southern Jordan, comprise 4,624 pieces. The majority of these were analysed following the 2006 summer season at the Council for British Research in the Levant, 'Ammān, followed by a further period of analysis of material from the 4 and 2mm heavy fraction in January 2008, at the University of Liverpool. Due to the general lack of chipped stone assemblage reports from sites of later pre-historic periods, the site of Khirbat ad-Dabba, while small, makes a vital contribution to this field of study. The assemblage is for the most part homogenous and attributed to the Iron Age occupation, although there are a few instances of intrusive chipped stone elements from earlier periods (**Tables 1 and 2**).

Methodology

Artefacts were classified by debitage category (flake, blade, bladelet, core, core trimming element, chip, chunk, burin and spall). Further attribute analysis was recorded for core technology, core trimming element type, and tools, which

were classified according to Rosen (1997).

Raw materials

The raw materials used on site came from the surrounding hillsides and wadi bottoms. For the most part it is medium to fine grained, caramel to dark brown flint although grey banding is common. A number of pieces retain rolled and weathered cortex consistent with the local wadi cobbles. One piece of chipped basalt, a retouched flake, was recovered from area B3. The source of the material is unknown, as is the source of a fine grey flint that has a limited representation in the tool categories, but is absent from the debitage.

Identification of intentionally chipped stone and classification of pieces recovered was made particularly difficult due to the nature of the material used in the construction of the architectural features. For the most part this was identified as the local chert, the same source as the wadi cobbles used in the chipped stone industry.

Among the items thought to be intrusive to the sample, tabular flint with a large proportion of cortex, as well as fine grained grey, and pink/purple materials were recovered. No evidence of these materials has yet been recovered in the locality and there is no evidence of associated debitage. This may suggest that the products were brought to the area rather than knapped there.

Technology

The debris category of chips and chunks dominates the assemblage. This is followed in number by flakes, tools, cores, core trimming elements, bladelets, blades, spalls and burins.

The large representation of debris may be explained in part due to the nature of the frag-

Table 1: Chipped stone technology by excavation area.

	A3	A4	B1	B2	B3	Totals
Tools	17	18	12	125	499	671
Cores	4	1	2	1	4	12
Flakes	15	6	11	142	1579	1753
Bladelets	1		1	1	7	10
Burin	1	1		1	1	4
Spalls		2			3	5
Chunks/ Chips	2	1	4	280	1882	2169

Table 2: Tool typology by excavation area.

<i>Tool Typology</i>	<i>A3</i>	<i>A4</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>Totals</i>
Retouched flake	11	6	8	86	394	505
Retouched CTE			3	1	5	9
Retouched bladelet		4		12	9	25
Retouched blade				1	1	2
Retouched fragment		4		18	83	105
Scraper		1	1	2		4
Notch		1		4	2	7
Denticulate	1				1	2
Awl		1		1	1	3
Retouched Burin		1			3	4
<i>Intrusive elements</i>						
Truncated retouched blade	1					1
Tabular scraper	1					1
Retouched flakes	2					2
Retouched bladelets	1					1

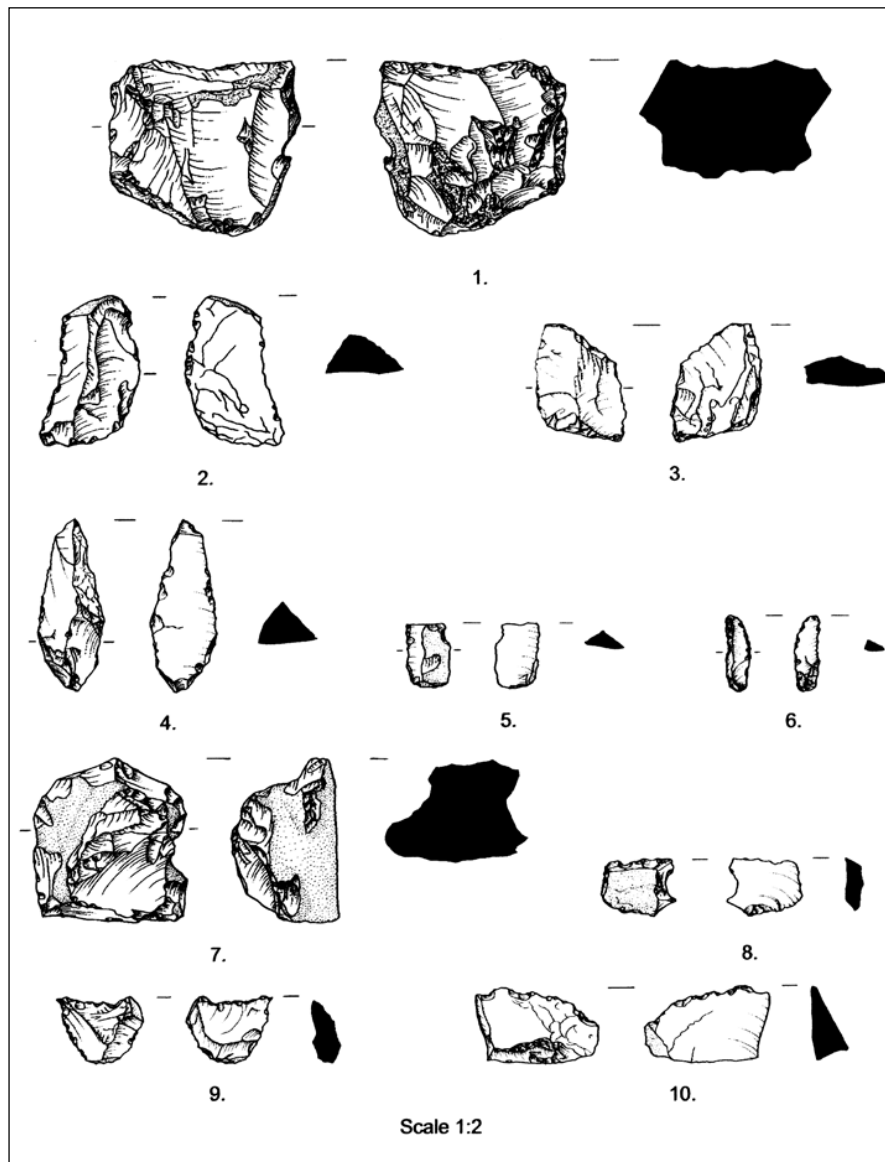
menting building material and bedrock. As a result, chips and chunks have not been counted separately as it is particularly difficult, in this instance, to determine natural from intentional removal. However, it is also notable that areas with the highest concentrations of debris also have the most debitage and tool evidence. These excavation trenches were the closest to the archaeological remains at the centre of the site, as well as the main areas of collapse. As a result, the high proportion of lithic material could be representative of the internal archaeology of the structure, therefore indicating knapping floors or other activity areas. It is also possible that these areas had better preservation due to the overlying collapse, or that archaeological recovery was more intensive.

Flakes are the second most common debitage group and are the most prevalent tool blank type. Flake production is un-standardised with extensive variations in terms of length, thickness and overall shape. In general, this is an example of the expedient nature of the assemblage. Blade and bladelets were rarely recovered either as

debitage, or as tool blanks. Blade and bladelet technology was also expedient in nature and followed no particular reduction strategy.

Burins and their associated spall products are infrequently found on the site. 8 burins have been recovered in total, four of which were retouched. Burins can be created accidentally through use, or purposefully to aid hafting, increase robustness of implement or create spalls. None of the 5 recovered spalls were retouched, which suggests that these were not the objective pieces. Further to this, reasons for burin retouch are unclear.

The number of cores (**Fig. 9.1**) that were recovered during the excavation is vastly under-representative of the rest of the material. Only 12 cores were found and core to removal ratio is very low at 1:203. This may suggest that the knapping areas of Khirbat ad-Dabba have yet to be excavated, that cores were discarded elsewhere after reduction, or that materials were knapped away from the site and products brought back. If we attribute the debris elements to knapping activities, it is likely that cores were



9. Chipped stone from the 2005 and 2006 excavations.

Fig. 9#	Area – Context #	Description
1	B2 - 31	Single Platform Core
2	B3 - 34	Retouched Flake
3	B3 - 34	Retouched Flake
4	B3 - 34	CTE
5	B3 - 32	Retouched Bladelet
6	B3 - 32	Retouched Bladelet
7	B2 - 12	Endscraper
8	B3 - 34	Notch
9	B3 - 34	Awl
10	B3 - 34	Denticulate

discarded elsewhere. However, the unclear relationship of the debris to the architectural collapse makes this link tentative.

Core trimming elements are present suggesting some level of investment in core preparation and maintenance. All CTEs recovered also exhibit retouch, suggesting that blank selection for tools was not exacting.

Typologies

A large proportion of the assemblage was retouched and for the most part, the typologies that have been recovered are expedient forms that are common to most archaeological chipped stone assemblages.

Retouched flakes (**Figs. 9.2 and 9.3**) were the most common tool group but whether this was the result of true preference or representative of the type of blanks generally being produced is unclear. Flake production is the simplest type of chipped stone strategy; therefore it is possible that this prevalence reflects the skills of the Iron Age knappers. After retouched flakes, un-diagnostic retouched fragments occur most frequently, followed by retouched CTEs (**Fig. 9.4**) and bladelets (**Figs. 9.5 and 9.6**), and retouched blades.

Formal tool types are restricted in frequency as only limited numbers of scrapers (**Fig. 9.7**), notches (**Fig. 9.8**), awls (**Fig. 9.9**), and denticulates (**Fig. 9.10**) were recovered. The technology used to create these tools was again relatively simple retouch removal.

One scraper and a single truncated backed blade are of Chalcolithic/Early Bronze Age date and intrusive into the sample.

No geometric sickles of the Iron Age were recovered. Three large, flat retouched flakes from Trench B3 may be evidence of this type of tool as some of the retouch is notably steep and does resemble backing in places. However, there is no evidence of gloss and these pieces are not standardised. They have therefore been classified as retouched flakes, but their difference from the majority of the assemblage tentatively marks them out for further assessment.

Conclusion

The lithic assemblage from Khirbat ad-

Dabba is largely of a homogeneous nature with few intrusive elements. It is notable for being a small assemblage, largely comprising expedient tool types made on locally available flints. The small sample size and lack of core pieces makes it difficult to gain more in depth information regarding the technological strategies pursued by the Iron Age inhabitants of the site. Nevertheless, the presence of these items, particularly the large numbers of tools in relation to debitage and cores suggests that, while use of flint technologies in general certainly decreases in the Metal Ages, the uses and properties of the material are not forgotten, nor completely abandoned. The informal nature of the assemblage suggests that these tools were made as and when they were needed, possibly for expedience sake, or because flint was the logical material choice under certain circumstances, for certain activities.

Ground Stone (IKM)

In the past, the recording and analysis of ground stone tools has too frequently been neglected. This situation is beginning to be remedied and many site reports now include a summary of ground stone tools. However, these discussions are often brief and ground stone tools are frequently grouped within small finds analysis (for example at Buşayra (Bienkowski 2002) and ʿUwaylān (Bennet and Bienkowski 1995)).

The artefacts from Khirbat ad-Dabba classified here as 'ground stone' tools ($n = 178$) cover a variety of objects¹⁰ and have been broadly divided into five categories: handstones (further sub-divided into pounders, pestles, hammerstones and grinders), upper millstones, lower millstones/querns, and mortars (each of these categories can be further sub-divided on the basis of size and shape, and thus possible function of the implement), perforated objects (broadly sub-divided into larger weights, smaller spindle whorls and beads) and a smaller number of miscellaneous objects.

The terminology used for the descriptive analysis of the stone tools from Khirbat ad-Dabba has been adapted from definitions developed

10. The term 'ground stone' applies to items ground in production, as well as to items used for grinding activ-

ities. The ground stone assemblage from Khirbat ad-Dabba includes items belonging to both categories.

by Wright (1991, 1992) and draw on comparisons from contemporaneous sites. The ground stone artefacts from the excavations at Khirbat ad-Dabba exhibit a typical use of available natural resources. The major raw materials in use at Khirbat ad-Dabba are flint (accounting for approximately 38% of the assemblage), limestone (approximately 35%), and sandstone (approximately 14%). All of these are available locally, with a small amount of possibly imported material, particularly basalt (approximately 4%) and two red carnelian beads. Without geochemical or petrological examination of the material, however, exact provenance remains uncertain.

In comparison to the low frequency of artefacts classed as high status, there is a rather high percentage of ground stone artefacts associated with food processing and possibly craft related activities. The following is a brief discussion of the different categories of ground stone items found at Khirbat ad-Dabba. A comprehensive analysis, incorporating studies of the distribution of artefacts by context and area, will be published in the final report.

Handstones (n = 81)

Items classified here as handstones (for all definitions see Wright 1992) include a variety of sub-types (as outlined above) used for a range of functions (crushing, hammering, grinding) and are used in conjunction with other ground stone items such as mortars, lower millstones and querns. In the Khirbat ad-Dabba assemblage a large percentage of these items have been further classified as pounders, with several that could possibly be classified as hammerstones (the vast majority of these pounders were made of flint; see **Fig. 10.3**). Eight have been classified as pestles, eleven as hammerstones, seven as grinders (see **Fig. 10.4**) and four miscellaneous stones which have been grouped broadly under the category of handstones, but may have served another, currently unrecognised, function.

Upper Millstones (n = 9), Lower Millstones and querns (n = 28)

An upper millstone (or grinding slab) is a large and elongated implement held with both hands and used in conjunction with a lower grinding slab, quern (see **Fig. 10.1**) or stone working surface. An upper millstone is usually thickest in

its mid section and tapered at both ends. A lower millstone can be quite similar in appearance and form to an upper millstone. However, it is distinguished here by a concave depression at one end, or in the centre, of the use surface. Querns perform the same function as lower millstones.

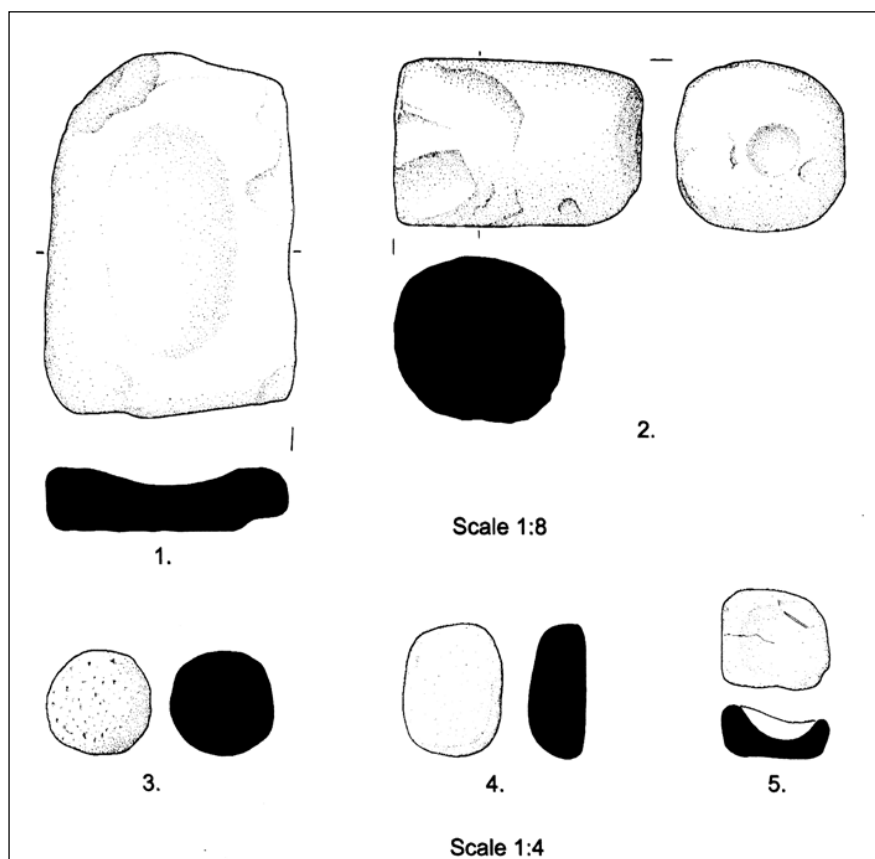
Mortars (n = 12)

A mortar can be an immobile or mobile implement, characterized by a shallow or deep depression in which material may be ground (Wright 1992: 21; see **Fig. 10.5**). Used for crushing, grinding, or hammering, the mortar should probably be considered a multi-purpose tool as it is used both in food processing, and possibly in a variety of crafts and industries (grinding and pounding tools have been observed to serve a variety of functions, see Kraybill 1977: 488-91). The size and shape of the particular vessel is presumably dependant on the particular material being ground. The mortar is used in conjunction with a grinding implement, more specifically a pestle, hand-stone or grinder. The forms of mortar represented at Khirbat ad-Dabba are many and varied, and probably served a range of functions. A number of the items classified here as mortars could be distinguished as a vessel (for definitions see Wright 1992: 21). However, for the purposes of this preliminary report they are included in this section as mortars only.

Perforated Objects (n = 34)

This category includes a variety of perforated stone objects (in addition to one glass and one ceramic object). These have been further subdivided into larger weights or loom-weights (n = 22), smaller spindle whorls (n = 7) and a small collection of beads (n = 5). The majority of the large weights are fabricated from limestone and are fragmentary. The beads demonstrate the use of a variety of materials (red carnelian, flint and polished glass). Both of these sub-categories demonstrate quite simplistic forms and cannot be securely dated to any given period.

The most common type of spindle whorl represented at Khirbat ad-Dabba is a small, cylindrical spindle whorl, made of smooth limestone with incised decoration (a trellis pattern between two parallel lines) on the exterior surface (see **Fig. 11.1**). These are recognised as the most common form of spindle whorl at other



10. Ground Stone from the 2005 and 2006 excavations.

Fig. 10#	Area – Context #	Description
1	A4 – 20	Quern
2	B3 - 2	Roof Roller
3	B2 - 75	Hammerstone
4	A3 - 23	Grinder
5	B3 – 9	Mortar

Iron Age sites in the area such as Ṭuwaylān (Bienkowski 1995: 89, fig. 9.29), Buṣayra (Sedman 2002: 408-411, Pl. 10.165-10.178) and Umm al-Biyāra (Bennet 1966: Pl. 25b). However, they are quite rare elsewhere, with notable examples from Tall 'Ira (Beit-Arieh 1999: 469, fig 14: 26, 14: 27).

Miscellaneous (n = 14)

A number of objects, with no definable func-

tion, have been grouped into this final sub-category. These objects will not be discussed in any great detail, but include a possible bead maker (see **Fig. 11.2**; for a possible parallel see Bienkowski 1995: 90, fig 9.32.11). The object is composed of friable sandstone and is largely unworked but has a shallow channel ground into one (the upper?) surface. Also included in this category is a large cylindrical stone, smoothed flat on either end, with a shallow depression at one end. It is possible that this object represents a roof roller (see Sedman 2002: 402, Pl.10.152; see **Fig. 10.2**), although it is equally possible that it served a different, unknown, function.

Small Finds (IKM)

The small finds from Kirbat ad-Dabba (n = 75) exhibit the use of a range of local and imported material types (bone, metal, shell¹¹, stone, ceramic and clay). In this analysis the finds have

11. A detailed analysis of the shell is currently being prepared by Aldona Kurzwaska for inclusion in the final report. Grateful thanks are extended for her kind as-

sistance with the identification of many of the shell species included in this preliminary report.

been organized by artefact type, rather than material type. For this reason, those artefacts classified as beads or spindle whorls, including a single ceramic example, have been examined as ground stone due to their manufacturing technique. The Khirbat ad-Dabba small finds have been grouped broadly into six main categories following definitions applied at contemporaneous sites (see Bennet and Bienkowski 1995 in particular). These categories include personal adornments; tools; re-worked sherds; stamp seals, stamped sherds and pot marks; figurines; and a collection of miscellaneous items. For the purposes of this preliminary report parallels with contemporaneous Iron Age material will be minimal, and information pertaining to context will not be addressed. These more detailed aspects of analysis will be published in the final report.

Although the Khirbat ad-Dabba small finds exhibit a variety of artefact types typical of the Iron Age period, they represent a reasonably simple domestic assemblage, which does not include a large number of luxury, or high status objects. The small finds assemblage is comparable to contemporaneous Iron Age sites, in particular Buṣayra (Bienkowski 2002) and Ṭuwaylān (Bennet and Bienkowski 1995).

Personal Adornments (n = 11)

This category includes a variety of artefacts that can be considered as personal adornments. These include a number of shell pendants, a single perforated bone, metal item identified as jewellery, and a single fibula. The fibula (see **Fig. 11.3**) has been identified as Stronach's type III: 4, "fibula with a triangular bow" (Stronach 1959: 193). It is recognised as the most common form of fibula in the Near East from the eighth century BC onwards (Stronach 1959: 193). Parallels can be found at many contemporaneous Iron Age sites including Ṭuwaylān (Bienkowski 1995: 81, **Fig 9.5.3, 4**). Also included here are four Copper/Copper Alloy rings or earrings. These are of such a common and simple form that parallels can be found at many contemporaneous sites. Finally, six shell pendants, including two cowrie shells (*Cypraea annulus*) and four

dog-cockles (*Glycymeris*), have been identified as possible pendants. Each pendant displays a central perforation and a single clavicle bone, in addition to a small perforation at one end.

Tools (n = 16)

This category includes a collection of tools and equipment (all of bone or metal) that can be associated with various crafts and industries. It is difficult to identify a particular tool type for many of the bone artefacts classified here as tools. The possible function of these items therefore remains obscure. In general, most of the bone pieces (n = 9) have been worked into points or smoothed into a rounded edge like an awl or spatula. Two iron knives or blades, a possible iron arrowhead, an iron rod, and a number of Copper nails are also included in this category.

Re-worked Sherds (n = 13)

The re-used (worked) sherds from Khirbat ad-Dabba exhibit a range of shapes and possible functions¹². Three of the sherds have a central or off-centre perforation. Suggested functions of the rounded/oval and triangular shaped sherds include gaming pieces (Bienkowski 1991: 90; London 1991: 414), jar stoppers (Bienkowski and Adams 1999: 161; Davies 1939: Pl.103), or possible systems of accounting (London 1991: 417).

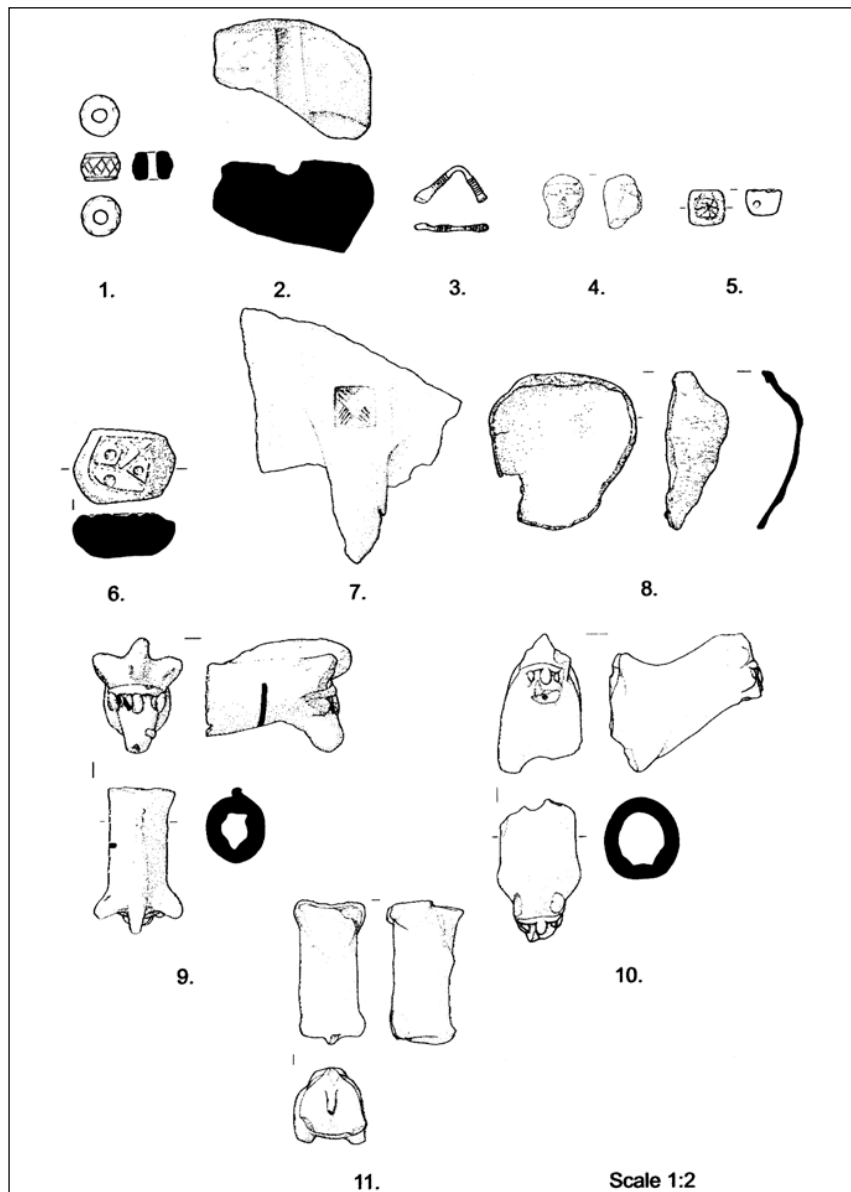
Stamp Seals, Stamped Sherds and Pot Marks (n = 10)

In this category are five jar handles from the same vessel that bear the impression of a square stamp seal (**Fig. 11.7**), a rim of a jar and a handle of a jar each bearing the impression of an ovoid stamp seal, and a lug handle that bears a square stamp seal impression. Also included are a body sherd, a shoulder fragment, and a jar/jug handle each inscribed with a different potter's mark. Finally, a perforated scaraboid stamp seal and a medium stamp seal complete this corpus.

The ovoid seal impression on the jar rim is badly preserved and nearly illegible, though it is clearly divided into three registers. The details of the imagery cannot be deduced however. The second ovoid seal impression is also divided into three registers. Whilst the top register is il-

12. As these are re-used sherds, presumably originating from a ceramic vessel, they have been included here,

rather than with the ground stone items.



11. Ground stone and small finds from the 2005 and 2006 excavations.

Fig. 11#	Area – Context #	Description
1	B1 - 61	Spindle Whorl
2	B2 - 31	Bead Maker
3	B1 - 13	Copper Alloy Fibula
4	B2 - 72	Head of Anthropomorphic Figurine
5	B2 - 58	'Scaraboid' Stamp Seal
6	B1 - 62	Stamp Seal
7	A3 - 18	Handle with Stamp Seal Impression
8	A4 - 18	Worked 'Giant Clam' Shell
9	A3 - 18	Head of Horse Figurine
10	A3 - 23	Head of Horse Figurine
11	B1 - 11	Body of Bovine Figurine

legible, the middle register appears to depict two opposing *uraei*, and the lowest register appears to depict the Egyptian plough sign. The square seal impression appears to depict an abstract, curved design composed of four elements.

Both the large stamp seal (**Fig. 11.6**) and the smaller scaraboid stamp seal (**Fig. 11.5**) are cut from a soft chalky limestone. The large stamp has a rough (largely un-worked) lower surface, with smoothed upper and side surfaces. The incised decoration is in negative relief on the flattened (upper) surface. Three indented circles are each enclosed in irregularly shaped polygonal shapes carved in rather heavy lines. The design is itself enclosed in an irregularly shaped rough ovoid shape. The scaraboid is pierced longitudinally with the decoration also incised in negative relief. The decoration on the scaraboid comprises several straight lines that radiate from a central, indented, point which is enclosed in a roughly depicted circle. The decorative motifs on both seals are quite simplistic in design and are poorly executed. Neither of the stamp seal corresponds to any of the stamped impressions on the ceramic sherds.

Figurines (n = 11)

This category includes a small collection of anthropomorphic (n = 3), zoomorphic (n = 4 or 6) and, as yet, unidentifiable figurine fragments (n = 2). With two exceptions (see below) all the figurine fragments are ceramic. Two of the anthropomorphic figurines - the fragment of a small head (**Fig. 11.4**) and the bust of a figurine - have been identified as Pillar-Figurines (for parallels and a detailed bibliography see Kletter 1999: 383). Two of the zoomorphic figurines can be compared to the characteristic hollow horse figurines with applied decoration found at Buşayra (Sedman 2002: 381-387, Pl.10.66, 10.86; see **Figs. 11.9 and 11.10**). Also included here are a possible bovine figurine (see **Fig. 11.11**) and two elongated cone-shaped figurine fragments, which may be identified as the legs of animal figurines (for comparable examples see Kletter 1999: 39).

Shell (n = 11)

This category includes the shell items that are not considered as personal adornments and include a considerable number of land snails

(*Sphincterochiliolae*). Of note are two giant clams (*Tridacna gigas*) which may have served as cosmetic palettes (for comparisons and discussion of inscribed examples see Reese 1995: 455-457; see **Fig. 11.8**).

Miscellaneous (n = 3)

This category includes two, as yet, unidentifiable metal objects. Also included is a fragmentary clay pipe.

Animal Bone

Numerous well-preserved animal bone remains were recovered during the excavations. Micro-faunal remains were also retrieved through flotation of excavated deposits. At the time of writing, the analysis of the animal bone is underway by Alex Wasse and Louise Martin.

Botanical Remains

Flotation of soil samples taken from all definable features such as hearths, pits, floors, and *tābūn(s)* was conducted. Well-preserved carbonised plant remains were collected and are currently being analysed by Andrew Fairbairn. Carbonised wood fragments from secure deposits are being submitted for 14C analysis, subject to their suitability currently being assessed by Eleni Asouti. Carbonised seeds from secure occupational deposits will also be submitted for radiometric dating once their archaeobotanical analysis is completed.

Summary and Conclusions

The excavations at Khirbat ad-Dabba have shown that the site consists of a series of occupation phases dated to the late Iron Age. Although the analysis of the samples for radiometric dating is not yet complete, these phases can be provisionally dated based on the recovered ceramic assemblage. Iron Age ceramics in southern Jordan are still dated based on historical sources, which place them in the seventh and sixth centuries BC. One of the main aims of the project is to refine this chronological framework by linking the securely stratified ceramic assemblage from Khirbat ad-Dabba with 14C dates from the site. This will have widespread implications for current understandings of the South Levantine Iron Age, especially when compared to recent dates

from the Wādī ‘Araba (Levy et al. 2005).

In addition, since the analysis of all the finds assemblages has provided some of the few reports on securely stratified Iron Age material in the region, the site of Khirbat ad-Dabba, while small, makes a vital contribution to this field of study. The combination of artefactual and environmental data analysis allows the project to address key issues such as the materiality of everyday life and the economic, social, and political functioning of communities during the Iron Age — research questions which until now have received little attention. By doing so, the project hopes to reassess traditional understandings of the Iron Age in the southern Levant.

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