

# THE FIRST PRELIMINARY REPORT OF THE KHIRBAT UMM AL-GHUZLĀN EXCAVATION PROJECT<sup>1</sup>: INVESTIGATING AN EB IV OLIVE PROCESSING SITE IN NORTH JORDAN

*J.A. Fraser, C.R. Cartwright, N. Zoubi, A. Carr, N. Handziuk, B. Spry, A. Vassiliades, K. Wesselingh and H. Winter.*

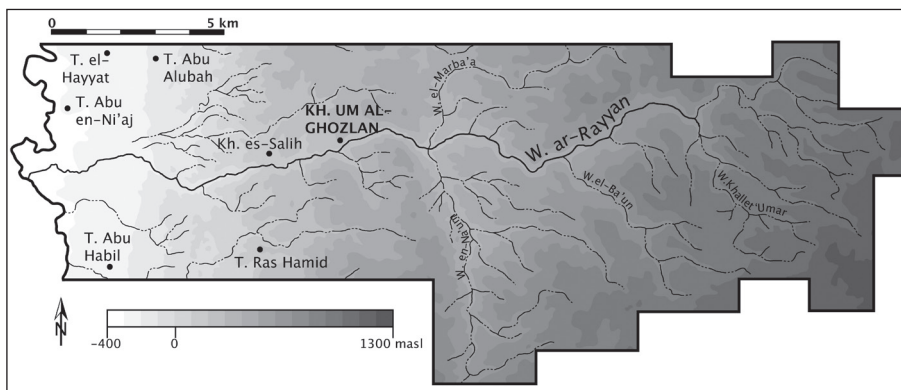
The Early Bronze Age (EB) IV (*ca* 26/2500-2000BC [Falconer and Fall 2016]) site of Khirbat Umm al-Ghuzlān lies in the middle reaches of the Wādī ar-Rayyān (formerly Wādī al-Yābis) in the eastern escarpment of the Jordan Rift Valley (Fig. 1). The site sits 390 meters above sea level (masl) on a defensible knoll that protrudes across a low saddle from the Tall ar-Rās ridge (UTM 749729E 3588534N; Fig. 2). Although only 0.4ha in size, the Ghuzlān knoll is surrounded by an ovoid enclosure wall, partly constructed by a double row of megalithic slabs (Fig. 3).

In October 2016, the APAAME Project captured aerial photographs documenting bulldozer damage to the northwest portion of the site, including part of the monumental enclosure

(Fig. 4). In response, a small team from the British Museum initiated a rescue excavation between 25 February and 23 March 2017, funded by the Curtiss T. and Mary G. Brennan Foundation and the Gerald Averay Wainwright Fund<sup>2</sup>. Excavations in four trenches uncovered at least two EB IV architectural complexes. The nature of these buildings and their associated finds suggest that Khirbat Umm al-Ghuzlān served as a specialized production and storage site for high-value liquid products such as olive oil in the late 3<sup>rd</sup> millennium BC.

## Past Research

Wādī ar-Rayyān descends for 18km from the ‘Ajlūn mountains (1200masl) to the Jordan Valley floor (300masl). Its headwaters receive over



1. The Wādī ar-Rayyān defined by the survey boundaries of the Wadi Yabis Survey. EB IV sites identified by the Wadi Yabis Survey (Mabry and Palumbo 1988: Fig. 1 and Table 1).

1. The 2017 season was directed by James Fraser (then Project Curator for the Ancient Levant, British Museum) with Nasr Zoubi (Representative of the Department of Antiquities of Jordan), Adam Carr, Natalia Handziuk, Beau Spry, Anthoulla Vassiliades and Holly Winter. Ehab al-Jariri joined the team for one day as Surveyor from the Department of Antiquities of Jordan. Dr. Caroline Cartwright (Senior Research Scientist, British Museum) served as scientific director for the project during post-processing analysis.

2. The project is grateful to Dr. Monther Jamhawi (then Director General, DoA) for allowing the rescue excavation to proceed.

Nasr Zoubi provided assistance and in-field advice as Representative of the DoA, and we are grateful for the administrative support of Aktham Oweidi at the DoA. The project is affiliated with ASOR, and invaluable support was provided by Barbara Porter and her staff at ACOR. We are also grateful for the in-field support provided by the University of Sydney's Expedition to Pella. Dr. Stephen Bourke offered invaluable comments on a draft of this paper. The project was funded by the Curtiss T. and Mary G. Brennan Foundation (USA) and the Gerald Averay Wainwright Fund (University of Oxford).

600mm of rainfall per year, and several springs feed the perennial Rayyān stream. Although long known as the *Yabis* (barren), the *wadi* was renamed the *Rayyan* (fertile) in the 1990s, and this toponym is used here (Fraser 2018: 180).

The Wādī al-Yābis Survey (WYS) investigated the catchment between 1987 and 1992 as a joint project between the University of Arizona and the University of Rome. Khirbat Umm al-Ghuzlān was identified in 1987 as site WY28 (Mabry and Palumbo 1988: 289). Gaetano Palumbo dated most surface sherds to the EB IV period, based on highly fired sandy fabrics and diagnostic features including ledge handles and everted rims, although sherds dating to the 2<sup>nd</sup> and 3<sup>rd</sup> centuries AD were also found (Mabry and Palumbo 1988: 288; Palumbo 1990: 98). Palumbo did not describe the site in detail, but noted that one of the largest dolmens in the catchment stands at the base of the al-Ghuzlān knoll (Palumbo 1992: 48, 2008: 242; also Fraser 2018: fig. 10.8).

In 2007 and 2009, the University of Sydney's North Jordan Tomb Project (NJTP) visited the site as part of a larger survey documenting megalithic features along the adjacent Tall ar-Rās ridge (Fraser *et al.* 2009). Significantly, the Ghuzlān knoll was the only locus along the ridge that yielded EB IV materials (Fraser 2018: 239). As Khirbat Umm al-Ghuzlān was threatened by encroaching olive groves, the NJTP produced a site plan of all surface architecture (Fraser and Batayneh 2009). This plan was updated as part of the British Museum project in 2017 to include the recent destruction.

### Surface Architecture

The site plan is presented in **Fig. 3**. The surface architecture includes an 'Enclosure Wall' surrounding the Ghuzlān knoll, and two large circles of heaped stones within. These features are described below.

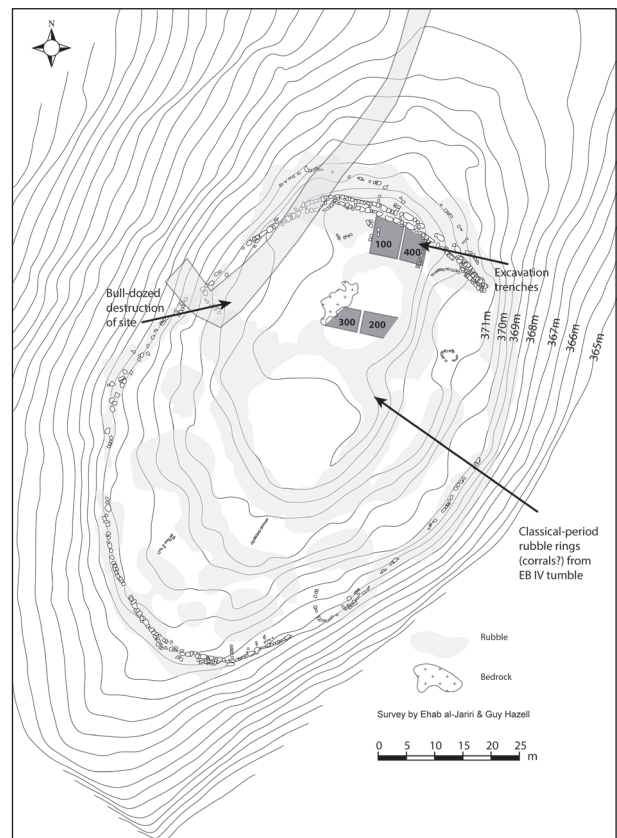
#### Enclosure Wall

The enclosure consists of a discontinuous perimeter wall around the Ghuzlān knoll, defining an ovoid area 100×50m (0.4ha). This 'Enclosure Wall' is described in detail elsewhere (Fraser and Batayneh 2009). In summary, the wall is only one row wide and preserved only one or two courses high around the steep eastern, southern and west-

ern sides of the knoll that fall sharply into the *wadi* below. In contrast, the northern portion of the wall constitutes a substantial piece of monumental architecture (**Fig. 5**). This section controls access to the site across a low saddle linking the Ghuzlān knoll to the Tall ar-Rās ridge. It extends 30m across the top of the saddle, then follows the contours southwest around the knoll for 12m. It comprises two rows of large field stones and megalithic boulders and is preserved up to four courses high, although a concentration of tumbled rocks suggests it once stood higher.



2. Khirbat Umm al-Ghuzlān above Wādī ar-Rayyān, seen from Tall ar-Rās ridgeline. Facing SW (Photo by A. Carr).



3. Plan of surface architecture at Khirbat Umm al-Ghuzlān.



*Rubble-Ring Features*

Two large circles of heaped stones sit on the highest point of the knoll within the enclosure, the largest of which defines a cleared area 22×24m. Both rings consist of small and medium field stones heaped approximately 1m high with no apparent structure (Fraser and Batayneh 2009). As discussed below, these features post-date the Enclosure Wall, and were probably associated with herding in the 1<sup>st</sup> millennium AD.

**The Khirbat Ghuzlān Excavation Project**

The primary objectives of the first season of excavations were:

- 1) To articulate the sequence of occupation at the site;
- 2) To determine the stratigraphic relationship between the Enclosure Wall and Rubble-Ring features.

These objectives were realised through the excavation to bedrock of four trenches in the two areas: Trenches 100 and 400 against the monumental portion of the Enclosure Wall, and Trenches 200 and 300 within the northernmost Rubble-Ring feature (**Fig. 2**). All trenches were between 1 and 1.5m deep, and yielded the same stratigraphic sequence summarised in **Table 1**.

**Table 1.** Summary of strata excavated at Khirbat Umm al-Ghuzlān.

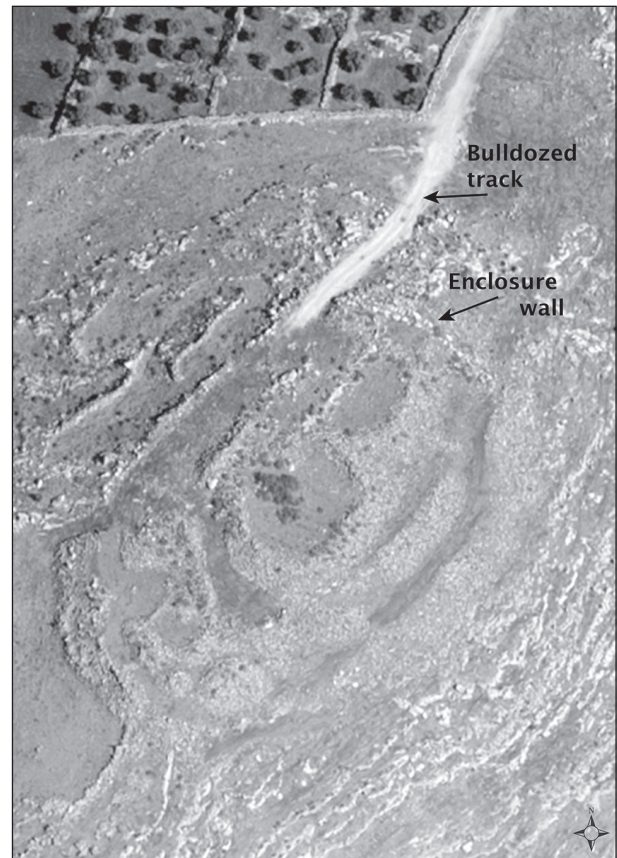
1. Topsoil	Dark brown silty-clay with EB IV and Classical period sherds,
2. Tumble	Tumbled stones from Stratum 3 architecture within a red silty-clay matrix with EB IV sherds.
3. Occupation	Yellow clayey-silt deposits with EB IV materials, including occupation surfaces associated with standing architecture.
4. Levelling fills	Stone cobbles within red silty-clay fills introduced to flatten irregular bedrock.
5. Natural	Sterile rendzina soil.
6. Bedrock	Microcrystalline limestone.

*Trench 100*

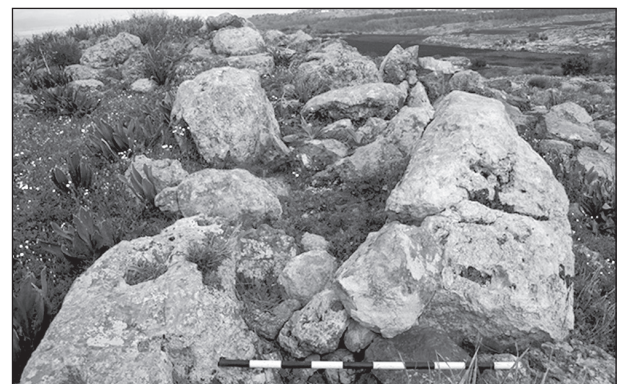
Trench 100 was opened to establish the stratigraphic relationship between the Enclosure Wall and the northernmost Rubble-Ring feature. As shown in **Fig. 6**, the trench measured

7×5m (NS×EW) and was located between the inner (south) face of the Enclosure Wall and the outer (north) side of the Rubble Ring.

Excavations quickly revealed a raised platform of limestone bedrock that dominated the trench. Two single-row walls of medium field stones (Walls 104 and 120) were roughly aligned north-south in the west of the trench: Wall 120 ran beneath the rubble accumulation of the large ring feature, while Wall 104



4. Aerial image of Khirbat Umm al-Ghuzlān taken October 2016 by Robert Bewley for the APAAME Project. APAAME\_20161002\_RHB-0100.



5. Northern portion of Enclosure Wall. Facing west, 1m scale (Photo by A. Carr).

abutted the inside face of the Enclosure Wall. Both these walls and the Enclosure had been constructed directly over bedrock or over a fill of small stones within a red silty-clay matrix used to level irregular bedrock depressions. A limestone mortar was found wedged in a bedrock split between these walls, suggesting the platform served as an activity area. Walls 104 and 120 may define the east side of a structure mostly situated west of the trench. No occupation strata were preserved, and topsoil directly overlay the raised bedrock shelf.

The bedrock platform dived to a natural depression 1.25m deep. Four lensing silty-clay fills were excavated within this depression beneath a layer of rock tumble, with substantial quantities of cultural material including sherds, broken spindle whorls and flint tools. These fills suggest the depression was used as a rubbish dump. Most animal bones retrieved from the site were recovered from these contexts.

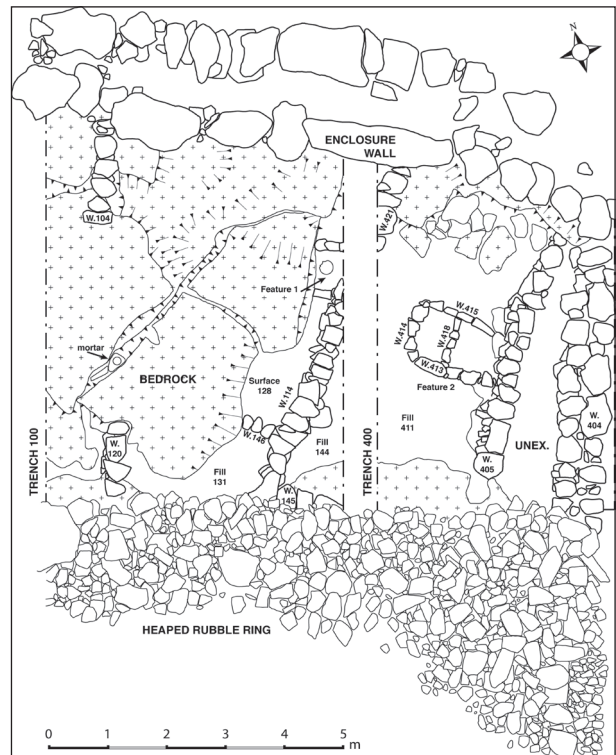
The east side of the bedrock platform was fashioned to create a 1m deep vertical shelf. Wall 114 ran adjacent to the shelf, extending northeast from beneath the Rubble-Ring feature, and a probable return (Wall 145) was detected in the southeast corner of the trench, beneath the accumulated rubble heap (Fig. 6).

Excavations between Wall 114 and the vertical bedrock shelf revealed a stone bin (Feature 1) defined by two rows of upright stones and a bedrock base. A cut-down jar base was found within. Three large stones (Wall 146) placed between Wall 114 and the bedrock platform divided this external area into two spaces, containing an earth surface running to Feature 1 (Context 128) and a silty-clay fill to Wall 120 (Context 131).

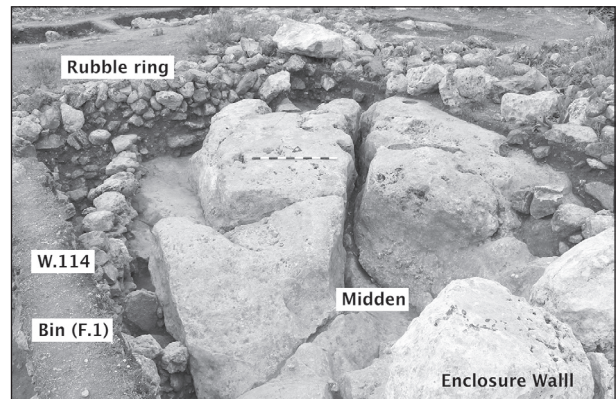
### Trench 400

In order to determine the relationship between Wall 114 and the Enclosure Wall, Trench 400 (6×4m) was opened 0.5m east of Trench 100 (Figs. 6, 8 and 9). These excavations revealed that Wall 114 continued to abut the inside face of an upright megalithic slab used in the Enclosure Wall. A parallel wall, Wall 405, was uncovered 3m east of Wall 114, also abutting the Enclosure Wall.

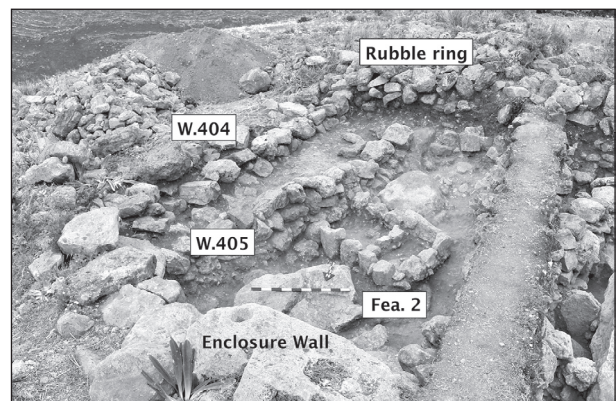
These walls define a rectangular space 3m wide and approximately 6.5m long. It is un-



6. Plan of Trenches 100 and 400 at end of excavation (Drawn by H. Winter and J. Fraser).

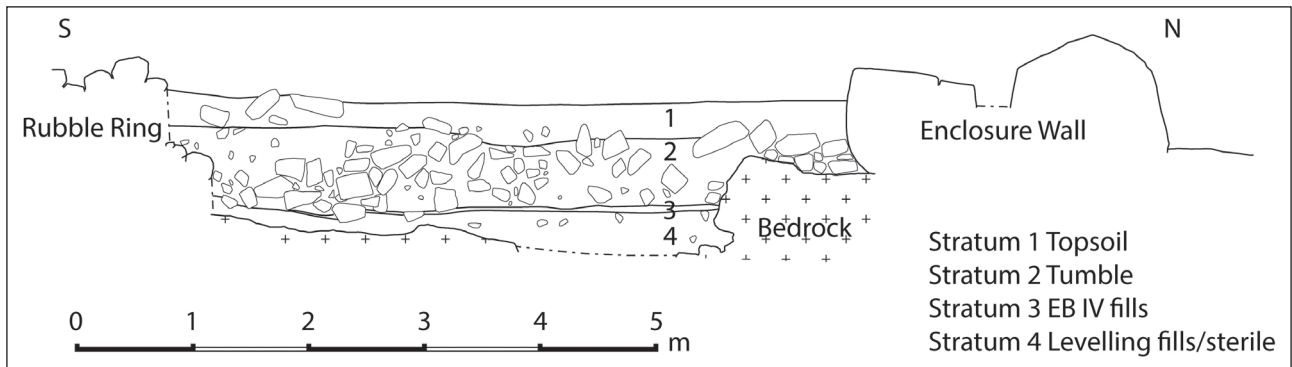


7. Trench 100 at end of excavation. Facing SW, 1m scale (Photo by A. Carr).



8. Trench 400 at end of excavation. Facing SE, 1m scale (Photo by A. Carr).





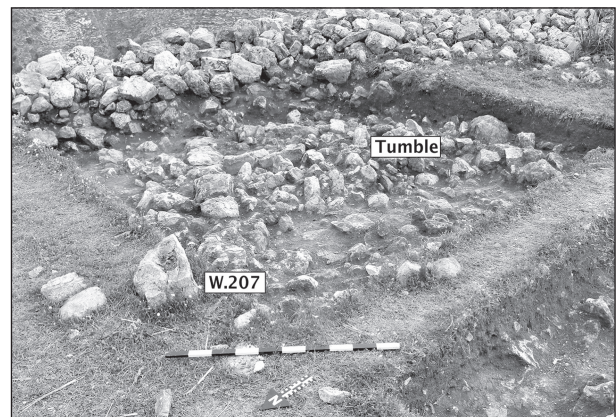
9. Section of Trench 400 west baulk. Facing W (Drawn by H. Winter and J. Fraser).

likely that this area served as occupation space, given its unmodified irregular bedrock and the absence of floors. Rather, the area probably served as an animal pen: a possible feeding trough (Feature 2 in Fig. 8) protruded from Wall 405, divided into two cells by a low partition. If so, Feature 1 in Trench 100 may have contained stored animal feed, with the jar base within being the scoop used to transfer feed to the trough. Feature 2 was constructed over the red silty-clay levelling fill.

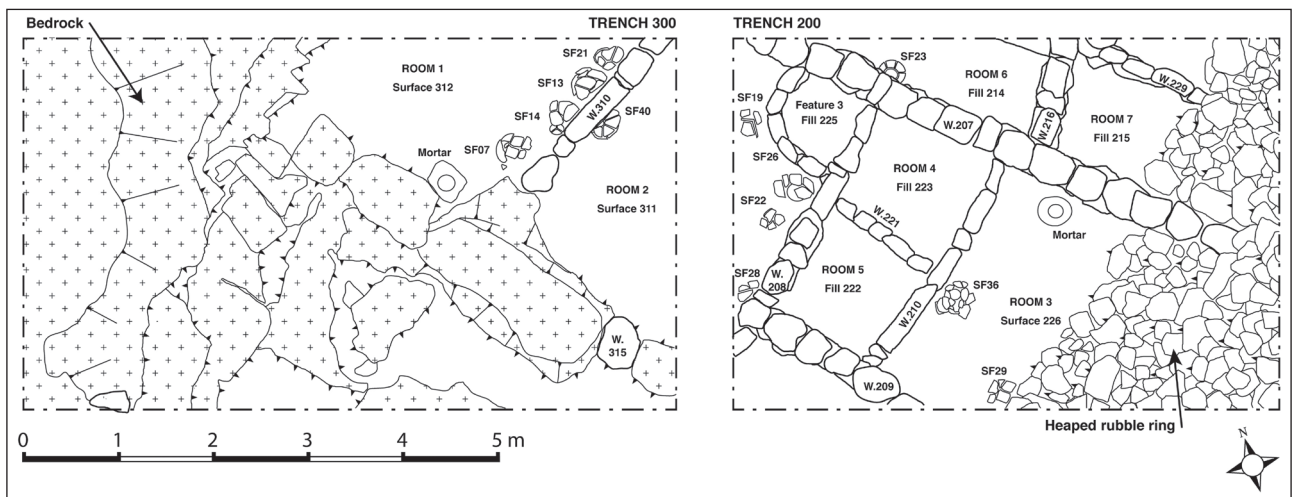
A large wall, Wall 404, was identified below topsoil running south from the inside face of the Enclosure Wall and continuing beneath the Rubble-Ring feature. This wall formed the eastern edge of Trench 400. Unlike the smaller walls exposed elsewhere in these trenches, Wall 404 was constructed of large field stones in two rows. The wall is not aligned with the adjacent Wall 405, but rather forms a triangular wedge (Fig. 11); this space remains unexcavated. Future excavations will investigate the southern continuation of this wall and its relationship to the possible storage area identified in Trenches 200 and 300.

*Trenches 200 and 300*

Trenches 200 and 300 were opened between the interior side of the northern heaped-rubble feature and a large outcrop of limestone bedrock (see Fig. 3). Both trenches measured 4×6m, separated by a 0.5m baulk. Excavations exposed an extensive area of tumbled stone overlying an architectural complex with at least nine walls and seven rooms or courtyards (Figs. 10-13).



10. Initial excavation of Trench 200. Top of Wall 207 emerging amongst Stratum 2 tumble, running beneath the Rubble-Ring feature.



11. Plan of Stratum 3 in Trenches 200 and 300 (Drawn by N. Handziuk, B. Spry and A. Vassiliades).

The two largest walls (Walls 207 and 209) ran northwest-southeast beneath the Rubble-Ring feature. Three cross walls (Walls 310, 208 and 210) divide the area into Rooms 1, 2 and 3; a fourth area with no apparent doorway was partitioned by Wall 221 into two 1×1m cells (Rooms 4 and 5). An additional northwest-southeast wall (Wall 229) defines a narrow space north of Wall 207, and at least one short cross wall (Wall 216) divides this area in two (Rooms 6 and 7). It is unclear whether Wall 229 defines the edge of a second structure immediately north of Trench 200, or represents a continuation of the same complex. All walls consist of a single row of medium field stones constructed directly over bedrock or on a levelling fill of fist-sized rounded cobbles in red silty-clay.

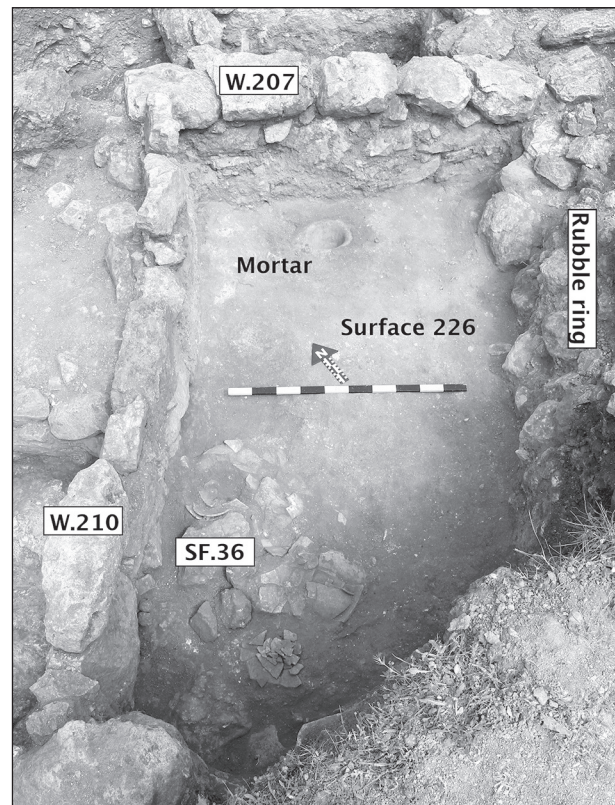
Although the northern, southern and eastern extents of the structure lie beyond the excavation area, the structure's western end was built against a raised bedrock shelf, and even incorporates it as part of Wall 315. A hard orange earth surface was detected in the room/courtyard defined by these walls (Context 312). Four broken but partly complete EB IV storage jars (Special Finds [SF] 07, 13, 14 and 21) were found on the floor against the wall, and a large limestone mortar was wedged in a bedrock split (**Fig. 11**).

Immediately east, Walls 310, 207 and 208 define a rectangular room (Room 2) that measures 3.1×2.4m. Excavations revealed a curved bin of upright stones (Feature 3) constructed against the northeast corner. The bin contained an upper fill of brown sandy-clay (Context 220) over a lower fill of red sandy-clay (Context 225), which yielded several joining jar sherds, a Canaanite blade segment (SF 034 [**Fig. 19**]) and several animal bones. Although partly obscured by the baulk, clusters of joining sherds from three storage jars (SF 19, 22 and 28) and a spouted holemouth jar (SF 26) were discovered on an earth floor (Context 219) against the stone bin and Wall 208; another storage jar (SF 40) was uncovered on the opposite side of the room on the equivalent surface in Trench 300 (Context 311).

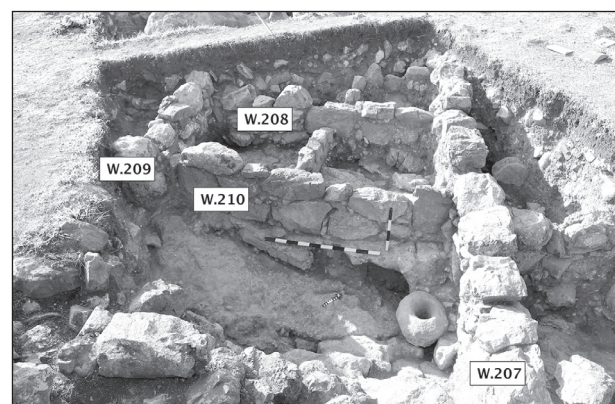
The two partitioned square features (Rooms 4 and 5) yielded neither cultural remains nor floor surfaces. A bedding of small cobbles in a red silty-clay matrix filled the uneven bedrock

between Walls 207-210, over which all walls were built.

A large, rectangular room/courtyard was excavated on the east side of Wall 210 (Room 3). The room contained a single surface of hard, yellow silty-clay (Context 226), on which an extensive spread of joining sherds from at least one storage jar (SF 36) and a mostly-complete amphoriskos (SF 29) were discovered. A large mortar was embedded within the surface so that only its top was visible (**Fig. 12**); removal of the surface revealed that the mortar had been



12. Joining pottery sherds on earth surface near rim of mortar in Room 3, Trench 200. Facing NE (Photo by A. Carr).



13. Architectural complex in Trench 200 at end of excavation. Facing west (Photo by A. Carr).



placed within a bedrock niche when the layer of levelling fill was laid over the irregular bedrock (Fig. 13).

The small spaces within Rooms 6 and 7 did not yield any surfaces, and the stone tumble of Stratum 2 appeared to overlie the levelling fills of Stratum 4 that underlay Walls 207 and 216. However, the concentration of joining storage jar sherds SF 23 in Room 6 suggests these rooms once contained a floor that has not survived, or which was missed in the excavation of these narrow spaces.

**Phasing**

These excavations indicate two distinct phases of activity:

*EB IV Phase*

The lower phase was defined by the standing architecture in all four trenches, including the Enclosure Wall. All associated Stratum 3 deposits yielded exclusively EB IV materials (see “Ceramics” below). As Walls 104, 421, 405 and 404 abutted the inside face of the Enclosure Wall in Trenches 100 and 400, it is likely that the knoll was enclosed before many or all its structures were built within. The irregular bedrock outcrop that forms the Ghuzlān knoll was prepared for construction by the introduction of levelling fills, which underlie those walls constructed in areas where the bedrock is uneven, including part of the inner row of the Enclosure Wall. This situation recalls the preparation of bedrock detected at the EB IV enclosure site of Dhahrat Umm el-Marrar on a defensible hilltop in the foothills of the rift escarpment (Falconer and Fall 2019: 167).

EB IV occupation appears short-lived. There is no evidence for architectural modification, and only primary floor surfaces were identified. The EB IV settlement was abandoned leaving vessels *in situ* and the walls in place. The tumbled stones that characterize Stratum 2 were found in all trenches (see Fig. 10), suggesting that the Ghuzlān knoll became an extensive ruin-field as these abandoned structures collapsed.

*Classical-period Phase*

The EB IV rock tumble was cleared from the north of the site to create two circles defined by heaped rings of cleared rubble. Five EB IV walls (Walls 120, 114, 404, 207 and 229) were shown to underlie the northernmost rubble feature. This phase may date to the Classical period, as the associated topsoil contains mixed EB IV and Classical-period sherds. The rubble features possibly served as animal corrals.

**Ceramics**

The excavations collected over 6700 sherds, of which 3759 derived from securely stratified EB IV contexts classified as “Stratum 3” in Table 1. As summarised in Table 2, 940 of these sherds were diagnostic. This corpus includes the identification of at least 12 broken but partly complete jars lying on the floor surfaces within the structure excavated in Trenches 200-300. Ongoing analysis may detect further joins between sherds, refining the provisional data presented in Table 2.

The ceramics display highly fired, sandy wares. Distinct fabric groups are apparent within the corpus, including pale, green and yellow-buff fabrics, although full characteriza-

**Table 2.** Summary of ceramics recovered from Stratum 3.

Vessel Type	Tr. 100	Tr. 200	Tr. 300	Tr. 400	Total
Necked jars	19	17	14	14	64
Holemouth jars	3	9	31	0	43
Spouted jars	3	3	0	0	6
Jars (indistinct)	193	197	270	13	673
Bowls	8	8	2	3	21
Cooking pots	35	8	77	11	131
Amphoriskoi	0	1	1	0	13
Diagnostic Total	261	243	395	41	940
Bodysherds	658	762	510	889	2819
Sherd Total	919	1005	905	930	3759

tion awaits detailed study. A dark-brown coarse sandy fabric with white lime inclusions is identified as a cooking ware.

Traces of red slip or red paint, occasionally identifiable as ‘trickle-painted’ ware, were detected on several sherds. However, burial above the limestone bedrock has caused a heavy mineral concretion to form on most sherds which is difficult to remove. Consequently, it is unclear what proportion of the corpus was painted or slipped. For this reason, painted or slipped decoration has not been indicated in **Figs. 14-17** (but see **Tables 3-6**).

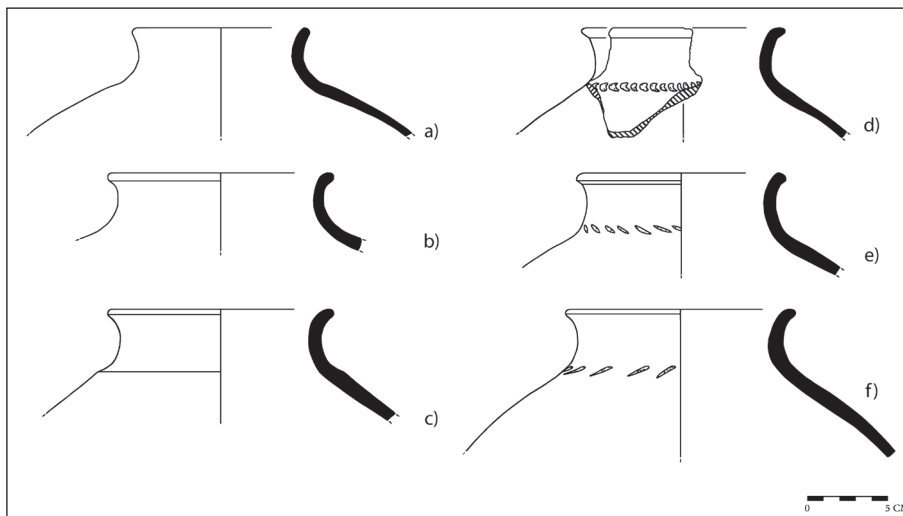
The Stratum 3 assemblage is overwhelmingly dominated by storage jars, which constitute 83% (n=780) of diagnostic sherds (**Figs. 14-16**). Jar forms comprise tall, narrow-necked jars with everted rims (10-14cm in diameter) and holemouth jars with short, everted or beveled rims (14-16cm in diameter). Narrow-necked jars constitute 60% (n=64) and holemouth jars 40% (n=43) of the jar assemblage. Those sherds listed as “Jars (indistinct)” in **Table 2** denote jar sherds such as handles, bases and other fragments that could derive from either the necked or holemouth forms. Examples of both forms were found with applied ‘envelope’ handles protruding from the widest point of the

body (**Fig. 16**). Every envelope handle exhibited three folds.

Many of the narrow-necked jars were decorated with a single row of incised slashes around the base of the neck, most of which were made from a high right to lower left side, but occasionally reversed (**Fig. 14d-f**). Holemouth jars were undecorated, with the singular exception of a rim sherd incised with a horizontal line and zig-zag motif (**Fig. 15g**). This sherd also included a vertical loop handle, and had a diameter much wider (23cm) than other jars from the site.

A partly complete spouted holemouth jar (**Fig. 15h**) was excavated in Room 2 against the curved storage bin (SF26 in **Fig. 11**). This vessel displays traces of red paint on the rim and red paint or slip on the body. A high tubular spout indicates liquid storage. As such a large vessel could not be lifted and poured when full, it may have served as a decanting vat into which pressed olive liquid could settle to allow the oil to rise above the water content and be decanted away. Two spout fragments were collected from the rubbish midden in Trench 100.

Only 2% (n=21) of the Stratum 3 diagnostic corpus were identified as open forms (**Fig. 17**). These sherds were mostly deep bowls or cups

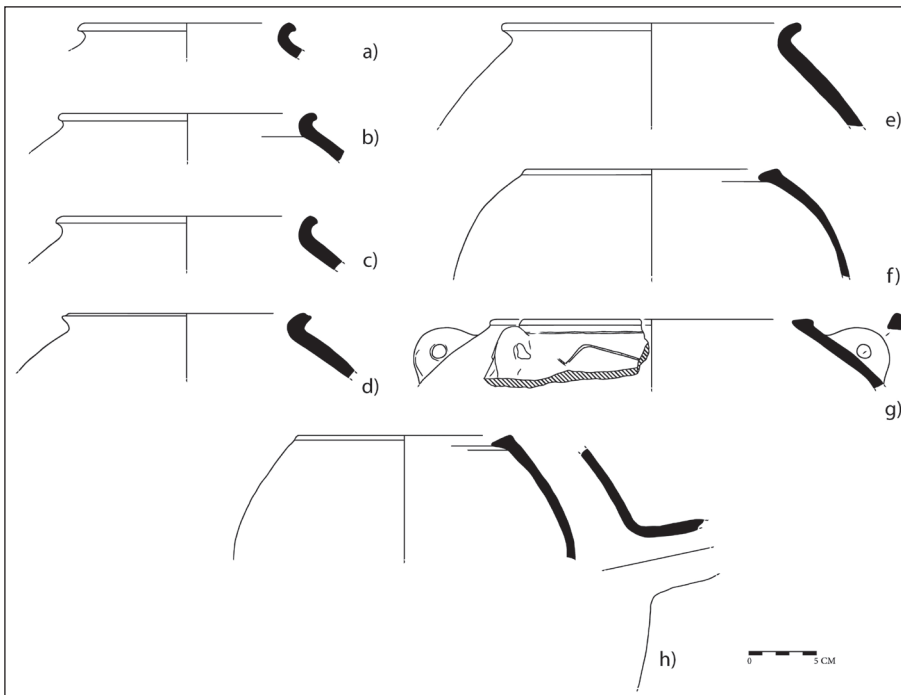


14. Narrow-necked jars with everted rims (Drawn by Monjed Qasem).

**Table 3:** Narrow necked jars.

a) Jar rim	KG-309-04	Ware pale buff, fine grit and sand temper.
b) Jar rim	KG-226-02	Ware pale buff, fine grit and sand temper.
c) Jar rim	KG-226-01	Ware pale orange buff, fine grit and sand temper.
d) Jar rim	KG-107-03	Ware pale buff, fine grit and sand temper, incised crescents.
e) Jar rim	KG-115-01	Ware pale buff, fine grit and sand temper, slash incised.
f) Jar rim	KG-115-03	Ware pale orange buff, fine grit and sand temper, slash incised.





15. *Holemouth jars* (Drawn by Monjed Qasem).

**Table 4:** Holemouth jars.

a) Cooking pot	KG-408-03	Ware coarse brown buff, white lime grit temper.
b) Jar rim	KG-214-01	Ware coarse orange buff, grit and sand temper.
c) Jar rim	KG-131-03	Ware coarse orange buff, grit and sand temper.
d) Jar rim	KG-308-11	SF16: Ware coarse orange buff, grit and sand temper.
e) Jar rim	KG-308-01	SF13: Ware coarse orange buff, grit and sand temper.
f) Jar rim	KG-308-04	SF12: Ware coarse pale buff, fine grit and sand temper.
g) Jar rim	KG-107-01	Ware pale buff, grit and sand temper. incised line and zig-zag below rim, vertical lug handle.
h) Jar rim	KG-219-01	SF26: Ware pale orange buff, grit and sand temper, traces of red paint on rim, neck and spout.

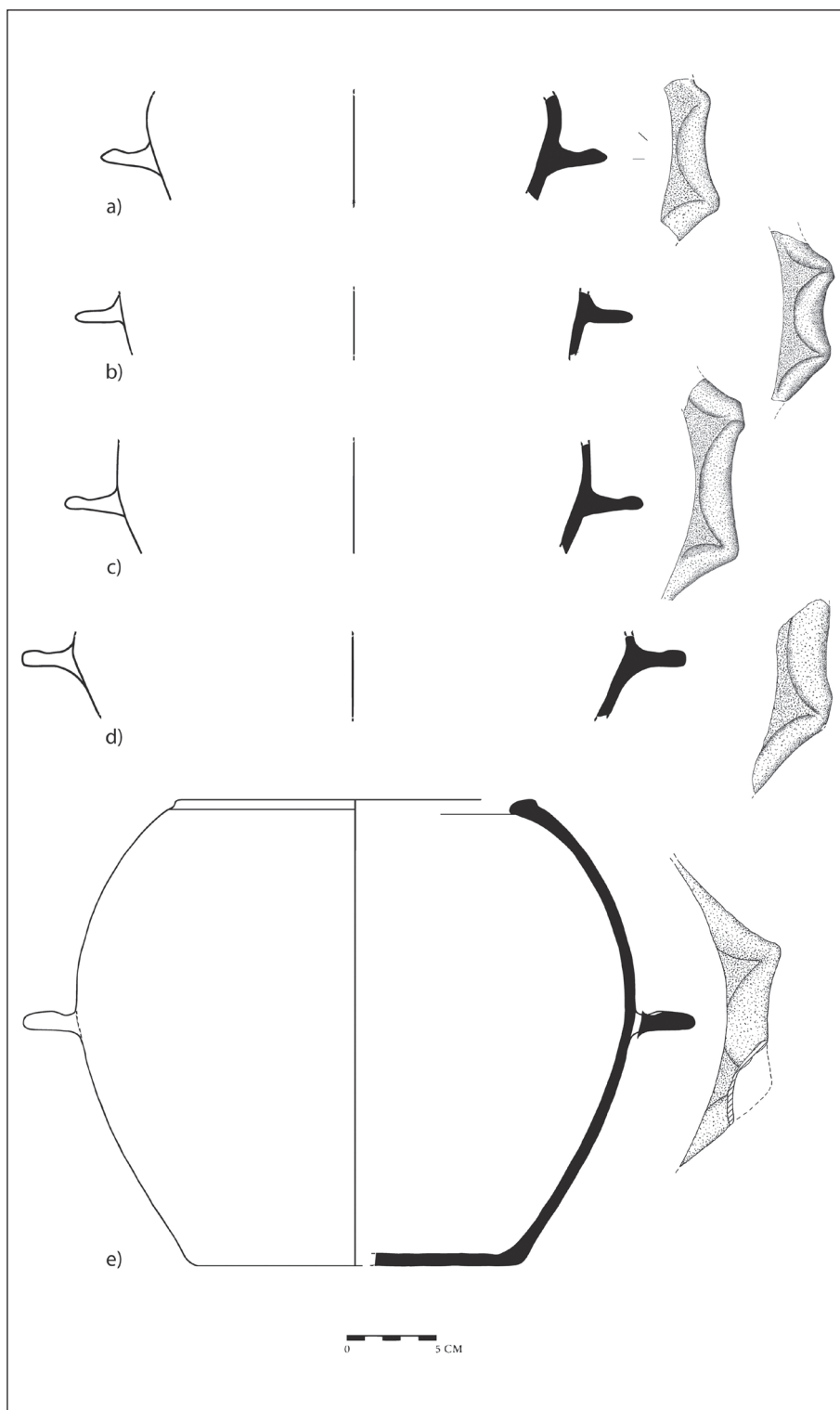
with upright or slightly inverted simple rims (14-18cm diameter). Occasional examples had small ledge handles, including a knob on the rim of a rare broad bowl (**Fig. 17e**) and thumb-impressed scalloped ledge handles on the mid-body of two deep bowls or cups (**Fig. 17c-d**). Several sherds had traces of red paint, although the nature of this decoration was indistinct; decoration was likely present on more sherds than those detected.

Cooking ware, identified by a distinctive coarse sandy fabric with small lime inclusions, constituted 14% (n=131) of the diagnostic assemblage. Sherds included both holemouth (**Fig. 17a**) and everted rim forms, the latter with dimensions between 14-15cm. A broken but mostly restorable amphoriskos was discovered on the floor of Room 3 (SF29 in **Fig. 11**). As

shown in **Fig. 17i**, this vessel has a small, squat body with two vertical loop handles below a short, everted rim, and traces of red trickle-paint were detected on the neck.

#### **Botanical Remains**

Sampling for archaeobotanical remains was an integral part of excavation procedure. Bulk samples of sediment were taken from all securely stratified contexts, with an ideal volume of 20 litres. Thirty-eight samples were processed by machine flotation. Light fractions (flots) were collected in 1.0mm and 0.3mm mesh sieves. The flots are currently being analysed for archaeobotanical remains by Dr. Caroline Cartwright at the British Museum, using reflected light optical microscopy and variable pressure scanning electron microscopy. This

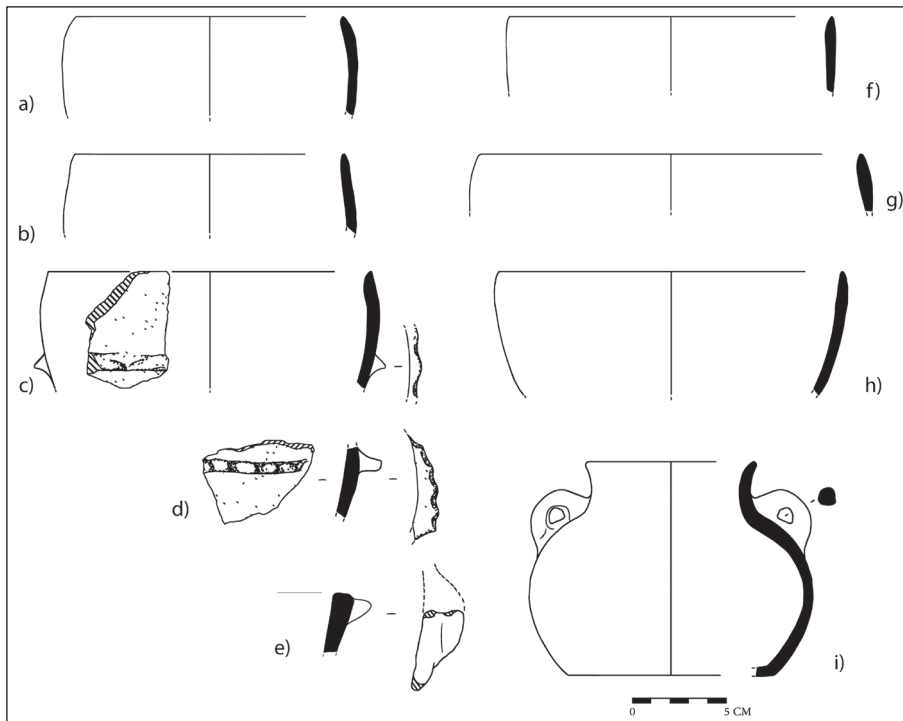


16. Envelope jar handles (a-d) and profile of holemouth jar SF07 (Drawn by Monjed Qasem).

**Table 5:** Jar handles and holemouth jar.

a) Handle	KG-219-01	SF28: Ware orange buff, grit and sand temper.
b) Handle	KG-219-02	Ware coarse orange buff, grit and sand temper.
c) Handle	KG-309-01	Ware pale buff, grit and sand temper.
d) Handle	KG-308-09	Ware pale buff, grit and sand temper.
e) Jar	KG-305-01	SF07: Ware pale buff, grit and sand temper.





17. Deep and broad bowls (a-h) and amphoriskos SF29 (Drawn by Monjed Qasem).

**Table 6:** Bowls and amphoriskos.

a) Deep bowl	KG-410-01	Ware orange buff, grit and sand temper.
b) Deep bowl	KG-211-01	Ware fine pale buff, grit and sand temper.
c) Deep bowl	KG-106-04	Ware pale buff, grit and sand temper, thumb-impressed ledge handle.
d) Handle sherd	KG-226-04	Ware pale buff, grit and sand temper. Thumb-impressed ledge handle.
e) Handle sherd	KG-403-02	Ware pale orange buff, grit and sand temper, folded ledge handle from rim. Very rolled.
f) Deep bowl	KG-211-04	Ware fine pale buff, grit and sand temper.
g) Deep bowl	KG-308-02	Ware pale buff, grit and sand temper.
h) Deep bowl	KG-213-01	SF37: Ware fine pale buff, grit and sand temper, traces of red paint on rim int. and ext. Possibly trickle-painted.
i) Amphoriskos	KG-211-02	SF29: Ware pale buff, grit and sand temper, traces of red paint on neck and shoulders.

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The flots from Khirbat Umm al-Ghuzlān demonstrate a near absence of charred seeds and grains. This situation strikingly contrasts the abundance of charred wheat, barley, lentil and other domestic and wild taxa recovered from lowland EB IV agrarian villages such as Tall Abū an-Ni‘āj (Falconer and Fall 2019). It is unlikely that this issue is due to poor preservation, as fragments of wood charcoal were retrieved, and charred organic remains were preserved in the Chalcolithic site of al-Khawarij in a similar geo-morphological zone nearby (Lovell *et al.* 2006: 56-58). Rather, the paucity of charred seeds and grains was probably associated with

the lack of domestic hearths, fireplaces or ashy debris detected at the site.

Fourteen small charcoal samples were collected. Using scanning electron microscopy, these samples were examined in transverse, radial longitudinal and tangential longitudinal planes. All 14 samples were identified as olive (*Olea europaea*), several of which exhibit the effects of heat (**Fig. 18**). It is difficult to assess the significance of olive-wood charcoal for the issue of olive cultivation, given the low number of samples. However, we draw two provisional inferences:

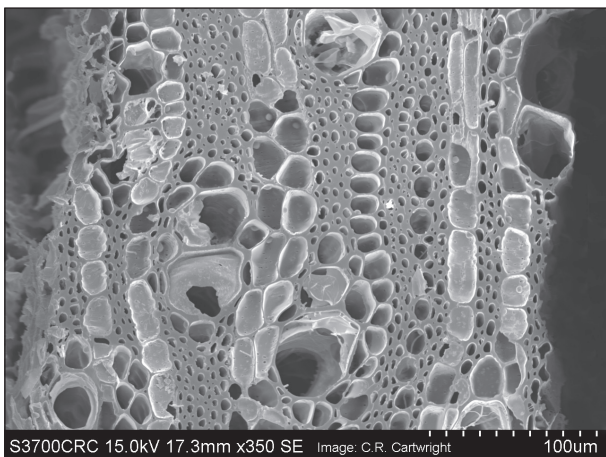
1) First, it is striking that olive was the only species identified in the corpus of wood charcoal. In an analysis of Jordan Valley

village sites, Fall noted that orchard taxa (mostly fig) represent 50% of burned wood, as fuel was also sourced from endemic trees and shrubs (Fall *et al.* 2015: 185-190; Falconer and Fall 2019: 137). As all wood charcoal at Khirbat Umm al-Ghuzlān was olive, we can assume that olive wood was in ready supply, as fuel would otherwise have been sourced from local trees such as oak, pistachio or pine. This situation is consistent with orchard maintenance, where communities stockpile orchard prunings for fuel.

- 2) Second, the paucity of charred seeds and grains suggests specialised economic activities. Charred seeds commonly enter the archaeological record as animal dung, burnt as fuel. Botanics at Tall Abū an-Ni‘āj attest a broad range of charred seed species consistent with grazing (Falconer and Fall 2019: 137-139). However, the absence of charred seeds at Khirbat Umm al-Ghuzlān suggests that dung was not burned, consistent with the supply of orchard prunings as an alternate supply of fuel.

### Faunal Remains

Only 46 animal bones were recovered, contrasting the corpora of faunal remains from Tall Abū an-Ni‘āj (Falconer and Fall 2019: 29-32). Archaeozoologist Dr. Karyn Wesselingh identified sheep/goat (n=15), cow (n=5) and bird (n=3), with undiagnostic bones from medium (n=19) and large (n=4) mammals also present. Significantly, the corpus of ovicaprid remains represents all parts of the skeleton (appendicular and axial skeleton including both front and



18. SEM image of olive-wood charcoal by C.R. Cartwright (Courtesy of the Trustees of the British Museum).

hind limbs), suggesting animals were killed at or near the site. No *Sus* remains were detected, unlike at Tall Abū an-Ni‘āj where pig constitutes 28% of the faunal assemblage (Falconer and Fall 2019: 29). These data suggest that pastoralism was practiced at the site, supported by the possible animal pen in Trench 400, as well as the presence of small finds associated with textile production (see below).

### Chipped Stone Tools

The chipped-stone assemblage comprised only 34 individual pieces. It is possible that many small tools and pieces of debitage were not collected, as no contexts were sieved. However, the 20 litre soil samples taken from 38 Stratum 3 contexts provided instances of 100% collection as a check on the number and nature of smaller finds overlooked. These coarse fractions yielded little cultural debris, suggesting the stone-tool assemblage was limited. The 34 pieces derived from mostly local sources, probably from the many flint beds that outcrop along the Tall ar-Rās ridge (Fraser 2018: 327-230). A single core suggests limited production, and only two of the 20 flakes were retouched. The most striking aspect of the assemblage was 12 flint blades, several of which exhibit the trapezoidal cross-section characteristic of Canaanite blades (Fig. 19).

### Other Finds

Six perforated spindle whorls recut from ceramic sherds (Fig. 20) were recovered from the midden deposits in Trench 100 or from the strata of wall tumble that sealed them. Two fine basalt objects were found in the animal pen in Trench 400: a rectangular weight with a circular perforation drilled from both sides (Fig. 21), and a bi-conical object with a grooved central axis (Fig. 22; cf. grooved hammer stones at Tall Abū an-Ni‘āj [Falconer and Fall 2019: Figs. 8.11-8.13]).

### Discussion

These initial excavations have produced data that differ significantly from the material culture recovered from the EB IV site of Tall Abū an-Ni‘āj, 3km northwest of the mouth of Wādī ar-Rayyān on the Jordan Valley floor. These differences are summarised below.





19. Flint Canaanite blades (SFs 18, 34, 20 and 49).



20. Spindle whorls from midden deposits in Trench 100.

### Occupation

Khirbat Umm al-Ghuzlān appears to have been occupied briefly, with single earth floors and no architectural modification; in contrast, Tall Abū an-Ni‘āj yielded seven phases spanning 500 years (Falconer and Fall 2016). Limited occupation is also reflected by a paucity of ashy fills, whereas strata at Tall Abū an-Ni‘āj included ashy debris, hearths and ash-filled *tabuns* consistent with domestic activities.

### Ceramics

The ceramic corpus at Khirbat Umm al-Ghuzlān comprises many jars (83%) and few bowls (2%); Tall Abū an-Ni‘āj produced a broader repertoire in which jars constituted 35% of the assemblage and bowls 41% (Falconer and Fall 2019: Table 7.1).

### Botanical Remains

Khirbat Um al-Ghozlan yielded exclusively olive-wood charcoal, suggestive of orchard



21. Basalt weight SF46.



22. Basalt groove SF47.

maintenance; in contrast, the inhabitants at Tell Abū an-Ni‘āj burned a variety of tree, shrub and orchard taxa (Falconer and Fall 2019: Table 3.2), while charred wild seeds suggest they burned dung as well.

### Faunal Remains

Ovicaprid remains dominate the small assemblage at Khirbat Umm al-Ghuzlān, and no evidence of pig has yet been found; in contrast, the significant quantities of faunal materials from Tall Abū an-Ni‘āj comprise 58% caprid, 28% pig and 12% cattle (Falconer and Fall 2019: 29-32), suggesting permanent occupation near the Jordan River conducive for swine husbandry.

Although Tall Abū an-Ni‘āj is almost five times larger than Khirbat Umm al-Ghuzlān (2.5ha and 0.4ha respectively), the most striking difference is the Khirbat Umm al-Ghuzlān monumental enclosure wall, while Tall Abū an-Ni‘āj is undefended. Why enclose such a small

site? While Tall Abū an-Ni‘āj was probably occupied as a sedentary, agro-herding farming village (Falconer and Fall 2019), the evidence from Khirbat Umm al-Ghuzlān suggests that this enclosure site served a specialised economic purpose. Given the site’s location, it is likely that it was used as a processing center for upland horticultural crops such as olive, which grow better in the well-drained slopes of the rift escarpment than on the flood-prone Jordan Valley floor (Lovell 2002: 96-97). Accordingly, the site may have been enclosed to protect seasonally produced caches of high-value oil jars before their distribution through the settlement systems of the rift escarpment, or to population centres on the Jordan Valley floor. The dominance of jar forms attests large-scale storage, and spouted jars were probably used within the extraction process; the presence of olive-wood charcoal connotes activities associated with orchard maintenance; and several rock-cut olive presses have been documented on the Tall ar-Rās ridgeline nearby (Fraser 2018: 233-236).

The implication is that so-called urban features of the EB II-III period such as fortification systems and specialised production were reconfigured within local settlement networks in the EB IV. This situation suggests an innovative rural response to urban collapse that may have underlain the Canaanite urban florescence in the 2<sup>nd</sup> millennium BC.

J.A. Fraser:

Curator for the Ancient Levant and Anatolia,  
Middle East Department, The British Museum,  
Great Russell Street, London, UK, WC1B 3DG.  
[JFraser@britishmuseum.org](mailto:JFraser@britishmuseum.org)

C.R. Cartwright:

Senior Research Scientist,  
Department of Scientific Research,  
The British Museum,  
Great Russell Street, London, UK, WC1B 3DG.  
[CCartwright@britishmuseum.org](mailto:CCartwright@britishmuseum.org)

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