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The nature of third-millennium settlement: The example of al-Tikha (Rustaq) an Umm an-Nar site on the Batinah coast of Oman

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Abstract

al-Tikha is a mid to large Umm an-Nar (c. 2700–2000 BC) settlement situated near Rustaq at the back of the Southern Batinah coastal plain in the Sultanate of Oman that was discovered (or rediscovered) in 2014. The site is unique because its layout and spatial organisation are very largely (possibly completely) visible on the surface. This includes two separate areas of stone-built housing, a large pottery scatter of varying density, three or four typical Umm an-Nar round towers and a small cemetery consisting of at least four tombs, along with a few other features. The layout of the site is described and discussed in detail, in particular, in relation to what it might tell us about the nature of Umm an-Nar settlement and social organisation more generally. The location of the site within a pattern of repeating Umm an-Nar settlement along Wadi Far (Wādī al-Farʿī) is also described and discussed.

KEYWORDS

Early Bronze Age, landscape, settlement, Southeastern Arabia, spatial organisation, Umm an-Nar

1 | INTRODUCTION

Compared to much of the Middle East, sedentism came late to Southeastern Arabia. Only in the second quarter of the third millennium BC do sizeable, permanent settlements begin to appear there—two to three millennia later than the first Ubaid villages in Mesopotamia (Ur, 2010, 2014). The Early Bronze Age (c. 3100–2000 BC) nonetheless constitutes a phase of profound transformation in the Oman Peninsula. Social, economic and technological changes originating in the late fourth millennium reached a peak in the Umm an-Nar period (c. 2700–2000 BC). Newly adopted arable agriculture thrived and spread widely; indigenous pottery, copper and soft-stone industries flourished; local and international trade boomed; and sophisticated monumental settlement and funerary architecture developed. From a modest community of nomadic-pastoralists—with perhaps a handful of sedentary settlements during the Hafit period (Deadman, 2012, 2017; Magee, 2014, pp. 97–98), there emerged a significant regional trading partner with tangible economic and geopolitical significance (Cleuziou & Méry, 2002; Potts, 1993) known in Southern Mesopotamian texts as *Magan* (Potts, 1990a, pp. 133–135). However, despite links to urbanised areas in Mesopotamia, Iran and the Indus Valley, Umm an-Nar settlements cannot be described as urban, and the question of how to categorise Umm an-Nar settlements, for example, in terms of size and social organisation, remains (Swerida, 2022).

Archaeological research into the Umm an-Nar period has been going on for over half a century (Frifelt, 1969; Glob, 1959). Dozens of settlements are known and a small selection has been partially excavated (e.g., Azzarà & De Rorre, 2018; Cleuziou, 1989; De Rorre et al., 2020; Döpper, 2018a; Frifelt, 1995; Kluge, 2018; Potts, 1991; Thornton et al., 2016). Known domestic structures are

rectilinear and are built of stone and/or mudbrick (Azzarà, 2009; Costa & Wilkinson, 1987). Many settlements feature large, monumental round-towers up to around 20 m in diameter (Cable & Thornton, 2013). Settlements appear to have centred around arable agriculture and copper smelting inland (al-Jahwari, 2009; Weisgerber, 1981) and fishing and trade on the coast (Cleuziou & Tosi, 2000; Frifelt, 1995). Umm an-Nar tombs are large, circular, surface-built structures (Böhme & al-Sabri, 2011; Munoz, 2019), up to 14 m in diameter (Carter, 2002); they served as communal graves and were reused repeatedly, housing as many as several hundred individuals (Blau, 2001; Munoz et al., 2012). The ceramic, copper and soft-stone material culture of the Umm an-Nar period is well documented (David, 2002; Méry, 2000; Weeks, 2003). However, despite this sizeable corpus of archaeological evidence and research, as well as recent renewed interest in the field (e.g., Döpper, 2018a, 2018b), our understanding of the settlements of the period is still very limited—particularly in relation to their layout and development. A recent paper by Swerida (2022) offers an overview of published Umm an-Nar settlements and argues the need for a clearer definition of 'settlement' in this period, in light of the dispersed and patchy data. Relatively few well-preserved Umm an-Nar settlements are known, and even fewer have been thoroughly investigated. Complete, or even near-complete, plans of settlements are almost nonexistent; complete plans of domestic or nonfunerary structures are also rare; and sites are often damaged and poorly preserved, obscured by evidence from later periods, or buried under alluvium.

The *Rustaq-Batinah Archaeological Survey* (RBAS) spent five seasons examining long-term settlement trends in Oman's Southern Batinah region of 2013 and 2018 (Kennet et al., 2016). An archaeological survey was conducted primarily around the 17th-century Yaʿarubid capital Rustaq and along the Musanaah and Suwayq coast, investigating every period from the Palaeolithic to the mid-20th century. One of the most significant sites discovered is al-Tikha, a medium to large Umm an-Nar site close to old Rustaq. A complete plan of the settlement is discernible on the surface, providing important new information on the layout and organisation of Early Bronze Age settlements in this region.

This paper has two separate but related aims: the first is to present a detailed description of Umm an-Nar al-Tikha based on surface investigation; the second is to discuss the significance of al-Tikha to our understanding of the layout and structure of Umm an-Nar settlements more generally through comparisons with other sites in the region and to consider whether al-Tikha might suggest a trend of agglomerated settlement development.

1.1 | Umm an-Nar settlements

Several Umm an-Nar sites have revealed information regarding individual structures and their immediate environs, but relatively little regarding the nature and layout of settlements as a whole. Umm an-Nar island (Figure 1) has an impressive cemetery, but its large settlement area consisting of three areas (A–C) that

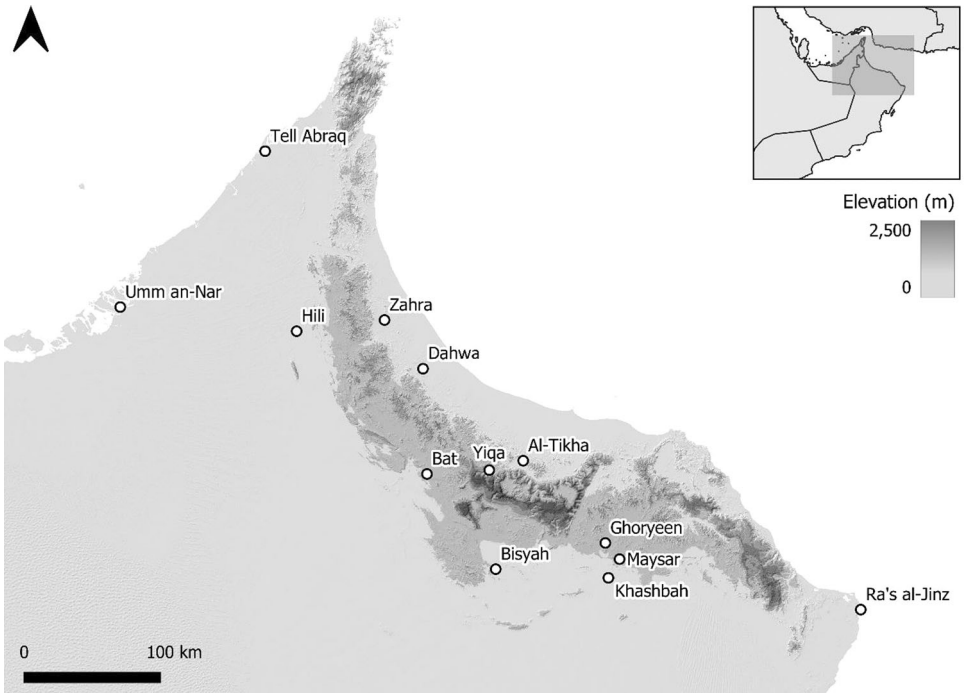

FIGURE 1 A map of the Umm an-Nar settlements mentioned in the text (SRTM data courtesy of NASA/USGS)

might have once formed a single settlement unit is partly buried, has been damaged by erosion and only a small portion has been excavated (Al-Tikriti, 2011, pp. 14–19; fig. 75; Frifelt, 1975, p. 364; 1995). Hili includes eight or more possible round-towers (only four of which are confirmed) and 12 tombs within a 30 ha area (Cleuziou et al., 2011, fig. 3). Rectilinear mudbrick structures have been excavated abutting one tower, but, so far, no other clear Umm an-Nar settlement remains have been discovered. Only a few very small soundings—uncovering pottery and mudbrick fragments (Cleuziou, 1989)—have been dug between the monuments, meaning that little is known of the site's general layout. Excavations at Tell Abraq revealed a large Umm an-Nar round-tower and a tomb, but no evidence of permanent domestic structures (Potts, 1990b, 1993), suggesting that the population may have lived in date-palm frond buildings in the environs of the tower (Potts, 1991, pp. 29–32; 2000, pp. 22–23).

At Bat, eight round-towers and well over a dozen Umm an-Nar tombs are contained within an area of only a few hundred hectares (Böhme & al-Sabri, 2011; Frifelt, 1976, 1985; Thornton et al., 2016, p. 169). This area, spread mostly across a 1-km-wide wadi valley, is inhabited today and thus a large part of the archaeological remains are likely to have been destroyed through erosion or later occupation, or lay buried under sediment, later occupation and arable farmland. In contrast to the tombs and towers, only two areas with contemporary domestic structures are known and plans of settlement layout are not well preserved (Swerida, 2018, p. 55, 2022). The eight round-towers at Bisya/Salut are spread over an area of 4000 ha or more. While many of the large monuments have been planned and even excavated (Degli Esposti, 2014; Orchard, 2000), very little is known about how occupation of the whole area was configured. Only one sizeable area of domestic structures is known, situated in the immediate vicinity of one of the round-towers (de Cardi et al., 1976, p. 163; Humphries, 1974, p. 50; Orchard, 2000, p. 172), and only a basic plan has been published (Orchard & Orchard, 2007, plate 13).

Other less well-known sites reveal more about the organisation of substantial Umm an-Nar settlements. Ghoryeen is approximately 15 ha in total, stretching along the terrace of a large, inland wadi on the south-western side of the Hajar Mountains. It has recently been excavated, which demonstrated the presence of two main periods of occupation: one late Hafit and one Umm an-Nar (Al-Jahwari et al., 2020). The layout of the Umm an-Nar phase of occupation is largely visible on the surface. It is possible to suggest that the Umm an-Nar period occupation (Period II) extended over around 5 ha, while the earlier, late Hafit occupation, may have covered a slightly larger area. The Umm an-Nar settlement included a round-tower, a cemetery of 49 tombs to the southeast, most of which are quite small and apparently relatively early, and between 18 and 28 rectilinear stone-built domestic structures (based on Al-Jahwari et al., 2020, p. 297 & fig. 30). The layout suggests a single main area of occupation, with a round-tower in the centre, although there might be a second occupation area to the north of the tower. Later Iron Age tombs cover earlier remains to the north and obscure the picture.

Further east at Amlah, the remains of several large rectilinear structures are situated immediately outside a crude round-tower; the main cemetery area lies a hundred metres to the west (de Cardi et al., 1976, fig. 3). Al-Zebah is located 7 km north-west of Bat. It consists of over a dozen large rectilinear stone structures distributed in three main clusters over an area of almost 4 ha (Schmidt & Döpper, 2016, p. 253). The site of a possible destroyed round-tower stands not far from the main cluster (Döpper, 2018c, p. 88); no cemetery has yet been discovered. The sizeable, multitowered sites of al-Khashbah (al-Jahwari & Kennet, 2010; Schmidt & Döpper, 2017) and al-Hasi (Kondo et al., 2014) have not yet been thoroughly investigated—although work is ongoing.

A number of Umm an-Nar settlements have been discovered that lack round-towers, suggesting that these were not ubiquitous. In some cases, tombs have not been found, but these absences are more likely to be explained by later destruction. Dahwa is situated on the Batinah coastal plain, on the northern side of the Hajar Mountains. It consists of five separate areas of occupation (DH1, 5, 6, 7 and 8) covering a total of around 32 ha of defined archaeological areas (based on al-Jahwari et al., 2018, fig. 3) and containing possibly as many as 65 rectilinear stone structures (based on al-Jahwari et al., 2018, p. 31, fig. 3; Douglas et al., 2021, p. 198) on both sides of a sizeable wadi and a mid-channel bar. No tower is preserved, though it is possible that one did once exist. Umm an-Nar tombs are also present at the site in small numbers. Wadi Fizh (WAJAP Sites 63 and 73) are located further north on the Batinah. Site 63 consists of a single cluster of approximately 17 rectilinear buildings, covering an area of about a hectare with no tombs, while Site 73 consists of several clusters of buildings and several tombs (Düring & Botan, 2018; Düring et al., 2019). Zahra 1 is also located in northern Batinah. It consists of 10 or more rectilinear stone structures in two clusters on opposite banks of the same wadi; there are no contemporary tombs (Costa & Wilkinson, 1987, p. 97). Maysar 1 is located on the other side of the Hajar Mountains. The settlement extends along the bank of a large wadi for approximately 200 m, with 10 or more stone rectilinear structures in two clusters visible on the surface; further remains may have eroded into the wadi (Weisgerber, 1983, p. 270, fig. 2). The nearest Umm an-Nar tombs and round-tower are located a kilometre away to the west and south (Weisgerber, 1981). At Ra's al-Jinz on the eastern coast

of Oman, RJ-2 consists of 14 stone and mudbrick rectilinear structures, conjoined in two separate but neighbouring complexes covering less than a hectare, while RJ-3, located around 200 m away, appears to have occupied an area of around 1 ha; the nearest known Umm an-Nar tombs are a short distance away above the settlements at RJ-1 and RJ-11, but no round-tower is known within more than 100 km despite intense survey of the region (Azzarà & De Rore, 2018; Cleuziou & Tosi, 2000, 2007, pp. 126–127; De Rorre et al., 2020). For summary plans of many of the settlement areas mentioned here, see Figure 2.

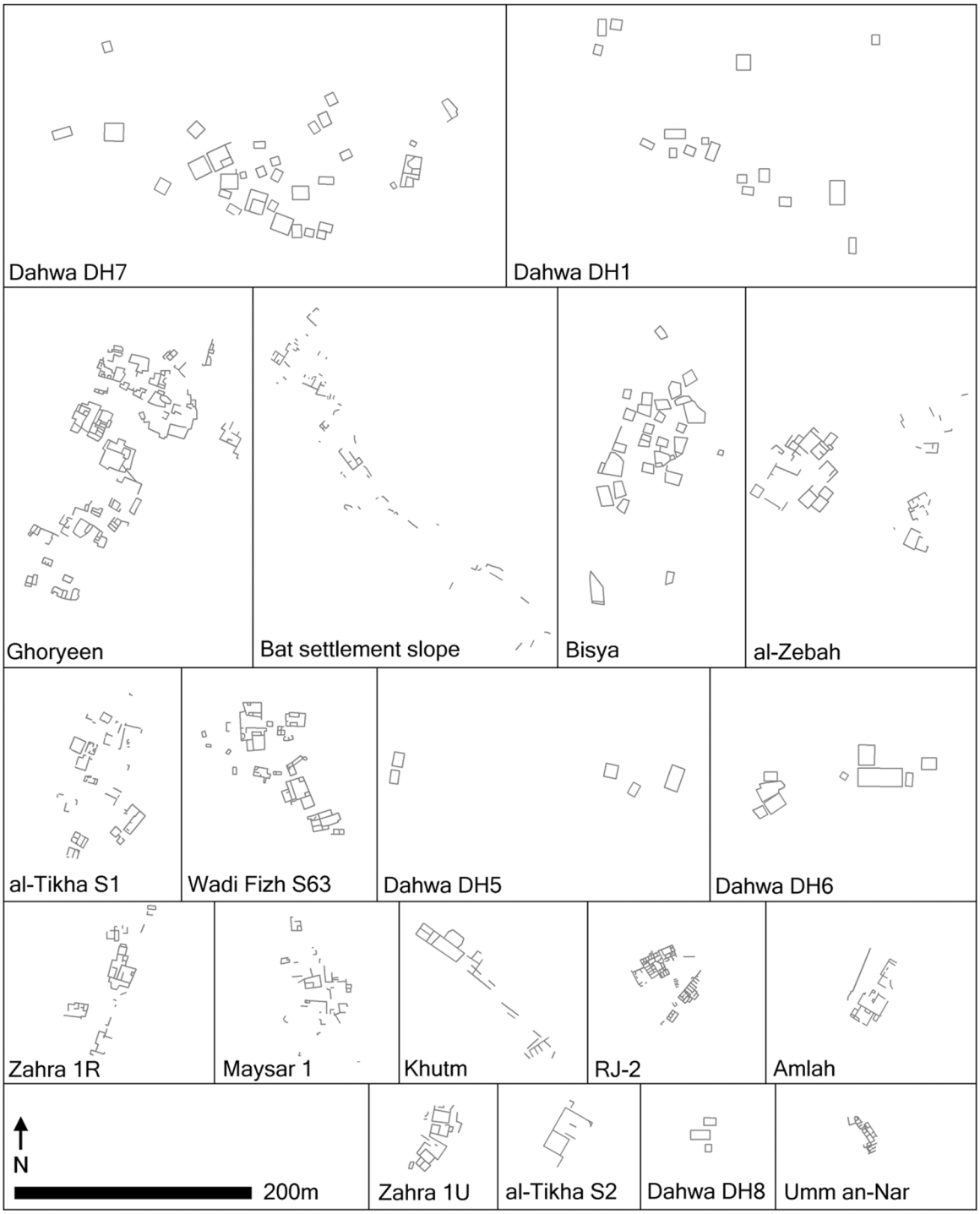

FIGURE 2 Comparison of the size and layout of rectilinear structures in planned Umm an-Nar settlement sites (to scale and oriented to the north). Modified after al-Jahwari et al. (2018, fig. 3), al-Jahwari and Kennet (2010, fig. 9), Swerida (2018, figs. 13, 12), Orchard and Orchard (2007, plate 13), Projekt Al-Khashbah (2022), During and Botan (2018, fig. 3), Costa and Wilkinson (1987, fig. 35), Weisgerber (1980, abb. 28), Azzarà (2012, fig. 3); de Cardi et al. (1976, fig. 10) and Al-Tikriti (2011, fig. 16).

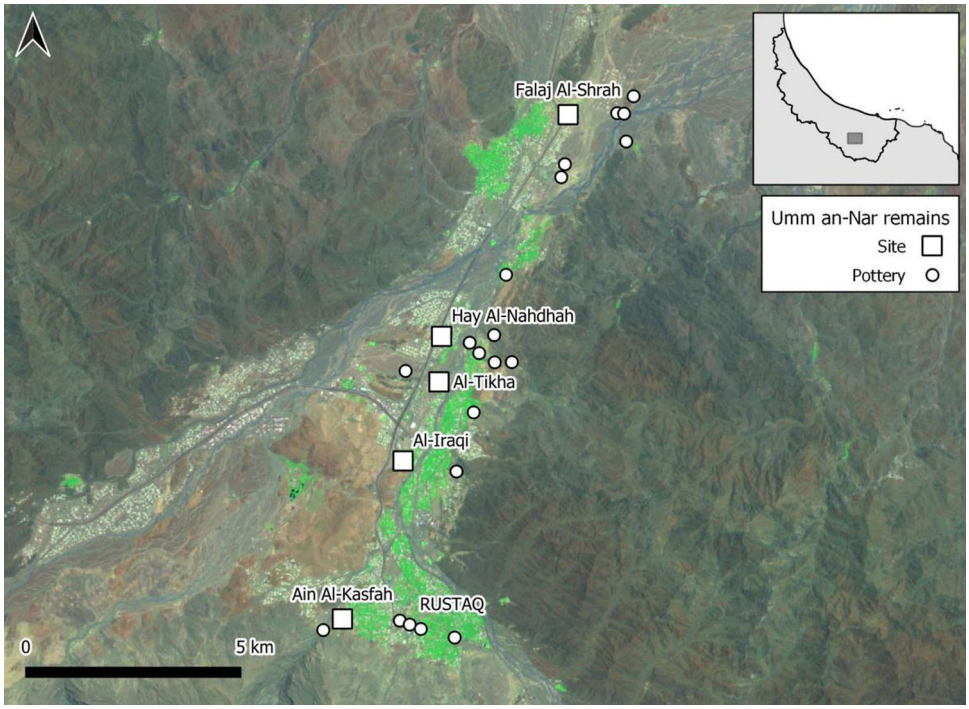

FIGURE 3 The location of major and minor Umm an-Nar sites around Rustaq (Sentinel-2 imagery courtesy of the ESA)

1.2 | Al-Tikha (*al-Ṭīkha*)

Al-Tikha (544200/2592100[1]) is located 5 km north of old Rustaq along the Wadi Far in the Southern Batinah region of Oman (Figure 1). It is the most significant Umm an-Nar site within the RBAS study area and one of only five large Umm an-Nar settlements known on the Batinah. It consists of three, or possibly four, round-towers; two occupation areas marked by stone buildings visible on the surface; a scatter of pottery covering a wider area, which probably indicates the presence of ephemeral structures; and a destroyed cemetery of at least four tombs. The site is perhaps the location of 'Wadi Far 1', a site reported by the 1973 Harvard survey as a small third millennium settlement 5 km to the north of Rustaq, with a number of associated cairns and stone circles akin to Umm an-Nar graves (Hastings et al., 1975, pp. 10, 12, figs. 2, 10). However, the Harvard description does not mention round towers and the tomb circles that it describes are not apparent at al-Tikha, meaning that it is impossible to be certain of the correlation. Indeed, it may be that Hastings et al. were referring to the site of Hayy al-Naddhah, an Umm an-Nar cemetery 1.5 km north of al-Tikha at 544950/25937000, a site also recorded by the RBAS.

[1]All coordinates are given as 'easting/northing' in metres (UTM zone 40 N, WGS 84).

al-Tikha appears to have been part of a string of Umm an-Nar settlements located along the east bank of the Wadi Far at intervals of one or two kilometres (Figure 3). It is impossible to be certain that this was the full extent of Umm an-Nar settlement in the area as it is likely that more, now-destroyed sites once existed. The best-preserved after al-Tikha is Falaj al-Shrah, about 7.5 km to the north at 547200/2598650, which has the remains of a single Umm an-Nar round-tower, two badly destroyed tombs and a small settlement area with no distinct building plans. Two well-preserved tombs that must once have been attached to a small Umm an-Nar settlement are located 1.5 km to the north at Hay al-Nahdhah. Evidence of an Umm an-Nar tomb or tombs in the form of 'sugar-lump' facing stones re-used in later tombs were found 1.7 km to the south at al-Iraqi. A possible settlement site is located 5.5 km to the south, near the hot springs at Ain al-Kasfah, where ceramics and the remains of a possible third millennium structure have been found. In addition, scatters and isolated finds of Umm an-Nar ceramics from many locations visited by the survey attest to wider activity and settlement that is now otherwise lost. The next closest known Umm an-Nar settlement is Yika, 26 km to the west at 519200/2585100 (al-Jahwari, 2004, 6-7, figs. 9–11), which has a round-tower and some smaller apparently domestic structures (Figure 1). The string of settlements mentioned above is further discussed below.

al-Tikha is situated just south of the confluence of two major watercourses, Wadi Far and Wadi Sahtan, which run from the Hajar Mountains and converge near the middle of extensive ophiolite and Hawasina foothills. The site is located on the western bank of Wadi Far, on a Quaternary alluvial terrace, between the modern settlements of Hay al-Nahdhah and al-Iraqi, opposite the village of Wubil. Its approximately 50-hectare extent encompasses remains from a number of periods, including a large Islamic cemetery that has protected the site from recent development (Figure 4). Its most striking and substantial features date to the Umm an-Nar period. As mentioned, three certain Umm an-Nar round-towers, a cemetery and a large occupation area including two areas of stone housing (S1 and S2 in Figure 4) are distributed across the site, linked by a scatter of Umm an-Nar sherds. The Umm an-Nar features are spread quite widely across the site—in some cases, hundreds of metres separate them. The surface pottery testifies to the continued occupation of the site into the Wadi Suq period, making it one of a relatively small number of sites outside of the northern Emirates where this is clearly attested. The architecture of one of the Umm an-Nar tombs indicates that it was built early in the period (below), thereby suggesting that the site was inhabited for much of the Early and Middle Bronze Age.

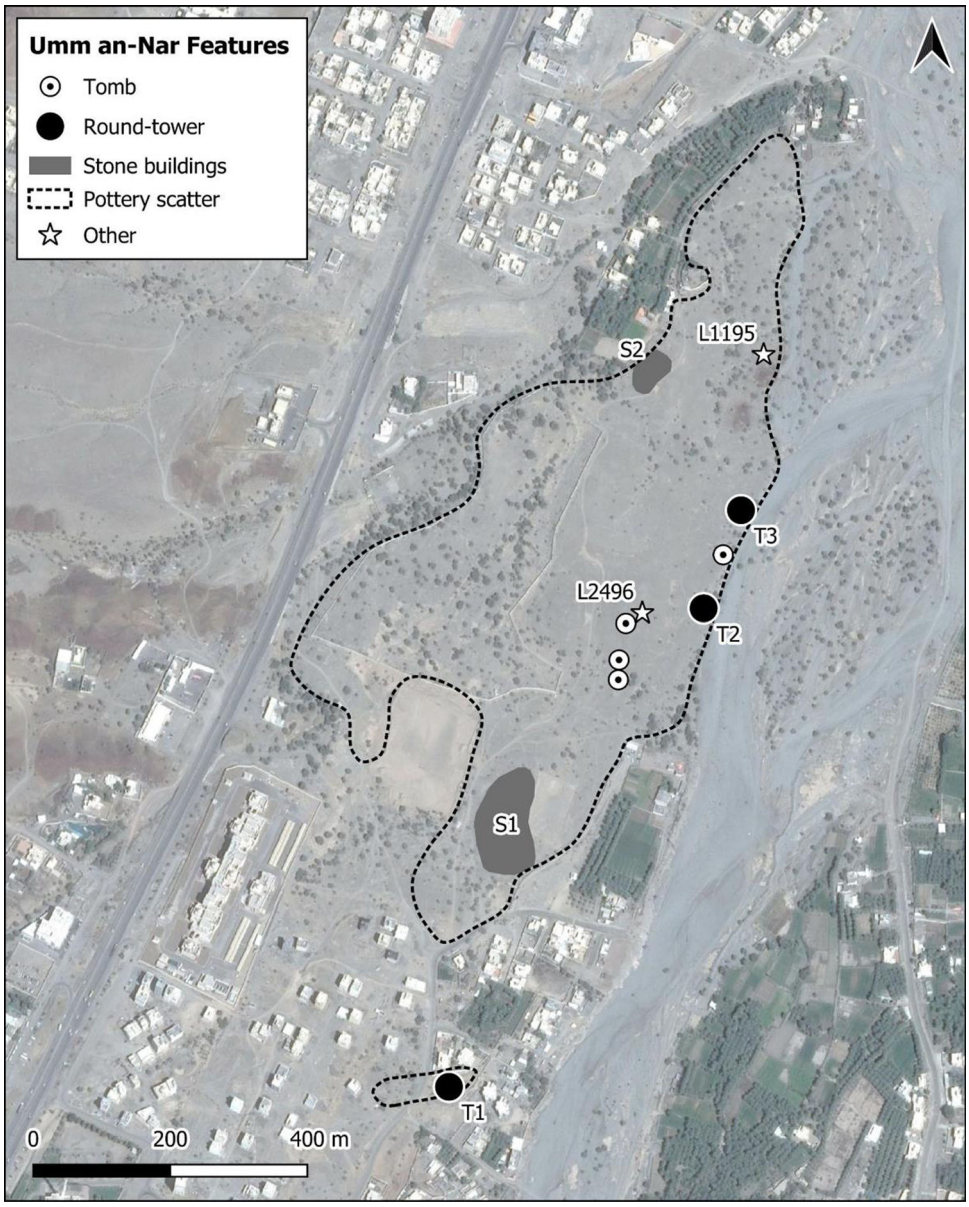

FIGURE 4 al-Tikha site map showing the major Umm an-Nar features (Google Earth imagery © 2016)

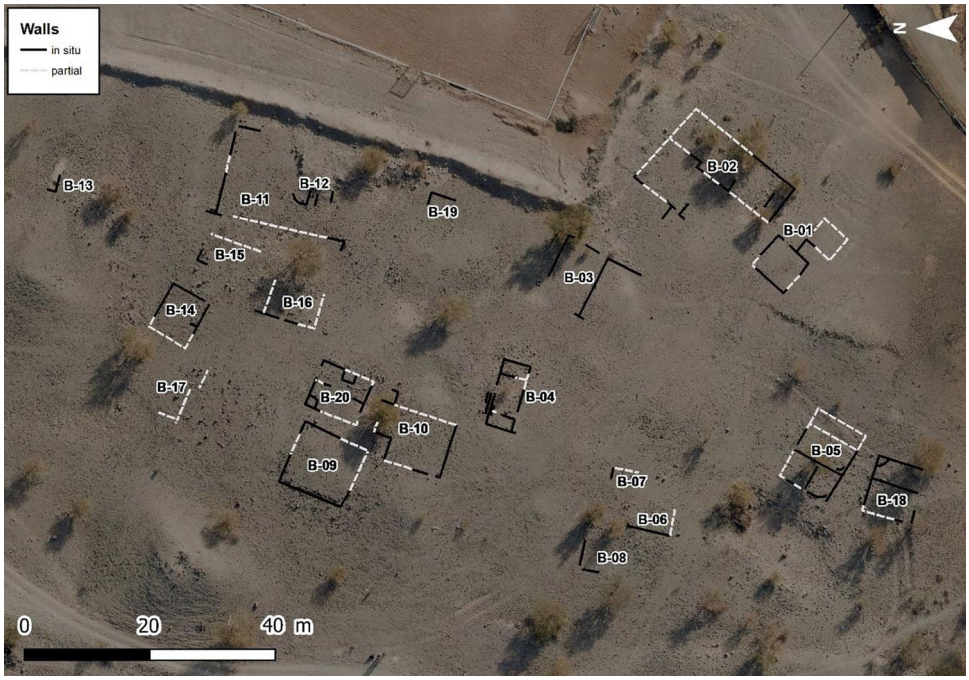

FIGURE 5 Plan of the 20 structures that make up Umm an-Nar occupation area 1

1.2.1 | Occupation areas

There are two main occupation areas at al-Tikha as well as a large scatter of pottery covering much of the site.

Area 1 (S1, 544190/2592080)

The best preserved and largest Umm an-Nar occupation area (S1) consists of 20 or so stone-built structures distributed across approximately 1 ha (Figure 5). The area immediately to the east of these buildings had been bulldozed by January 2014 when the site was first discovered by the RBAS (as can be seen in the top left corner of Figure 5), so it may have continued further in this direction. However, there is relatively little masonry within the disturbed spoil, suggesting that little of the stone buildings has been lost, although there may of course have been other activities in this area.

The structures consist of stone walls clearly visible on the surface, forming a variety of rectilinear plans. Many of the walls have been partially or entirely robbed of stone, and the condition of the buildings varies considerably (Table 1). The two largest (B-02, B-11) are over 20 m long and 16 m wide, while a third, B-03, could have been of similar size. The others are considerably smaller; the nine most complete have average dimensions of 11.0 × 8.1 m, and three of the four most complete are quite modest in size. The majority of the structures are subdivided into two by internal walls. B-05, despite its small dimensions, was made up of at least four rooms, and two others (B-02, B-04) appear to have had at least three.

TABLE 1 Details of the 20 structures at S1

Structure	Condition	L (m)	W (m)	Rooms
B-09	Complete?	12.2	10.4	1+
B-18	Complete?	9.3	8.7	2+
B-20	Complete?	8.7	7.6	2+
B-14	Complete?	8.4	6.4	2+
B-02	Partial	20.4	17.3	3+
B-01	Partial	14.1	8.3	2+
B-05	Partial	12.3	9.6	4+
B-04	Partial	11.1	5.4	3+
B-11	Large fragment	22.5	16.4	2+
B-03	Large fragment	16.6	14.2	2+
B-10	Large fragment	12.7	10.7	2+
B-16	Large fragment	10	5.7	2+
B-15	Small fragment	8.2	4.8	1+
B-06	Small fragment	6.9	4.2	1+
B-12	Small fragment	6.5	5	1+
B-17	Small fragment	6.1	3.7	1+
B-19	Small fragment	5.2	2.8	1+
B-08	Small fragment	5.1	3.3	1+
B-07	Small fragment	4	2.4	1+
B-13	Small fragment	2.8	1.5	1+

The stone walls were built using two distinct techniques. Wall-1—the most common—uses large, angular blocks of what appears to be a Hawasina limestone, while the second, Wall-2, uses water-rounded limestone cobbles/small boulders (Figure 6). Generally, walls measure about 30–40 cm wide, with a 10–20 cm gap between them for double walls, which consist of two rows of stone with no preserved matrix. Most walls are built of either one or the other technique, but both are combined in some buildings (such as B-04) and occasionally in the same wall—the inner face being one and the outer face another. In such cases, the water-rounded cobble side is slightly narrower. It is possible that the two techniques are of different dates. Ten of the buildings consist solely of walls made up of a single line of stones, five walls made up of an inner and outer face of parallel lines of stones and five made up of a combination of the two (Figures 6 and 7). There is no obvious pattern in terms of single/double-wall combinations, building techniques or the size, distribution or alignment of the structures.

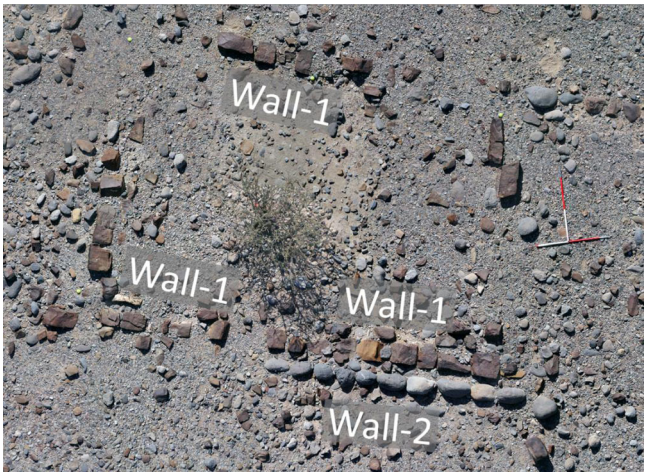

FIGURE 6 Structure B-04 whose walls are built of double rows of blocks (Wall-1) and cobbles (Wall-2), demonstrating clearly the two different wall-construction techniques used at the site.

The structures are distributed in groups of two or three separated by gaps of 10–20 m. The orientations of the buildings suggest that they might be divided into four different alignments, although the variation is modest, with a maximum difference of 25° (Figure 8). In some cases, buildings of the same alignment neighbour one another; in other cases, they are spread across the area. The different alignments might conceivably indicate different phases of construction, or they may be haphazard.

The scatter of Umm an-Nar pottery around S1 is much denser than the general background level across the whole site (see below). A 4-m-wide, 150 m surface ceramic collection transect through the middle of the area yielded almost 450 sherds—nearly six times denser than the average across the site. The vast majority of sherds date to the Umm an-Nar period (Table 2). Surface pottery collections were also carried out on each structure, but a comparison of the assemblages reveals no obvious chronological or functional differences. In addition to pottery, B-01 yielded a single piece of copper slag.

Area 2 (S2, 544410/2592750)

The second Umm an-Nar occupation area (S2) in the northern part of the site consists of a collection of stone walls visible on the surface forming a rectilinear plan of an apparently complex building (Figure 9). The walls are constructed mostly of the Wall-2 technique along with a few angular blocks as in Wall-1 (Figure 10). The vast majority are single-row walls, but the southernmost is a double-row wall. The larger, continuous structure measures ~50 × 25 m, and it is not unlikely that the smaller (5 × 4 m) structure to the north was originally

FIGURE 7 Structure B-01 (from the east), an example of a stone structure visible on the surface in S1

FIGURE 8 The four different alignments of structures at S1

TABLE 2 Pottery picked up in the 4 × 150 m transect through the middle of S1

Umm an-Nar	340	76.9%
Wadi Suq	25	5.7%
Iron II	19	4.3%
Late Islamic	5	1.1%
Non-ID	53	12.0%
Total	442	100.0%

joined to it. This building is larger than any in the S1 area and is obviously a courtyard structure.

Interestingly, the structures were built on a similar alignment to those in S1. Architecturally, the larger structure has a bracketed, curved wall in one corner—a feature also observed in some of the S1 buildings. Surface pottery collection in the area yielded a large number of Umm an-Nar domestic ware sherds as well as a few Wadi Suq and Iron Age II sherds. The proportions are comparable to S1, but the density is not as high.

1.2.2 | The pottery scatter and surface collection

In addition to the structural remains in the two occupation areas, there is a notable scatter of Umm an-Nar pottery across the whole site. A transect-based survey methodology was used to map this. Six transects

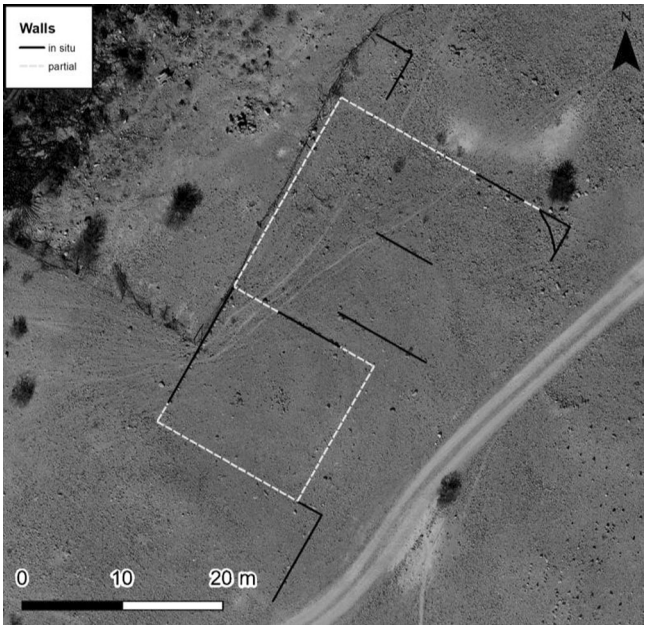

FIGURE 9 Plan of the second Umm an-Nar occupation (S2)

spaced evenly across the width of the main part of the site were field-walked. All pot sherds 2 m either side of the transects were bagged separately every 25 m. The pottery collected from each of the 25 m sections along the transects was then classified and quantified.

The results will be presented in more detail in a future publication. For the present purposes, it suffices to note that around 3500 sherds were collected from 260 transect sections from more than 6.5 km of transect. Approximately

FIGURE 10 The mainly cobble-built single wall on the south-western corner of the S2 complex

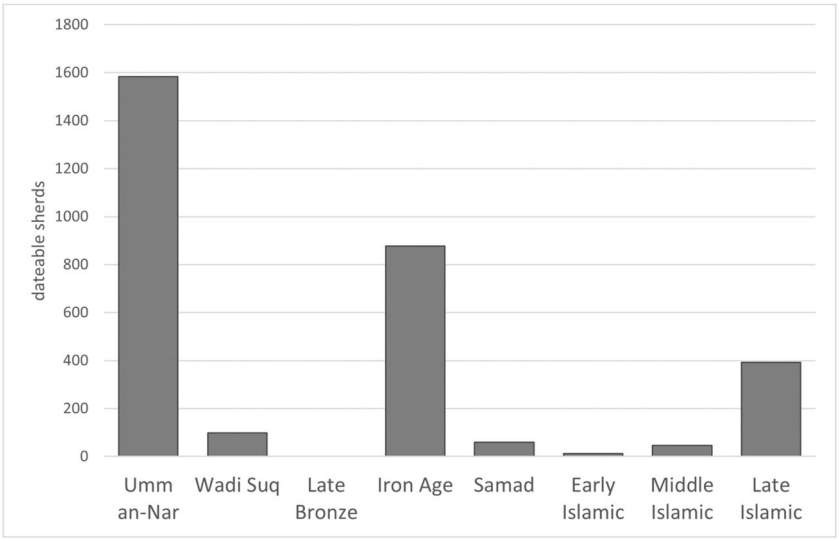

FIGURE 11 The number of dateable pottery sherds recovered during the transect survey

90% of the sherds could reliably be allocated to a specific period. The assemblage is dominated by Umm an-Nar and Iron Age domestic wares, but Wadi Suq pottery makes up a smaller but significant proportion (Figure 11).

The Umm an-Nar pottery

Umm an-Nar domestic wares were predominant amongst the Umm an-Nar pottery at al-Tikha. These were mostly related to 'Omani Sandy Red Wares' (Méry, 2000, p. 150) (Figure 12.1–5, 7–9), and were usually in the form of larger storage jars, sometimes with painted or applied ridge decoration. In addition, another important component has clear grey cores and brown fabrics, not normally seen in Sandy Red Wares, suggesting lower firing temperatures and incomplete oxidisation. These tended to be smaller jars with a large diversity of everted rim types. Similar pottery has also been found at SWY-3 at Khor Bani Bu Ali (Méry & Marquis, 1998, pp. 217–219, 223, n. 4; 1999, p. 10) and at RJ-2 Period IV (Azzarà & De Rorre, 2018, pp. 16, 22). At both sites, it seems to be related only to the very latest period of Umm an-Nar occupation.

It can be suggested, on the basis only of the fabrics, that there was a local ceramic industry (the location of which has not been discovered), which underwent a decline in the standardisation of firing and shapes towards the end of the Umm an-Nar period. This fabric was used to make the ubiquitous Umm an-Nar period bowls and ovoid jars from the tombs, which are often

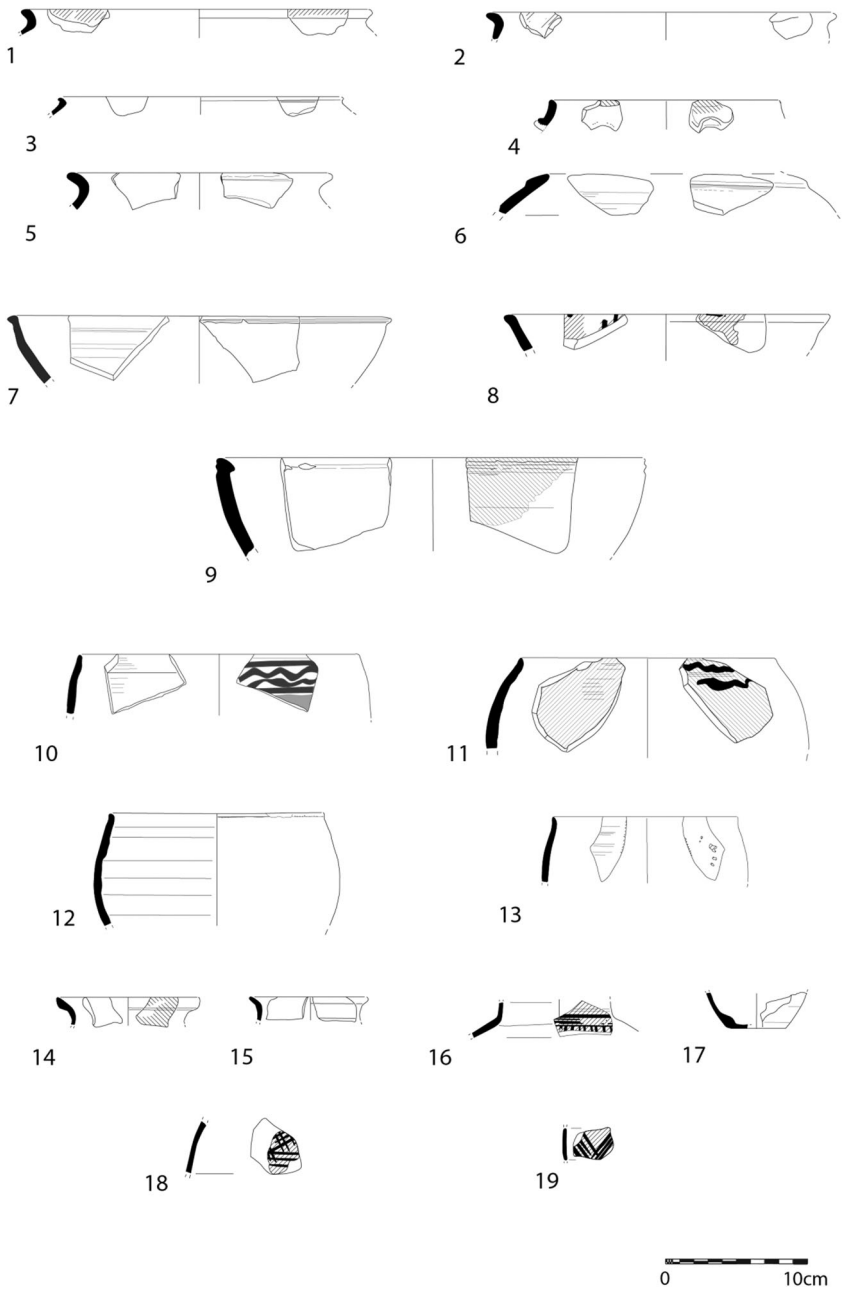

FIGURE 12 Umm an-Nar ceramics from the surface collection at al-Tikha (Tables 3 and 4)

overfired (Figure 12.10–13). These products appear to have been changing away from the high standardisation of earlier Umm an-Nar ceramic industries to more localised production with various production modes including use of the wheel. A similar pattern was recognised from the latest Umm an-Nar tombs at Hili, which appear to have been contemporary with some of the habitation and tomb use at al-Tikha (Méry et al., 2010, p. 10).

Umm an-Nar period 'Indus-related' ceramics were attested in rare open vessels, sometimes painted, as well as in the more common Black Slipped Jars used for storage and/or transport (Figure 13.3–6). Some locally-made Black Slipped Jars must have been present as well, as a substantial part of the sherds were difficult to distinguish from local Umm an-Nar wares, even including small mica inclusions normally associated with Indus pottery. An additional group of vessels in light brown-reddish yellow fabrics with fine mica represents shapes typically seen as Indus style, with an applied ridge and everted rim (Frenez et al., 2016, p. 177) (Figure 12.6). However, these jars also seem similar to local wares and suggest local manufacture of Indus-style ceramics (see also increasing evidence from Salut and other sites: Frenez et al., 2016, p. 176).

Umm an-Nar painted Black-on-Red fine wares, as defined by Méry (2000, p. 79) (Figure 12.14–19), were

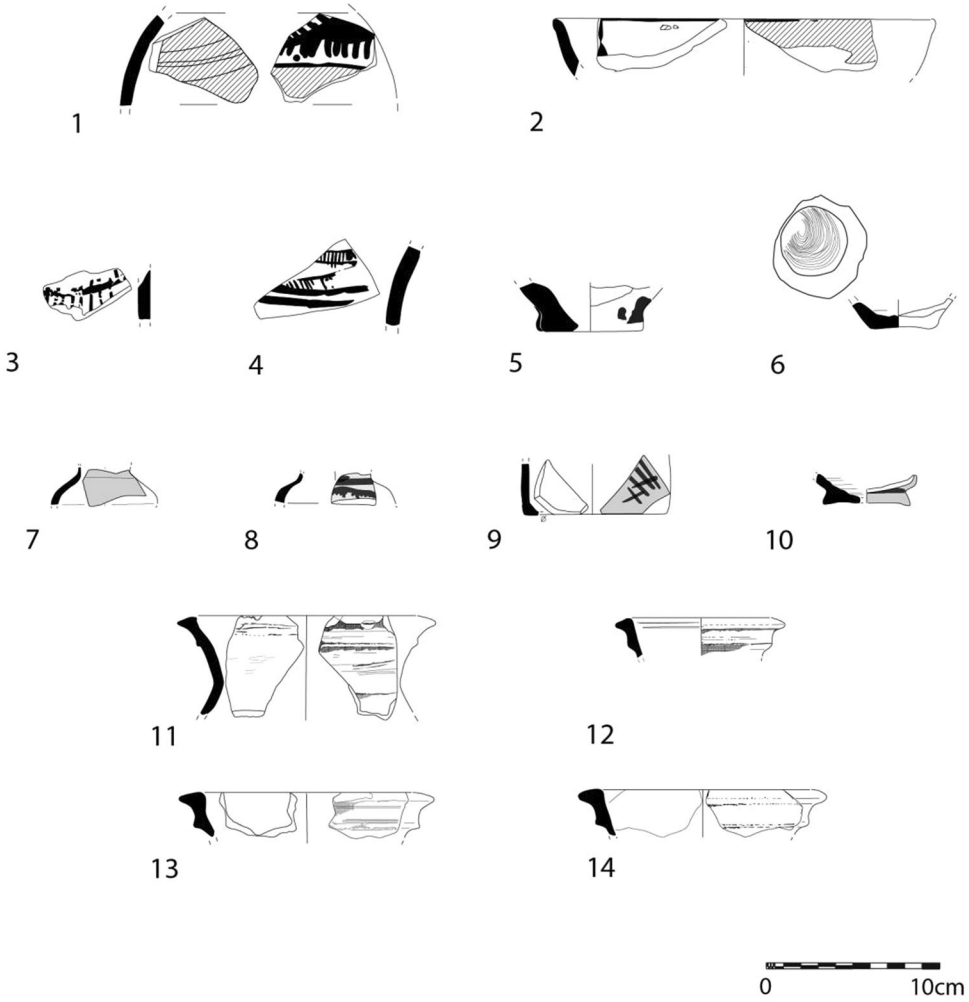

FIGURE 13 Imported Umm an-Nar period ceramics from the surface collection at al-Tikha (Tables 3 and 4)

associated with some of the tombs, together with Grey Wares (both incised and painted) (Méry, 2000, pp. 196, 205) (Figure 13.7–10). Rarer, but significant, Mesopotamian imports were recognised, belonging to the late Akkadian/Ur III period, again suggesting a late third millennium BC use of the tombs (Figure 13.11–14). Rarer bichrome wares (cream slipped and red/black painted), from the tombs, suggest an Indus affinity, but might also relate to a late Umm an-Nar local tradition (Figure 13.1–2).

The data from the transects can be used to map the density of Umm an-Nar pottery across the whole site (Figure 14). It is most dense around the two occupation areas S1 and S2—with a notably lower density around the round-towers and the cemetery. S1 and its vicinity have the highest density. However, a low-density scatter extends some distance beyond the two occupation areas S1 and S2, with maximum dimensions of approximately 1200 × 500 m. This strongly suggests that Umm an-Nar occupation and/or other activity extended across much of the site between areas S1 and S2. This may be indicative of occupation in *arish* (date-palm-frond huts) rather than stone buildings and may be indicative of some level of seasonal occupation. However, it may also result from manuring, processing, manufacturing, waste disposal and other activities.

The evidence indicates extensive Umm an-Nar occupation covering at least 35 ha, which can be roughly divided into dense areas around or close to the stone-built occupation areas and less dense areas elsewhere.

It should be noted that a limited number of fragments of slag and furnace lining were noted on the surface during the transect study. This material appears to be associated predominantly with concentrations of Iron Age pottery, and is therefore likely to be unrelated to the Umm an-Nar occupation of the site or to have been disturbed by Iron Age activity.

1.2.3 | The round-towers

Many Umm an-Nar settlements have one or more 'round-towers' attached to them. These are large, mostly circular monuments of large blocks or mudbrick, usually

TABLE 3 Sherds illustrated in Figure 12

Number	Survey number	Description	Parallel	References
1	P3522 L881	Jar. Late UNAR domestic/local sandy ware. Red slip exterior	Bat/Maysar/Dahwa	Méry (2000, p. 162, fig. 100.1–2)
2	P3524 L881	Jar. Late UNAR domestic/local sandy ware	Bat/Maysar/Dahwa	Méry (2000, p. 162, fig. 100.1–2)
3	P3588 L2647C	Jar. Late UNAR domestic ware	Bat/Maysar/Dahwa	Méry (2000, p. 162, fig. 100.1–2)
4	P3196 L2493	Jar. Late UNAR domestic/local sandy ware. Spouted jar	Hili Tomb N	Méry (2000, p. 210, fig. 8.7)
5	P16578 L2577	Jar. Late UNAR. Domestic/local sandy ware	Hili/Bat/Maysar/Dahwa	Méry (2000, p. 143, fig. 84)
6	P3525 L881	Cooking pot. UNAR. Indus style in local orange sandy domestic ware. Corresponds to 'Beige Sandy Ware' Salut	Salut; Dahwa	Douglas et al. (2021, p. 208, fig. 19); Méry et al. (2017, pp. 177, 173, fig. 8d)
7	P3548 L2647C	Bowl. UNAR domestic ware	General occurrence bowls: Hili; Bat; Salut	No exact parallels
8	P3542 L2647C	Bowl. Late UNAR domestic ware. Red slipped. Black paint	General occurrence bowls: Hili; Bat; Salut	No exact parallels
9	P16574 L2649	Bowl. Local Sandy Ware. Eroded purple-brown slip on the exterior	Hili Tomb N; Hili Tomb A north; Salut	Méry (2000, p. 128, fig. 75.9); Méry et al. (2017 p. 171, fig. 7c)
10	P3544 L2647C	Bowl. Local Sandy Ware. Painted wavy lines between horizontal bands. Late UNAR	Hili Tomb N; Hili Tomb A north; SWY-3	Al-Tikriti and Méry (2000, p. 210, fig. 8.1–3); Méry (2000, p. 149, fig. 89-1.2); Méry and Marquis (1999, p. 224, fig. 8.7)
11	P3588 L2647E	Bowl. Local Sandy Ware. Paint not preserved. Late UNAR	Hili Tomb N; Hili Tomb A north	Al-Tikriti and Méry (2000, p. 210, fig. 8.1–3); Méry (2000, p. 149, fig. 89-1.2); Méry and Marquis (1999, p. 224, fig. 8.7)
12	P3527 L2647W	Bowl. Local Sandy Ware. Paint not preserved. Late UNAR	Hili Tomb N; Hili Tomb A north	Al-Tikriti and Méry (2000, p. 210, fig. 8.1–3); Méry (2000, p. 149, fig. 89-1.2)
13	P3570 L2647C	Bowl. Local Sandy Ware. Traces of red slip. Late UNAR	Hili Tomb N; Hili Tomb A north	Al-Tikriti and Méry (2000, p. 210, fig. 8.1–3); Méry (2000, p. 149, fig. 89-1.2)
14	P3287 L2040	Small jar. UNAR fine ware	Bat; Hili	Méry (2000: p. 82, fig. 48.7)
15	P3290 L2497	Small jar. UNAR fine ware	Bat; Hili	Méry (2000, p. 84, fig. 51)
16	P3329 L2040	Small jar. Base. Black on Red fine ware. Horizontal and short vertical lines	Bat; Hili	Méry (2000, p. 84, fig. 50.2)
17	P3286 L2040	Small jar. Base. Red slipped	Bat; Hili	Méry (2000, p. 84, fig. 51)
18	P3330 L2040	Small jar. UNAR fine ware. Chevron painted	Bat; Hili	Méry (2000, p. 85, fig. 51)
19	P16574 L2497	Small jar. Red on Black fine ware. Chevron motif	Bat; Hili	Méry (2000, p. 85, fig. 51)

TABLE 4 Sherds illustrated in Figure 13

Number	Survey number	Description	Parallel	References
1	P3540 L2647C	Jar. Bichrome ware. Crème and weak red slip. Black decoration. Possibly local production but related to late Harappan ceramic traditions	Late/final UNAR	Carter (2001, pp. 184–185); Carter (2005)
2	P3541 L2467C	Bowl. Bichrome ware. Crème and red slip. Black decoration. Possibly local production but related to late Harappan ceramic traditions	Late/final UNAR	Carter (2001, pp. 184–185); Carter (2005, pp. 258 S46b)
3	P3138 L1922	Harappan ware. Black decoration and mica tempered	Ras al-Hadd; Dahwa; Ras al-Jinz 2	Méry (2000, fig. 144.12); Douglas et al. (2021, p. 206, fig. 13); Personal observation M. d Vreeze (2021)
4	P3555.1-2 L2647C	Harappan ware. Black decoration. Mica tempered	Hili; Dahwa	Douglas et al. (2021, p. 206, fig. 13)
5	P16860 L2561 Transect 7-773	Black Slip Jar. Indus related. Possibly local fabric	Hili, Bat, Dahwa	Douglas et al. (2021); Méry (2000, p. 221), fig. 135
6	P3546 L2647C	String-cut base. Mica ware. Indus related	Hili Tomb A north/Tomb N (late UNAR)	Méry (2000, p. 54, fig. 26; pp. 241–242, fig. 153–154)
7	P3323 L2040	Fine Grey Ware. Iranian import	Bat/Hili	Méry (2000, p. 197, fig. 124.7–10)
8	P3284 L2040	Fine Grey Ware. Iranian import	Bat/Hili	Méry (2000, p. 197, fig. 124.7–10)
9	P2324 L2040	Fine Grey Ware. Iranian import	Bat/Hili	Méry (2000, p. 197, fig. 124.7–10)
10	P3283 L2040	Fine Grey Ware. Iranian import	Bat/Hili	Méry (2000, p. 192, fig. 119.9)
11	P3539 L2647C	Mesopotamian small jar	Late Akkadian/Ur III; Late/Final UNAR	Laursen (2011, p. 34, fig. 1.1–7)
12	P3537 + 3538 L2647C	Mesopotamian small jar	Late Akkadian/Ur III; Late/Final UNAR	Laursen (2011, p. 34, fig. 1.1–7)
13	P3118 L2040	Mesopotamian small jar	Late Akkadian/Ur III; Late/Final UNAR	Laursen (2011, p. 34, fig. 1.1–7)
14	P3119 L2040	Mesopotamian small jar	Late Akkadian/Ur III; Late/Final UNAR	Laursen (2011, p. 34, fig. 1.1–7)

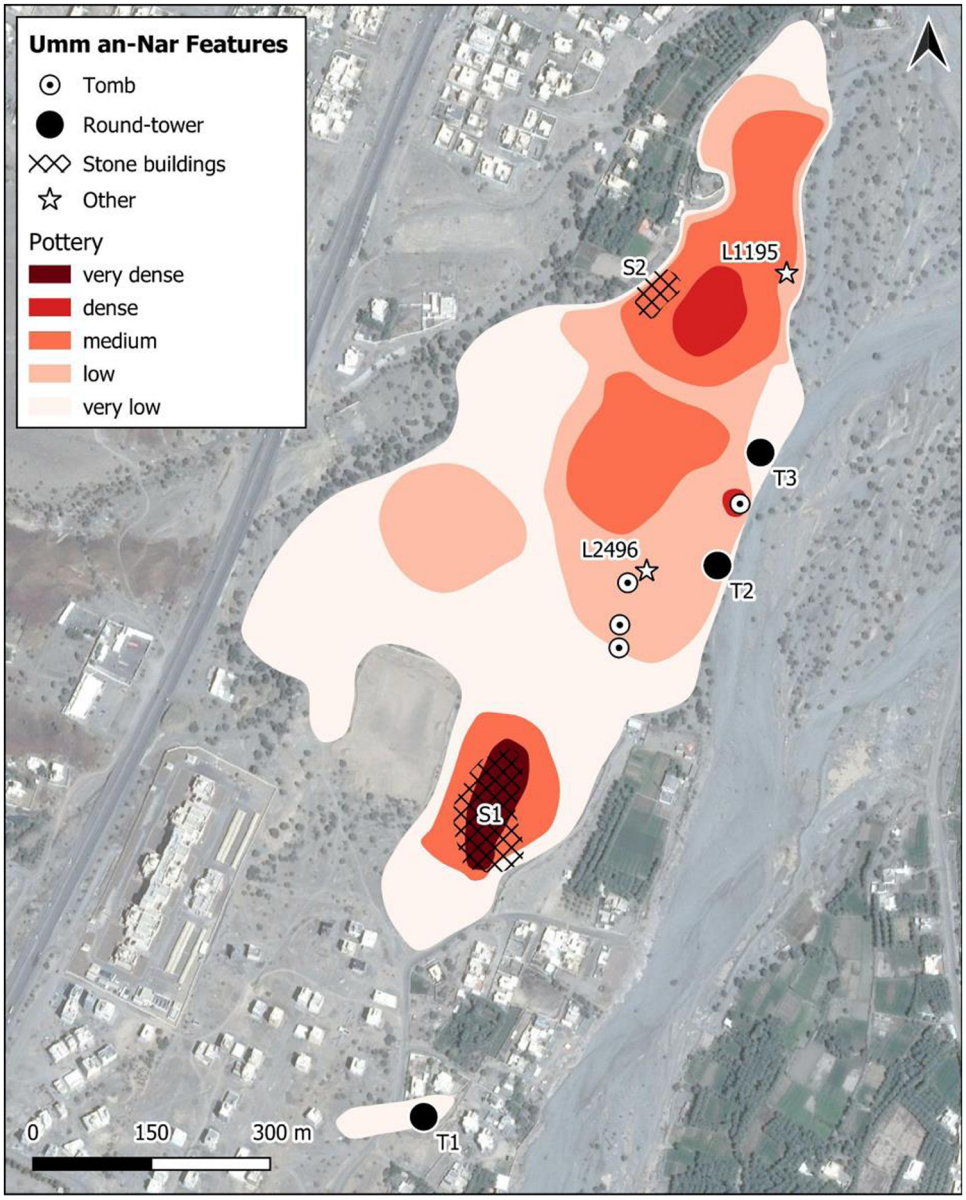

FIGURE 14 The density of Umm an-Nar surface pottery at al-Tikha based on the transect survey (Google Earth imagery © 2016)

measuring in the region of 20 m in diameter, often with internal walls defining casement rooms filled with rubble or sediment (apparently as part of the construction) and often a well at the centre (Cable & Thornton, 2013). Al-Tikha has three such structures that are certain, and one or possibly even two more may be interpreted as towers (features L1195 and L2496, which are described and discussed below). Each of the three certain towers is located several hundreds of metres from the occupation areas. The northern tower (Tower 3) and middle tower (Tower 2) are about 150 m apart right on the edge of the wadi terrace. The southern tower (Tower 1) is of a very different type of construction. It is located 800 m south, and is set slightly further back from the wadi edge.

Tower 1 (544110/2591670)

Known by the local toponym of Harte, this monument was constructed on a rocky outcrop that stands several metres proud of the terrace (Figure 15). The tower is roughly circular, measuring 19.2 × 18.7 m. It is built of massive blocks—on average 80 × 50 × 50 cm—taken from the outcrop that is thought to be a Hawasina limestone. In places, the monument stands two courses high, a metre or more above the ground surface. The structure consists of a double ring wall and perpendicular internal casement walls retaining a 1-m-thick core of soil and gravel. A rounded cobble-lined well lies at the centre of the tower. Its large size—4 × 3 m—and the building material used suggest that it may be

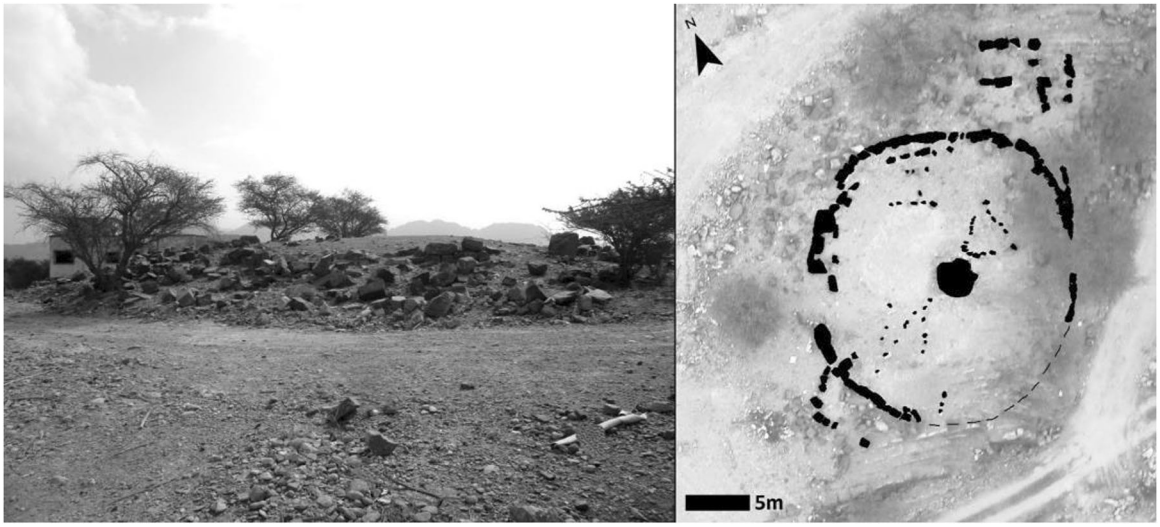

FIGURE 15 Photo and plan of Tower 1

of a later date, or that it was rebuilt and enlarged at a later date. A rectangular 'annex' stands immediately to the north of the tower ring wall. This is built of the same large stone blocks and has dimensions of 6.5 × 6 m. Only a very small number of surface sherds of Umm an-Nar domestic pottery were observed in and around the monument. Approximately 50 m west of the tower, several straight double and single walls are spread over a distance of ~150 m. The area has been severely disturbed by the construction of modern houses and roads, making it impossible to provide a plan. Although very little Umm an-Nar pottery is present in this area, it is possible that a number of domestic structures associated with the tower once stood here, marking a possible third occupation area.

The two northern round-towers are of a different construction method to Tower 1.

Tower 2 (544480/2592390)

The middle tower is c. 18 m in diameter and forms a low hillock on the edge of the present wadi channel, standing almost 2 m above the surrounding terrace (Figures 16 and 17). The structure consists of a double ring wall of large water-rounded cobbles from the wadi channel and angular stones, as well as a series of interior casement walls that appear to be intended to retain a gravel and cobble fill. The outer wall is only visible in short sections and is most apparent in the eastern section that has been eroded by the wadi. A number of water-rounded cobble walls to the north of the tower may once have formed part of related structures, possibly including a walled ditch. Now filled in, the remains of this earthwork are visible to the west and southwest of the tower. A small assemblage of Umm an-Nar and later Bronze Age ceramics was recovered from the area. About 50 m north-west of the tower are two disturbed structures. Although in poor condition, their rectilinear plan is consistent with Umm an-Nar structures at the site, and they could well be related to the tower. They measure c. 6.5 × 6 m and c. 15 × 15 m.

Tower 3 (544530/2592530)

The northernmost tower is similar to its neighbour, but is in much poorer condition. Only short sections of a double ring wall remain, partially encircling a large mound of gravel and small water-rounded cobbles (Figure 18). The mound measures c. 30 m in diameter, but this includes collapse; the original tower would have been smaller. The walling is most clear in the section where the wadi has eroded the eastern part of the monument. The few short surviving sections of the tower's casement walls are more substantial than those of the other two monuments. A number of water-rounded cobble walls to the north of the structure may suggest the presence of a small rectangular 'annex' in this area. Only a few Umm an-Nar sherds were recovered—a density similar to the general background level at the site as a whole.

1.2.4 | The cemetery

Umm an-Nar tombs are known throughout the northern Oman Peninsula (Blau, 2001). They consist of circular structures divided into multiple chambers

FIGURE 16 Oblique aerial view of Tower 2

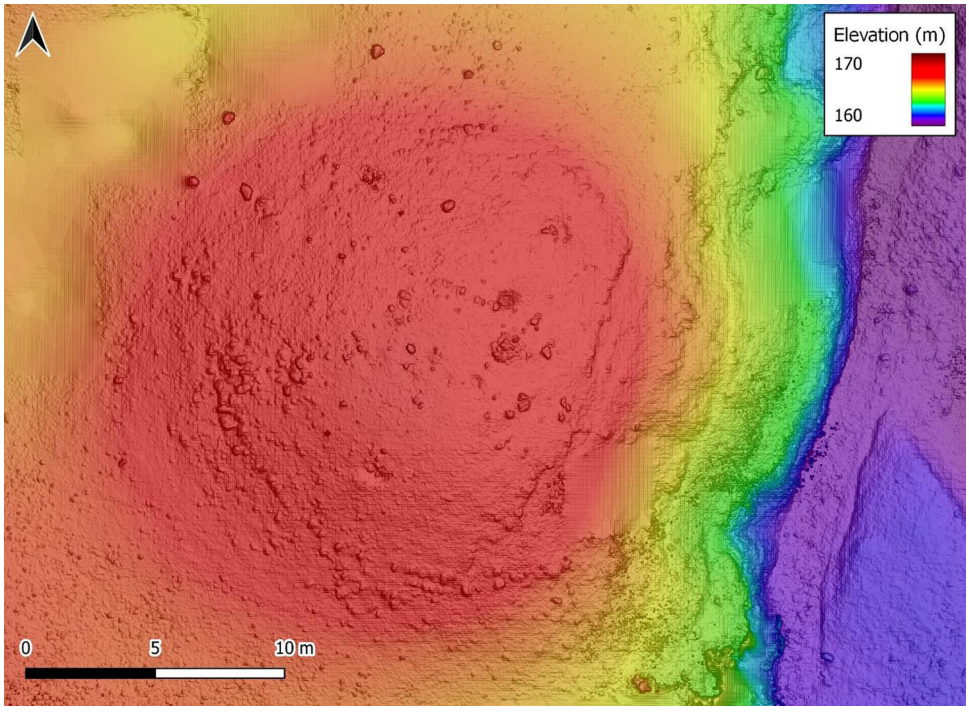

FIGURE 17 Digital elevation model and hillshade of Tower 2

by straight internal walls (Cleuziou et al., 2011; Frifelt, 1991). They are typically 6–9 m in diameter, although they can be as large as 14 m (Blau, 2001; Table 1). In the later part of the Umm an-Nar period, these tombs were faced with finely worked, highly crystalline white-limestone 'Sugar Lump' stones, although in the earlier part of the period, less carefully carved facing stones made of lower-grade, grey or green limestones were used (Méry, 2010, p. 39). The two types are easily distinguishable in the field. In the following description, the early stones will be referred to as Early Facing Stones, corresponding roughly to Méry's 'small facing stones' (Méry, 2010, p. 39, figs. 8, 9), and the later examples as 'Sugar Lumps',

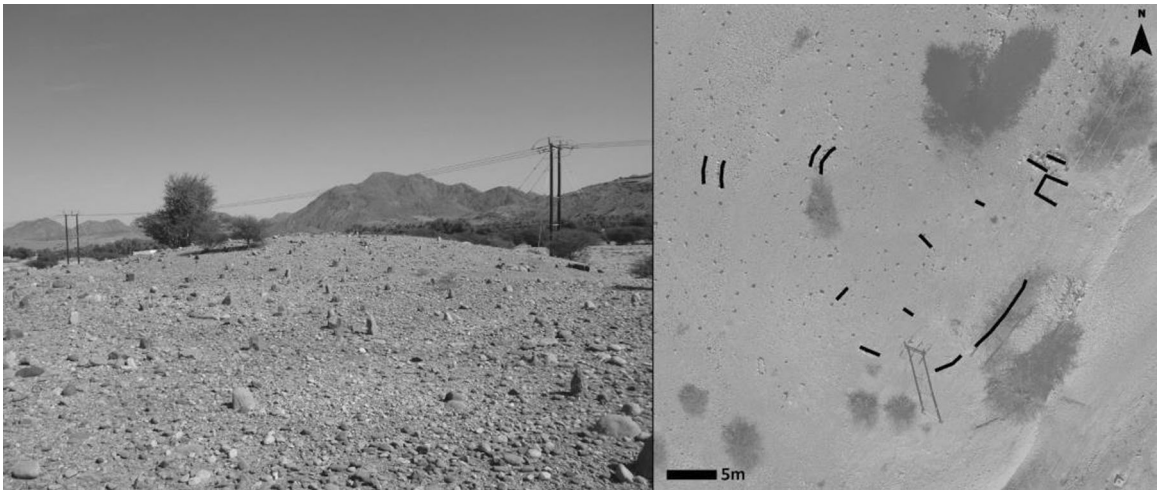

FIGURE 18 Photo and plan of Tower 3

corresponding to Méry's 'bigger facing stones', which were used in her Phase 2 and Phase 3 tombs at Hili (Méry, 2010, p. 40, fig. 10). They are not only distinguished by the type of stone and its colour, but the Sugar Lumps are also more precisely finished on the outer face and are carefully tapered on four sides so that when they are built into a tomb wall, the wall curves inwards vertically as well as horizontally. By contrast, the Early Facing Stones upper and lower faces are parallel and at right angles to the curved vertical outer face of the stone. In addition, the finishing is less precise (Figure 19). This distinction is important for understanding the development chronology of the al-Tikha Umm an-Nar cemetery. Numerous complete examples of both Sugar Lumps and Early Facing Stones (though far fewer in number) were found built into Islamic graves across the site.

Al-Tikha's Umm an-Nar cemetery area is located south and west of Tower 3 and Tower 2 (Figure 20). It is centred around a low natural ridge—called the 'cemetery ridge' here—that sits in the centre of the terrace, running parallel to the wadi bank and continuing to the north and east.

The remains of four Umm an-Nar tombs survive. All have been very badly disturbed through stone robbing for the construction of later prehistoric and Islamic graves, and possibly through deliberate destruction, perhaps to be slaked for lime mortar. There were almost certainly more tombs to judge by the number of Sugar Lump fragments that are to be found scattered across the cemetery area (Figure 20), but these must have been destroyed or remodelled in later periods. Each visible tomb survives to only a single course of stones on the surface, accompanied by a scatter of broken masonry and fragmentary Sugar Lumps. The latter confirm the dating and function of these structures. Larger fragmentary or complete Sugar Lumps and Early Facing Stones are incorporated into later prehistoric tombs and Islamic graves across the site.

Tomb A (544355/2592285)

This tomb is badly disturbed, with only short sections of a double wall of mainly angular stones with a few rounded cobbles visible on its south-eastern side. Based on the curve of these walls, the tomb would have been approximately 9.5 m in diameter. The remains of two fragmentary Sugar Lumps remain in situ on the southern edge of the outer wall (Figure 21). Dozens of Sugar Lump fragments are also visible in and around the tomb. Two sherds of fine, funerary Umm an-Nar pottery were found inside the structure.

Tomb B (544355/2592315)

Tomb B is almost entirely destroyed, with no in situ structure visible on the surface. All that remains of the structure is a scatter of angular fragments of brown rock (Figure 22) and small angular fragments of Sugar Lumps (Figure 19, top-right). The angular fragments of brown rock are thought to be the inner-walling of an Umm an-Nar tomb that has been deliberately broken up. It is clear that these angular fragments result from anthropogenic activity as the surface geology is stable and otherwise consists entirely of water-rounded pebbles and cobbles in a soil matrix. The scatter is roughly circular, measuring between 15 and 20 m in diameter, and is situated on a low rise and spreads over the surrounding slopes of the cemetery ridge. A large number of Islamic graves have been dug through the tomb, bringing Umm an-Nar grave goods and human bone to the surface. Hundreds of sherds of Umm an-Nar pottery were recovered in the vicinity as well as 16 soft-stone vessel fragments. Over 80% of the assemblage consists of Umm an-Nar domestic pottery; over a dozen sherds of funerary wares were also found, as well as 25 sherds of imported pottery, including Indus, Mesopotamian, Dilmun and Iranian Grey wares. The inclusion of domestic wares among the funerary assemblage, together with Mesopotamian imports

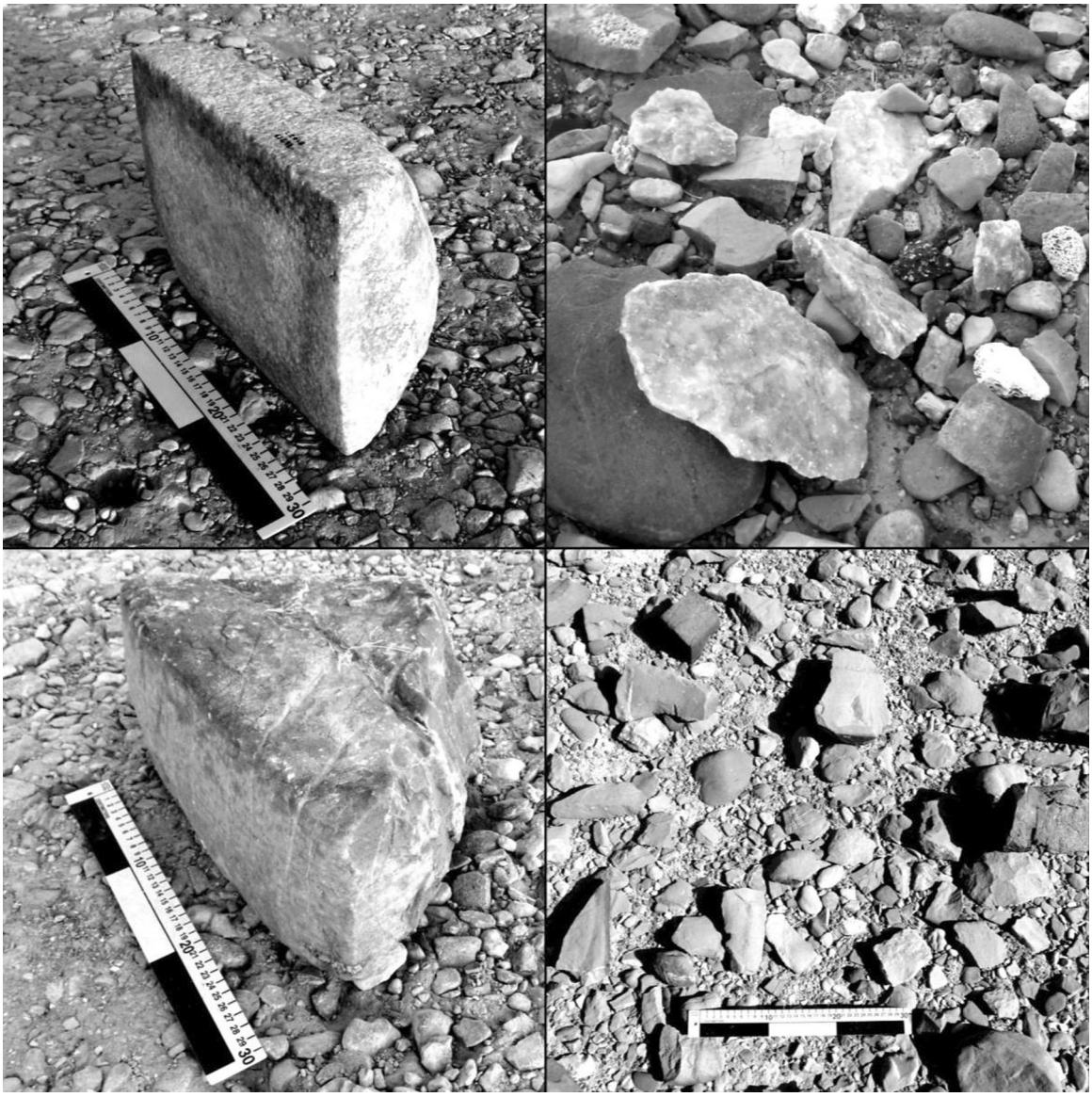

FIGURE 19 Comparison between a Sugar Lump (above) and an Early Facing Stone made of grey/green limestone and lacking the horizontal tapering (below). Both were found at al-Tikha.

belonging to the final part of the third millennium BC, suggests that this tomb was used extensively during the latest phase of the Umm an-Nar period. An assemblage of over 50 sherds of Wadi Suq pottery—along with a dozen Iron Age II coarse sherds—suggests that the tomb continued to be used after the Umm an-Nar period.

Tomb C (544365/2592370)

This structure closely resembles Tomb B in that it consists solely of a scatter of angular fragments of brown rock and Early Facing Stones, the fragments of which are of the distinct grey/green limestone described above rather than the crystalline white limestone used for the Sugar Lumps (Figure 19). The somewhat irregular, roughly circular scatters of the brown rock and grey-green Early Facing Stones do not overlap perfectly, but have their centres situated several metres away from each other. The total scatter is approximately 17–18 m across. Seven sherds of Umm an-Nar funerary pottery were found in the area, as well as two sherds of domestic ware. A worked shell bead and a fragment of a soft-stone vessel were also found.

Tomb D (544505/2592470)

Tombs A, B and C are located within 100 m of each other on a low, long natural mound. Tomb D is situated c. 200 m to the north-east, very close to the edge of the wadi terrace, in between Towers 2 and 3. As with Tombs B and C, no part of the structure is visible on the surface;

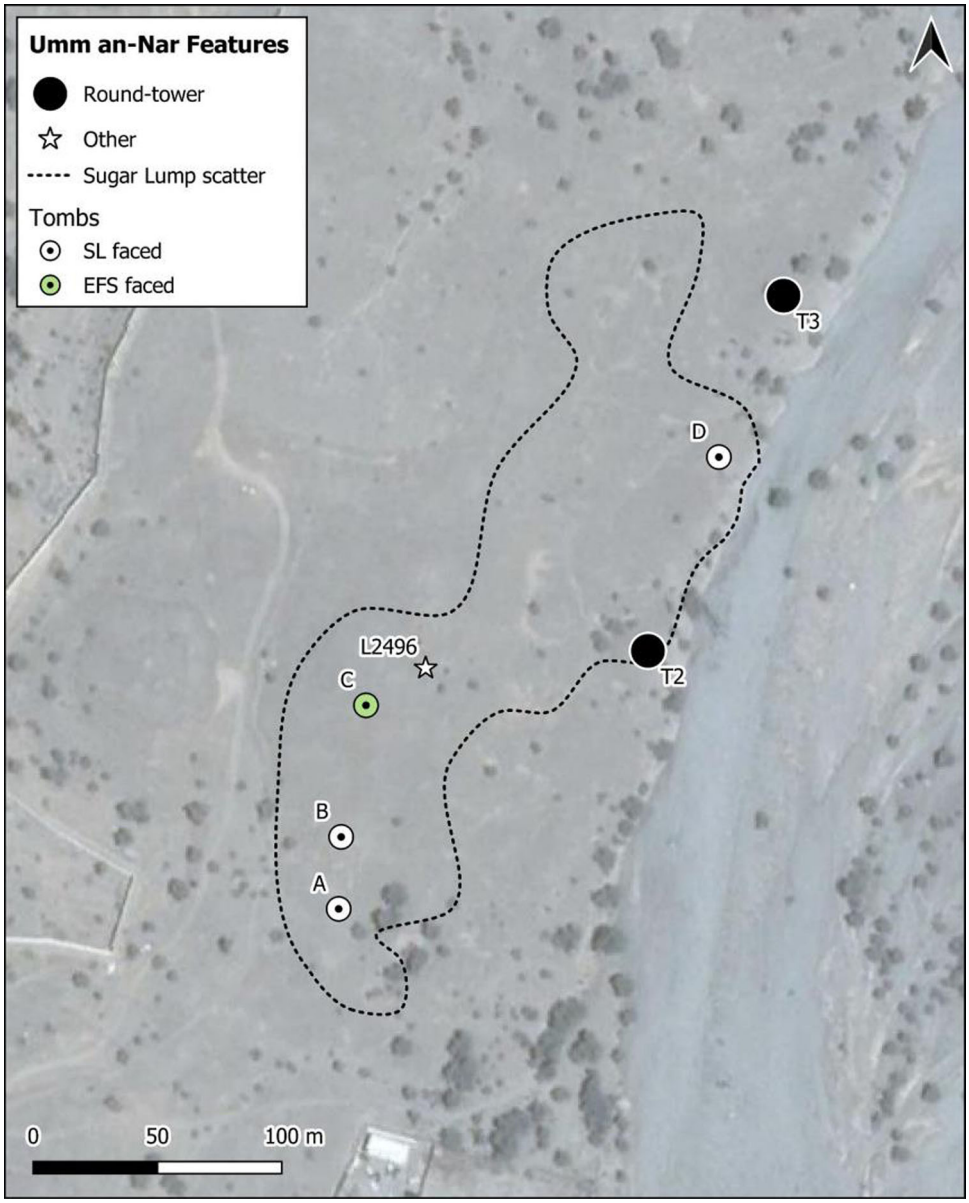

FIGURE 20 Plan of the Umm an-Nar cemetery

the tomb consists of a scatter of fragments of angular brown rock fragments and fragmentary Sugar Lumps. The densest part of the scatter is circular in shape with a diameter of approximately 7 m. The southern half of this scatter has been bulldozed, seemingly during the construction of a nearby electricity pylon. In the disturbed area, a large quantity of fragmentary human bones and Umm an-Nar grave goods were recovered, including over a hundred sherds of pottery, as well as an alabaster and two soft-stone vessel fragments, a silver bead and a fragment of corroded copper. More than half of the assemblage, over 50 sherds, was made up of fine funerary Umm an-Nar wares. Over 75 sherds of domestic Umm an-Nar pottery were also found, as well as five imported Iranian Grey and four Mesopotamian sherds. The Mesopotamian sherds with late third millennium parallels and the inclusion of domestic wares suggest a late third millennium date. This tomb shows the densest scatter of fragmentary Sugar Lumps in the cemetery, in addition to several partial and whole examples (Figure 19, top-left).

Slab tombs

In the same part of the site where the four Umm an-Nar tombs are located, 12 examples (eight certain and four possible) of another type of circular tomb were recorded, referred to here as 'slab tombs'. All that remains of these generally poorly preserved tombs is a roughly circular single or double wall, 5–9.5 m in diameter, made of horizontally set angular slabs and blocks, normally in a single course embedded into the ground (Figure 23). This often resembles the foundational 'plinth' of a typical

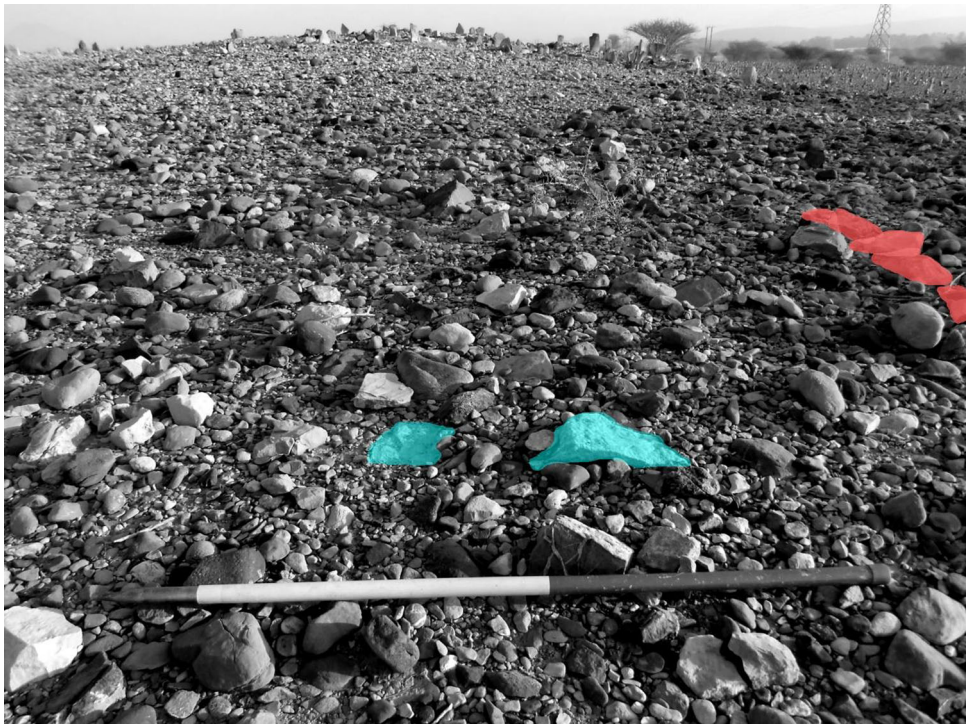

FIGURE 21 Tomb A with fragments of two Sugar Lumps in situ just above the 1 m scale (blue shading); other Sugar Lump fragments are visible on the surface and part of the curved outer wall can be seen on the far right of the photo (red shading)

FIGURE 22 Tomb B showing the destroyed tomb with Islamic graves dug through it (left), and a comparison between the angular brown stone scatter and the compact gravel surface background (right)

Umm an-Nar tomb, although multiple courses are visible in some places. Rounded cobbles and reused partial or complete Sugar Lump stones are also occasionally incorporated. Slab tombs are distributed over a limited area in the central part of the site between tombs A, B, C and Tower 3 (Figure 24).

Umm an-Nar domestic pottery was associated with some of these tombs, but only in quantities consistent

FIGURE 23 Oblique view of a 'slab tomb'

with the background scatter (Figure 14). However, two yielded an unusual later prehistoric assemblage consisting of a significant quantity of Iron Age and some Samad pottery. Slab tombs were not observed anywhere else in the RBAS survey area and their date is unknown. Despite the parallels with the construction of the plinth, the lack of associated typical Umm an-Nar funerary material makes it unlikely that they are Umm an-Nar. It seems more likely that they were constructed in the Wadi Suq period or later, reusing Umm an-Nar masonry from tombs in the vicinity. Excavation would be needed to clarify this.

Other tombs

At least 97 further stone-built tombs were located and recorded across the whole site and its immediate environs, in particular, to the west and north (Figure 24). More than 60 have been tentatively dated to the Wadi Suq period on the basis of their style of construction, size and layout; others have been dated later, although it will be impossible to date many of them precisely without excavation. Some incorporate Umm an-Nar Sugar Lumps, presumably robbed from older tombs. The tombs will be presented in a future paper dealing with the Wadi Suq period occupation of al-Tikha.

1.2.5 | Other features

Al-Tikha includes two significant stone-built features that have not—to the knowledge of the authors—previously been identified at Umm an-Nar sites. The first, L1195, which is located towards the northern limit of the site, is a much-disturbed, circular structure 6.5 m in diameter that appears to be halfway between a tomb and a small round-tower. The other, L2496, is located on the eastern slope of the cemetery ridge 100 or so metres to the west of Towers 2 and 3. It is a scatter of large, rectangular boulders of what appears to be Hawasina limestone that formed part of a circular structure.

L1195 (544566/2592761)

This feature is a careful construction of large, cubic or rectangular blocks of Hawasina limestone measuring from 60 cm to as large as 1.3 m in length. At least 10 of these are still in situ and mark a precise circle 6.5 m in diameter (Figure 25)—in one place on the north side, two neatly arranged courses are still in situ. Only the outer face of this massive wall is visible, suggesting that it formed a circular platform without an inner face, rather than a walled building—although there is a lot of disturbance that might have hidden the inner face of a wall. To the immediate east, there is a small annex of similar stones forming a rough rectangle 3.7 m long and 1.2 m wide abutting the circular outer wall of the structure. An arrangement of stones to the north-east of the circle suggests that a similar feature might have existed there.

The centre of the circle is occupied by a very rough rectangular feature 3.4 m long and 1.55 m wide. These stones have clearly been displaced from the original structure—they look to be the remains of a cist grave that was constructed inside the circle at a later date, reusing stones from the original circle. A small area of

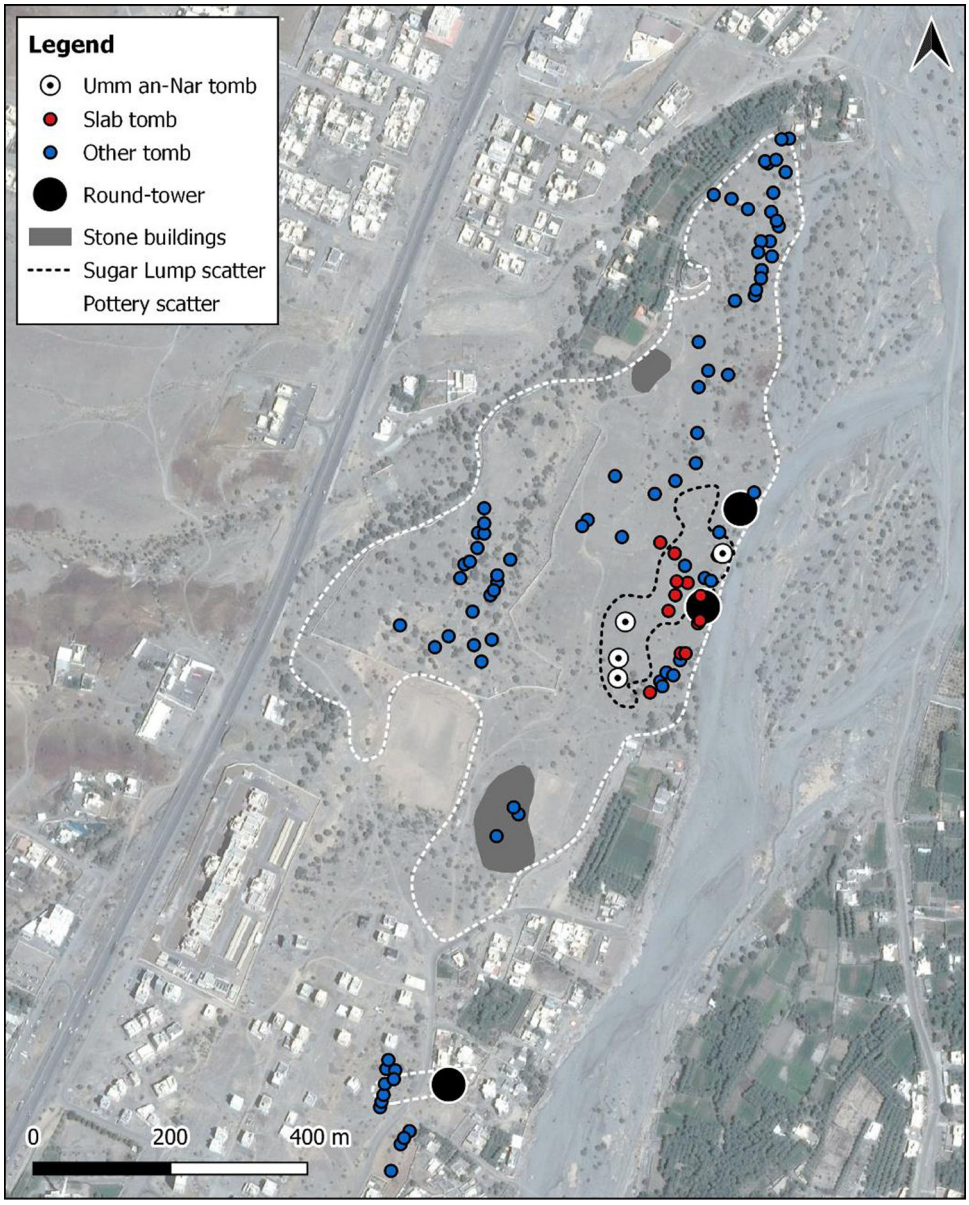

FIGURE 24 Plan of other tombs found at al-Tikha

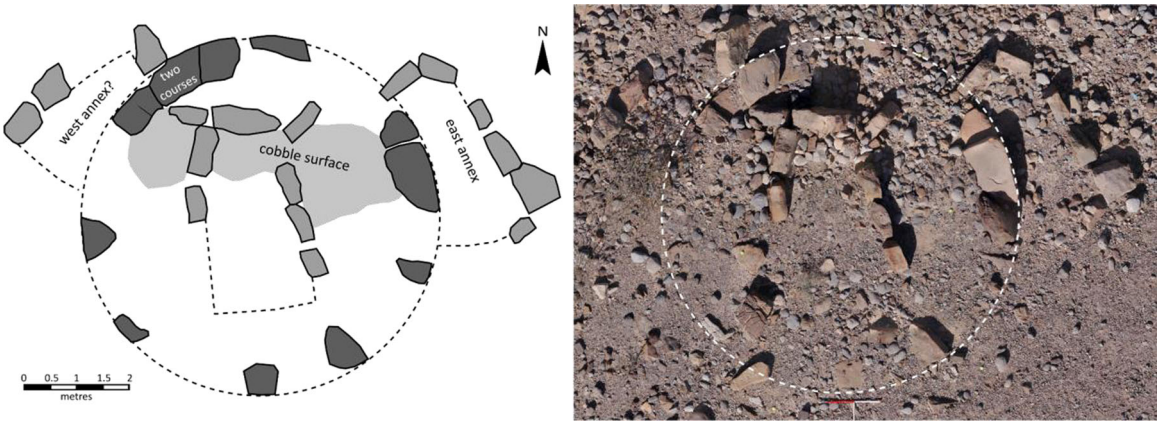

FIGURE 25 Plan and aerial view of L1195

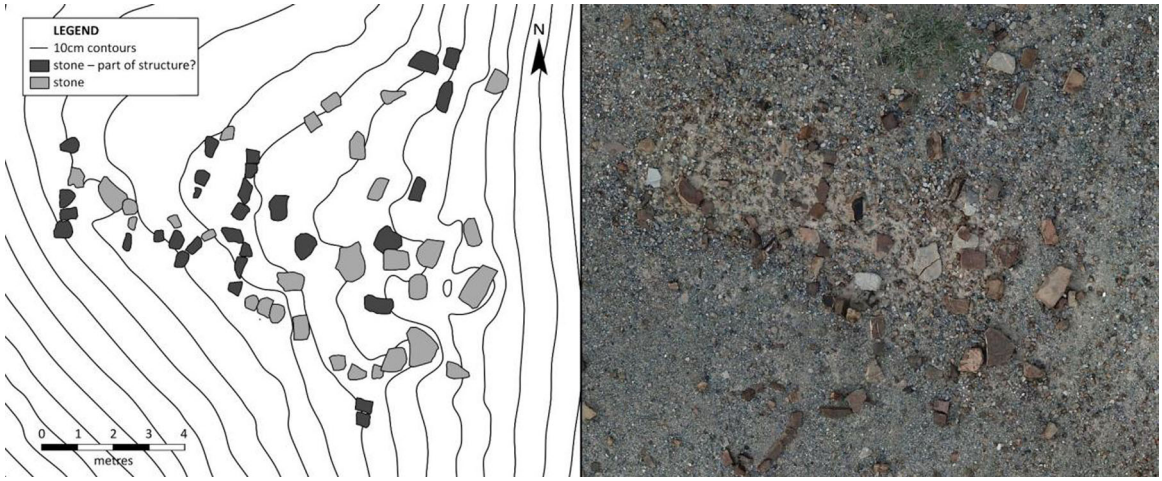

FIGURE 26 Aerial view and sketch plan of L2496 with ground-based interpretation of the structure

water-rounded cobbled surface inside the cist and to each side of it appears to be related. Most of the cist has now been removed, presumably by robbing. A similar, though smaller, cist stands a few metre to the southeast outside the structure.

It is impossible to be sure of the interpretation of this structure. Its circular shape, massive construction and lack of an inner wall face, along with the possible annexes, clearly suggest an Umm an-Nar round tower, but at 6.5 m diameter, it seems too small. On the other hand, the masonry appears far too massive for an Umm an-Nar tomb, though that does remain a possibility. An Umm an-Nar date seems almost certain based on the shape and style of construction.

L2496 (544389/2592384)

This feature is located on the eastern face of the slightly elevated cemetery ridge facing the wadi gully and Towers 2 and 3. It consists of around 50 large rectangular blocks of what is thought to be a type of Hawasina limestone up to 1 m in length and 20–40 cm in thickness. These are scattered across an area of the cemetery ridge slope measuring 17 m east–west and about 11 m north–south (Figure 26). Some of the blocks are formed into rough north–south alignments, the longest at the eastern end measuring 10.9 m, but none is very precise and none consists of more than one course. Some of the blocks have been disturbed by and built into recent Islamic graves, including one in the centre of the scatter.

It is difficult to interpret this scatter. It could be a natural outcrop, though it has clearly been manipulated into rough alignments. It could mark the location of a quarry—it is the same stone as that used in the construction of L1195 above. Alternatively, it could mark the location of a previously existing and now robbed structure, such as a small round tower similar to L1195, or a rectangular platform perhaps similar to (but smaller than) the one at al-Khashbah (al-Jahwari & Kennet, 2010, pp. 163–165). There is no dating evidence associated with it, though the type of material and the fact that it is located in the midst of al-Tikha's Umm an-Nar cemetery clearly suggest an Umm an-Nar date.

Two finished shell inlays found on separate occasions at the same spot most likely belong to the same object. One is in the form of an eye, missing an inlaid pupil (Figure 27, right); the other is triangular in shape (left). Although the eye could come from a statue, this combination suggests instead that they may have originally been set into a metal bull's head, most likely originally mounted on the front of a lyre, and several examples of these are known from mid/late third millennium BC contexts in Mesopotamia (Frankfort, 1939; 42, p. 104, no. 184; Simpson, 2021). If this hypothesis is correct, it would support the provisional interpretation of the adjacent rectilinear structure as an elite and perhaps cultic building.

2 | DISCUSSION

Al-Tikha is undoubtedly a highly significant Umm an-Nar settlement, one of only a small handful known on the Batinah (Figure 1) and one of even fewer where a more or less complete plan appears to be visible on the surface (Figure 2). The layout of the site is interesting; its 35-ha extent[2] can be divided into a number of distinct areas such as occupation area S1; occupation area S2 and the medium-density pottery scatter to its immediate east—possibly including L1195; a second medium pottery scatter to the south; the cemetery area including L2496; Towers 2 and 3; and the area around Tower 1. To

[2]Fifty hectares if archaeologically void areas filled with modern buildings are included.

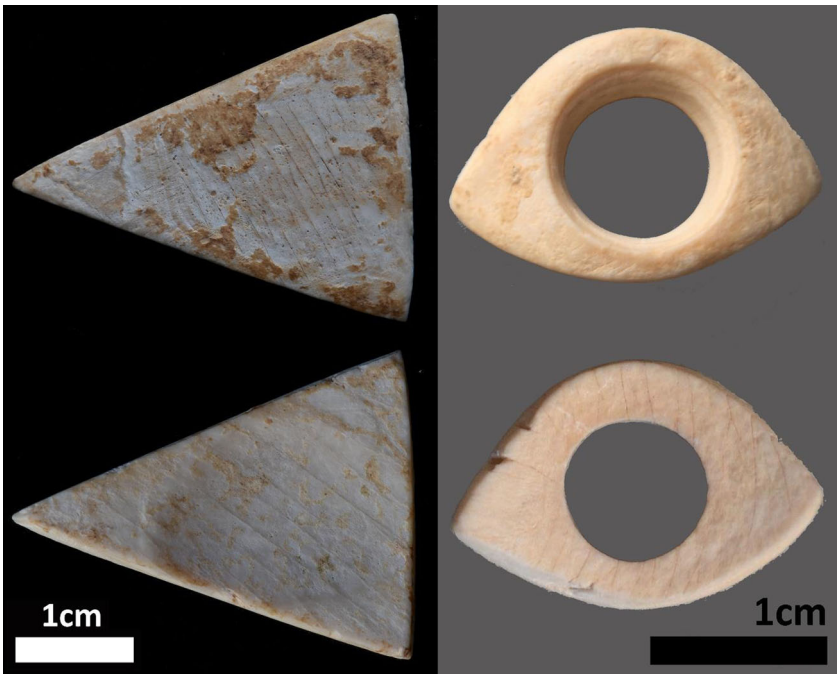

FIGURE 27 Two shell inlays, likely from the same object, found at L2496

some extent, these areas are connected by a low-density surface scatter of Umm an-Nar pottery—though this is not the case for Tower 1, which appears to be quite separate. If, and in what ways, these different areas might have been regarded as distinct by the Umm an-Nar occupants of the site is not clear. It is possible that not all parts of the site are contemporary and reflect the main occupation area being successively re-located at different parts of the site during the Umm an-Nar period.

However, it seems more likely that the main occupation area of the site is located around the largest area of stone-built structures and the densest pottery scatter at S1. Second to this, the area of S2 and its associated pottery scatter appear to be a larger but less dense occupation with a different style of stone buildings. They may perhaps have included structures that were not built from stone—such as *arish* or date-palm-frond huts. In between S1 and S2, and somewhat to the side, is a further pottery scatter, the Umm an-Nar cemetery area and Towers 2 and 3. It is tempting to suggest that the cemetery area was shared between the two occupation areas S1 and S2 and that the two towers were either intended to defend towards the wadi or, more likely, that they had some ceremonial or religious role linked to the cemetery—although such a link is not seen in other Umm an-Nar sites. Tower 1 and the possible remains of buildings associated with it appear to be quite different, being separated by an area of open ground with no pottery scatter from the rest of the site. It is possible that Tower 1 and its surrounding area date to an earlier (or perhaps later) period of occupation/activity—which might also be reflected in its different construction method and materials.

2.1 | Development

It is clear that many Umm an-Nar settlements may have developed out of Hafit-period occupation (or at least seasonal grazing camps). This is suggested by the presence of Hafit cairns on surrounding ridges at numerous sites; Bat (Cable, 2012), Bisya (Orchard, 2000, pp. 168–169), Hili, less than 2 km away at Jabal Haqla (Cleuziou et al., 2011; Figure 3), and Ghoryeen (al-Jahwari et al., 2020, p. 284) are all good examples of this model. By contrast, a few Umm an-Nar sites do not seem to have been preceded by Hafit-period activity, at least so far as the absence of Hafit tombs in the vicinity indicates—the recently discovered site of Dahwa in the Northern Batinah is an example of this much less common model (al-Jahwari et al., 2018), as are the coastal sites of Tell Abraq and Umm an-Nar island itself. Al-Tikha finds itself somewhere in the middle between these two models, perhaps closer to the first. During the Hafit period, there was a strong human presence in the Rustaq area, but the vast majority of this seems to have had nothing to do with al-Tikha; instead, it was focussed in the middle of the coastal plain some 14 km to the north, where a dense, 250-km-long 'band' consisting of over 6000 tombs is located (Deadman 2017). By contrast, fewer than 10 Hafit tombs are located within a couple of kilometres of al-Tikha on the surrounding ridge-tops, rising to a total of 28 within double that distance (Figure 28). The presence of these tombs is far from conclusive evidence, but it does seem to suggest that there was a limited Hafit presence at or close to al-Tikha in the

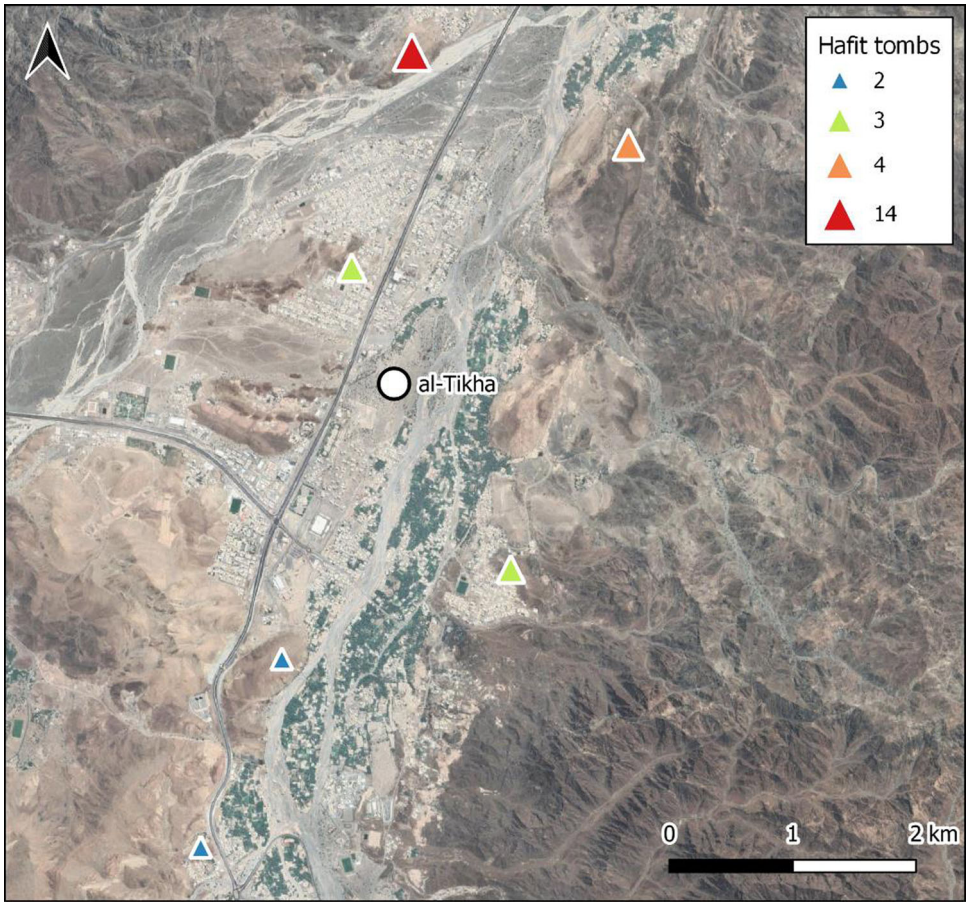

FIGURE 28 Hafit cemeteries in the vicinity of al-Tikha (Google Earth imagery © 2022)

early part of the third millennium, from which the Umm an-Nar settlement subsequently developed.

Otherwise, the earliest evidence of activity on the site is Tomb C, which, although now completely destroyed, is known to have been built of Early Facing Stones and is therefore certainly earlier than Sugar-Lump tombs A, B and D. It appears to have been a single, isolated tomb located more or less midway along the cemetery ridge. There is no indication of which, if any, of the two occupation areas it might have been connected with.

It is possible that structures L1195, L2296 and Tower 1—all being built of the same Hawasina limestone blocks—represent a phase of monumental architecture distinct from, and perhaps earlier than, the rounded cobble/boulder architecture of Towers 2 and 3. It is possible that this distinction is to some degree reflected in the two construction types (Wall-1 and Wall-2—see Figure 6) observed in the walls of domestic structures in occupation areas S1 and S2. However, this is purely speculative.

By linking the construction style of tombs A, B, C and D (Figure 12) to Méry's Hili-based chronology (Méry, 2010, pp. 36–41), it can be argued that the cemetery existed by 2700–2600 BC, as evidenced by tomb C (equivalent to Méry's phase 1), and probably grew, reaching its greatest extent during the period 2600–2200 BC, as evidenced by tombs A, B and D, which are equivalent to Méry's phase 2 and 3 tombs. However, this chronology is still tentative and lacks precision. It may reflect the development of the site as a whole, but it is based only on the cemetery, and assumes that the occupation areas followed a similar chronology. Nonetheless, it is the most precise chronology that can be proposed on the basis of the surface evidence collected here.

Significant changes in the layout of the site can be shown to have begun to occur around the end of the third millennium and into the Wadi Suq period. These are demonstrated by new tomb types as well as surface pottery scatters. These have been mapped in detail and will be presented in a separate paper. They suggest that the site continued to be occupied into the second millennium, but on a different pattern and at a lower density.

2.2 | Site plan—Buildings and areas

2.2.1 | Domestic structures

While many of the stone foundations of the structures at al-Tikha are in good condition, the original full plan, construction and appearance of the buildings

FIGURE 29 A comparison between part of the stone and mudbrick plan of RJ-2 on the left (after Azzarà, 2012, fig. 3) and the stone walls of part of al-Tikha S1 on the right

are, in most cases, unclear. Even the smaller structures are surprisingly large—equalling or surpassing the largest buildings recorded at Dahwa, 100 km to the north (al-Jahwari et al., 2018, fig. 6; Douglas et al., 2021, fig. 4). The largest are far bigger—at around 1000 m^2, the footprint of S2's contiguous stone foundations is comparable to a major fort of the Late Islamic period. It is unlikely that the larger buildings, which are now represented only by the surviving stone wall bases, were built entirely of stone, the upper parts of the walls and, importantly, internal dividing walls are likely to have been of mudbrick.

This is supported by evidence from the excavation of Umm an-Nar domestic structures at Ra's al-Jinz. Stone was used relatively sparsely in the RJ-2 structures, primarily to protect the base of external mudbrick walls from salt erosion and damp (Azzarà, 2018, p. 105). The vast majority of the internal walls consist of consecutive courses of mudbrick and clay laid directly onto the ground surface (Cleuziou & Tosi, 2000, p. 29). When compared, the stone foundations at al-Tikha show many similarities to the stone walling at RJ-2 (Figure 29). Each individual room or unit—excluding uncovered courtyards—is usually around 2 m wide (Cleuziou & Tosi, 2000, p. 38), a distance that could be easily roofed. Therefore, the stone walls of the 20 × 16 m central part of the northern RJ-2 compound actually consisted of six buildings and around 30 separate rooms (Figure 29, left). It is therefore quite possible that the larger al-Tikha structure plans are only the stone outlines of buildings that were internally subdivided by mudbrick walls. Based on the parallel from RJ-2, a medium-sized 10 × 10 m building at al-Tikha may have incorporated 8–10 rooms.

The building remains might provide some insight into the size of the population in area S1. An approximate estimate of the roofed floorspace based on the visible wall plans suggests a total area of 1942 m^2 (Table 1). Estimates of floorspace-to-person ratio vary—as does opinion as to the suitability of such an approach—with 4 to 10 m^2/person being a representative range (Kramer, 1979; Postgate, 1994). Assuming that the entire floorplan of the S1 buildings was originally roofed, such a ratio would give a population estimate of between 194 and 486 people in the 20 surviving building plans. This estimate relies on several assumptions regarding the phasing and architecture of the structures, but it would suggest that al-Tikha could have housed a sizeable population.

Another possible option is that most of the building space was not roofed. Similar large rectilinear structures have been reported at numerous Umm an-Nar settlements (Figure 2), and the case for these consisting of large open courtyards and smaller roofed buildings has been made before (Swerida, 2018, p. 64). Such open spaces could have been used to pen livestock or pitch tents or temporary *barasti* structures (Düring & Botan, 2018, p. 24; Schmidt, 2018, p. 82). A number of the al-Tikha buildings have smaller units attached to larger spaces or wall stubs that suggest that these could have existed originally. They are usually around 2–2.5-m-wide—a room span that is known from other Umm an-Nar sites (al-Jahwari et al., 2018; Swerida, 2018, p. 60; Table 2; Düring & Botan, 2018, p. 21),

and which probably indicates the limitations of available roofing materials. The use of palm fronds to cover a wooden frame or beams is a traditional construction method in use until recently (Cleuziou & Tosi, 2007, pp. 218–219; Costa, 1985). Whether split date palm trunks or other native wood was used (Azzarà, 2018, pp. 105–106), there would be a limit to the distance that could be spanned. If the majority of walled space at al-Tikha was utilised as livestock enclosures, or for activities such as craft or food production, then the population estimate would need to be drastically reduced, roughly in line with the Wadi Fizh (WAJAP Site 63) estimate of between 25 and 170 people (Düring & Botan, 2018, p. 24).

2.2.2 | Site layout and an 'agglomerated settlement' model

The excellent preservation of the surface plan at al-Tikha has the potential to shed light on aspects of the organisation and layout of large Umm an-Nar sites. The site plan does not, however, lend itself to simple interpretation. Traditionally, Umm an-Nar settlements have been thought to be made up of three main components: towers, domestic structures and tombs, but as we have seen, not all these features are always present, and if they are, the way they are related spatially varies considerably (Swerida, 2022). Research on Umm an-Nar settlements, which for a long time was focussed predominantly on towers, has recently begun to focus increasingly on domestic structures (Swerida, 2022, p. 2). Although towers, tombs and domestic structures are present at al-Tikha, they do not offer a clear interpretation, particularly the towers, whose function is still unknown. The plan of al-Tikha also suggests that the supposedly empty space between these features needs to be considered as a key part of the settlement structure.

Tower 1 in the south is fairly isolated—lying almost 400 m south of Occupation Area 1 (S1). Although there are some walls and fragmented structures in the vicinity of this tower, the dearth of Umm an-Nar pottery suggests that it is unlikely that there was another area of occupation here. From S1, the nearest tomb lies over 250 m to the north, while Tower 2 is located over 350 m away—it is also quite isolated. While the Umm an-Nar cemetery area is close to Towers 2 and 3, Occupation Area S2 is almost 250 m to the north-west. This patchy distribution contrasts with the compact layout of the well-preserved Umm an-Nar site at Ghoryeen, where occupation, round-tower and cemetery are all within a short distance. However, it does have parallels with the layout of Dahwa (Figure 30).

Let us consider what is known generally about the layout of Umm an-Nar settlements, in particular, the larger, multi-towered sites. At Bat, a minimum of eight round-towers are dispersed across the whole site, hundreds of metres apart from each other, while the main occupation area and main cemetery are supplemented by smaller occupation and funerary areas across the site (Cable, 2012; Swerida, 2018; Thornton et al., 2016). Al-Khashbah appears to be very similar (al-Jahwari & Kennet, 2010; Schmidt & Döpper, 2017), and while Hili's layout is possibly the same but slightly more compact (Cleuziou, 1989; Cleuziou et al., 2011), it may also consist of a number of nucleated hamlets within a wider settlement landscape. Bisya and neighbouring Salut are the most dispersed of all (Orchard, 2000).

How are we to understand the nature of settlement at these multi-towered sites? A number of theories have been presented. It has been argued, admittedly in relation to a purported pre-Umm an-Nar (al-Hajar) phase that is not widely accepted, that the towers at many sites were organised according to a planned arrangement, with two standing close to each other in the centre of the oasis—one of them close to the domestic occupation—while others marked the outer boundaries of the cultivated area (e.g., Orchard & Stanger, 1999, p. 91). Other researchers have suggested that each of the towers might instead be associated with a separate area of domestic occupation—an arrangement that Orchard somewhat mockingly referred to as the 'tower hamlets' model (e.g., Humphries, 1974, p. 51; Orchard, 2000, pp. 165–166; Potts, 1997, p. 65). It has also been hypothesised that towers were associated with the management of water (e.g., Thornton et al., 2016, pp. 82, 136–138, 259), meaning that they would have been located according to the location of cultivable land and water resources.

The al-Tikha evidence does not support any of these views. The relationship between occupation areas and towers, perhaps more completely visible on the surface here than at any other large Umm an-Nar site, would agree with Orchard's (2000, p. 174) observation, based on Bisya, that towers are not necessarily associated with areas of housing. But neither does al-Tikha conform to Orchard and Stanger's idea of a planned arrangement; indeed, the differences in the styles of tower construction at al-Tikha seem to emphasise Thornton et al.'s (2016, p. 259) point that not all towers at a single settlement were necessarily in use at the same time, although, at present, we lack the evidence from any Umm an-Nar site that would allow us to define possible chronological reconfiguration such as this. Neither is there an obvious relationship between tower locations and the management of water for irrigation at al-Tikha, certainly in the cases of Towers 2 and 3; the most obvious cultivable areas are located on the opposite, western, side of the narrow interfluve on which the site is located. The layout of al-Tikha suggests, therefore, either that we should discount these theories or that they do not apply to all Umm an-Nar sites. This might support Swerida's (2022) point that there is no universal configuration of settlement applicable to the Umm an-Nar period, or it might simply indicate that we need more detailed information about the configuration of settlements. Because we are presented, at al-Tikha, with something

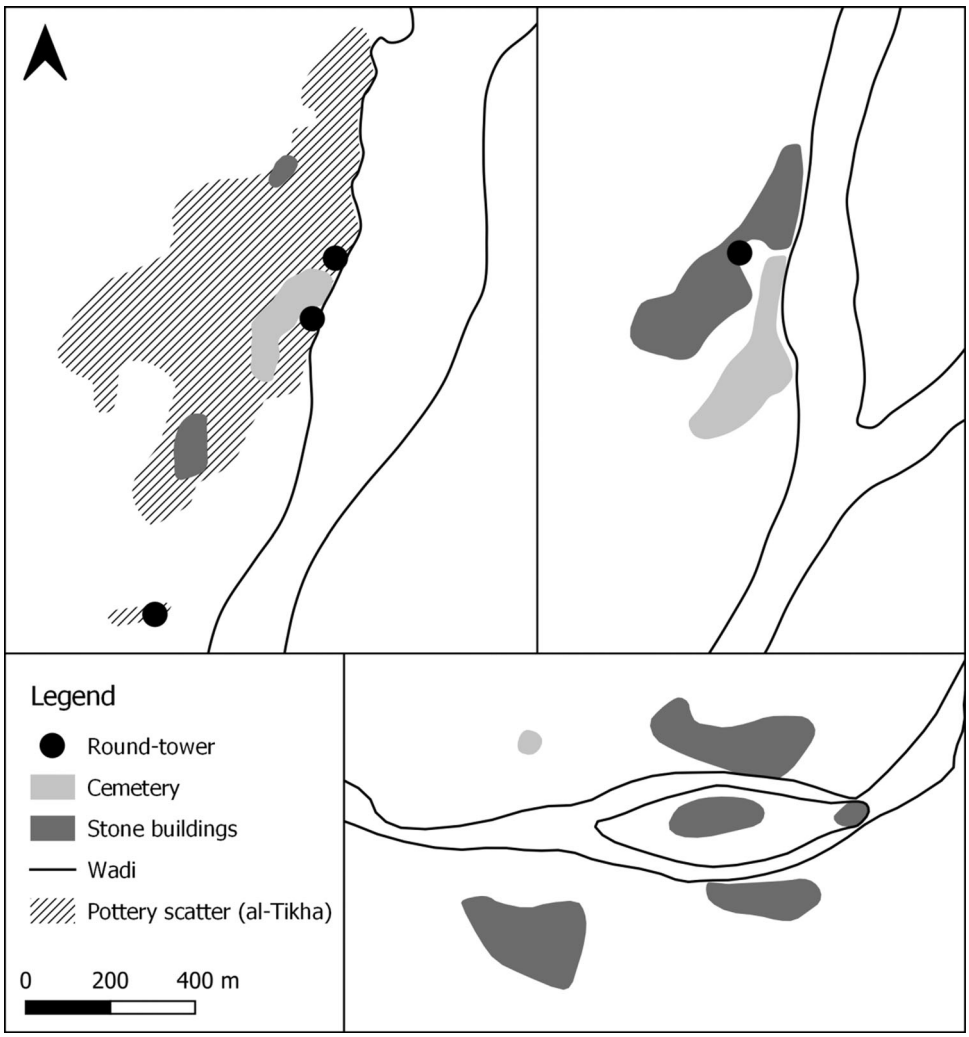

FIGURE 30 Simplified layouts of round-towers and domestic stone building/cemetery areas at al-Tikha (top left), Ghoryeen (top right, after al-Jahwari et al., 2020, fig. 3) and Dahwa (bottom, after al-Jahwari et al., 2018, fig. 3).

that approaches a complete site layout, we can move away from a reliance on towers when thinking about how the site was organised, and instead focus on the actual location of areas of housing, as we cannot yet do at sites such as, for example, Bat, Hili and Bisya.

According to this approach, the layout of al-Tikha might suggest a 'hamlet' model, but not a 'tower hamlet' model, in which there was a close link between housing and tower, but more of an 'agglomerated hamlet' model in which the site is made up of a number of separate areas of housing, possibly sharing a cemetery and other features (including towers where present). Another site where a similar structure may be observable is Dahwa, 100 km to the north of al-Tikha along the Batinah, where the site, as currently defined, is made up of five separate occupation areas ranging in size between more than 15 ha (DH1) and as small as 1.2 ha (DH8), each containing between 17 and 3 separate buildings (al-Jahwari et al., 2018, fig. 2; Douglas et al., 2021, fig. 2). There is a hint of a similar structure at Ghoryeen, where it is possible—though far from certain—that the Period II (Umm an-Nar) structures are separated into two distinct areas north and south of the round tower 'M.1' (al-Jahwari et al., 2020, fig. 3). This also appears to be the case for WAJAP Site 73, which has a core area and several clusters of occupation spread out around, each with communal tombs (Düring et al., 2019, pp. 115–120). Ra's al-Jinz may also conform to this model, with its two distinct areas of Umm an-Nar occupation, RJ-2 and RJ-3, being separated by about 200 m (Azzarà & De Rore, 2018; Cleuziou & Tosi, 2000; De Rorre et al., 2020). It would be easy to imagine a similar configuration at some of the larger sites such as Bat, Hili and Bisya mentioned above, but the location of domestic buildings at those sites is still either completely or partially unknown.

Despite the lack of complete site plans, rough plans of 19 individual Umm an-Nar occupation areas ('hamlets') are known from publications, many of which are located within larger sites (Figure 2). Comparison of the plans of the al-Tikha S1 and Dahwa areas with other sites shows that there is considerable variation in the size,

density, building size and general layout between these areas. In no case is there evidence of deliberate overall planning or alignment. This figure makes clear the range of size and density of Umm an-Nar occupation areas—whether they are single or part of a larger agglomerated settlement—and shows that al-Tikha S1 falls at around the median in terms of size and is fairly typical of the range of density and layout.

Umm an-Nar society certainly cannot be characterised as 'urban', as it clearly lacks many aspects that are generally associated with true towns, not least size. The size of settlements such as al-Tikha, at around 35 hectares, is dwarfed in comparison to third millennium towns in Mesopotamia, which can be as large as 400 hectares (Van de Mieroop, 1997, pp. 94–95), and the Indus Valley (e.g., Mohenjo Daro ca. 200 ha). Nevertheless, the process of hamlets growing and agglomerating into larger, urban, settlements does not necessarily differ from processes of urbanisation in the Near East. In fact, urban trajectories across the Near East appear to have been quite diverse, with a distinct indication of regional trajectories (Lawrence & Wilkinson, 2015; Ur et al., 2007). In this sense, the model presented by al-Tikha would resemble the growth of a settlement such as Tell Brak during its initial stages, which consisted of multiple pockets of settlement separated by areas of lower density occupation, with little indication of hierarchy and centralised organisation (Ur et al., 2007). In terms of settlement evolution, it would also fit the idea of 'planned organic growth' (Lawrence & Wilkinson, 2015, p. 339), where locations of houses and communal spaces (such as, e.g., towers, cemeteries and possible gardens) were chosen by groups of people, including newly settled households in accordance with the physical environment, and came to structure ongoing negotiations of spatial organisation over time.

Using this model, what might the 'agglomerated hamlet' structure of al-Tikha and Dahwa indicate? First, it should be observed that there is no evidence that the separate housing areas were walled off or separated from each other by anything other than space. Second, as can be seen in Figure 2, at both sites, the different occupation areas were not equal in size or in number of buildings. This is clearest at Dahwa, but also observable at al-Tikha. There are different ways in which such a structure could be explained. It might be that access to water, agricultural land or other resources forced different groups to cluster closely together, while maintaining their own identities through the occupation of distinct areas. This might be seen as representing the tail end of the process of sedentarisation that had taken place during the first half of the third millennium, during which some groups settled down to cultivate earlier than others. Groups that maintained a largely nomadic existence may have gathered around established settlements, initially in seasonal camps consisting of ephemeral structures, to trade and exchange goods and labour, gradually becoming incorporated into a fully sedentary lifestyle in which their separate group identities and autonomy were reflected by their living areas. The possible presence of ephemeral buildings evidenced by the pottery scatters might fit this picture. Parallels for such developments during the early stages of the sedentarisation of particular tribes are described from northern Oman in more recent times (e.g., Wilkinson, 1974, 1977, pp. 189–198, 231–232). Whatever the explanation, further investigation of this model may prove to be useful in gaining a clearer understanding of Umm an-Nar social organisation.

It would fit a more heterarchical model of settlement growth, with autonomy but close cooperation between clusters of habitation within a settlement. This cannot be taken to mean that hierarchical tendencies within settlements were not part of Umm an-Nar social structure, because we are ill-equipped to perceive such processes in the absence of visible material expressions of elites. Rather, it might suggest that the process of settlement growth was not primarily driven by centralised decision-making, but was more in accord with proposed alternative trajectories towards urbanism from other parts of the Near East and even the Indus Valley (e.g., Green, 2018; Ur et al., 2007).

2.3 | Local and regional settlement patterns

'Agglomerated hamlet' settlements, such as al-Tikha, though clearly not urban, might have benefited in a way similar to urban settlements from the concentration of socioeconomic activities enforced by the settlement gradually becoming a central node in economic, ritual (and political?) power. This principle of 'accelerated feedback growth' is known from other areas in the Near East (e.g., Altaweel & Palmisano, 2019). The measurable centrality of such places in terms of location along communication routes, for instance, for the transport of copper from mountains to coast, might potentially allow the role of this process to be assessed. Al-Tikha could be an example of this process, a possibility emphasised by the presence of imports from various locations, including the Mesopotamian shell inlays described above, and late Akkadian/Ur III ceramics at both al-Tikha and at Ain al-Kasfah, 5 km to the south (below).

One of the advantages of the survey strategy adopted by RBAS is that the area of study extends for around 20 km along a major wadi system, extending beyond the constraints of a single oasis and instead linking up to 10 separate oases between Rustaq and the area around Hazm. Crucially, this provides the potential to elucidate a repeating pattern of settlement that would not be visible to an approach limited to a single oasis (compare, e.g., the 2 × 1 km area of Bat [Thornton et al., 2016, fig. 1.6] or the 5 × 4 km around Bisya (Orchard, 2000, fig. 3).

Within this study area, the RBAS discovered Umm an-Nar pottery without any associated structural remains at over 12 sites (Figure 3). As stated above, at four

further sites, Umm an-Nar funerary or occupation evidence was discovered. A round-tower, a small cemetery and evidence of domestic structures, already known to the Ministry of Heritage and Culture, were recorded at Falaj al-Shrah, 7.5 km north of al-Tikha. A cemetery consisting of two Umm an-Nar tombs was discovered at Hay al-Nahdhah, less than 2 km to the north of al-Tikha, and a number of Sugar Lumps were found built into later tombs at al-Iraqi, 1.7 km to the south of the site. At Ain al-Kasfah, over 5 km to the south of al-Tikha, the fragmentary plan of a circular stone structure was found, associated with sherds of Umm an-Nar pottery.

It, therefore, seems almost certain that a string of small Umm an-Nar settlements and their associated cemeteries were spaced along Wadi Far for at least 13 km. In addition, the scattered pottery noted above suggests another level of smaller, dispersed activity surrounding these, possibly consisting of individual structures, but also possibly manuring of fields, seasonal camps or other activities.

This is the first time that a localised pattern of repeating settlement has been detected for the Umm an-Nar period and represents an important step forwards in our understanding of the way in which the landscape was organised at this time—even if the evidence is still very fragmentary. The pattern that has been outlined is similar to the distribution of premodern agricultural villages such as, for example, Mazahit, Wubil, Wishayl, Falaj al-Shrah, and so forth, along the wadi (though the precise locations are generally different) and may simply reflect the most effective way of exploiting the limited cultivable areas in small tributary wadis adjoining the main wadi channel. Because the plans of most of the Umm an-Nar settlements are not preserved, it is not possible, at this time, to say more about how settlement was organised or how individual settlements related to each other. Many of the sites were probably quite small. With a large round tower, Falaj al-Shrah may have formed a significant village. However, as an agglomeration of two occupation clusters and at least three towers, al-Tikha in all likelihood formed a significant local centre (Figure 3). Indeed, given that it is the largest Umm an-Nar site yet known from this area and has yielded evidence of imports from as far afield as Mesopotamia and the Indus, its socioeconomic reach and influence are likely to have extended further across this part of the Batinah.

2.3.1 | Regional patterns—round-towers and settlement hierarchies

The function of Umm an-Nar round-towers at al-Tikha, and across eastern Arabia as a whole, remains open to debate. Numerous interpretations have been suggested at other sites: a refuge or keep; an elite residence; a structure used to control irrigation systems; a ritual platform; flood protection; or some combination of the above (cf. Cable & Thornton, 2013, pp. 383–385; Döpper, 2018b, 2018d). The lack of Umm an-Nar pottery around the three certain towers at al-Tikha—the density of which is no higher than the general background level at the site (Figure 14)—suggests that they are unlikely to have functioned as residences or as refuges that were frequently occupied. The elevated location of Tower 1 and the wadi-bank situation of the two northern examples (Towers 2 and 3) give them a potentially imposing position within the landscape—whether with a defensive, political or ritual function. Towers 2 and 3 are situated a considerable distance from modern cultivated or cultivable areas, although this may not have been the case in the Early Bronze Age, but Tower 1 sits adjacent to areas of modern cultivation. Moreover, Tower 1's well has clearly been enlarged and modified in more recent times, suggesting that it must have given a reliable supply of water.

Regardless of their role, the very presence of three or possibly more such monuments marks al-Tikha as a site of local significance within the immediate Rustaq area, and possibly regional significance stretching across the southern Batinah. In total, only two other Umm an-Nar round-towers have been discovered within 30 km—at Falaj al-Shrah, 7.5 km north, and at Yika, 25 km west—suggesting that al-Tikha may have been a regional centre of prominence, an idea that is reinforced by the fact that only a handful of Umm an-Nar sites across the northern Oman Peninsula have a greater number of towers (Figure 31, Table 5). Figure 31 shows the distribution of multi-towered Umm an-Nar sites across northern Oman and the eastern U.A.E. Ranked in this way, al-Tikha stands out as the only site of prominence for hundreds of kilometres on the north-eastern side of the Hajar mountains.

The presence or absence of monumental and domestic architecture at Umm an-Nar sites has been used to define numerous hypothetical settlement hierarchies. Phillips' analysis of the evidence from the northern Emirates yielded a three-tier hierarchy based on the features present at the sites: (1) tombs and substantial architecture; (2) tombs and sherd scatters/hearths; and (3) sherd scatters/hearths only (Phillips, 2007, pp. 5–6). Al-Jahwari and Kennet's work based on the Wadi Andam, on the south-western side of the Hajar Mountains, also suggested a three-tier system, but with sites at a notably larger scale than Phillips': (1) regional centres with multiple round-towers; (2) local centres with one round-tower; and (3) agricultural villages without towers (2010, pp. 209–210). The problem with numbers of round-towers is that, without detailed investigation, it is not possible to be certain how many were occupied at any one time, blurring the distinction between middle- and high-ranking sites. At Bat and al-Khashbah, the dating evidence demonstrates that not all round-towers were contemporary (Döpper, 2018c,

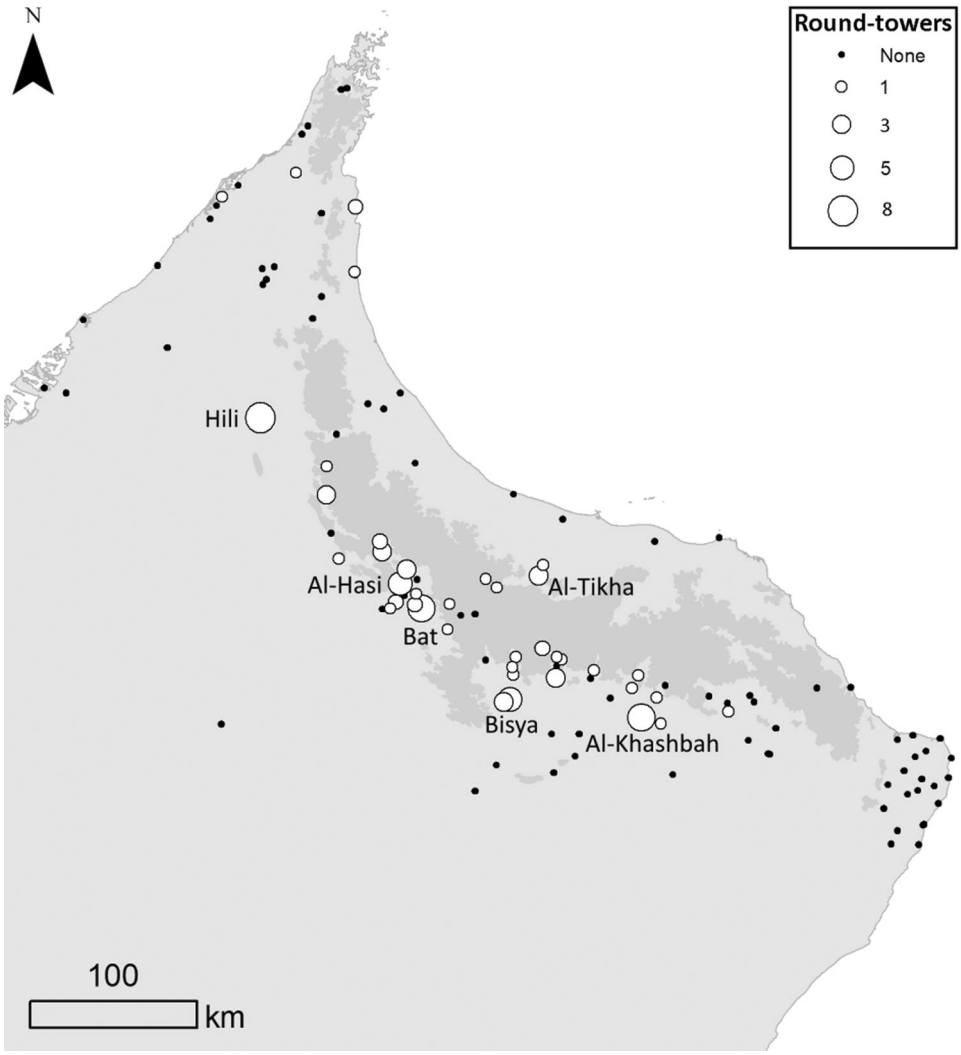

FIGURE 31 The number of round-towers at Umm an-Nar sites across the northern Oman Peninsula

TABLE 5 Umm an-Nar sites with three or more round-towers

Site	Towers	References
Hili	10+?	Cleuziou (1989); Frifelt (1975)
Bat	8	Thornton et al. (2016); Frifelt (1985)
Al-Khashbah	7	Schmidt and Döpper (2017); al-Jahwari and Kennet (2010)
al-Hasi	5	Kondo et al. (2014)
Bisya	5	Orchard and Orchard (2007); Orchard (2000)
al-Tikha	3	—
Salut	3	Degli Esposti (2014); Degli Esposti and Phillips (2012); Orchard (2000)
Firq	3	Orchard (2000); de Cardi et al. (1976)
Khadil	3	Cable and Thornton (2013, tab. 20.1)
Qumayra	3	Cable and Thornton (2013, tab. 20.1); Costa (2006)
Safri	3	Cable and Thornton (2013, tab. 20.1)

p. 93; Swerida, 2018). It does seem likely that at sites with three or more round-towers, that the occupation of the monuments did overlap in at least some cases.

It is also important to acknowledge the regional variation in the nature of Umm an-Nar settlements. A single settlement hierarchy is unlikely to be universally applicable across the Umm an-Nar area (al-Jahwari & Kennet, 2010, p. 211; Döpper, 2018c, p. 93; Kerr, 2016; pp. 189–190; Swerida, 2022). Al-Tikha appears to be akin to multi-towered settlements on the other side of the Hajar Mountains between Hili and al-Khashbah, where the vast majority of round-towers are found (Figure 20). Thus, the site could be part of the main agricultural zone—sometimes called the 'oasis belt'—in this area (al-Jahwari & Kennet, 2010, p. 211; Al-Jahwari, 2009). Despite extensive survey uncovering a wealth of Umm an-Nar sites, no round-towers are known from Jaʿalan, the easternmost region of Oman (al-Jahwari, 2013; Giraud, 2009). Interestingly, further north along the Batinah from al-Tikha, the nature of Umm an-Nar settlement seems to change. Despite having the largest

number of Umm an-Nar domestic structures known anywhere, Dahwa has no round-tower (al-Jahwari et al., 2018). Thus, the northern Batinah might be more akin to the northern Emirates, where round-towers are fewer in number and appear generally to have been constructed late in the period (Düring & Botan, 2018, p. 24). It has been suggested that this variation is the result of seasonal migration between different regions (Döpper, 2018c, p. 93; Phillips, 2007, p. 6), but it seems more likely that it relates to regional diversity in other aspects of socioeconomic organisation. It may also reflect an Umm an-Nar presence in the 2 km coastal strip of the Batinah, where evidence is less likely to have survived.

3 | CONCLUSION

This paper has presented a detailed description and discussion of the Umm an-Nar settlement of al-Tikha on the Batinah plain. The value of this site to our understanding of Umm an-Nar society and settlement is not so much in its size, although, as has been suggested, it seems likely to have been a site of regional significance, or in the finds that it has yielded, but in the fact that the original layout appears to be almost completely visible on the surface, allowing—really for the first time—the chance to gain an understanding of the way in which a middle-ranking Umm an-Nar settlement was organised spatially and how the elements of which it were constituted—areas of stone-built housing, pottery scatters, tombs and round-towers—relate to each other. The layout of the site challenges at least some of the extant theories about how Umm an-Nar settlements were organised, suggesting instead an 'agglomerated hamlet' model, consisting in this case of two separate areas of more densely occupied stone-built housing in addition to a large scatter of pottery that probably indicates the presence of occupation in structures of a perishable nature or possibly areas of cultivation. This might provide an insight into the way in which Umm an-Nar settlements were founded and how they grew and developed. The location of the cemetery area at the site suggests that it might have been shared between all of the occupation areas, as does the location of the towers. In the case of al-Tikha, it seems likely that the settlement grew preferentially (it may also have been founded a little earlier), compared to a small network of settlements in the locality, possibly becoming the dominant place in the landscape by the later Umm an-Nar period. How applicable such a model is to other sites and areas remains to be seen.

One of the key questions raised by al-Tikha is the function and meaning of the three, or possibly four, Umm an-Nar round towers. This is still one of the key questions in understanding Umm an-Nar settlements. While such settlements are known from across Southeast Arabia and are located on the coast or in the foothills of the Hajar Mountains, it is clear that the vast majority of round-towers are located inland and are concentrated on the south-western side of the mountains. This, in itself suggests that their meaning and function were not consistent across the Umm an-Nar area: settlements in the inland core of the region show strong similarities, while different patterns are apparent in Ja'alan in eastern Oman, and the northern Emirates and northern Batinah. Through the survey strategy used by the RBAS at Rustaq, an improved picture of the structure of Umm an-Nar rural settlement has emerged. Al-Tikha appears to have been the largest of a series of five or more settlements that were spaced along the bank of the Wadi Far. Based on their locations and similarities to more recent settlements (Iron Age and premodern), these seem likely to have been small villages of cultivators. This is the first time that a pattern of rural Umm an-Nar settlement that is anything like complete has been elucidated at this scale. It serves, amongst other things, to illustrate how al-Tikha might have grown over time from an 'agglomerate hamlet' structure into a central location in the local settlement pattern, its size and location on a route of potential significance giving it an increased role over time also in regional networks of communication.

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AUTHOR CONTRIBUTIONS

D.K. and N. al-J. conceived and organised the project. D.K. and W.D. designed the research. W.D., D.K. and M.d.V. carried out the fieldwork and study. W.D., D.K. and M.d.V. wrote the paper with input from N. al-J.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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