ST1-I2B – ST1-I3A

IMTO FIELD REPORTS

PRELIMINARY REPORTS FROM THE ITALIAN MISSION TO OMAN

The 5th and 6th campaigns of excavation at the Salut Bronze Age tower (ST1)

UNIVERSITY OF PISA

INTRODUCTION AND GENERAL REMARKS

Michele Degli Esposti

After four campaigns of excavation, the main aspects of the general stratigraphy of the site were already known, at least partially. Nevertheless, the large extension of the site required further investigation in order to reveal more of its planning, as well as testing the archaeological potential of areas further away from the central monument – the Early Bronze Age tower itself.
Besides, where good, sealed stratigraphic sequences were surviving, it was necessary to record them and their cultural assemblages in order to analyse them together with the ones previously investigated, to subsequently try and build up a related pottery sequence which could possibly have an objective chronological significance.
Previously collected data were of great help in placing the new trenches and in allowing a quicker removal of those layers which already revealed to be recent and devoid of cultural remains.

The main goals of these two campaign were the following:

- A general enlargement of the excavation with the removal of later deposits in order to further reveal the plan of the main ditch and to possibly identify other structures
- The excavation of a few deep trenches meant to investigate the whole stratigraphic sequence in different points inside the main ditch (trenches T11, T12 and T13)
- Further verification of the stratigraphy inside the tower itself, as a preliminary operation meant to allow the restoration of the well's head (wall feature W6)
- The investigation of the northern and final part of the shallow drainage SU 140, discovered around Structure 2
- The widening of trench T5 in order to complete the planning and excavation of the Iron Age and Islamic structures already partially discovered during previous campaigns
- Testing the general stratigraphy of the area moving away from the site, towards Salut, trying to verify the presence of archaeological features over a wider area

The results obtained during last autumn/winter excavations were of great importance to the reconstruction of the site's history and layout, also shedding some light on different issues like that of long distance contacts.

The plan of the main ditch has been almost completely revealed, at least for what concerns its inner side (the one closest to the tower), and it was shown that it actually runs all around it. The ditch was only lined in its eastern part with the massive walls W28 (inner side) and W41+W52 (outer side, slightly north of W28). It is also quite sure now that there is only one large ditch, divided into two halves (also referred to as inner and outer channel of the ditch) by a strip of caliche left standing proud during the original digging of the structure; the same strip widens to form what has been called the caliche "island", above which Structure 1 was erected. It would seems at the moment that this strip of caliche only occupied the eastern half of the ditch.

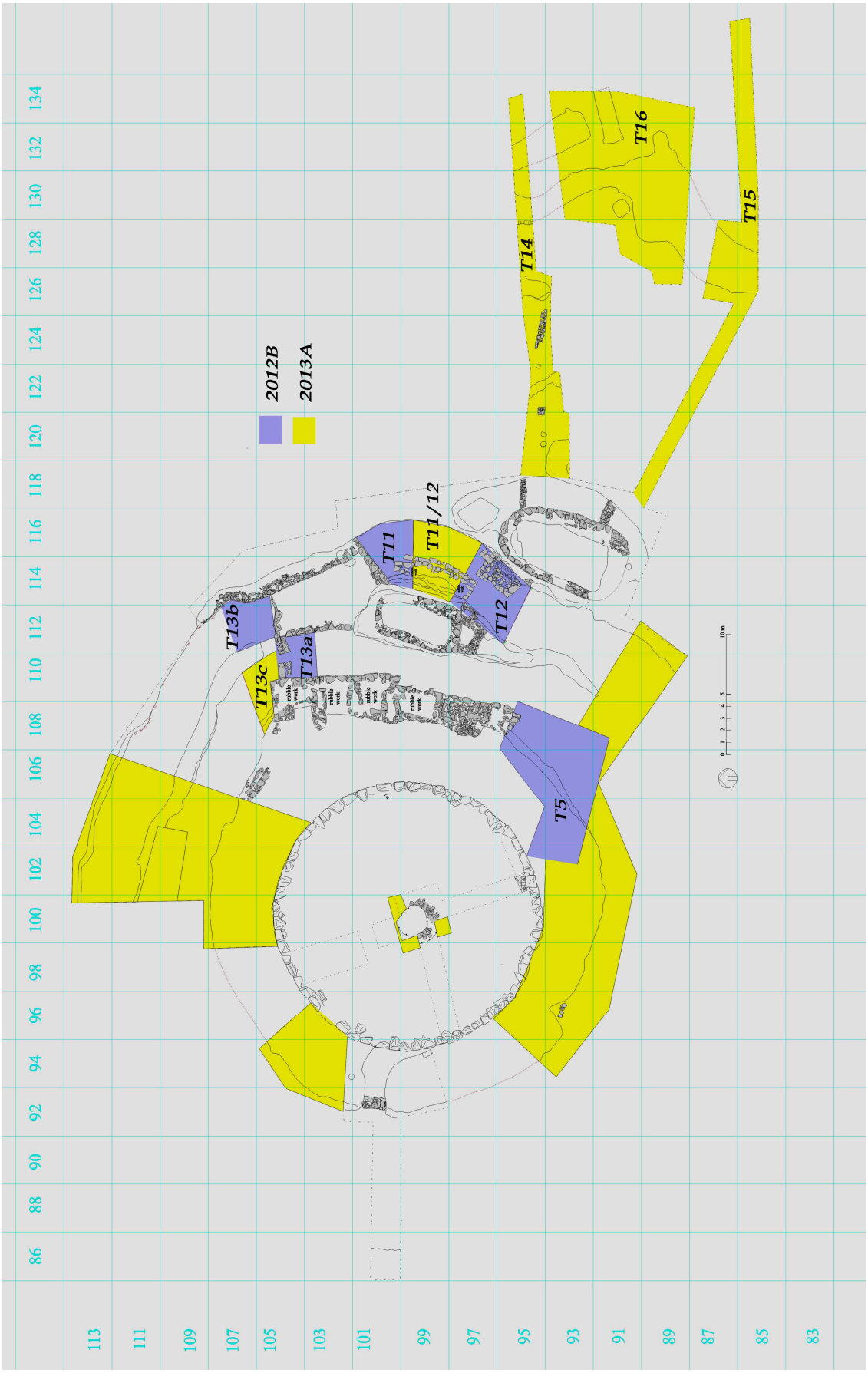

Fig.1. General plan of the excavation, indicating the trenches excavated during the last two campaigns. Areas not numbered were excavated down to Bronze Age levels only removing recently accumulated deposits, without hitting good ancient surfaces or structures.

Several structures, all made of large roughly hewn boulders, were discovered inside the ditch. They probably served different purposes: while W47 and W50 were likely meant to connect Structure 1 with Structure 2 (supporting a wooden bridge? see below), W51 served as a protection of the ditch's side against water erosion.

The excavation of deep trenches inside the main ditch, apart from allowing the identification of the different deposits and of the mentioned structures, also gave back evidence which can be used to build up an internal phasing for the site. This if of even greater importance considering that such a reconstruction is impossible for Structures 1 (apart from the relative sequence of its rooms) and 2 and for the tower itself, given the deep impact of wind and water erosion and later stones robbing.
It is thus clear that a first phase, during which the ditch was completely open, terminated with a dramatic event which caused the collapse of large parts of its unlined sides, probably an heavy flood. After this, the outer part of the ditch was blocked at least in one point by erecting Structure 3, a sort of terrace which connected the outer side of the ditch with Structure 1. Besides, the northern wall of Structure 3, W44, was built as to abut against W28, thus blocking also the internal part of the ditch, except for an 80 cm wide passage. After this substantial re-arrangement, water was surely still present inside the inner channel of the ditch, while it is not clear whether the same was true for the outer one.
Another heavy flood, or actually just the lack of maintenance over a few seasons of heavier rains, caused the deposition of massive water-borne deposits inside the ditch, which was then no longer used for its primary function but rather became an area for waste dumping. For what concerns its original use, the debate remains open, ranging from a defensive to an irrigation purpose. Probably it served both; what is undeniable is anyhow the presence of water inside it.
After this phase, the Bronze Age occupation of the site came to an end, and the remaining depression which still indicated the presence of the ditch was completely backfilled and almost evenly levelled by further deposits.

These deposits finally made up the occupational levels for the Iron Age period of the site. Structural remains of this date are actually scarce for the moment, with the remarkable exception of the well's head W6, linked with the well's reuse. It has anyhow to be borne in mind that some of the walls forming the eastern compound excavated to the southwest of the tower (Degli Esposti 2011: fig. 8) were probably first built during this period, and later reused and superseded. The northern compound, on the other hand, revealed to be the outcome of a completely new building activity during an Islamic occupation of the site, as already suspected (*ibid.*: fig. 9 and see footnote 9). The fact that the southern walls of this compound (W11) rests almost directly above a Bronze Age wall (W32) is a good example of how shallow the stratigraphy is at the site if one excludes dug features, indicating that erosion of soils balanced if not overcame deposition.
Be that as it may, one of the most important results of the two campaigns here considered, is the discovery of an area, to the east of the site, where Iron Age levels and structures (postholes and pits) hadn't been completely eroded by water and wind action. Besides, the uneven preservation of the Iron Age levels is in keeping with what had emerged from a series of trenches placed in the plan between ST1 and Salut in 2010 (Cremaschi & Zerboni in *Salut preliminary report 2010A*).

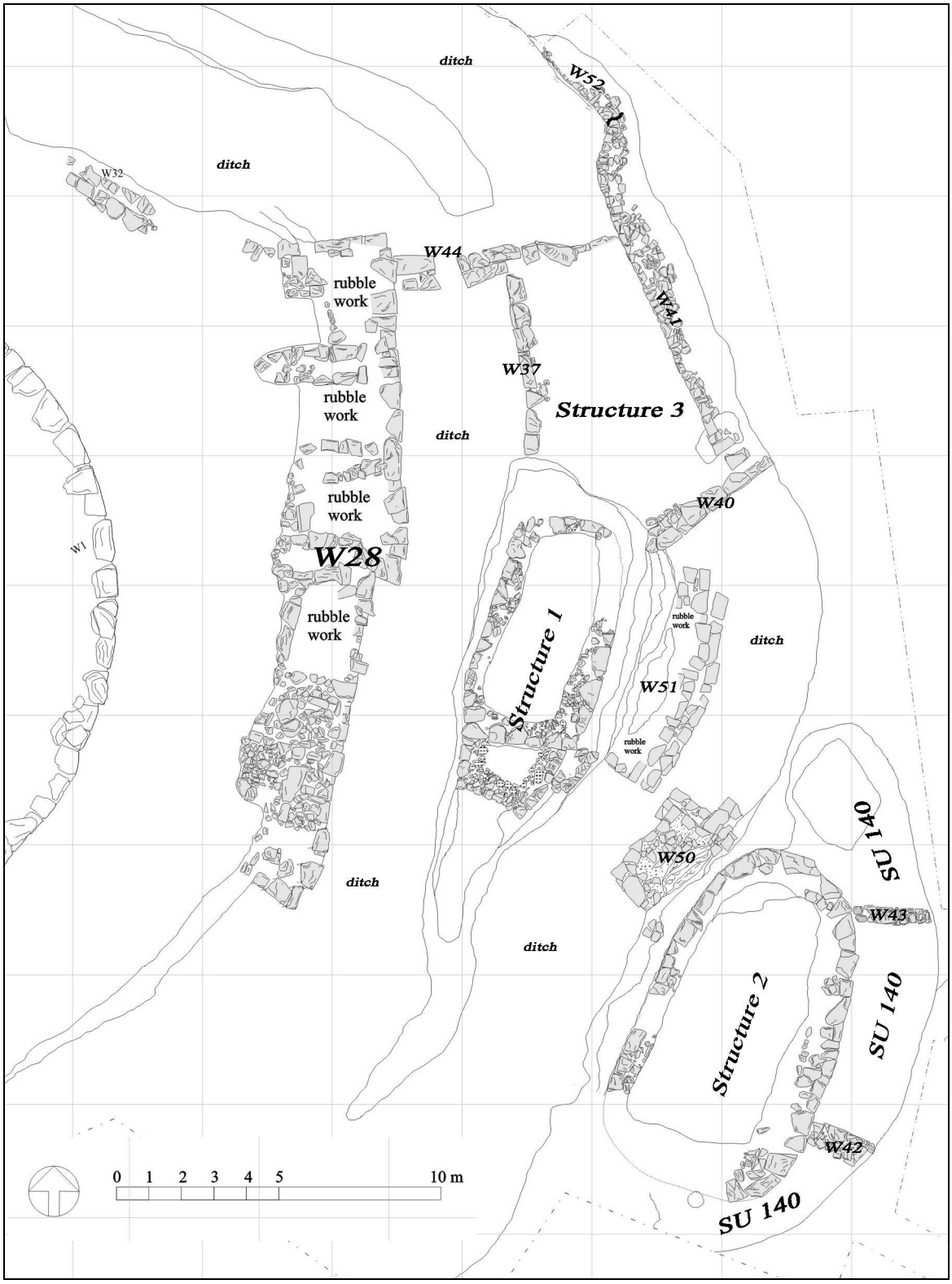

Fig. 2. Plan of the Bronze Age structures excavated to the east of the tower.

What would at this preliminary stage of its excavation seems to be a second well was also discovered to the north of the tower, between its ring wall and the inner side of the main ditch; for the time being only Iron Age sherds were recovered form the excavated deposits, but the possibility can not be discarded that this just indicates a reuse in the same way of what happened for the well inside the tower.

Of great relevance are the results coming from the extension of the investigated area further to the east. Here in fact part of a complex network of channels was discovered, which can be dated to the Early Bronze Age on the basis of the materials retrieved from their deepest, sealed fillings, perfectly mirroring the assemblage collected form the main ditch around the tower. Only a small section of the two longer channels located so far was excavated; although a more accurate analysis of the deposits is needed, it would seem that the lower ones were actually connected with the presence of water inside the ditches. This can be of paramount importance in the reconstruction of the environmental parameters at the site during the Bronze Age, and would be in contrast with what reported for the not too distant site of al-Ghubra near Bahla (Orchard & Orchard 2010). By way of a general point, this channel network, which could speak in favour of an agricultural exploitation of the plain, can be paralleled with those discovered at the same site of al-Ghubra (Orchard & Stanger 1994: fig. 12) but to some extent also with the situation at Hili 8 (Cleuziou 1989: plates 11-15).

For what concerns the material culture, these last two seasons have confirmed the general uniformity of pottery throughout the stratigraphic sequence, with a possible minor variation in the more ancient levels, whose relevance will be possible to be discussed only after the different assemblages have all been studied. Other classes of materials, like stone vessels and beads (very scarce), conform to what is known from coeval sites throughout the Oman Peninsula, although the paucity of metallic items is striking.
The most important recent finds anyhow are related with the issue of long distance contact, or rather to internal, intra-regional redistribution of items primarily coming from distant areas. While Indus imported or related material was already known at the site, the more widely attested class being that of the large black slipped jars and the most astonishing find that of a soft stone stamp seal (see *ST1 preliminary report 2011B*), contacts with southeastern Iran are now witnessed by two sherds of Incised Grey ware. From the same area, if not from central Asia, came two fragments of alabaster vessels, probably belonging to one and the same bowl, also found in sealed contexts inside the main ditch.

ACKNOWLEDGEMENTS

Excavations at the Early Bronze Age site ST1 are a project of the Italian Mission to Oman (IMTO), directed by Prof. Avanzini. To her, the writers would like to express gratitude for the possibility of taking part to the project and to direct field work at ST1, as well as for the opportunity of publishing this preliminary report on the Arabia Antica website.
The 5th campaign took place from October, 20th, to November, 29th, 2012; the 6th from February, 1st, to March, 14th, 2013. Work on the field was directed by Michele Degli Esposti (Dip. di Civiltà e Forme del Sapere, University of Pisa), with the help of Marzia Sasso (advanced student in archaeology at the University of Rome 1 – "La Sapienza"). During the 6th campaign a restoration program was completed under the supervision of Architect Valter Filatondi.
As for its other projects, IMTO has been working under the aegis of the Office of His Excellency the Advisor to His Majesty the Sultan for Cultural Affairs, taking advantage of the kind help of Dr. Said Al Salmi and Mr. Hassan Al Jaberi. Representative of the Office on the site for the 5th and 6th campaigns was Mr. Walid Al Wazini.
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DEFINING THE PLAN OF THE MAIN DITCH

Michele Degli Esposti

The acquired knowledge on the general stratigraphy allowed a faster removal of the uppermost deposits in order to try and hit the Bronze Age levels connected with the ditch, obviously where no later structure or occupational level was encountered.

For what concerns the general plan of the ditch, it was also possible to show that it surely surrounds the tower. The inner limit of the ditch was in fact exposed for some 5/6th of its overall extension (see fig. 1). Apart from the peculiar 'C' shaped derivation already located with a small trench in 2012A, the only divergence from a predictable round shape is the presence of a neat indentation to the southwest of the tower, in correspondence of which a series of tumbled stones was partially brought to light, possibly pointing to the presence of a wall feature built against this corner of the ditch's cut. Clearly, this hypothesis is only speculative and will need confirmation.

Fig. 3. The inner side of the ditch's cut to the southwest of the tower, where a right angle indentation is visible.

The outer limit of the ditch was less widely exposed: it was possible to chase it for a few more meters to the south – southeast of the previous excavation limit, and more extensively to the north - northeast.

It was also possible to see how the caliche "island" on which Structure 1 was built, actually carries on towards the south-west and thins down to become a long strip, dividing the ditch almost into halves. It would seem that on this side its end was reached, unless it simply sinks down a little and was thus just not reached by the excavation.

A similar strip of caliche was found north of W44, the wall partially blocking the ditch, and extends till the current north-eastern excavation limit, although it gives the slight impression of being almost ending.

Almost precisely on top of this strip, close to the north-western end of the excavation, three stone walls were uncovered. These had actually already been located during the 2011A campaign, inside

what was at the time the small trench T8 (see *ST1 preliminary report 2011A*: fig.7). They are W2, the continuation of a large boulders wall of Islamic date, now removed, and the smaller walls W26 and W27, departing from W2 towards the southeast. The nature of these structures, which anyhow seems to be all datable to the same late occupation, will have to be investigated with further excavation in the next campaigns.

Fig. 4. The caliche strip left standing to separate the inner and outer channels of the main ditch, here seen to the northeast of the tower. In the centre of the picture, on the inner edge of the ditch, the small wall W32 is visible.

Roughly in the same area north of the tower, another feature was discovered which could be of relevance. At a distance of 2,3 meters from the tower ring wall, a large circular pit was visible, cut through the caliche and separated from the ditch's internal side by just a thin septum of untouched caliche. This situation resembles that of the drainage SU 140 with the cistern standing at its end, although here no water-draining feature is present. The pit, named SU 222, was excavated just in its upper part, where the deposit SU 223 was removed (and more of it still remains *in situ*). This layer only gave back Iron Age sherds, which comprise a rather wide variety of shapes, although almost all of them coming in medium to coarse fabrics. This applies also to the few painted sherds and to the single fragment decorated with an applied ridge likely representing the wavy body of snake. A single fragment of an Iron Age III large dish was also retrieved. The width of this cut suggests that we are dealing with yet another well; it is at present not possible to date it with certainty. The presence of only Iron Age sherds in fact is not in this case of much help: even for the well dug inside the tower, the excavated layers only contained Iron Age material, but its original excavation surely dated back to the moment of the tower construction. In the case of SU 222, even the shape is similar to that of the well standing inside the tower, contrary to what can be seen for SU 214,

mentioned below in the section dealing with the outer trench. It is hoped that the removal of more of the deposits backfilling SU 222 will help to define this matter.

Fig. 5. The north-eastern limit of the excavation, showing the main ditch running around the tower, with the possible well SU 222 standing almost on the ditch's edge, and the later walls W2, W26 and W27 in the foreground (left); the later walls standing north of the tower, seen from the west (below left);
a detail of the large pit SU 222, possibly a second well of yet undetermined date (below right).

For what concerns wall features connected with the ditch, the complete plan of W41 was revealed. The wall, made of stones which are remarkably smaller than those of the other walls, lines the ditch's eastern side bottom to top. Near its northern end, it bends eastward and abuts against the caliche side. Here, a new wall, W52, was discovered, made with the same technique as W41, but resting at a neatly higher level. It is leant against W41, although a few stones of its upper south end were tied with those of W41.
On the internal side of the ditch, the small wall W32 previously investigated within trench T9 (see preliminary report ST1 2012A), turned out to be as well sitting on the caliche right on the ditch's edge, and covered in its lower row of stones by SU 037, which is a Bronze Age deposits without later material.

Fig. 6. Walls W41 with W44 abutting against it on the right hand and W52 on the left (top);
detail of W52 (above);
detail of W41 after 2013A excavation (right).

EXCAVATIONS INSIDE THE MAIN DITCH (TRENCHES T11, T12 AND T13)

Michele Degli Esposti & Marzia Sasso

Trenches T11 and T12 are both located in the outer channel of the main ditch, east of Structure 1 (see fig. 1). The excavation of these trenches was carried out in two different moments. At first, during the 2012B campaign, trenches T11 and T12 were excavated reaching the bottom of the ditch and leaving a substantial balk of untouched deposits between them. This allowed the definition of the main stratigraphical sequence in this stretch of the main ditch's outer channel and the discovery of two wall features built inside it – W50 and W51.

The removal of the untouched deposits between the two trenches was anyhow deemed useful in at least two instances. The first was the possibility to reveal entirely the medium-large stone wall w51, lying on the bottom of the ditch and whose opposite ends were visible in the aforementioned trenches. The second reason was the great visual impact that such a wide portion of the ditch would have had on the visitors, once emptied out. This second part of the work was completed during the 2013A campaign.

Trench T13 instead occupies part of both the inner and the outer channel of the ditch. It was subdivided in trenches 13a-b-c, due to the presence of W44 and to that of the caliche "strip" that runs in the middle of the ditch from just north of W44 to the excavation limit. T13a was dug south of W44, between W37 and W28. T13b was instead placed north of W44, between the eastern side of the caliche strip and the outer side of the ditch. T13c was on the other side of the caliche strip than T13b. Trenches T13a-b were excavated in 2012B, while T13c was completely excavated in 2013A.

Trench T11

The trench, quickly excavated in 2012A, was enlarged southward. This allowed a more detailed investigation of the stratigraphy, and a clearer view on W40, the southern wall of Structure 3 (the "terrace" blocking the outer channel of the ditch).

Fig. 7. Trench 11 at the end of 2012B excavations, with the northern end of W51 visible against the inner side of the ditch (left); south face of wall W40 seen from inside the main ditch (right).

The uppermost layer in the trench was SU 135, a clear brown silty layer with scarce material, deriving from natural deposition. It marks the final and complete backfilling of the ditch. Below it, SU 156 was distinguished. Actually the two layers are extremely similar, and the distinction was

mainly possible due to the presence of an ashy lens (SU 155) on top of SU 156. Also the layout of a few pebbles helped the identification of the limit between the two context.
SU 156 in turn covers SU 163, a darker brown silty layer, quite compact, which also gave back little material. From this layer, nevertheless, came a terracotta figurine of a quadruped, lacking the head and one of the paws, as well as the tail (F58).
Below this layer, we hit the collapsed caliche already noticed in 2012A, now named as SU 165. It had collapsed on top of the sediment SU 169, which in turn covered SU 136, a layer of tumbled stones. The enlargement of trench T11 showed that this collapse could be associated with a specific wall feature: the northern end of a new wall was in fact unearthed, which lined the ditch's cut in correspondence of the "island" hosting Structure 1. This wall was named W51, and its southern end was afterward discovered in trench T12.

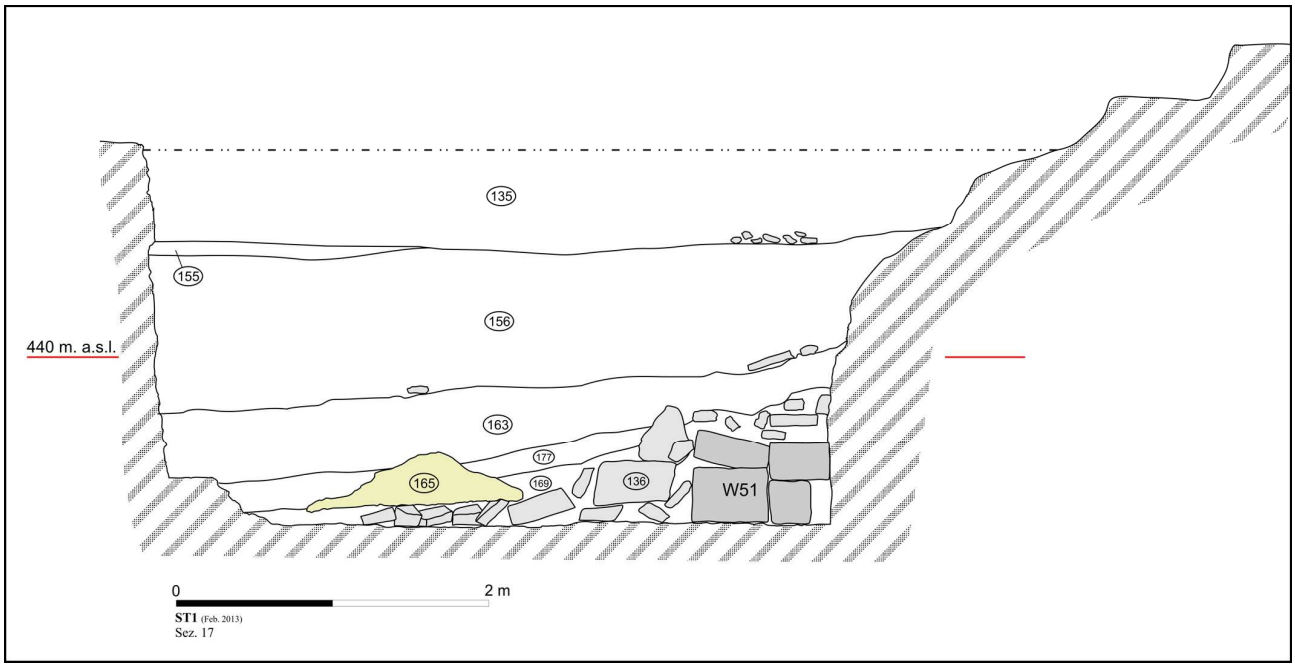

Fig. 8. Section through the main ditch, outer channel, corresponding with the southern limit of trench T11 (layers not characterized – Section 17).

It was now also confirmed that the massive wall W40, blocking this part of the ditch, was actually built after the collapse of both W51 and of the caliche side of the ditch, since part of SU 165 is clearly visible underlying the bottom stones of W40.

Trench T12

Excavation of this trench had the initial goal of clarifying the chronology of the little wall feature W47, leant against Structure 1, and apparently resting on late deposits backfilling the ditch, which lead to a possible dating to the Iron Age occupation of the site (see *ST1 preliminary report 2012A*).
The first layer removed was SU 133, a clear brown, quite compact silty layer which gave back only Bronze Age material. It can be equalled with the previously dug SU 83. SU 133 was covering the lower part of W47, which turned out to be laid directly above the caliche slope standing between Structure 1 and the actual ditch cut. W47 has then to be dated back to the Bronze Age occupation of the site.

Fig. 9. The small C-shaped W47 leant against Structure 1's Room 2.

The removal of SU 133 also uncovered the upper surviving stones of what revealed itself as a rectangular buttress, with a small buttressing to the north, which was built against the ditch's outer side, below Structure 2. This wall feature was named as W50. It is of some relevance to note its position, facing W47: this suggests that the two structures could be somehow linked, possibly having served as supports for a wooden bridge linking Structure 1 and Structure 2.

Below SU 133, an ash and charcoal lens appeared, SU 157. It was actually also covered by a pebble rich layer visible mainly in the southern part of the trench and named SU 166.

Close to W47, besides, a small heap of collapsed stones likely to have originally belonged to it, was distinguished (SU 158).

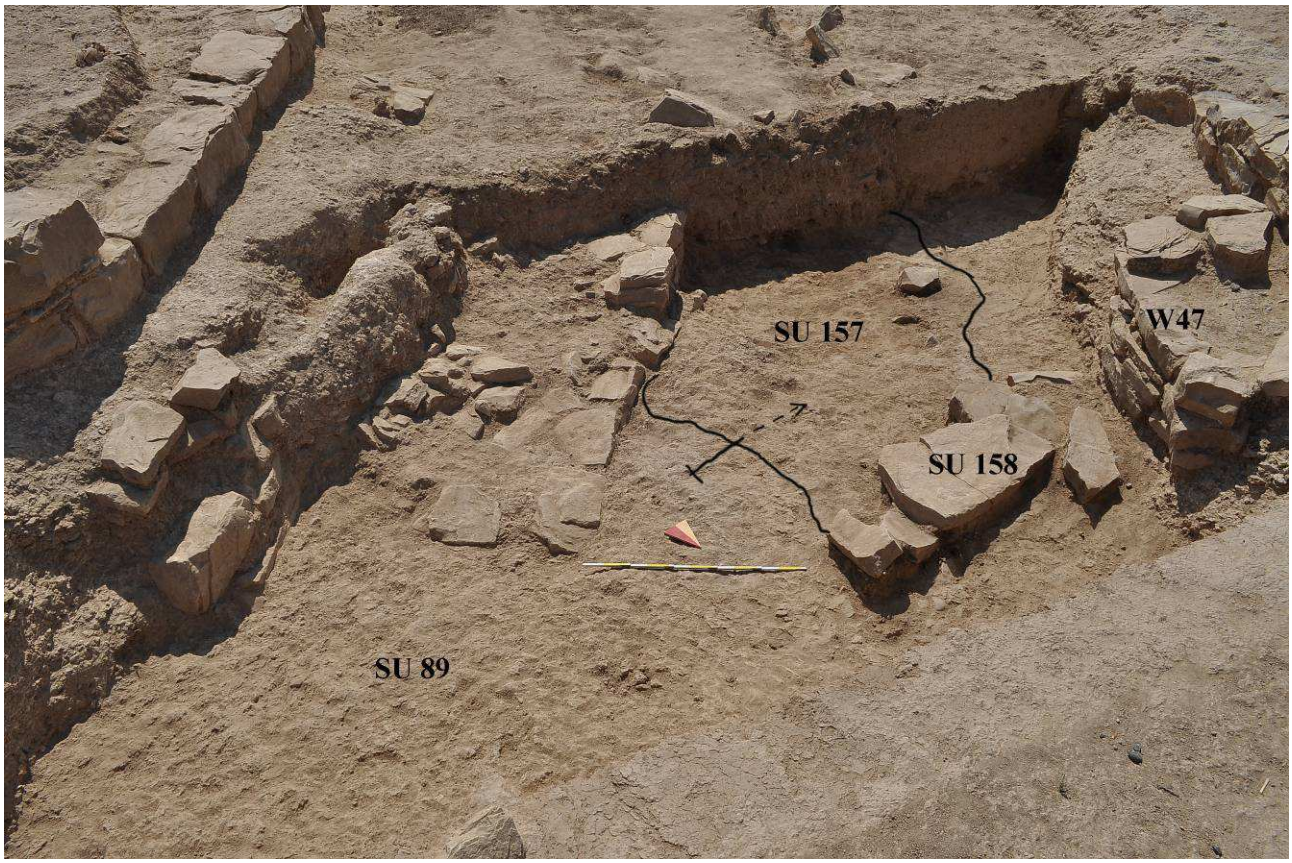

Fig. 10. The situation in trench T12 after the removal of SU 133 (2012B campaign).

From SU 158 another charcoal sample was collected. This layer then marked the passage between SU 133 and 89, a dark brown silty, slightly clayish layer with rather abundant pottery, present on the whole trench. SU 89 was initially distinguished from SU 172, standing below it, mainly on the basis of the scarcity of pottery in the latter. This remaining true, the two layers can anyhow be considered as one.

A real hiatus was visible instead between SU 172 and SU 174. SU 174's surface was marked by a dispersion of charcoal flecks and calcium carbonate concretions. It would seem that the surface remained exposed for a period of time.

Fig. 11. The surface of SU 174 as exposed in trench 12 during 2012B excavation.

Removing SU 174 gave back an abundant collection of pottery, among which several pieces of a completely decorated jar which was made of a peculiar pale red fabric, characterized by abundant tiny black grits, slipped in bright red. The external surface still bears a rich, black painted which, together with the fabric, seems to indicate that the pot does not belong to the "fine red Omani" ware tradition but could actually represent an Harappan import or influence.

Fig. 12. The southern end of W51 as visible in T12 at the end of 2012B excavation.

Below SU 174, a more compact, clear brown silty layer was identified in the northern part of the trench, partially covering W51. This layer, SU 177, had deposited on top of W51's collapse, indicated as SU 181. From SU 177 came the complete (fragmentary) rim of a large storage jar in a rather coarse fabric, with applied ridges and an applied knife/dagger figure.

W51 stones had tumbled above a relatively thin brown silty deposit (SU 182), which in turn covered the first deposit in this part of the ditch, that is a layer of eroded and re-deposited

caliche, mixed with some waterborne silt, named SU 183. From SU 182 two fragmented saddle querns were collected.

Fig. 13. The buttress W50 at the end of 2012B campaign.

In the northern part of the trench, namely where W51 stands, the ditch was cut deeper than in the remaining part. Here we were able to identify another deposit, SU 184, standing below W51 and above SU 183. This layer clearly accumulated before SU 182, which is in fact covering W51.

Removing the deposits between T11 and T12

The uppermost deposits were removed consistently with what previously defined. In most of the cases it was possible to ascertain the equivalence between layers excavated in T11 and other excavated in T12. In all these cases, the number assigned for T11 was kept, with the exception of the highest deposit. This was labelled as SU 133, which is equal to SU 135. Below it stood SU 156 and SU 163, top to bottom.

SU 174, identified during the excavation of T12 below SU 156, only extended over part of the new trench, as such being visible only in section 14, drawn along the southern limit of the new trench.

Below these layers, which are the outcome of a natural, massive silting up of the ditch, stood a sequence of deposits which have instead to be connected with a dramatic collapse of some of the walls discovered in the area, and of large portions of the caliche sides.

This sequence comprises, from top to bottom, SU 177, a silty layer which englobed the tumbled stones which constitute SU 181; SU 181 in turn is resting above SU 169, a layer perfectly identical to SU 177, which covered a second heap of collapsed stones – SU 136. A large chunk of caliche

(SU 165), dethatched from the outer side of the ditch, collapsed over SU 169 and was then covered by SU 177. All these collapses actually happened almost at the same time, and are just part of one single destructive event.

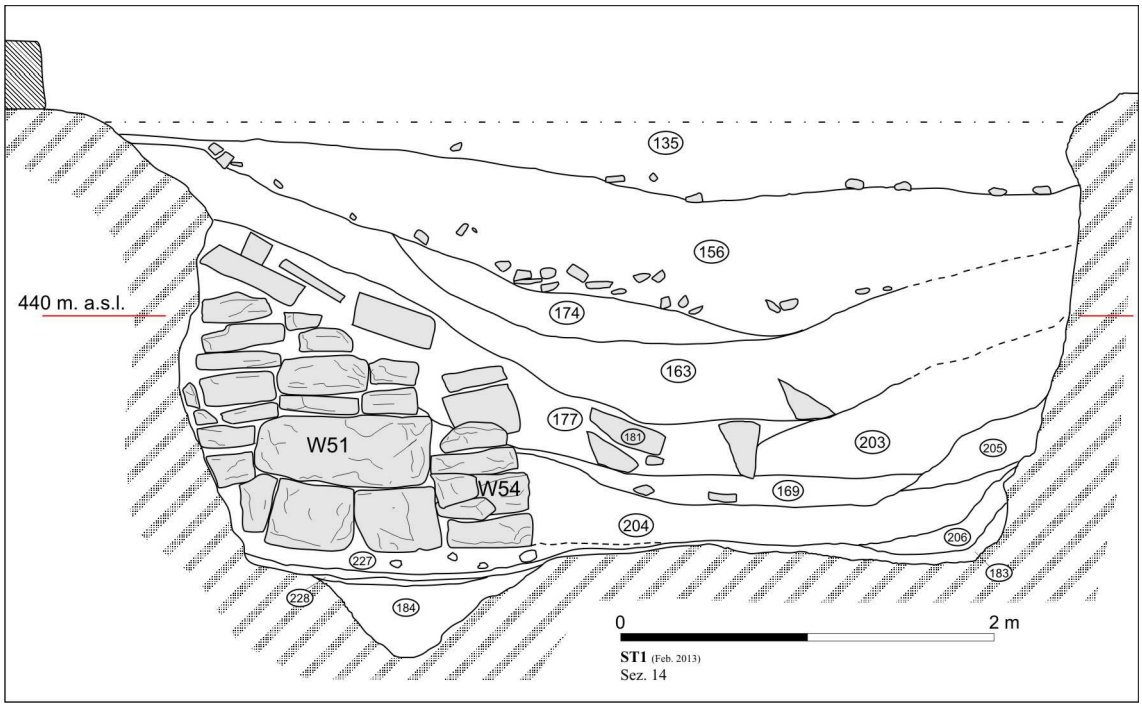

Fig. 14: Section drawn along the northern limit of trench T12 before removing the deposits between this and T11 (layers not characterized – Section 14).

They cover the already mentioned wall W51, to which was also leant a skin wall comprising a single row of stones, probably meant to supply W51 some more strength. This wall was named W54. Both these walls were built inside the ditch some time after its excavation. This is shown by the presence, below them, of some deposits that can be connected to water erosion of the caliche ditch's bottom and to an initial deposition of water-borne material inside the ditch (SU 184, SU 183 and SU 227).

The consequence of the massive collapse referred to above was the decision to block the outer channel of the ditch, and to reduce the water flow in the internal one by erecting wall W44. W40, w37 and w44 (defining Structure 3) in fact were built above portions of collapsed caliche which were capping other deposits to be linked with this main disruption of the ditch's structures.

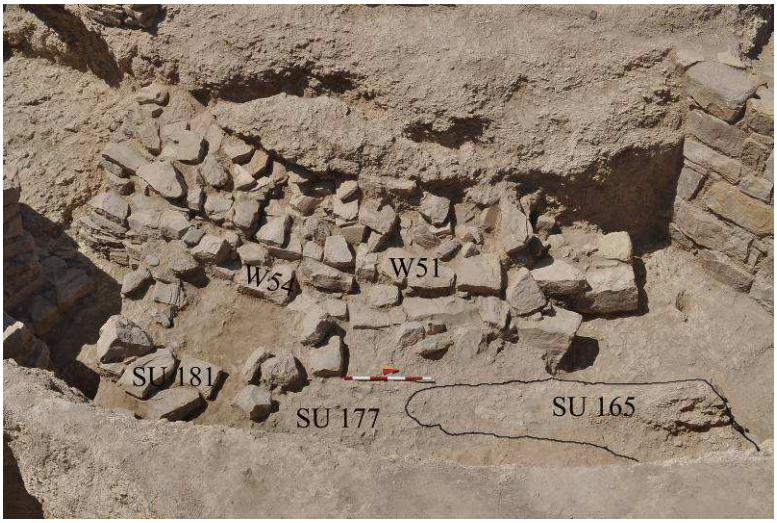

Fig. 15. The area between T11 and T12 after the removal of SU 163 in 2013A season.

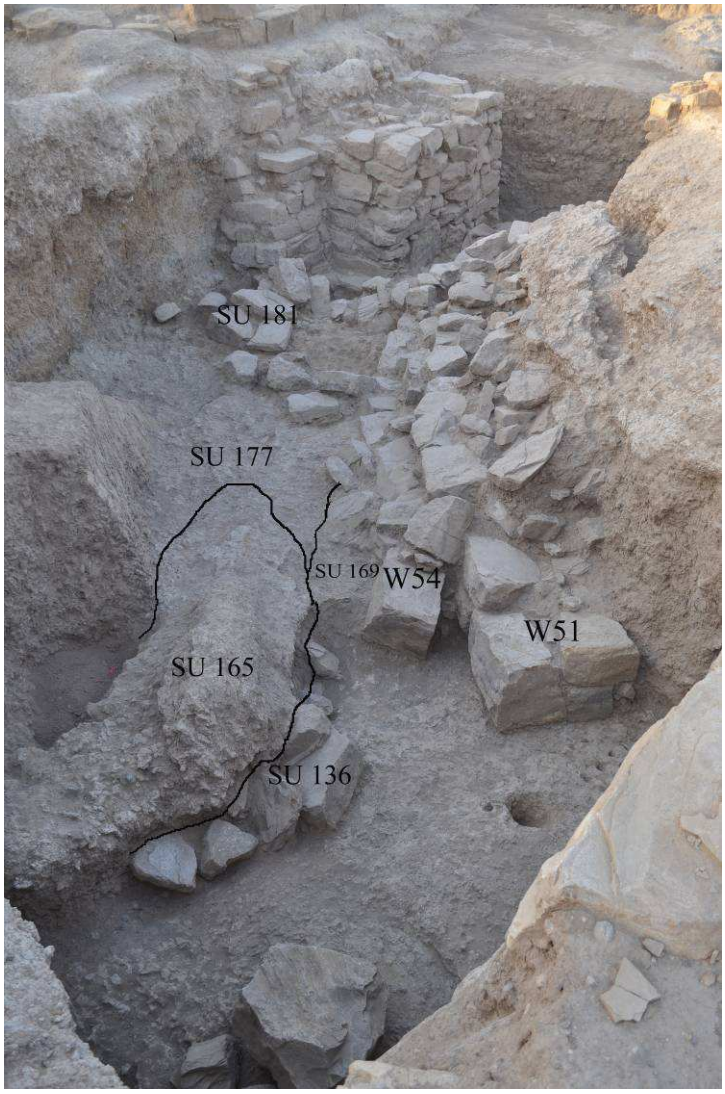

Fig. 16. (left) the situation below SU 133 seen from the north;
(below) north side of the buttress W50 in T12.

Trench T13a

The excavation of T13a started from the removal of the bottom part of SU 87, left during previous campaigns. SU 87 gave back a remarkable amount of Bronze Age pottery, without later intrusions, and has to be understood as the result of dumping inside the backfilled ditch during the last part of the Bronze Age occupation of the site. It was covering SU 171, a brown compact silty soil standing against W28 and covering partially SU 173, which conversely stood against W37 and had a gently sloping layout towards the opposite side of the ditch. SU 173 was a silty, light brown, loosely compact deposit with abundant pebbles in its upper part and abundant potsherds.

Below this layer two thick deposits were identified, poor in potsherds and almost identical in composition (silty, brown, loose to medium compact), but distinguished on the basis of a slender line of potsherds visible in section. The two layers were named SU 178 and SU 179.

The lowermost layer in this trench was SU 180, a thin, loose compact layer, rich in wadi pebbles. Also SU 180 gave back only a handful of potsherds.

Fig. 17. W44 blocking the inner channel of the main ditch, except for a narrow passage. The wall stands on collapsed caliche, which in turn covers earlier sediments. View from the south after 2012B campaign.

Trench T13b

Excavation in the whole area north of W44 started with the removal of remaining portions of SU 88, which had already been shown as being of Bronze Age date (probably originated in the period between the end of Bronze Age occupation and the establishment of Iron Age occupation).

Below it, two layers were distinguished to the east and to the west of the caliche strip: SU 137 in T13b (east) SU 138 in T13c (west).

Quite similar each other, these two layers covered SU 143, which was deposited in both T13b and T13c. While SU 137 and 138 were quite loose to loosely compact, SU 143 was markedly more compact.

The excavation in T13c was initially (2012B) interrupted at this point, leaving residual SU 143 in place but allowing the discovering of the end of W28, right north of W44.

Excavation was continued in T13b. Here, a small accumulation of small size stones was standing almost on top of SU 143, in a recess of the caliche strip. It cannot be linked to any surviving feature of which it could possibly indicate the collapse.

SU 143 was covering, not completely, a quite extended lens of ashes, including scarce over-fired pottery. This layer, SU 167, had an inclination deepening north-eastward, that means that while at its southern it was standing near the corner between W44 and W41, the opposite was abutting against the caliche strip, where it also became thicker.

This ashes marked the limit between SU 143 and SU 170, barely identifiable else way. SU 170 contained abundant pottery in its upper part, decreasing as the depth increased, and a noticeable amount of gravel. It is also less compact than SU 143.

Below this quite thick deposit, a change in the soil matrix and aggregation was rather evident. The new layer, which splits in prismatic lumps, had a more sandy texture than the layers covering it, and was hard compact. It was named SU 175, and covered a few tumbled stones coming more probably from W44 rather than from W41, given their dimensions. These stones were not actually given a context name on their one. Anyway, they also helped the distinction of the following and final layer in the ditch, that is, SU 176. This is a silty layer, incorporating lots of eroded caliche, quite loosely aggregated. Pottery was not abundant in these lower strata.

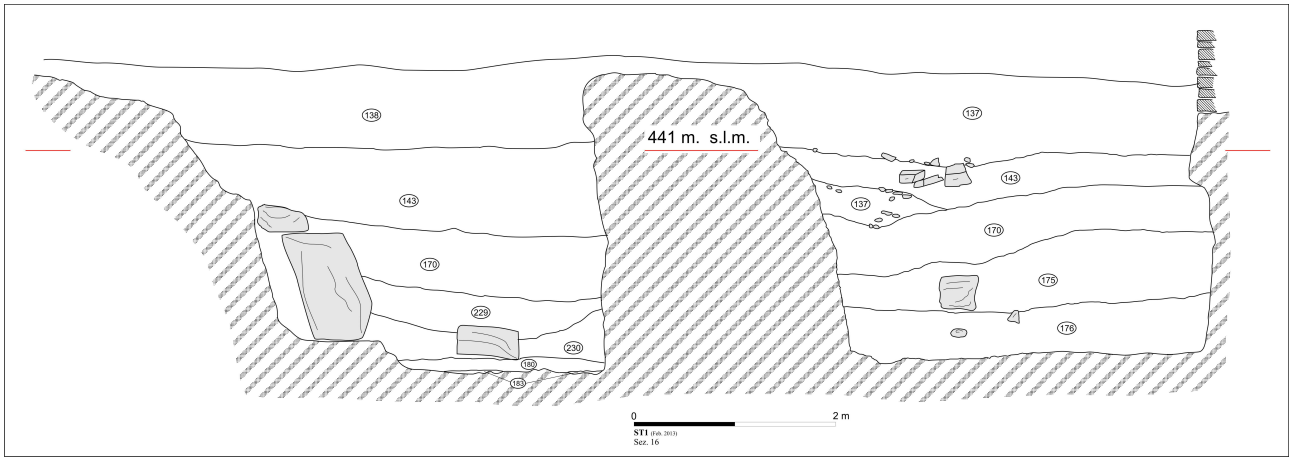

Fig. 1. Section through T13b+c (layers not characterized – Section 16).

Trench 13c

As said, excavation in this part of T13 was resumed in 2013A, starting from the residual part of SU 143 and the underlying SU 170.

It has to be said that distinctions between the different layers in both T13b and T13c were actually far from neat, the general composition and texture of these deposits being almost identical. In most of the cases, limits were identified following evident layouts of pebbles or other elements (large tumbled stones).

The sequence below SU 170 included two thick deposits, SU 229 and SU 230, which superseded a lower silty layer, rich in small pebbles, which is equal with SU 180 identified in T13a. Wall W44, which constitutes the limit between T13a and T13c was sitting, at its western end, directly above SU 180, which thus showed also a physical continuity over the two trenches.

In places, mainly inside natural cavities at the bottom of the ditch, the greenish layer of eroded caliche SU 183 was spotted.

The excavation of T13c also allowed a better glimpse on the structure of W44. This resulted to be standing directly on the caliche bottom of the ditch only in its eastern part, inside the outer channel of the ditch, while its central and western part were laid down above a big chunk of collapsed caliche which in turn was covering some other deposit. The situation was then identical to that of W40 exposed in T11. In the present case, although, the caliche likely dethatched from he tip of the caliche strip standing in the middle of the ditch, and not from one of the ditch's sides.

Fig. 19. The western part of W44 seen from the north (opposite side of fig. 17), after the excavation of trench T13c.

W44 was originally built leaving an 80 cm wide passage in its middle, already recorded during previous campaigns. This passage was found roughly blocked by some medium size stones, whose layout left some doubts about its intentionality. The removal of the deposits in T13c showed how these stones were actually just concentrated inside this gap; besides, their dimensions are not consistent with an alternative interpretation of them coming from a local collapse of W44. It seems thus acceptable the hypothesis that these sort of rubble work actually made up a deliberate blocking of the passage in a later phase: this blocking was given the label W55.

FURTHER INVESTIGATION INSIDE THE TOWER

Michele Degli Esposti & Marzia Sasso

The confirmation of an Iron Age occupation in trench T5, right in front of the lacuna visible in the tower wall W1 (see *ST1 preliminary report 2012A*), called for a control in what had been previously indicated as trench T2south (*ST1 preliminary report 2011A*).

Here, a thick re-deposited layer of Aeolian sand was removed, in order to proceed with the removal of SU 009 (mainly Iron Age materials, loose deposit recognized in the whole tower) and to the subsequent excavation of pit 048's backfilling.

The upper one SU 46 was a silty loam accumulation which definitely obliterated the pit. It was quite rich in potsherds and included several small pebbles. Intense root action made it quite loose and scarcely aggregated.

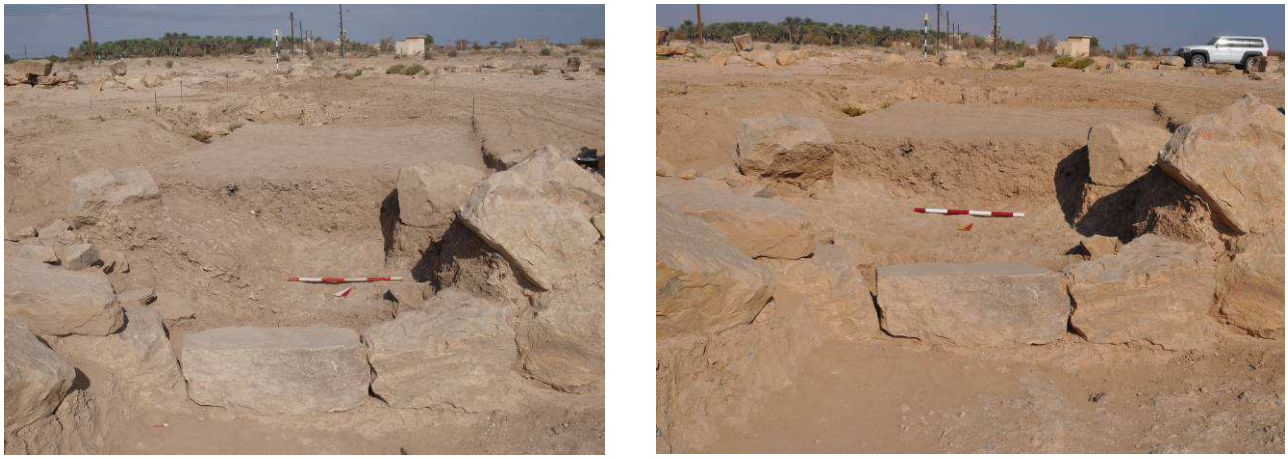

Fig. 20. After the removal of SU 046, SU 049 is left, standing against the western side of cut SU 048 (left); at the end of the works, SU 049 also removed, the surface of cut SU 048 is visible on SU 004 (right).

Below SU 46, the second filling of the pit, SU 49, was exposed. It lain on a bias, against the western side of the pit, not occupying it completely. Very rich in pebbles and potsherds, it directly covered the pit's sides, which were cut through SU 004.

From both SU 46 and SU 49, only Iron Age material was collected, confirming the chronological placing of this pit. An Iron Age date for the dismantling of this portion of the ring wall W1 was already suggested (Degli Esposti 2011: 197). It finds further support in the fact that two of the large boulders removed actually sit on top of SU 164, that is one of the components of the Iron Age surface in T5.

Fig. 21. The central well of the tower with the remaining portion of its well-head W6, after the enlargement of the trench necessary to the well's rebuilding.

In the light of programmed restoration of the tower ring-wall W1 and of the well-head W6 (see Appendix 1), a few works were necessary inside the tower.
Specifically, trenches T2 / T2north / T2west, investigated in the middle of the tower during 2010B and 2011A campaigns, needed to be slightly widened. This was meant to reveal completely the surviving remains of W6, as well as to make space for the restoration works.
Only small portions of the stratigraphy, previously defined, were removed. These included the uppermost late deposit SU 009, as well as the almost complete excavation of W6's foundation trench SU 032, which had been cut through layers SU 063 and SU 004. The foundation trench filling, SU 022, was consequently also removed, and yield a collection of potsherds which are datable to the Iron Age, as already described in previous reports (see also Degli Esposti 2011: 195-196).

THE DRAINAGE SU 140 AROUND STRUCTURE 2

Michele Degli Esposti

This shallow and rather large drainage had already been partially excavated down to the bedrock. Two walls, W42 and W43, were unearthed, which appeared to be blocking it in a second moment, abutting Structure 2 (see *ST1 preliminary report 2012A*).
The deposit between the two walls had already been removed (SU 139), but was no determinant in asserting the date of these walls.

Fig. 22. Layer SU 145, rich in burnt material, exposed in the northern part of the drainage SU 140, abutting against (and thus stratigraphically covering) the small transversal wall W43.

North of W43, SU 144 had been distinguished from SU 139 due to absence of physical contiguity. During this season, this layer was removed (mixed Iron Age and Bronze Age pottery was collected), allowing the complete revealing of the underlying SU 145, a layer rich of burnt material form where a charcoal sample was obtained, hopefully suitable for radiocarbon dating. From SU 145, only Bronze Age material was collected. What is also important, is that this layer clearly abuts W143, whose chronology can thus be safely tied with the Bronze Age occupation of the site.

Fig. 23. The drainage SU 140 completely emptied out, with the exception of the deep tank (?) dug at its northern end. a later rounded pit is visible on its eastern side, whose nature is not clear (the abundance of roots could indicate that it was a modern plant pit).

Below SU145, SU 146 was removed, a brown-greyish, quite loose silty loam layer which also gave back scarce Bronze Age pottery. This removal revealed the morphology of the cut SU 140 in this place: it becomes deeper, sloping northward, where it then forms a sort of deep, sub-squared tank cut through the caliche, and apparently separated from the main ditch by just a thin caliche transect. This tank was filled, below SU 146, by SU 154, a silty, slightly clayish brown greyish deposit, including abundant eroded and re-deposited caliche and several pebbles. The layer is quite compact. For the moment, it was only partially removed, due to the difficulties in deepening the excavation.

All the area was cleaned from Aeolian deposits, keeping the roughly W-E oriented wall W19 as the southern limit.

Fig. 24. Plan of the late (Islamic) occupation features in trench T5(Plan 1).

This operation exposed the occupational surface SU 098, already partially investigated during previous campaigns (*ST1 preliminary report 2012A*). The surface is clearly marked by the presence of three fire pits: SU 099, SU 100-101, and SU 152. All these contexts were excavated and gave back Islamic pottery.

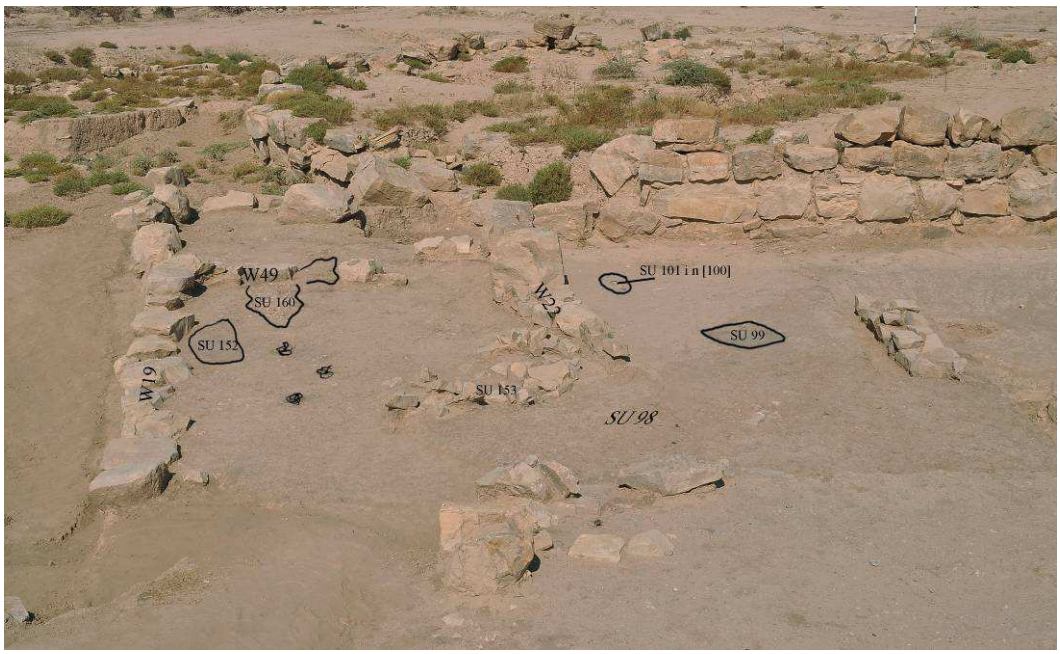

Fig. 25. View of the late features in T5 from the southeast, as visible after preliminary cleaning.

Above SU 98, two poor stone walls were laid down, forming a right angle. They were W22, parallel to W19, and W49, spanning the distance between the other two. Both W22 and W49 were dry stone walls, very poorly realized reusing randomly sized stones which were available in the area.
The presence on SU 098 of another shallow pit, SU 160, filled by loose silty loam and abundant pebbles, could indicate that some of these stones used to build W49 and W22 were removed from more ancient walls. SU 160 in fact cuts through the earlier wall W48 (see below).
One last feature stood on SU 098: it was a chaotic accumulation of medium size stones, close to the eastern end of W22. It was named SU 153 and then removed; no real interpretation was possible, and it is likely that it was just the result of walls collapse and stones reshuffling.
After planning this Islamic phase, SU 098 was removed.
This allowed the discovery of a new occupational surface which has to be related to the Iron Age occupation of the site, as appears to be indicated by the pottery collected from SU 098, which was almost exclusively of that period.

Fig. 26. A view of trench T5 from the north, after the removal of the late layer SU 98.

The new surface corresponds to SU 102, above which stood the little wall W38, discovered in 2012A. Now, a new wall perpendicular to it can be linked to the same phase, the two walls possibly forming a right angle. This new wall was named W48; it sits directly above SU 004, a calcium carbonate cemented silty layer, which constituted the soil for the Bronze Age occupation, on top of the caliche horizon. This layer had already been recognized in section 4bis (*ST1 preliminary report 2012A*: fig. 14), where it was shown how it formed a shallow hump in this area.
SU 004 shows a neat limit with SU 102, which covers it. This limit corresponds to the cut for the Bronze Age ditch SU 067, as was also confirmed by successive excavation. SU 102 thus represents the upper backfilling of the ditch. To the west of W49, a different deposit (SU 164) covered SU 004, levelling the area.
The excavation of SU 098 also brought to light the shallow foundation trench for W19, SU 161. It was backfilled with a pebble rich layer (SU 162), which gave back scanty pottery datable to the Iron Age.

W19 can then be interpreted as a low, "terrace" wall, meant to protect the area where W48 and W38 were erected, from water erosion.

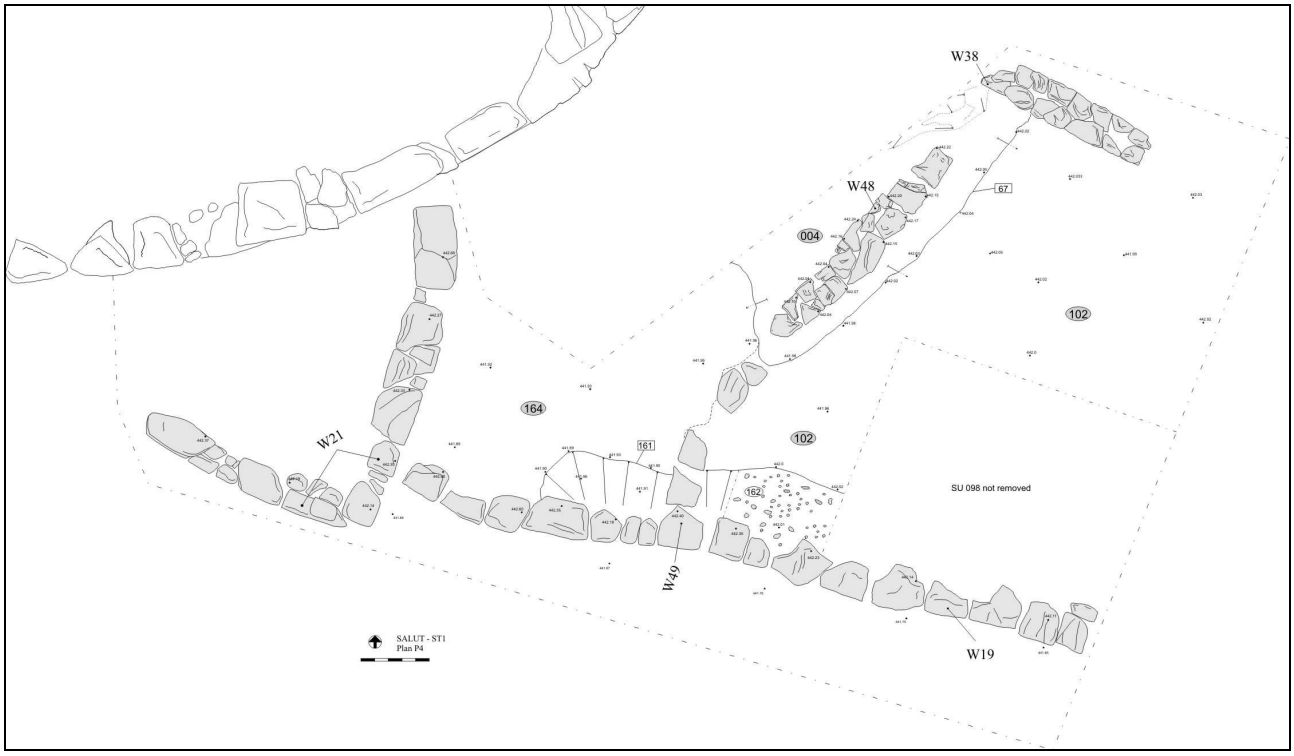

Fig. 27. Iron Age surfaces and structures in trench T5 (Plan 4).

AN EARLY BRONZE AGE CHANNEL SYSTEM AROUND THE SITE

Michele Degli Esposti & Marzia Sasso

In order to investigate further the stratigraphy in an area less close to the tower and the ditch, two long trenches – T14 and T15 – were initially dug starting from the previous eastern excavation limit and moving further east.

Fig. 28. The western part of the north side of trench 14: the pebbles rich layer, clearly visible, is SU 123, which disappears moving east.

In T14 a series of small features, mainly post pits, holes and larger pits, were identified; while some small channel have to be related to later periods, all the pits can be linked with the Iron Age occupation of the area. A 10 to 15 cm thick layer, comprising lumps of caliche, abundant pebbles and a yellowish oxidised silty loam was also traced all over the western part of T14 (where it was larger and occupied completely the area of a previous enlargement of the excavation), disappearing towards the east. This layer corresponds to SU 123, and had already been located above Structure 2.

It covers the mentioned Iron Age features, and is in itself rich in Iron Age sherds. This layer corresponds to the one identified by M. Cremaschi in a series of trenches cut along a line linking ST1 with Salut (Cremaschi & Negrino in *Salut preliminary report 2010A*). The disappearance of SU 123 in the eastern part of the trench is consistent with the remarks made by Cremaschi, who noted how this layer, which he identified as the Iron Age soil, was not homogeneously present in all the trenches, often being completely eroded.

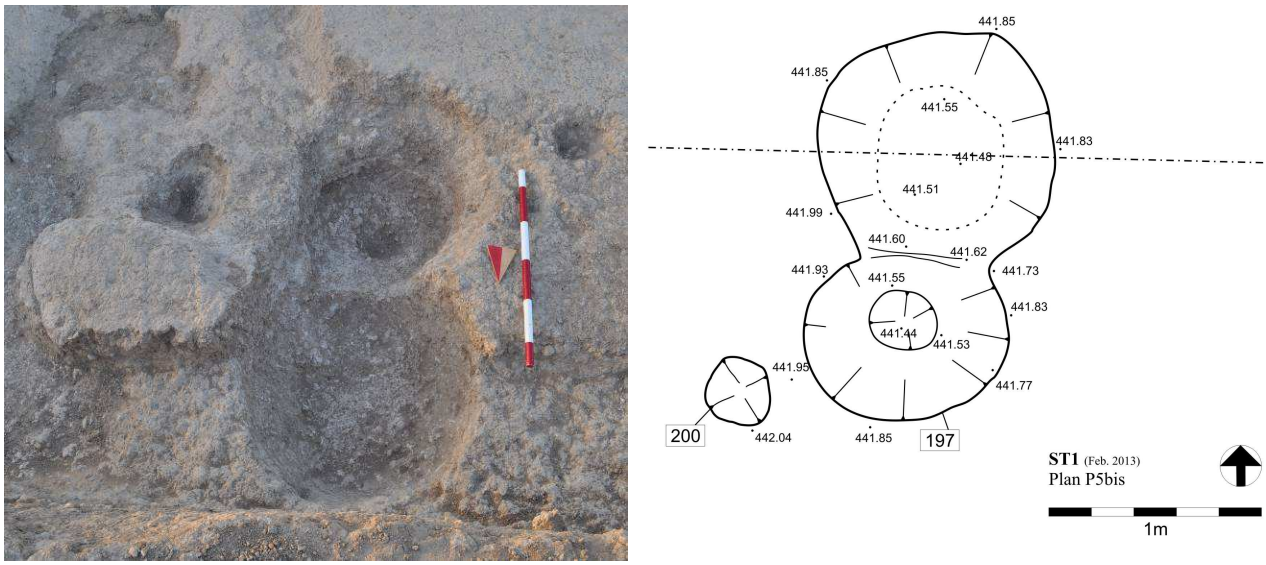

Fig. 29. A large bilobate pit, datable to the Iron Age occupation of the site, flanked by two smaller postholes (left); detail of the morphology of the bilobate pit SU 197 after excavation (right).

More than a proper soil, though, this layer seems to represent a substantial flooding (?) event which brought along all the visible pebbles and sealed the Iron Age levels around the site. This layer only survives where the vagaries of later water erosion allowed its permanence.

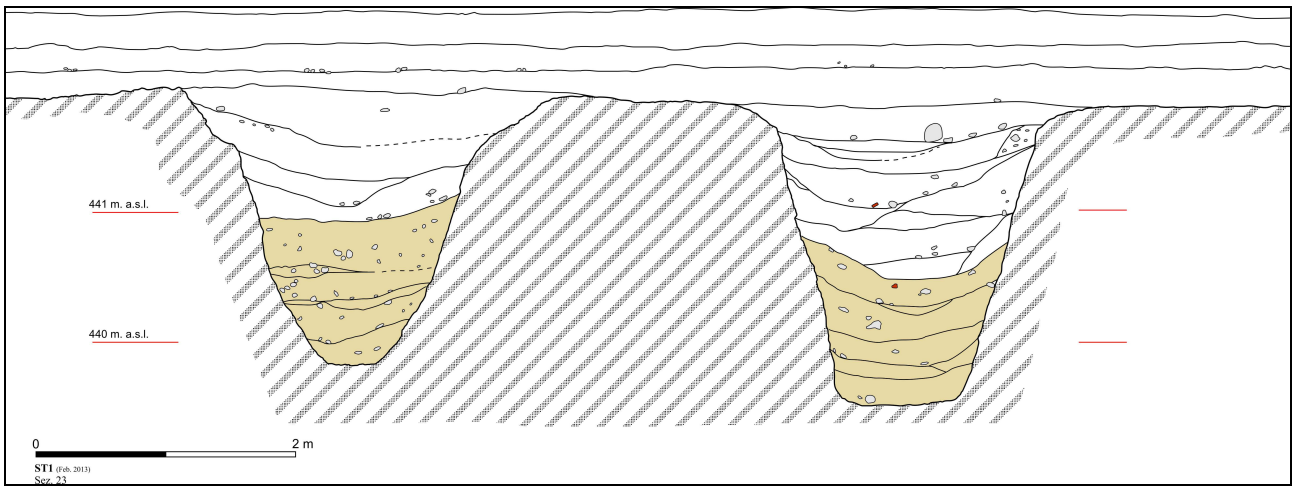

Fig. 30. The profile of the two EBA channels SU 194(left) and 195, seen from the south. Brown indicates the deposits possibly made up by water borne sediments (due to the small size of the trench, the sequence requires further study – Section 23).

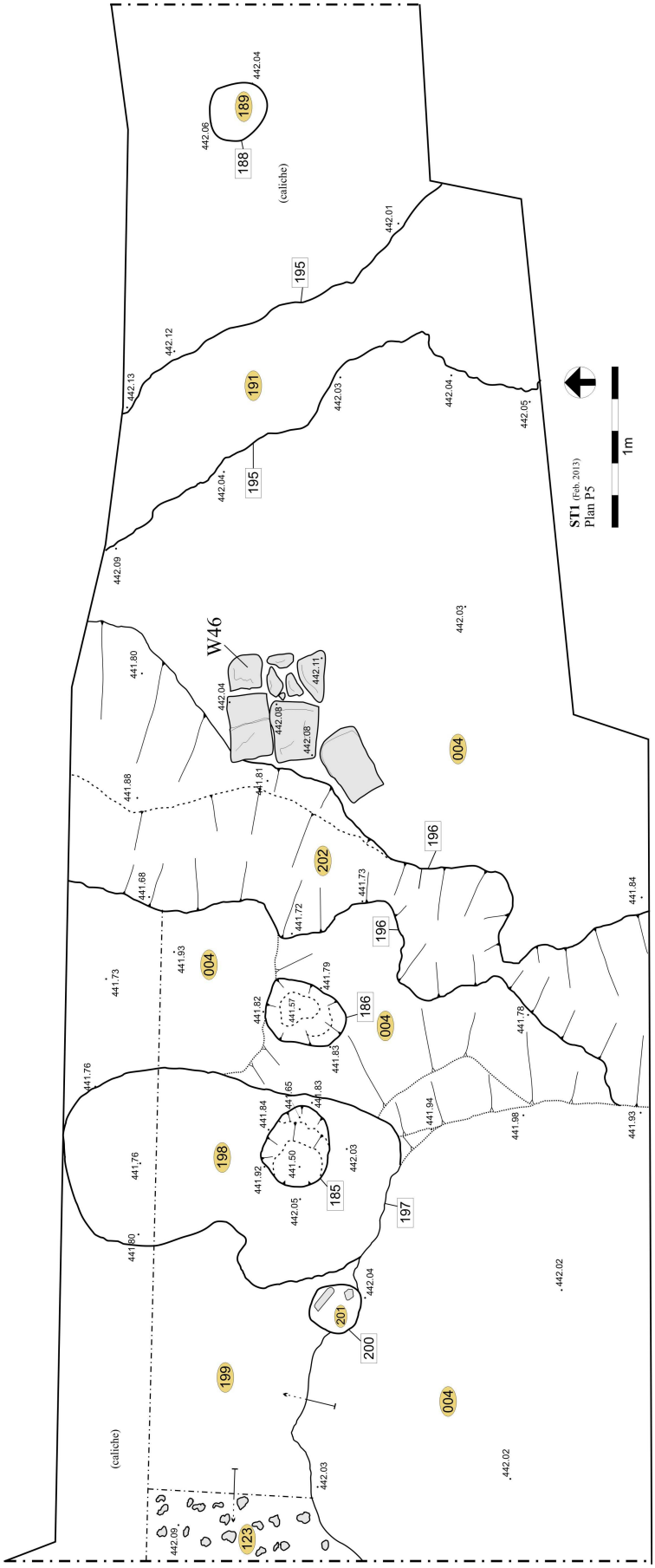

Fig. 31. Iron Age features (post-holes, pits) and later small channels located in the western part of T14 (Plan 5).

In the eastern part of the trench, anyhow, the two more important features were discovered. They are two quite large and deep channels whose excavation can be dated back to the Bronze Age, standing on the retrieved material, which shows no mixing with later stuff. They were named SU 194, the westernmost, and SU 195 the one more to the east. Their fillings, drawn in section, were for the moment left unlabelled.
T15 was actually excavated in order to check if the same channels could be intercepted. At first, a larger cut was located, which seemed to possibly be the continuation of SU 194. To try and clarify this correspondence, another trench – T16 – was excavated between the former two. This trench ended up to be rather wide, but finally allowed the reconstruction of the plan of SU 194 over this area, as well as the location of SU 195 southern end.

Fig. 32. General view of T16 after excavation, with indication of the discovered features.

Besides, another peculiar, rather precisely rectangular feature was discovered. This sort of large pit, SU 214, looked a bit strange, and the possibility that it was just a modern backfilled trench was considered. Anyhow, its filling resulted quite compact, and perfectly similar to the deposits that were sealing the other ancient channels. Besides, it only gave back Bronze Age sherds, though in a small quantity.
One last feature deserves mention, discovered close to one of the bends of channel SU 194. It is a squared pit with rounded edges, that was for the moment investigated down to a depth of 2,2 meters. Its sides were precisely cut straight through the caliche substratum, with a minor episode of probable collapse visible at one of the corners. Several deposits (SUs 217 to 221) were distinguished so far during its excavation, all being very similar in composition and mainly separated on the basis of material deposition layout. Up to now, only Iron age material was collected from these deposits, including the most typical Early Iron Age shapes such as spouted jars and carinated cups. Only one small later – Islamic – sherd was retrieved, indeed quite deep in the sequence. Further excavation will possibly tell if it was drawn there by fortuitous events (root action?) or if it has to be considered a consistent evidence of a late date for this feature's

excavation. Given the dimensions, shape and (partial) depth, the feature has likely to be interpreted as a well.

Fig. 33: the rectangular pit SU 214 after excavation (left);
the probable well SU 216 after the removal of the upper filling (below left);
the same structure at the end of the excavation (below).
The bottom was not reached.

BRIEF NOTES ON THE MATERIALS

Michele Degli Esposti

As mentioned in the introduction, the general remarks that can be made about the pottery assemblage at ST1 were confirmed from the results of the last two seasons. The most widely represented fabric is of a pale red to brownish red colour, fine but with anyhow a sandy component, with no or very little visible vegetable temper. It usually comes self-slipped or with a red slip, but noteworthy is also the presence of sherds with a pale brown-creamy slip. Very frequent is the presence of a black painted decoration on the exterior.

Relatively abundant are fragments of a thick, red, dense fabric rich in mica inclusions and with a black slip both internal and external, that can easily be recognized as coming from Indus produced jars.

Other finds, though occasional, speak of an even wider network of contacts, pointing to south-eastern Iran and possibly central Asia.

Fig 34.: sherds of the most common fabric at the site, with red paste and black painted decoration (left); a few sherds of Indus black slip jars (right).

Fig. 35. Upper half of a suspension vessel in a pale red fabric (slightly over-fired) with black painted decoration on most of the body (from SU 157). This shape of vessels is widely attested at the site, coming in many different fabrics and with a presence throughout the whole stratigraphic sequence.

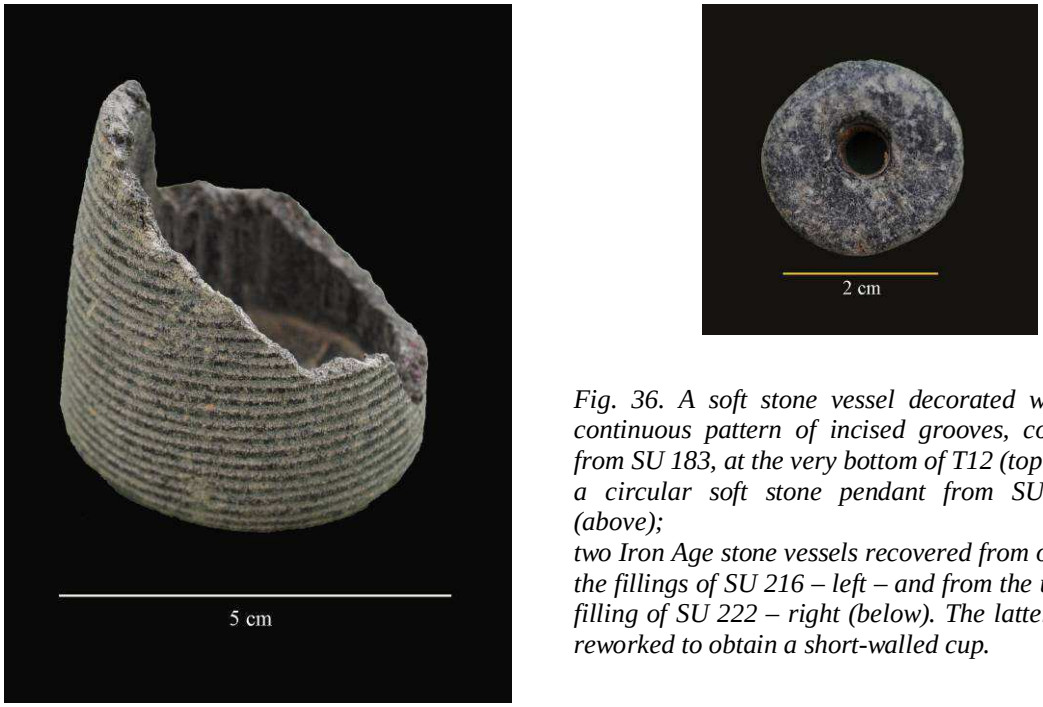

Fig. 36. A soft stone vessel decorated with a continuous pattern of incised grooves, coming from SU 183, at the very bottom of T12 (top left); a circular soft stone pendant from SU 102 (above);
two Iron Age stone vessels recovered from one of the fillings of SU 216 – left – and from the upper filling of SU 222 – right (below). The latter was reworked to obtain a short-walled cup.

Fig. 37. A ceramic waster found in SU 177, T12. This piece, the first of such kind, could be of importance in indicating the likelihood of pottery production taking place at the site.

Fig. 38. An extensively worn saddle quern coming from SU 169, in T11, below wall W40.

Fig. 39. An Iron Age sherd with applied snake-shaped ridge from SU 223.

Fig.40. A carnelian bead from a sealed Bronze Age layer inside T11/12 (SU 183).

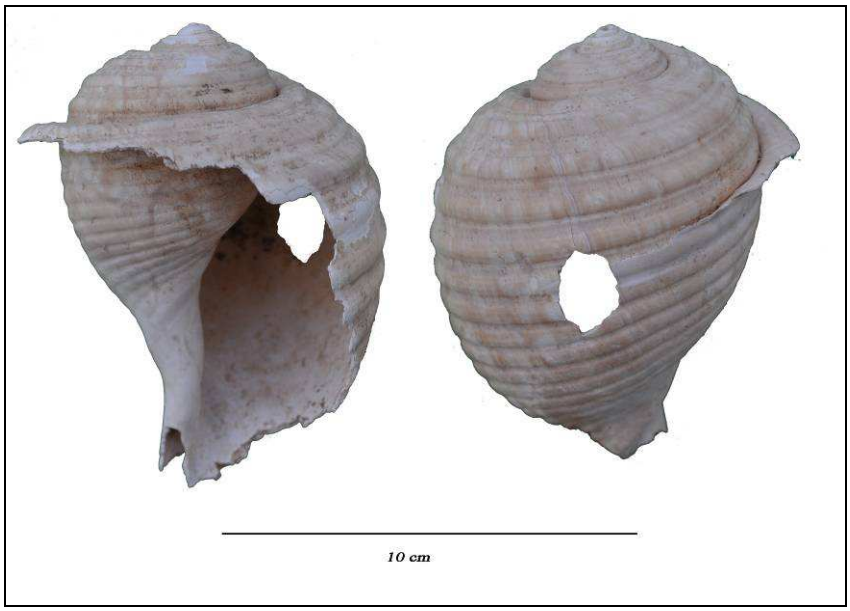

Fig. 41. A Tonna Luteostoma *shell from SU 156.*

Fig. 42. A fragment of incised grey ware, imported from Iran, coming from SU 102, found in 2012B. This is the first fragment of this kind of ware found on the site, indicating that contact with the East included other areas than just the Indus Valley. A second sherd in the same fabric was found in 2013A.

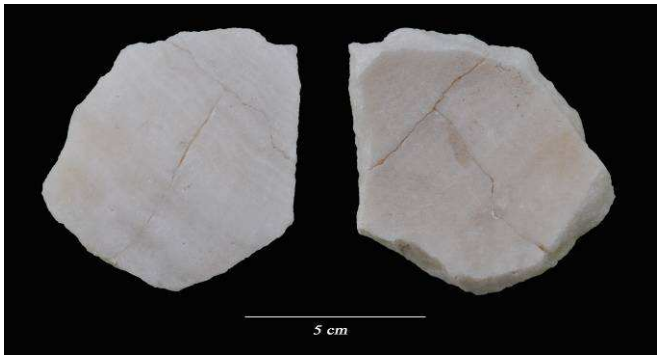

Fig. 43. A fragment of an alabaster vessel (wall thickness 1,2 cm), found in SU 182 (T12) in 2012B. This item is possibly of central Asian origin, and adds to the range of objects deriving from eastern contacts. Another fragment likely part of the same vessel was found in 2013A.

Fig. 44. A terracotta figurine of a quadruped, found in SU 163, one of the lower deposits in T11. Similar figurines are not common in the Arabian Peninsula, while quite diffuse within the Indus civilization. Nevertheless, the fabric is for sure not of a typically Indus Valley type, rather resembling the average fabrics found in ST1 pottery. Thus, a local production would seem at the moment as likely, if not more, than an eastern import.

Fig. 45. General view of the excavation at the end of 2013A campaign, from the east.

Fig. 46. The main ditch, with Structures 1, 2 (and 3) visible on top of the caliche horizon, and the excavated part of the main ditch's outer channel in the foreground, seen from the north (March 2013).

Fig. 47. View of trench T13, closed by wall W44, and of the excavated part of the inner channel of the main ditch, from the northeast (March 2013).