

CHAPTER 7

REPORT ON THE 1986 EXCAVATIONS AND SURVEY:
THE SURVEY OF SITE X2

by

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7.1 The problem, and site location

On the approaches to the Workmen's Village from the west, some 200 metres distant, a notable scatter of sherds lies strewn over the bare and stony desert surface, made conspicuous by the lack of vegetation cover. Named Site X2 (see Figure 9.6 for the general location, and Figure 7.1 for the position of Site X1), this feature was prominent as one of the few evident indications of human activity in the vicinity of the Workmen's Village and its adjoining *Zir*-area.

The aim of the project was to define the nature and extent of the site, and if possible to comment upon its origin and function.

Site X2 is thus an outlier of the Workmen's Village, lying c. 200 metres west of the *Zir*-area and c. 150 metres west of the sherd scatter to be seen below (i.e. to the south of) Site X1. The site lies at the foot of the low ridge which runs out westwards from the Workmen's Village, so that the line from the *Zir*-area to X2 forms a natural path at the foot of the slope (while Site X1 is located some 10 metres further up the slope).

The principal feature of Site X2 is a dense scatter of sherds concentrated within an area of c. 30-40 metres east-west, by c. 20 metres north-south, with an outlying scatter to the east (Figure 7.1). Several configurations of larger stones are visible on the already stony surface. At the west, two parallel lines, c. 4.5 metres apart, of stones up to 15-20 cms., extend c. 17 metres in the direction N.N.W./S.S.E. and there are three clusters of larger stones (up to 20-50 cms.) further to the east (Figures 7.2 and 7.3).

7.2 The approach

Before work began, a survey base line had been established, allowing the topography of Site X2 to be linked with that of the Workmen's Village. A grid of 5-metre squares was then laid out. Sherds from the surface of a single one-metre square within each 5-metre square were then counted in order to estimate the sherd cover of the area as a whole.

In order to investigate whether the sherds on the surface might simply represent the upper part of a greater quantity buried beneath, the sherds from a number of these one-metre squares were first collected. The square in each case was then excavated, and the cover of earth sieved. It soon became clear that there were very few sherds below the surface, and that the surface count therefore represented satisfactorily the total quantity of sherds present. The counting of sherds by one-metre squares offered a convenient and flexible strategy for defining the extent of the sherd cover. The application of a simple smoothing technique to the resulting data brings out the pattern of distribution effectively (Figure 7.5).

In order to obtain samples of pottery suitable for examination and identification, the material from the surface of several 5-metre squares was collected, and subsequently examined by Ms. Pamela Rose (Appendices I and II). Following the survey and her study it was possible to make suggestions about the formation of the "site" and the activities which might have generated it.

7.3 The surface count: first phase

Before work began a survey base-line had been extrapolated from a point on the main Workmen's Village north-south base-line running east-west. Perpendicular to this a line had been

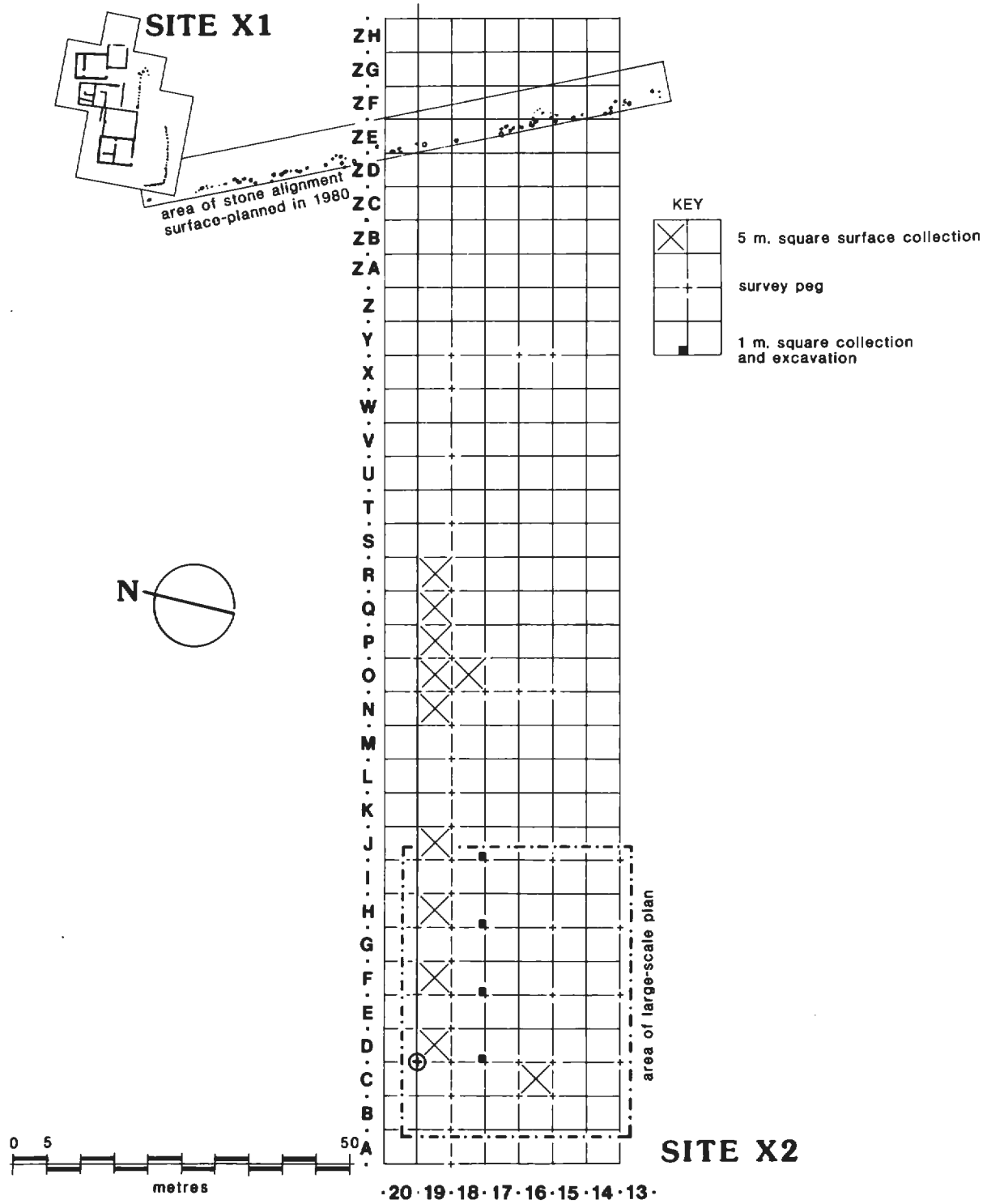


Figure 7.1. Map of Site X2, showing arrangement of grid and relationship to Site X1.

established running south from a point which will be designated D20.¹

It was found convenient to establish a notional grid of five-metre squares, following the site convention, designated by letters (A, B, C...) west to east, and numbers (7, 8, 9...) south to north

¹ Peg D20 lies 237.19 metres west of point F, which is 95 metres south of the south-east corner of the Walled Village.



Figure 7.2. Western end of Site X2, looking south along the parallel lines of stones.

(Figure 7.1). Each square is named by the peg in its south-west corner. A box of 30 x 30 metres was measured, from D20 to the points J20 and D14, and then the south-east corner J14. The ten-metre points within it were also measured, and subsequently the five-metre points along the "19" line, extending this line 30 metres further to the east, to P19. Further points as needed were then established by pacing (7 military paces to 5 metres). The measured points and a few of those paced were marked on the ground with nails and white cards (Figure 7.1).

The method adopted for the sherd count was to use a one-metre planning frame and to place it with its south-west corner against the relevant named peg. In this way, in each case the south-westernmost one-metre square of the five-metre square was counted.

Within the one-metre square, sherds were counted in four batches, by 50 cm. quadrants, in the configuration:

c	d
a	b

In this way a rapid count could be effected using the grid established. Only those sherds evident

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SITE X2

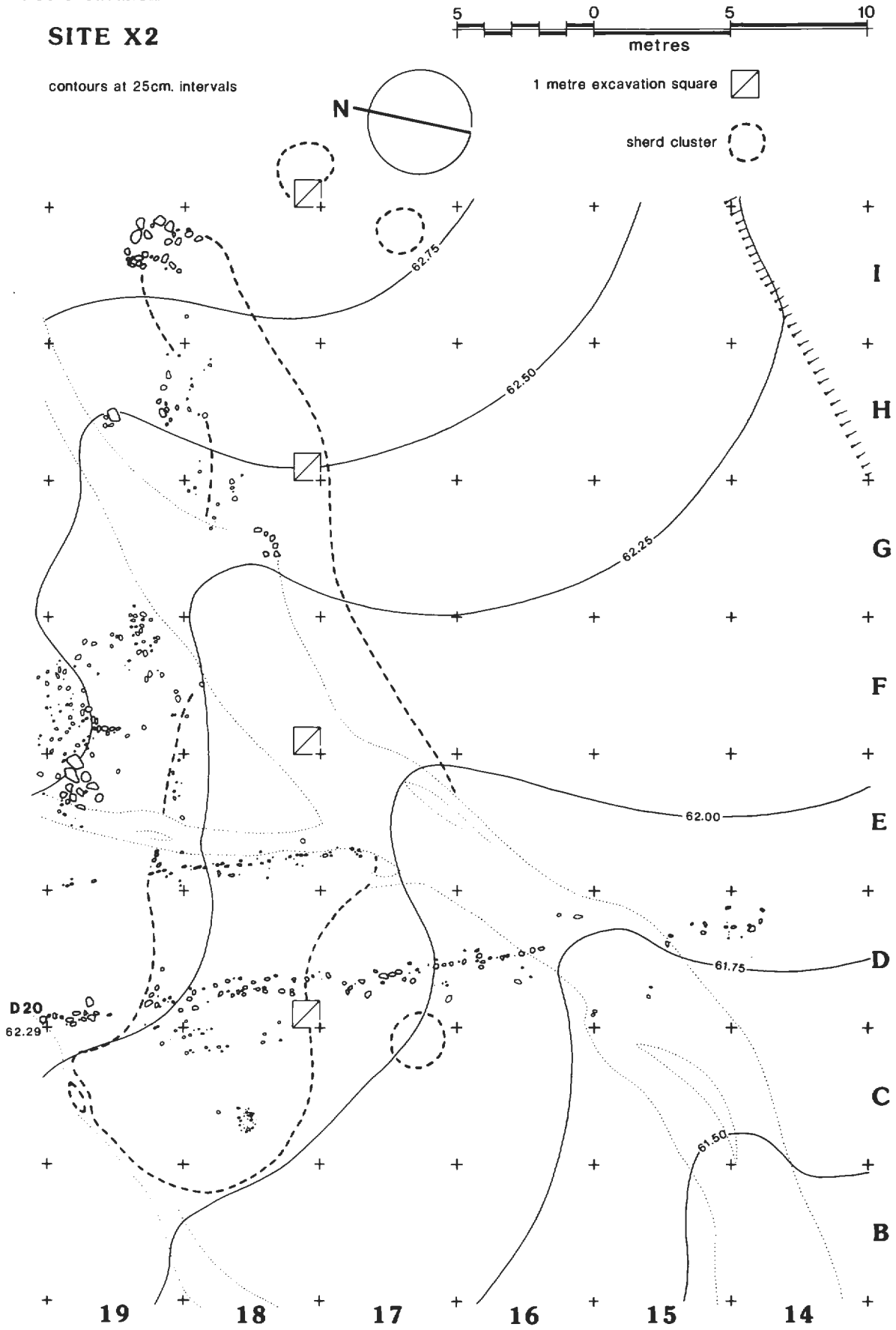


Figure 7.3. Detail map of the western sector of Site X2.

on the surface were counted. Sherds smaller in size than c. 1 cm. were ignored.

The ten-metre grid points within the box D20/J20/D14/J14 were counted first. This made clear that the maximum density was in the north-west part of the box. It seemed best to count first along the line of maximum density, so a transect at five-metre intervals from D19 to J19 was undertaken (Figure 7.4). Sherd counts are listed in Table 7.1 in the order in which they were undertaken. The remaining raw data are available in the survey notebook.

It should be noted that the area is interrupted by two minor stream beds (wadis) within which sherd counts are very low.

7.4 The surface collection

It was initially decided to collect by one-metre squares, so as to achieve a good number of samples. Collection was begun in this way, taking first the surface material in each one-metre square, then digging within the square to a depth of 5 to 10 cms., sifting the earth through a standard site mesh of maximum aperture c. 5 mm. It was at once apparent that nearly all the material lay on the surface, and that collection of the sub-surface component could be abandoned. The figures for these one-metre squares are also given in Table 7.1, preceded by those for the initial surface count. (It is to be expected that more sherds will be collected than are initially evident on a surface inspection).

Following this exercise it was decided that larger batches of pottery would be more useful in the analysis of shape and fabric. It was consequently decided to collect pottery by five-metre squares. In order to gain a good sample within the main area of sherd spread, the following five-metre squares were collected: D19, F19, H19, J19. Later, to obtain a sample away from line "19", the square C16 was also collected.

In order to obtain a sample of the rather thinner spread of pottery further east, the following five-metre squares were next collected: N19, O19, P19, Q19, R19, O18.

As an exercise it is interesting to see how the one-metre square counts (at the south-west corner of each five-metre square) correlate with the collections of pottery within the entire five-metre square. This is done in Table 7.2.

The table shows an interesting pattern. The collection is greater than the prediction for areas outside the main concentration. The prediction based on the one-metre squares along the 19 lines is **greater** than the collection in the five-metre squares for D19, F19, H19 and J19. This must be due to the steep gradient in the concentration, with these points along the 19 line being at the peak. This is confirmed by the 50 cm. quadrant readings for D19 (26:28:28:22) which are especially high. This is further discussed in section 7.8.

7.5 The surface count: second phase

The first objective, of examining the character of the sherd spread, was achieved by determining its essentially superficial character through the miniature excavation of four one-metre squares. The third, that of sampling the pottery, was met by the collections described above: the pottery will be discussed below.

The second, which logically precedes the third, was to establish the extent of the sherd spread(s). The first step was visual inspection by intensive examination, which established the extent of the main spread, and of the subsidiary spread to the east. The next was the first counts already indicated. The next, constituting the second phase, was a series of further transects: north-south along D, H, O and T; and east-west along 14, 16, 17, 18, 19 and 20, all at five-metre intervals. Further east the sherd counts did not diminish immediately to zero, but instead began to rise again as the *Zir*-area and the space to the east of Site X1 were approached. Further approximate counts in this area were undertaken, but without measuring in the relevant pegs/pins for the squares: position was established entirely by pacing. The raw figures are set out in the diagram, Figure 7.4; the patterns are discussed below.

1 m. square	D18	F18(b)	H18	J18
Surface count (a)	57	4	50	11
Surface collection	59	6	49	11
Excavation of 10 cm. spit	37	0	11	5

Table 7.1. Figures for the initial sherd collection, from the surface and from the trial excavations. (a) The totals only are given; the separate 50 cm. quadrant counts have not been included in this report; (b) this square is within the wadi, hence the count is low.

	A	P1	B	P2	
D19	104	2600	748	1325	P1>P2>B
F19	38	1950	446	700	P1>P2>B
H19	50	1250	307	900	P1>P2>B
J19	17	425	302	550	P2>P1>B
C16	6	150	239	125	B>P1>P2
N19	15	375	406	225	B>P1>P2
O19	6	150	325	200	B>P2>P1
P19	8	200	242	150	B>P1>P2
Q19	4	100	104	75	B≥P1>P2
R19	5	125	131	175	P2>B≥P1
O18	7	175	50	125	P1>P2>B

Table 7.2. The table indicates (A) surface count in south-westernmost one-metre square of the five-metre squares; (P1) predicted total collection for the five-metre square; (B) actual total collection for the 5-metre square; (P2) predicted total collection using smoothed surface count (see Figure 7.5).

7.6 Discussion of the surface counts

As the work progressed a fairly clear pattern emerged, the basic elements of which had been evident from the outset. (a) the dense sherd scatter centred on the north-west part of the D/J/16/20 box; (b) a broken, less dense scatter further east, lying between the box and lines S and T; and (c) a fairly dense scatter to the east of this, which lies below (to the south) of Site X1 and to the west of the *Zir*-area. As the count was carried out, the second spread became better defined, and a linear axis between Y20 and J14 emerged, with high counts in S17 (59) and W17 (39). At the same time a better appreciation was gained of the extent to which disturbances of two kinds had radically affected the position. The first of these is water action: the dry watercourse beds ("wadis") had carried away nearly all sherds which had lain in those positions. Secondly human activity by (i) recent donkey treading, and by (ii) vehicle tracks, resulted in very low counts. This last observation emphasised the significance of wind action also.

Geomorphological processes ("N-transforms").

In undisturbed areas the sherds stood out clearly on the pebbly desert surface. There were few sherds beneath. This is a highly dissected desert surface, where the blowing-away of sand has made sherds stand clear. But the weathering on the sherd surfaces is often slight. The small "wadis" have had a very marked effect, transporting away nearly all the sherds in them. It may be that flash floods have disturbed the surface more generally. Other sherds may be seen along the shallow wadi floors to the west of the area. Indeed, the general sherd density well to the west of the area is up to one sherd per square metre, whereas to the south it is zero, since the drainage is to the west.

As seen in Figure 7.4 there is (a) a wadi running north-east/south-west from H20 to D15 which bisects the densest sherd scatter; (b) a wadi c. 3-5 metres wide running along line 15 east

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of N15, then moving north at Y15 to end in ZE1. This effectually washes out the southern fringe of the scatter; (c) a wadi running west from Z19 to N17 as seen in Figure 7.4. It is only 2-3 metres wide but has seriously disturbed the picture.




Perturbation by recent human action ("C-N transforms").²

There are two donkey paths which have had the effect of churning up the surface and much reducing surface counts. The first trample track runs east-west in a five-metre band immediately north of line 20. The second is broken, less intense, running east-west along the foot of the slope for 10 to 35 metres north of line 20. Unfortunately also there are tyre marks in the eastern part of the area with similar effects.

The result of these various processes on the already no-doubt patchy scatter is eloquently reflected in the lack of consistency in the results. This could best be illustrated by a statistical analysis of the 50 cm. quadrant figures, grouped where necessary to give estimates of ten-metre squares. The point is also made by the cases where repeat measurements have been taken at an estimated location (by pacing), where the position will have varied by at least 10 cms. (up to at least 1 metre): the counts are sometimes considerably different.

Cultural formation processes ("C-transforms").

The discussion can now turn to the formation of the scatters in the first place. As an exercise it may be worth interpolating figures for the counts lost in wadi-action (where these have been noted) and then applying a smoothing procedure. For the former a figure has been inserted in place of the wadi figures which is not the mean of adjacent figures, but the lower of the two adjacent: in this way over-estimation is avoided. (Thus in Figure 7.5 the following are used: B14=1; D15=2; E17=8; F18=23; G19=38; etc.)³

For smoothing the mean of five is taken:  or, at the edge of a distribution a four: 
or in a line, of three: 

The smoothed results are seen in Figure 7.5. Several features are classified by this plot:

- 1: the special nature of high concentration in D18+19 to I18+19, indicated by the 20 and 30 sherds/sq.m. contours;
- 2: the linear spread from N16 to ZD19, indicated by the 20 and 10 sherds/sq.m. contours;
- 3: the high general level of sherd frequencies east of the Z line, to be associated with the spread from the X1 and *Zir*-areas. These sherds were often small in size;
- 4: the general shape of our sherd spread west of this point, indicated by the contours at 1, or perhaps better 2 sherds/sq.m.

7.7 The ceramic material⁴

1. By far the most abundant fabric at X2 is III.11, totalling 45% in main, western area (squares D19, F19, H19, J19), and 52.4% in the second sample area around P19 (N19, O19, P19, Q19, R19, O18). This is the Group 20 Canaanite amphora form, whose fabric is of uncertain provenance.

2. Following this in frequency is IV.1, the true Canaanite amphora fabric, imported. This represents 21.2% of the total by sherd numbers in both the western and eastern sample areas.

3. These two fabrics predominate, in contrast to their occurrence at less than 1% for the Workmen's Village as a whole.

4. In contrast, siltware, nearly always of the large water-jar or related large form, represents only 4.6% of the total. The smaller, fine siltware (simple-rimmed red-slip bowls) do **not** occur here. This contrasts with the frequency of siltware for the site as a whole, generally of the order of 50%.

² These recent human activities fall somewhere between the C and N transforms of Schiffer (1972).

³ Other wadi adjustment figures are K14=2; M16=4; N17=5; P17=12; R18=21; S18=6; T18=2; U16=6; T15=7; X16=11; Y16=3; Z16=4; ZA17=4; ZB17=6; ZC17=7; ZA18=12.

⁴ For this section I am indebted to Ms. Pamela Rose both for discussion and for her sherd counts.

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5. Fabric III.3 here may also be used for the production of Group 20 (i.e. imitation Canaanite amphorae).

6. The contrast is very striking with the position for the Workmen's Village as a whole where siltwares and III.2 generally constitute c. 80-90% of the total.

The conclusion is inescapable that activities were carried out at X2 which involved the occasional breakage of Canaanite amphora forms, both imported (IV.1) and the more common probably Egyptian fabric (III.11).

The relevant figures are summarised in Table 7.3

Fabric	Square											Total
	D19	F19	H19	J19	C16	N19	O19	P19	Q19	R19	O18	
Siltware %	3.7	4.7	4.6	5.0	0.8	8.1	2.8	3.3	1.9	16.0	0.0	4.6
III.2 %	8.4	5.8	7.2	12.3	19.2	0.0	2.5	0.0	0.0	0.8	14.0	6.4
III.3 %	10.4	9.2	13.7	11.3	0.0	8.6	4.6	0.0	12.5	9.9	4.0	8.3
III.11 %	47.1	45.5	47.2	40.7	20.5	63.3	56.6	53.7	38.5	40.5	62.0	47.8
IV.1 %	23.0	26.0	17.6	18.2	8.8	8.9	31.4	25.6	26.9	22.1	12.0	20.6
Other %	7.3	8.7	9.8	12.6	50.6	11.1	2.2	17.4	11.5	10.7	8.0	12.3
Total sherds	748	446	307	302	239	406	325	242	104	131	50	3300

Table 7.3. Percentages of principal fabrics recovered in surface collection of 5-metre squares at Site X2. Note the similarity of squares D19-J19; squares N19-R19 show more variation, most noticeably in the increased percentage of siltwares in R19. The square C16 is conspicuously different from the others, in its high proportion of Group III.3 fabric and its low occurrence of fabric III.11.

7.8 General discussion

The survey and sherd collection have allowed the definition of an area of pottery scatter, which is found in conjunction with (although not necessarily in association with) some surface features of stone. The identification of the pottery shows it to be predominantly of amphora forms, especially of imitation Canaanite amphorae (III.11), and of their authentic, imported prototypes (IV.1). The interpretation of these features will need to take into account a number of features:

1. The isolated position of the sherd scatter constituting Site X2, located some 200 metres west of the *Zir*-area, which lies immediately outside the Workmen's Village.
2. The localised nature of the scatter, which finds its densest concentration in the area centering on squares D19 to J19, and K18 to M19, and on its superficial character.
3. The larger size of the sherds in the K18 to M19 area, brought out by the sherd weights discussed in Appendix II. These modify the impression given by Figures 7.4 and 7.5, which are based on sherd counts alone. The sherds in the western part of Site X2 are more fragmentary.
4. The concentration of amphora forms, with the rarity of siltware and the absence of any siltware cups and bowls of domestic character.
5. The limited number of vessels involved (calculated for various 5-metre squares, considered in isolation, in Table 7.7 below).
6. The scanty stone remains in the area, with the absence of any mud brick.

In the first place, it is pertinent to ask in what sense this scatter of sherds should be regarded as a "site". As Figure 7.4 indicates, there is a background count of sherds between Site X2 and Site X1 to the east which never falls below a frequency of 1 to 3 sherds per square metre, except in the wadis where sherds have been washed away by flood action. Site X1 is close to the *Zir*-area and the Workmen's Village itself (see Figure 9.6), where densities are naturally higher. To the west of Site X2 the sherd density falls by an order of magnitude to about 1 sherd per 10 square metres in some areas. But as Figure 9.6 indicates, the density between the Workmen's Village and the city itself does not fall to zero. It is, however, the case that there is a

concentration of high density in the area termed "Site X2", and that the composition differs in character from the sherds recovered from the Workmen's Village itself. It is reasonable to postulate some specific activity in the area of Site X2 which is responsible for this concentration.

Secondly it is pertinent to note that the quantities of sherds, while notable in comparison with the low densities to south and west, are not considerable in terms of the number of vessels involved. The eleven 5-metre squares where surface material was collected yielded of the order of 60 kilograms of pottery altogether. If a complete amphora, when empty, weighs between 3 and 5 kilograms, we are speaking, for those squares, of the equivalent by total weight of between 12 and 20 amphorae.

To achieve an order of magnitude estimate for Site X2 as a whole it is necessary to consider sherd losses. If we were to imagine the sherds in each 5-metre square as representing the residue of a quantity originally very much larger, then the total Site X2 might represent at least 10 or 20 times this collected quantity - up to 400 amphorae. But if, on the other hand, we discount sherd loss from the area as minimal, and assume that, despite processes of dispersal and breakage, most sherds have remained within the area, then the total sherd cover might be some 3 to 5 times by weight greater than that which was collected, representing in total between 40 and 100 amphorae. The calculation for the potential number of amphorae given in Table 7.7 would probably support the lower figure.

It is clear, therefore, that this area did not serve as a ceramic dump, where large quantities of broken pottery were disposed of. It is more appropriate to see the scatter as the result of accidental breakages rather than as deliberate discards. If this is the case, the distribution of sherds, allowing for subsequent dispersal and fragmentation, should itself offer a kind of mapping of the loci of breakage.

When we consider the vessel types involved, the contrast with the ceramic repertoire at the Workmen's Village itself is very striking. There is an almost complete absence of siltwares. That is to say that vessels of domestic function were absent. It could not, for instance, be suggested that the sherd scatter represents simply the breakage in transit of pottery being transported to the Workmen's Village in order to be used there.

Nearly all the vessels are in fact containers for liquids. A significant proportion (more than 20%) is made up of imported Canaanite amphorae, which will undoubtedly have reached Akhetaten containing wine, or oil, or some other imported liquid. Now it seems unlikely that such high-value imported liquids would be used in significant quantities at the Workmen's Village, which is not likely to have been occupied by many persons of high status. Instead it seems more appropriate to suggest that these imported amphorae were being re-used after their original contents had been consumed within the city itself.

The critical resource lacking at the Village, or the chief of them, is of course water. Whoever determined that the Village should be built and used had to arrange a water supply. This will have involved the transportation of either skins of water or sealed ceramic vessels of water, almost certainly by donkey. I suggest that re-used amphorae, which had previously transported more precious liquids to the city, were utilised.

Our first conclusion, therefore, is that Site X2 represents accidental breakage of amphorae which were being re-used in order to provide the water supply for the Village. It remains to be considered why there is this pattern of breakage, extending as far as, and with a notable concentration at, a point distant some 200 metres from the Workmen's Village. There is then a very marked decline, of an order of magnitude, in sherd density further to the west.

The excavations at the *Zir*-area (*AR I*: Chapter 5) indicated there a "delivery area" including provision for standing large water storage jars. This was within the precinct connected with the Village. It is here, if the amphorae were being offloaded from donkeys, that one would expect a high frequency of breakages. This, however, would not explain the existence of Site X2.

I therefore make the suggestion that the amphorae containing water were, in fact, offloaded from the transport donkeys within the area of Site X2, and then transported by hand either to the *Zir*-area where the water was poured into the storage jars, or directly into the Village. This would account for the higher breakage rate in the X2 area. For it would seem that some additional activity, either supplementary to or instead of the transportation of the amphorae by donkey, must be postulated in this area.

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This proposal allows us to imagine a donkey stand, perhaps at the western end of Site X2, which might in several ways have been analogous to the donkey stand which, during the course of recent excavations, was situated in what is now termed the *Zir*-area (Figure 7.6). At this point, however, the observation made in Appendix II should be noted that, while the sherd count was highest at the western extremity of Site X2, this is in part a product of the more fragmentary condition of the sherd material in that area. When sherd weighings are taken into account, the concentration around square M19 is as significant. And the high counts in other 5-metre squares further to the east (from which sherd collections were not taken), for instance in square R16, should be noted (Figure 7.4).

It is not immediately clear why it would be felt desirable to situate the donkey stand as far as 200 metres away from the area to which the amphorae, and the water which they contained, were to be transported. But there may have been sound functional reasons for such a distance. It may be, for instance, that the flies which will inevitably have accompanied the donkeys were found to be a nuisance (although flies are likely to have been a considerable nuisance at the site in any case). Such a separation could then have been appropriate on the grounds of convenience and hygiene. Alternatively, there may have been administrative reasons. The location may have arisen from the wish to keep outsiders beyond the perimeter line marked by the stone alignment which runs south from Site X1 (Figure 7.1). The parallel stones in D16 to D19 become more intelligible in this light, as the other end of the offloading area.

Admittedly there seems no direct way of dating these stone lines, and the possibility is raised in Appendix II that they may postdate the scatter. But this would imply the assignment to them of a date after the use of the Workmen's Village for which there is no other evidence. Whether the other groups of stones, including the hearth in G18, are associated is more problematical, for their distribution matches the sherd spread less, extending outside the areas planned and described in this chapter.

While some aspects of the interpretation undoubtedly remain hypothetical, the investigation of Site X2 has raised some interesting questions, and perhaps offered some fresh insights concerning the provision of water for the Workmen's Village. The organisational aspects of this activity perhaps carry with them wider implications.

It is encouraging to note that the main hypothesis advanced here received significant support from the subsequent investigation, reported in Chapter 9, of the well at Area 23 in Square Q48 of the Main City (Figure 9.5). With it was associated a scatter of pottery analogous in many ways to that recovered during the survey at Site X2, suggesting that this was the source of the water transported by donkey to the Workmen's Village. The amphorae which contained it, as we have seen, were not infrequently broken in transit in the area of Site X2, thus leaving in the archaeological record a valuable trace of this activity.

Acknowledgements

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7.9 Appendix I. Fabric and form data from surface collections: two specimen squares, by Pamela J. Rose.

All the sherds collected from all of the squares were examined and their fabric and form noted. The following two squares have been selected as representative of the total set of counts:

Square D19 [2287] (five-metre square)

Bag no. 124		
Silt	4	All worn
III.1	-	
III.2	12	≥2 vessels
III.2/9	-	
III.3	11	Gp. 20
III.4	3	Possibly III.6
III.5	3	
III.6	-	
III.11	84	Includes 2 handles, 1 base, >2 vessels
IV.1	51	
IV.4*	-	
Unidentified import		1 (possibly III.11)
TOTAL	169	

*: IV.4 is a new fabric identified in the course of the work at Site X2. It is not clear whether this is a native Egyptian ware or an import. Dense paste, hard. Colour: pale buff-cream. Solid temper: most conspicuously black particles (similar to IV.1). Organic temper: none noted. Surfaces: frequently weathered away. Self-slipped ? Forms: amphorae of uncertain shape.

Bag no. 125		
Silt	12	1 closed form; rest too worn to identify shape
III.1	-	
III.2	29	At least 2 vessels
III.2/9	-	
III.3	39	
III.4	-	
III.5	10	
III.6	-	
III.11	169	≥5 vessels
III.12	3	
IV.1	49	
IV.2	1	
IV.4	-	
TOTAL	312	

Bag no. 126		
Silt	12	3 closed forms, rest too worn to identify shape
III.1	-	
III.2	22	Some burnished. At least 2 vessels
III.2/9	-	
III.3	28	Includes handle fragment Group 20. > 3 vessels
III.4	-	
III.5	4	
III.6	-	
III.11	129	Includes 1 rim fragment ≥3 vessels
IV.1	72	
TOTAL	267	

Table 7.4a. Sherd data from a specimen square of the survey of Site X2.

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Square N19 [2292]

Bag no. 139		
Silt	10	3 closed form, rest too worn to identify form
III.3	9	Includes handle fragment. Group 20
III.2/5	20	2 burnished. \geq / at least 2 vessels
III.11	118	Includes 4 rim fragments, 5 handle fragments. \geq 4 vessels
IV.1 (=IV.1a)	22	Includes 1 rim, 2 handle fragments. Group 20.
TOTAL	179	

Bag no. 138		
Silt	23	8 closed forms, including Group 16 rim frags., rest worn
III.3	26	Includes base 41 with handle stump, Group 20
III.2/5	22	Several vessels, including handle fragment
III.4	2	
III.11	139	Includes handle and base fragments, \geq 2 vessels
IV.1	14	Handle stump
TOTAL	227	

Table 7.4b. Sherd data from a second specimen square of the survey of Site X2.

Appendix II. Experimental comparison of sherds by weight, by Pamela J. Rose

After the end of the work on Site X2, the sherd collections made during the course of the surface survey were also weighed. These covered the 5-metre squares D19, F19, H19, J19, N19, O19, P19, Q19, R19, O18 and C16, and the 1-metre square samples in the south-western corners of squares D18, F18, H18 and J18 (Table 7.5). The weight of the sherds from each square naturally correlate with the number of sherds, i.e. both were highest at the western end of the scatter; however, the weight of the groups at the eastern end were rather higher than expected for the number of sherds.

5-metre squares, surface collection:

D19	9125
F19	7095
H19	4255
J19	5470
N19	6470
O19	6415
P19	6785
Q19	1620
R19	5045
O18	1425
C16	4440

1-metre samples:

	Surface	Excavated	Total
D18	1100	280	1380
F18	25	0	25
H18	595	110	705
J18	170	30	200

Table 7.5. Sherd weight by square (in grammes).

5-metre squares, surface collection:

D19	12.2
F19	15.9
H19	13.9
J19	18.1
N19	15.9
O19	19.7
P19	28.0
Q19	15.6
R19	38.5
O18	28.5
C16	18.6

1-metre squares, surface collection:

D18	18.6
F18	4.2
H18	12.1
J18	15.5

Table 7.6. Average weight per sherd (in grammes).

Therefore, the average weight per sherd in each 5-metre square was calculated, and similarly for the 1-metre squares. The results are shown in Table 7.6. This was appropriate because the vast majority of the sherds are of a limited number of fabrics, and of similar forms, and because most of the squares contained a roughly equal mix of fabric types (see Table 7.3), so that differential breakage patterns do not distort the results. The figures indicate that the largest sherds are to be found at the eastern part of the area where sherds were weighed, and the smallest at the western end. Furthermore, if the number of sherds coming from the upper and lower junctions of vessel handles with the vessel wall are counted (these fragments being well preserved because of their size and mass), a greater number are present in the middle and eastern area. When these are broken down by fabric, it is only in these same areas that the presence of broken complete or largely complete vessels within a single 5-metre square can be hypothesised (Table 7.7), and even then in no case have sufficient diagnostic sherds been found to suggest that a complete vessel was present in sherd form in the immediate area.

D19	5/0
F19	2/0
H19	4/0
J19	11/1
N19	7/0
O19	11/1
P19	11/2
Q19	4/0
R19	12/1
O18	4/0
C16	7/0

Table 7.7. No. of upper and lower handle fragments/ Potential no. of amphorae.

These facts, albeit based only on a small number of surface collections, suggest that the focus of activity on Site X2 may not necessarily have been at the western end of the scatter. It is possible that the stone alignments and groupings at the western end of the area, the former of which cuts across the spread, betoken an area of human activity unconnected with the pottery which, through use, has broken down fragments into larger numbers of sherds than further east.

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However, the greater weight of sherds in square D19 and to a lesser extent F19, although containing a low number of diagnostic fragments, remains to be explained. It should be noted also that the scatter of sherds is not confined within the limits here given, but can be traced continuously back to the Main City, although at a much lower density over most of the distance (see Chapter 9).



Figure 7.6. View to the west: the donkeys on the right are standing along the southern edge of the *Zir*-area; Site X1 is behind them; the human figure in the middle distance at the left edge of the picture is standing at point D20 on Site X2.