

## CHAPTER 2

### REPORT ON THE 1987 EXCAVATIONS THE EXCAVATION OF Q48.4

by

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#### 2.1 Introduction

In the 1987 season a new site was opened lying in the eastern desert close to the dried watercourse which has cut a broad path through the Main City (Figure 2.2). It falls within the 200-metre grid square Q48, on a shallow rise in the desert plain 30–35 m south of the large well described in Chapter 1. This well was noted last season for its apparent association with the Workmen's Village suggested by a trail of largely Canaanite amphorae sherds detected scattered between the two sites. The site, designated Q48.4, was excavated in the hope of revealing buildings connected with this well and, by association, with the Workmen's Village itself.

Before excavation the site consisted of a series of shallow mounds and dips visible as only slight undulations in the desert plain, and covering a roughly rectangular area measuring about 80 m east–west, and 45 m north–south. The east–west direction represents the full original limits to the site, whereas the southern portion has been progressively truncated along most of its length (Figure 2.16) through the eroding action of the large wadi which has left low terraces against the bank. Nevertheless, by the end of the excavation it had been established that at the western end of the site the north–south measurement of some 45 m represents the full original dimension in this direction.

The mounds do not spread evenly across the site but form two distinct groups running along the east and west ends. In Figure 2.1 only those at the west are shown; time did not allow for the completion of the contour survey over the eastern mounds. The centre portion is flat or slightly concave, the lowest part marked by an area of fine pale silt on which small bushes grow. Much of the central area has a covering of sherds, as is indicated in Figure 2.1. From the results of this season's excavations it can be judged that the sherd cover derives from a very widely spread layer of rubbish lying over largely open ground; also, that the reason why it does not spread far over the surface of the mounds is not because the rubbish ends here but because it has been covered by rubble spreading out from the collapse of buildings along the west side. The site has suffered from a limited amount of modern disturbance, partly from east–west traffic which in some parts has produced a corrugated effect on the ground, and partly and more seriously from digging for antiquities, concentrated in the south–east quadrant of the excavated area and detectable as shallow pits filled with wind-blown sand and scattered rubbish, particularly decayed pottery and charcoal, from underlying deposits. Some partly dressed stone blocks were scattered over the site, including part of a column drum. On the north side modern digging has exposed patches of mud-brick dust which probably derive from the enclosure wall.

In total seventeen five-metre squares and three strips of five-by-two m were excavated in eight-and-a-half weeks. Two site supervisors (Angela Tooley and Christopher Kirby) directed their own teams of workmen, digging simultaneously on the west side of the site, taking in both the mounded part and a portion of the low sherd-covered part. By the end of the season the area covered by excavation amounted to about a quarter of what needs to be dug if an adequate record of the site is to be recovered. In general the site appears to have been a rectangular enclosure with buildings constructed against the inner face of the enclosure wall, particularly on the east and west sides, leaving much of the interior space free of buildings. A degree of major internal subdivision is also hinted at in squares E6 and F6, where an east–west wall separating two groups of buildings seems to run across the northern edge of the excavations.

The excavation revealed more than one phase of building and activity which amounted to more than minor structural changes. On the west and south this can be resolved into two phases which can be separated with some certainty and precision (Figures 2.17–2.19). Elsewhere,

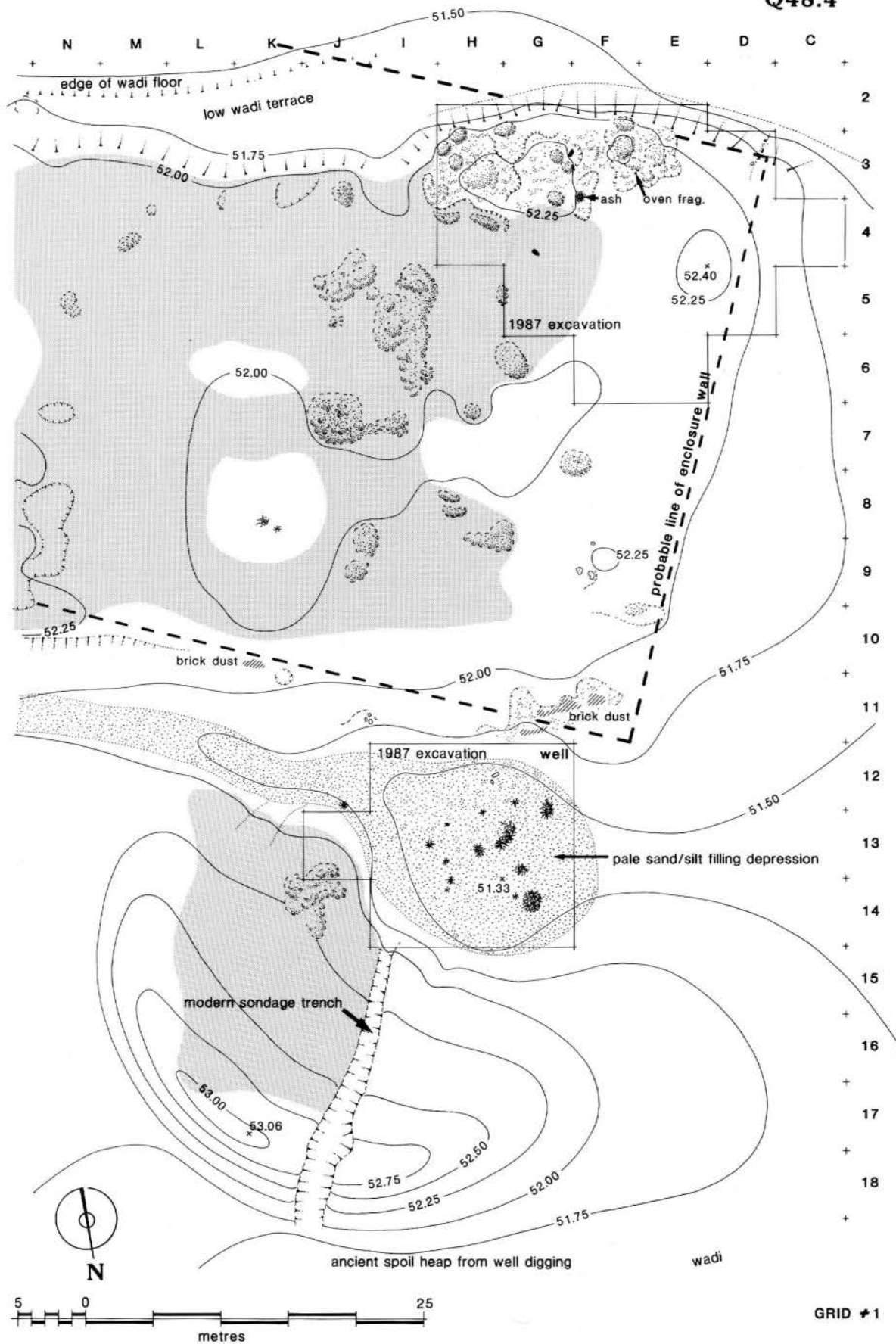


Figure 2.1. The western half of Q48.4 before excavation, with sherd scatters shaded.



**Figure 2.2.** The excavation of Q48.4 at an early stage, with squares C4 and D5 in the foreground, looking south-east.

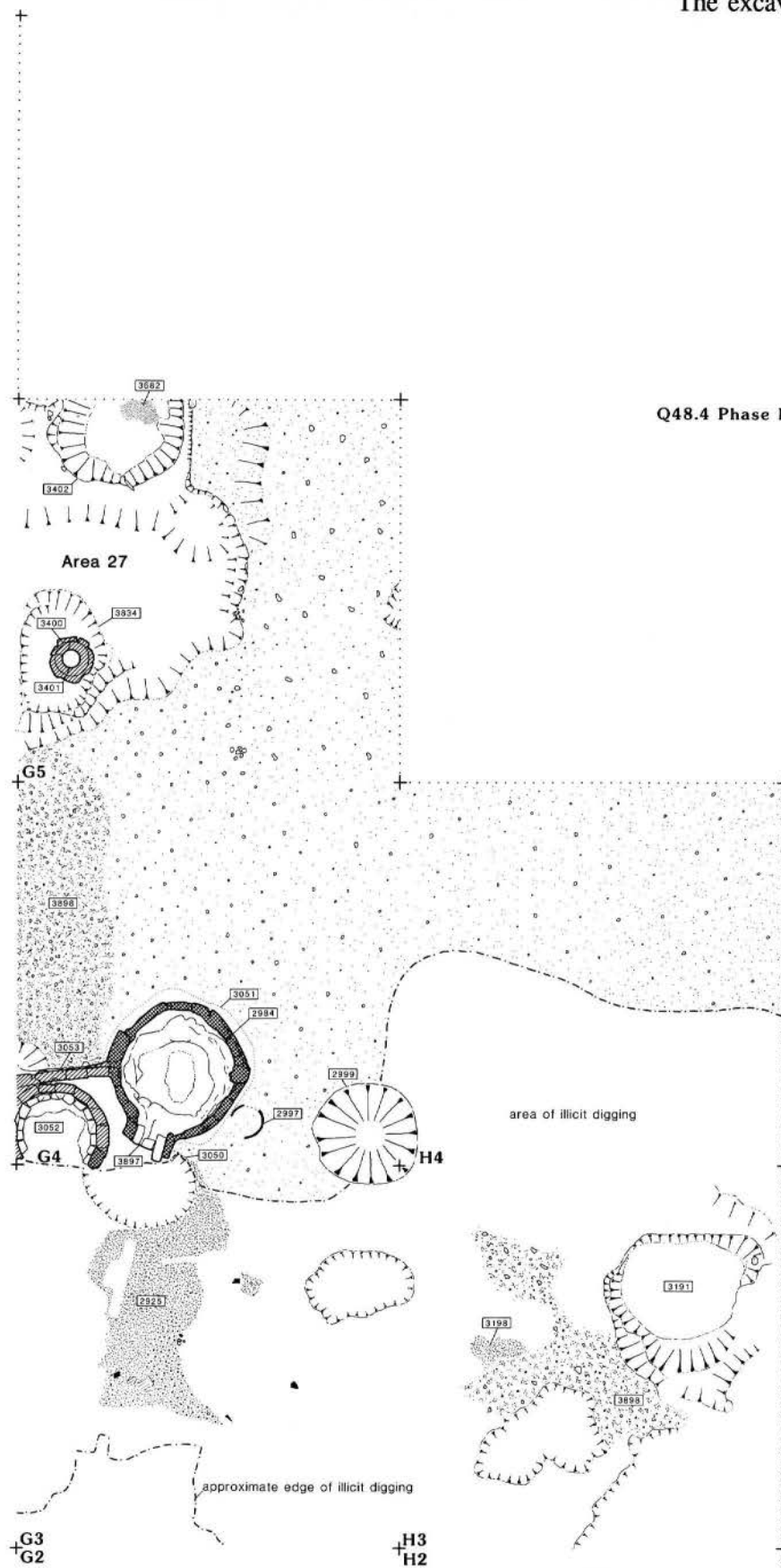
however, the record is more ambiguous, and perhaps points even to a single phase of use, either partially or wholly equivalent to the two phases of other parts. This history of the site can be characterised broadly as the establishment of a workshop in which pottery (and probably faience jewellery) was being produced, followed by a phase of poor domestic occupation. In Phase I the site consisted of a pottery workshop established against the west enclosure wall adjacent to a group of kilns. These were situated in a large open courtyard to the east, bounded on the north by the wall [3104, 3267, 3266] which crosses squares E6 and F6 at the northern edge of the excavations. Much of this was destroyed in preparation for the second phase of occupation. This latter saw the termination of pottery production: workshops were levelled and floored over by rooms furnished with hearths and in one case with a low bench or mastaba; the kiln area was suddenly abandoned leaving a new kiln only partly built.

Both phases can be dated to the reign of Tutankhamun on two pieces of evidence. The first is a complete ring bezel with the prenomen (*nb-hprw-rʿ*; Figure 8.7) which was discovered near the bottom of a rubbish deposit (D4 [3154] = object no. 8338) lying on the natural *gebel* and fragments of Phase I floor. For the second piece of evidence some ambiguity remains over whether it relates to Phase I or II. Part of a ring bezel was discovered in Area 16 within an ashy deposit [3393] associated with a broken pottery bowl ([3396] = object no. 8762) lying on *gebel*. This ashy deposit was sealed by a segment of marl plaster [3390] and a floor [3387]. With the ring was discovered the mould from which it was taken (Figure 8.5 = object no. 8761). The ring and mould were inscribed with the king's prenomen (*nb-hprw-rʿ*), to which had been added the epithet *stp-n-ʿimn-rʿ* (Petrie 1894: Pl. XV, no. 119), showing beyond doubt that the site was occupied in the reign of Tutankhamun following the official re-establishment of the cult of Amon-rē, so coinciding with the period of occupation of the Workmen's Village. The missing portion of



**Figure 2.3.** Plan of structural units of Phase I (originals by C. Kirby and A. Tooley).





the ring bezel was found in an adjacent deposit towards the northern end of square G5, in a layer of sand [3269] not far from kiln [3400]. This layer of sand, c. 10 cm thick, was immediately beneath the top 10 cm of surface sand, and represents a superficial deposit. Since no modern disturbance was visible in this area the breakage of the bezel and its separation from Area 16 presumably took place in ancient times and it eventually became one of the scatter of objects resting close to the surface. The key question is whether the first fragment and the mould lay within a deposit belonging to Phase I or to Phase II. The contextual evidence will be presented below. The site supervisor (Angela Tooley) was of the opinion that the deposit was of Phase II, and this should be given due weight, whereas the director (B. Kemp) later formed the view after considering the evidence as a whole that a Phase I date was also possible. The uncertainty affects how we interpret the development of the site in this particular area, but not the overall dating of the site to within the reign of Tutankhamun. The discovery of a clay document-seal depicting Akhenaten or Nefertiti as a sphinx from the same deposit as the first ring bezel (D4 [3154]) has less value, as it may have come from an archive document.

## 2.2 The Enclosure Wall [2907]

The whole site was enclosed on the west and south sides by a mud brick wall two courses in width. It is assumed that there was a north and east wall as well, forming a large rectangular enclosure. Its probable course along the north side can be detected from surface indications (Figure 2.1), where it appears to run right up to the large well to the north (a fact confirmed by Ian Mathieson's resistivity survey, see Chapter 7). On the south it has been progressively destroyed by wadi activity, vanishing completely at around 15 m from the south-west corner. The plan of the rubble spread (Figure 2.20) also gives the impression that a greater degree of overall wind erosion has taken place, something consistent with the fact that it faces south, towards the direction of the sand-laden winds of the summer. On the south the excavated plan gives the impression that between squares E2 and F2 the wall narrowed down from two course to one. This is, however, an illusion brought about by the erosion of a wall with foundations of differing depths. In the western length [2907] one is looking at a plan of the wall as it survived up to four courses above foundations; east of buttress [3197], however, only the original single outer foundation course was left [3146].

The wall exhibited two distinct phases of construction relating to the two phases of occupation. At the beginning a very shallow foundation trench was dug into the *gebel* and a single row of mud bricks laid down; for some stretches they were placed on their edge (vertically) but otherwise were placed flat (horizontally), in order to compensate for variations in the level of the *gebel* and provide an even foundation (Figure 2.25, nos. 3, 5, 7, 8, 10). It seems logical to expect that a wall of single-course thickness was then built on this foundation, but if so, it was later dismantled to be replaced by a wall two courses thick but still resting on the original and now narrower foundations. Buttresses, two bricks wide, were set into the *gebel* against the foundations at regular intervals (about five m). They were detected against the west wall [2909, 3152] and against the south [3368, 3197]. Phase I walls abutted the enclosure wall at the single-course thickness stage of its foundations (E3 [3294] and D3 [3698], Figure 2.25, no. 8), and in so doing incidentally support the idea that at this stage the enclosure wall was of a single stretcher course in thickness only; the bottom courses of these walls were then later incorporated into the Phase II double-thickness enclosure wall above. A large pot [2900] had been set into the ground just outside the enclosure wall on the west, opposite the puddling-pit area. It was broken into three large sherds with a large stone in the middle of them.

In Phase II the enclosure wall was dismantled with the rest of the Phase I walls down to its bottom course which was left in place; the site was then levelled in preparation for the Phase II buildings and a new double-thickness enclosure wall built to which Phase II walls (D3 [3365, 3363]; D4 [3129, 3127]; and D5 [2908]) were attached. This new wall was founded partly on the Phase I foundation bricks and partly on the levelled rubbish of the Phase I occupation. As is often the case with mud-brick walls where the final appearance was determined by mud plastering, the bricklaying was somewhat irregular, with a liberal use of mud plaster to fill large gaps. On the south side of the enclosure wall the sequence of courses had itself started to depart from the truly vertical, with courses offset from those lying beneath.

The enclosure wall was clearly intended to provide a boundary to the pottery-making area, for both the puddling pit (D5 [3166]) and the mud working surface (D5 [3815]) to the north curved up to the side of its foundations (Figure 2.25, no. 5). No unfired sherds or debris from glazing were found outside (Figures 2.23 and 2.24). "Floors" found outside the enclosure wall on its west side (C4 [2914, 2915] and D4 [3150]) had been largely removed by erosion but did not give the impression that they were remnants of a continuation of the activity carried out inside the perimeter of the site. As the section (Figure 2.21) shows, they probably represent the gradual accumulation of fine debris which had actually begun in Phase I.

### 2.3 Phase I

The earliest activity on the site was manufacturing, primarily of pottery. Although the construction of the enclosure wall may have been started at the beginning of the site's history, it appears that pottery making could have been underway even before the construction of the Phase I buildings, for layers of rubbish were found sealed beneath Phase I floors and walls in certain parts of the site, as with the Phase I wall (D3 [3367], Figure 2.25, no. 2) which overlay rubbish deposit [3720] and wall [3385] lying on rubbish deposit [3710]. The principal east-west wall [3266-3267] which crosses the northern part of F6 and E6 was also laid in part on *gebel* and in part on a thin organic layer. Another example can be seen in the section illustrated in Figure 2.21, where the layer of debris ([3014], becoming [3782]) can be seen passing beneath wall [3366]. Indeed, this section suggests that the greater part of the floor deposits had accumulated before this wall, which formed the east side of **Area 1**, had been built. This must mean that **Area 1** was at first either an open space or was covered by a construction of wooden poles and screens of reeds or suchlike, all traces of which were destroyed when it was replaced by brickwork. In view of the broad east-west spread of floor debris (Figure 2.17), far beyond the limits of **Area 1**, the former is the more likely. Although the preservation of Phase I floors was generally bad, there was much evidence of mud-working directly on the natural *gebel*, particularly in the area of the puddling pit in the north-west part of the site (see Chapter 4), much of which may have belonged to this pre-building phase, to which the term "Phase Ia" can be given. We can suggest that many of the Phase I floor surfaces consisted of levelled rubbish from this earliest phase of pottery production, although during the course of excavation they were impossible to distinguish from Phase I rubbish which had accumulated above.

This is a suitable moment to comment on the Phase I floor deposits in general. All of the rooms contained a sandy layer mixed with dust and brownish "organic" material, and with varying amounts of fine charcoal and small pebbles and many sherds. In some areas it was fairly loose, in others more compact, the limit of the latter reached by the consolidated deposit [3264], with a particularly high organic content, over the mud floors of **Area 16**. As the section, Figure 2.21, shows, this floor deposit ran without interruption from inside **Area 1** to cover a broad extent of open ground to the east. Its upper surface undulated somewhat, producing a slight mounding near the intersection of squares E4, E5, F4 and F5, and another towards the north-west corner of square D5 where the depth reached 50 cm (Figure 2.21). In Figure 2.17 an attempt has been made to indicate the general spread of these deposits. Inside the walls this is fairly straightforward, once one has allowed for the subdivision into a series of discrete excavation units of a more continuous spread of material which varied laterally in composition but not in a sharply defined manner. Outside to the east, however, these deposits gradually merged with others derived from separate activities and mixed with wind-blown sand, and not necessarily of Phase I. The limits of the spread given in Figure 2.17 are to some extent idealized and approximated.

As already mentioned, most of the Phase I buildings (those along the west wall) were levelled in preparation for Phase II buildings. This and the modern digging done in the south-east corner of the site have left an incomplete plan of the remains of this period. The major exception to this is a series of rooms within square E6, which kept the same alignment throughout both phases and which were probably built in Phase Ia. The main Phase I building on the site came to be (perhaps fairly late in the phase) a long, rectangular structure running beside, and parallel to, the western stretch of the enclosure wall, mainly across squares D4, D5 and E5, and here designated **Area 1**. It had an internal length of 15 m, and an internal width of about three. The bottom courses of the outer walls of the building were preserved on the east [3366, 3367] and south [3698] because



1987 excavation

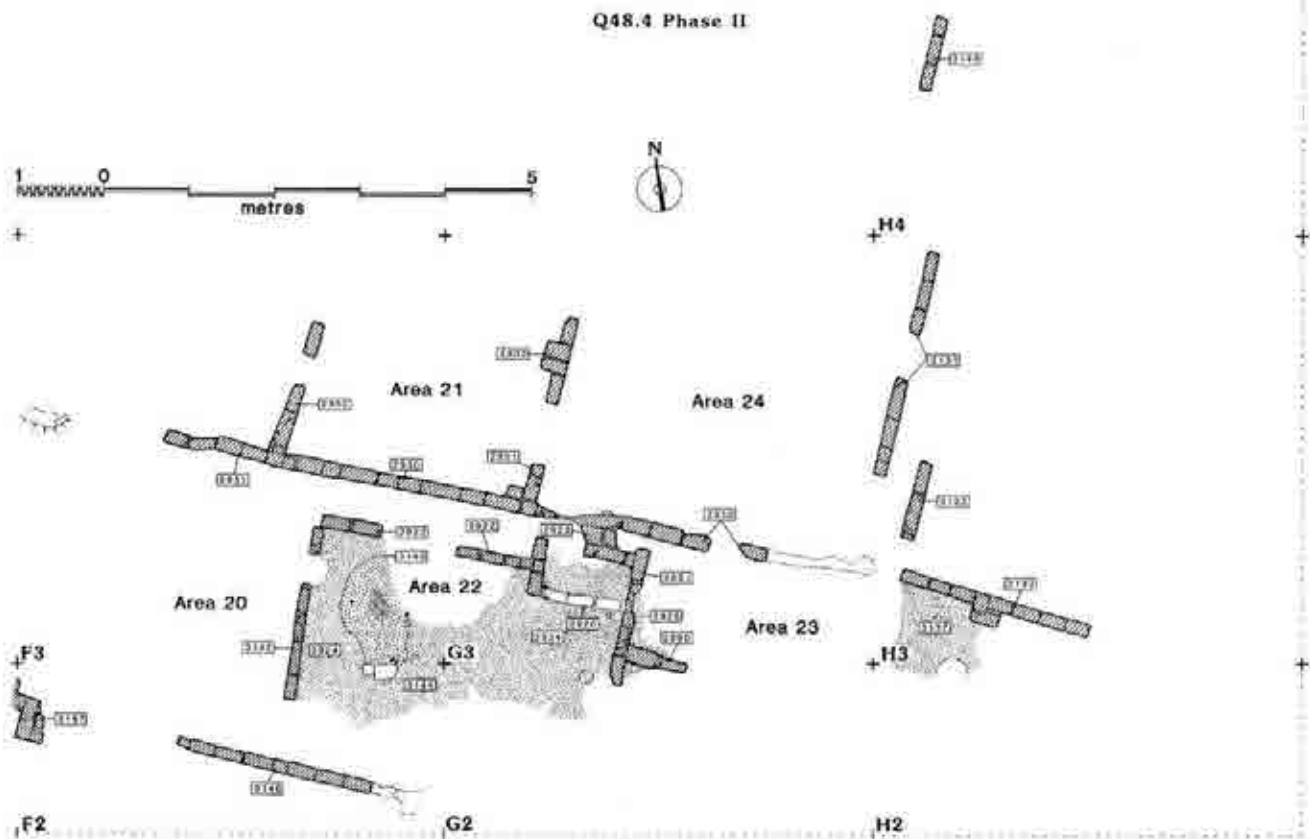


**Figure 2.4.** Structural units for Phase II (originals by C. Kirby and A. Tooley).



- burnt bricks
- pottery vessels
- distinct floor
- less distinct floor/packed surface
- mud trampled on desert
- ash/burnt area
- puddled mud
- desert surface

Q48.4 Phase II



they were foundations cut into rubbish or *gebel*. No internal partition walls were preserved, however, but these could have been removed with the later levelling of the site.



**Figure 2.5.** A view of Area 12, at Phase I level, looking north, showing the brick-lined pit [3046] and buried *zir* [3113].

At the north end of this rectangular structure was a block of four small rooms, Areas 12 to 15, founded directly on *gebel* (see the section, Figure 2.21), to which a fifth had been added on the east side (Area 16), although its walls were very badly destroyed. Area 12, in the south-west corner of the building, had been initially subdivided to create a cubicle in the south-east corner [3116-3118] in the floor of which was sunk a pottery *zir* [3113] and a brick-lined pit [3045] (Figures 2.5, 2.6, and 2.25, no. 1). The other three rooms in the block contained little but shallow rubbish deposits [3745, 3721, 3746]. However, the north-west room (Area 14) also had a broken pot [3757] sunk into its rubbish [3745], filled with burnt quartzite stones of uncertain purpose.<sup>1</sup> East of the block of four rooms was a partly preserved room (Area 16) with its east wall missing except for a short length to the north [3283]. Two fragments of spur walls [3282, 3356] partly enclosed the south-west corner. The limits of Area 16 were entirely filled with a compact undisturbed layer [3264], c. 15 cm thick, of decayed brick rubble which sealed an underlying

<sup>1</sup> Pot boilers has been one suggestion, although their use in ancient Egypt is not well established.



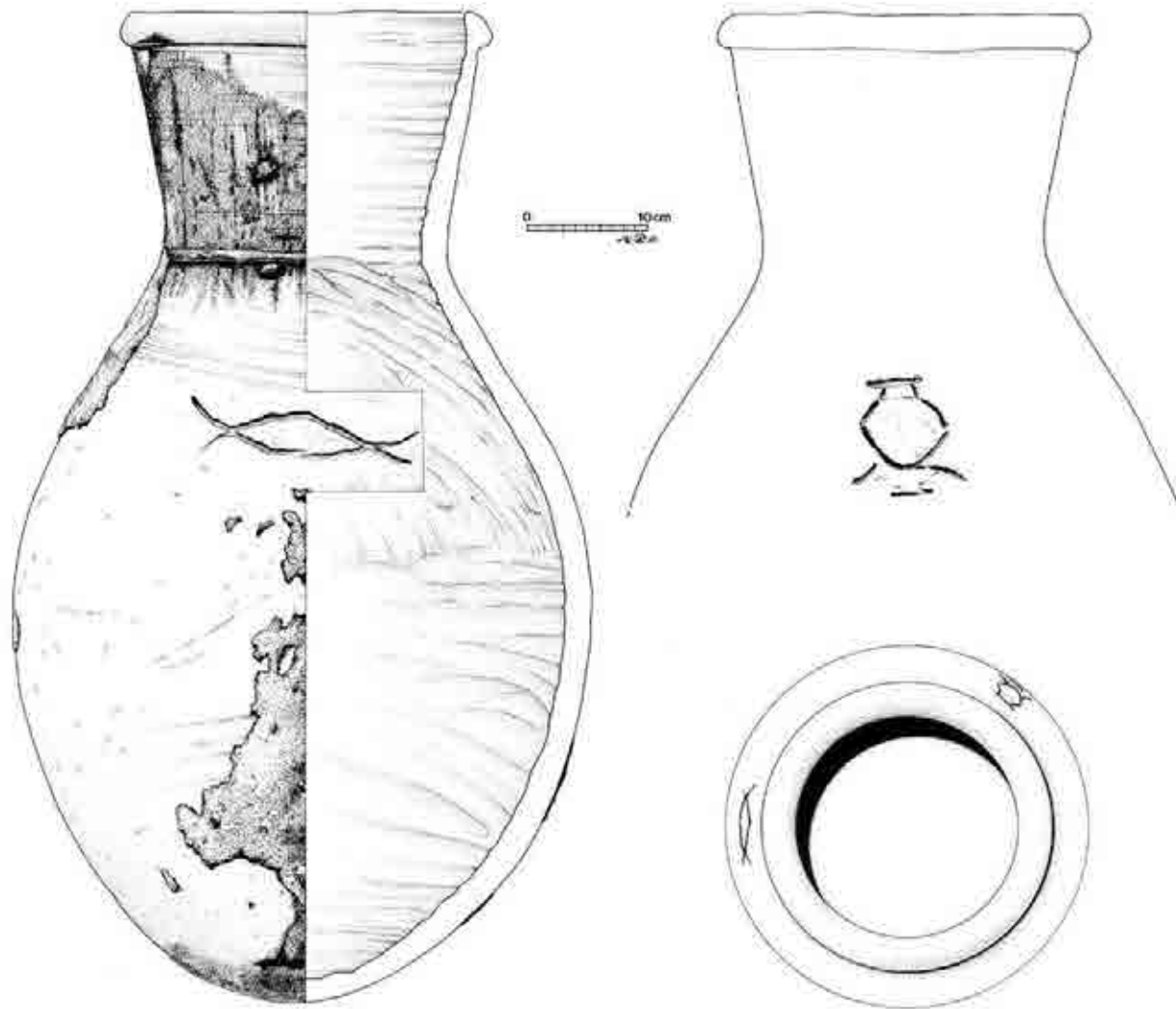


Figure 2.6. Drawing, by A. Boyce, of the buried *zlr* [3113].

organic deposit [3328]. Removal of this, the last floor deposit before the building was anciently abandoned, revealed broken fragments of earlier mud floors. Four of these could be distinguished [3360, 3386, 3387, 3388], presumably representing a process of reflooring and wear from use which spans either the whole occupation of the site, through both phases, or one phase only, followed by permanent abandonment. This is the area of disagreement mentioned earlier, the uncertainty arising from the compressed nature of the floor deposits and the difficulty of relating them to the more clearly differentiated sequences elsewhere on the site. The site supervisor saw them as similar to the Phase II floors on the western side of the site, and this has to remain a possibility. It is supported by the appearance of the oven/kiln [2994] probably associated with it, which fits a Phase II date better. An observation which supports an exclusively Phase I date is the extreme degree of weathering and loss of brickwork sustained by the south and east walls (visible in the plan of rubble units, Figure 2.20), which is more consistent with an abandonment within the main period of use than after it. The ambiguity of the phasing of Area 16 will recur in this chapter and is reflected in the accompanying plans (thus the question mark over this area in Figure 2.17). In the centre of the room the principal earliest floor level [3387], which had a burnt bluish appearance, covered a pit [3395] containing part of a large pottery bowl [3396]. The pit fill [3393] also yielded part of a ring and pottery mould with the prenomen of Tutankhamun, its context strongly implying that it belongs to the earliest use of the room (see above). The fragmentary earliest floors [3387, 3388] further overlay a deposit of dark soil [3397] containing

faience fragments, glass beads, bone, and organics as well as beetle cases. We ascribe this rubbish to the pre-building Phase Ia, discussed above.

This whole northern group of rooms had been built against a longer east-west wall [3104, 3266, 3267] which probably formed an internal boundary, subdividing the main enclosure into at least two parts. As already noted, in places it stood on a thin layer of organic debris instead of directly on *gebel*. Only a small strip of ground beyond it was dug, but sufficient to reveal offset walls [3103, 3280] defining a further set of spaces, Areas 25 to 26. These rooms may well have a history and purpose of their own, separate from most of the area under consideration, but, at the same time, it should be noted that Area 16 was also accessible from Area 25 through a narrow doorway with sandstone threshold [3281].

Evidence for early buildings was also encountered against the southern stretch of the enclosure wall, especially in square E3, where the lowest walls and floors were set immediately upon *gebel* in an area close to the principal deposits of ash, a situation suggesting that they, too, belonged to the first phase of construction and use. The wall fragments define three or possibly four areas. The clearest are two (Areas 17 and 18) defined by continuous lengths of wall foundations [3290, 3292, 3294] supported by buttresses [3291, 3293], to which fragments of floors also belong [3213, 3214]. Within each room a pottery vessel had been sunk into the floor, in Area 17 a small storage jar [3170] sunk almost to its neck against wall [3292]; in Area 18 a *zir* [3196], more shallowly sunk so that only its base survived. Beside this, and also built against wall [3290], was an oven of standard form, consisting of a cylindrical lining of clay [2968] surrounded by a thicker wall of marl clay [2967], with a thin layer of ash [2965] on the floor. Immediately to the east the ground had been disturbed by modern digging, which had involved trenching along wall faces, down to the *gebel* in some places. Nevertheless, it is possible to ascribe two more features to this Phase I: the short north-south length of wall [2956] which formed an eastern boundary to Area 17, and an area of clay floor [2969], both lying directly on *gebel*. The latter must have lain to the east of, i.e. outside, Area 17, and so is one patch of a broad area of floor and trampled clay surface which occurs over a large part of the central open space and is represented, e.g., by deposit [2925] in square G3.

Areas 17 and 18 were covered with an organically rich layer [3165]. This spread over the partition wall [3292], but since it also ran beneath the Phase II wall [3287] it must be ascribed to the earlier phase and was perhaps spread by trampling over the line of wall [3292] during the course of its removal in ancient times.

One other set of features possibly extends the spread of Phase I walls in this area. This is a linear grouping of patches of mud plaster [3295] on *gebel* immediately to the north of Phase II wall [3289]. This could be the fugitive remains of the mortar for a foundation course, which would then have bounded Area 3 on the north in Phase I. Two rounded pits [3209, 3219] were cut into the *gebel* within Area 3 and filled with sand and inclusions [3216, 3224]. A narrow trench [3273] is probably part of the foundation trench for the southern enclosure wall [2907].

#### *The Pottery Workshops.*

In Chapter 4 the evidence for pottery-making is discussed, not only the structural remains but also the artefacts recovered from the related earthy strata. These are primarily quantities of unfired sherds which were concentrated in deposits along the western side of the site and spread eastwards into square E5 (Figure 2.23). In this chapter a basic description of the physical features of this part of the site will be given, whether or not they can be related directly to the making of pottery.

#### *The Northern Workshop.*

Area 12 is likely to have been a pottery workshop. It is the south-west room of a block of four in square E6 built directly on *gebel* (see the section, Figure 2.21), thus early in the site's history, the other rooms serving less easily defined purposes. Area 12 contained internal walls which created a small cubicle in the south-east corner (Figure 2.5). Its east and south walls [3100, 3115] were preserved to four courses, forming part of the later Phase II building, whilst its north and west walls [3117, 3116] were represented by a single course of brick on *gebel*. Within the workshop lay a *zir* [3113] (Figure 2.6) sunk into the ground to its rim, next to a pit which had been lined with mud bricks to create a bin [3046] (Figure 2.25, no. 1), which was generally

rectangular in shape, although convex on its west side. It was three courses deep on three sides, but only two courses on its east side, and lay below the lowest floor level. It had been originally at least one course of bricks higher, the smooth finish to the south side being deceptive. Set into the second course on its south side was a piece of natural limestone with gypsum plastered on it, its purpose unknown. A highly polished potter's wheel made of basalt (?) (Figures 4.2–4.4) was discovered in the bin, along with two-thirds of a red slip bowl, the rim of an amphora, and large lumps of hard mud clay in a deposit of sand with organic inclusions [3045].

Directly to the north of the bin was the sunken *zir* [3113]. Mud brick had been packed around the neck to secure it in the *gebel*. A small pottery incense burner was found close by. On excavation, the *zir* was found to be full of large pieces of mud brick deliberately placed inside. It seems likely that this was done by the Phase II builders in order to consolidate the *zir* beneath the new Phase II floor. Part of the shoulder of the *zir* had been plastered with mud, presumably to repair a crack in the fabric. Both the *zir* and the bin were difficult to associate with a floor level, since the floor around them had crumbled away leaving a dark brown, sandy fill [3036]. Other parts of the workshop preserved patches of two floors [3119, 3120].

A doorway, with limestone door pivot [3043], led out on the north to the remainder of Area 12, perhaps a courtyard. We hypothesize that this provided access to the puddling-pit area to the south, Area 1. A layer of grey-brown sandy soil [3036] lay immediately on the *gebel* (and was found also within the cubicle, around the *zir*), and within it, against the north wall, a further pottery jar [3793] had been buried. Subsequently a mud floor [3120] had formed over both debris and pot, and this probably connected with the floor which had covered the puddling area (D5 [2910]) of this same phase to the south of the workshop.

#### *The Clay Puddling Area.*

To the south of the workshop lay the deposit which produced the principal concentration of unfired sherds (Figure 2.23), deriving from vessels which broke between drying and firing, many of them before the turning stage (Chapter 4), and which could be made again into workable clay for reuse by the potter. This deposit ran east–west south of Areas 12 and 13 but was later partly enclosed within the long narrow building, Area 1, defined principally by the enclosure wall on the west and a line of foundations on the east. In Phase II the area had been subdivided into a series of small spaces, and it is possible that in the course of doing this subdividing walls of Phase I were entirely removed. However, enough survives of early floors and other features to make it unlikely that a major subdivision separated the puddling pit [3166] and the ground immediately to the south from Area 12, just described. Indeed, when pottery-making first began, in Phase Ia, the area was not even defined by a wall on the east, and, even if we postulate the existence of a shelter supported on wooden posts, the activity area spread without interruption eastwards for some distance, taking in the puddling pit [3059] in square F5.

The most readily identifiable feature is the puddling pit [3166] in square D5, oval in shape, measuring roughly 2.5 x 1 m x 20 cm deep, which had been built so close to the original enclosure wall that on the west it curved up into the side of the foundation bricks (Figures 2.7, 2.8 and 2.25, no. 5). It was cut about 20 cm into *gebel*, and lined on the south side (and presumably originally on the north where the edge was much broken) by limestone blocks. These blocks lay almost flush with the desert surface. To the north of the pit, and also lying directly on *gebel*, was a smooth patch of puddled clay of Phase Ia [3815] with a large red slip bowl with rim missing [3895]. As is indicated in Chapter 4, it is possible that this could be the remains of a puddling pit which slightly preceded the one to the south (designated unit [3166]). Lying above these working surfaces and in the puddling pit was a thick layer of rubbish (D5 [3785, 2910, 2906, 2902, 2894], E5 [3761]) consisting of waste from the pot-making process, principally unfired sherds, particularly concentrated in the area of the puddling surface to the north of the puddling pit [3815] and also in an area to the east, outside Area 1, although the concentrations of unfired sherds did not extend quite as far as the F5 puddling pit [3059] (see Chapter 4, Table 4.1, and Figure 2.23).

The subdivision of this deposit into component layers changes from west to east, reflecting the appearance of localised patches of floor. In ascribing these deposits to Phase I one is greatly helped by the fact that the whole sequence was locally covered first by a layer of sand and then by the walls of Phase II (Figure 2.19, and visible in the section, Figure 2.21). In this way a





Figure 2.7. Puddling pit [3166], looking east. In the foreground is the enclosure wall with a buttress [2909]. The pit is crossed by the Phase II wall [2908].

reasonably clear separation can be made between Phase I and Phase II deposits, although one minor problem should be noted. The western tail of the evidently narrow sand deposit was picked up in the section beneath wall [2908] of Phase II (Figure 2.25, no. 5). As it approaches the enclosure wall [2907] it is actually covered by a limited amount of the floor deposit [2902]. We can explain this only by considering that when the Phase II walls were built and the floor of Area 8 was laid down the existing Phase I deposits were heaped up to even the ground level. On the west, within Area 1 (here also Area 10 of Phase II), one distinctive unit had the appearance of a laid floor [2910] and was picked up over a significant area by excavation only in Area 10. It had originally covered the puddling pit, but subsequent wear had brought about its loss. By the time that it had passed eastwards into square E5 two component floors [3760, 3778], were distinguishable, the former beneath the latter. The latter spread only a short distance into the square; the former extended to and lapped against the east wall of Area I [3366]. Further eastwards, thus into Areas 9 and 11 of Phase II, the equivalent deposit thickens and divides even further. In Area 11 two rubbish deposits ([3722] above [3759]), each with unfired sherds, and each 10–15 cm thick, formed a low mound, separated by patches of floor [3758]. The wall which separates Areas 11 and 9 belongs, of course, to Phase II and was not present when these deposits were being laid down. On the south side of this wall (which was not removed) the intermediate



**Figure 2.8.** Puddling pit [3166], looking north. The pit is crossed by the Phase II wall [2908], and by a section of debris which includes the sterile sand layer [2918 = 3011], see Figures 2.19, 2.25, no. 5.

floor faded away, and the thickness of the deposits decreased again, so that the whole sequence of units (which also contained unfired sherds) [3759–3758–3722], was removed as a single unit ([3014] = E4 [3014]). As the section (Figure 2.21) shows, this deposit continued eastwards into the open central area of the site, which will be described separately below. As already noted, all of these units were sealed by a thin layer of wind-blown sand before the construction of the Phase II building.

In this part of the site, then, at least two distinct sub-phases to Phase I have been detected: Phase Ia consisted of patches of mud-working on *gebel* with an accumulation of waste made up of unfired sherds concentrated perhaps over the remains of a partly destroyed puddling pit and extending to the east; and Phase Ib where the whole puddling area was floored over and rubbish only allowed to accumulate outside the limits of the Phase I building, **Area 1**. This sub-phasing appeared to be of a localised nature.

#### *The Southern Workshop.*

The central part of **Area 1** is blank except for patches of floor [3155, 3161, 3381], which had survived the Phase II rebuilding. But another pottery workshop may have lain at the south end. The evidence is weaker, consisting primarily of a mud brick bin [3712] (Figures 2.9, 2.25, no. 2) which appeared to be of a similar nature to the bin in the northern workshop, although it was oval in shape and at least four courses deep. It was mud plastered on the inside, and a thick

sloping layer of compacted mud covered the floor. Crudely made unfired clay figurines of a recumbent lion and a standing female were found inside the bin along with five unfired sherds and an alabaster pot. Like the other bin, at least one course of brick was missing, and as a result it lay beneath the level of a Phase I wall. Directly north of the bin were the remains of a blue-painted pottery jar [3160], sunk into *gebel*. This jar, missing its neck and upper body, was full of unburnt seeds. Rubbish deposits in the vicinity (D3 [3372], [3713] = bin fill, [3720]; D4 [2903, 3154, 3156]) contained more unfired sherds. Whilst this suggests that this end of Area 1 had been part of the workshop (part, perhaps, of the drying area), it actually contrasts with the northern workshop where few unfired sherds were found (Figure 2.23), presumably because only wet clay was handled there.<sup>2</sup>



Figure 2.9. View, to the south, of Phase I features in square D3.

The bin lay close to the south-east corner of Area 1, as defined by the wall foundations [3367] on the east, and [3698] on the south. Against the south wall of Area 1 had been built a short projecting wall [3385], creating a further room, Area 2 (Figures 2.9, 2.25, no. 9). Two bricks set vertically could represent the beginnings of projecting walls, forming a bin or supports for a shelf. Close to it was one of several patches of floor [3714], and a line of gypsum plaster.

<sup>2</sup> Unit [2903] is in fact the Phase II mud floor for Area 8. Presumably in the course either of originally laying down the floor or of excavating it the underlying rubbish became inseparable from it.



Not a single unfired sherd came from this area, a fact which implies that this was an ancillary room not directly involved in pottery-making. Both the wall and the patches of mud lay on a layer of rubbish [3710], lying on *gebel*. A *zir* [3737] lay sunk into the rubbish and *gebel* to the west of the wall, as well as a jar [3738] lying on its side alongside the conical base of a third vessel [3741]. When emptied, the jar was found to contain a Tawosret pendant, a scarab pendant and seven bone and faience beads. The rubble layer [3371] which covered the floor, and which we interpret (see below) as packing material laid down (or perhaps just Phase I collapsed brickwork left in place) to raise the floor in the Phase II reconstructions, also contained pieces of large pottery vessels, namely a large pot stand [3298] and the neck and shoulder of a large painted storage vessel [3361]. They could also belong to the Phase I use and have become incorporated into the rubble as it was laid down.

#### *The Water Supply.*

Although the sunken *zirs* found in the workshops could have stored water, the discovery of three pieces of stone conduit suggests that a much more efficient method was used to run water directly from the well lying to the north. Two of these blocks were discovered lying on top of each other against a Phase II wall and on a Phase II floor [3012] in square E6 (one is marked on Figure 2.20). The third, possibly a T-junction block, lay on the surface. Since there is no sign of an emplacement for these blocks in the Phase II elements, it is more likely that they were robbed from a Phase I stone-conduit channel during the rebuilding in Phase II, when a few were left behind. The actual placement of the conduit system is unknown although one would expect it to have entered from the north, from the direction of the well. It is to be hoped that further excavation towards the well will provide an answer.

#### *The Kiln Area (see also Chapter 3).*

The open area which occupies the eastern part of the excavation has a more uncertain stratigraphy, for three reasons: the total depth of deposit is less (only about 25–30 cm over squares G4 and H4, for example) and lacks the presence of walls which help to separate phases; there is the likelihood of ancient disturbance; and particularly in the south and south-east modern illicit digging has reduced areas of the earthy fill to a loose homogeneous deposit devoid of stratigraphy with any meaning. As the section drawing along line C-D shows (Figure 2.22) several of the excavation units are arbitrary layers. Logically, however, some key elements, particularly the kilns, belong to Phase I. The large used kiln [2984] lay in square G4 beneath a deposit of sand mixed with pebbles and sherds [2883] and was surrounded by a 10–15 cm deposit of rubbish [2990] consisting of charcoal, pottery sherds, and bone, all burnt and lying on *gebel*. The kiln was cut deeply into the *gebel*, the edge of a foundation trench [3051] being found filled with fine sand. The upper half of the kiln had been removed in antiquity, to judge from the absence of a sufficient quantity of vitrified rubble in or around it. The fill of the kiln [2985, 2986, 2987, 2991, 2992] consisted of rubble, wind-blown sand, sherds, and slag (Figure 3.5). As the section shows, much of the rubble had been cast into the kiln from the south, after it had been abandoned and was already partly filled with sand. It forms part of a large spread of rubble and ash which occupied much of the southern edge of the site, extending only about 1.50 m northwards into square F4. To the east of the kiln were the remains of a small oven [2997] lying directly on *gebel* and filled with a deposit of ash, charcoal, pottery, slag, and unfired clay lumps. Further east still a shallow circular pit [2999] in the *gebel* could mark the position of a third intended kiln.

To the south-west of the used kiln was a smaller unused kiln [3052] linked to the larger one by means of a connecting wall [3053], which perhaps acted as a windbreak. This kiln consisted of courses of horizontally laid mud bricks and one course of vertically laid bricks sloping in towards the bottom of a circular pit cut partly into consolidated ash and partly into *gebel* (Figure 2.22). One of the bricks from this structure was a fired red brick while the rest were unfired. This fired brick probably came from kiln [2984], when it was dismantled. The fill of this unfinished kiln was made up of pieces of broken *zir*, whole mud bricks, and dark-brown silty material suggestive of burning but clearly not belonging to the kiln itself. The southern edge of the kiln had been destroyed by modern digging.

On the west side of kiln [3052] the surface of the *gebel* bore marks of activity which clearly preceded the insertion of the kiln, yet which, by their character, seem to be an extension of the pottery-making phase of Area 1. The desert surface had been cut into to create an irregular pit [3141], partly floored with mud [3094], as if it had been trampled. The deeper section of the pit on the east could well be modern and have destroyed the eastern half. Spilling down one side was a curious deposit of clay lumps, some of which had anciently been pressed around the outside of an amphora. They are illustrated and commented upon in Chapter 4. These deposits had been sealed by a layer of desert material [3093] and had then been buried by a thick bed of fine grey ash [3092] in which the kiln [3052] had been cut.

A short distance to the south, and now into square F3, the desert surface had been cut to create another circular pit within a broader irregular pit [2961], with maximum depth of 39 cm. Near the bottom was discovered a complete red-slip bowl [2958], heavily burnt on the inside. The pit was filled, and the surrounding area covered, with a complicated sequence of layers which seem to have escaped the illicit digging and consisted of sandy rubble patches and ashy lenses [2955, 2959], and a continuation [2957] of the compacted ash layer [3092] of square F4, into which the unused kiln was dug. It is thus possible that this pit also at one time contained a kiln or oven, later totally removed.

To the south of the kilns there had originally spread a distinctive deposit of ash. Although much of this part of the site had been dug into in modern times, and reduced the stratified deposits thereby to a loosely textured mix of sand and debris over much of the area, the stratified sequence was preserved beneath the remaining stumps of Phase II walls, where it lay, in turn, either directly on *gebel*, or on patches of mud floor resting on *gebel*. There was no trace of walls associated with these patches of mud floor (the principal one being unit [2925]), which must have been created early in the life of the kilns before much ash had accumulated.

From an examination of the surviving undisturbed stratigraphy it is possible to reconstruct the original ash deposit as a low mound (Figure 2.17). To the east, in squares H3 and H4, the ash was preserved beneath walls [3131], [3132], and [3133], with a depth of between 16 and 9 cm (from south to north) in the case of [3131], tailing off to almost zero at the eastern end of the surviving portion of wall [3133], which rested almost immediately on *gebel* [2889]. Beneath wall [3149] in H4, on the other hand, instead of ash was a 6 cm deposit of brown earthy debris [3208], implying that the ash mound did not extend this far northwards. This kind of record continues over squares G2 and G3, preserved in deposits protected beneath a series of wall fragments [2932, 2931, 2930, 2922, 2921, 2920, 2891, 2890]. Ash deposit [3528] possessed a thickness of just over 20 cm extending from east to west under wall [2930] but thinning sharply to the south, and tailing off altogether close to the boundary between squares G2 and G3. Northwards the pattern of H3 and H4 is repeated, in that by the time wall fragment [2932] is reached, although it stands on a 22 cm-thick deposit, only 3 cm of that is ash, the remainder being an earthy material [3259]. It was in this area that the largest extent of mud flooring [2925], resting directly on *gebel*, was found. The kilns themselves, however, had dense ash deposits beneath and around them, as the section drawing shows (Figure 2.22). Finally in the western group of squares F2 and F3 the western side of the ash deposit is preserved beneath wall [2951], as an abrupt termination just to the west of the junction with wall [2950], under which the deposit continues northwards with a thickness of 16 cm. The western end of wall [2951] is built on a layer of sand.

From these scattered observations it would appear that a major ash deposit lay to the south and south-east of the kilns, with its greatest thickness more than 2 m back from them (reconstructed in Figure 2.17). The deposit was not everywhere homogeneous; lenses of sandy material occurred within it, one occurring close to the kilns and largely replacing the ash. As already noted, the used kiln [2984] was filled with a sloping layer of rubble [2987] sandwiched between two layers of sand (Figure 3.5). This rubble was not the result of the collapse of the kiln walls but had been cast in from outside, from the south, after the kiln had been partly demolished. A similar deposit was found within the unused kiln. The kilns stood at the very edge of the main area of modern disturbance, and this prevents a direct stratigraphic connection being made with the wall fragments to the south, so that it is not absolutely clear whether the rubble was thrown in during Phase I or Phase II. It does seem generally more likely, however, that the rubble fill of the kilns is a local variant of the earthier element of the general spread of debris

around the south of the kilns and of a thin deposit of much fragmented rubble which spread to the north (Figure 2.20), and that the Phase II walls were constructed over it.

The fragments of mud paving [2925] lying directly on *gebel* should be related to large areas where the surface of the *gebel* bears a thin crust of mud, too thin to merit the term "floor", more a surface into which mud had been trampled [3898]. The main area ran to the north-west of the kilns and included the pit [3141] and pile of pieces of broken mud already described. Further to the north-west, in square F5, it took in two further distinct patches of mud with a concave surface [3059, 3064 lying in pit 3082]. Although they are small, the general context points to the remains of a further puddling pit (cf. Chapter 4, section 2), initially consisting of floor [3059] surrounded by a brick curb [3148], later replaced and partly destroyed by the smaller floor [3064]. The adjacent circular pit [3083], with a diameter of c. 60 cm, which could have contained a large pottery jar for the storage of water, predated both of them.

A second and separate area of trampled mud covered parts of square H3, to the south-east of the kilns. Here the mud-stained ground [3898] surrounded a large, circular pit [3191] cut into *gebel* [2889], which was filled with dark brown silty material [3147] containing many sherds, slag, and a piece of limestone with hollowed surface. The purpose and, indeed, date of this pit are unclear.

The nature and direction of spread of the mud-trampled or mud-stained surface suggest that it derives from the movement of the potters between the kiln and the workshop and around the kiln itself. It thus becomes an important pointer to a pronounced pattern of behaviour at the site which links the kilns with the main area of pottery making, the north part of Area 1 and Area 12. One might also guess from this that the main entrance to Area 1, once the east wall [3366] was built, was across the north end of this wall.

#### *The smaller kiln group (Area 27)*

Beside the largest area of mud-trampled *gebel* [3898], on the north, lay a roughly circular shallow bowl-like depression cut into the *gebel*, Area 27, which provided limited shelter for a series of circular features around the edge (Figure 2.17). On the north a large circular pit [3402] had been cut into bedrock, 45–55 cm deep and in the steepness of its sides different from the other pits. Much of the fill of the pit consisted of burnt sherds, pieces of burnt wood, dom-nuts and coprolites [3256]. This deposit was split up by thin layers of sand showing that the dumping and burning of the rubbish was done periodically rather than all at once. The bottom of the pit was floored with a layer of sand sealing a lens of white ash and, finally, water-compacted silt [3682]. These filling deposits, as well as the pit itself, were sealed beneath layers of debris, notably a heavily burnt deposit [3255] containing relatively large pieces of burnt wood. They spread over broader areas of both this and the adjacent square F5 and must have arisen from the gradual build-up of debris through to the final abandonment of the site, creating the impression that the pit itself is relatively early, belonging presumably to our Phase I. The domestic nature of the burnt rubbish in this pit does not fit the industrial nature of this phase, but it also appears from the sherd record (see below) that other activities were taking place within the enclosure, perhaps associated with buildings in the areas not yet excavated.

Around the southern edge of Area 27 a series of smaller and shallower pits [3834, 3088, 3087] had been cut, the latter two filled with sand, charcoal, sherds and pebbles (Figure 2.10). Pit [3834] was still occupied by a small oven or kiln, constructed from the lower part of a blue-painted pottery jar [3401], with a stokehole only 4 cm in diameter bored through its fabric from the outside (Figures 2.11, 2.12). It was supported by a circle of vertically placed bricks and surrounded by further pieces of brick plastered into place [3400]. The hole in the side of the pot matched a small triangular stokehole in the brickwork which had been blocked by a stone. The fill from around the outside of the oven [3398] contained burnt wood and large faience vessel fragments; when the oven was emptied, the fill [3399] was found to contain large quantities of ash, charcoal, burnt seeds and pieces of bone.

A second oven lay on the opposite side of Area 27. It consisted of a cylindrical baked clay liner [2993], 56 cm in diameter, 3 cm thick, and preserved to a height of 41–42 cm, with damage on the south side, around the stoke hole. Around it was a 12–13 cm thick jacket of mud [2994]. The fill [3056] consisted of clean, loose sand, some sherds and stones, but none of the expected ash. This raises the possibility that, like pottery kiln [3052], it had not been used. Immediately to

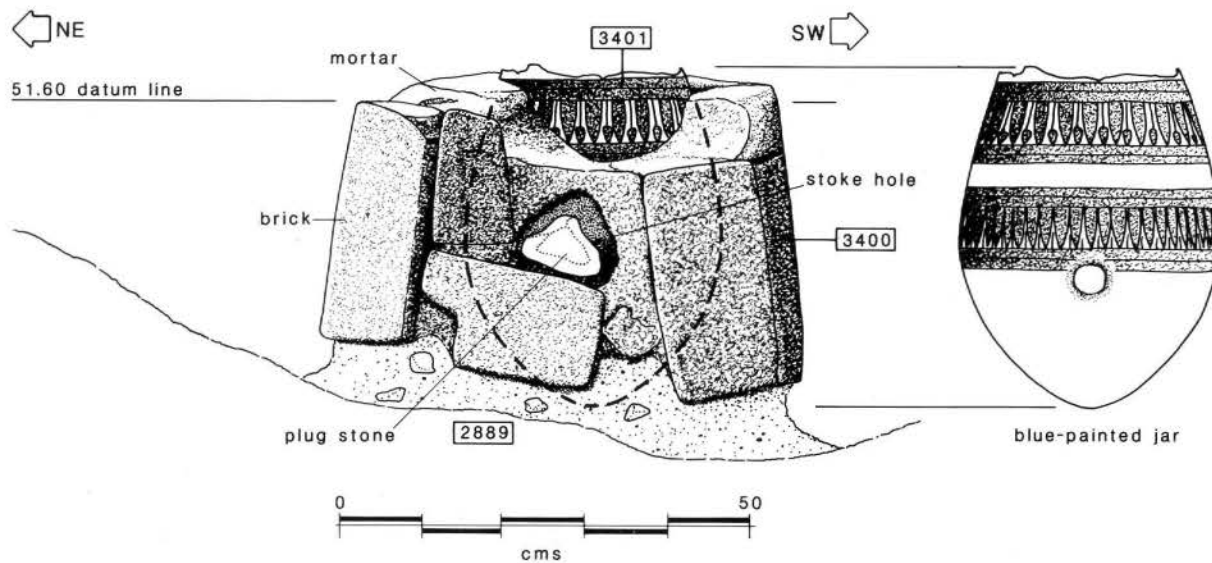




Figure 2.10. Square F5, looking south, showing the west half of Area 27.

the south of this oven were the remains of a second one: fragments of oven wall lying on and around a circular patch of ash [3055], apparently the remains of an oven which had been broken up *in situ*. It is not shown in Figure 2.3 because it lay not on the *gebel* floor of Area 27, but on the fill, showing that it was a late feature. It is, however, marked on Figure 2.17. Likewise oven [2993] had been built only after the pit had filled up and the surface had become sufficiently compacted. Subsequently it had been covered by the sandy deposits which formed the modern surface. In stratigraphic terms it would therefore seem to belong more to Phase II than to Phase I, since it must have been left standing, probably unused, when the site was finally abandoned. By contrast, the oven/kiln made from a reused blue-painted vessel [3401] stood on the floor of a small pit cut into *gebel* and not only showed ample traces of use but was also wholly buried in a deposit of ash and charcoal (part of [3394]) which in turn lay below spreads of sandy debris [3354, 3269, 3206]. There is a clear case for ascribing it to Phase I. Both of them provide a clue to what the two adjacent holes [3087, 3088] (Figure 2.10) were for, namely to contain still earlier ovens or kilns. A parallel for this can be found in the vicinity of the pottery kilns a little to the south. At least one larger shallow hole (G4 [2999]) can be interpreted as the location of a kiln which was either never built, or was subsequently removed (see Chapter 3).

Whilst the purpose of the large deep pit on the north [3402] remains obscure, we can now see that Area 27 provided a sheltered place in which, at different times probably spanning the entire



**Figure 2.11.** Elevation of oven/kiln in square G5. Beside it is drawn a sketch of the re-used blue-painted jar which formed the lining (originals by A.M.J. Tooley and P.J. Rose).

history of use at the site, five ovens or small kilns had been operated. It lay beside, but remained separate from, the activity zone of the pottery industry.

An important discovery for understanding the purpose of the kilns in Area 27 was part of the faience Tutankhamun ring bezel and the mould from which it was made in deposits in Area 16 (see above). This creates the strong suspicion that the bezel had been made close by, for it has to be realised that the two objects represent manufacturing steps which do not run directly from one to the other. Between the bezel decoration being pressed out from the mould on to the unfired paste, and the production of the finished ring, the craftsman had to take the unfired ring to a kiln, fire it, and then return to Area 16, where, perhaps because it had already broken, he discarded it. We need to look for a handy kiln and find, in fact, that the ovens/kilns of Area 27 formed a compact group lying a short distance to the south-east of this very room.

If it had been an intensive industry we might have expected to identify a concentration of related material within Area 16, but this is not the case. There are, indeed, sufficient finds to point to the manufacture of small faience objects and also of glass vessels and beads at the site, but these are much more widely scattered and so imply a much more occasional manufacture, not necessarily concentrated in Area 16. The three principal categories are other pottery moulds for rings and pendants (12, including the one just discussed); short lengths of small glass rods and slabs, the prepared materials for the manufacture of glass earrings and other small items (55 pieces; cf. Petrie 1894: Pl. XIII.43–50); and small lumps of waste glass and glaze and pieces spoiled in manufacture (33 specimens). One of the moulds, no. 9162 from E6 [3036], a Phase I context, was unfired and had presumably been made on the spot. Five possible pieces of unfired and unglazed faience core material were noted. The suggestion has also been made (by A. Boyce) that eleven pieces of copper/bronze rod or wire could have been used to form the hole in the manufacture of beads, citing not only the example published by Petrie (*ibid.*: Pl. XIII.59–61) but also one of the pieces found on site Q48.4 (no. 8763, from G3 [2886], see Figure 2.24), with a dark blue glass bead still threaded on to it.

In Figure 2.24 this material is plotted by grid-square. No notable concentrations are visible. It was part of the general spread of debris over the site, most of it lying within the deposits outside the line of buildings along the west side of the site. If we wish to fit it to the chronological phasing of the site, our best chance is to concentrate on the squares containing buildings, where deposits are interleaved with structural remains. Table 2.1 shows the results of doing this over squares E4, E5 and E6. A fairly even spread is visible through Phases I and II and the superficial



Figure 2.12. View of the oven/kiln in square G5, looking south-east.

deposits. Two deductions are possible: either the small size of the items in question led them to “migrate” from one deposit to another or small faience and glass objects were made on the premises during both phases, in the second within the little kiln [2993] in square F5. In support of the latter view a contrast can be made with the unfired sherds (Chapter 4), which are firmly associated with deposits of Phase I only.

Even more than with the pottery industry, the amount of debris is small. It would be misleading to talk of a faience factory or of a glassworks. It is perhaps to be compared with Site X1 at the Workmen’s Village, where, within a building that was probably in essence administrative, evidence was found of the making of ostrich eggshell-beads. By this interpretation, the reoccupation of site Q48.4 in Phase II saw a continuation of the small-scale and probably occasional making of faience and glass objects, but this need not, and indeed probably was not, the principal reason for the site’s existence.

#### *The Central Zone Deposits*

Within the area of the excavation a broad pattern of usage defined by structures has now become apparent: buildings constructed against the main enclosure wall on the west and against the east-west partition wall on the north; kilns and their ash heap towards the southern side of the open area to the east, an area which bore a trampled mud surface marking the position of an



Surface	E4 [2864]
	E5 [2864]
Superficial	E4 [2913]
	E4 [2941] (2 specimens)
	E4 [2917]
	E5 [3362]
	E6 [2919]
	E6 [2943] (3 specimens)
Phase II	E4 [2980]
	E5 [3380]
	E5 [3384] (3 specimens)
	E6 [2974]
Phase I	E4 [2979] (2 specimens)
	E5 [3722] (2 specimens)
	E5 [3759] (2 specimens)
	E6 [3036]
	E6 [3045]

**Table 2.1.** Vertical distribution of finds related to glazing and glass manufacture within a sample of five-metre squares E4-E6.

activity corridor linking the kilns to the centre of the pottery-making. A related diagonal trend can be recognised linking the small ovens/kilns of Area 27 with the room Area 16. Much of the open space, however, also bore a cover of debris which can be described as rubbish or refuse, and which, to judge from surface indications, spread across a much broader area of open space in the site. The debris was not uniform. Sometimes it was ashy, with charcoal and, around the pottery kilns, with pieces of vitrified brick; sometimes it was a mixture of dust and sand; sometimes it had a brownish appearance as if with an organic content. Pebbles and limestone chips occurred in some (G4 [2883], H4 [2865]), and all contained large quantities of potsherds.

In order to understand the origin of this material we have to consider the principal site-formation processes: the accumulation of debris during the time that the site was in use, and the accumulation of wind-blown sand and the effects of weathering on rubbish heaps subsequent to the site's abandonment. For the former we also need to be able to distinguish to which phase the component elements primarily belong, and what sort of activities produced them. In formulating answers one is hindered by the modern disturbance over the south-eastern part of the site, which has destroyed most of the stratigraphic evidence altogether.

Much of this spread of debris covers floors or mud-trampled surfaces lying directly on *gebel*, and these, of necessity, are to be ascribed to Phase I. Both on the west (especially around Area 11) and south of the pottery kilns, however, some of these deposits lay beneath Phase II walls and in the former case were separated from them by a layer of sand. There is thus a *prima facie* case for regarding them as having accumulated over whatever period of time is represented by Phase I. The nature of these deposits varies considerably from one location to another, implying that they originated from different activities, and that they need not have built up simultaneously. Indeed, when examined in section, individual deposits were seen to have internal subdivisions and horizons which were scarcely recognizable when, in their soft dusty state, they were being excavated from above. The following discussion of deposits and their component units is thus bound to contain much simplification.

The most straightforward deposit to deal with is the ash heap south of the pottery kilns, where, despite intensive modern digging, it was found preserved around the kilns and beneath the walls of the Phase II buildings. We can see that in Phase I a low mound of ash accumulated south of the pottery kilns, and it has to be seen as derived from the kilns (Figure 2.17).





**Figure 2.13.** View of oven/kiln [2993] in square F5, looking north-east. Note the dark ashy layer beginning to rise in the section at the north-east corner of the square.

A second deposit which had the form of a low mound lay to the west and north-west, with its highest point around the intersection of squares E4, F4, E5, and F5 (Figure 2.17). Its western side ran beneath the Phase II walls of Areas 5, 9, and 11 and merged with the Phase I floor deposits of the pottery workshop, and it spread eastwards into squares F4 and F5, tailing off and merging indistinctly with other deposits. It could, of course, have been higher and covered less area when first deposited, having subsequently spread through the effects of weathering. Its full unit list is: E4 [2979, 3007, 3014]; F4 [3086, 3091] and perhaps some of [3063, 3084]; E5 [3014, 3722, 3759, 3743]; F5 [2998, 3060]. Its principal distinguishing characteristic is its brown or brownish-grey colour, and within it were mixed tiny pebbles, charcoal and sherds. It is the one deposit which, because of the likely original organic content, most deserves the term "refuse". It was also the deposit which contained most of the unfired sherds (Figure 2.23). It can be ascribed unequivocally to Phase I.

On the eastern fringes of this deposit it was overlaid by a thin cover of sandy debris which also contained a proportion of brick rubble broken into very small pieces. Its approximate limits are marked in Figure 2.20, with the relevant unit numbers. It really lies too far distant from the nearest walls to be considered as the rubble from the direct collapse of the Phase II walls after the final abandonment of the site and in any case probably spread southwards as well, over part

of the area dug over in recent times. This is picked up in the section illustrated in Figure 2.22 and is probably the same as the rubbly filling of one of the large kilns [2984]. An explanation for this can be found in regarding it as rubble from Phase I walls which was spread out to make a more even ground surface by the builders of Phase II.

Further still to the east, into squares G4 and G5, and H5, the deposits generally became sandier, though still with many sherds (the sherd totals are 19480, 27893, and 22513 respectively), but by no means uniformly so. In some places they return to being browner and earthier, something picked up beneath some of the Phase II walls around the pottery kilns (see above); in other places spreads and patches of ash and charcoal appear, one of them occupying an ill defined area north-east of the pottery kilns. Where the deposits lie on *gebel* which has not had pits cut into it they are thin and of slight character except for the quantities of sherds. As the surface survey shows (Figure 2.1) these deposits probably continue over a large portion of the total site area of Q48.4 and contribute significantly to its general character.

The date and meaning of these considerable quantities of sherds can at present be discussed in provisional terms only, for the detailed analysis of the sherds from this site has not yet been started. The only available information is raw counts and weights for squares and units, and the results of treating one large unit, [3090] in square H3, as a sherd-survey sample. The raw counts enlarge on the picture provided by the glazing and glass evidence, namely that there is no dramatic decline in sherd numbers over Phase II floors, if one allows for the fact that sherds within the rooms of buildings tend to be fewer than within extra-mural rubbish deposits. More useful is the sherd survey sample of unit [3090] from square H3, which provides the clearest available picture of the broad range of pottery types present and is published as Area 31 in Chapter 5. There it will be found to agree closely with the range of pottery types from a series of locations in a strip across a residential part of the city which must, therefore, represent typical domestic ceramic residue. An important element to notice is the proportion of marl wares (over 25.5%) from storage vessels (which included sherds from both imitation and imported Canaanite amphorae), these being types which were not manufactured in the pottery industry of the site itself.

We can consider three possible sources for the abundant sherds: domestic rubbish brought out from the Main City, or debris arising from activities carried out on the site either during Phase I alone or across both phases. The first possibility seems very unlikely, for it would represent an exception to the local ancient practice of dumping household waste in the nearest available open space.<sup>3</sup> Furthermore, within the excavated area there is hardly any debris outside the enclosure wall which thus effectively contained the rubbish deposits. We know from the stratigraphy that a part, at least, of the sherd-rich strata derives from Phase I. It is at this point that we must recall the overall context of the site. It lies close to the large well, so much so that we are entitled to consider them as parts of a single entity. How the two communicated (and, indeed, where the main entrance to the enclosure lay) we have not yet established. Direct linkage is suggested by the finding of the limestone conduit blocks lying loose within Phase II rubble. It is very tempting to regard them as remnants of an original Phase I conduit bringing water directly into the pottery factory. There is another direct linkage out from the well, i.e. to the Workmen's Village, documented by the trail of sherds (AR IV: 124–126). This supplies an hypothesis for the basic reason for the existence of Q48.4: that it was there to serve a wide range of needs to the Workmen's Village: pottery, small faience jewellery, water, and — explaining the sherd debris — perishable commodities, either stored temporarily there, or repacked, or collected in the large open area of the site ready for transportation.

We are, of course, still missing the evidence for the large areas of the site yet to be excavated. But it looks very much as though we are observing the remains of a multi-functional building, with the possibility of a degree of continuity from one phase to the other.

<sup>3</sup> Amply illustrated by the results of the surface survey in the Main City carried out in 1987 which will be published in a future volume.

## 2.4 Phase II

Pottery production had ended by the beginning of this phase. Except for the rooms in the north part of the excavated area, the Phase II buildings represent a fresh subdivision of the ground beside the main enclosure wall into rooms and courts which paid little heed to the layout of the workshop (Figures 2.18 and 2.19). The common features with the past were the reluctance to build on the central open space and the likely retention of **Area 27** for small ovens or kilns.

The northern block of rooms, **Areas 12 to 15**, were re-used in Phase II, keeping the old walls. This much is evident from new floors and related features. The clear division between the phases does not continue, however, into **Area 16** built immediately to the east. In discussions earlier in this chapter it was pointed out that by one interpretation a much damaged sequence of floors takes the history of this room from an early point in the site's general history through Phase I, but it remains uncertain whether the sequence continued through Phase II or whether the room was abandoned. What is definite is that no major structural repairs or alterations were made.



**Figure 2.14.** Square E6, looking south, at Phase II level, showing the bench and hearth in **Area 12**.

The original northern pottery workshop and its related courtyard (**Area 12**) showed particularly clear evidence of a change of use, having been completely covered over by a single mud floor [3038=3122]. Excavation of the *zir*, as mentioned above, showed it to be full of mud bricks placed there presumably in order to consolidate the vessel beneath the new floor. The *zir* actually



lay beneath a circular hearth [3027] in the Phase II floor filled with burnt sand [3028], which overlay a dark brown silty deposit containing some heavily burnt organic material [3036] deposited in the workshop beneath. On the east wall of the new Phase II room was a low bench or *mastaba* [3041] with the hearth in front of it (Figure 2.14). The other three rooms in square E6, Areas 13 to 15, also had good mud floors which must also belong to this phase [3005, 3121, 3012]. However, these floors had little beneath them to represent the Phase I occupation except relatively shallow rubbish deposits [3745, 3746, 3721]. Both the north-east room (Area 15) and south-east room (Area 13) had pots sunk into the floors [3006, 3013], perhaps for storage.

Although no actual doorways for the four rooms survived, the positions of some can be inferred. The remains of an entrance [3836] from outside the rooms can probably be seen at the southern end of the east wall of Area 13 [3105]. It consisted of two small limestone blocks set into mortar, one acting as a pivot socket, the other as a slotted fitting for the door frame. These blocks were laid on a deposit of rubbish [3746] between walls lying on *gebel*, illustrating again the two phases of use of these four northern rooms (Figure 2.25, no. 10). The doubling [3042] of the wall at the northern end of the partition wall [3100] between Area 13 and Area 12 may mark the position of an interconnecting doorway; the deliberately thickened portion of wall [3049] between Area 12 and Area 14 almost certainly does. The means of access to Area 15 is not marked by any particular structural feature but is more likely to have been from Area 14 to the west, thus across wall [3100], than from Area 13 to the south.

A similar pattern of "domestic" occupation superseding the pottery industry is to be found in the puddling pit area to the south of the northern workshop, in the form of a second block of four rooms, Areas 6 to 9. Between the two blocks the second phase is represented by two areas, Areas 10 and 11, which were probably left open and largely unused. This part of the site also provided critical evidence for a period of interruption between the two building phases. It takes the form of a 5-10 cm thick layer of clean yellow sand (the principal unit being [3011]) which was encountered running irregularly across squares E4, D5 and E5 (Figure 2.19), and upon which the second phase walls were built. It looks very much like a layer of wind-blown sand which had drifted in during a time that this particular part of the site lay abandoned. Thus the Phase I floor [2910] laid over the earliest puddling pit was covered directly by this sand [2918], which also sealed the rubbish dumped in a low mound outside the Phase I building to the east. Over this deposit of sand, running east-west over the centre of the main puddling pit from the enclosure wall, the north wall [2908] of a Phase II building was constructed using, as noted above, some probably redeposited Phase I floor material (including some of [2902]). The space to the north side was subdivided into two parts, Areas 10 and 11, by a partial partition wall [3735], and was probably closed on the east by a continuation of wall [3733], which had, however, been reduced to an intermittent line of rubble as it crossed the edge of Area 11. Neither of these two areas contained a proper floor or hard-packed surface or any trace of an architectural fitting. Indeed, no definitely contemporary fill deposits were recorded at all. The deposits which we ascribe to Phase I passed upwards into rubble layers (D5 [2893]), (E5 [3384, 3697]), which seemed to belong to the decay of the whole building after final abandonment, although over this particular part there was something of a void in the layer of firm brick rubble, consistent with Areas 10 and 11 part having been left as open spaces (Figure 2.20) unused even for the dumping of refuse.

To the south a series of rooms was built which filled the south-west corner of the enclosure, and, for a while, extended for an unknown distance along the southern enclosure wall. They can be grouped into three units: a "house" of four rooms (Areas 6 to 9), a set of four enclosed spaces in the south-west corner (Areas 2 to 5), and the much-ruined constructions to the east, amongst which the remains of a further "house" (Areas 20 to 24) can perhaps be detected.

For the first of these units the principal element was a large, square room (Area 8) with a mud brick-lined hearth [3110] placed off-centre towards the south-east corner, very similar to the one in Area 12. The floor in this room [2903, 3779] overlay a deep deposit of rubbish and decayed mud floor, mixed with large cooking-pot sherds lying on patches of mud-stained *gebel*. The remains of the Phase Ib floor noted on the north side of wall [2908] was removed with the excavation of this rubbish. In the south-west corner of this room there still survived the base of the entrance doorway. A rectangular mud step [3151] was set in front of a long, rectangular sandstone threshold [3835] with curvilinear wear marks caused by the movement of a door. The fact that the top of this threshold lay 30 cm above the floor of Area 8, with the brick wall





**Figure 2.15.** Square E4 at Phase II level, looking north-west. The southern part of Area 9 occupies the centre of the picture.

running continuously beneath it, and was also almost flush with the modern surface and therefore very vulnerable to destruction or robbery, explains why so often in small buildings where only one or two courses of bricks are preserved no doorways can be detected. Beyond this doorway, to the south, was a small room (Area 6), with secondary buttressing wall [3127] similar in nature to the one noted in Area 12. This room presumably gave access to a second small room (Area 7) by means of a doorway in wall [3128] no longer detectable. The "house" was probably completed by a fourth room on the east, Area 9, a long, rectangular room, again with a badly preserved floor [3019, 3024], which had been laid over a stratified sequence consisting of a rubbish deposit [3010], a layer of fine sand deposit [3011] (part of the sand over the Phase I floor mentioned above), and another rubbish deposit lying on *gebel* [3014], a sequence which illustrates again two distinct phases of dumping before the construction of the Phase II building. In the north-west corner of this room was a limestone door socket [3837] set into a thickening of the wall, showing the presence of a doorway leading into Area 8. An important missing element is the position of the outside entrance to the "house" itself. The most likely position, on the parallel provided by the northern "house", is in the east wall of Area 9 [3003], towards the south end. Of this wall only the bottom course survived (Figure 2.15).

To the south of this group of rooms, and occupying the south-west corner of the enclosure, was a further set of four enclosed spaces, **Areas 2 to 5**, which lack the degree of compactness and specific internal features which might signify that they represent a further "house". Some, or all, could well have been open courts, a view supported by the small amount of rubble found over them (Figure 2.20). Although the walls of this group were evidently in part creations of Phase II, deposits and features within the spaces so defined were few. The excavation of **Area 4** closely resembled that of **Area 10** in that the removal of the rubble layer from the final wall collapse [3107] immediately exposed the packed surface of the underlying Phase I rubbish deposit [3154, 3372] described in an earlier section. This was a deposit containing unfired sherds, and also one of the Tutankhamun ring bezels. This in turn rested on patches of floor or trampled mud ([3381, 3719] of Phase I) lying on *gebel*. There is thus no real floor deposit to go with the Phase II walls.

The adjacent area to the east, **Area 5**, was a little more positive in remains of this period, for it contained a brick-lined bin [3369], small and rectangular, made up of single mud bricks laid on edge and built into and thus subsequent to the corner created by two transverse Phase II walls [3153, 3289]. At the base of the bin, which lay on *gebel* [2889], were slight traces of a mud-plastered floor which curved up at the edges of the surrounding walls. The bin could have been an animal trough, but then one would have expected an organic floor deposit as well. As it was, the whole area was covered with a deep deposit of fine yellow sand mixed with charcoal [3168, 3277] which had accumulated in that corner. A partly preserved compact surface, presumably the further remains of a floor, was revealed in the north-west corner [3025] and towards the south-east corner [3218]. No distinct Phase I occupation was discovered under Phase II, except for the edge of a rubbish deposit [2979] running beneath wall [3000], which belonged to the accumulations of debris associated with the kilns to the east. The access to **Area 5** was via an alleyway in the north-east corner, which separated it from a group of buildings to the east. The means of access to **Area 4** is not preserved but was presumably through a doorway in the interconnecting wall [3153], which was in places almost completely destroyed.

The buildings along the west side of the site ended to the south with two adjacent rectangular rooms or courts, **Areas 2 and 3**, the former situated in the south-west corner of the enclosure. As with others of the small enclosed spaces division into two phases was far less obvious than it was where new structures with floors had been created in Phase II. Indeed, a careful consideration of the stratigraphy and site-formation factors leads to the conclusion that most of the deposits within **Area 2** were of Phase I. To Phase II we can ascribe only a packed surface, or perhaps a floor [3370], covering part of the north-east corner. It overlay a deep deposit of rubble or weathered mud brick [3371], of the kind which often represents the collapsed remains of walls. It must either be rubble laid down intentionally, or the collapsed remains of the Phase I walls left in place, in either case representing a deliberate act by the Phase II builders to compensate for the downward slope of the natural *gebel* surface at this end of the site in order to build up the Phase II floor level. Within this rubble layer, and thus chronologically ambiguous, was found a stone figurine showing two squatting apes eating donuts, a well-attested find at Amarna, along with half of a stone quern. **Area 3**, adjoining on the east, was a rectangular space of similar size. Its east wall [3288] overlay a Phase I wall [3294] only slightly varying its alignment from the latter at its south end. Removal of surface debris revealed only a limited area of floor [3163=3221], again lying on Phase I rubbish (D3 [3373], E3 [3222]).

The east wall of **Areas 3 and 5** lies not far from the edge of a large patch of modern digging which has disturbed the whole south-east part of the 1987 excavation area (Figure 2.16). This has led to substantial destruction of walls and deposits. What has survived is a series of wall fragments which have often served to protect little elongated islands of Phase I deposits, principally of ash, as described above. The degree of destruction has been such that it is now impossible to group walls and spaces to form individual buildings (cf. Figure 2.18). The most conspicuous feature for Phase II is a long east-west running wall [2951, 2930, 3133], parallel to the southern side of the enclosure wall. It is possible that its western end is to be found in square E3, in the shape of wall [3287], which was bonded into the north-south wall [3288=3286], although the alignments do not quite match. A number of partition walls had been constructed against it on the north to create at least two enclosed spaces, **Areas 21 and 24**, but insufficient remained to enable a clear plan to be discerned. As Figure 2.20 shows, very little brick rubble



**Figure 2.16.** The southern part of the site, looking east. In the right foreground is the single line of foundation bricks from the enclosure wall [3146].

was found around the wall fragments to the east, something which, on its own, might lead to the view that they belong to Phase I. All of them, however, like the definite Phase II walls in this part of the site, lay over a thick deposit of burnt waste, presumably from the kiln to the north. Perhaps we should consider that Phase II also comprises two sub-phases.

The most coherent remains to the south of the east-west wall are found around the intersection of squares F2, G2, F3, and G3. Here a patch of floor [2924] remained, still surrounded by fragments of its walls on four sides. Off-centre to the west were the remains of a large hearth, most of which had been removed, possibly in antiquity. It had probably been similar to those found in other parts of the site but at the time of excavation was only represented by a shallow, round depression [3145] with a ragged edge, filled with fine ash and charcoal. Of the original surrounding curb of brick and mortar only a small part remained [3144] at the south end. The hearth had been cut through the Phase II floor into the underlying rubbish deposit (2953), lying on *gebel*. The existence of this hearth relates the room (Area 22) to the two “houses” on the west of the site. In the north-east corner of the room lay a rectangular enclosure, created by a low curb wall [2920] with worn or weathered top. Indeed, when first uncovered the eastern half seemed flush with the floor on both sides and was scarcely distinguishable. One possibility is that both it and the remnants of brickwork [2923] behind formed two steps before a doorway in wall



[2930], reflecting the underlying slope caused by the presence of the low ash mound of Phase I beneath the floors. They would not, however, conform to the usual design of steps, which was wholly of bricks, often set on edge. A preferable solution is to see it as the remains of a small *mastaba*, very appropriate to a room containing a central hearth. The size and appearance of the structure resembled the *mastaba* in Area 12, although the projecting wall [2922] is oddly placed.

The only remaining Phase II features lie outside the walled enclosure altogether, on the west side. Immediately outside the enclosure wall were mud floors or packed surfaces lying on *gebel* (C4 [2914, 2915]). Unfortunately, the wadi had removed the west side of these surfaces, which had also suffered from wind erosion, lying on the edge of the occupation mound. No outer walls or partition walls were evident and it is feasible to consider that they represent open areas of human activity arising from the work of Building Q48.4.

## 2.5 The site after Phase II

There is slight evidence of possible squatter occupation of part of the site after its abandonment. In the north-west corner room of square E6 (Area 14) the remains of a small fire consisting of burnt twigs and ash [2972] were found on a compacted sand deposit lying on the Phase II floor. Nearby a complete red-slip bowl [2973] propped up against the Phase II wall was discovered also lying on the rubbish. Both fire and bowl were sealed beneath collapsed rubble from the Phase II building. The remains of two other possible small fires were found in the adjacent rooms, Areas 13 and 15.

Apart from this possible activity the site was abandoned and experienced a slow process of structural decay and the deposition of aeolian sediments. Certain areas of the site showed that the Phase II buildings collapsed in two distinct stages: presumably the roof and top part of the walls followed by the collapse of the rest of the wall down to its bottom two or three courses. This can be seen in the south-east room of square D5 where the two layers of fallen mud brick [2896, 2898] were separated by a thin layer of wind-blown sand. The well-preserved fallen mud brick was concentrated within the Phase II buildings in the north and west parts of the site (Figure 2.20). Even allowing for the effects of modern digging there seems to have been a greater degree of erosion and disintegration of rubble from collapsed walls along the south side, consistent with exposure to the sand-laden southern winds of the summer. The courtyard and most exposed areas of the site were covered in deposits of wind-blown sand mixed with organic inclusions and decayed mud brick, and patches of ash and charcoal. As a result of weathering the sherd content of these strata also became partly exposed. In the course of time water flowing down the wadi outwash to the south eroded the southern edge of the site, except for a short section in the south-west corner. In recent times an area along the southern margin has been dug into and turned over.

## 2.6 Conclusions

The excavations have covered less than a quarter of the whole site but, when taken together with the surface appearance, seem to have established its basic character, namely: a large rectangular enclosure surrounded by a buttressed enclosure wall, with small buildings constructed against it on the inside, leaving much of the central interior space open. The excavations have also revealed two distinct phases of ancient usage. The first and primary was industrial. A range of domestic pottery vessels was manufactured and probably small faience jewellery and glass objects as well. The huge volume of sherds, mostly present in spreads of rubbish, cannot be explained, however, as a by-product of these industries. A better understanding may come when the remainder of the site is excavated; for the time being a working hypothesis is that the building, like the adjacent well, served as a major service centre for the Workmen's Village, supplying a range of commodities in addition to water, and that the sherds, which have a general "domestic" character, derive from this.

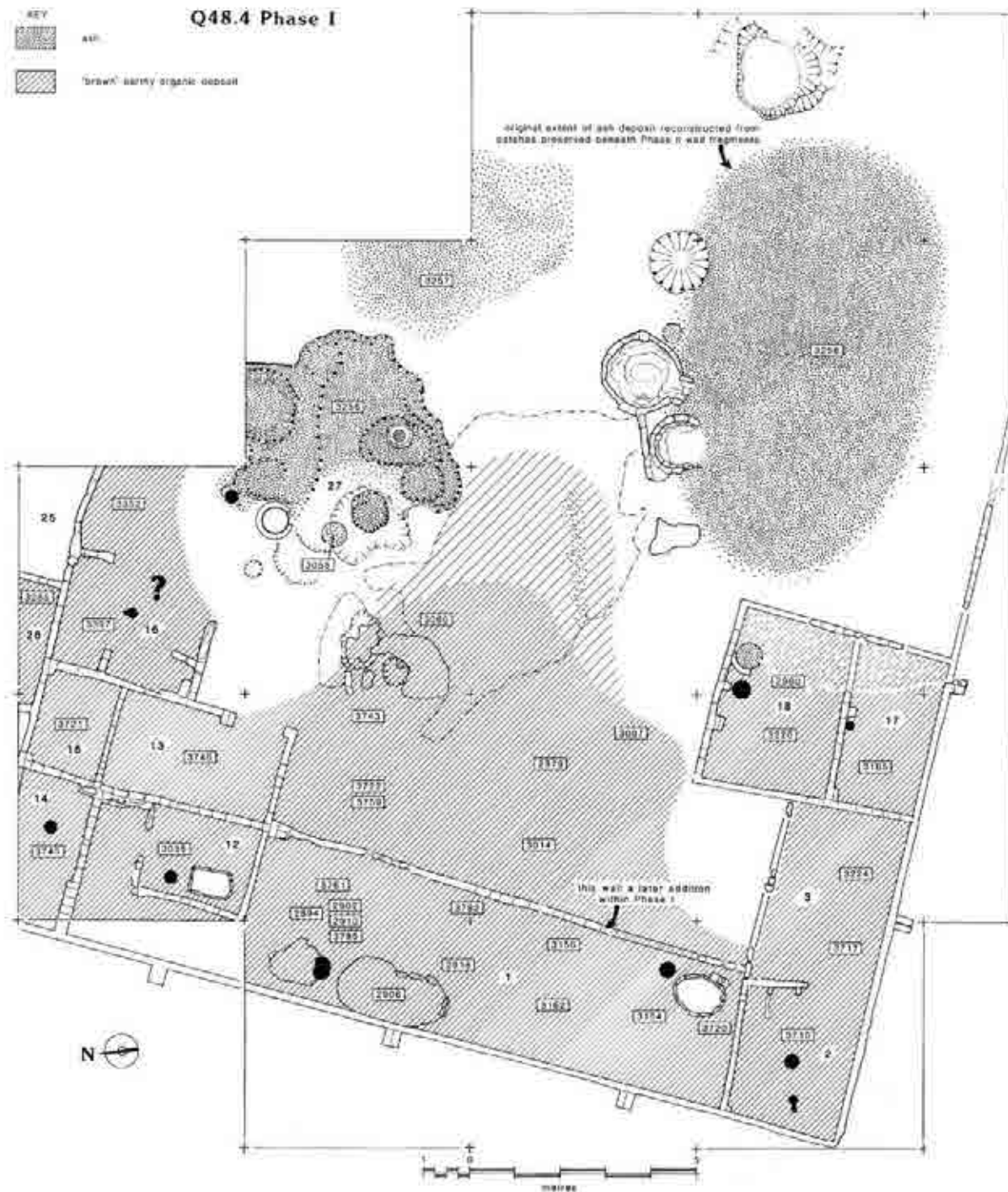
The second main phase is puzzling. It was built over the pottery workshops, and in one area an intermediate layer of sand implies an intervening hiatus of occupation. In so far as it has a discernible character at all it can be called domestic, for two four-roomed "houses" can be isolated, though with dimensions (about 22 and 30 square m) that put them amongst the smallest



range of houses built at Amarna. They had courtyards attached to them, but these contained little in the way of floor deposits. Because of difficulties in linking the stratigraphy from the vicinity of buildings to that of the open areas it is not certain whether the dumping of sherd-rich debris continued, but it is likely that the small ovens/kilns of **Area 27** continued in use, something supported by the vertical distribution of the remnants of a small faience and glass industry.

Amongst the small finds from the site are four ring bezels with royal names, nos. 8202, 8338, 8762, 8863. All bear the prenomen of Tutankhamun, one of them (no. 8762) with the added epithet "chosen of Amon-rē". No. 8202 comes from rubbish [3010] in square H3, turned over in modern times; no. 8863 from an undisturbed deposit of ash and rubble [3380] in square E5, which seems to belong to the collapse and decay of the Phase II constructions. Neither is thus particularly useful. The other two, already described, were found in undisturbed deposits very close to *gebel*, one in a clear Phase I context and the other in a context which could be of either phase. We cannot be sure that either belongs to the very earliest sub-phase, Phase Ia, but it is safe to say that much of the building and activity of Phase I took place after the accession of Tutankhamun and, in the case of Phase II (and possibly I as well), after the reinstatement to official favour of the cult of Amon-rē (from the evidence of ring bezel 8762).

This finding is a remarkable confirmation of the picture which has emerged at the Workmen's Village (cf. Kemp 1987: 41-43), where the years following Akhenaten's death seem to have witnessed considerable activity and a feeling that the community had a future at the site, something particularly apparent from the building of the private chapels. It thus reinforces the impression derived from the Village excavations that a facet of the reign and administrative policies of Tutankhamun of great importance to el-Amarna is now only beginning to emerge.



**Figure 2.17.** Overall plan of Phase I, with principal deposits of ash and brown earthy rubbish. The principal area of the former (characterized as unit [3258]) is reconstructed from fragmentary deposits. With the latter a few of the minor unit numbers have been omitted.

Q48.4 Phase II

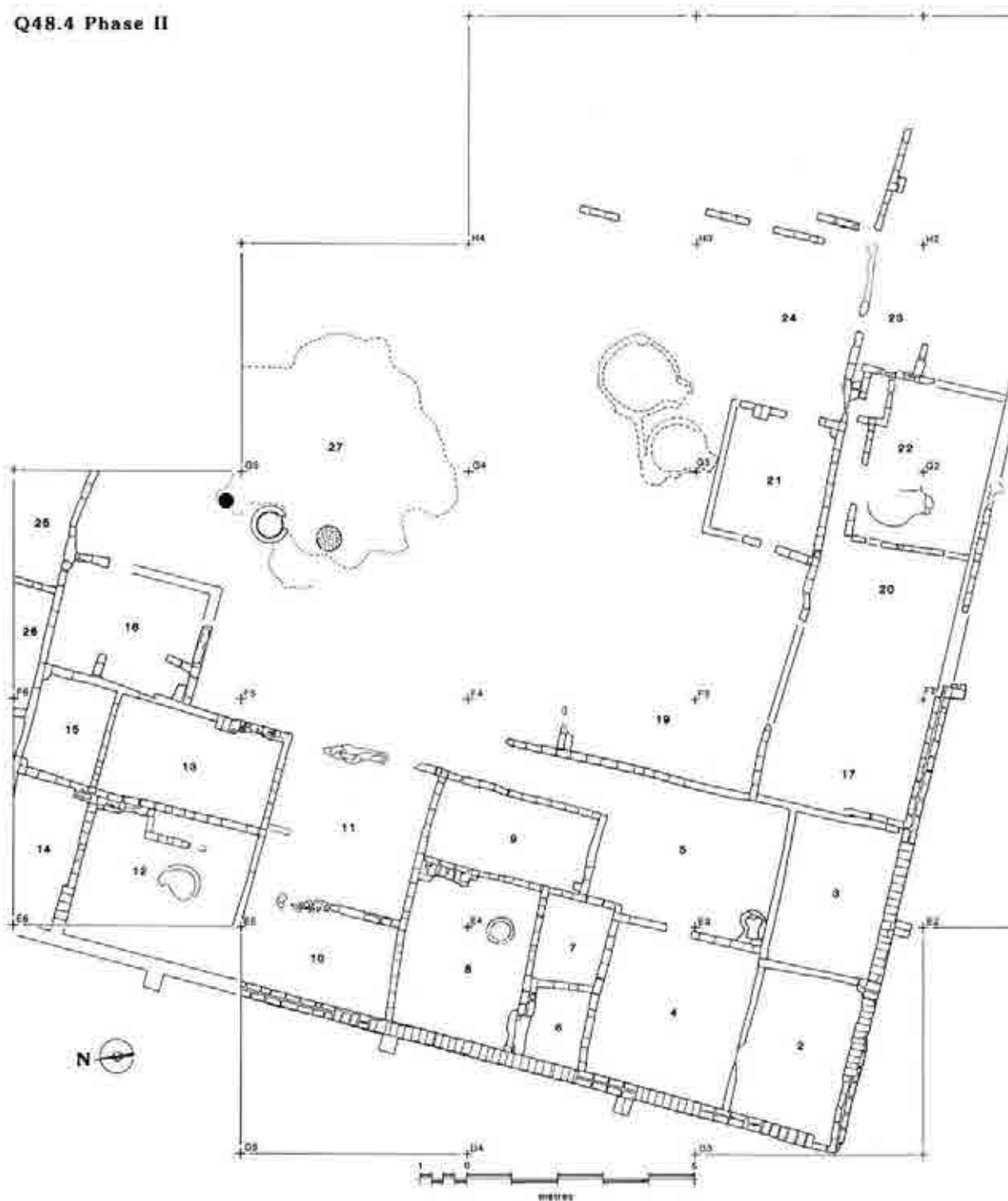


Figure 2.18. Overall plan of Phase II.



Q48.4

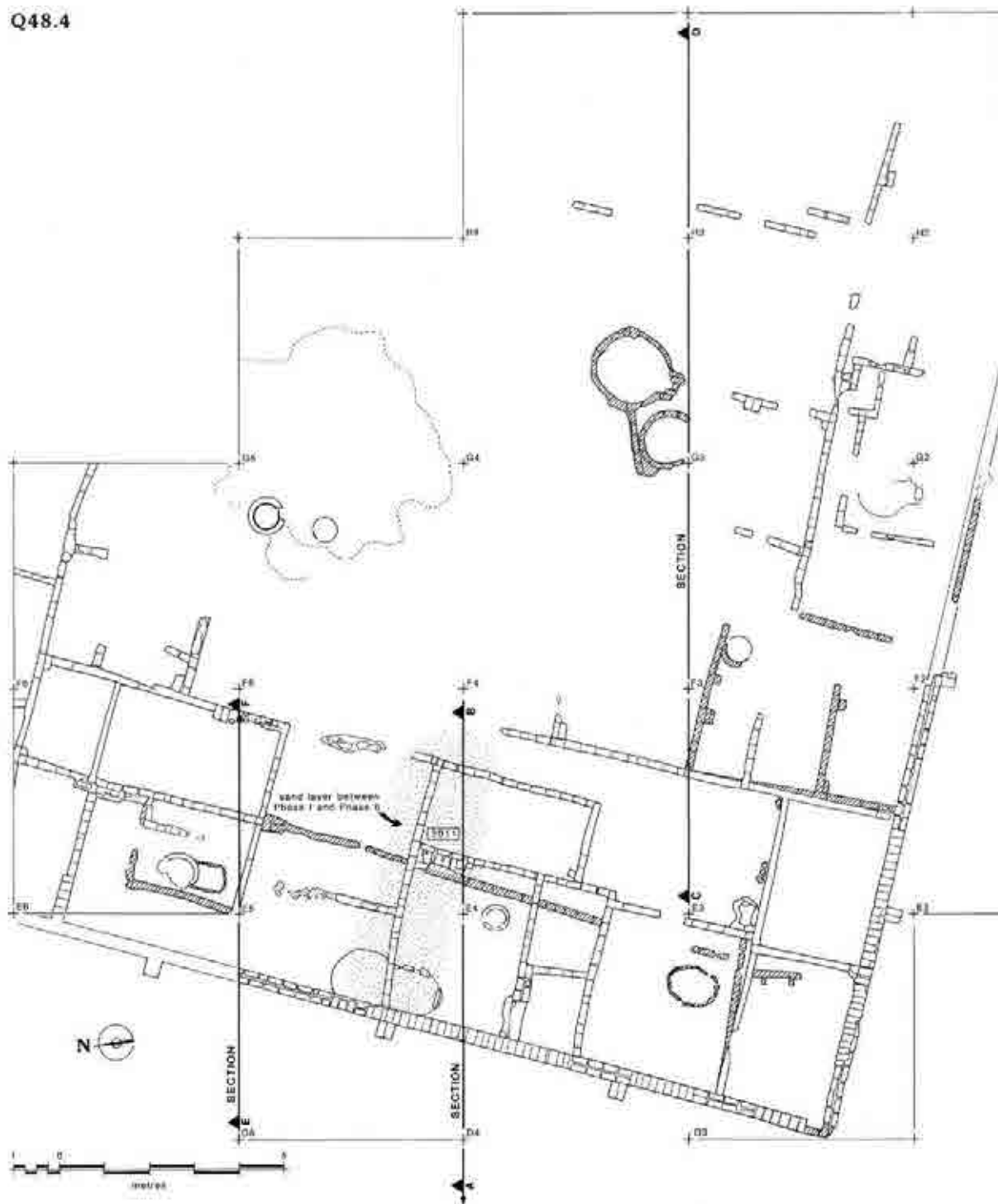
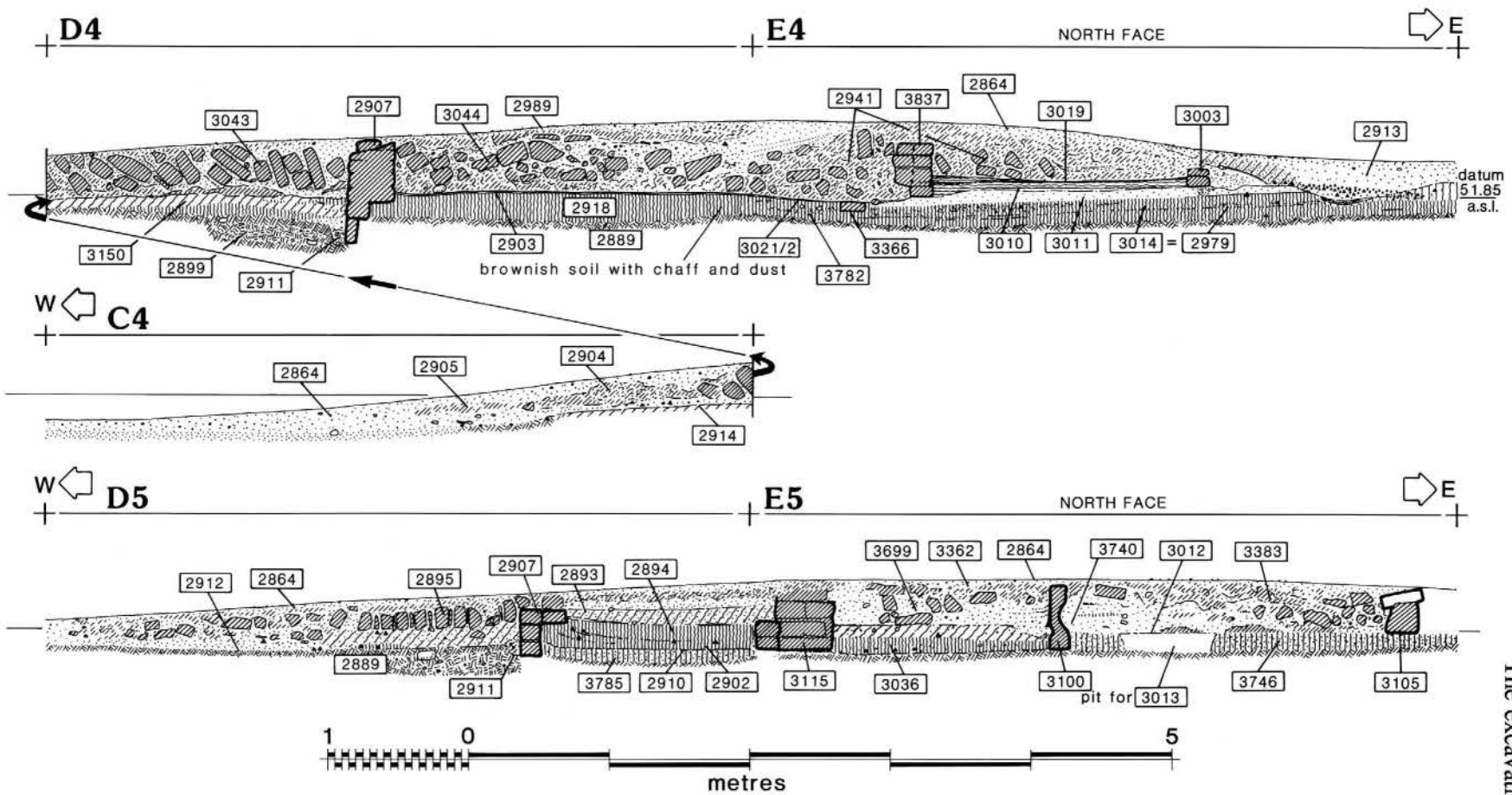


Figure 2.19. Overall plan of both phases, also showing approximate limits of intermediate sand layer and section lines. Walls present only in Phase I are hatched.

Q48.4



Figure 2.20. Overall plan showing rubble units (hatched), as exposed by removal of surface sand.



The excavation of Q48.4

Figure 2.21. Sections along lines A-B (top) and E-F (bottom).



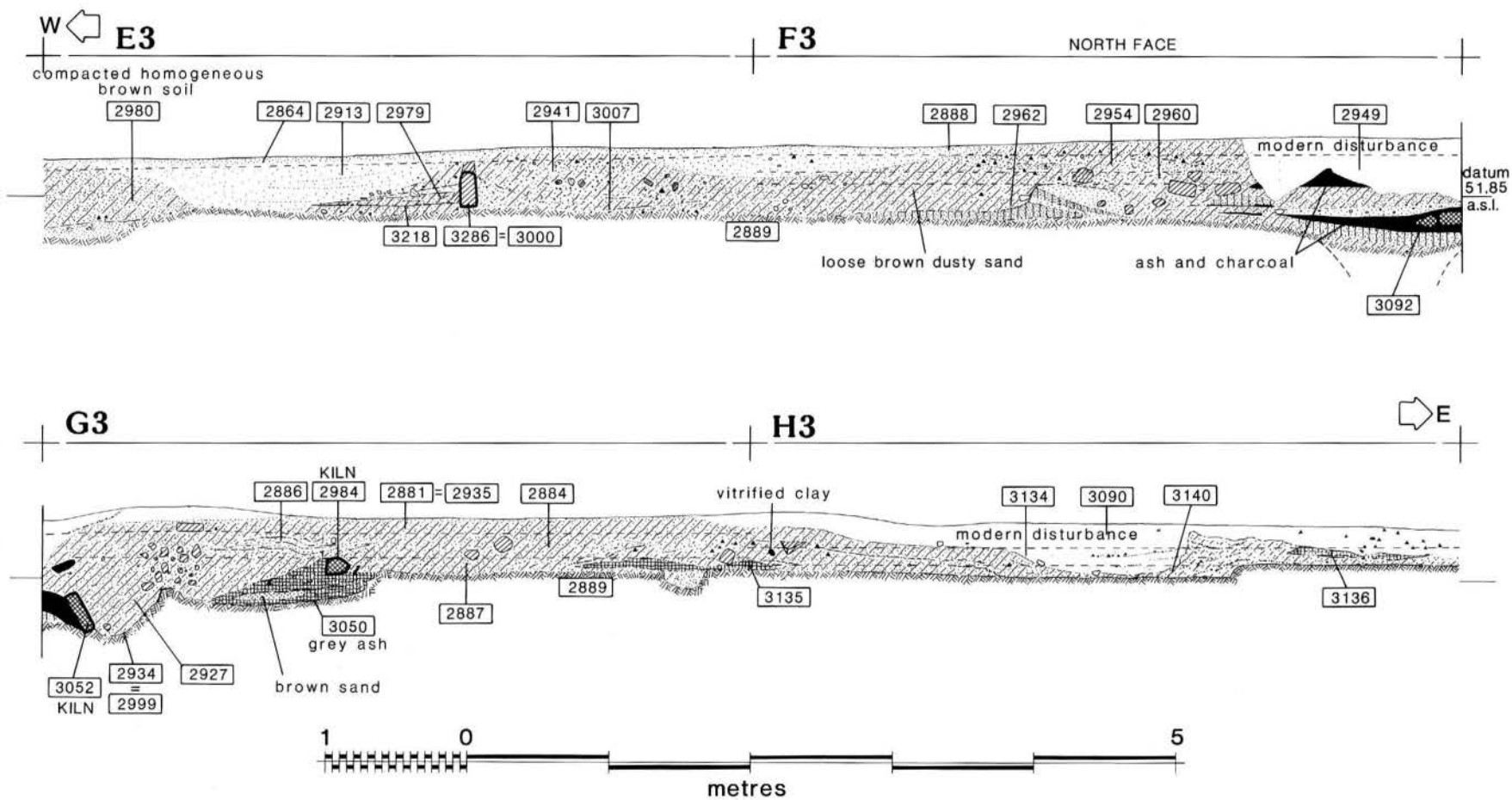


Figure 2.22. Section along line C-D. Some of the unit divisions are arbitrary.

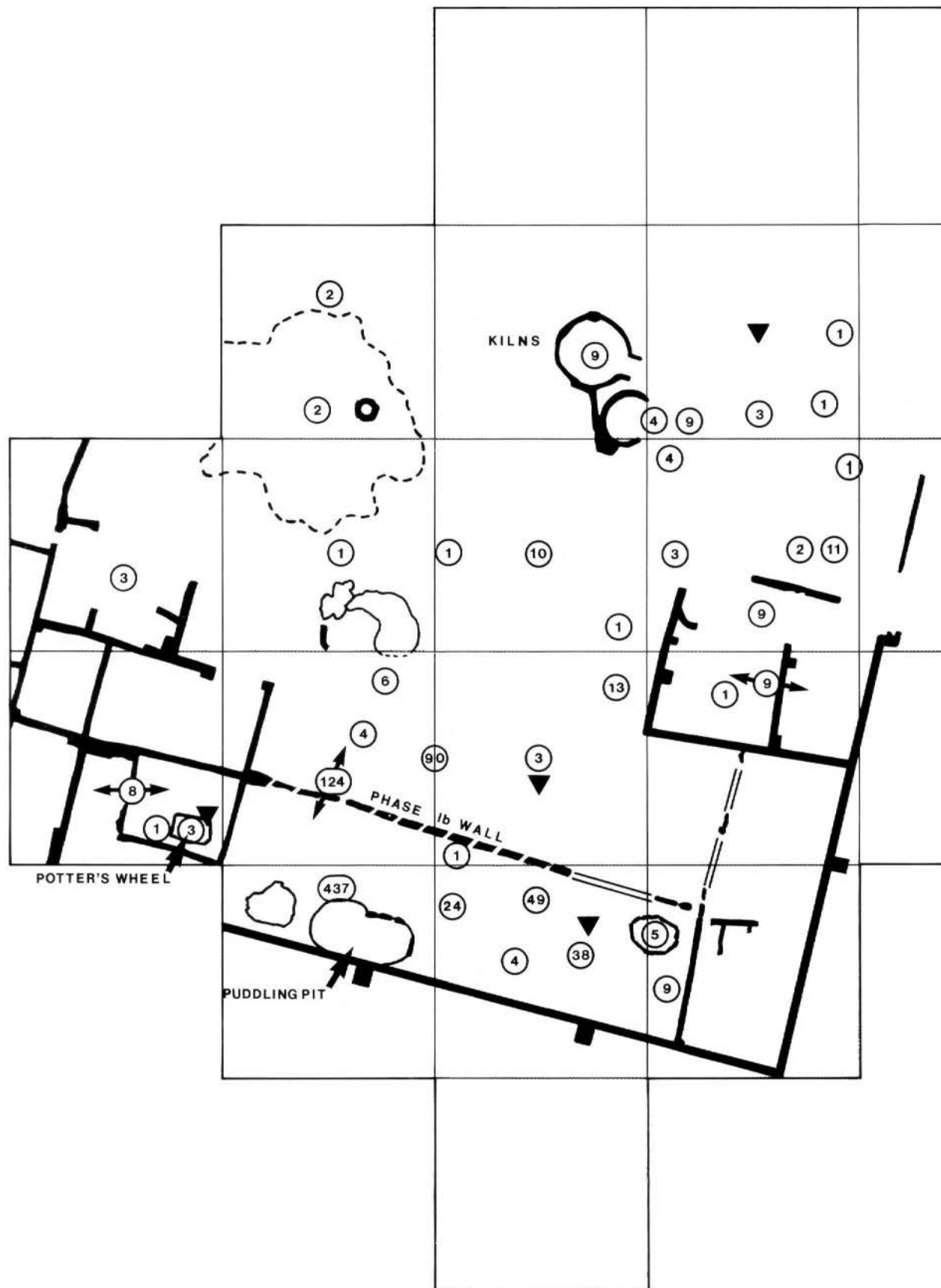
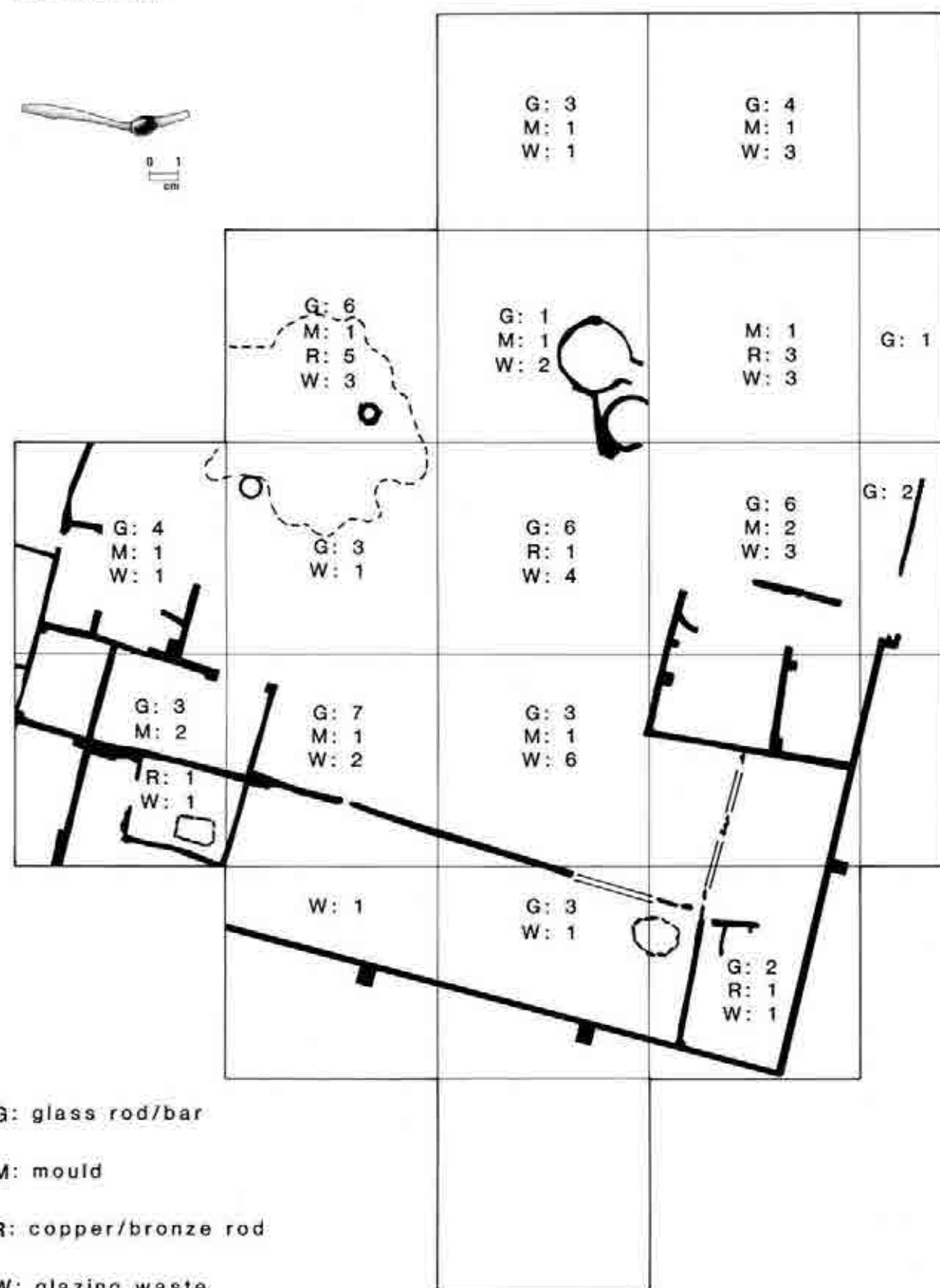


Figure 2.23. Outline plan showing the distribution of mud sherds and other features related to the pottery-making industry. The four inverted triangles mark the positions of the four items illustrated in Figure 4.5.



**Figure 2.24.** Outline plan showing the distribution of finds related to glazing and manufacture of glass objects. Inset at the top-left corner is a drawing of object no. 8763 from G3 [2886], a dark blue glass bead on a length of copper/bronze wire.



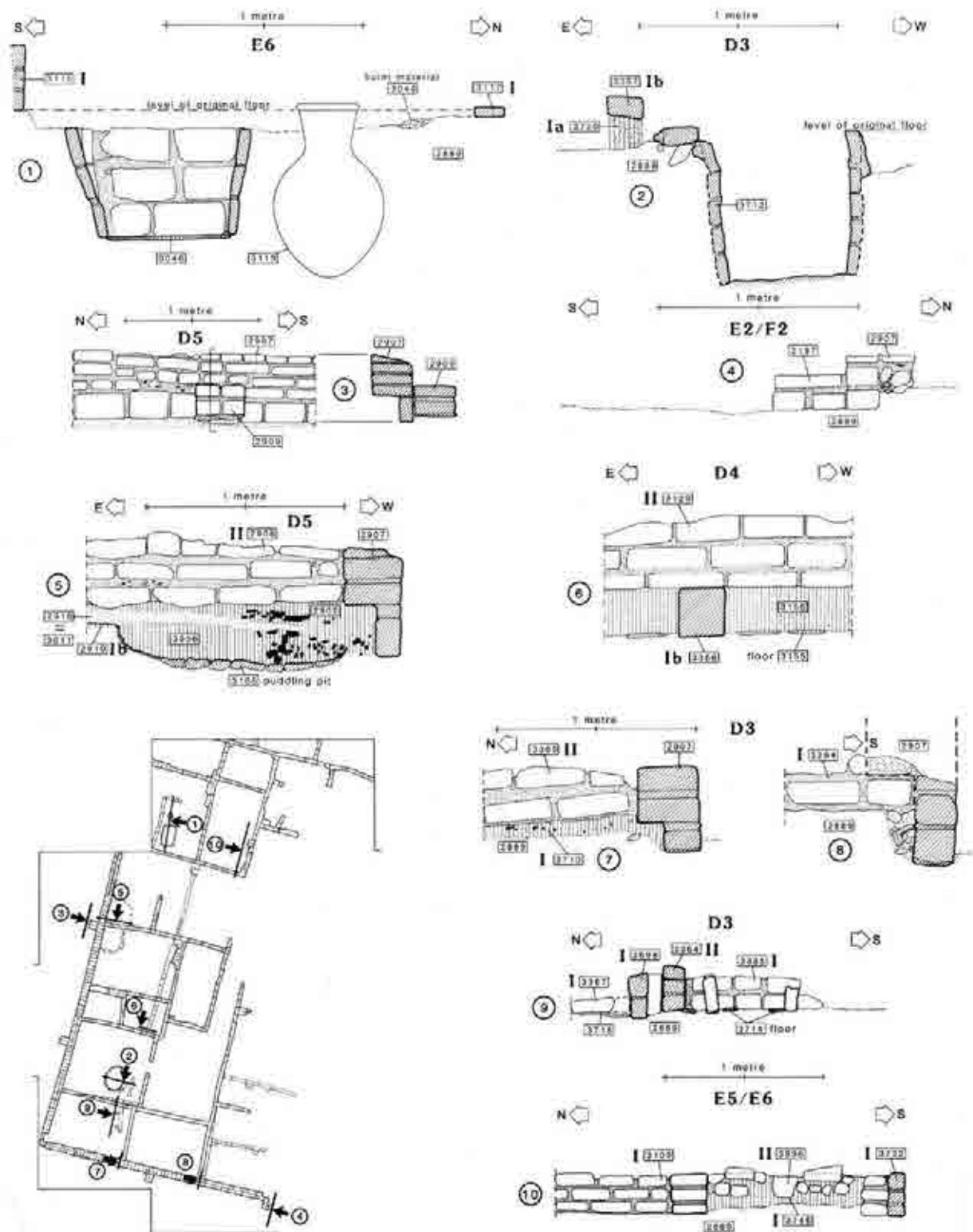


Figure 2.25. Elevations and sections of selected structural features (originals by C. Kirby).

## 2.7 Appendix: workshops and production at el-Amarna by B.J. Kemp

Scenes of craftsmen at work are a well known element in New Kingdom tomb art (the major ones conveniently summarised and discussed, from an organizational point of view, in Steinmann 1984: 37–40; cf. Eyre 1987: 193–195; also *RT* III: Pl. XVII, Tomb of Huya at Amarna discussed below). Where the accompanying evidence is explicit, the craftsmen often appear to work for a temple or for the palace (Steinmann 1982), the Huya scene being an exception, see below. So much of Amarna has been excavated in the past, including most of the temples and palaces and their precincts, that it would be extraordinary if a substantial number of places of craft production had not been uncovered. Yet in the published record of the older excavations such evidence is rare. As a speculation arising from considerations provoked by the current excavations, one can put forward a general explanation for this, namely that the archaeological evidence for manufacture is much less explicit than one might initially expect. One can propose a set of reasons: the permanent fixtures for much ancient Egyptian technology were few and constructed with economy of effort and considerable modesty in scale and design; there was probably a general tendency to organise work in small teams, where the number of separate teams and their small installations was increased as the work was scaled up, in place of an approach towards efficiency which minimized labour and tried to increase the scale of installations; craftsmen used a range of specialist tools and portable equipment, but in the orderly evacuation of Amarna they had time to pack them up and take them away. All that may be left of the myriad industries of the kind familiar from tomb scenes are small and simply built kilns and minor brick constructions of ambiguous meaning, and categories of waste products, perhaps intermingling and also mixed with other kinds of deposits, and thus not necessarily easy to separate, let alone correctly identify. The amount of industrial waste left by the pottery making at Q48.4 is, for example, relatively slight. Thus the identification of places where craftsmen worked may often rest upon the interpretation of quite subtle forms of evidence, rather than on reading obvious clues. Only in this way can one explain why so few identifications have been made in the past from such a huge sample area of a major city. One of the major challenges of field archaeology at Amarna is to break the blandness of the artefactual reporting of the past. That said, it is possible to discern three different kinds of context for craft production:

(a) small-scale domestic (the “cottage industry”). This required very few or no extra buildings, although basic installations might need to be constructed. It is well established that spinning and weaving were common household tasks,<sup>4</sup> and to these a series of other crafts can be added from excavated evidence at Amarna that is more specific than the finding of tools, including the manufacture of pottery (see Chapter 3), small faience jewellery, glass objects and frit (Chapters 8 and 10), and sculpture.<sup>5</sup>

(b) formally constructed institutional workshops. Only three examples can be cited from Amarna, all associated with temples. Two lie on the south side of the Great and Small Aten Temples respectively; the third is within the enclosure of the site known as Kom el-Nana.<sup>6</sup> As yet the evidence — primarily the huge quantities of pottery bread moulds — points only to the baking of bread in the first two, although it is possible that the frugality of the older excavation reports is oversimplifying the whole picture of what went on in these large buildings, though one might note in passing the finding of “a stone mould for metal amulets” in one of the baking chambers beside the Great Aten Temple (*COA* III: 31, Pl. LXXIX.10). Already the limited work at Kom el-Nana hints at a degree of diversification. Some New Kingdom tomb paintings show that a wide variety of manufacturing was done in temple workshops, and, if one tries to envisage what such workshops looked like, the Amarna blocks of long parallel chambers supply a plausible model. The further work at Kom el-Nana should provide a valuable test case.

(c) courtyard establishments. A small number of buildings can be identified at Amarna which seem to represent an intermediate type of establishment with workshops and/or storage capacity

<sup>4</sup> Apparent outside Amarna from tomb paintings, e.g. Djehuty-nefer, Davies 1929: 234, Fig. 1A; 239–240, and from excavated evidence, e.g. at the Workmen’s Village at Amarna, *COA* I: 60–61; cf. *AR* II: Chapter 10.

<sup>5</sup> Note especially the materials from a sculptor’s workshop in square O47, where the excavated plan shows only a conglomeration of small houses. See Pendlebury 1933: 117–118. The plan of this area is included within the map given in *AR* I: 94, Figure 7.2.

<sup>6</sup> The excavation of Kom el-Nana was begun in 1988, and the results will feature largely in *AR* VI.

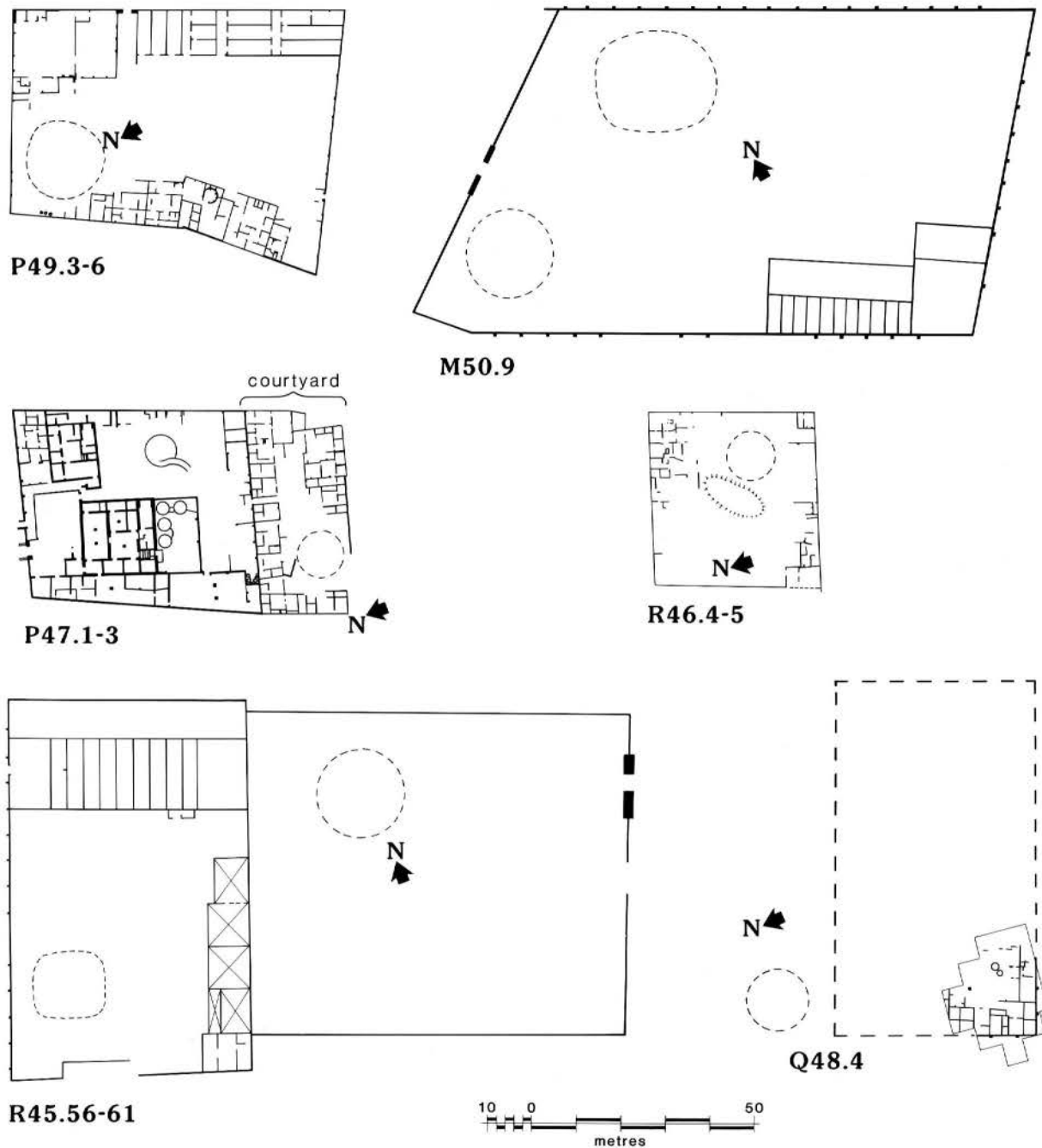


Figure 2.26. Examples of courtyard establishments from Amarna drawn to the same scale.



for commodities. The basic elements are a rectangular or roughly rectangular walled enclosure, many rooms, courts and small buildings constructed against its inner face, and a large central open space containing a well. Since building Q48.4 is a prime example, the others will also be illustrated (Figure 2.26), and the general layout is probably represented in a painting in a Theban tomb (no. 178) of the time of Rameses II, the tomb of Neferrenpet-Kenro (*Atlas I*: 73–75; *KRI III*: 329–331; pointed out by Drenkhahn 1976:153–154). These establishments are intermediate not only in their rather loose design, but also in the way they can be related both to private and to institutional ownership or control. In making comparisons with Q48.4, however, an important point has to be realised in assessing the results of older excavations, namely the lack of attention normally given to areas that seemed to be devoid of buildings. Large open areas or gardens were nearly always treated with a cursory inspection via one or two very narrow trenches crossing from side to side, or from corner to corner. Such a policy applied to Q48.4 could very easily have missed **Area 27** which, because it was sunk slightly into the ground, was undetectable before excavation. Such working areas supply indispensable evidence to understanding the nature of the activities pursued, so that it is quite possible that the following accounts of comparable buildings at Amarna are significantly flawed or incomplete.

**P49.3–6** (Borchardt and Ricke 1980: 266–268, Plan 87): intended to be a rectangular enclosure, some 50 by 70 m, situated on the eastern edge of the city, its western side made irregular by having utilised the boundary walls of two adjacent houses which were not in the same straight line. The component buildings were confined to the eastern and western sides of the enclosure, the open stretches of enclosure wall being supported by small square buttresses built on the inside. The main entrance was on the east, thus from the desert; a side entrance on the south gave access from a side street. There is no obvious physical connection with any of the houses lying outside the enclosure. As at site Q48.4 two building phases are apparent, though this evidence is confined to the west side. Here a double row of circular grain silos was replaced by three dwellings with adjoining groups of small courts. These silos complemented a set of parallel rectangular chambers on the east side of the court, of the type which often served as magazines, sometimes storing grain. Consequently in Phase I the dominant element was bulk commodity storage. Only on the north side of the enclosure did the character of activities differ. Beside a large well (left unexcavated) stood a series of courts and small rooms housing a sculptors' workshop. It should be noted that, as was normally the case, the central space was left unexcavated but does, in fact, bear an archaeological deposit containing, to judge from surface observations, sherds and basalt chippings.

The apparently simultaneous presence of two centres of basically unrelated activity — substantial commodity storage and a sculptors' workshop — points to an establishment like Q48.4, serving more than one purpose. Also like Q48.4 (which actually lies not far away, about 300 m distant) it is hard not to see it as serving an "official" end. The scale of the commodity storage is moderately large, whilst the output of the sculptors' workshop went beyond the provision of royal statues, which could have been intended for the shrines of private houses, for amongst the debris were many pieces of inlay for large stone reliefs, which almost completely precludes a private destination.

**R46.4–5** (Borchardt and Ricke 1980: 52–53, Plan 14): an approximately square enclosure, with sides measuring around 40 m, situated on the eastern edge of the city. Although laying adjacent to private houses, it does not seem to belong to any particular one of them, and probably had its own independent entrance from a side street on the north. Much of the enclosure is open space, containing, on the east, a well depression (never excavated), the spoil from the ancient digging remaining as a heap in the centre of the enclosure. Two sets of small rooms had been built against the enclosure wall, on the south and north sides. One group of rooms in the south-west corner could well have been a small house, provided as it was with a staircase to the roof. Three of the rooms contained small brick-lined chambers sunk in the floor. In two rooms (R46.4, room 10, and R46.5, room 11) rounded fragments of syenite, c. 20 cm in diameter were found, which prompted the suggestion that some of the rooms could have been workshops.

**P47.1–3** (Borchardt and Ricke 1980: 87–100, Plan 27; Krauß 1983): the house and adjacent complex of the sculptor Thutmose. Part of the sculpting was done within the grounds of the main house, a practice which exemplifies the "cottage industry" approach. Adjoining the house compound on the south, and communicating with it by means of a doorway, was a set of small

buildings grouped around an irregular courtyard containing its own well. Sculptors' debris was found here as well and also thirty fired-clay moulds for the manufacture of faience jewellery (including a single group of ten for making ring shanks). Rather surprisingly, the enclosure showed no signs of a kiln or oven. Unless there were little kilns in the depressions cut into the desert in the central space of P47.1 (like those on Area 27 at Q48.4) which were completely removed anciently, whoever pressed out the pieces from the moulds then had to carry them elsewhere for firing. The nearest ovens were those in the south-west corner of the grounds of the main house.

**R45.56–61** (unpublished E.E.S. 1924 excavations). This building lay towards the north end of the Main City, not far south of the private house of Panehsy, on the east side of the easternmost main north-south street. It was excavated under the direction of F.L. Griffith in January 1924 (Griffith 1924: 302), but unfortunately the plan made at the time has not survived, whilst no description of the whole complex seems to have been made. The plan given here in Figure 2.26 is an outline plan made by Kemp (and later field-checked by Garfi) of what was discernible on the surface in 1977. The basic form is a rectangular enclosure, c. 85 by 55 m, surrounded by an enclosure wall which, at least on the west side, was strengthened by exterior buttresses. An entrance, not necessarily the main one, lay towards the northern end of this west wall. A large part of the enclosure seems to have been left empty (and was not excavated), with a well depression towards the south-west corner. Along the north side, but separated from the north wall by a 9-metre wide space, is a row of at least nine narrow parallel chambers of the magazine type. The present appearance of the ground gives the impression that the interiors were never excavated. Against the east side of the enclosure wall lay a row of small "houses". These were given separate house numbers in 1924, namely R45.40, .56–59, and .61. In their present condition it is not possible to plan the internal walls without re-excavation, so that only their outlines are marked in Figure 2.26. Brief descriptions of these houses and their small finds have survived but do not illuminate their purpose, although one entry does read: "'west loggia' — seems as if it might have been a kitchen or ?workshop. Pot sunk near its W. wall & pot for oven sunk in S.E. corner. Near it an oblong oven. Had a little 'yard' to the W. where the working had been done." Not a great deal can be read into this account, although the existence of the magazine block invites comparison with P49.3–6, described above.

A second enclosure, 86 x 72 m in extent, adjoined the east side. It appears to have been completely empty, except for a well depression with its accompanying ancient spoil heap. Whether a doorway connected it with R45.56–61 is not apparent, but it did have its own entrance, flanked by pylons and facing the open desert on the east side. The field notes refer to very poor burials along the insides of the south and east walls, two in each case. In 1986 two sherd samples were recorded from within this enclosure, one of them from beside the well depression (AR IV: 124–125, Areas 20 and 21, and this volume, Chapter 5). Marl-clay wares predominated, principally from amphorae, something characteristic of wells and water-supply.

**M50.9** (unpublished E.E.S. 1924 excavations; Figure 2.26); a large enclosure (c. 70 x 107–127 m) lying immediately to the north of the Society's southern expedition house, its enclosure wall buttressed on all four sides, and facing, via a pylon entrance, the easternmost of the main streets. It contained two large well depressions, but still most of the enclosure seems to have been open. The interior buildings were confined to an L-shaped block against the eastern and southern walls. They consisted of a row of eleven parallel chambers of the magazine type, most of them still unexcavated, on the south, and two enclosures on the east. The smaller of them, on the north, was also left unexcavated, whilst the larger one, which had apparently been excavated by the Borchardt expedition, contained four circular ovens.

Fitting descriptions of these buildings (including Q48.4) into a framework of administration represents a problem which goes to the heart of how we understand New Kingdom society. They do, of course, display considerable differences, to the extent that more than one category of buildings may be involved, no. M50.9 showing the greatest degree of divergence. Their principal characteristic is the grouping of features serving more than one activity (including provision of water from a large well) into a single courtyard building, and in so doing presumably reflecting a single responsibility, discharged by one official and assistants. Another way of looking at them is to focus on the absence of a large house, for if such existed they would lose their distinctiveness, since the component features of these compounds can all be found within the compounds

surrounding the larger houses. They have another distinction, too: all are to be found within the South Suburb.<sup>7</sup>

Whether the Egyptians themselves would have called these buildings by the same word, and given the man in charge the same title, we are not entitled to assume. But we can detect a parallel line of thinking in the term *šn'*. Establishments by this name seem in the New Kingdom (and reflecting an ancient tradition of organization) to have been primarily places for the storage and production of food, and, through possession of their own workforces, to have been able to undertake farming, and perhaps some manufacturing of other commodities as well (one text links the *šn'* with production of linen cloth).<sup>8</sup> We have too little detailed ancient written or pictorial knowledge of the nature and workings of the *šn'* in the New Kingdom to understand how to apply the word to Amarna buildings, although one point of reference is provided by the bakeries beside the Great Aten Temple, the provenance of a stone weight bearing the name of an official actually titled an "overseer of the *šn'*" (COA III: 31, 187, Pls. LXII.4, CIII.49; Kemp 1979: 12, note 25). This is probably the kind of building that lay behind the Memphis bakery accounts of the reign of Seti I, where the term *šn' n 'kw* was used for the place where the bakers worked (Eyre 1987: 196). There is no means currently of knowing, however, if the term also applied to the buildings under consideration, though we should note that grain storage was one of the functions of P49.3–6 (and perhaps of R45.56–61). But in its basic character of a mixed production/storage centre we can at least detect a common approach, the aim of which was perhaps nothing more complicated than to make a convenient grouping of a range of activities which flowed from *ad hoc* decisions by those in authority. Storage as well as production are similarly linked in terms both of architectural layout and administration in the painting in the tomb of Neferrenpet-Kenro, referred to above.

An important possible clarification of one form of management of such an establishment can be cited from Amarna written and pictorial sources. It comes from the tomb of Huya, no. 1 of the northern group (RT III: 13–15, Pls. XVII, XVIII; Sandman 1938: 37–38; *Urk* IV: 2007; Helck 1961: 356; Drenkhahn 1976: 152–153, 145 n. 15; Steinmann 1980: 152, section 2.2.4.1.1; Eyre 1987: 192). Beneath a scene of reward at the Window of Appearance, and separated from it by a register depicting Huya's chariot and a line of waiting men, is a scene of a workshop in which a variety of crafts are plied: metalworking, carpentry, jewellery-making and sculpture, and probably others as well. One of the sculptors is labelled "overseer of the sculptors of the Great Royal Wife, Tiy: luty", and he is shown making a statue of Tiy's daughter Baketaten. The most prominent figure within the workshops, however, is Huya himself, accompanied by two men of lesser rank. The text in front of Huya is brief and damaged but appears to read: "Appointing (*dhn*) the craftsmen of the honoured one of the Lord of the Two Lands, the overseer of the royal harim, of the treasury and of the household of the Great Royal Wife, Tiy: Huya".<sup>9</sup>

The wording of this text and the context of the scene — it is an illustrative appendix to the Window of Appearance reward scene — imply that the workshops and their personnel were a personal reward to Huya, and not that he was being placed in charge of workshops belonging to the palace, or to Queen Tiy's household.<sup>10</sup> Huya's residence at Amarna has not been identified, but we need scarcely doubt that it was one of the larger private residences in the city. We can

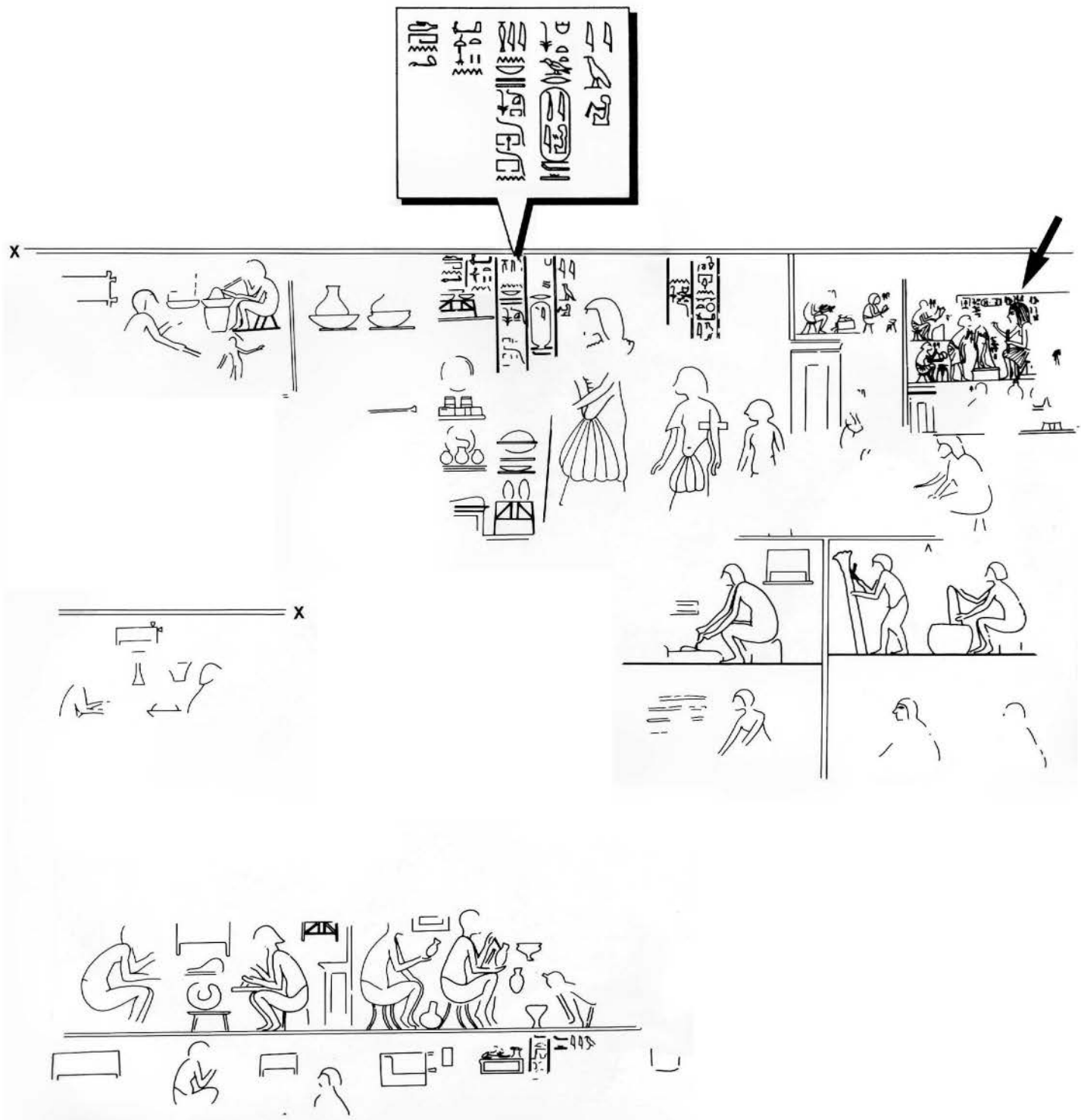
<sup>7</sup> The almost bare square enclosure in the North Suburb, V36.11, is the nearest equivalent, but is almost entirely devoid of internal features, see COA II: 26, Pl. V. Most of the open space was never, in fact, excavated.

<sup>8</sup> On *šn'* in the New Kingdom, see Bakir 1952: 44–47; Lesko 1987: 158; Eyre 1987: 196; also Gardiner 1947: II, 209\* f.; Faulkner 1962: 269; at Amarna: COA III: 172, and an official with the title *hry šn'*: *ibid.*, 31, 187, Pls. LXII.4, CIII.49; Kemp 1979: 12, note 25, recorded on a stone weight from the Great Aten Temple bakeries. The range of functions seems incapable of being rendered into English as a single word, hence Faulkner's twin translations "storehouse" and "labour establishment" and a similar division of meanings given by Lesko, though the texts show that both could apply simultaneously. Drenkhahn (1976: 151–154) has proposed that the word *d3dw/d3d3* referred to a royal workshop, but the New Kingdom evidence for this is not convincing. Holthoer (1977: 27–28) discusses specific connections between *šn'* and pottery-making in pre-New Kingdom sources.

<sup>9</sup> A comparison in linguistic usage is provided by the listing of the royal and temple establishments to which craftsmen were attached, described by means of the prepositions *n* "of", and *m* "in", given in Steinmann 1982.

<sup>10</sup> Descriptions of the decoration in the Theban tomb of the mayor Paser (no. 106) raise the possibility of a parallel case. A scene of Paser inspecting craftsmen, amongst whose products is a statue of the king intended to be donated to the temple of Amon at Karnak, stands adjacent to a reward scene, see Redford 1970: 221.





**Figure 2.27.** Scene from the tomb of Huya, no. 1 at Amarna (after *RT III*: Pl. XVII). The arrow points to the figure of the sculptor Iuty.

cite as a parallel case the chief priest Panehsy, owner of tomb no. 6, who, in addition to an official residence beside the Great Aten Temple, possessed one of the larger private estates in a prominent position at the northern end of the Main City (Griffith 1924: 302). We can imagine Huya occupying a major house somewhere in the city, and then comes the reward of the workshops from the King. If there were sufficient vacant ground around the house they could be added alongside (as in the case of P47.1–3, the house of the sculptor Thutmose); if not, a vacant lot on the eastern edge of the city would suffice. But this takes us back to an earlier observation: the buildings described above (with an exception perhaps to be made of M50.9), if they contained a large house of their own, would no longer be unusual. Do they simply represent, therefore, expansions to private house compounds made after the initial settlement at Amarna? The sculptor Thutmose's house and grounds would be a case in point, where Thutmose was favoured with an adjacent, though irregular, vacant lot. It is worth recalling the observation made above that high-quality sculpting did not necessarily require a building of any distinctive design at all, as the sculptor's material from square O47 demonstrates.

For whom was the output of Huya's workshops intended? In part it would have been taken by Queen Tiy's household. This much is suggested by the assignment to the workshops of the "overseer of sculptors of the Great Royal Wife, Tiy: Iuty", who is shown making a statue of Princess Baketaten. This assignment was presumably on an occasional basis, to set the standards of the new establishment, for the case of the sculptor Thutmose shows that a sculptor could be a man of considerable status himself, with a large residence and workshops of his own (see especially Krauß 1983). But if our surmise is correct, and Huya's workshops were in the city, looking like the workshop buildings summarised at the beginning of this section, they would have been well placed for supplying luxury goods in various directions socially: upwards to the court as gifts marking loyalty, laterally to other senior officials as reciprocal goodwill exchanges, and downwards as rewards for service or as straight sales, with a price. One can then see just how generous a reward this was for Huya, and why it forms part of a key scene in his tomb. It also helps to fill for us an awkward gap in the pattern of supply within the city, offering a means which inextricably combined economics and obligations of the kind that we should expect for ancient Egypt. In particular, it helps to explain the paucity of evidence for large royal workshops at Amarna.

We seem to be looking, then, at a delegation of production and patronage which gave to high and loyal officials both the responsibilities and rewards for managing centres of production, the output from which was intended both for the court and for private consumption. They were thus extensions to the role of the larger Amarna houses as farm centres, storing considerable agricultural wealth. From the excavated evidence we know that service buildings belonging to the temples (category 3, above) and to the palace (the magazines/granary behind the King's House and the huge unexcavated buildings south of the Coronation Hall and Great Palace, AR II: Chapter 5) were constructed on a large scale and with formality of layout. They provide an obvious contrast to the buildings under consideration, to the extent that the epithets "royal" or "state" or "official" are not readily transferable to them. The question of the ownership, or control, of any one of these intermediate centres is bound to remain opaque in the absence of identifying inscriptions, and not necessarily clear even with them. This has to apply to building Q48.4, the subject of this chapter. The evidence that it was involved in supplying water and certain manufactured goods to the Workmen's Village is reasonably strong, and this alone provides a good case for saying that it was administered by an official on behalf of the king. Yet in size, layout and standard of construction it resembles the private architecture of the city. Three particulars illustrate this most forcefully, namely the manner in which the enclosure wall came to be built, which can be contrasted with the enclosure wall around the Workmen's Village itself, the lack of a brick building altogether for some time over the area where clay was puddled and pots probably dried, and the tiny size of the houses of Phase II which are small by Amarna standards.

Even without completing the excavation it appears to be highly unlikely that Q48.4 had anything to do with the supply of grain to the Village. The appearance of the unexcavated portion does not lend itself at all to the interpretation that granaries form a significant part. Building Q48.4 (and its well) is thus only part of the supply picture. Other buildings, in other parts of Amarna, were also involved, so that there can never have been a single supply centre for the

Village. Furthermore, the chronology of the site shows that it was not created simultaneously with the establishment of the Workmen's Village but was connected only with the later phase of the time of Tutankhamun. We must assume, too, that other buildings at Amarna were also supplying the Village and functioning within the time of Tutankhamun, the workers and officials involved living with their families in some of the houses within the Main City. It is at least worth the thought that the fraction of supply represented by Q48.4 was a delegated one, that is, that at a late stage in the history of the Village an official was charged with the responsibility of providing, for the benefit of the Village, the building that we know as Q48.4 and the regulation of the work within it, in return for rewards from the king, so that it became, in effect, an extension of his own private estate.

A separate challenge is provided by the buildings of Phase II. By the time they were built the pottery making had ended, whether occasioned by factors on the supply or demand side we cannot tell. The existence of a phase of "squatter occupation" at Amarna has been claimed before, notably by Pendlebury. This phenomenon needs to be carefully reconsidered but at Q48.4 would seem to be highly unlikely in view of the isolation of the building, where any occupation implies the existence of a parent body of organization and supply. For the present the background to this occupation must also remain a mystery.