National Museums of Scotland

Saqqara Project Report

1994

National Museums of Scotland
Chambers Street Edinburgh EH1 1JF

NATIONAL MUSEUMS OF SCOTLAND

SAQQARA PROJECT 1994

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Harry Smith, Ana Tavares

An interim report on the work carried out during the 1994 season covering the testing of resistivity results by *sondage* trenches over selected anomalies and carrying out further resistivity profiles over areas of particular interest, topographic survey and research into previous records at the Saqqara Necropolis of Memphis, Egypt

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THE NATIONAL MUSEUMS OF SCOTLAND

PRELIMINARY REPORT OF THE SAQQARA SURVEY PROJECT, 1994

By ELIZABETH BETTLES, JOHN DITTMER, LOUISE MAGUIRE, IAN MATHIESON, HARRY SMITH and ANA TAVARES

The findings of this project will enable the National Museums of Scotland to produce an up-to-date archaeological and sub-surface geophysical map of the area known as the Abusir West-Saqqara Wadi. The work combines

- remote sensing investigation
- field inspection
- archival research into previous excavations and surveys
- selected excavation of anomalies that demand more detailed examination.

The National Museums of Scotland acknowledge with gratitude the help and co-operation of the Egyptian Antiquities Organisation with whose permission the Museum's work is carried out; especially the Officers at Abassiya, Chairman Prof. Dr Abdel Halim Nureddin, the members of the Committee and the Secretariat, Dr Abdel-Selim Bakh and Mme Samia; at Giza Dr Zahie Hawass, Director of Antiquities for the Region; at Saqqara, the Director of Antiquities Mr Yahya Eid and the EAO representative Mr Said Farag, all of whom have been most willing to give assistance at all times.

Financial assistance from the British Academy, the National Museums of Scotland, the Gerald Averay Wainwright Fund and map reproduction by Survey and Development Services, Bo'ness, West Lothian are gratefully acknowledged.

The 1994 field season opened on the 16th of October and continued to the 6th of December, the staff being co-directors Ian Mathieson (geo-archaeological surveys) and Prof. Harry Smith (Egyptological adviser), Elizabeth Bettles (archaeologist and epigrapher), Dr Louise Maguire (ceramicist), Dr Jon Dittmer (geophysicist), Padi Mathieson (data control) and Ana Tavares (archaeological archivist).

Previous Fieldwork

During the 1990 season resistivity work was completed along the length of the concession area and four of the proposed cross-sections covering the large enclosure known as the Gisr-el-Mudir were surveyed. In 1991 the complete concession area was field-walked and all visible surface indications of structures and old excavations were located for inclusion on the base maps. Work was completed in 1992 on the observation of the resistivity data covering the Southern two-thirds of the original concession area, from the Northern access road to the Serapeum to the Southern limit of the concession which lies some 100m South of the Southern boundary of the Gisr-el-Mudir (the Great Enclosure). (See Map Sheet Layout diagram). In 1993 sondage trenches were opened on anomalies in the South-West corner of the Gisr-el-Mudir to check the resistivity data plotted at these points. A mud-brick platform was discovered inside the enclosure at the SW corner and the construction of the enclosure walls was investigated.(Reports 1990 - 93)

1994 FIELDWORK

Methodology

Sub-surface remote sensing for archaeological purposes can be carried out by:

- resistivity
- proton-magnetometry
- sonic profiling
- electro-magnetic impulse equipment
- thermal imaging

For large-scale exploration the method of resistivity survey by traverse profiles gives the fastest results and enables the area to be divided into a grid pattern for closer examination of any anomalies touched

during the traverses. The techniques of resistivity survey, proton magnetometry, field inspection and archival research are fully described in the Reports of 1990, 1991,1992 and 1993.

Gisr-el-Mudir (Great Enclosure) (Map Sheet 1)

At the time of building the Gisr-el-Mudir would have been a massive construction project and even today still looks very impressive despite extensive use as a quarry. To put the size in context the GM is approximately twice the area of the Zoser enclosure and four times the area of the Sekhemkhet complex to name its closest neighbours. By the end of the 1992 season the resistivity cross-sections across the monument in an East-West direction had been completed and the anomaly indicated in the 1990 survey, which was located at the South West end of the assumed South Wall, had been investigated. It was decided in 1993 to test the results of the resistivity data by *sondage* trenches over the previously discovered anomalies. Four areas on the main anomaly and one on the West wall were chosen by study of the resistivity profiles and local topography and the results were recorded and discussed in the 1993 report.

In 1994 the anomaly shown on profile GMNWXS2 was chosen for inspection. A sondage trench was opened 40 metres South of the assumed position of the North Wall of the Gisr el Mudir and approximately over the start of the anomaly as shown on Map Sheet 1.

On the removal of the windblown sand forming the surface deposit (001) several burials consisting of skeletal fragments and carbonised mummy wrapping were found G1 - G8 in grid squares A, B and D (Fig.1). These burials lay within a matrix of coarse sand, pebble and small limestone fragments (013) and varied in depth from 300mm to 750mm below the surface.

The *tafl* bedrock (002) lies below this matrix at 46.71m(amsl), starting at 500mm below the surface in squares A & B and reaching 1500mm below the surface in squares G & H. This bedrock provided an easily cut material into which rectangular and anthropoid graves had been cut. In in the area of the sondage 20 such rock-cut burials were recorded.(Fig.2) The graves were filled with a fine yellow sand (037) and it was this fill which had caused the anomaly readings recorded in the resistivity profile.

The fill in six of the graves was removed to uncover the upper surface of the burials. In all cases the burials had been wrapped and then plastered with brown-coloured mud wash. Three graves held single burials and three had multiple burials.(Fig.1)

1. Grave G3(005) contents probably two adults, disturbed, Grid B.(Fig.6)
2. Grave G11B(015) contents one adult, (the stela grave), Grid C.(Fig.3)
3. Grave G14(018) contents one adult, Grid C
4. Grave G17A(021) contents one adult and probably two children, Grid C.(Fig.6)
5. Grave G18(022) contents one adult and one child, Grid D
6. Grave G19(023) contents one adult, Grid D

The burials were notable by the complete lack of *in situ* grave deposits. One very small piece of copper wire (018) was found in G14 and on the surface of G17B(050) were several fragments of wooden coffin material and fragments of white plaster. There were no pottery deposits or shards found in any of the graves, so that an attempt at dating was impossible.

During the clearing of the surface of the *tafl* bedrock (002) and the fine yellow sand (037) of the infill of Grave G11 a burial (Burial 11A) consisting of lower limb bones and some carbonised wrappings (014) was found at the Eastern end of the grave 140mm below the level of the bedrock surface (El.46.7m) and lying in an East/West direction.(Figs. 1A & 3)

After recording and removing the burial a limestone block was seen lying 010-020mm below the burial, covered with soft yellow sand and several small limestone fragments. The upper surface of the block was rough and looked like any rough-hewn piece of limestone except for the clean white colouring. The block was then rotated along the North/South axis and the beautifully carved surface of a stela was seen.

Continued excavation of Grave 11 yielded a further discovery. 225mm from the surface of the bedrock the rectilinear shape of grave 11 was cut into an anthropoid form (11B) with the head to the West. In this lower anthropoid grave was the mummified adult referred to in (2. G11)as previously stated.(Fig.1A & 3)

The stela (EAO Object Reg.No.001, NMS No.GMNWSX2 - C1 - 003) (Figs 4 & 5) was found 30-40mm below burial (014), lying face down with the rounded top facing South 150mm below the surface of the bedrock (002) and approximately 899mm below the ground surface (001) with the North and South edges resting on the ledge forming the anthropoid grave 11B cut below the rectangular shape of grave 11A.

The measurements of the stela are: Height 410mm to the rounded top, 354mm to the shoulder. Width 284mm, Mean thickness 082mm. It was at location Universal Transverse Mercator Co-ordinates East 326638, North 305684, Elevation 46.5m(amsl). The stela had clearly been re-used as a simple block of stone and was certainly not in its original context. A full description and discussion of the text and carving of the stela is the subject of a paper to be published in the autumn of 1995.

The sondage was extended to the South Face of the North Wall (026)Grid N which is poorly preserved to a height of five courses (Fig.2). At this location the *tafl* bed-rock (031) is at its highest point and the surface had been smoothed and a foundation cut of 40-60mm made to locate the first course of the wall which is set in a mud mortar. As was discovered in 1993 on the West wall, the courses are made of local limestone roughly cut and poorly set in mud mortar with much filling of limestone fragments to compensate for the roughly cut blocks.

From the vertical section (Figs.7 & 7A) it can be seen that a considerable depth of windblown sand accumulated against the South face of the wall (024) and stretches South for a distance of 25m. However sealing this sand is a layer of mud mortar with limestone fragments (162) followed by fine-grained sand (161) again sealed by another layer of thick mortar with some limestone fragments and just below the surface sand (001) a final layer of very hard mud mortar with few limestone fragments (165). It appears therefore that considerable activity in local building or destruction of a building on top of the wall happened some time after the North wall was completed.

Continuing across the wall on the line of GMNWXS2 the North face of the wall was exposed (206)(Fig.8) revealing seven courses of local limestone. In exposing this wall it was found that a completely new structure had been built against the wall on the north side. This consisted of very large local limestone blocks of good quality, neatly cut and set in a hard mud mortar (107). There were collapsed blocks (102) lying on top. The structure completely filled the North side to the full depth of the existing North wall and stretched 6.2m to a new lower North wall (108), two courses high, which had not previously been seen. Many collapsed blocks were lying in this area.(Fig.9) On examining the main North wall structure it was found that the fill consisted of limestone blocks laid in an orderly fashion (120)(Fig.8) which is very different to the mortar and limestone fragment fill found in the West wall (1993 report Fig.15)

When the wall was examined in 1991-93 it was considered that there was a step formation in the area of GMNWXS2 which could have been the foundation of a gate. It now appears that the area may have had a building of considerable size or a pylon type of gate structure built on the wall and that the Gisr el Mudir may have a second, lower wall on the outer side of the main wall which may exist round the complete enclosure. If this is so then the case that the Gisr el Mudir is a funerary enclosure, similar to the Abydos structures but built in stone, may yet be proved.

Two unrelated finds were made in the windblown surface sand close to the wall.

1. GMNW - V+25/20 - 011 (200) a fine tura limestone door lintel found in four pieces but now restored. Inscribed with horizontal inscription in high relief.(Dyn V - VI) ~~(Fig 10)~~

2. GMNW Q-15 - 008 (100) a local limestone doorjamb in four pieces but now restored. Inscribed with a male and female figure with inscriptions.(Dyn. VI) (Fig.10)

A further 23 resistivity profiles were observed in the Gisr el Mudir enclosure:

- At right angles to GMNWXS2 between 20m and 80 m South of the wall 15 profiles in the form of 5 traverses.(Map Sheet 1, GM39-51))
- At the foot of the large central mound in the Southern half of the enclosure 8 profiles in the form of 4 traverses.(Map Sheet 1, GM52-59)

No further anomalies were recorded in any of these profiles.

Ceramics

The pottery excavated from the Gisr el Mudir (GMNWXS2) can be separated into two groups which would seem to correlate with the contextual background.(See also Report 1993, p5)

Early Dynastic/Old Kingdom pottery comprising in the main, Nile B2 and C beer jars and storage jars (handmade, finger and stick moulded) and Marl A1, Marls C or C1 closed vessels (handmade, coil and wet smoothed, and sometimes slipped) are consistently found in contexts associated with the GM North enclosure walls. In particular context (031), sealed by context (030), revealed fragments of an ED/OK jar at the base of the South face of the North Wall(area Grid M). The ED/OK material from the North walls bears close resemblance to the material excavated in GMA 7c and A8WW in Report GM93.

The late period pottery (of which the majority of sherds comprises imports from the Aegean or Levant, local Nile C storage jars, some Marl imports from Upper Egypt) is found predominantly in the areas South of the North enclosure wall where a collection of rock-cut graves were excavated (Grids A to D: contexts 003 to 012 and 014 to 023 for example) and in the surface sand layers excavated across the site. Both in the surface sand level of areas Grid a to D (Context (001) and above the rock-cut graves, context (002), where "surface burials" and disturbed graves were recorded and in and around the rock-cut graves cut into context (031, *tafl* bed-rock), many large sherds from amphorae probably imported from the East Mediterranean or the Aegean were noted. In Grid G (context 150) Late amphorae fragments were mixed with ED/OK jar fragments.

The Serapeum and Sacred Animal Necropolis (Map Sheet 2)

The Serapeum area is described in the 1993 Report (p.6) when resistivity coverage was accomplished. This season, with renewed permission, the area on the Eastern side of the Serapeum-Abusir valley was examined. On cross-section 18 we had found in 1993 an anomaly area of 20 metres by 30 metres; the low current and very high readings suggested that a structure with a very solid and compact fill was present.(1993 Report)

Sondage trenches were excavated over the anomaly at J4, J12 and at J24 (Map Sheet 2, resistivity traverse 18). The anomaly was found to have been caused by massive lenses of very fine wind-blown sand extending to a depth of 5.2 metres to the rock floor of the valley.(32.40m amsl at J4 & J12) As there are indications of mud-brick walls on each side of the sand lenses it appears that mud-brick mastabas exist with the intervening spaces filled with fine wind-blown sand. It is hoped to explore this interesting structural maze with electro-magnetic impulse equipment in the 1995 season.

As shown on Map Sheet 2 a further 36 resistivity profiles in the form of three cross-section traverses (24, 25 and 26) were observed in a North/South direction to the North of the Serapeum access road but no further anomalies were recorded.

A complete five metre grid of proton-magnetometer readings was observed covering an area of 100m by 130m to the North-East of the Tomb of Ti, as shown on Map Sheet 2. An anomaly B26 was found at position close to the North East corner of the Ti enclosure, a one metre grid was observed to pin-point the centre of the anomaly.

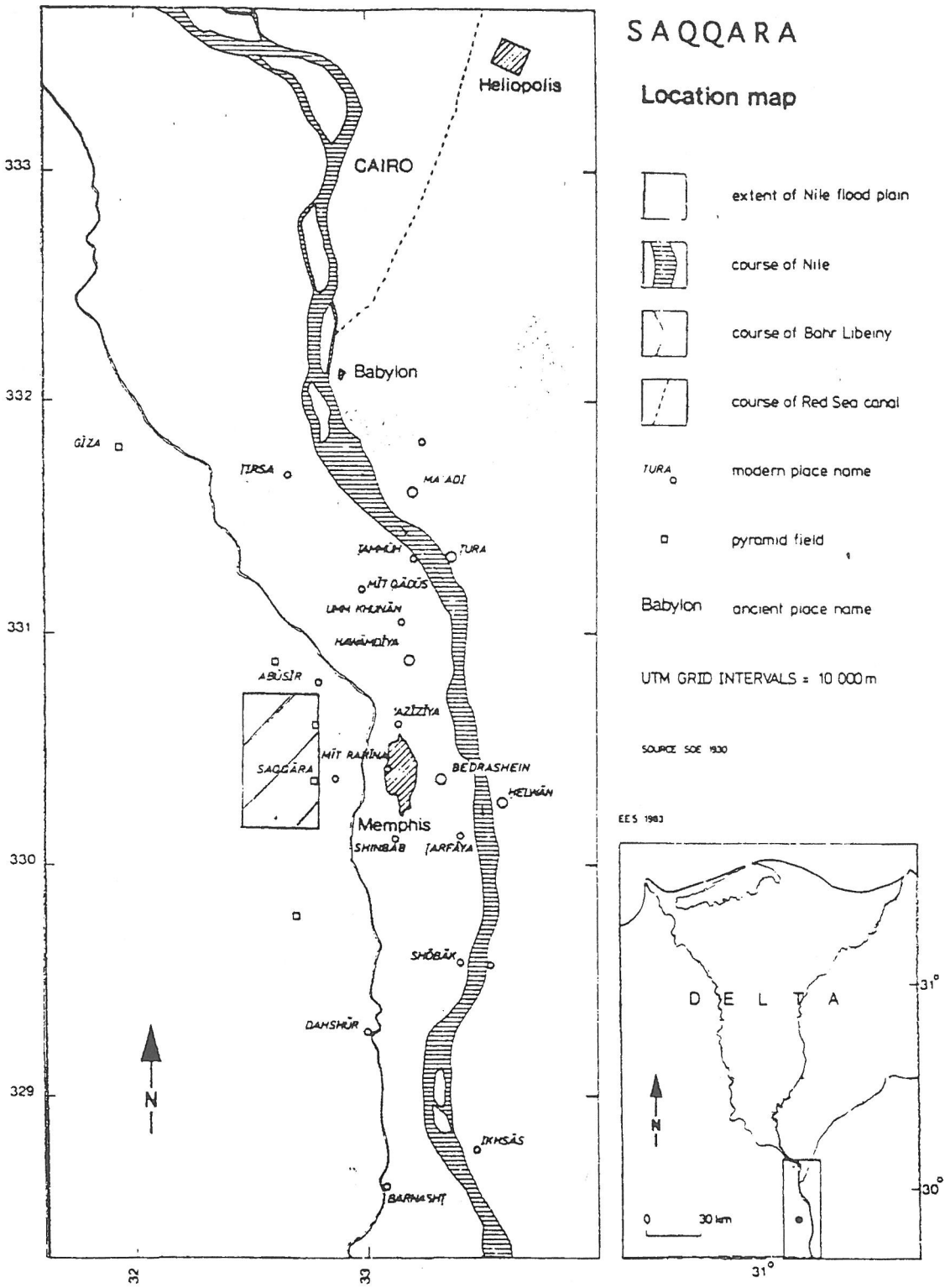
Ceramics

The sondage trenches at the Sacred Animal Necropolis (areas J3, J12, J24) produced redeposited ED/OK pottery which comprised 40% of the sherd collection; the remaining 60% of sherds can be attributed to the Late Period (including Persian material) and Ptolemaic. The occurrence of these pottery types is consistent with the history of the nearby Vth to VIth Dynasty mastabas and the Sacred Animal Necropolis.

Conclusions

1. The Gisr el Mudir continues to provide information which points to the probability that it must be one of the earliest large-scale stone buildings in Egypt but still has not given proof of ownership or date of construction. The finding of a second, outer, wall and the failure to locate any structure within the enclosure certainly appears to give the monument a different character from that of Sekhemkhet and Zoser and tends to strengthen the supposition that in this case we have an intermediate phase between the pyramid complexes and the Abydos mud-brick funerary monuments. The National Museums of Scotland propose further work on the East wall and central area to test the character and purpose of the monument.

2. It is important to develop our methods of ground-based sensing so that interpretation of the data can be relied upon. We have seen this season that deep fine sand can cause considerable problems and we propose designing new electrode arrays and introducing various methods of computer analysis of the results to enable a better sub-surface picture to be drawn. By using electro-magnetic impulse equipment to supplement the resistivity results the misinterpretation of deep sand lenses can be avoided.


SAQQARA
Location map
Heliopolis
CAIRO
Babylon
GIZA
TURA
MA'ADI
HELWAN
MIT RAHINA
MEDRASHEIN
Memphis
SHINBAB
TARFAYA
SHOBAK
DAHSHUR
IKHSAS
BARNASHT
ABUSIR
AZIZIYA
SAQQARA
333
332
331
330
329
32
33
N
extent of Nile flood plain
course of Nile
course of Bahr Libeiny
course of Red Sea canal
TURA modern place name
pyramid field
Babylon ancient place name
UTM GRID INTERVALS = 10 000 m
SOURCE SOE 1930
EES 1983
D E L T A
31°
30°
0 30 km
N

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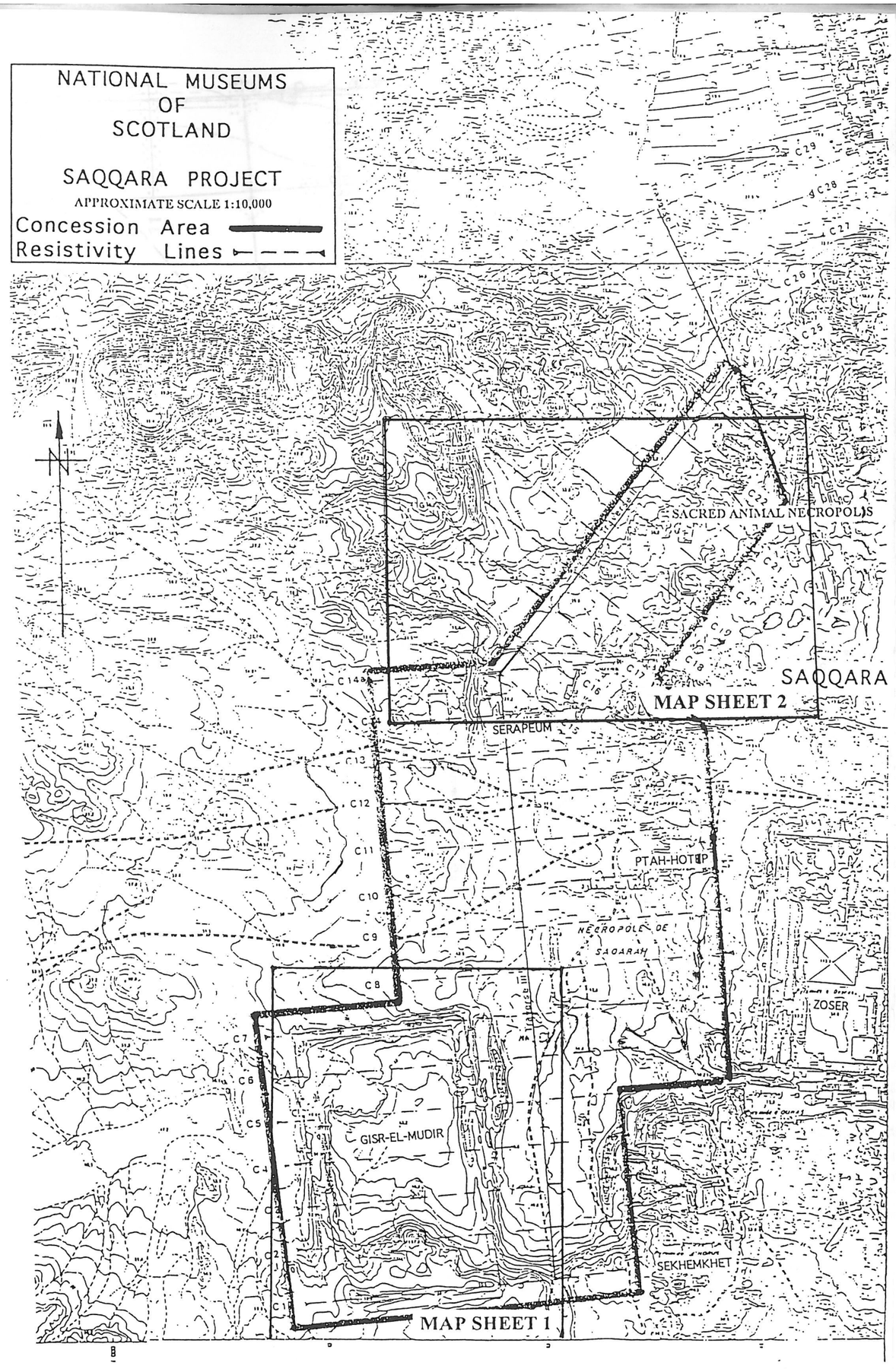
APPROXIMATE SCALE 1:10,000

Concession Area

Resistivity Lines



LEGEND

Topographic

Contour — 35

Spot Height — .29

Triangulation Point — T9

Building (modern)

Track

Geophysical Sensing

Resistivity Line (& direction)

High Readings

Cross-section & Profile

Anomaly

Proton-magnetometer sites

Archaeological

Mariette's numbered tombs — 39

Surface features-surveyed & numbered (Mathieson & Tavares) — 46

Serapeum Enclosure (as shown by De Morgan) — A

Serapeum Enclosure (as shown by Rhone) — B

Early Dynastic Cemetery

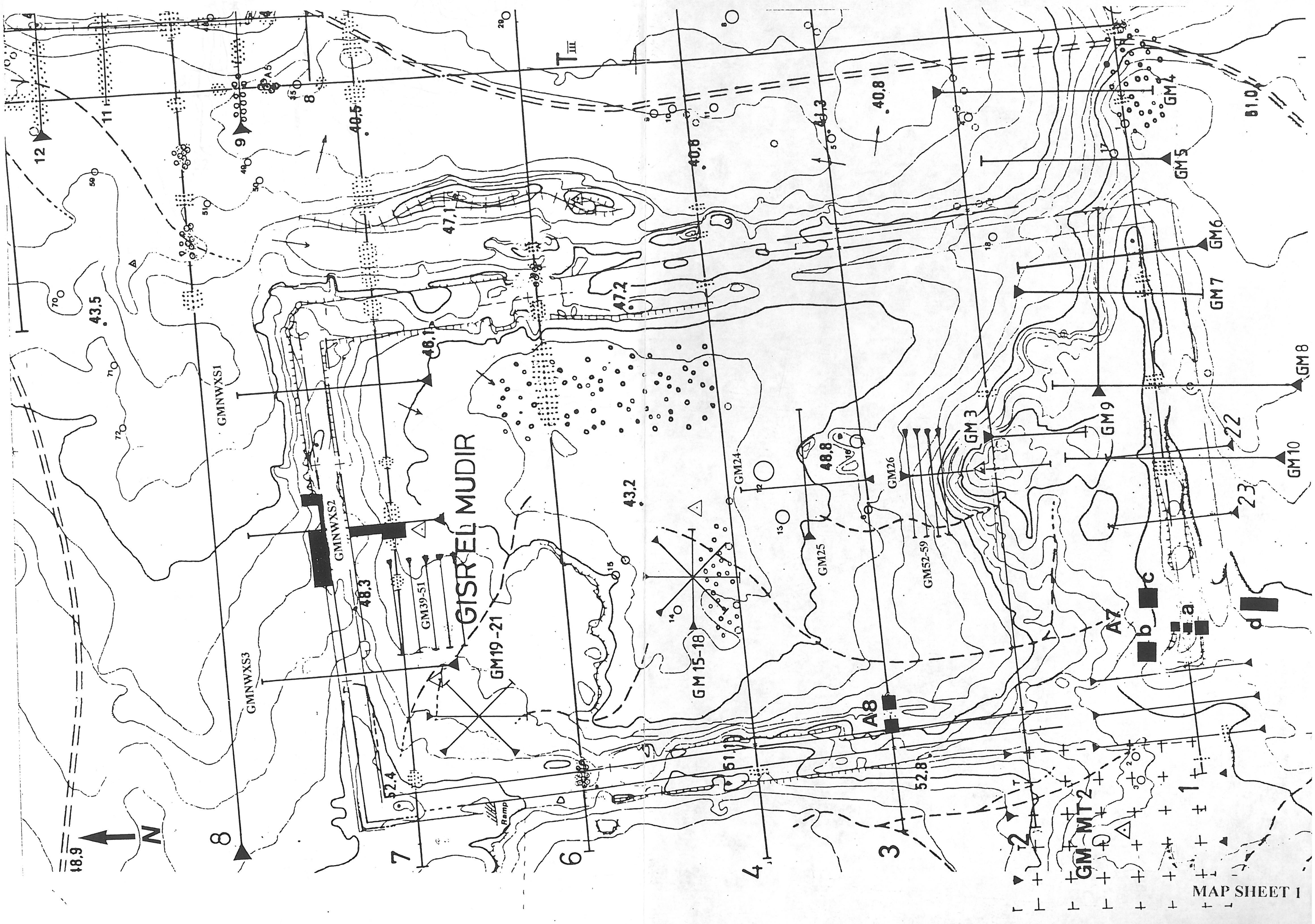
Probable shallow burials

Scale

1/2500 — 0 100 200

Elevations in metres above Mean Sea Level

Topographic information from 1978 Map Sheets for the Ministry of Housing and Reconstruction
UTM Projection - Hayford 1909 Int.Ellipsoid


GISR EL MUDIR
GMNWXS1
GMNWXS2
GMNWXS3
GM39-51
GM19-21
GM15-18
GM24
GM25
GM26
GM52-59
GM3
GM4
GM5
GM6
GM7
GM8
GM9
GM10
GM MT2
A5
A7
A8
a
b
c
d
Ramp
N
43.5
43.2
47.1
47.2
48.1
48.3
48.8
40.5
40.6
40.8
41.3
52.4
52.8
51.1
48.9
81.0

MAP SHEET 1

GM8

GM10

EET 1

N

56,7

36,4

40,8

52,1

50,2

33,9

35

43,6

40,5

35,9

52,6

51,5

48,4

39,2

42,2

39,5

30,5

39,8

32,9

38,1

38,8

39,3

41,7

46,7

39,7

41,1

45,4

S.A.N.

galleries

Ibis galleries

SACRED ANIMAL NECROPOLIS

P-Mag 5m grid

J4

290-294

J12

J24

B26

Mastaba de Ti

SERAPEUM

TII

TIII

A2

A3

A4

A

B

MAP SHEET 2

PLAN SHOWING POSITIONS OF NEAR-SURFACE AND ROCK-CUT BURIALS IN RELATION TO RESISTIVITY PROFILE GMNWXS2

SCALE 1: 50

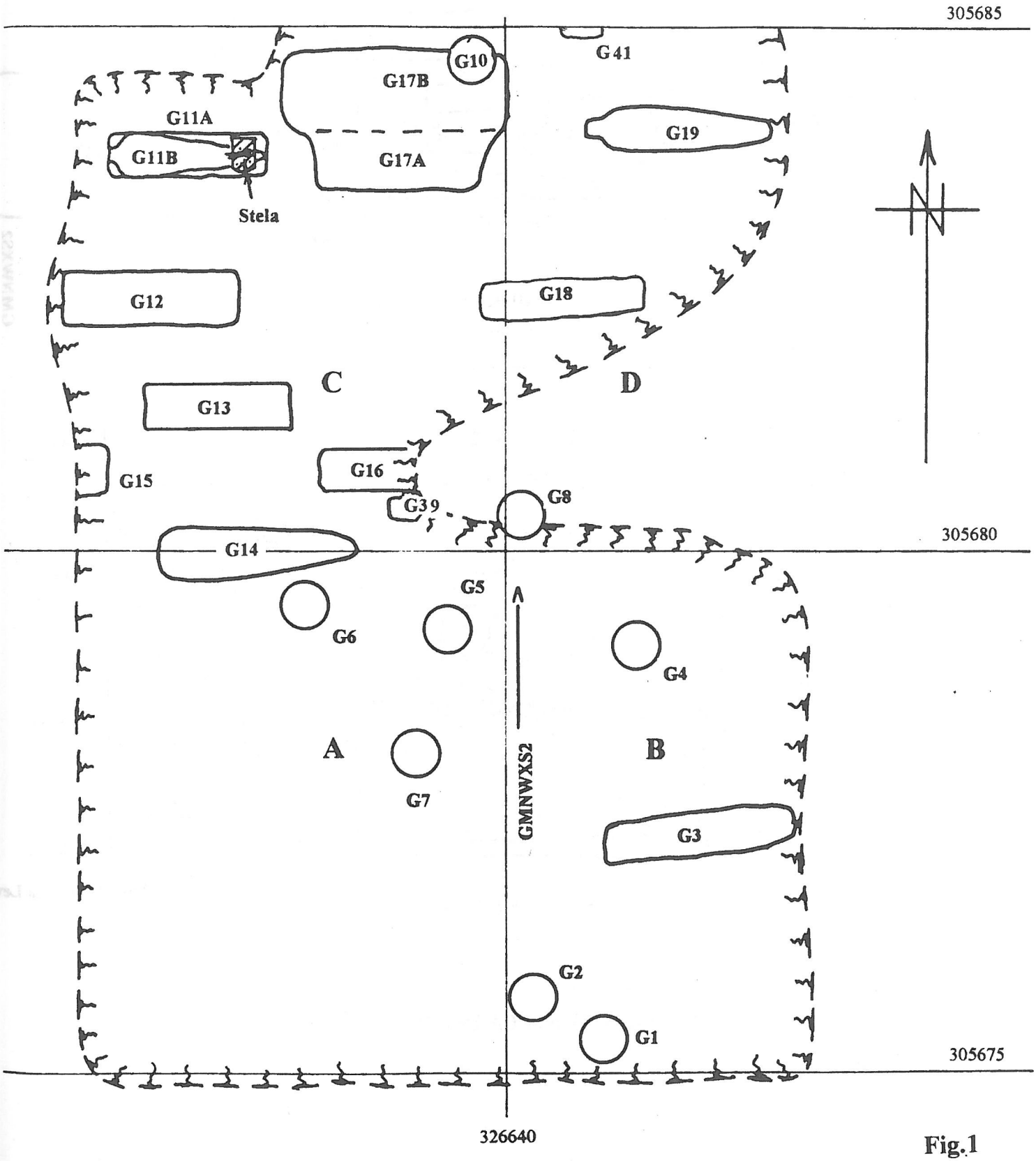
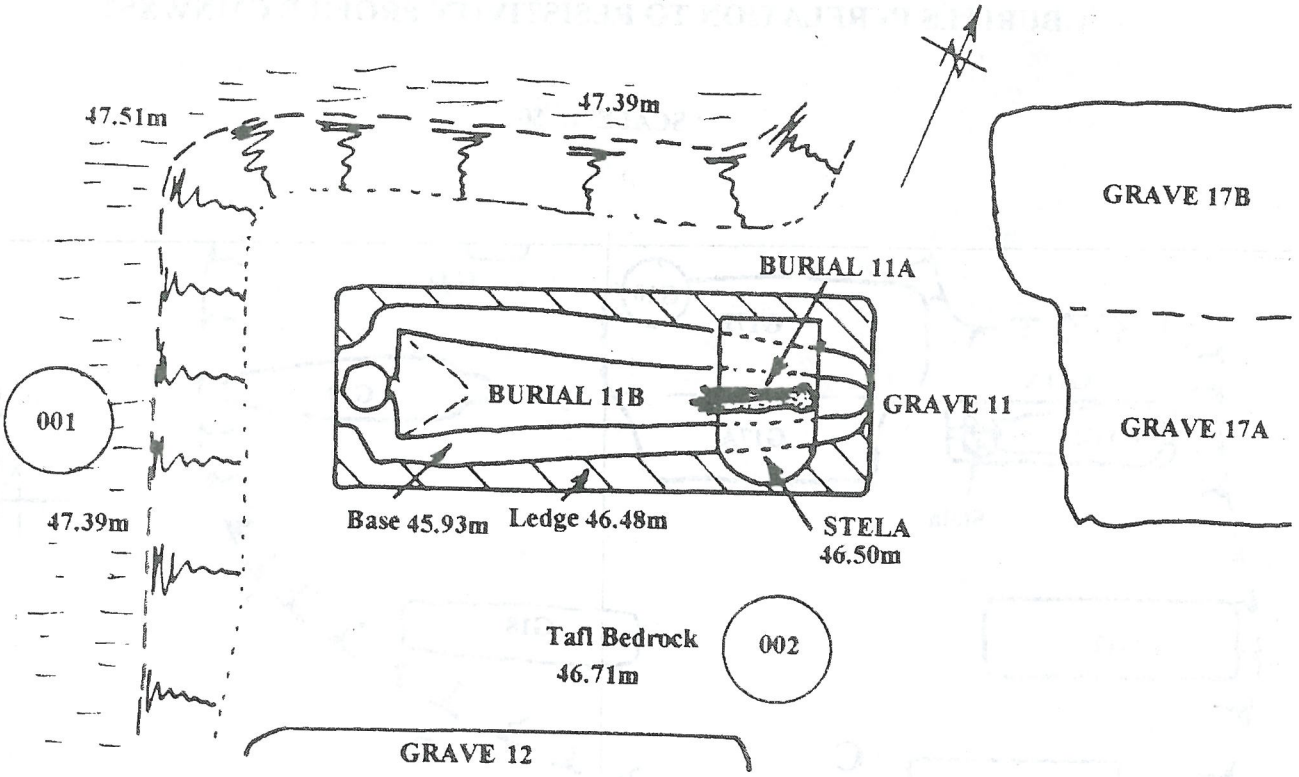
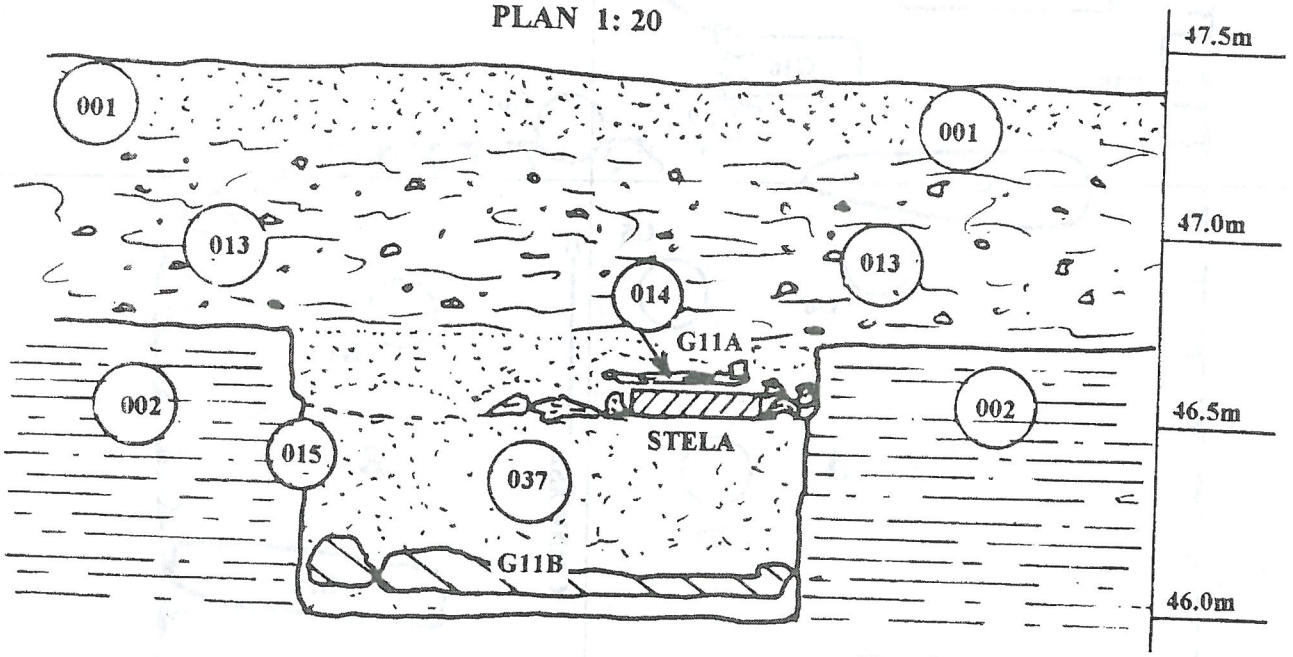


Fig.1



PLAN 1: 20



Elevation in metres above Mean Sea l

SECTION 1: 20

LOCATION OF STELA IN GRAVE No 11

Fig.1 A

PLAN SHOWING SONDAGE AREA ON GMNWXS2

SCALE 1: 500

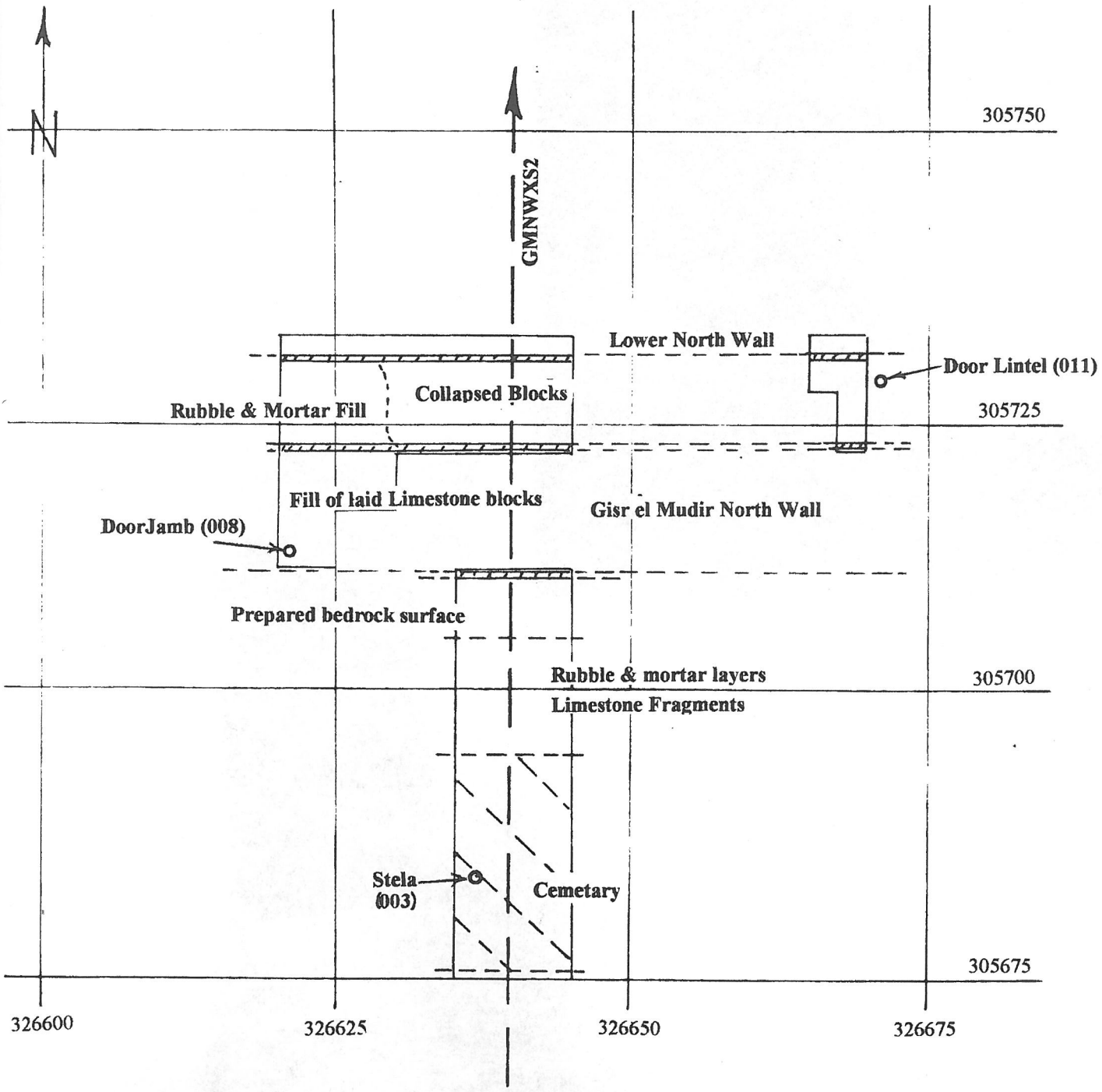
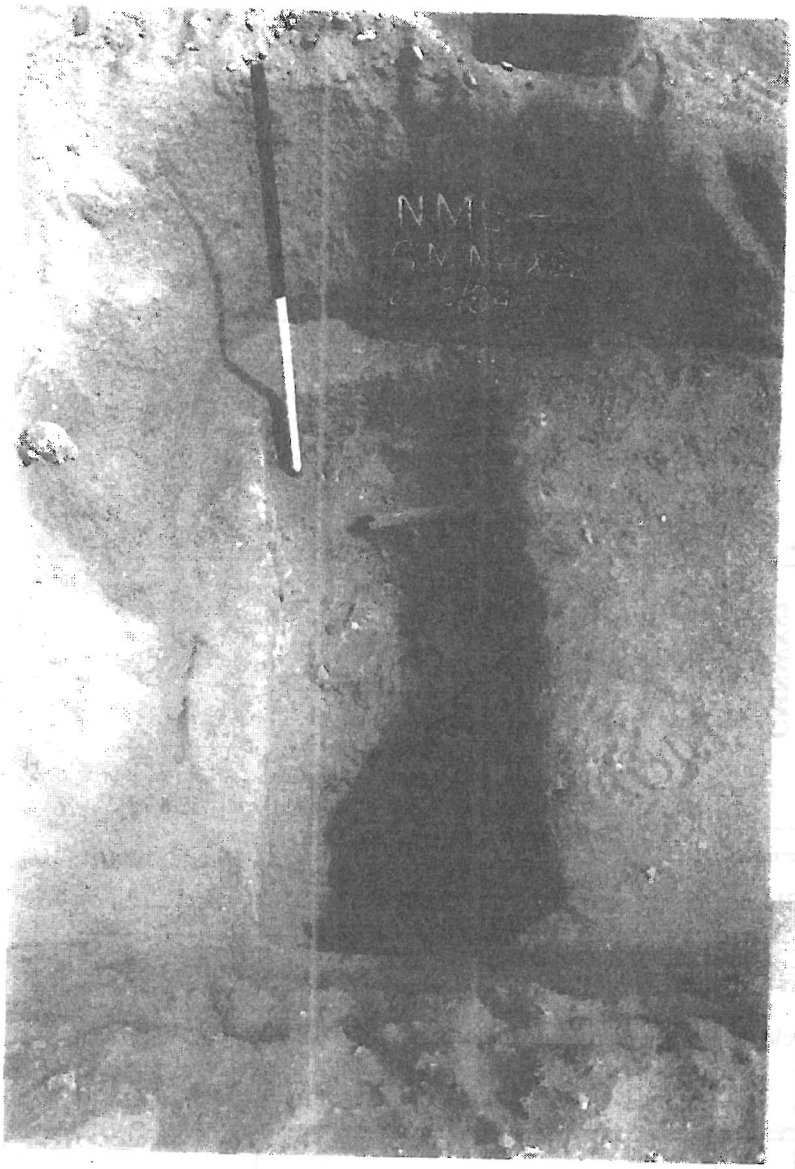


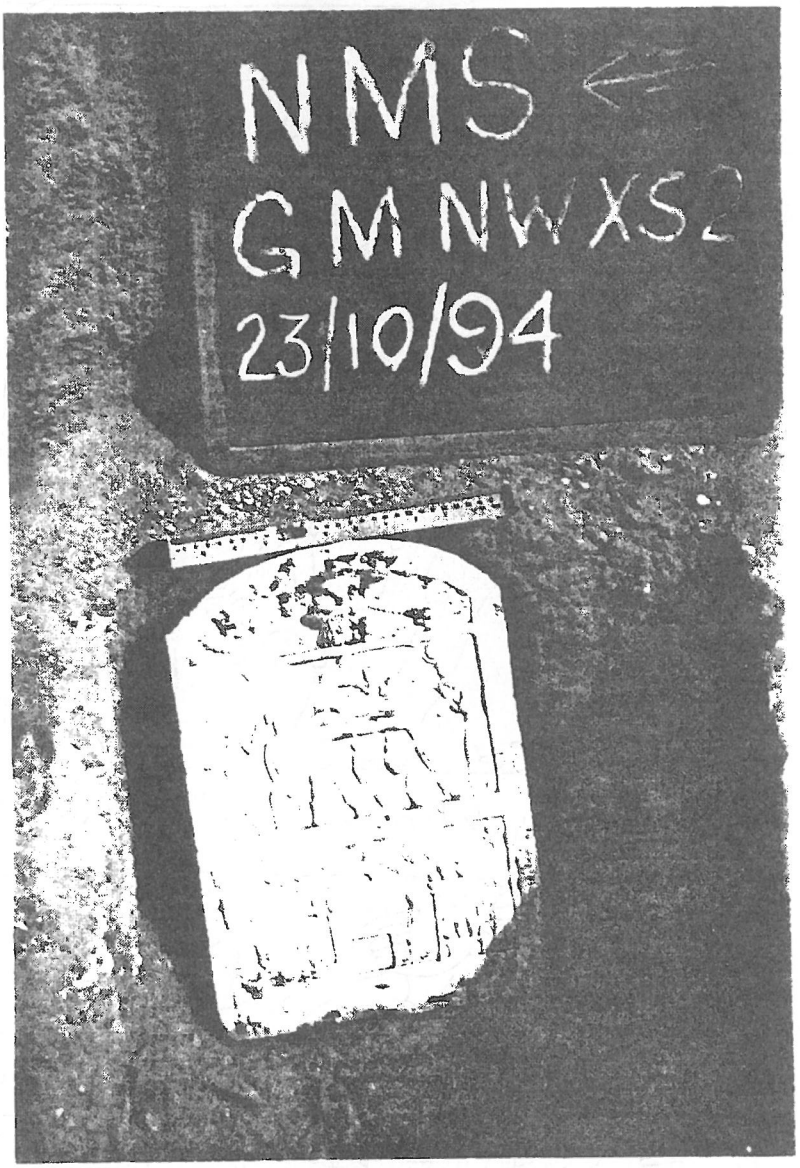
Fig.2



BURIAL 11A

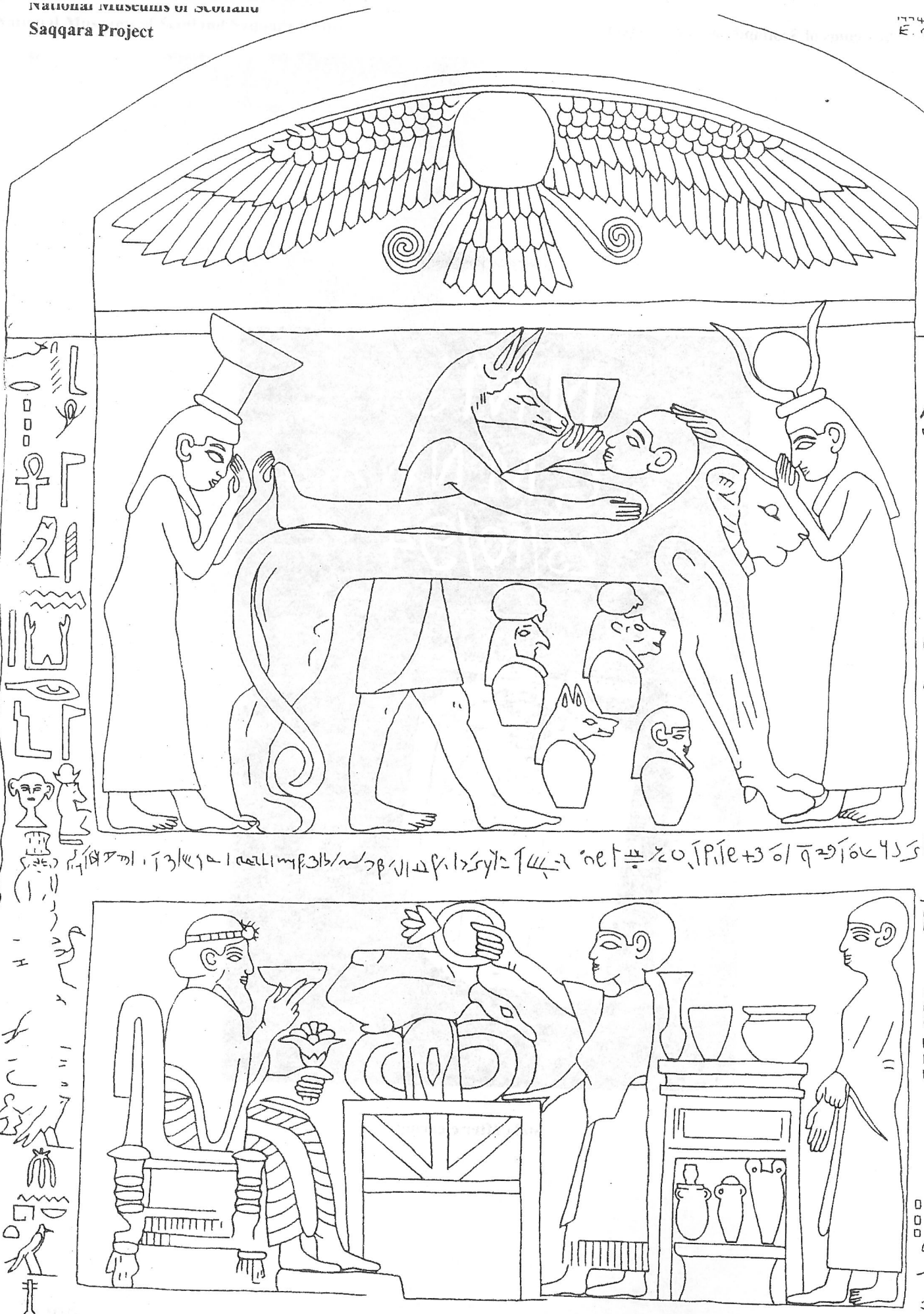
BURIAL 11B

Fig.3



Stela after clearing

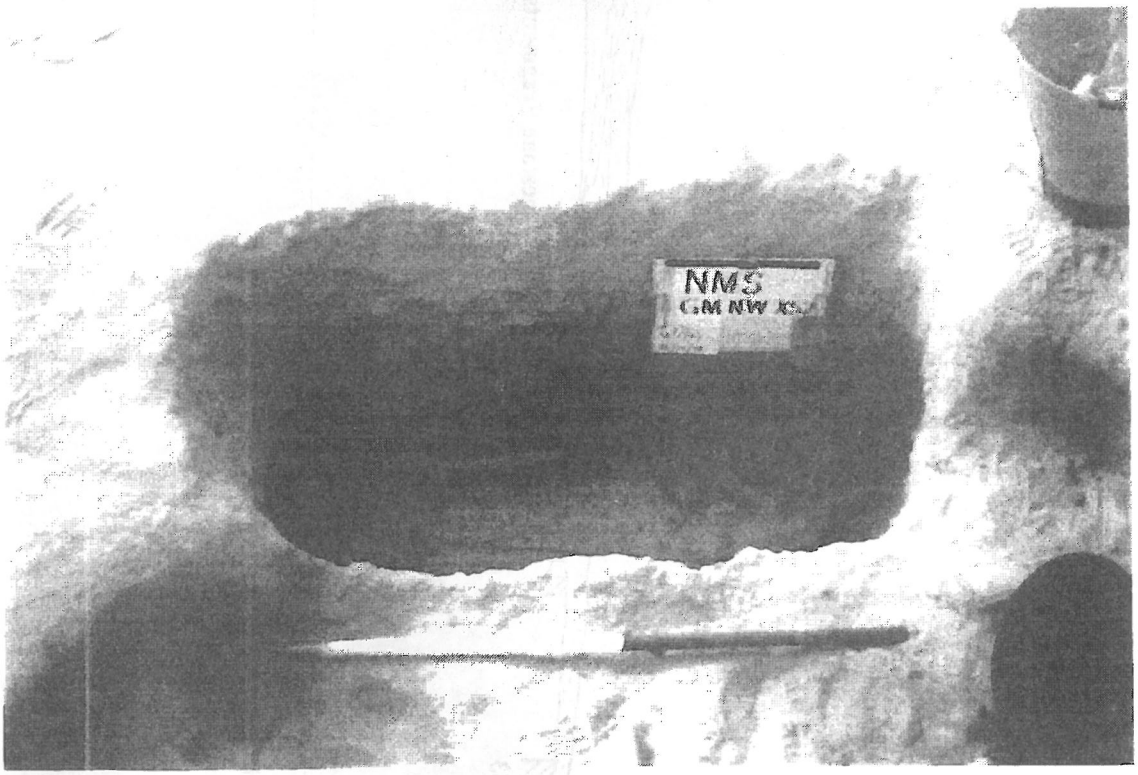
Fig.4



LIMESTONE STELA - Reg. No.001, GMNW - C1 - 003

Fig.5

GRAVE 3



GRAVE 17A

Fig.6

SECTION THROUGH GMNWXS2

SCALE 1: 200

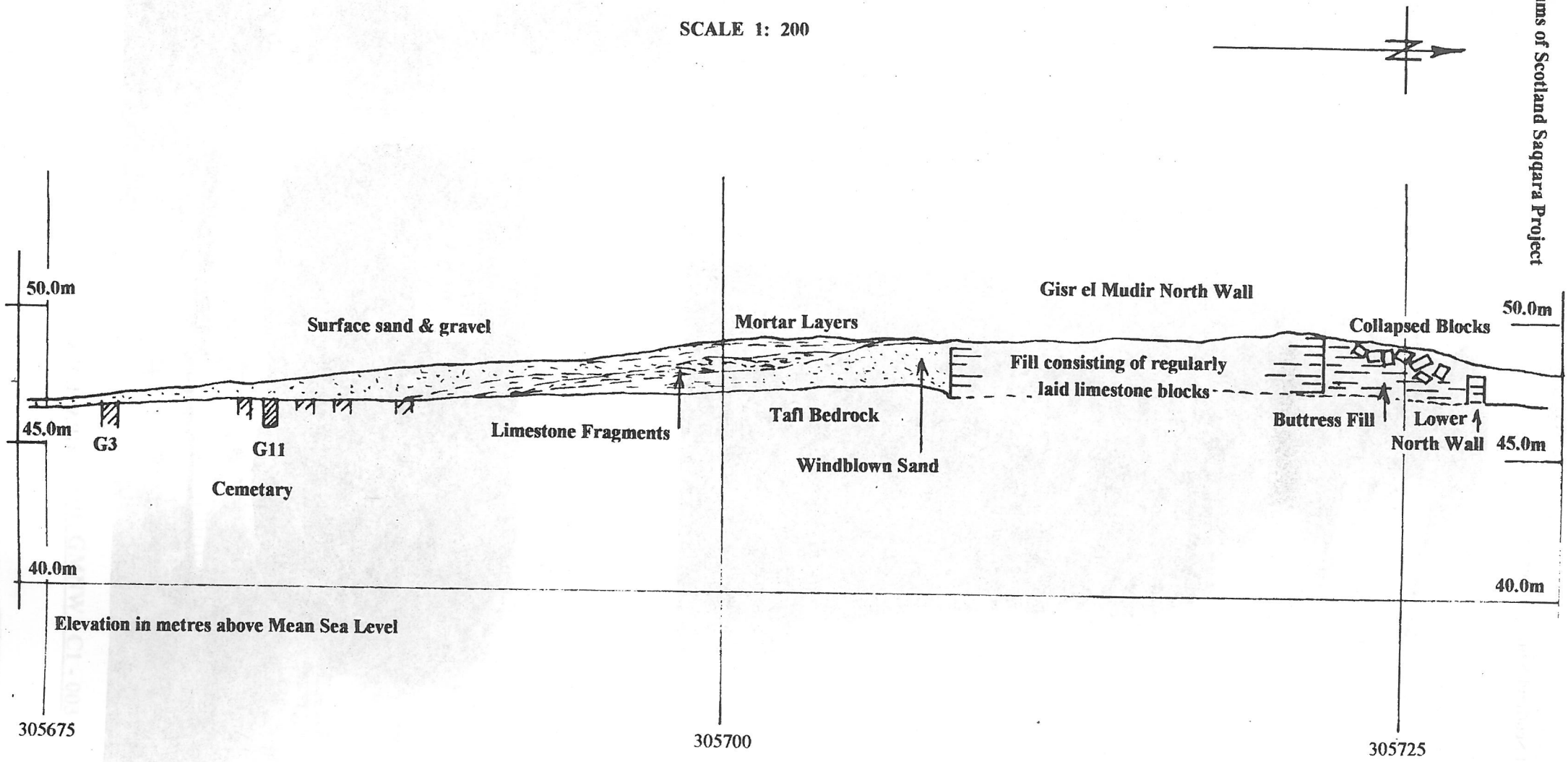
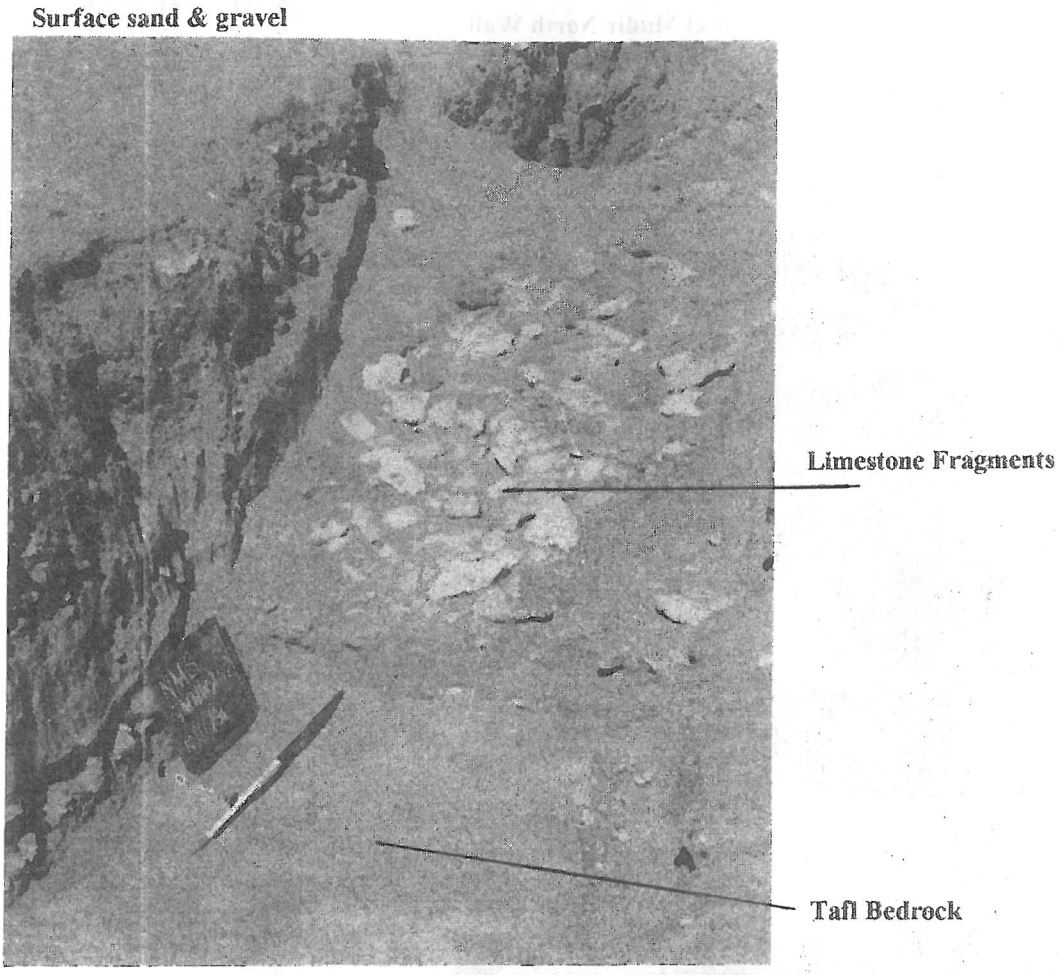


Fig.7


Surface sand & gravel
Limestone Fragments
Tafl Bedrock

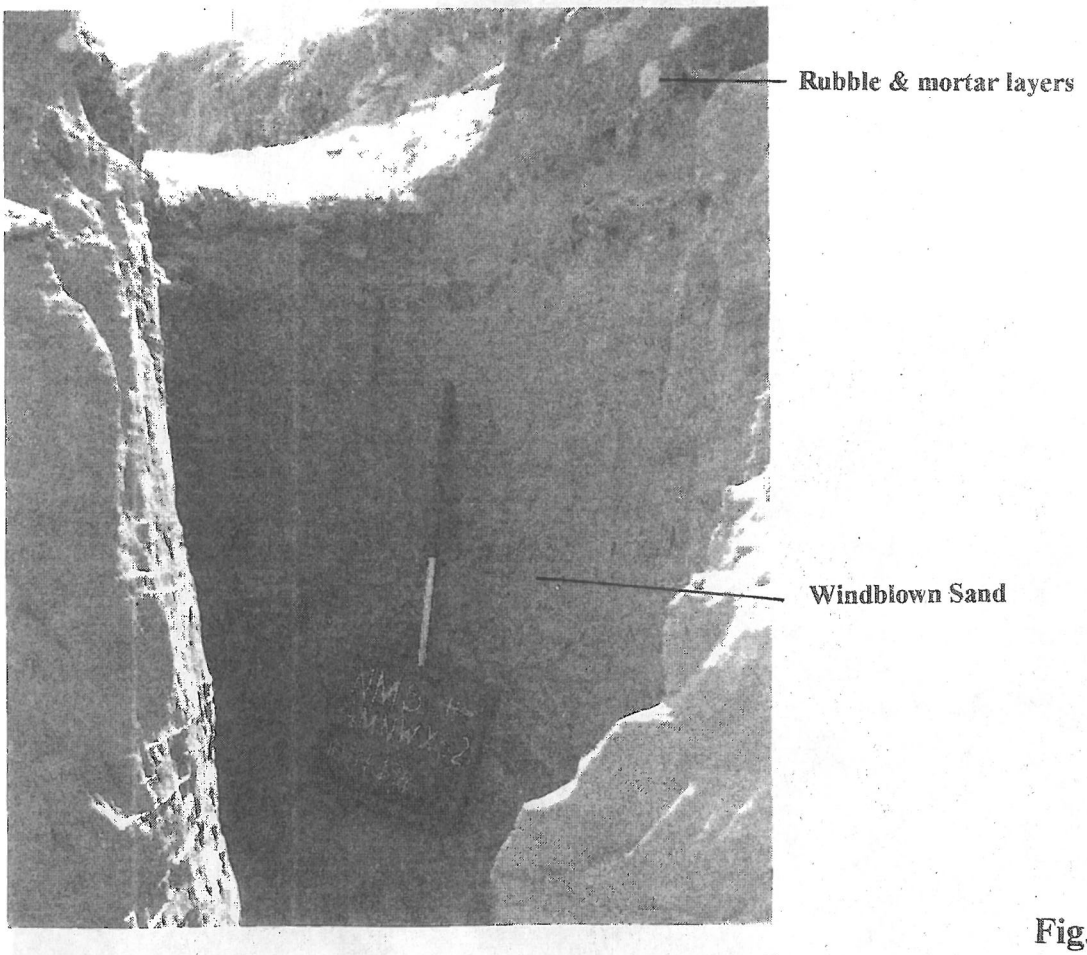

Rubble & mortar layers
Windblown Sand

Fig.7A

SECTION THROUGH GMNWXS2

SCALE 1: 200

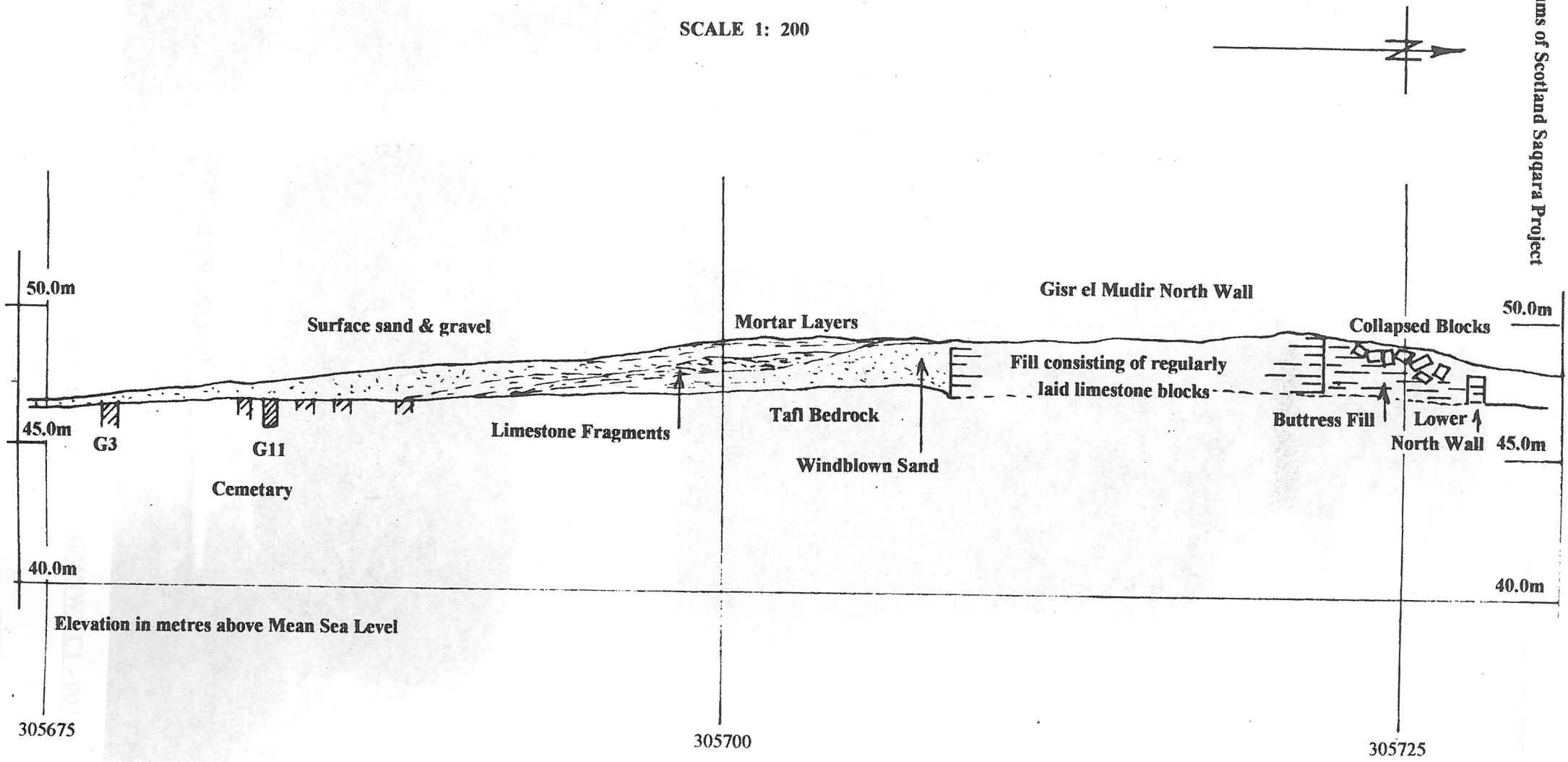
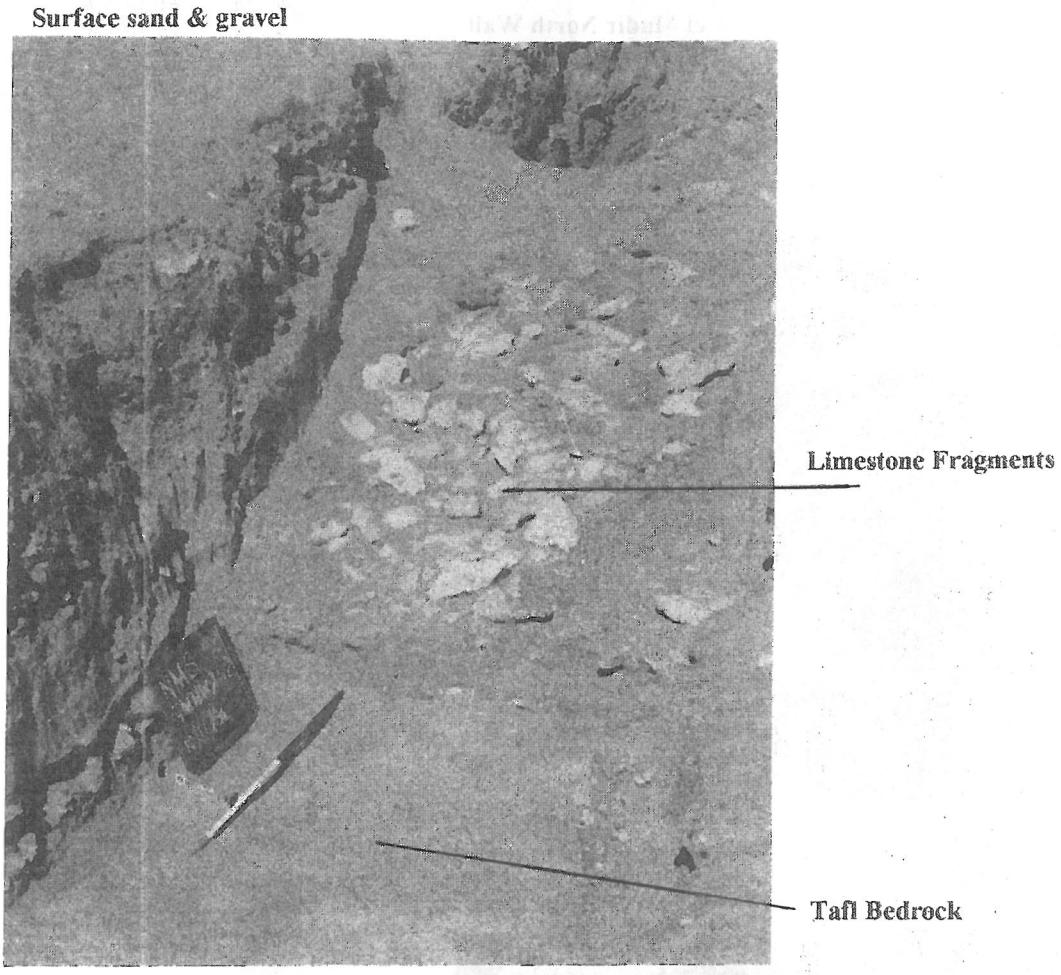


Fig.7


Surface sand & gravel
Limestone Fragments
Tafl Bedrock

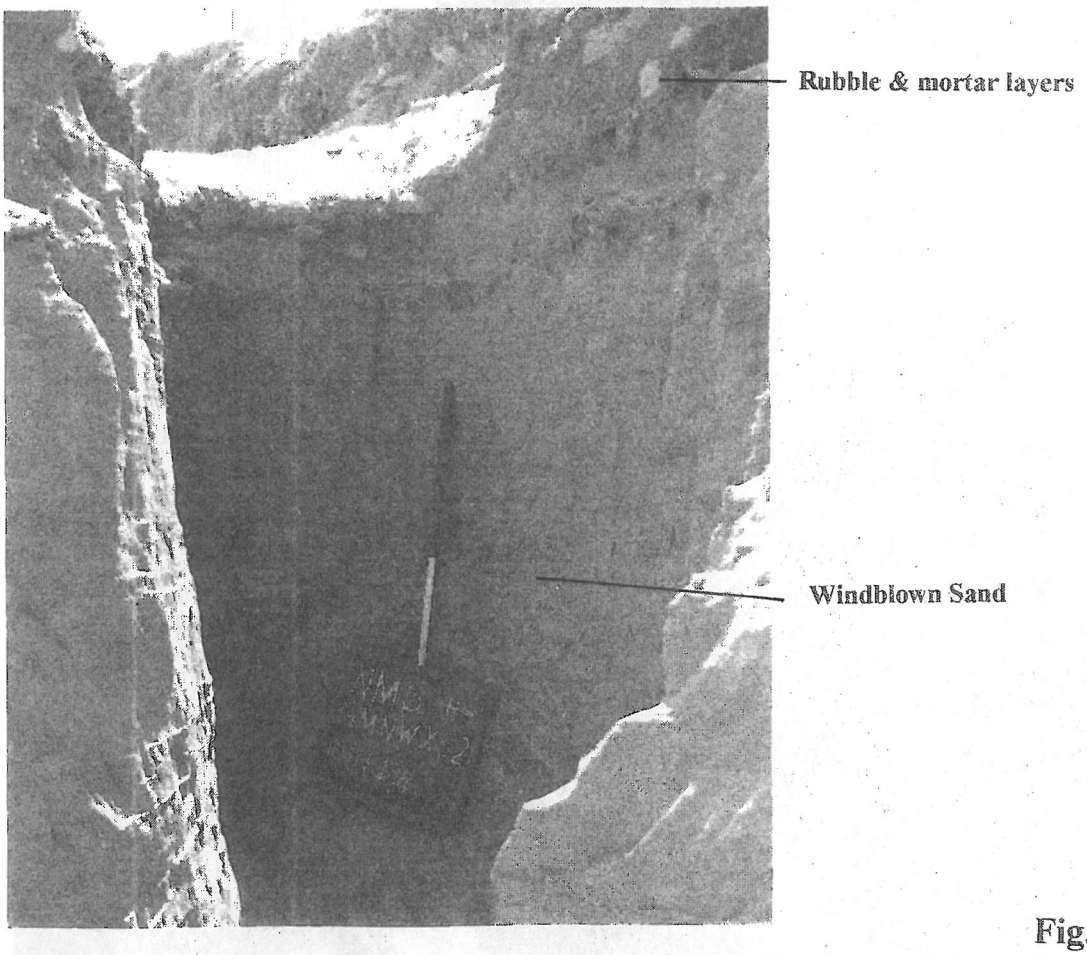
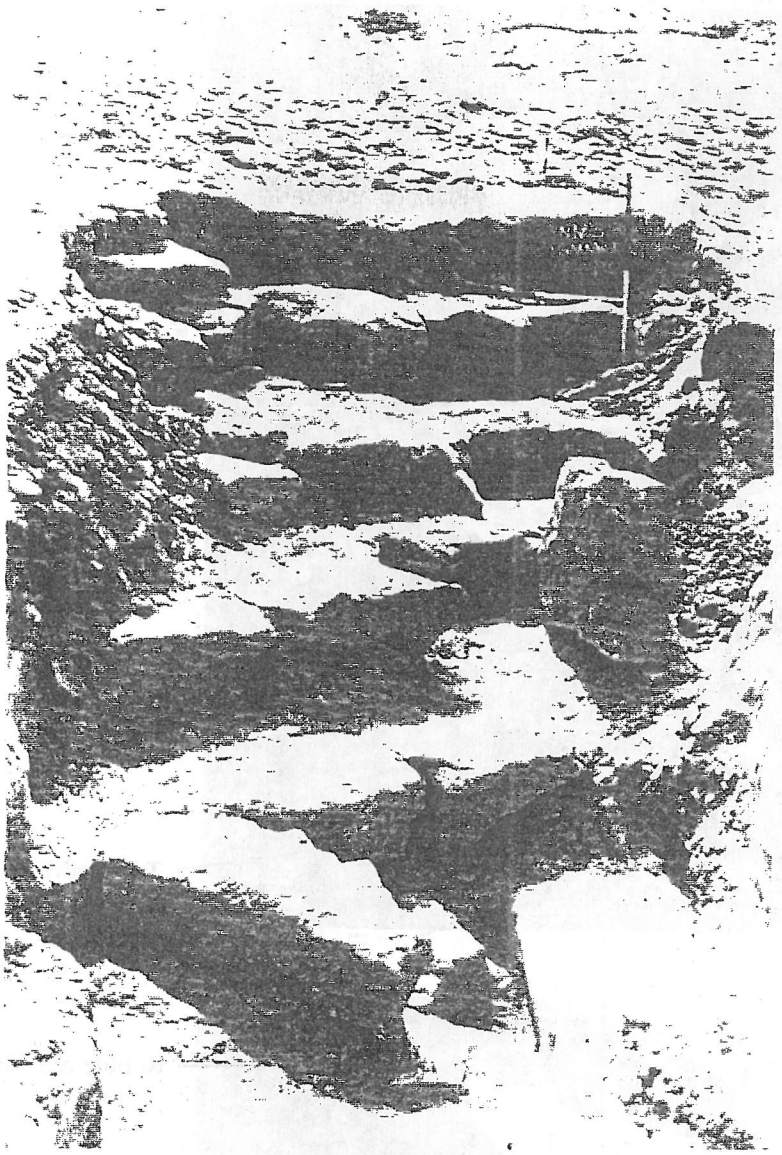

Rubble & mortar layers
Windblown Sand

Fig.7A

Gisr el Mudir North Wall



Fill of laid Limestone blocks

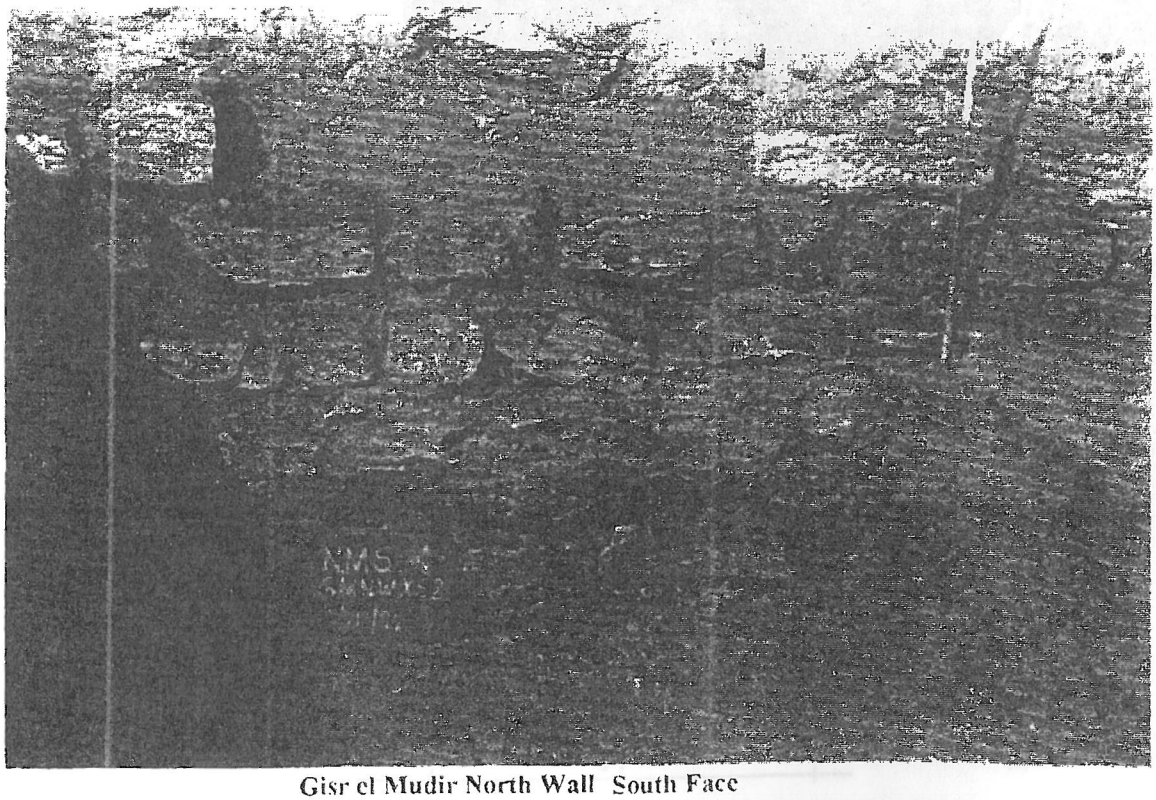
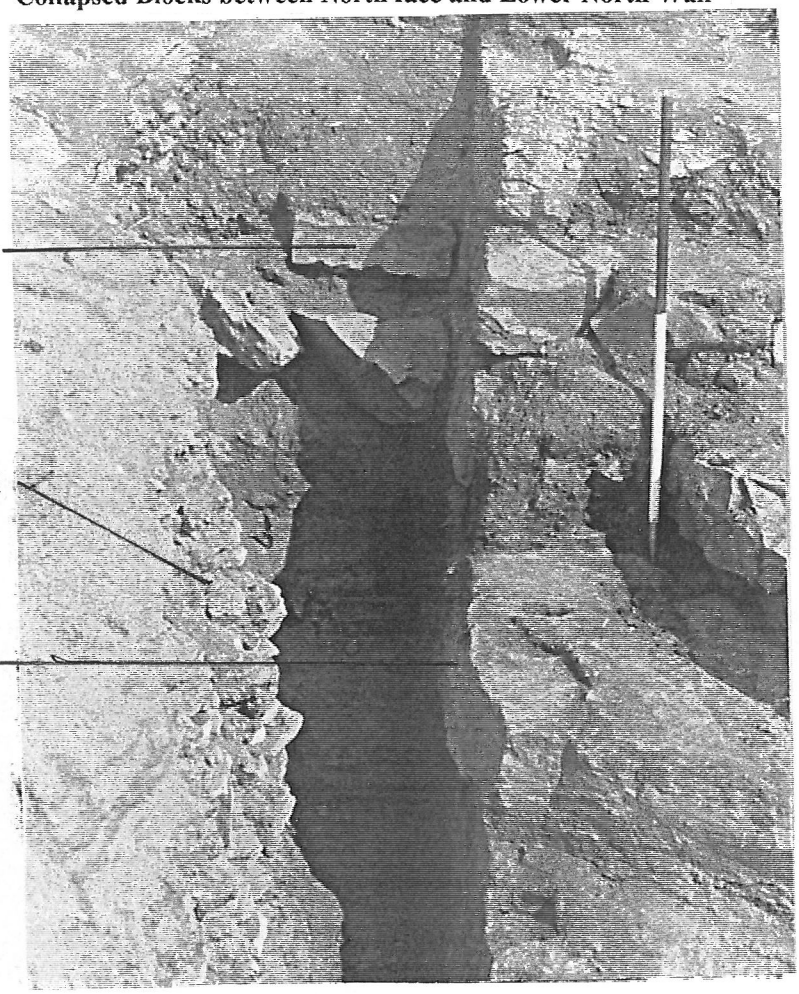


Fig.8

Gisr el Mudir North Wall South Face

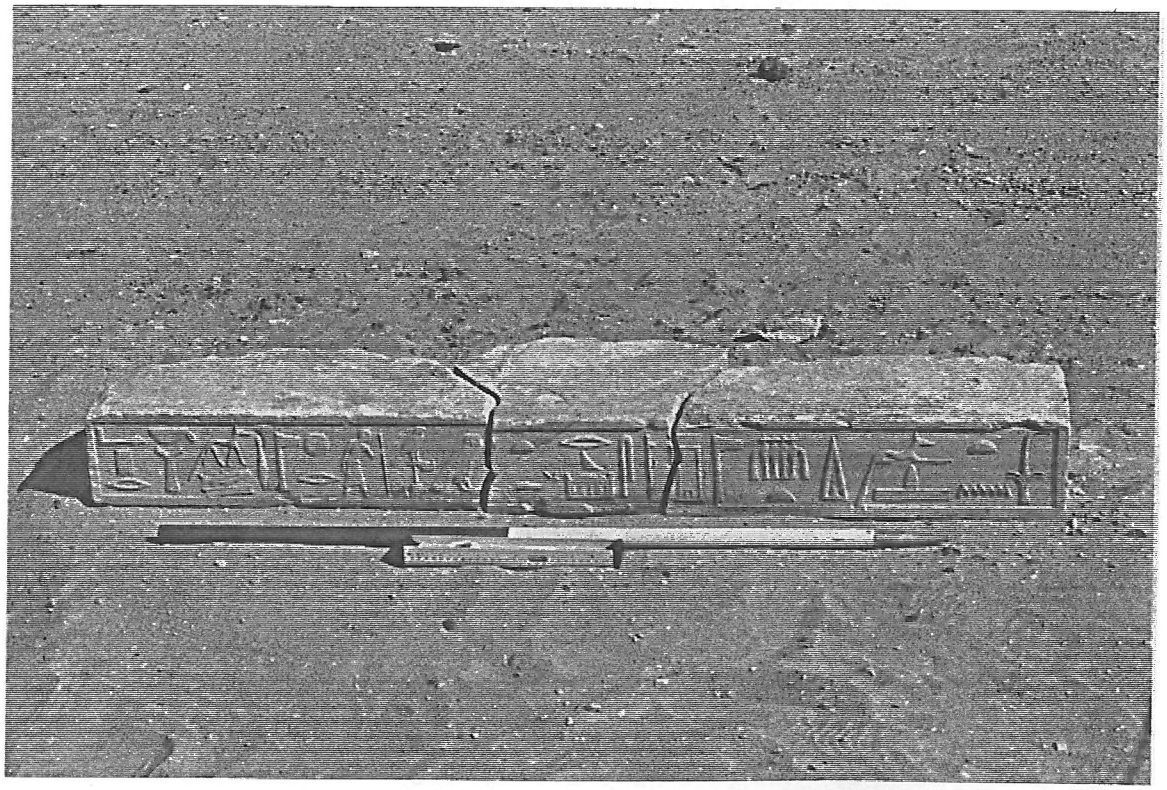
Collapsed Blocks between North face and Lower North Wall



Gisr el Mudir North Wall

Fig.9

DoorJamb (008)



Door Lintel (011)

Fig.10