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REPORT

Widan el-Faras Ancient Quarry Landscape, Northern Faiyum Desert, Egypt:

Site Description, Historical Significance and Current Destruction

16 November 2003

REPORT

EXPERT CENTER FOR CONSERVATION OF MONUMENTS AND SITES

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Title

Widan el-Faras Ancient Quarry Landscape, Northern Faiyum Desert, Egypt: Site Description, Historical Significance and Current Destruction

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ABSTRACT

Widan el-Faras ancient quarry landscape in the Northern Faiyum Desert (Egypt) consists of more than 4.500 years old basalt quarries used at the Old Kingdom pyramid fields, as well as the world's oldest paved road (11.5 km long), storage areas for stone, ancient encampments and several other archaeological features. Together with Chephren's Quarry in Lower Nubia, it is the oldest well-preserved hard-stone quarrying area in the world. It gives unique insight into highly organised exploitation and massive procurement of natural stone at a very early stage in human history, and is exceptional also because of being remotely located, far away from where the stone was used.

The site is located at Gebel Qatrani, beside some of the most prominent topographical features within the boundaries of the Lake Qaroun nature reserve, in an area exceptionally rich in natural and cultural heritage sites. As a whole, this area is currently considered for nomination as a UNESCO World Heritage Site. In this situation it is highly alarming that a significant part of the ancient quarries since 2001-2002 are being destroyed by modern exploitation of basalt, which is used for road building and other construction works.

The destruction of the site must obviously come to a halt and the modern quarrying regulated before the whole area can be nominated as a World Heritage Site. Also if nomination is not put forward, it is very important to regulate the modern activity to stop destruction. In order to aid necessary regulation, this report has been prepared on a voluntary basis, on request of various UNESCO organisations, for documentation purposes following several recent archaeological surveys. It gives a brief overview of Widan el-Faras and its significance as an ancient quarry landscape and also describes the current destruction in detail. The report also briefly describes the nearby Umm es-Sawan ancient gypsum quarries, which can be regarded part of the "greater" Widan el-Faras quarry landscape.

Picture on cover: Recent destruction of the Widan el-Faras ancient quarry. A 4.500 years old extraction site removed by bulldozers, clearing the site for modern basalt quarrying (January 2003)

Contents

1 Introduction

Egyptian and international efforts are currently undertaken to nominate the Northern Faiyum, including Lake Qarun and the Northern Faiyum desert, as a UNESCO World Heritage Site. The area is exceptionally rich in natural and cultural heritage sites[1] and parts of it have since 1989 enjoyed protection as a national Egyptian nature reserve (Lake Qarun nature reserve[2], see fig. 2).

The Widan el-Faras ancient basalt quarries at Gebel Qatrani and the associated ancient infrastructure constitute an important site *within the boundaries of Lake Qarun nature reserve* (figs. 1 & 2). It can be regarded an early industrial landscape – or an *ancient quarry landscape* – and features one of the oldest hard-stone quarries in the world used for architectural purposes, as well as the world's oldest paved road. The exploitation of the Widan basalt probably commenced already in the late Neolithic for bowls and vessels – and reached its peak during the Old Kingdom when it was the main source of basalt for the pyramid fields at Giza (Khufu), Saqqara (Userkaf) and Abu Sir (Nyuserra and Sahu-Ra). Parts of the quarries were later reopened during the Roman period.

That Old Kingdom basalt exploitation took place at Gebel Qatrani has been anticipated for about a century, but the actual quarries and parts of the ancient infrastructure were discovered by Bown and Harrell (1995). It is only since the early 1990s that the site has been subject of serious archaeological and geological survey under the aegis of the Supreme Council of Antiquities (SCA) and the Egyptian Geological Survey and Mining Authorities (EGSMA) (Harrell & Bown 1995, Bloxam & Storemyr 2002, Bloxam 2003). During these surveys it has become clear that the site has outstanding qualities not only with regard to very early basalt quarrying operations, but also because it includes a range of features related to transportation of stone and the general organisation of stone extraction in Egyptian antiquity. This until recently extremely well preserved ancient infrastructure (encampments, storage areas, roads, harbour, secondary quarries etc.) has been surveyed, but it has not yet been possible to reach a proper interpretation of how it actually was used.

In this situation it came as a sad surprise that in 2001-2002 modern basalt quarrying commenced within the ancient site. One modern quarry has been opened in the middle of the ancient quarries, whereas two others have started their activities just beside the site. The new quarries are seemingly operated by several private companies and the stone extracted is used for road building and other construction work.

The ongoing destruction of the site is a serious blow for the efforts of nominating parts of the Faiyum as a World Heritage Site. In order to stop the destruction and possibly re-locate modern extraction to other basalt outcrops without archaeological features, documentation is needed of the ancient site and its current situation. This report, giving introductory documentation of the significance of the site and its current destruction, has been prepared on a voluntary basis because of many requests for information, especially from various UNESCO organisations. It is intended for any institution and individual concerned with the situation. The information presented leans on results of surveys carried out over the last 10 years (Harrell & Bown 1995, Bloxam & Storemyr 2002, Bloxam 2003), as well as on a recently established GIS of the area by Mr. Tom Heldal.

[1] See e.g report from Dolson et al. (2002). This report can be downloaded from: www.searchanddiscovery.com/documents/cairo/index.htm

[2] See www.touregypt.net/featurestories/qaroun.htm and www.eeaa.gov.eg/english/main/protect_desc.asp

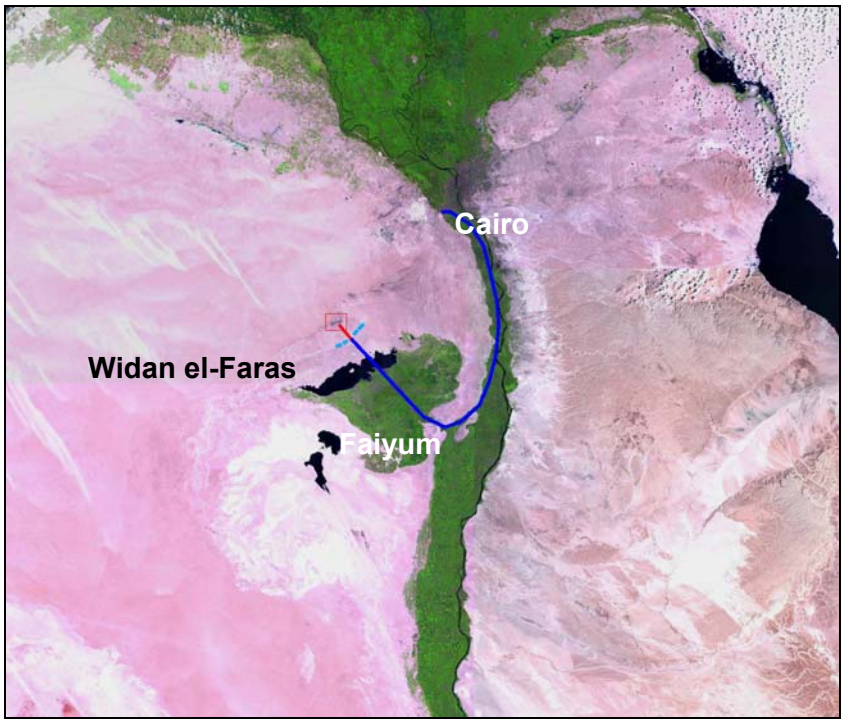

Fig. 1: Location of the Widan el-Faras ancient basalt quarries. Landsat satellite image. The direct distance between Widan and Cairo is about 80 km. The basalt transportation route between Widan and the Old Kingdom pyramid fields is indicated (red-overland, blue-shipping). Note that the level of Lake Qarun (ancient Lake Moeris) was much higher in the Old Kingdom than today (indicated by light blue broken line).

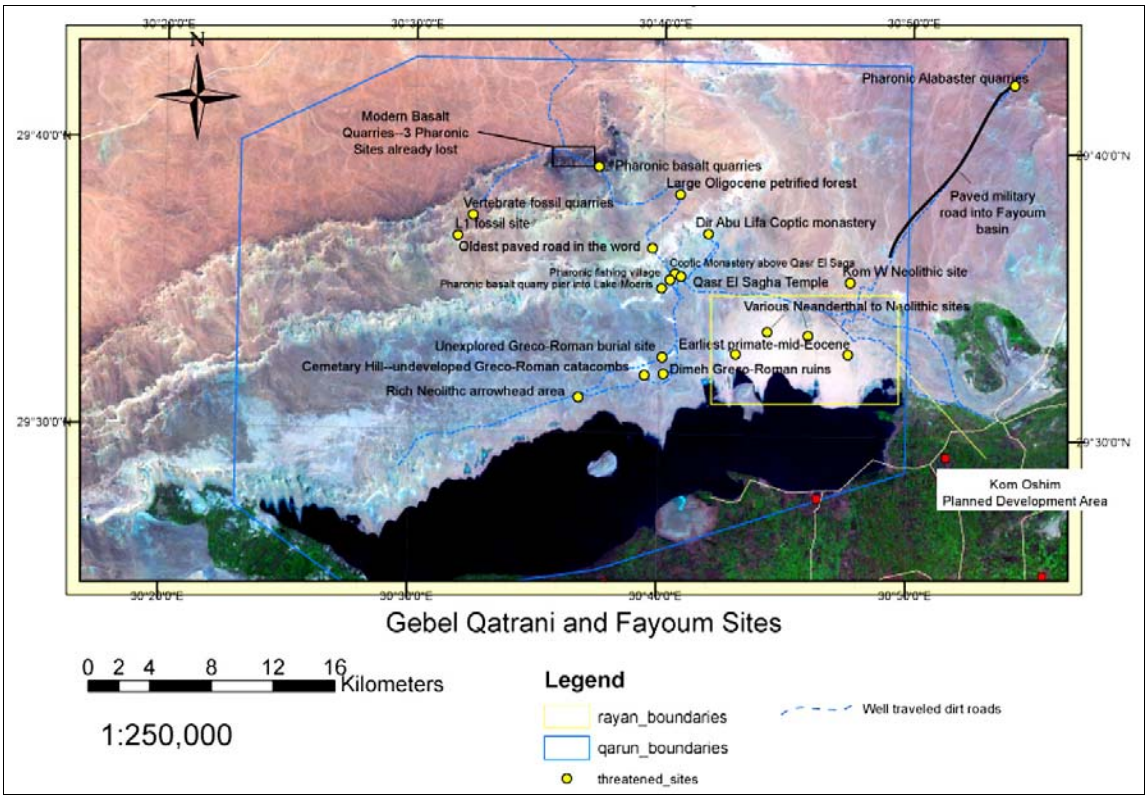

Fig. 2: Location of natural and archaeological sites in the Northern Faiyum desert. The boundaries of the Qarun Nature Reserve are marked with a blue line.
Figure (GIS-based) provided by Dr. John Dolson.

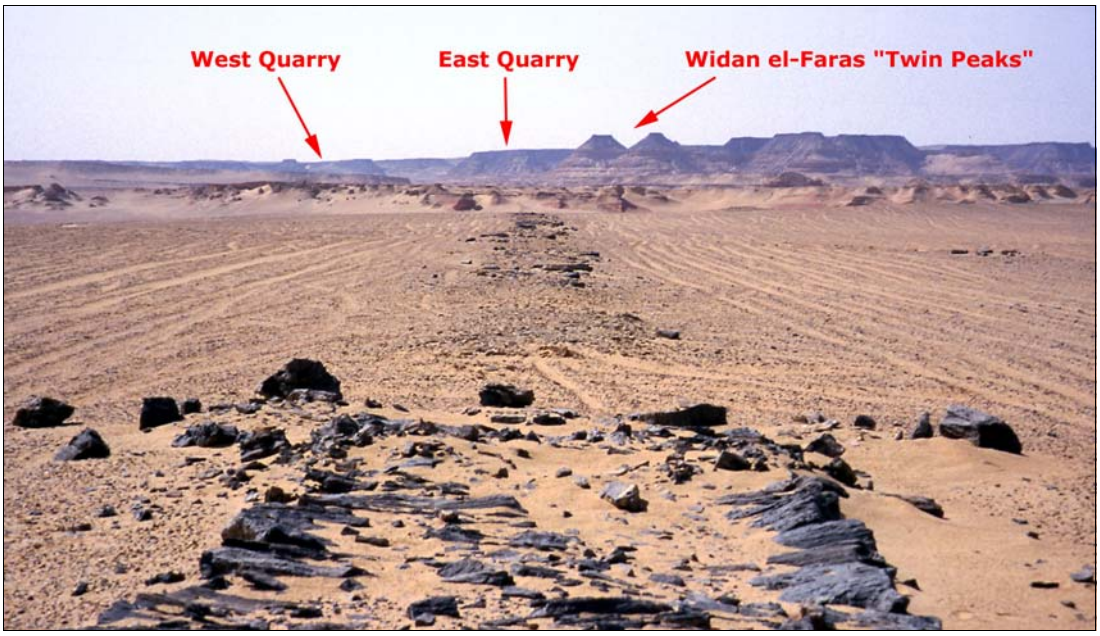

Fig. 3: The Widan el-Faras site as seen from the south along the world's oldest paved road between Widan and Qasr el-Sagha. This road was used for transportation of basalt blocks in antiquity.

2 Widan el-Faras ancient quarry landscape

The Widan el-Faras ancient quarry site is located beside the most prominent part of the basalt outcrops defining the escarpment at Gebel Qatrani (translates to "Tar hills"). The 40-50 m high escarpment is littered with black basalt pebbles originating from the weathering of the basalt as well as from the ancient quarrying operations. The name "Widan el-Faras" (translates to "Ears of the mare") refers to the distinctive twin peaks just to the east of the site (fig. 3). The whole quarry landscape can be divided into five sub sites (fig. 4, 5):

- The East quarry (with individual quarry areas numbered 1, 2, 3 and 4)
- The West quarry (with individual quarry area numbered 5)
- The Basalt block area (formerly known as the "Quarrymen's camp")
- The Encampment area
- The Ancient paved quarry road from the quarries to Qasr el-Sagha (including the quay at Qasr el-Sagha)

The first four sub sites define an area of 1,6 x 2,1 km (3,4 km^2), whereas the ancient road is some 10,5 km long (11,5 km when including individual road segments leading into the quarries). Coordinates of important parts of the site are given in table 1.

Tab. 1: Centre coordinates of important parts of the site (in different coordinate systems/datums).

Site	UTM (WGS84)	D M S.ss (WGS84)	D M S.ss (Old Egyptian)
Basalt Block Area	36R N270024 E3282853	N29°39'15.90" E030°37'26.68"	N29°39'15.29" E030°37'20.69"
East Quarry 1	36R N270003 E3283395	N29°39'33.48" E030°37'25.48"	N29°39'32.87" E030°37'19.50"
East Quarry 2	36R N269783 E3283305	N29°39'30.41" E030°37'17.37"	N29°39'29.80" E030°37'11.39"
East Quarry 3	36R N269718 E3283448	N29°39'35.01" E030°37'14.85"	N29°39'34.40" E030°37'08.87"
East Quarry 4	36R N269653 E3283521	N29°39'37.34" E030°37'12.38"	N29°39'36.73" E030°37'06.39"
West Quarry 5	36R N268973 E3283664	N29°39'41.53" E030°36'46.99"	N29°39'40.91" E030°36'41.01"

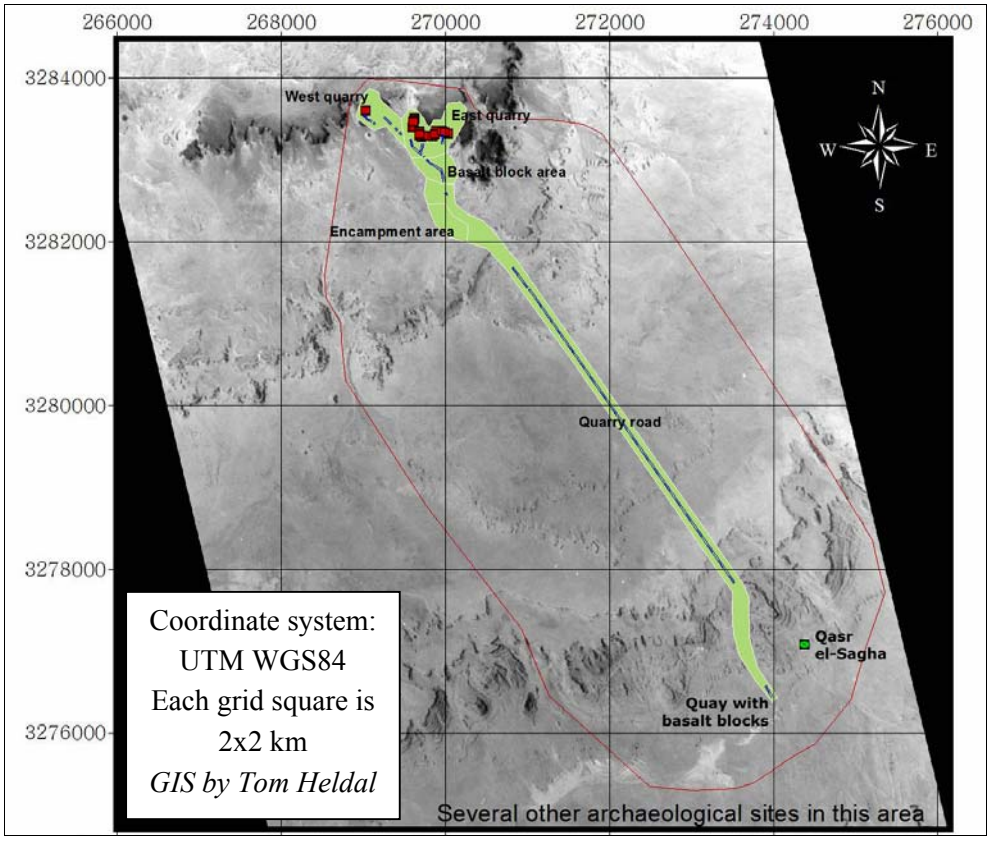

Fig. 4: Overview and definition of sub sites (green). Base map: Corona satellite image from the 1960s.

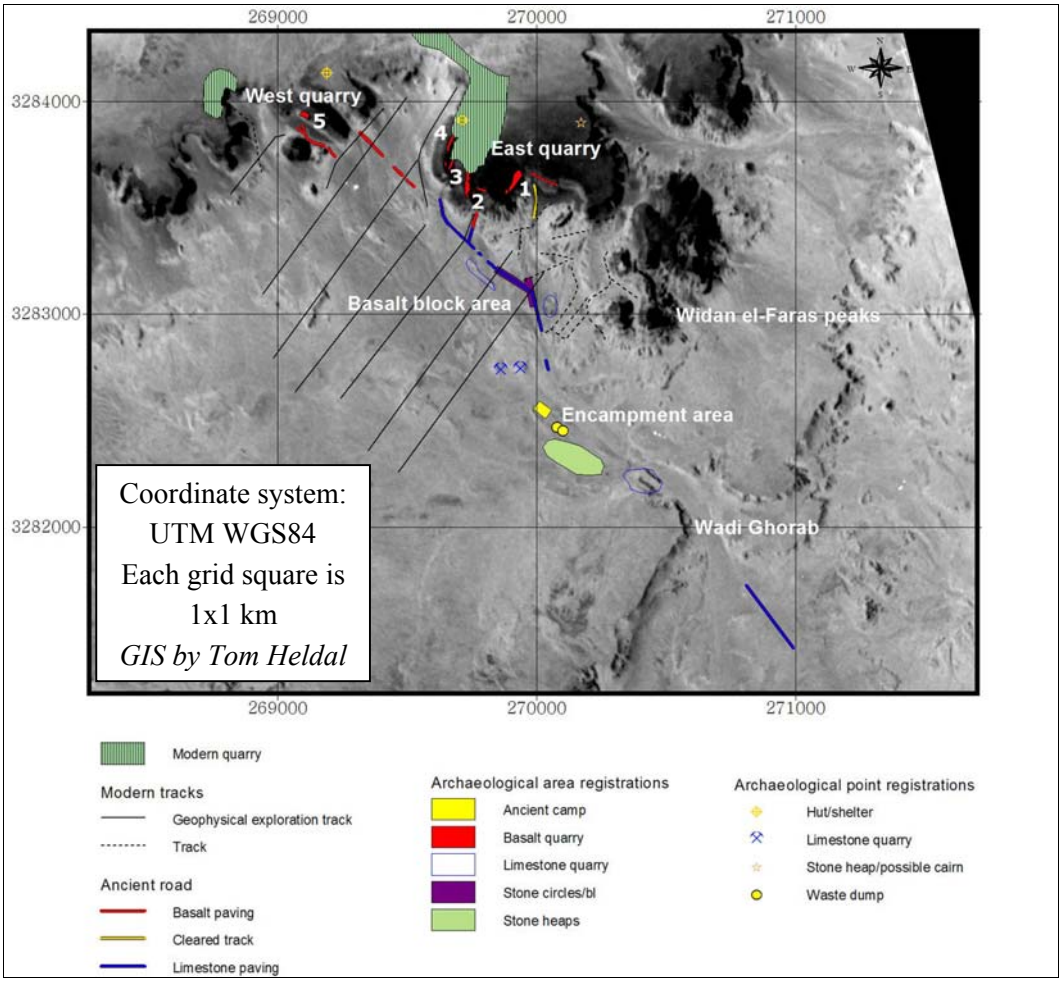

Fig. 5: Detailed map of the four sub sites at Widan el-Faras. Note the modern quarries.

Fig. 6: Part of the East quarry (quarry area 1) as seen towards the south. This part has remains of both Pharaonic (Old Kingdom) and Roman extraction.

2.1 EAST QUARRY

The East quarry features four individual quarry areas, which are characterised by a series of shallow depressions and low benches along the edge of the basalt escarpment. The total length of the quarries is some 950 m. Since the basalt is very weathered, it can be difficult for the layperson to observe these features. However, it seems that each individual quarry area was opened along small valleys in the escarpment, as evidenced by the fact that segments of the ancient quarry road ends just below these valleys. Thus, basalt blocks wedged out along cracks in the basalt were tumbled down the escarpment to await transport along the roads.

As evidenced by pottery scatters and the known use of the basalt, all the quarries were opened in the Old Kingdom, in a period of some 150-170 years between the 4th and the 5th Dynasties. In this period basalt was used for floors, retaining walls and other architectural elements in four pyramid complexes: Khufu at Giza, Userkaf at Sakkara, and Sahu-Ra and Nyuserra at Abu Sir.

In addition to the Old Kingdom quarrying, quarry area 1 features definite traces of Roman quarrying. In this part there are Roman pottery and traces of Roman wedge holes in the rock.

Fig. 7: Part of the Ancient paved road leading up to the West quarry, which is situated at the end of the sandy path in the middle of the picture.

2.2 WEST QUARRY

The West quarry is much smaller than the East Quarry, consisting of some six shallow depressions along a 60 m long part of the basalt escarpment. According to the age of the pottery scattered at the site, this quarry was also opened in the Old Kingdom. It is not known why the quarrymen took the trouble of opening this quarry and constructing a road over a long stretch of wadi (some 600 m) from the East quarry, in which there was plenty of good stone still to be had.

Fig. 8: Stone tools found in the Widan quarries

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In all the quarries at Widan el-Faras stone tools can be found (fig. 8). Used for varying quarrying purposes, these tools definitely did not come from the Faiyum. Most probably they were imported from Upper Egypt or Nubia (e.g. Aswan or Chephren's Quarry) – a feature that tells about widespread exchange among quarrymen and the organisation of quarrying in ancient Egypt.

It has been estimated that the West and the East quarries together may have provided between 2000 and 4000 m^3 of basalt in the Old Kingdom. This roughly coincides with the amount of stone known to have been used at the Pyramids. Most blocks were – probably due to the long and difficult transport – of a small size (some 0,4 m^3), but there is also evidence of much larger blocks possibly having been transported from the quarries. At Abu Sir the largest basalt blocks to be seen are some 4-5 m^3.

Fig. 9: The Basalt block area below the East quarry. This site may have been a storage area for basalt blocks, which awaited transport along the Ancient paved quarry road passing through the site.

2.3 BASALT BLOCK AREA

This is an area 275 m long by 11 m wide consisting of approximately 24 single-level basalt stone circles which span each side of the Ancient paved quarry road that leads to Qasr el-Sagha. The site is located just below the East quarry and has an east-west orientation. Limestone quarries for road building can be found nearby (see fig. 10). The position of the site across a wadi and its exposure to the prevailing north wind poses many questions as to the function of this area. Previous interpretation has suggested that this represented the "Quarrymen's camp", although the now weathered (in some cases into small pebbles) basalt blocks would originally have been much larger than what is visible today and seemingly far too large for tent footings. This natural weathering phenomenon has caused the walls to collapse into each other and therefore makes it difficult to determine if these were ever originally circles.

Recent reinterpretation of the site proposes that this could have originally been a storage area for basalt blocks to be transported along the ancient road. It is also possible that at least one of the larger stone circles may have been an ancient well. The presence of small amounts of Roman pottery may indicate that the site was reoccupied during this later quarrying period, although due to the disturbance of the site from natural (flash floods) and man-made (vehicle traffic) intervention, there is no secure context to accurately assess the dating of this site.

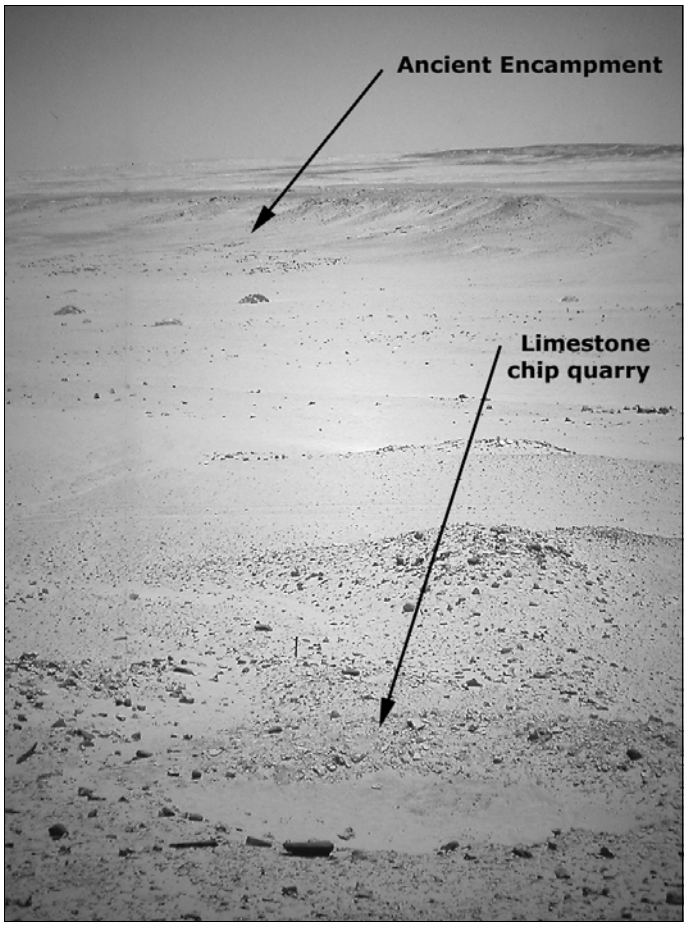

Fig. 10: The Encampment area and parts of nearby limestone chip quarries (see chapter 2.5), which were probably used for building/repairing sections of the Ancient paved quarry road.

2.4 ENCAMPMENT AREA

The Encampment is situated at the entrance to Widan el-Faras, approximately 500 m southwest of the Basalt block area and 30 m from the south bank of Wadi Ghorab.

The Encampment comprises a cluster of single-level circular and oval structures of small basalt blocks across an area 60 m long by 36 m wide. Although the basalt has been subject to weathering, the larger spaces between the features define 6 circles with diameters ranging from 3 m to 8 m. The Encampment shows minimal disturbance and is not crossed by wadis. Spoil heaps and various stone heaps can be found nearby. The former heaps are possibly connected with the Encampment, whereas the latter are difficult to interpret.

Small, but dense scatters of pottery sherds are to be found across the site, dating from the Fourth to Fifth Dynasty and comprising only two categories: storage vessels and cooking bowls. Other items found, such as dioritic or doleritic pounders made from non-local stone, a hearth and plentiful amounts of charcoal in one of the circles excavated, are all suggestive of this being a small area of temporary habitation. Its location places it strategically at the entrance to Widan el-Faras, with a vantage point north into the quarry and south where the road heads towards Qasr el-Sagha.

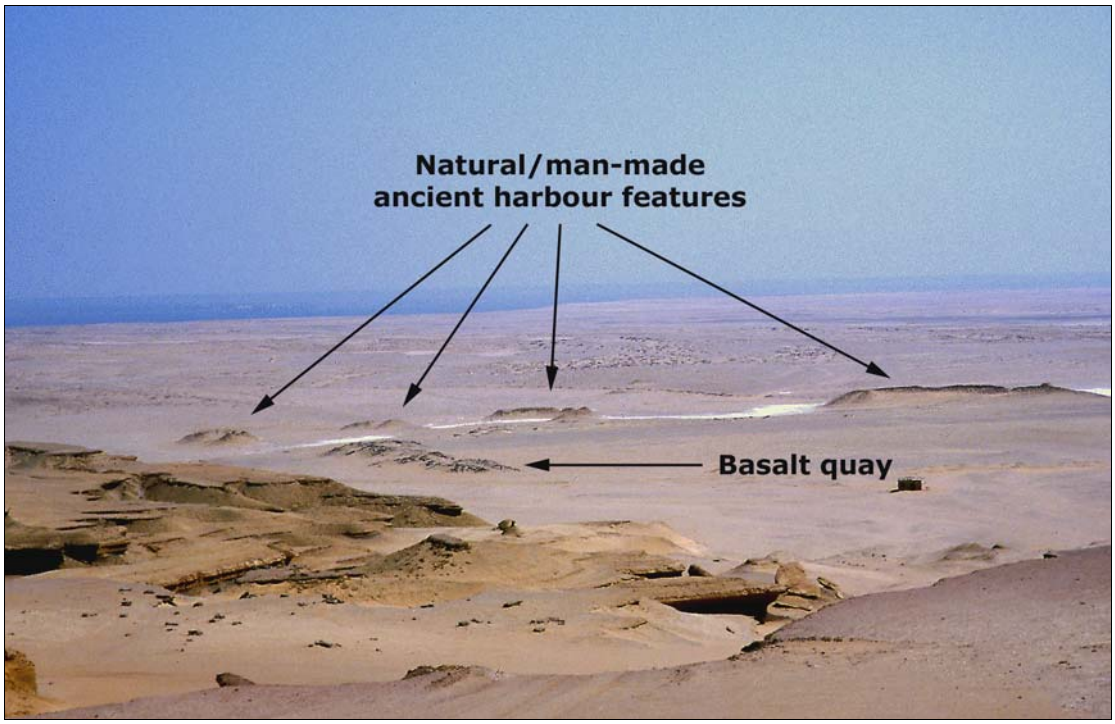

Fig. 11: The terminus of the Ancient paved quarry road is a quay close to the Qasr el-Sagha temple.

2.5 ANCIENT PAVED QUARRY ROAD AND THE QUAY AT QASR EL-SAGHA

The 10,5 km (11,5 km when including all segments) long paved road that connects Widan el-Faras with Qasr el-Sagha represents the oldest and most pristine example of a purpose-built quarry road in the world (fig. 3). Although it is not yet known how the transport of basalt was actually undertaken, it is certain that blocks were moved along the road to await shipment by a boat from Qasr el-Sagha to the pyramid fields. This is because there are several weathered blocks strewn along the road and because of the harbour features by Qasr el-Sagha. The road conforms in its entirety to a width of 2,10 m which is equal to the ancient Egyptian measurement of 4 cubits and is constructed from sandstone, limestone, basalt and silicified wood, their intermittent use for certain sections is clearly related to the proximity of these raw materials. Limestone and basalt fragments are used predominantly for the road's surface within the Widan el-Faras area, where most branches of the road start below individual basalt quarry areas. In limestone chip quarries just to the south of the Basalt block area, several stone tools can be found.

The terminus of the road is within a natural inlet, 1 km southwest of the Qasr el-Sagha temple. These environs were clearly utilised as a harbour when the levels of Lake Moeris were at 22-23 m above sea level (fig. 11). The features that make up the harbour consist of four natural promontories at an elevation of 22 m, which have been artificially reinforced with limestone and sandstone slabs. Behind these is another promontory at the same elevation, 311 m long by 19 m wide, which is strewn with weathered basalt blocks. This feature is interpreted as a quay, which in turn acts as the terminus of the quarry road. The weathered basalt blocks strewn along the top of the quay sometimes form circular constructions around shallow depressions in the sand. Small heaps of basalt chips and stone tools suggest that some trimming of stone took place here, but determining the precise date of this secondary production is problematic as pottery found here dates to both the Old and Middle Kingdoms.

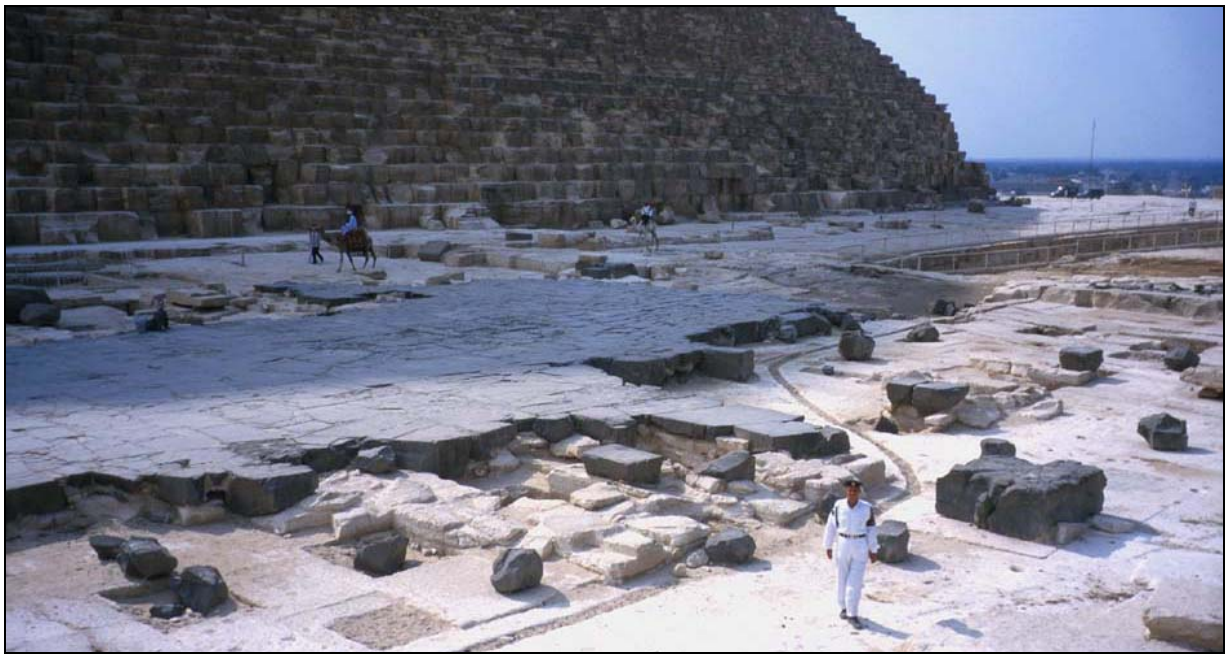

Fig. 12: The most prominent use of Widan el-Faras basalt: Funerary temple floor at the east side of the Great (Khufu) Pyramid at Giza.

3 The significance of the Widan el-Faras ancient quarry landscape

Including the Ancient paved quarry road and the harbour at Qasr el-Sagha, Widan el-Faras is a large archaeological site, which can only be properly understood and appreciated as an integrated whole – as an *ancient quarry landscape*. The site bears witness of one of the most important traditions in Egyptian Antiquity – the procurement of massive amounts of stone for the building of lasting edifices in the 3rd millennium BC.

3.1 WIDAN EL-FARAS IN THE CONTEXT OF ANCIENT QUARRYING

There are countless ancient quarries and quarry landscapes in Egypt. However, almost all of the older ones (Old Kingdom and earlier) are soft-stone quarries (limestone, travertine, gypsum-alabaster) mostly situated in the close vicinity of the River Nile. Only 5 very early hard-stone quarry sites are known;[3] parts of the Aswan granite quarries, the Aswan West Bank silicified sandstone quarries, the Gebel Ahmar silicified sandstone quarries in Cairo, the remotely located Chephren's Quarry in Lower Nubia (in the desert west of Abu Simbel) and Widan el-Faras. Old Kingdom parts of the Aswan granite quarries are already almost completely destroyed by modern quarrying and advancing infrastructure, whereas Chephren's Quarry may soon be destroyed by the South Valley Development Project (or the Toshka Mega Project), which is currently advancing into the site (Storemyr et.al. 2002,

[3] Not including the "semi-hard-stone quarries" at Manzal el-Seyl (vessel quarry; Pre-Dynastic) and in Wadi Hammamat in the Eastern Desert. See overview of Egyptian quarries by James Harrell: http://www.eeescience.utoledo.edu/egypt/quarries/quarries_menu.html

Heldal et al. 2003).[4] Gebel Ahmar is severely influenced by modern infrastructure, whereas the Aswan West Bank quarries are extremely well preserved, but mainly showing evidence of New Kingdom and Greco-Roman quarrying. Thus, Widan el-Faras may soon be the only site left (also worldwide) that can give current and future generations full insight into procurement of massive amounts of hard-stone with very simple stone tools at a very early stage in the history of human civilisation.

Judged by the archaeological evidence, the Old Kingdom procurement of stone at Widan el-Faras took place as organised expeditions with a limited, highly qualified workforce and not – as has been earlier thought – with countless, less qualified personnel residing at the site. The work seems to have been closely linked to a period of high Nile floods (4th and 5th Dynasties) and thus of such a high level of ancient Lake Moeris that stone could be transported by boat from the quay at Qasr el-Sagha right through the Faiyum (the Lahun-Hawara gap) and along the Nile to Giza, Sakkara and Abu Sir. Interestingly, the use of basalt came to a halt at the end of the 5th Dynasty – at a time of declining Nile floods. Since black stone (colour was an important reason for using basalt) continued to be used at the pyramid fields (black limestone at Sakkara), this probably means that the c. 80 km long overland route from Widan to the Pyramid fields was considered too difficult for stone transportation.

Thus, Widan el-Faras is an outstanding example not only of highly organised exploitation of a natural resource, but also of how changing environmental conditions influenced such efforts.

3.2 WIDAN EL-FARAS AND THE CRITERIA FOR INCLUSION IN THE WORLD HERITAGE LIST

As seen from the precepts of the "Operational Guidelines for the Implementation of the World Heritage Convention" and the "Criteria for the inclusion of cultural properties in the World Heritage List", it would seem that Widan el Faras ancient quarry landscape fulfils most of the norms.[5] Such sites should:

24 a i: "bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared"

> Widan el Faras is *unique* due to the presence of the Ancient paved quarry road and the ancient harbour) – features that cannot be found elsewhere at such an early stage in human history. It is *exceptional* in that it features one of the very few examples of early hard-stone quarrying for architectural purposes.

24 a ii: "be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history"

[4] Current efforts seem to be undertaken by the SCA to protect Chephren's Quarry
[5] See the Operational Guidelines at: http://whc.unesco.org/nwhc/pages/doc/main.htm. It should be borne in mind that Widan el-Faras is thought of as only part of the possible future Qaroun WHS

Widan el-Faras is a technological ensemble and a landscape – *a quarry landscape* – that in detail illustrates how hard-stone procurement at a massive and highly organised scale was undertaken 4.500 years ago. Except for Chephren's Quarry that may probably soon be destroyed, there are no known archaeologically preserved equivalents anywhere else in the world.

24 a iii: "be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change"

> Widan el-Faras is not an example of a traditional human settlement, but the quarry landscape may be representative of how remote natural resources (land use in desert areas outside the Nile valley) were exploited in Egyptian Antiquity. Comparisons can be made with mining activities at remote places. Moreover, the site is very vulnerable and is currently subject to destruction by modern quarrying activities (see chapter 4).

Many other early ancient quarries and mines in Egypt and elsewhere would certainly fulfil these criteria. However, very few sites of a similar age exhibit a *preserved* associated ancient infrastructure, which makes them interpretable ancient industrial landscapes. This means that Widan el-Faras is one of the few that also -

24 b i: "meet the test of authenticity in design, material, workmanship or setting and in the case of cultural landscapes their distinctive character and components [ ]"

Although the significance of the Widan el-Faras ancient quarry landscape can be reasonably well assessed, there are still many unanswered questions about its use in antiquity. Some of the most pressing questions are related to the actual use of the large Basalt block area, whether there are ancient wells in the area and how basalt blocks were actually transported along the quarry road. Moreover, detailed knowledge of the ancient basalt extraction processes have not yet been achieved. Since such knowledge only can be obtained by detailed studies in the quarries themselves, it is alarming that these are currently being destroyed by modern quarrying operations. Moreover, the destruction also efficiently removes traces of huts and possibly graves close to the quarries.

The current destruction makes it clear that Widan el-Faras does not fulfil the last criterion for nomination as a part of a World Heritage Site. According to this paragraph it should -

24 b ii: "have adequate legal and/or traditional protection and management mechanisms to ensure the conservation of the nominated cultural properties or cultural landscapes. [ ]"

However, if the Gebel Qatrani area could be inscribed on the list of “World Heritage in Danger”, this should help in instituting such long awaited legal protection.

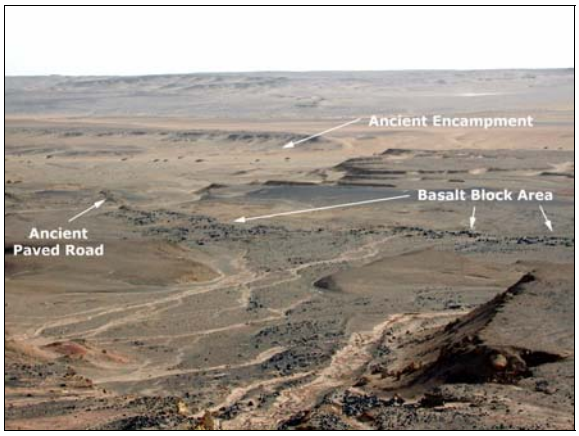

Fig. 13: Small wadis cut through the Basalt block area resulting in damage by occasional flash floods

Fig. 14: Bulldozed track from the 1990s cutting through the Ancient paved quarry road at Widan el-Faras

4 Recent and ongoing destruction of the site

The Widan el-Faras ancient quarry landscape was until the 1990s more or less pristine ground only affected by natural weathering, which has clearly put a strong mark on this extremely fragile site. Many features can thus be difficult to recognise for the layperson. The Ancient paved quarry road is seriously affected by wind deflation, the basalt block area by occasional flash floods (fig. 13) and the quarries by strong weathering of the basalt (consisting of *olivine* basalt the quarry weathers due to heavy rainfalls, morning condensation and even micro organism and lichen).

4.1 Vehicle traffic

With the introduction of vehicle traffic in this rather remote desert area, modern man-made deterioration commenced 10-20 years ago.[6] Today tracks from 4WD vehicles can be seen all over the place – from Qasr el-Sagha to Gebel Qatrani. At several spots, such tracks cut the Ancient quarry road. More serious destruction by vehicle traffic began in the early 1990s. In this period large parts of the Northern Faiyum desert were subjected to geophysical exploration programmes involving clearing (by bulldozers) of parallel, straight, several miles long, 4-5 m broad tracks spaced some 200 m apart from each other (fig. 14). These tracks have especially had a destructive impact on the Ancient quarry road and the Basalt block area.

4.2 Modern basalt quarrying

Compared to natural weathering and vehicle tracks, modern basalt quarrying of course has a much greater impact on the site. Modern basalt quarrying is nothing new in the area between the Faiyum and Cairo, as outcrops of the Gebel Qatrani basalt flow can be found along a line stretching from the west of Widan el-Faras to Giza and Abu Roash. A large amount of modern quarries have been opened along this line, some of them probably already in the 1960s or earlier[7], providing material for road building and other construction works. The basalt is transported on lorries along new roads or

[6] There are few or no traces of recent looting at the site, but this may have happened in the past.
[7] According to studies of Corona satellite images from the 1960s.

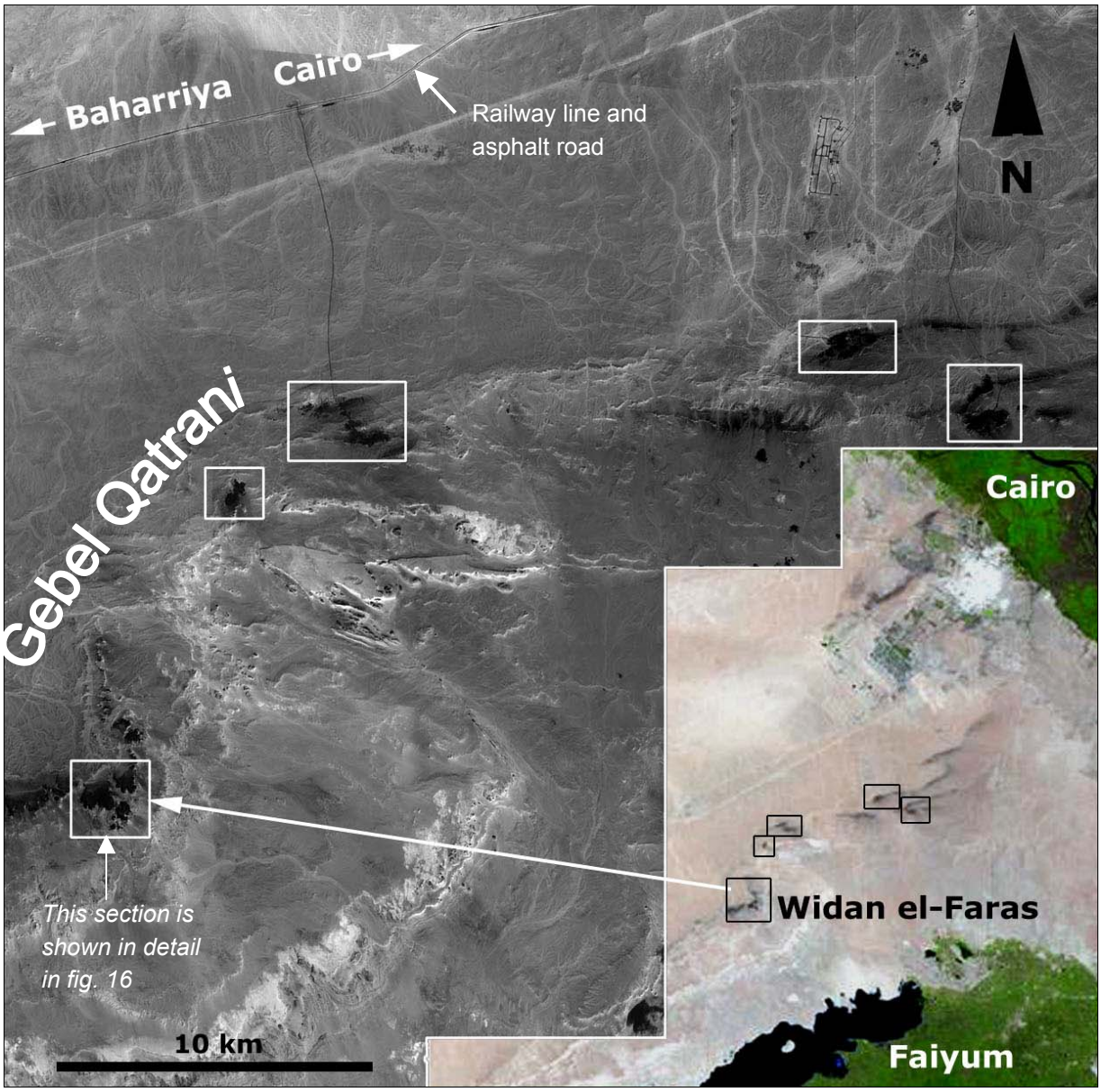

*Figure 15: Various Ikonos satellite images (2000-2003) put together to show **modern basalt quarrying areas** between Gebel Qatrani and Cairo (Giza). The quarry areas are marked with white rectangles. The inserted Landsat 7 satellite image shows where the quarries (black rectangles) are located in relationship to Faiyum and Cairo. The arrow shows the location of Widan el-Faras (cf. figs. 4 and 5)*

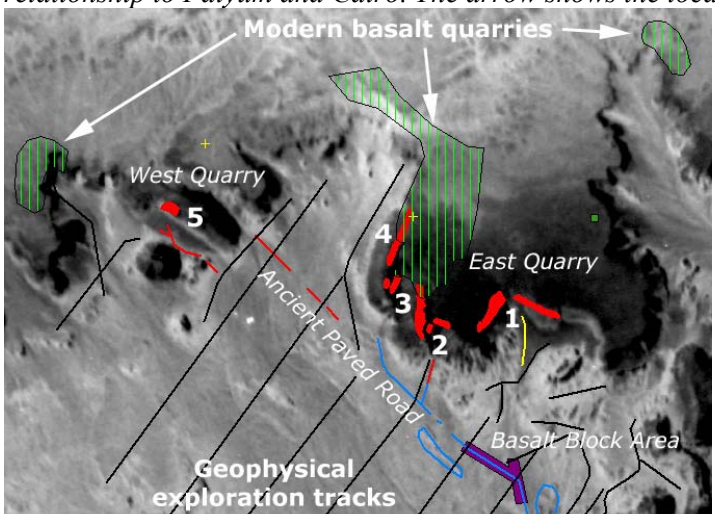

*Figure 16: Detailed view of the Widan el-Faras ancient quarry site (approximately covering the area of the Widan rectangles in fig. 15). The view is a section of the GIS with Corona satellite image shown in fig. 5. **Note the 3 new basalt quarries (hatched green) and how the middle one destroys the ancient quarries** (the ancient quarries are marked with red).*

tracks trough the desert – these roads link the various modern basalt quarries with the Cairo-Baharriya asphalt road.

During archaeological surveys at Widan el-Faras in May 2001, we observed one new quarry just to the west of the ancient West quarry, but there was no activity going on. Moreover, there were many small test pits on the plateau by the East quarry. Upon new surveys in June 2002, the modern quarrying had advanced into the middle of the ancient East quarry and houses for the workers had been built just to the north of the site (fig. 16, 18). At that time about 1/3 of quarry area 4 and 1/4 of area 3 was completely destroyed because of having been subjected to clearing with bulldozers (fig. 16, 17, 18). Fine remains of an ancient hut by quarry area 4 had also completely disappeared (fig. 17).

Fig. 17: Clearing for modern quarrying in area 4 in the ancient East quarry (June 2002). The inserted picture shows an ancient hut that has been lost (May 2001).

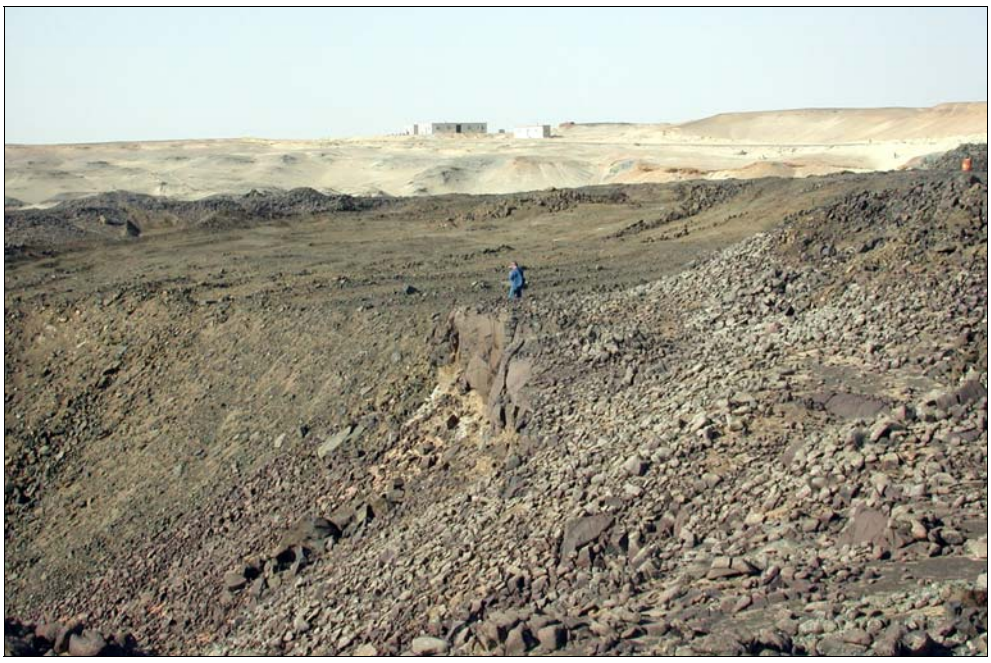

Fig.18: Large cleared section for modern quarrying in area 3 in the ancient East quarry. Houses for the workmen can be seen in the background (January 2003).

In addition to the modern quarry in the middle of the ancient East quarry, large extraction activities were also going on at two places to the west of the ancient West quarry and further to the east of the East quarry.

Having observed the destruction, various Egyptian authorities were alarmed by us. Moreover, an information package with a GIS of the area was given to the Egyptian Antiquities Information System (EAIS) in the summer of 2003. New visits in 2003 (fig. 20) confirmed that the modern quarrying was still going on; advancing into the ancient quarries, but at a lower pace than had been expected. At the moment (Nov. 2003) the situation is unclear to us, but it is very likely that the modern quarrying is still going on.

Fig. 19: Typical modern basalt quarry close to the ancient extraction sites in the East quarry (June 2002).

Fig. 20: Modern drilling just beside the ancient East quarry, either for testing basalt or for blasting (July 2003). Photo: James A. Harrell.

4.3 REGULATION OF THE MODERN BASALT QUARRYING AT WIDAN EL-FARAS URGENTLY NEEDED

We are not aware of the legal status of the Widan el-Faras ancient site. However, we have no information that it is officially registered or protected as an archaeological site with the SCA. Despite this, it is now well known that destruction is going on and that regulation of the modern quarrying activity is urgently needed. Moreover, the site is situated within the boundaries of Lake Qarun nature reserve. Thus, it may well be possible that the modern activity is contravening Law No 102 of 1983 for Nature Protectorates,[8] especially since the modern activity is taking place in an area *not only characterised by archaeological remains, but also constituting one of the most prominent natural features in the whole Northern Faiyum desert and Lake Qarun Nature Reserve*. Gebel Qatrani and Widan el-Faras are outstanding geological and topographical landmarks and may be regarded the natural boundary of the Northern Faiyum desert. It is also very important to note that the there are vast amounts of basalt along the Gebel Qatrani escarpment and below the desert surface to the north of Gebel Qatrani, and that it should be entirely possible to relocate the activities at Widan el-Faras to other areas. As has been shown in this report, *Widan el-Faras is a unique ancient quarry landscape, which should be urgently protected for the benefit of humankind*.

5 A note on Umm es-Sawan Early Dynastic gypsum quarries

Unlike Widan el-Faras, the Umm es-Sawan Early Dynastic gypsum quarries (see location on the map in fig. 2, coordinates: N 29° 42.7', E 30° 53.0') have not been subject of archaeological survey since that of Caton-Thompson and Gardner 70 years ago in the 1930s (Caton-Thompson & Gardner 1934). Umm es-Sawan represents evidence of habitation in natural rock shelters situated above the gypsum quarry and stone vessel workshops (fig. 21) and an archaeological site rich in artefactual data comprising an area of possible settlement consisting of 250 stone circles (fig. 22). The 'workshop' mounds comprise gypsum debris, stone tools, including crescent-shaped flints for hollowing stone vessels, and pottery that are associated with an area of vessel production.

Pottery dates from the Early Dynastic Period (2900-2600 BC) and is almost exclusively beer jars. A pot mark on one of these resembles a pot mark found on a sherd at the encampment at Widan el-Faras. Hence, there might be a connection between Widan el-Faras and Umm es-Sawan via the workmen. Moreover, the presence of non-local stones in a tool-making context, including Chephren Gneiss from Chephren's Quarry (1000 km away) is further evidence to suggest mobile labour forces operated between a network of quarry sites in the 3rd millennium BC. *Umm es-Sawan can easily be regarded as part of the greater Widan el-Faras ancient quarry landscape*.

It is therefore extremely important that this site is protected so that future archaeological investigations and GIS mapping can be made in this relatively undisturbed site. We realise that the site is outside of the Lake Qarun nature reserve, but we are sure that like other ancient quarries in Egypt, it probably remains unregistered as an archaeological site. Moreover, since most of the archaeological features are very difficult to observe for the layperson, it must be regarded an extremely fragile site.

[8] See the law at: www.eeaa.gov.eg/English/Law102English.doc

Fig. 21: Umm es-Sawan Early Dynastic gypsum quarry site. The gypsum quarry and workshops can be seen in the foreground. Large amounts of stone circles – a possible settlement - and waste heaps from the production are located on the hill in the background.

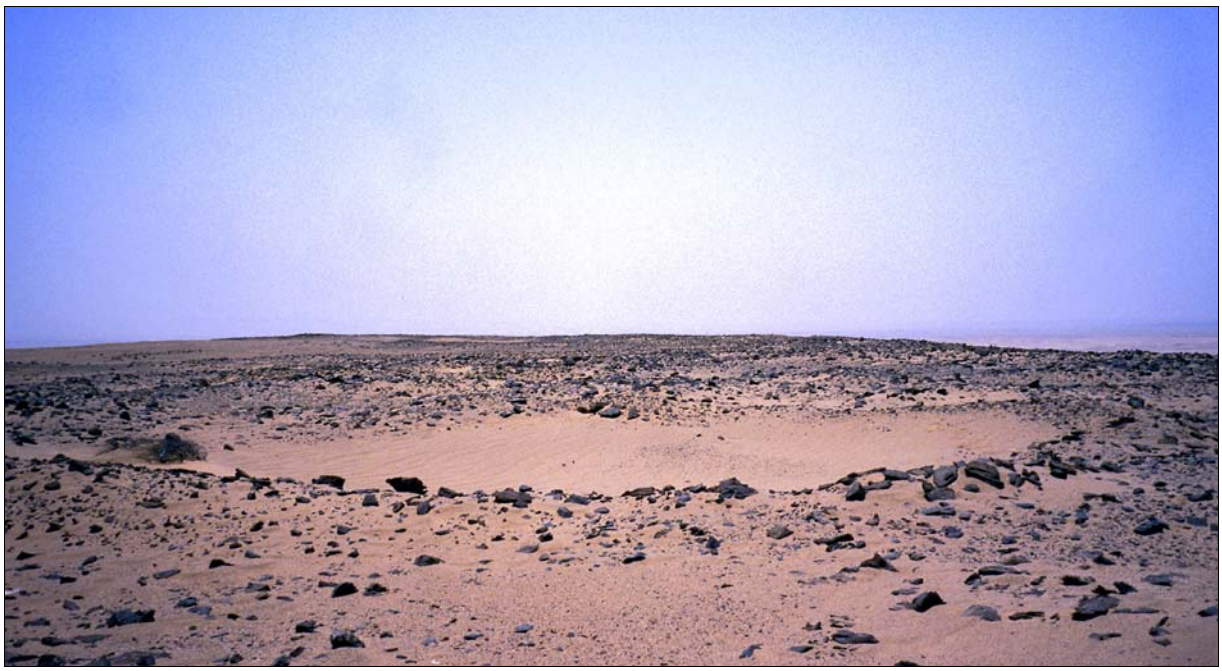

Fig. 22: One of some 250 stone circles found above the quarry area in the Umm es-Sawan ancient gypsum quarries.

Concluding remarks

The Widan el-Faras ancient quarry landscape, including the Ancient paved quarry road, is a unique testimony of the technological achievements in Old Kingdom Egypt – at a very early stage in the history of human civilisation. The fact that the quarry landscape is linked to the Pyramid fields – through the use of the stone – does not make it less valuable. Already being part of the established Lake Qaroun Nature Reserve, we consider it of utmost importance that the modern destruction should be regulated and come to a halt, thus ensuring that this exceptionally rich natural and cultural landscape will be a worthy candidate for inclusion in the World Heritage List.

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Bibliography

Publications consulted for this report are listed below. Those including detailed descriptions of Widan el-Faras are emphasised.

Beadnell, H.J.L. (1905): *The Topography and Geology of the Fayum Province of Egypt*. Survey Department, Cairo.

Bloxam, E. & Storemyr, P. (2002): Old Kingdom basalt quarrying activities at Widan el-Faras, Northern Faiyum Desert, *Journal of Egyptian Archaeology* 88

Bloxam, E. G. (2003): The Organisation, Transportation and Logistics of Hard Stone Quarrying in the Egyptian Old Kingdom: A Comparative Study. Submitted, unpublished PhD dissertation, Institute of Archaeology, University College London

Bloxam, E., Storemyr, P. & Heldal, T. (2003): Hard stone quarrying in the Egyptian Old Kingdom (3rd millennium BC): Rethinking the social organisation. Presentation at *7th international conference of the Association for the Study of Marble and Other Stones in Antiquity* (ASMOSIA), Thassos, Greece, 15-20 September 2003. See abstract at: www.ims.demokritos.gr/archae/Abstracts.html

Bown, T.M. & Kraus, M.J. (1988): Geology and Paleoenvironment of the Oligocene Jebel Qatrani Formation and Adjacent rocks, Fayum Depression, Egypt. *USGS Professional Paper*, 1452, 1-59

Bown, T.M. & Harrell, J.A. (1995): The oldest paved road, Faiyum Depression, Egypt. *The Ostracon*, v. 6, no. 3, p. 1-4.

Caton-Thompson, G. & Gardner, E.W. (1934): *The Desert Fayum*. (2. vols.), Royal Anthropological Institute, London.

Dolson, J. et al. (2002): The Eocene and Oligocene Paleo-Ecology and Paleo-Geography of Whale Valley and the Fayoum Basins: Implications for Hydrocarbon Exploration in the Nile Delta and Eco-Tourism in the Greater Fayoum Basin. Field Trip Guidebook for Field Trip No. 7, Cairo 2002,

the International Conference and Exhibition, sponsored by AAPG, EPEX, SEG, EPS, and EAGE, October 27-30. Downloadable from: www.searchanddiscovery.com/documents/cairo/index.htm

Greenough, J.D., Gorton, M.P. & Mallory-Greenough, L.M. (2001): The Major- and Trace-Element Whole-Rock Fingerprints of Egyptian Basalts and the Provenance of Egyptian Artefacts. *Geoarchaeology*, Vol. 16, No. 7, p. 763–784

Harrell, J. & Bown, T. (1995): An Old Kingdom Basalt Quarry at Widan el-Faras and the Quarry Road to Lake Moeris. *JARCE*, 32, 71-91

Heikal, M.A., Hassan, M.A. & el-Sheshtawi, Y. (1983): The Cenozoic Basalt of Gebel Qatrani, Western Desert, Egypt - As and Example of Continental Tholeiitic Basalt. *Annals of the Geological Survey of Egypt*, 13, 193-209.

Heldal, T., Storemyr, P., Salem, A, Bloxam, E., Shaw, I. & Lee, R (2003): GPS and GIS Methodology in the Mapping of Chephren's Quarry, Upper Egypt: A Significant Tool for Documentation and Interpretation of the Site. Presentation at *7th international conference of the Association for the Study of Marble and Other Stones in Antiquity* (ASMOSIA), Thassos, Greece, 15-20 September 2003. See abstract at: www.ims.demokritos.gr/archae/Abstracts.html

Hoffmeier, J.K. (1993): The Use of Basalt in Floors of Old Kingdom Pyramid Temples. *JARCE*, 30, 117-123.

Jones, M. (1995): Pottery analyses. In: Harrell, J. & Bown, T. (1995): An Old Kingdom Basalt Quarry at Widan el-Faras and the Quarry Road to Lake Moeris. *JARCE*, 32, 90-91

Klemm, R. & Klemm, D. (1993): *Steine und Steinbrüche im Alten Ägypten*. Springer Verlag, Berlin-Heidelberg.

Mallory-Greenough, L.M., Greenough, J.D. & Owen, J.V. (2000): The Origin and Use of Basalt in Old Kingdom Funerary Temples. *Geoarchaeology*, 15, 4, pp. 315–330

Moores, R.G. (1991): Evidence for Use of a Stone-Cutting Drag Saw by the Fourth Dynasty Egyptians. *JARCE*, 28, 139-148.

el-Senussi, A (2001): Pottery of the Widan el-Faras survey 2001. Unpublished report.

Storemyr, P. & Heldal, T. (2003): Ancient Stone Quarries: Vulnerable Archaeological Sites Threatened by Modern Development. Presentation at *7th international conference of the Association for the Study of Marble and Other Stones in Antiquity* (ASMOSIA), Thassos, Greece, 15-20 September 2003. See abstract at: www.ims.demokritos.gr/archae/Abstracts.html

Storemyr, P. (2001): Widan el-Faras Ancient Basalt Quarry, The Northern Faiyum Desert, Egypt. Archaeological expedition, May 2001. Site mapping, quarry description, weathering and preliminary interpretations. Field report to University College London. *Report*, Expert-Center for Conservation of Monuments and Sites, Zürich, 50 p.

Storemyr, P., Bloxam, E., Heldal, T. & Salem, A. (2002): Survey at Chephren's Quarry, Gebel el-Asr, Lower Nubia 2002. *Sudan and Nubia, The Sudan Archaeological Research Society, Bulletin,* no. 6, pp. 25-29 + Plates

Storemyr, P., Heldal, T. Bloxam, E. & Harrell, J.A. (2003): New evidence of Roman quarrying from the El-Minya basalt flow, Tilal Sawda, Middle Egypt. Presentation at *7th international conference of the Association for the Study of Marble and Other Stones in Antiquity* (ASMOSIA), Thassos, Greece, 15-20 September 2003. See abstract at: www.ims.demokritos.gr/archae/Abstracts.html

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