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The Kirwan Memorial Lecture

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Front cover. General view of Site WNP-J-22\1, Al-Jabalain, White Nile State. Photo by Hamad Mohammed Hamdeen.

The Sudan Military Railway between Wadi Halfa and Abidiya

Derek A. Welsby

In 1896 the Anglo-Egyptian army under the command of Horatio Herbert Kitchener began the conquest of Sudan. The initial phase of the campaign was designed to seize control of the Nile Valley upstream from the Second Cataract as far south as the Fourth Cataract. This was accomplished successfully by 1897. The Dongola Campaign as it was known was greatly assisted by the use of the railway. This railway, originally begun as a commercial venture in 1875, was taken over by the military in 1884 and extended as far south as Akasha over the next few years during the Gordon Relief Expedition and in its immediate aftermath. The line was refurbished in 1896 and extended, eventually reaching its terminus at Kerma in the Northern Dongola Reach in May 1897 (Welsby 2011, 1-16).[1]

Phase 2 of the campaign involved an advance to the seat of Mahdist power at Omdurman and the removal of the Khalifa Abdullahi from power. This was potentially a very hazardous undertaking involving immense distances. To guarantee access to water along the route it would have been necessary to follow the circuitous route along the Nile in places through very inhospitable territory particularly at the Fourth and Fifth Cataracts. Alternatively a route across the desert could be chosen dramatically reducing the distances involved. Kitchener chose this latter option relying on a new railway to alleviate the logistical problems of moving large numbers of men and much war material towards its destination.

Initially Kitchener favoured a route following closely the main cross desert route between Korosko and Abu Hamed, known as the Korosko Road through the wells at Murrat, the only source of water known in the region.[2] To that end he ordered railway material to be moved from the railway depot at Wadi Halfa to Korosko and construction of the railway began in the autumn of 1895. However construction was halted in March 1896 and the railway material returned to Wadi Halfa to be used on the railway towards Kerma (Sandes 1937, 223). Kitchener then decided on a route from Wadi Halfa to Abu Hamed, a total distance of 370km (230 miles).[3] Construction began on 1st January 1897 and progressed at a rate of 1.6km (1 mile) per day. Meanwhile a force was sent up river through the Fourth Cataract to secure Abu Hamed (7th August) before the arrival there of the railway on 31st October. Whereas it took 18 days by boat from Wadi Halfa to Abu Hamed with the completion of the railway across the desert the journey time was reduced to 24 hours (Sandes 1937, 202). From Abu Hamed the railway was extended upstream reaching the Nile-Atbara confluence on 3rd July 1898 (Figure 1).

As with the Wadi Halfa to Kerma railway, speed of construction was of the essence. For this reason the easiest route was chosen, that requiring the minimum of engineering works be they tunnels, cuttings or bridges. The route chosen was in places far from ideal, the railway frequently following seasonal water courses where it was very prone to flood damage. Rainfall throughout this region is either negligible or very limited and clearly the risks involved were deemed to be justified by the time saved during construction. Kitchener and his engineers must have been well aware of the dangers which were highlighted on the 25th and 27th August 1896 when severe storms destroyed 19km of the earlier military railway north of Saras (Knight 1897, 245). The severity of the storms was amply demonstrated in the last decade when the newly-built tarmac road connecting Berber and Abu Hamed was cut in several places, the flood waters causing immense destruction of stoutly-built culverts and their associated embankments (Figure 2). For

[1] For the background to the campaign with numerous references see Spiers 2015, 96-101.
[2] A fort was constructed here in 1893 to deny Mahdist forces access to the wells (Welsby 2020, 132-136).
[3] See Spiers 2015, 101ff for additional details on the railway's construction.

Welsby, D. A. 2024 [http://doi.org/10.32028/SN28pp152-193].

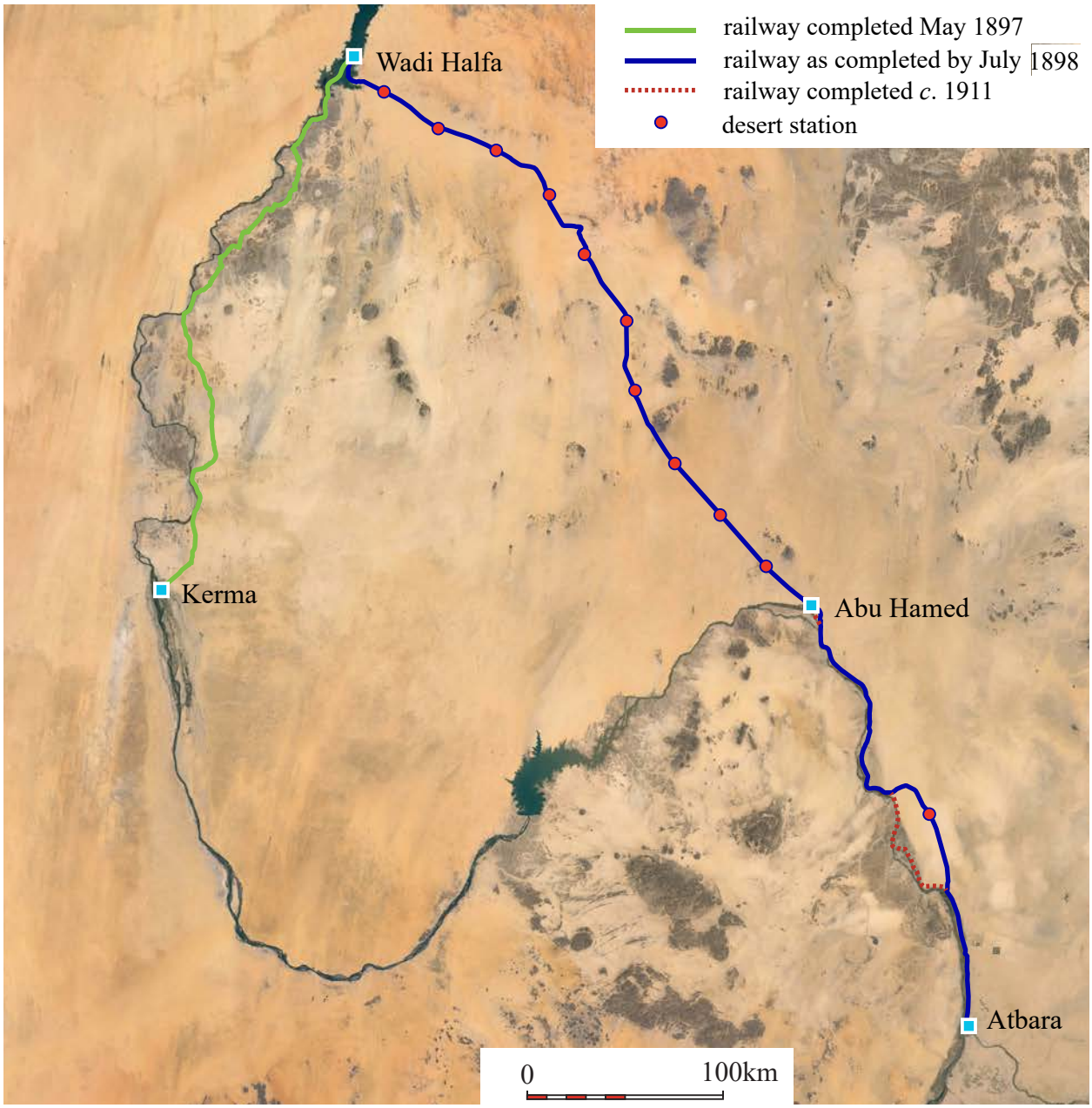


Figure 1. The Wadi Halfa to Kerma and the Wadi Halfa to Atbara railways (background image Google Earth).

the impact of floodwaters on a railway see Figure 3, a section of the line between Abu Hamed and Kareima.

According to Sandes, the construction gang lived under canvas with 3,000 inhabitants protected by the military. This was at the rail head which periodically, as construction continued, may have lain some distance from the rail end. The camp was moved every four or five days but as the railway neared Abu Hamed this became every few days (Sandes 1937, 227, 236). Although no construction camps have so far been noted north of Abu Hamed, their presence along the line to its south, with a character very similar to those along the Wadi Halfa to Kerma line, suggests that they remain to be located.[4]

Between Abu Hamed and Abidiya above the Fifth Cataract the railway engineers sought to construct the line alongside the river (Figure 4); however, in two areas this was not deemed feasible. The first begins a little to the south of Abu Hamed station. Here a number of *wadis* enter the Nile and the land alongside the river is extremely rough terrain. At 3.4km, measured along the railway from Abu Hamed's station, it turned away

[4] However the speed and urgency of construction of the railway across the desert may have resulted in much less care being given to the layout of the construction camps making their remains even more ephemeral that elsewhere.

Figure 2. Flood damage to the culverts along the Berber to Abu Hamed road (photo December 2013).

Figure 3. The embankment washed away from beneath a section of the Abu Hamed to Kareima railway line.

Figure 4. The railway a little to the south of Abu Hamed looking downstream.

Figure 5. The railway as rebuilt along the Nile at the Fifth Cataract.

from the river forming a loop extending a maximum of 3.2km from the Nile over a total length of 11.7km.

At the Fifth Cataract the hills, cut by innumerable deep seasonal watercourses, extend right to the river bank over a considerable distance. To avoid this, at 102km measured along the railway line from Abu Hamed station, a few kilometres to the south of Shereik station, the railway engineer Girouard, when informed that there was broken and rocky ground along the Nile for the next 80km, detoured the line eastwards out into the desert before rejoining the river near Abidiya (Sandes 1937, 238). The railway on leaving the river followed a wide shallow *wadi* and runs north-north-east before looping back to the south. For most of this distance the railway ran across a gravel plain – this was also the preferred route for motor vehicles before the construction of the tarmac road early in this century. This section of line was begun at some date after 10th March 1897 and reached Abidiya on 5th May. Construction here consisted of wooden sleepers set at 2½ feet intervals, 12 sleepers per each 30 foot rail (Brevet Colonel A. O. Green quoted in Sandes 1937, 240).

Following the defeat of the Khalifa Abdulahi at the Battle of Kerreri (Omdurman) on 2nd September 1898 railway construction continued reaching the Nile opposite Khartoum on 31st December 1899. In subsequent years the focus of Sandes Railways shifted from a purely military role to one of facilitating commerce and the movement of people. In this context the sections of the railway which ran out into the desert were far from ideal. Time and resources were advanced to relocate those sections of the line. The new section of line alongside the river (Figures 5 and 6) was completed in 1911 and the old route was abandoned (Sandes 1937, 238, fn. 3). Approximately 56 bridges, many with multiple spans, and large numbers of culverts were needed on this new section of line which, at about 5km longer than the earlier route, served the villages along the river banks and thus, in a civilian context, was more financially viable. The date of the replacement of the desert loop immediately south of Abu Hamed is not clear to the author but it may have been broadly contemporary.

Figure 6. An original rail dating from the revised line opened in 1911 at Karaba.

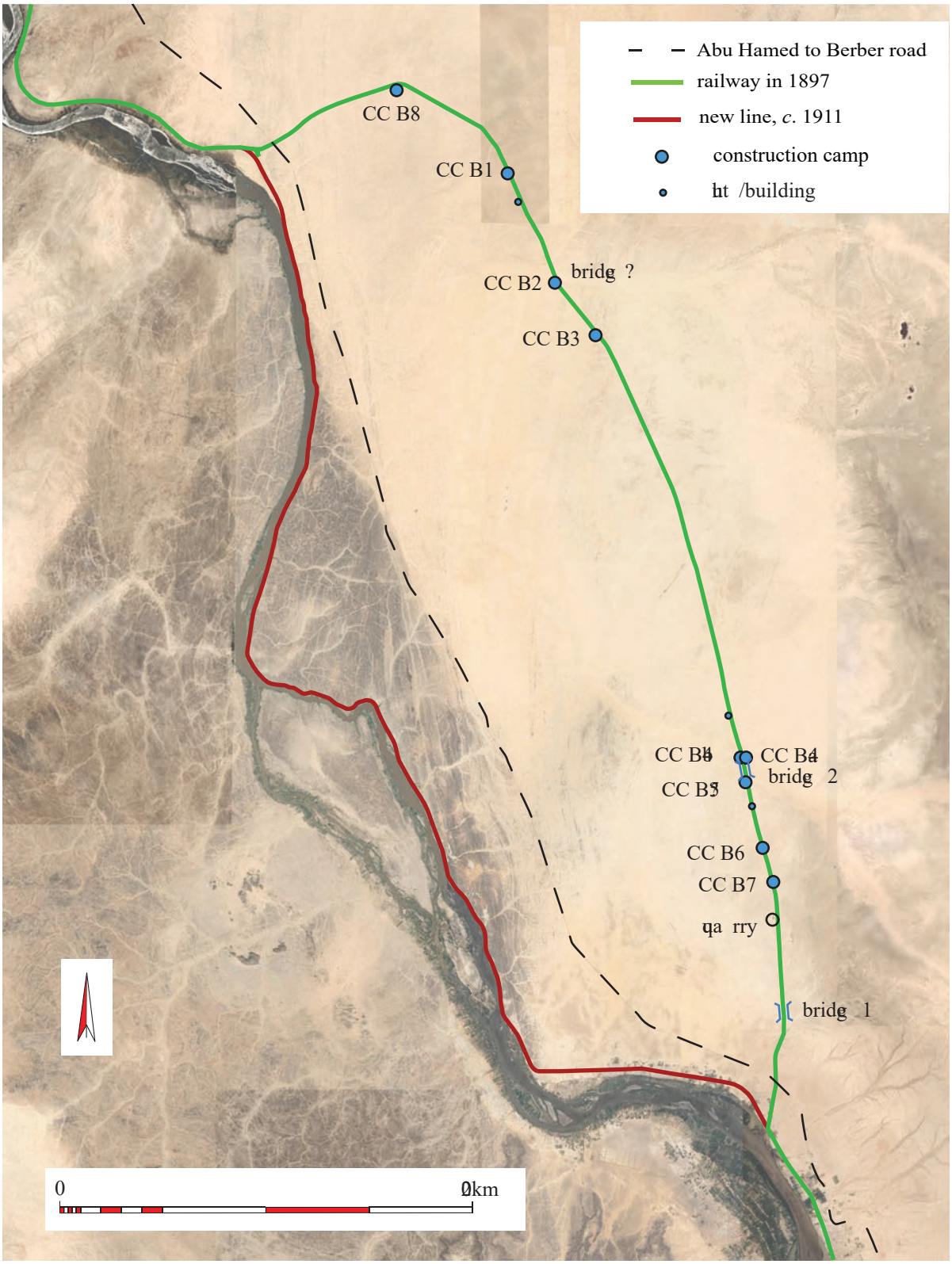


Figure 7. The railway between Shereik in the north and Abidiya in the south (background image Google Earth).

The survey

In 2013 the Sudan Archaeological Research Society, in response to an appeal to conduct archaeological work at the Fifth Cataract necessitated by the planned construction of a dam at Shereik, undertook a survey in the area. Soon after the work began opposition from some of the local inhabitants brought the work to a halt and, while NCAM and its representative on the mission opened a dialogue with the protesters, the team was largely idle.[5] To make productive use of this time an application was made to NCAM to make a brief reconnaissance along the line of the abandoned railway in the desert to the east and permission was granted. A brief photographic survey of this section of the line (Figure 7) was made on one day and another day was devoted to recording a construction camp; a detailed plan was made of Construction Camp B3 and all artefacts were collected. A brief report on this work was published in 2013 (Welsby 2013, 132-133).

Unfortunately the Google Earth and Bing Maps coverage of the desert through which the railway runs is of relatively low resolution. The course of the railway where it is preserved is clear, but evidence for other features is very hard to spot. While some features such as isolated huts and construction camps were observed on the ground only a few of the construction camps are clearly visible on Google Earth. It should be noted that the imagery taken in 2013 is much better, in many cases, than more recent satellite images of the area. Other camps may exist.

The railway formation

The low embankment on which the railway was constructed is visible over extensive sections (Figures 8 and 9) but is sometimes masked by vehicle tracks, which are following the north-south route. It is also interrupted at a number of *wadis* where it has been washed away. Throughout it is a single track apart from by the station where a parallel track was laid. At the point where the railway left the river near Shereik there is a triangle allowing the direction of travel of trains to be reversed.

Bridges

The remains of only two bridges and what may be a three-channelled culvert were noted. Others may have been required to cross several *wadi*s. While traces of these may remain many will have been destroyed by floodwaters. The presence of two periods of formation surviving on the north side of a *wadi* 650m to the north of Construction Camp B2 certainly indicates the presence of a secondary structure, probably a bridge.

Bridge 1 – The bridge is of four spans with a total length of approximately 21m, the piers being rectangular with ends rounded both upstream and downstream (Figures 10 and 13). It is made throughout of cast concrete with threaded bars set into the pier tops to attach the girder (Figure 11). Wing walls extend from each abutment for some distance upstream, that on the south side of the *wadi* for 88m from the centre line of the formation. This bridge is on the later of two periods of formation.

Bridge 2 – The remains here are partly obscured by sand dunes. It was probably single span with abutments constructed of polygonal stonework rough courses and with raised pointing in the joints. The south abutment is much destroyed; the north abutment has been undermined and is now leaning at an angle into the water course (Figure 12).

Over a distance of approximately 375m two periods of formation can be observed, the bridge presumably dates to the later period of construction (Figure 17). Four hundred and thirty metres to the north of the

[5] The team consisted of Abdelhai Abdelsawi (NCAM inspector; archaeologist), Silvia Gómez-Senovilla (archaeologist), Susanne Hakenbeck (archaeologist), Moises Hernandez-Cordero (archaeologist, GIS), Jon-Paul McCool (archaeologist), Julian Newman (archaeologist), Isabella Welsby Sjöström (assistant director, pottery specialist), Derek Welsby (director), Rebecca Whiting (archaeologist, physical anthropologist).

Figure 8. The railway formation looking south by CC B3 with the station at Abu Sillem visible on the horizon.

Figure 9. The railway formation running south as seen from the top of the jebel by the quarry. The termini of two of the sidings are visible in the foreground.

Figure 10. Bridge 1 looking downstream.

Figure 11. Bridge 1 looking south.

Figure 12. Bridge 2 looking downstream.

bridge on the eastern side of the formation is what appears to be a revetting wall probably associated with a culvert bridge – three regular sand-filled gaps in the formation support this suggestion (Figure 14). No similar revetting wall is visible on the satellite imagery on the downstream (western) side of the formation. This feature was not examined on the ground. According to Macauley, 'The culverts consist of 2-foot cast-iron pipes set in masonry, with an apron on the downstream side to prevent scouring away the foot of the bank' (Macauley 1902, 42).

Construction camps

Nine camps were noted during the ground survey, a few of which can be seen on the satellite imagery available on Google Earth and Bing Maps. The lack of visibility of these camps is partly due to their ephemeral remains on the ground, the wind-blown sand cover in many areas, and the relatively low resolution of the imagery. Only Camps B1, B2, B3 and B8 were recorded in any detail.

B1 – This camp located close to, and on the west side of, the railway had at least 39 tent bases arranged in seven parallel rows aligned at 166° (Figures 15 and 16). Five widely spaced bases, forming two rows to the north, were aligned at 67° (Figure 18). The tent bases here are distinctive being formed partly or totally by a ring of long rounded stones sourced from the locally outcropping rock (Figure 20). One has a rectangular box-like feature in its centre delimited by similar stones (Figure 21).

B2 – Although some features of the camp were clearly visible on the ground in 2013 they are very unclear on the satellite imagery. The sketch plan (Figure 19) is created from the satellite imagery enhanced by reference to the photographs taken on the ground. It only gives a very basic indication of the original form. There appear to be three rows of tent bases, some certainly with spayed entrances, set within square plots (Figures 22 and 23). One curved stone feature (Figure 24) is presumably a windbreak and its

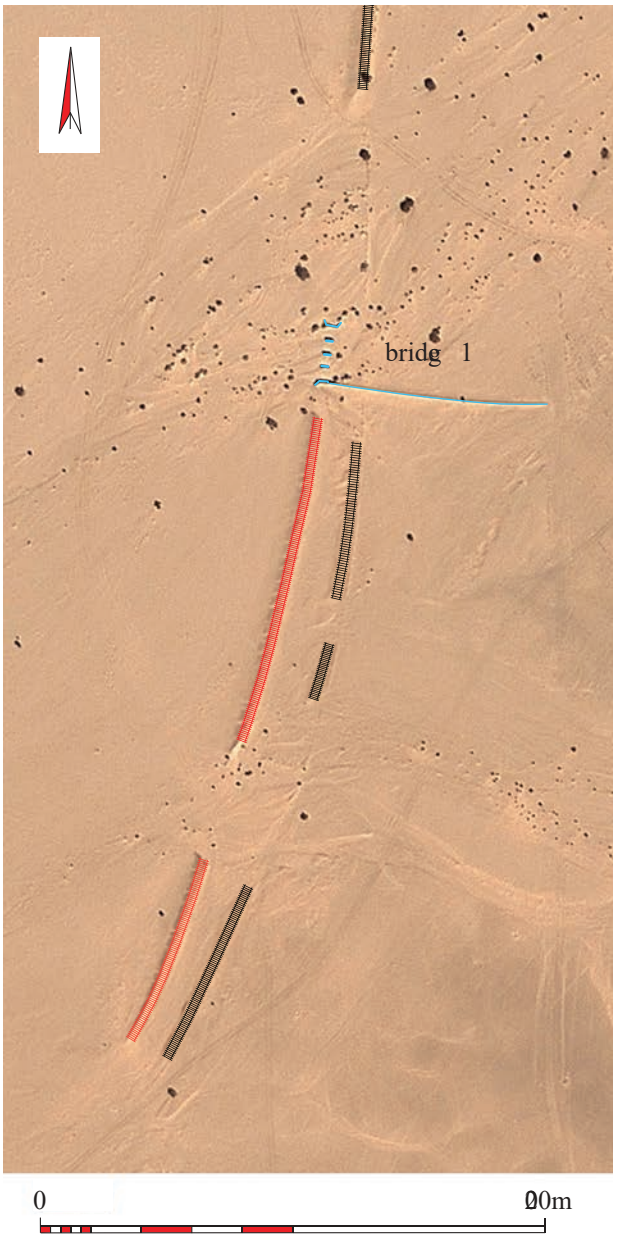


Figure 13. Bridge 1 (background image Google Earth) (scale 1:3000).

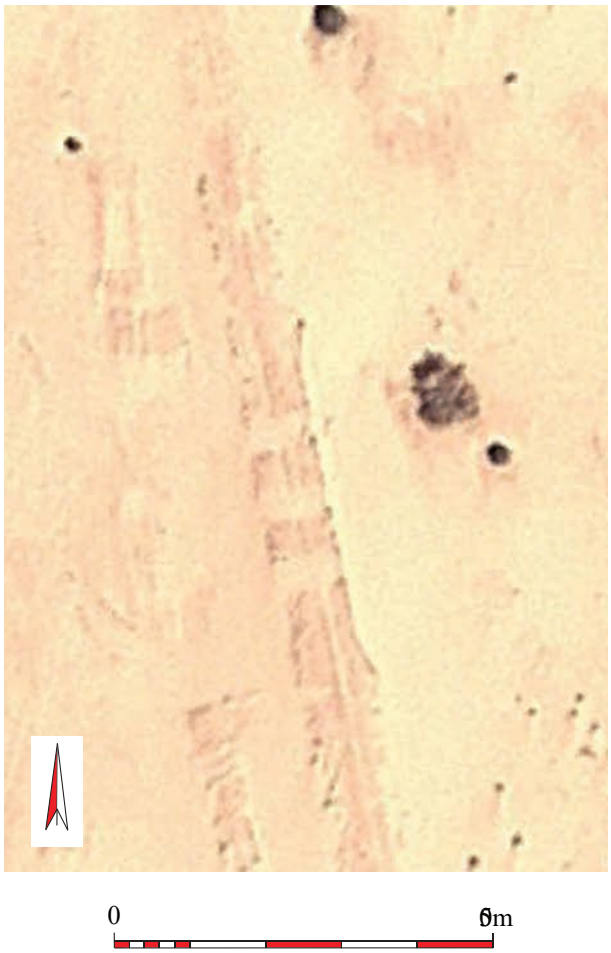


Figure 14. Culverts (background image Google Earth) (scale 1:1000).

Figure 15. Construction Camp B1, general view over the tent bases.

Figure 16. Construction Camp B1, general view along one row of tent bases.

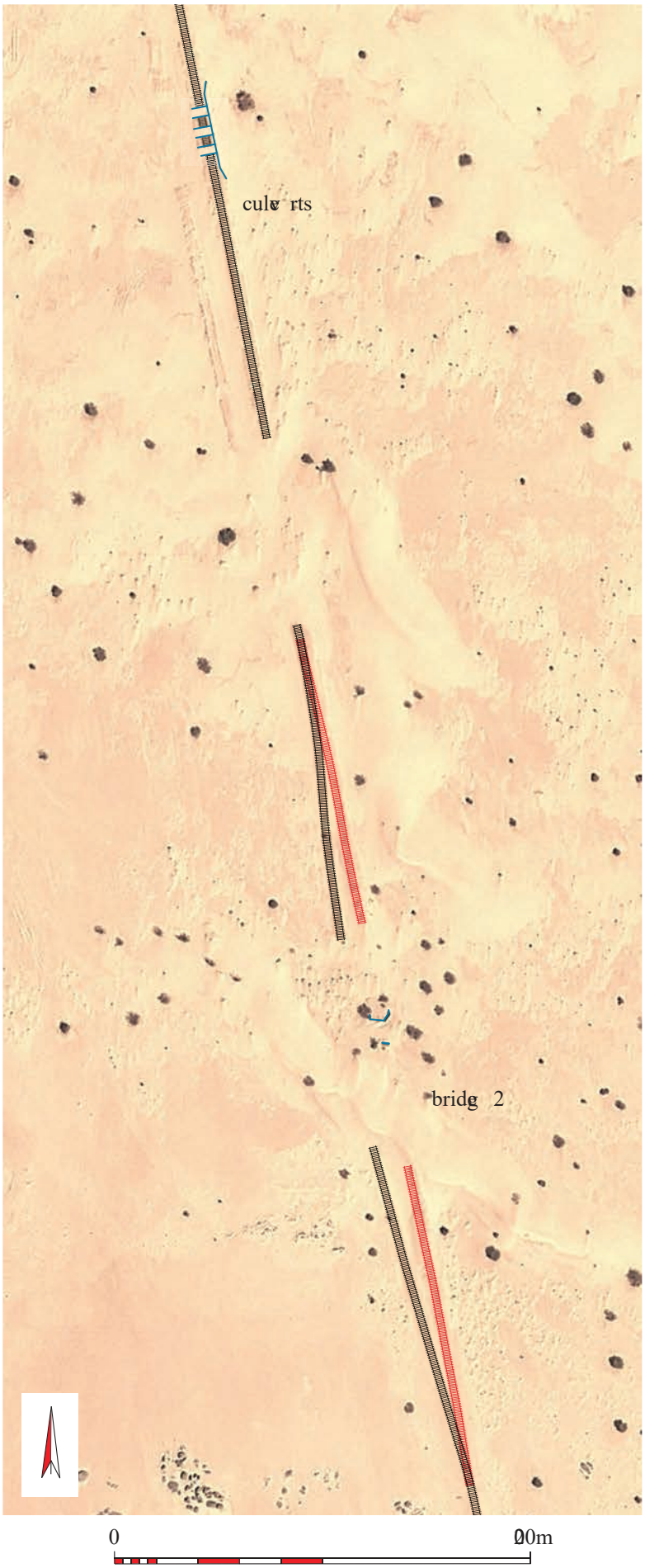


Figure 17. Bridge 2 and the culverts to the north (background image Google Earth) (scale 1:3000).

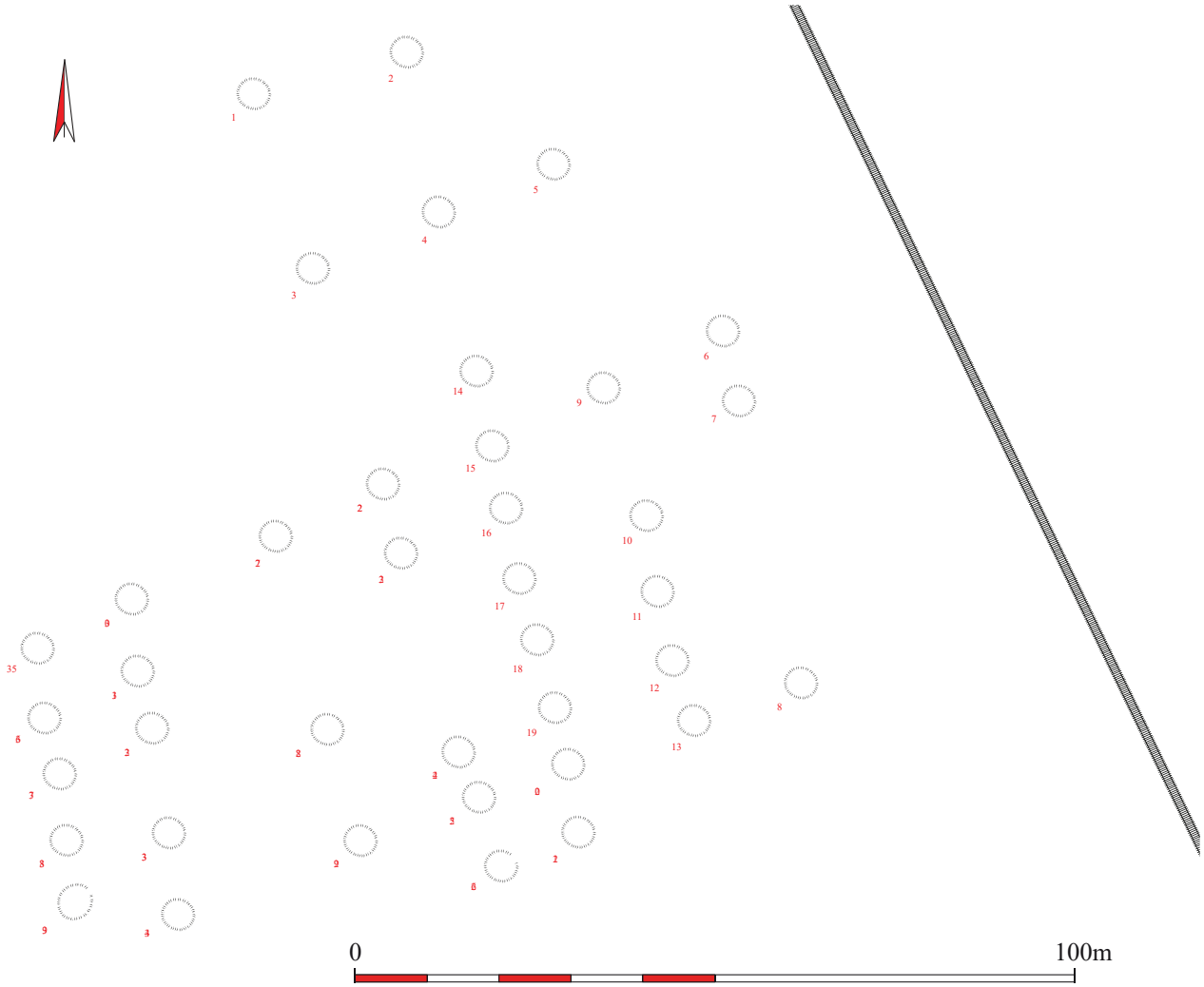


Figure 18. Sketch plan of Construction Camp B1 (scale 1:1000).

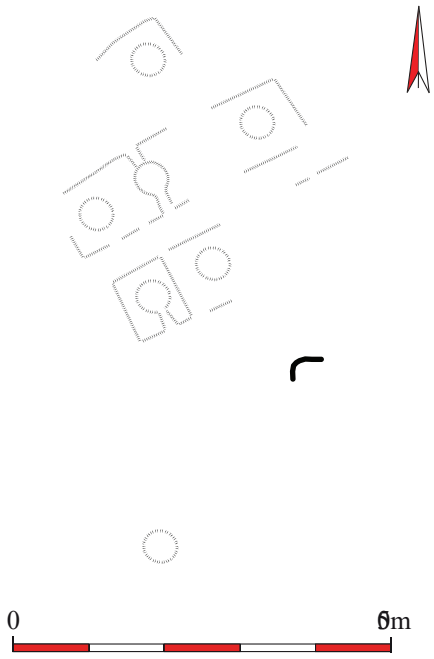


Figure 19. Sketch plan of Construction Camp B2 (scale 1:1000).

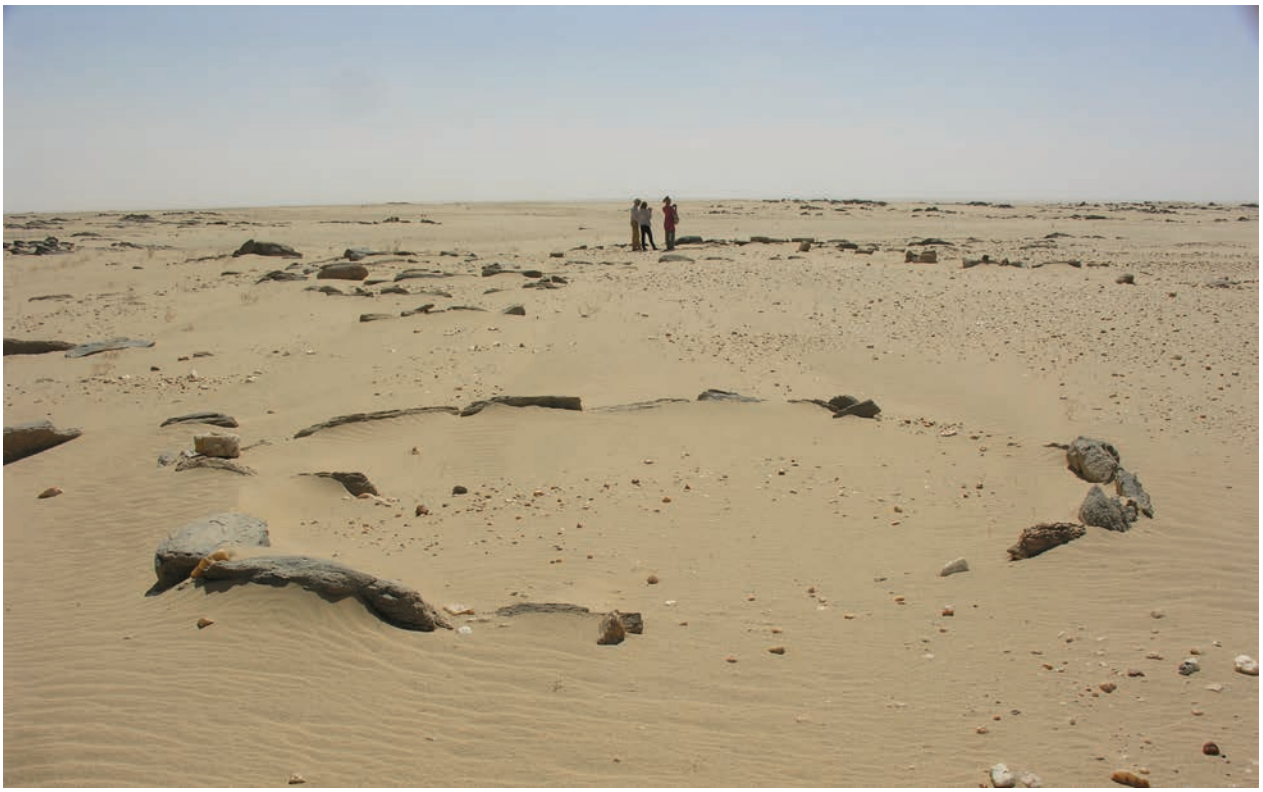


Figure 20. Construction Camp B1, tent base formed from a ring of long narrow stones.

Figure 21. Construction Camp B1, tent base partly formed from a ring of long narrow stones, and with a rectangular feature within.

Figure 22. Construction Camp B2, general view.

Figure 23. Construction Camp B2, tent base with spayed entrance path and sleeping platform.

Figure 24. Construction Camp B2, the stone windbreak.

Figure 25. Construction Camp B3, general view of the tent base.

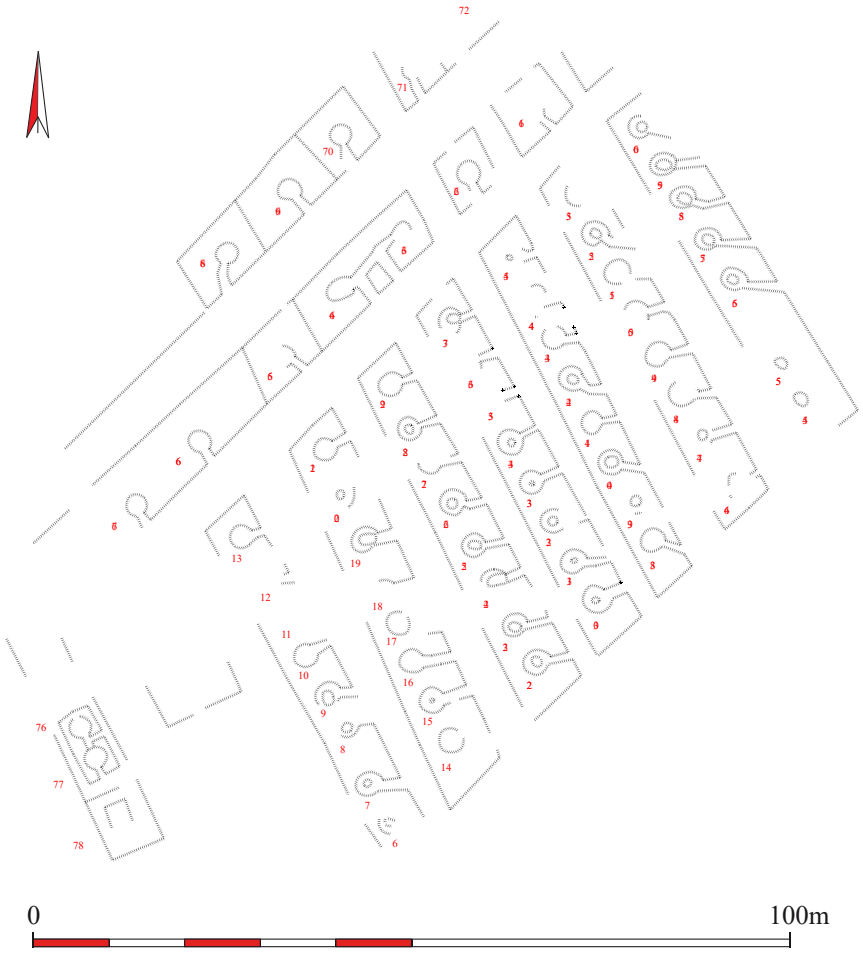


Figure 26. Plan of Construction Camp B3 (scale 1:1000).

position on the south side of the camp suggests that it is associated with cooking facilities.

B3 – The camp here was very well preserved and its accommodation area was planned in detail using a Leica Total Station. It comprises at least 68 tent bases (Figures 25, 26 and 29). There are seven parallel rows on an alignment of approximately 151°. Within these each tent base has a splayed entrance pathway towards the street to the north east. Each row is enclosed by a border but there are no internal divisions forming individual plots. The north-easterly rows contain eight tent bases, the south-westerly rows seven. To the north-west are two further rows at 90° to the others; most of the tent bases in these rows are within square plots. Tent bases (63) and (64) face each other and are linked by a pathway. The two tent bases (76) and (77) may be similar (Figure 30). At the end of this row is a square outline (78) marked by a line of stones, open to the south (Figure 31). The row is parallel to the core of the camp but separated by a wider space occupied in part by what may have been a rectangular plot.

To the south-west of the tent bases are a number of stone features and one rectangular plot (1) with a connected pathway (Figures 27 and 32). It is associated with stone features (1b), a long rectangular shape, open down the centre and at both ends (Figure 33). There is also possibly a cairn, a windbreak and a rectangular structure, possibly the base of a building (Figure 34). The other features are three stone windbreaks and two structures, perhaps huts open on their south sides (Figure 36).

B8 – This camp, with a minimum of 31 tent bases, lies over 200m to the south of the railway, which at this point describes a gentle curve east to west. There appear to be three rows of tent bases, aligned approximately at 196° (Figures 28 and 37), without surrounding plots and streets being demarcated by low gravel banks as at CC B3. A few other tent bases were isolated from the main cluster. Some of the

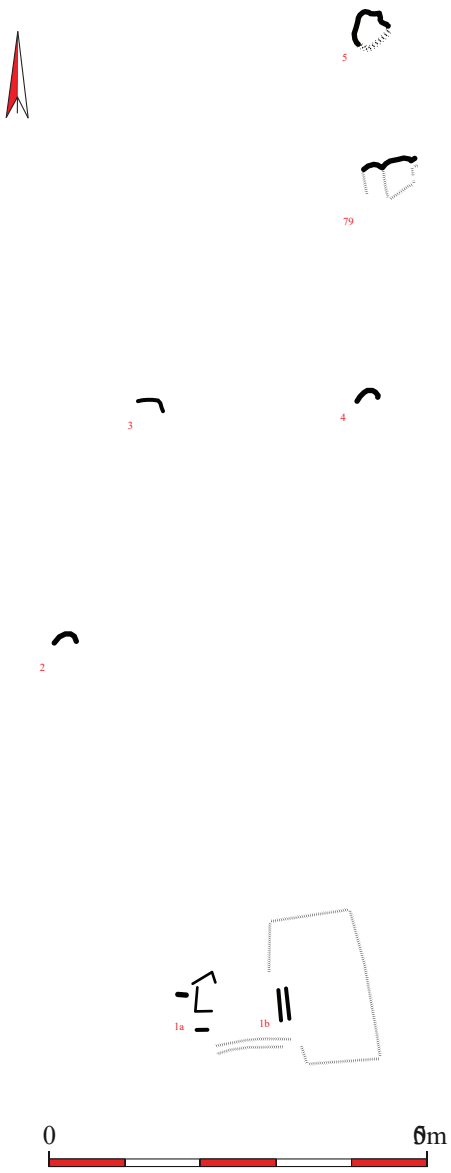


Figure 27. Sketch plan of the features to the south west of the tent bases of construction camp B3 (scale 1:1000).

tent bases had the slightly tapering pathway leading up to their doorways (Figure 38) and one has two slightly raised areas within, presumably sleeping platforms (Figure 39). The entrances where visible appear to be facing a little south of east. Two huts with the lower parts of their walls of irregularly-shaped stone blocks (Figure 40) were noted, the other structures relating to the location of tents.

The construction camps along the railway in the desert between Shereik and Abidiya, as far as can be ascertained from the very brief survey of them which was conducted, were of the same character as those extensively studied by the British Museum team between Wadi Halfa and Kerma in 2008 and 2010 (Welsby 2011). This suggests that the organisation of the construction teams, and whatever military escort they were provided with, remained unchanged. The following specific parallels may be noted:

CC B3(78) – square to rectangular stone kerb open to one side – two examples at CC1 and another two at CC1b.

CC B3 many examples – tent bases with their entrance pathways markedly at an angle from the surrounding plot – an example at CC2, a row of three examples at CC6, a few at CC7a.

CC B3 – large rectangular plots devoid of internal features – also at CC6, CC9.

The arrangement of the tent bases is invariably in rows apart from some outliers. These fall into five main types.

A. Camps with each tent base set within an individual plot within a row.

B. Camps with tent bases in a double-width row divided along its length into individual plots (each containing two tent bases back-to-back).

C. Camps with each tent base in a row delimited along its perimeter but without internal divisions.

D. Camps where the rows are not delimited.

E. Camps with tent bases within concentric circular plots.

In some camps the arrangement can vary from one row to another and even within a single row. The various layouts of tent bases in the core of the camps, where information is available, are shown in Figure 35. Note that occasional deviations from the norm are discounted.

The station

Only one station was provided on the desert section of the line, at Abu Sillem (Figures 41 and 44). It was not studied in detail; the following description is based on the Google Earth satellite image and photographs taken during the SARS survey (Figures 42 and 43). It was constructed of mud brick with red brick used around the windows and doors. The red bricks around the openings stood a little proud of the adjacent mud bricks and will have been flush with the surface of the plaster render which covered all internal

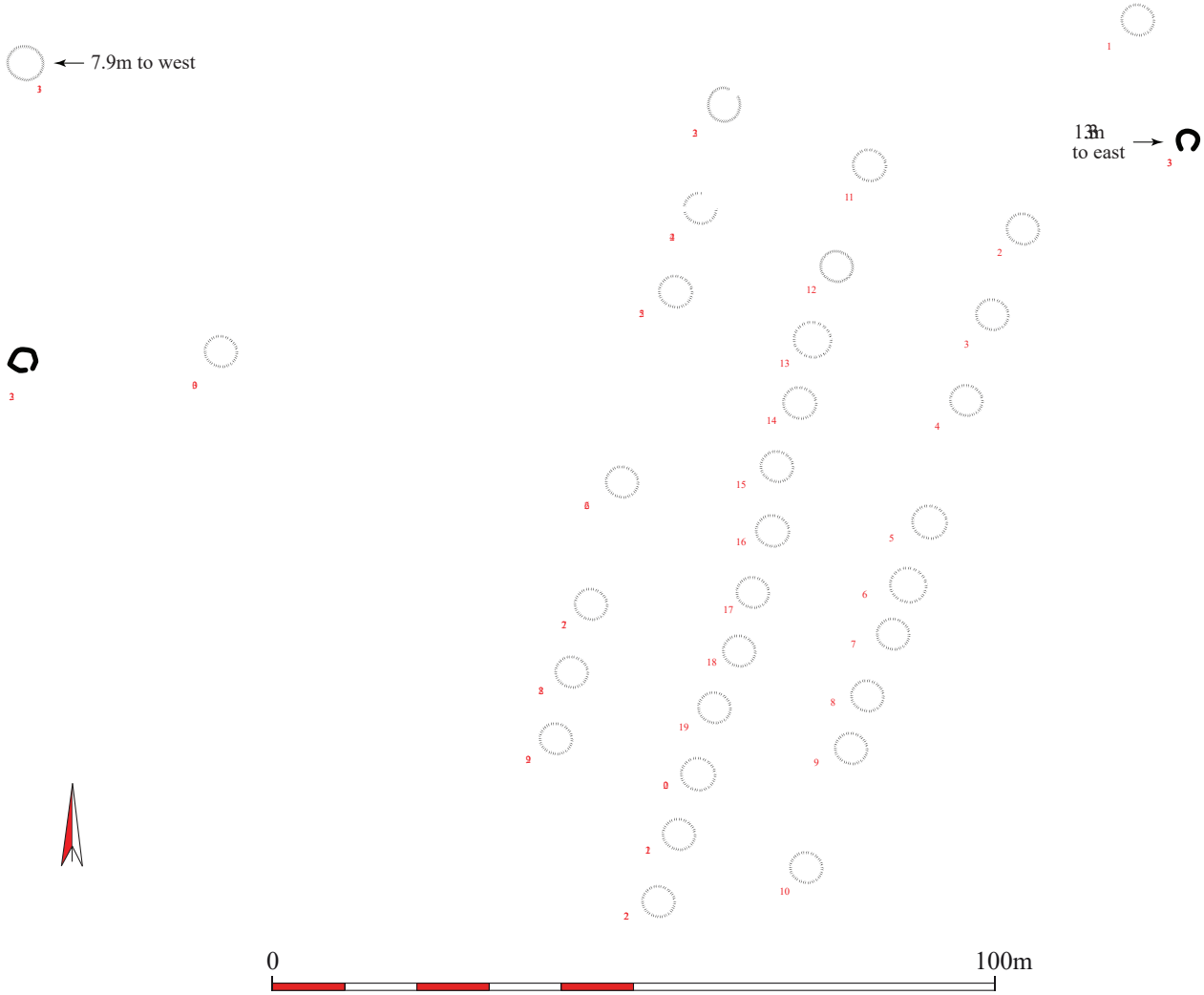


Figure 28. Sketch plan of Construction Camp B8 (scale 1:1000).

Figure 29. Construction Camp B3, general view of the tent base (68) to (72), looking north-east.

Figure 30. Construction Camp B3, tent bases (76) and (77), looking west.

Figure 31. Construction Camp B3 (78) looking west.

Figure 32. Construction Camp B3 (1) looking north west.

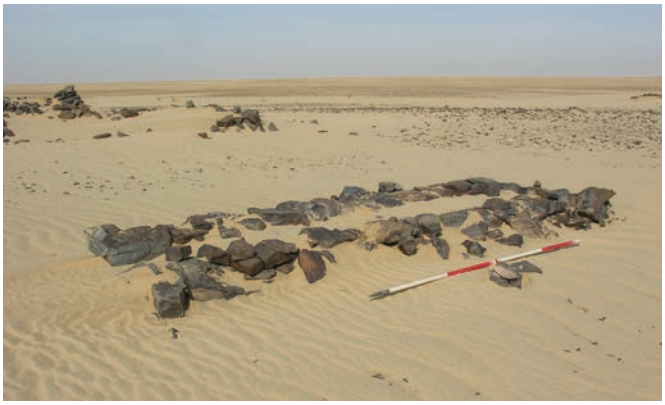


Figure 33 a and b. Construction Camp B3 (1b).

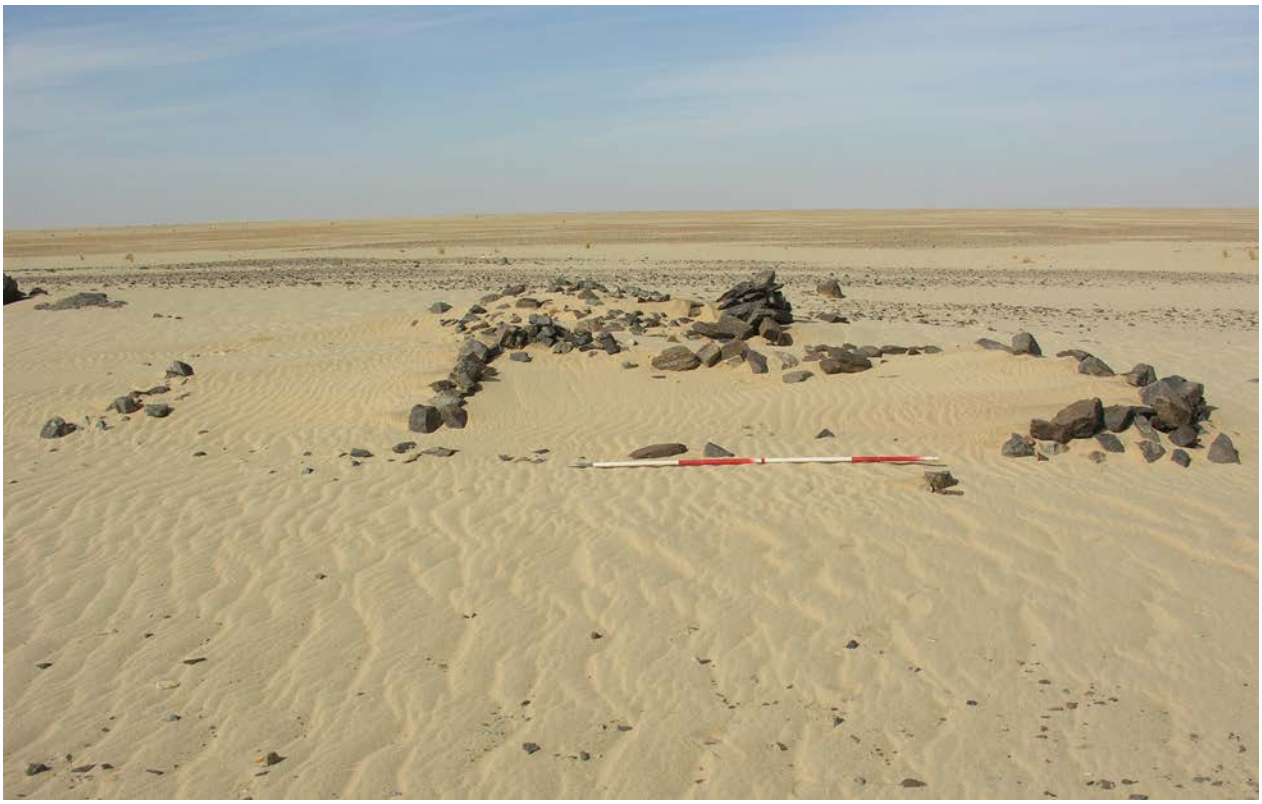


Figure 34. Construction Camp B3 (1a) looking west.

Camp	Layout type				
	A	B	C	D	E
CC1			X	X	
CC1b			X		
CC2	X		X		
CC4		X		X	
CC4a				X	
CC4b				X	
CC5	X		X		
CC5a	X				
CC6	X		X		X
CC7	X				
CC7a	X				
CC8				X	
CC9	X		X		
CC10	X		X		
CC10a				X	
CC11b					X
CC14a2					X
CC19				X	
CC B1				X	
CC B2		X			
CC B3			X		
CC B8				X	
CC A1			X		
CC A2	X				

Figure 35. Layout of the tent bases in camps on the Wadi Halfa to Kerma Railway (CC), immediately south of Abu Hamed (CC A) and between Shereik and Abidiya (CC B).

and external walls. All openings are crowned with a segmental arch, the bricks set radially and with a group of three 'courses' projecting a little and forming the 'keystone' capped by two courses of horizontal bricks (Figure 45 and 46). All the red bricks have raised pointing at the joints. The lowermost part of the walls were faced in red brick capped by a chamfered brick course at the level of the window sills (Figure 47). Above this the walls were slightly reduced in thickness. The roof over the northern and southern ranges may have been pitched, the ridge running from south west to north east. A little to the north east of the station building two circular features of uncertain function were noted (Figure 43).

Other structures

Hut – A small structure, approximately 3m square with walls of rubble (Figure 48), was observed about 1.5km south along the railway from Construction Camp B1.

The quarry

A siding branches off from the main line and extends to the base of a prominent rock outcrop where it further divides (Figures 49 and 50). It appears that there are probably two phases of use here (Figure 51). A little to the north are traces of linear features (Figure 52 and 53). At the base of the hill are large piles of stone fragments ready for transport (Figure 54). A number of the large boulders had deep drill marks in their split faces (Figure 55). Presumably the quarry was used during the construction of the railway to furnish stone for bridges and culverts and the formation.

Alongside the main line south of the siding are piles of ballast while on the other side is a small circular feature.

The railway immediately south of Abu Hamed

This section of the line has not been surveyed on the ground. What follows is exclusively derived from the readily available satellite imagery.

Leaving the river the line was largely constructed in the shallow valleys and *wadi*s (Figure 56). Part way along a substantial watercourse had to be crossed. This was done mainly on an embankment presumably with a small bridge or culvert at the *wadi*'s centre. All traces of this installation have been removed. As on the Wadi Halfa to Kerma railway and on the line between Shereik and Abidiya this installation was subsequently redesigned (Figures 57 and 58). A two-span bridge was constructed a little upstream, the

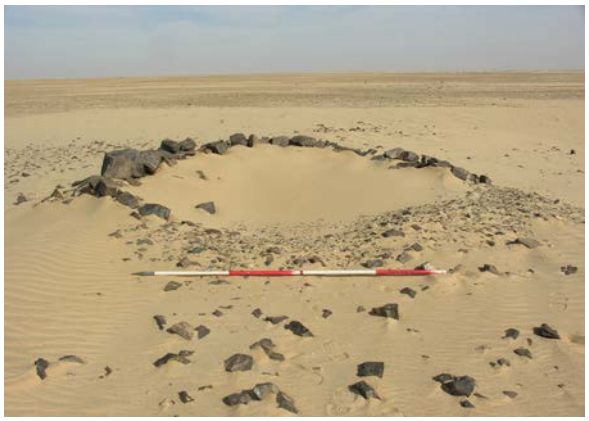


Figure 36. Construction Camp B3, (5).

Figure 37. Construction Camp B8, general view.

Figure 38. Construction Camp B8, general view.

Figure 39. Construction Camp B8, general view.

Figure 40. Construction Camp B8, stone feature.

Figure 41. Abu Sillem station looking south.

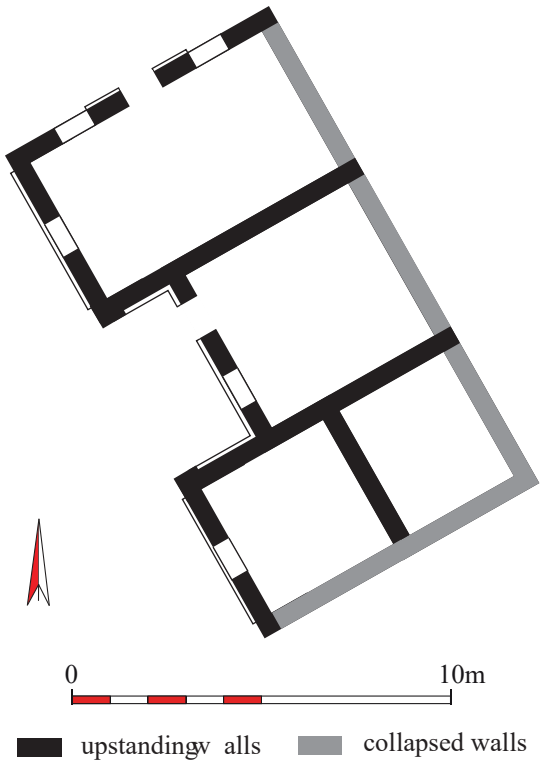


Figure 42. The station (scale 1:200).

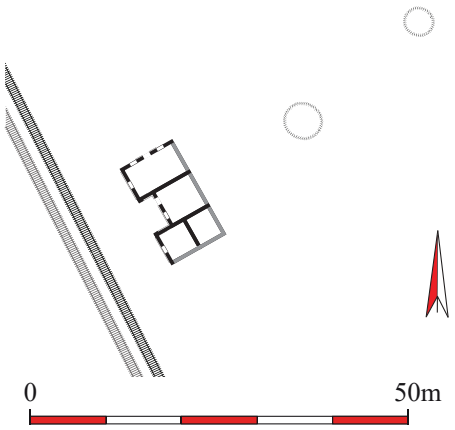


Figure 43. The station and other features (scale 1:1000).

Figure 44. Abu Sillem station looking north east.

Figure 45. Abu Sillem station, the doorway from railside and flanking window.

Figure 46. Abu Sillem station, the ‘keystone’ over the window by the main door.

Figure 47. Abu Sillem station, the doorway from railside and flanking window.

Figure 48. The hut south of Construction Camp B1.

Figure 49. The railway and sidings by the quarry to the south of CC B7 looking north east.

Figure 50. The siding with the quarry beyond.

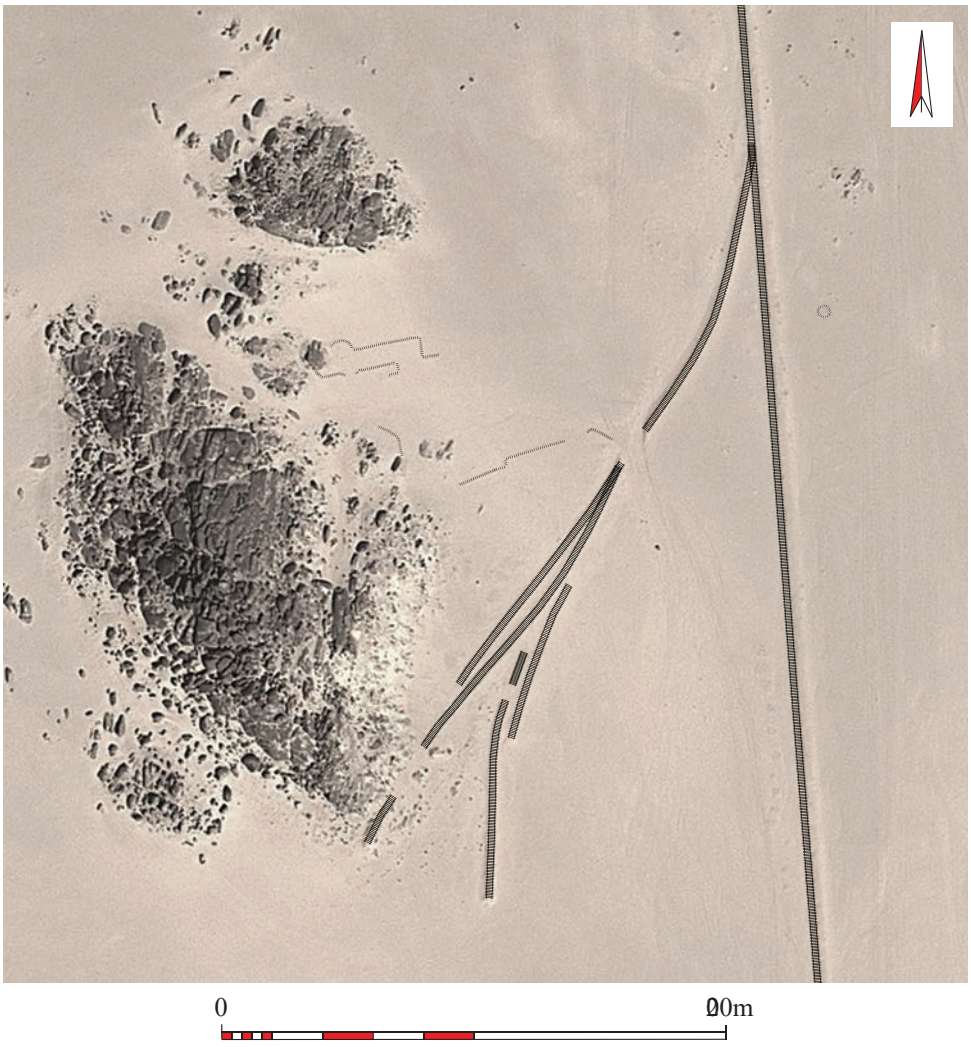


Figure 51. The railway, sidings and features by the quarry to the south of CC B7 (scale 1:3000) (background image Google Earth).

Figure 52. Linear features in the plain.

Figure 53. The northern linear feature in the plain.

Figure 54. Piles of stone at the base of the jebel.

Figure 55. Boulders with drill holes.

new section of line leaving the gently curved route of the original formation. This change may have happened very soon after the original construction. At locus 230 on the Wadi Halfa to Kerma railway the original line must date between September 1896 and May 1897 at the outside yet the new bridge and revised course of the railway was built in 1897[6] as evidenced from the building inscription still in place (Welsby 2011, pl. 53).

Probably to be associated with the construction of one or both phases of the *wadi* crossing were two construction camps. CC A1 (Figure 59) was of two rows of tent bases, at least seven being visible on the satellite imagery. A rectilinear stone structure, which may be associated with the construction camp, lies a little to the west. CC A2 (Figure 60) is again of two rows of a minimum of four tent bases, each set within an individual plot.

Further south, two archaeological surveys have recorded installations connected with the construction of the railway. In 2012 the survey in the environs of Kurgus noted, a little south of Dagash, a stone feature with the character of the wind breaks common in construction camps along with a military button (Cat. no. 11). No traces of tent bases were noted but the abundant modern activity on the site may have been responsible for their removal (Welsby Sjöström 2014 and pers. comm.).

During the survey by NCAM in 2011, undertaken in anticipation of the building of a dam at Dagash

[6] The new bridges on the line were constructed by the Works Department, a unit recruited from tradesmen in Egypt, which arrived in Wadi Halfa at the beginning of 1897 (Sandes 1937, 207).

Figure 56. The course of the various phases of railway immediately south of Abu Hamed (background Google Earth).

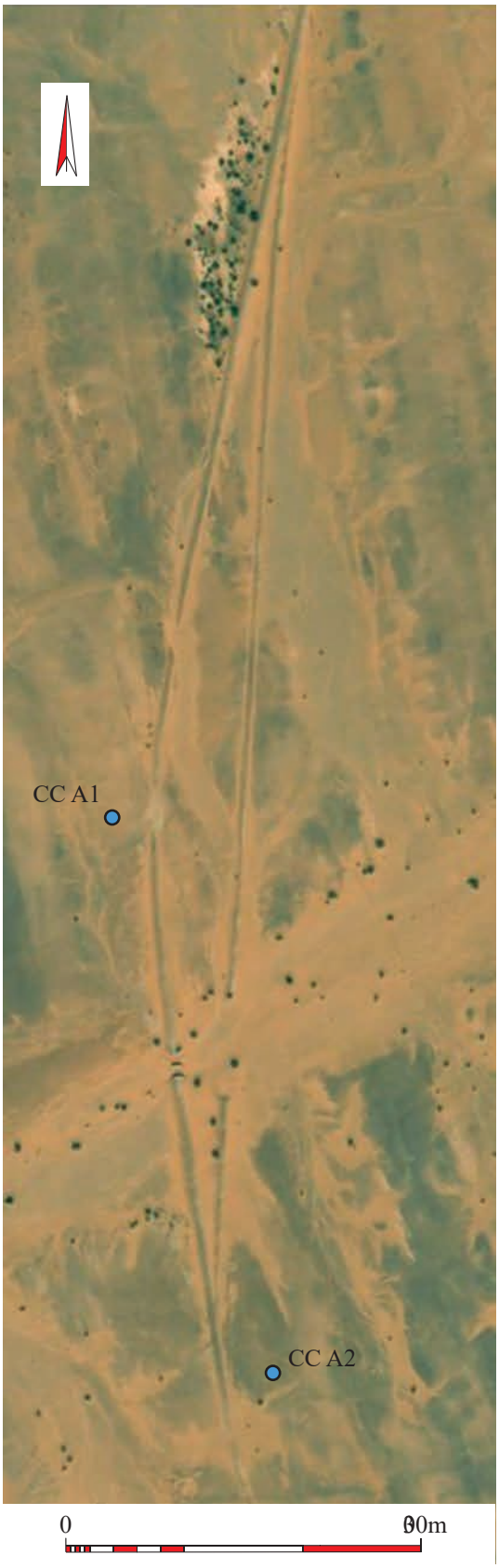


Figure 57. The two phases of railway crossing a *wadi* south of Abu Hamed (background image Bing Maps).

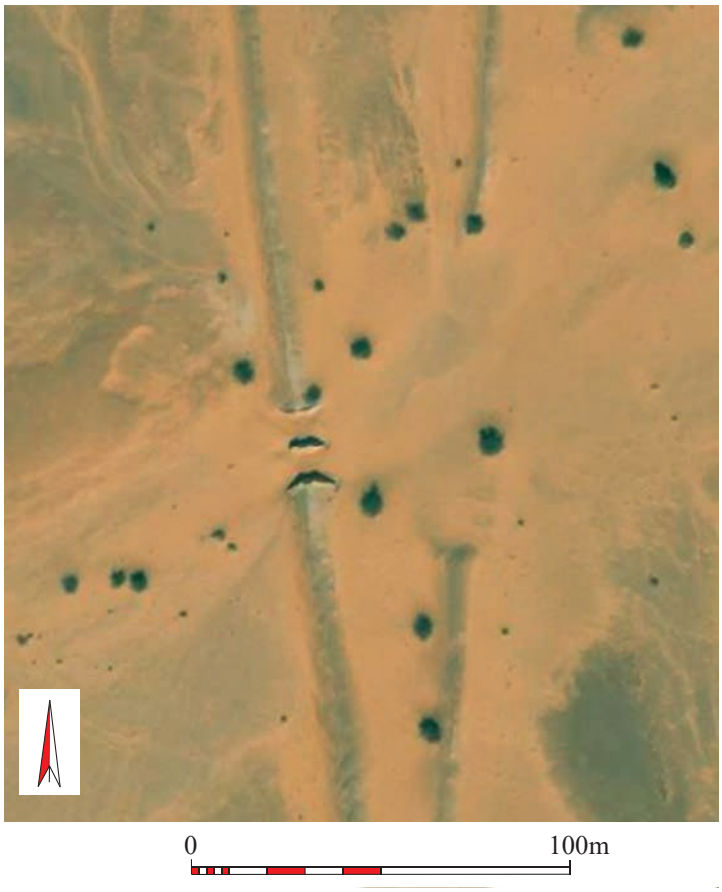


Figure 58. Detail of the two phases of railway crossing a *wadi* south of Abu Hamed with the abutments and pier of the later bridge (background image Bing Maps).

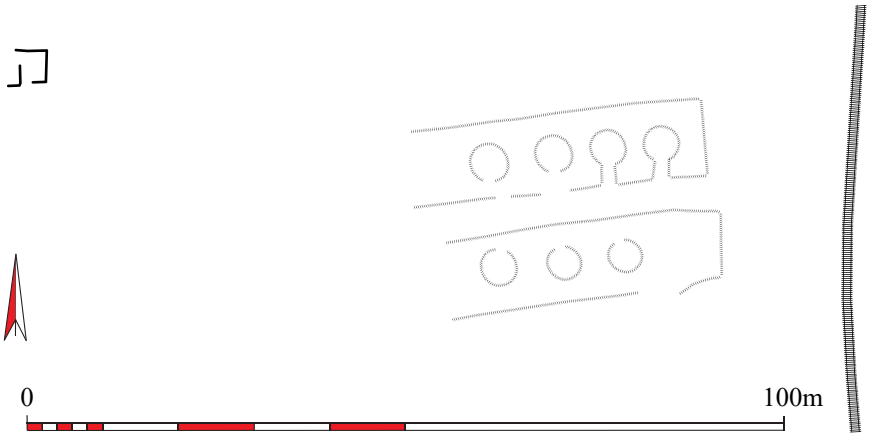


Figure 59. Sketch plan of construction camp A1 based on what is visible on Google Earth and Bing Maps (scale 1:1000).

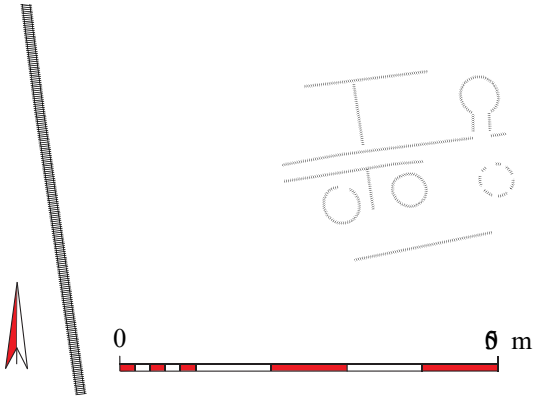


Figure 60. Sketch plan of construction camp A2 based on what is visible on Google Earth and Bing Maps (scale 1:1000).

Figure 61. The construction camp DSHE 32 recorded by the NCAM survey team (photo © NCAM).

(Abdelrahmam Ali Mohamed *et al.* 2014, 77ff), the well-preserved remains of a construction camp were noted. This lay near the village of el-Zareeba and was designated site DSHE 32.[7] From the photograph here published (Figure 61) several features can be observed. In the foreground are two tent bases in square/rectangular frames made of a single line of stones. The two frames are separated by a narrow alley. Both tent bases have pathways leading to them from opposite sides of their enclosures.[8] In the background can be seen another tent base, which also appears to be in a square/rectangular frame, smaller in size to those mentioned above. It has only one pathway. Possibly a further tent base lacking its rectilinear frame is visible beyond. One of the other features appears to be another tent base, a simple penannular stone ring with a wide opening. Beyond is probably yet another tent base in a rectilinear frame. The nature of the other features is unclear.

[7] All information on this site and the photographs of it and the finds located there were kindly provided by Dr Mahmoud Suliman Bashir, Regional Director of Antiquities, River Nile State and Resident Manager of the Island of Meroe World Heritage Site.
[8] For a similar arrangement in the camps along the Wadi Halfa to Kerma Railway see Welsby 2011, fig. 7 – Camp 2; fig. 13 – Camp 6; fig. 19 – Camp 10; fig. 24 – Camp 19.

The artefacts (Figures 62-68)

Artefacts were collected from the surface within Construction Camp B3. A coin, Cat. no. 10, was found a little to the north of the station. This was photographed but left *in situ,* as were the two fishplate bolts from by the station and close to Construction Camp B8 (cat. nos 43 and 44). The button, Cat. no. 11, was found by Isabella Welsby Sjöström during her survey in the vicinity of Kurgus in 2012 (Welsby Sjöström 2014, 130, pl. 1) and is included here with her permission. Other finds, from construction camp DSHE 32, were collected and photographed on site, by the NCAM team.[9] All the finds recovered are now in the collections of the Sudan National Museum.

Ceramic

1. Sherds from a wheel-made vessel in an orange-red fabric. The exterior is largely eroded but traces of a smooth red surface remain.

SF:44, CC B3, (12) – L:118mm, W:44mm, T:6mm

2. Sherds as cat. no. 1.

SF:45, CC B3, (41) – L:89mm, W:69mm, T:4mm

3. Two sherds as cat. no. 1. Pale yellow material adhering to both.

SF:46, CC B3, (19) – L:93mm, W:69mm, T:6mm

4. Sherds as cat. no. 1 but with a red-brown glaze on the exterior. Among the 101 sherds, all of which are heavily wind eroded, is a footring base.

SF:47, CC B3, (21) – sherds from 10-110mm in size; Footring D. *c.* 100mm

5.[+] Cup in a white fabric with white glazed surfaces. On the exterior is a maroon register delimited by a black band above and below with another black band just below and around the footring. The register has a repeating star and crescent motif. It is stamped on the base with a rampant lion within a shield with a crown above and the legend *BOCH Fres LA LOUVIÈRE*. Pot mark as *WHKRS* cat. no. 45; decoration as cat. nos 44 and 58 (Welsby 2011, 94, pl. 162).

SF:48, CC B3, (74) – H:58.5mm, Rim D:100mm; Footring D:55.5mm

From camp DSHE 32 came two rims and necks from spouted jugs and a white-glazed sherd with vertical flutes probably from a small cup.

Glass

6.[+] Purple glass bottle. Two conjoining shards forming the base and part of the vertical wall. The shallow ompholos base has text in raised relief on the underside, **GG** and **76**, the latter twice.

SF:49, CC B3, (29) – H:51+mm, Max. D:44.5mm, T:3mm

7.[+] Olive green champagne bottle; nine fragments after refitting; base with high ompholos, neck and rim present.

SF:50, CC B3, (8) – H:210+mm, Rim D :28.5mm, Max. D:84mm, T:6mm

The presence of this bottle, and of other similar bottles and sealings along with the many beer bottles within the construction camps along the Wadi Halfa to Kerma line (Welsby 2011, cat. nos 6-9, 247-249), cast doubt on the effectiveness of the prohibition on all alcohol in the campaigns of 1885 and 1896-1998 (see Sandes 1937, 208).

8. Clear to light green bottle glass shards, ten fragments after refitting, all wall shards. From a large vertical-sided bottle with a prominent shoulder rounding into a narrow neck. Found in the street to the W of (34).

SF:51, CC B3, (34) – H:180+mm, Max. D:100mm, T:3.5mm

[9] Only very low resolution photographs of these finds were available when writing this article. More detailed documentation and the objects themselves were unavailable for study owing to the current situation in Sudan (during 2023).

9. Light green glass bottle, five shards all with eroded edges; dimensions of largest.
SF:52, CC B3, (33) – L:65mm, W:51mm, H:51+mm, Max. D:100mm, T:9mm
From camp DSHE 32 came a pale-green glass bottle missing its neck and rim. It has a shallow ompholos base.

Metal

Coin
10.⁺ A 10 qirsh, silver composition coin bearing on the obverse the *toughra* of Sultan Abdul Hamid II, with the denomination below and a floral design to the right. The mintmark **W** is at the base, and refers to the designer Emil Weigand of the Berlin Mint. The reverse carries the year of mintage (year 15 of reign) followed by ***minted in Misr***. The year of accession (1293) is written below, and all the foregoing is enclosed by a wreath. The coin dates to AD 1889.[10]
SF:50, Station, Not collected – D:18mm

Buttons
11.⁺ Brass button with a central coat of arms surmounted by a crown and flanked by a rampant lion and unicorn. Around the coat of arms *honi soit qui mal y pense* and below it in a banner split in the centre ***dieu et mon droit***. The flat back made from a separate iron disc has a dished centre through which a wire loop extends. Around the edge of the disc the following text is stamped:

This is a General Service – Royal Arms button of the period 1871-1901.[11]
SF:49, From the construction camp, CC C1 a little south of Dagash at 19° 18’ 53.1” N, 33° 25’ 13.56” E – Max. D:24.2mm, T:7mm, D of loop:7.4mm, D of wire:1.7mm
12.⁺ Button with four holes in the dished centre. Outer flange with incised lattice.
SF:37, CC B3, (47) – D:17.5mm, T:2.5mm; Holes D:2.5mm
13.⁺ Button as cat. no. 12. On reverse stamped:

SF:41, CC B3, (50) – D:14mm, T:2mm

14.⁺ Button as cat. no. 12. On reverse stamped:

Around each thread hole is a concentric incised groove.
SF:53, CC B3 – no dimensions available

Buckle
15.⁺ With two tines.
SF:43, CC B3, (15) – L:36mm, W:26mm, T:2mm

Heel protector
16.⁺ Heel protector with five countersunk circular holes. Found 3m east of (14).
SF:39, CC B3, (14) – L:81mm, W:18mm, T:1mm; Holes D:4mm

[10] http://www.coinfactswiki.com/wiki/Egypt_AH_1293(16-W)_10_qirsh.
[11] https://www.kellybadges.co.uk/uniform-buttons-older-types-of-military-uniform-buttons/4184-general-service---royal-arms-245mm---1871-1901-with-queen-victorias-crown-brass-military-uniform-button.html

Cans

17.+ Sardine tin[12] with key recess on base. Stamped on the base in two arcs: PRODUITS / IMPORTÉS either side of the key recess.
SF:1, CC B3, (74) – L:105mm, W:76mm, H:22mm, T:>1mm

18.+ Sardine tin as cat. no. 17 but with lid remaining attached along one long side.
SF:2, CC B3, (74) – L:105mm, W:76mm, H:23.5mm, T:>1mm

19.+ Sardine tin as cat. no. 17.
SF:7, CC B3, (48) – L:105mm, W:77mm, H:22mm, T:>1mm

20.+ Rectangular tin with rounded corners, stamped on the recessed base: URUGUAY 1 INSPECCIONADO
SF:26, CC B3, (10 – L:81mm, W:64mm, H:16mm

21.+ Lid of a rectangular can with a tab at one corner for insertion into the key. From a sardine tin?
SF:12, CC B3, (63) – L:105mm, W:75mm, T:>1mm

22.+ Partly crushed can with the top removed. In the centre of the base is an opening (D:40mm). Found 1m south of (42) on edge of road.
SF:11, CC B3, (42) – H:86mm, Max. D:76mm, T:>1mm

23.+ Can with clamped ends and seam along the edge. Stamped on the base ***WJU JD*** or ***MJU JD*** or ***HJU JD*** within two concentric raised rings. Roughly cut open at the top.
SF:31, CC B3, (10) – H:112mm, Max. D:76mm

24.+ Can with a 5mm-wide seam of solder down the side and solder also visible around the junction with the base. The top has been removed and a hole 6mm in diameter punched near its open lip.
SF:17, CC B3, (41) – H:108mm, Max. D:73mm, T:>1mm

25.+ The base and lower part of a can; the upper part has been destroyed by corrosion. No solder visible on the seam which has split.
SF:24, CC B3, (9) – T:>1mm H:36mm, Max. D:104mm

26.+ Lid with a projecting tab from a circular can which has been rolled into a cylinder during opening.
SF:3, CC B3, (74) – Max. D:83mm, T:>1mm

27.+ Circular lid with a dimple in the centre (D:7mm). The edge is jagged from opening.
SF:4, CC B3, (18) – Max. D:90mm, T:>1mm

28.+ End cut from a cylindrical can made from a disc joined to the side of the can which is rolled over to hold it in place.
SF:13, CC B3, (37) – H:8mm, Max. D:46mm, T:>1mm

29.+ End of a can or a large interference-fit lid; band with overlapping seam visible joined to disc. From 4m SE of (14).
SF:21, CC B3, (14) – H:45mm, Max. D:110mm, T:>1mm

30.+ Can? Fragment, cut and folded. It is impressed with a pineapple(?) with leaves the shape of holly leaves by the stalk.
SF:40, CC B3, (21) – L:92mm, W:54mm, T:>1mm

31.+ Can with inset base. The base appears to be clamped to a rolled sheet that has the seam visible. A raised ridge 10mm below the rim forms the lid seating. Lids as cat. nos 32 and 33 fit this can which, with

[12]During his journey on the train across the Nubian Desert Captain Churcher recorded 'There is not a tree or a blade of grass anywhere, nothing but sand, the railway track marked by sardine tins and broken bottles'. National Army Museum, NAM. 1978-04-53, Churcher, TS diary, 7 August 1898 (4.30 p.m.) – referenced in Spiers 2015.

the lid in place, will have had a height of 65mm or 87mm.
SF:32, CC B3, (10) – H:58mm, Max. D:103mm, T:>1mm
32.[+] Interference-fit lid; outer lip only partly preserved.
SF:16, CC B3, (10) – T:>1mm H:16mm, Max. D:105mm
33.[+] Interference fit lid; band with soldered seam visible. Disc folded over the sides of the can. Black deposit within.
SF:22, CC B3, (9) – T:>1mm H:38mm, Max. D:105mm
34.[+] Interference-fit lid made from a single piece of metal with a slightly raised ridge around the top of the lid and a cordon towards the bottom edge with gripping grooves below.
SF:23, CC B3, (9) – T:>1mm H:24mm, Max. D:74mm

Petrol cans[13]
35.[+] Fragment with cut edges; evidence of join along one edge. Stamped ***REFI[NED]***.
SF:25, CC B3, (10) – L:67mm, W:47mm, T:>1mm
36.[+] 'Lid' from a petrol can with a central circular depression. It has been cut out from the top of the can.
SF:30, CC B3, (10) – L:mm, W:mm, T:>1mm H:4mm, Max. D:56mm
37.[+] Part of the top of a petrol can with an oval wire handle. Text along one corner ***REF[INED].***
SF:33, CC B3, (38) – L:130mm, W:105mm, T:>1mm; Handle wire D:3mm
38.[+] Corner of the square top of a petrol can with 'lid' with circular depression. Stamped on the edge **BE**[.... and [RE]**FINE**[D].
SF:36, CC B3, (8) – L:132mm, W:96mm, T:>1mm
39.[+] Disc from a petrol can lid with centre largely missing.
SF:42, CC B3, (14) – T:>1mm, Max. D:50mm; Central hole D:32mm
40.[+] Circular lid from a petrol can(?) with well-defined inner ring. Stamped *D* and *12*. The edge is jagged from opening. The top has been pierced by a small hole punched through, which has then been sealed with a blue material.
SF:5, CC B3, (49) – L:66mm, W:61mm, T:>1mm, Max. D:55mm

Fishplate bolts
41.[+] Bolt with partly unscrewed nut. The upper 31mm of shaft is not threaded. The head is square with a central recess (D:21mm) within which is a star and crescent and *BJB 1897* in relief. Nut square, slightly domed on one side.
SF:18, CC B3, by the railway – L:105mm, Max. D:19mm; Bolt head L:28.5mm, T:13mm; Bolt shaft L:92mm; Nut L:32mm, T:18.5mm
42.[+] Bolt with partly unscrewed nut as cat. no. 41.
SF:34, CC B3, in the street between (35) and (42) – L:107mm, Max. D:19mm
43. Bolt as cat. no. 41.
SF:54, by CC B8, not collected – no dimensions available.
44.[+] Bolt with nut as cat. no. 41 apart from the head. Impressed on the very slightly domed head is ***PNB C°*** above a star and crescent. Below this is stamped *98*.
SF:55, by the station, not collected – no dimensions available.

Dog-head spikes
45.[+] Dog-head spike with a square shaft terminating in a chisel point. On the head is a star and crescent and [B]**JB 1897** in relief.

[13] For better preserved examples from along the Wadi Halfa to Kerma railway see Welsby 2011, pls 173 and 174.

SF:19, CC B3, by the railway – L:136mm, W:16mm; Head L:31mm, W:25mm, H:20mm
46.+ As cat. no. 47 but with the star, crescent and text miss-stamped to one side.
SF:20, CC B3, by the railway – L:133mm, W:16mm

Banding iron
47.+ Twisted and folded. It is pierced by 10 nail holes.
SF:9, CC B3 from the far side of the street opposite the entrance to (15) – L:515mm, W:17mm, T:>1mm; Holes D:4mm
48.+ With three nail holes, twisted.
SF:14, CC B3, (7) – L:160mm, W:16mm, T:>1mm ; Holes D:2mm
49.+ With one machine-made nail *in situ*.
SF:15, CC B3, (10) – L:48mm, W:16mm, T:>1mm; Nail L:32mm, D:2.5mm
50.+ With four nail holes.
SF:27, CC B3, (10) – L:270mm, W:17mm, T:>1mm; Holes D:4.5mm
51.+ Doubled over. Pierced by three nail holes.
SF:35, CC B3, (8) – L:314mm, W:16mm, T:>1mm; Holes D:2.75mm, 2mm, 4.5 x 2.5mm

Sheet
52.+ Fragment cut from a metal sheet stamped *IN R*[.. This may be from the side of a can.
SF:8, CC B3, (33) – L:70mm, W:36mm, T:>1mm

Strip
53.+ 'L'-shaped strip (W:15mm and 26mm) probably strengthening for the corner of a wooden box. Cut marks extend into it.
SF:10, CC B3, (13) – L:135mm, W:72mm, T:>1mm

Tube
54.+ Cylindrical tube made from a rolled sheet with the ends overlapping but not fixed together. At one end a circular disc with two semi-circular cutouts on opposite edges has been attached. In the centre of the disc a folded metal strip has been inserted through a slot splayed out in the interior.
SF:6, CC B3, (42) – L:56mm, T:>1mm ; Tube D:20mm, disc D:42mm

Wire
55.+ Bent and partly coiled.
SF:28, CC B3, (10) – L:300mm, Max. D:4mm
56.+ Bent.
SF:29, CC B3, (10) – L:267mm, Max. D:3mm

Loop
57.+ 'D'-shaped circular sectioned loop. Slightly thinner and flattened on the straight section.
SF:38, CC B3, (57) – L:76mm, W:79mm, Max. D:10mm.

From Camp DSHE 32 came the following:
a white enamelled teapot with lid decorated in blue.
a 'sardine' can with rolled-back lid.
part of an oil lamp?
a hemispherical bowl probably from a ladle.
three bolts, one which is slightly smaller, with its nut, as cat. nos 41 and 42.

a more slender bolt.
a rail spike as Welsby 2011, pl. 182, cat. no. 303.
a needle with curved end – for leather working?
a spiral drill bit of similar diameter to the three bolts.
a cotter pin?
sheet metal wrapped around a thick-walled tube.
dog-head spikes were also noted.

References

Abdelrahman Ali Mohamed, Fawzi Hassan Bakheit and Muawia Mohamed Salih 2014. *Salvage Archaeology of Dams on the Nile (Preliminary Report). Fourteen year of co-operation between NCAM and DIU*. Khartoum.

Knight, E. F. 1897. *Letters from the Sudan: Reprinted from "The Times" of April to October, 1896*. London - New York.

Macauley, C. B. 1902. 'Sudan Government Military Railways', in J. D. Cormack (ed.), *International Engineering Congress (Glasgow), 1901. Report of the Proceedings and Abstracts of the Papers Read*. Glasgow, 40-43.

Sandes, E. W. C. 1937. *The Royal Engineers in Egypt and the Sudan*. Chatham.

Spiers, E. M. 2015. 'The Sudan Military Railway', in E. M. Spiers (ed.), *Engines for empire. The Victorian army and its use of railways*. Studies in Imperialism 127. Manchester, 96-114.

Welsby, D. A. 2011. *Sudan's First Railway, The Gordon Relief Expedition and The Dongola Campaign*. Sudan Archaeological Research Society Monograph 19. London.
http://www.sudarchrs.org.uk/wp-content/uploads/2021/02/SARS_WHKRS_SudansFirstRailway_opt.pdf.

Welsby, D. A. 2013. 'Surveys at the Fifth Cataract and on the Sudan Military Railway and excavations at Kawa, 2012-13', *Sudan & Nubia* 17, 131-136.

Welsby, D. A. 2020. 'Gazetteer of sites', in W. V. Davies and D. A. Welsby (eds), *Travelling the Korosko Road. Archaeological Exploration in Sudan's Eastern Desert*. Sudan Archaeological Research Society Monograph 24. London, 131-163.

Welsby Sjöström, I. 2014. 'Kurgus 2012: report on the survey', *Sudan & Nubia* 18, 130-137.

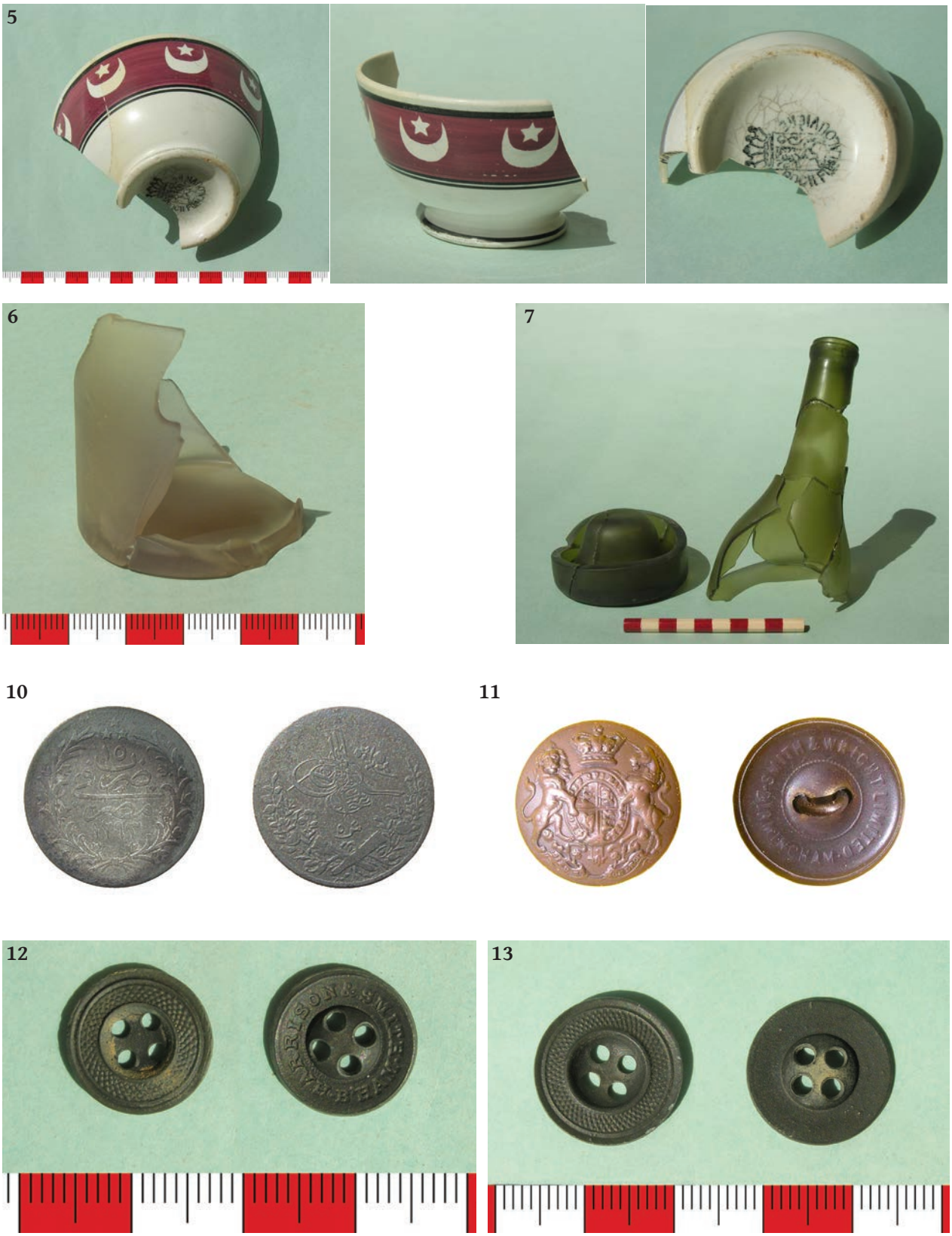


Figure 62. Ceramic cup, glass bottles, a coin, and buttons. Catalogue nos 5-7, 10-13.

Figure 63. Button, a buckle, a heel protector, and ferrous metal cans. Catalogue nos 14-19.

Figure 64. Ferrous metal cans. Catalogue nos 20-24.

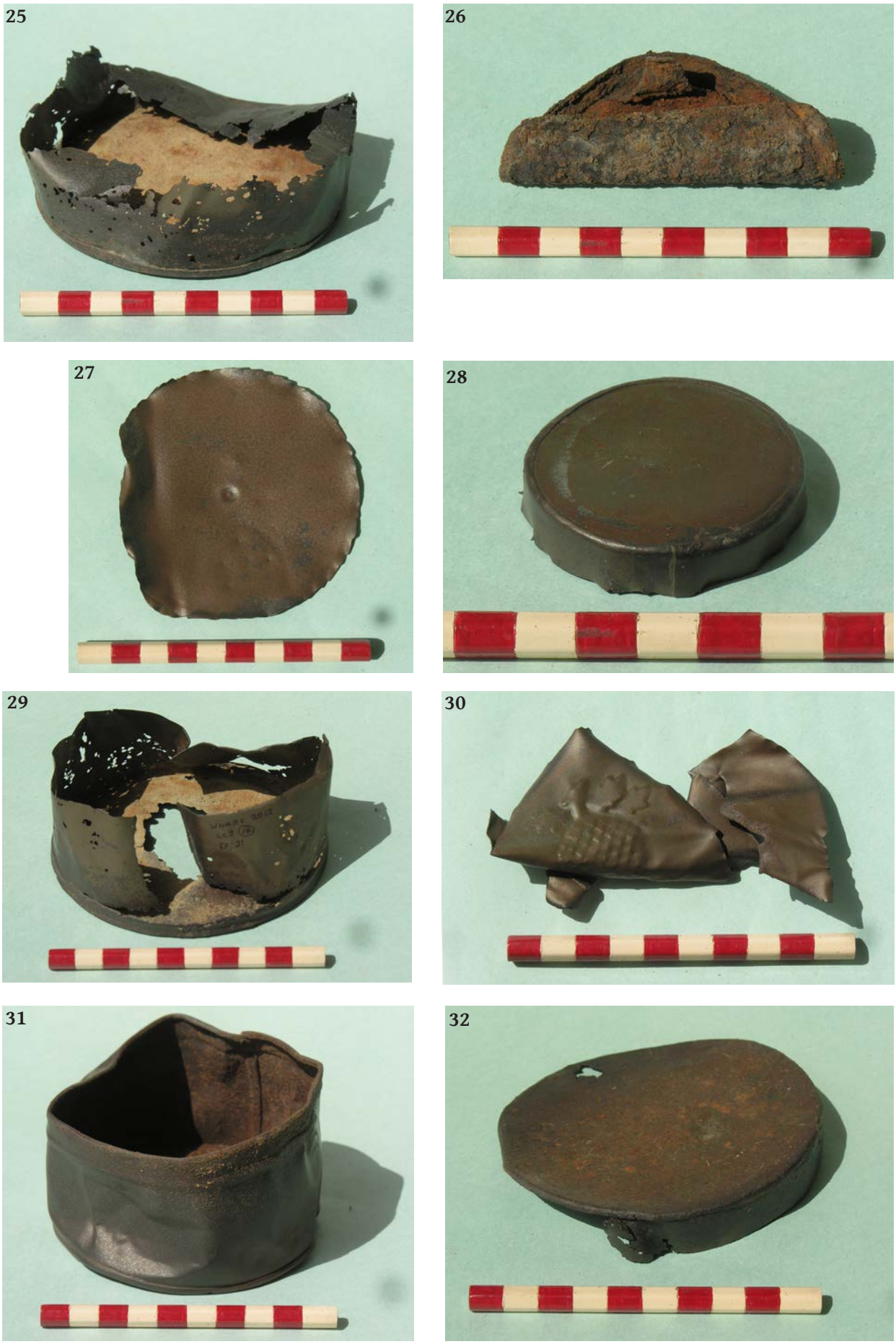
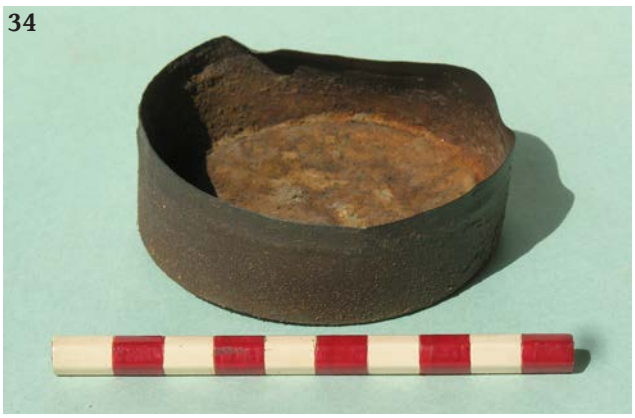


Figure 65. Ferrous metal cans. Catalogue nos 25-32.



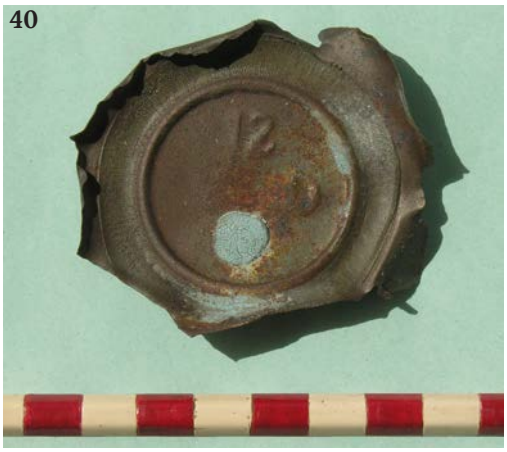


Figure 66. Ferrous metal cans. Catalogue nos 33-40.

Figure 67. Fishplate bolts, doghead spikes and banding iron. Catalogue nos 41-42, 44-47.

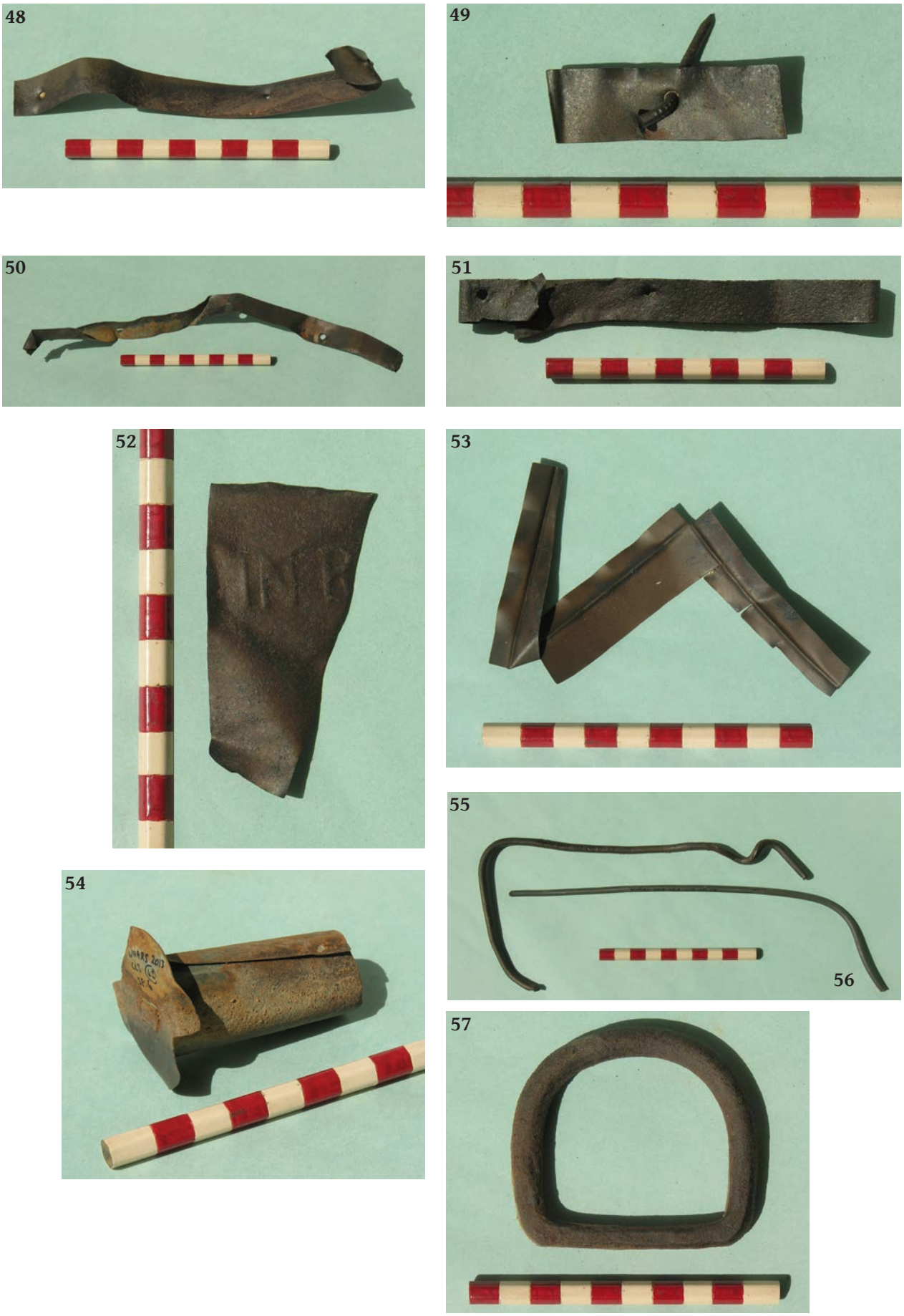


Figure 68. Banding iron, sheet fragment, 'L'-sectioned strip, tube, wire and 'D'-shaped loop. Catalogue nos 48-57.