

**PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT  
OF THE PROPOSED CONSTRUCTION OF TOURISM UNITS  
AT ELANDSBERG REST CAMP AND  
STAFF VILLAGE NEAR THE ROODEWERF PARK OFFICE,  
TANKWA KAROO NATIONAL PARK,  
HANTAM LOCAL MUNICIPALITY, NORTHERN CAPE**

(Assessment conducted under Section 38 (8) of the National Heritage Resources Act (Act 25 of 1999) as part of an Environmental Impact Assessment)

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## **EXECUTIVE SUMMARY**

Natura Viva cc was appointed by Enviroworks Western Cape on behalf of South African National Parks to undertake an Archaeological Impact Assessment (AIA) of proposed developments in the Tankwa Karoo National Park (TKNP). These consist of the construction of 5 additional tourism units at Elandsberg Rest Camp and the development of a new staff village near the Roodewerf Park Office. The associated infrastructure includes bulk services such as water, electricity and sewage, as well as access and internal roads.

This study forms part of the Assessment conducted under Section 38 (8) of the National Heritage Resources Act (Act 25 of 1999) as part of an Environmental Impact Assessment. The terms of reference for the AIA stipulated a field visit to identify archaeological sites, assess their significance and make recommendations regarding any mitigation required. Fieldwork for the proposed developments was undertaken from 11 to 13 February 2014. The visibility of archaeological material on the ground was good in the case of the Elandsberg Rest Camp and varied from good to poor in the area of the proposed Staff Village near the Roodewerf Park Office.

### **Elandsberg Rest Camp:**

The proposed development consists of 5 additional accommodation units, internal roads to link the units with the existing access road, as well as bulk services such as water and sewage. The affected area is situated along a dolerite ridge.

A low density of Stone Age material (some 55 artefacts and ostrich eggshell fragments), distributed on the surface in a patchy manner, a possible burial cairn and low dry stone wall were recorded. The stone artefacts are of Middle Stone Age (MSA) and Later Stone Age (LSA) origin. Although dolerite boulders are abundant, no rock engravings were observed. No pottery was noted.

The low density of stone artefacts visible on the surface suggests that the affected area is of generally low Stone Age archaeological heritage significance. However, the possible burial cairn is potentially of high significance. The dry stone wall is probably older than 60 years and is thus also protected by the National Heritage Resources Act 25 (NHRA) of 1999. (The co-ordinates of these significant features are given in Table 1 of the Appendix.) It is unlikely that there will be any direct impact on the possible burial cairn but it is possible that building activities and heavy vehicle traffic may have a direct impact on the wall.

It is therefore recommended that:

- The wall be clearly demarcated in the development plan and be declared out of bounds
- No boulders from the wall are to be used for the construction of the proposed accommodation units or the roads. The destruction of such a heritage resource would require a permit from the South African Heritage Resources Agency (SAHRA).

## **Staff Village near the Roodewerf Park Office:**

The proposed Staff Village development consists of three bands of houses (A to C Bands), a crèche, an access route from the gravel P2250 road, internal roads between the blocks, bulk services (water, electricity and sewage), a storage area for water tanks and a recreation area. It is situated on the alluvial floodplain of the Renoster River which has been extensively disturbed due to past farming activities, particularly the construction of narrow flood irrigation dams, the so-called 'lane' (avenues). A dolerite hill lies immediately to the north of the affected area.

### **1) Area on the alluvial floodplain:**

The remains of several historical structures were recorded during the survey - the ruin of a small stone house with associated features such as soil-covered rubbish middens, a small sluice gate, a fragment of a possible foundation wall, a low dry stone wall and the remains of a possible kraal. (The co-ordinates of these structures are given in Table 2 of the Appendix.) Ceramics, glass, metal, ostrich eggshell and bone fragments were noted. No pre-colonial pottery was seen. Fewer than 40 isolated stone artefacts or low density clusters of artefacts, mostly made of hornfels, were observed. Most of the pieces seem to be of LSA or possibly MSA/LSA origin, but rare Early Stone Age (ESA) artefacts were also recorded. All the material was in a disturbed context.

The low density of stone artefacts visible on the surface and their secondary context suggests that the affected area itself is of generally low Stone Age archaeological heritage significance. The ruin and the recorded stone structures are probably older than 60 years and are protected by heritage legislation. They are considered to be of medium to high local significance. They are of archaeological and historical importance as part of a broader regional picture, rather than as isolated structures. Research into the continuity or disturbance of settlement, cultural and subsistence practices in the Tanqua Karoo can contribute towards larger studies of interactions between indigenous people (San and Khoekhoen) and the trekboers during the 19<sup>th</sup> century and beyond.

Building activities and heavy vehicle traffic as a result of the proposed development of the Staff Village, as well as the subsequent habitation of the Village by staff members and their families, will have a direct impact on most of the heritage remains observed. The destruction of such a heritage resource would require a permit from SAHRA.

It is therefore recommended that the structures and associated features (such as the sluice gate and historical rubbish dumps) be mitigated. Mitigation would be undertaken by a professional historical archaeologist with a permit issued by SAHRA and should involve:

- archival work on the history of the farm
- mapping of the structures, the associated features and their broader context
- sampling of the cultural material - this would include small test excavations.

NB: Mitigation is at the cost of the developer.

## **2) Dolerite hill immediately north of the proposed Staff Village:**

The discrete concentration of MSA and LSA artefacts on and beneath the finer surface gravels overlying the bouldery high-level gravels, as well as the LSA site at the top of the dolerite hill, are considered to be of medium to high local significance. (The co-ordinates of these features are given in Table 2 of the Appendix.) The Stone Age archaeology of the Tanqua Karoo is poorly understood. The Roodewerf area is possibly of special archaeological significance in this semi-arid landscape as a result of the co-occurrence of abundant, high quality raw material (hornfels) and a major watercourse. Proper recording and sampling of the remains noted on the dolerite hill would usefully contribute to the archaeological database of this part of the Karoo and to the TKNP in particular.

Building activities and the subsequent settling of people on the floodplain will result in an increase in pedestrian traffic in the area. It is likely that the inhabitants of the proposed village will walk on the slopes and damage the archaeological sites. These sites are therefore highly vulnerable and fencing is unlikely to be a deterrent.

It is therefore recommended that mitigation be undertaken by a professional archaeologist with a permit issued by SAHRA. This should involve:

- mapping, sampling and describing the archaeological sites. Sampling would entail setting up a grid and collecting all the archaeological material from targeted areas at the discretion of the archaeologist.
- excavating a few test pits to determine if there is indeed *in situ* material below the surface.

NB: Mitigation is at the cost of the developer.

## **General recommendations:**

- If any human remains are found during construction of the proposed developments, work in that area must cease and SAHRA must be notified immediately.
- Archaeological and historical heritage remains are assets which enrich the educational and tourism value of the TKNP and should be conserved. It is therefore recommended that all heritage remains within the TKNP should be recorded and mapped as part of a Heritage Management Plan. Oral histories about the TKNP area should also continue to be recorded.

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## 1. INTRODUCTION

Natura Viva cc was appointed by Enviroworks Western Cape on behalf of South African National Parks to undertake an Archaeological Impact Assessment (AIA) of proposed developments in the Tankwa Karoo National Park (TKNP) (Figures 1 to 3). These consist of the construction of 5 additional tourism units at Elandsberg Rest Camp and the development of a new staff village near Roodewerf Park Office. The associated infrastructure includes bulk services such as water, electricity and sewage, as well as access and internal roads.

The TKNP lies along the border of the Northern Cape and Western Cape Provinces, with the bulk of the Park being located in the Hantam Local Municipality of the Northern Cape. Smaller portions are located in the Karoo Hoogland and Witzenberg Local Municipalities of the Western Cape. The TKNP is situated in the middle of the Tanqua Karoo, an arid biodiversity hotspot situated between Karoopoort in the south, some 40 km to the northeast of Ceres, and Calvinia to the north (Figure 1). It is bounded by the Cederberg Mountains to the west and the Escarpment of the Roggeveld Mountains to the east (Figures 2 and 3).

The park falls within the Succulent Karoo Biome and comprises the lowland (Tanqua Karoo) and upland (Western Mountain Karoo) Succulent Karoo vegetation types (TKNP Management Plan 2008). The Tanqua and Renoster Rivers with their sandy alluvium-covered floodplains are the dominant hydrological features of the park. The Tanqua River joins the Doring River some 10 km to the west of the R355 road (Figure 2). Sandstones and mudrocks of the Ecca Group (Karoo Supergroup) underlie much of the park (J. Almond, pers. comm.). The Karoo sediments are extensively intruded by dolerite sills and dykes that build low-lying hills such as the Elandsberg range. The Roggeveld Escarpment consists of sandstones and mudrocks of the Ecca and Beaufort Groups, as well as dolerite sills. Land use in the area has predominantly consisted of small livestock grazing, with some cultivation along the Renoster and Tanqua Rivers (TKNP Management Plan 2008).

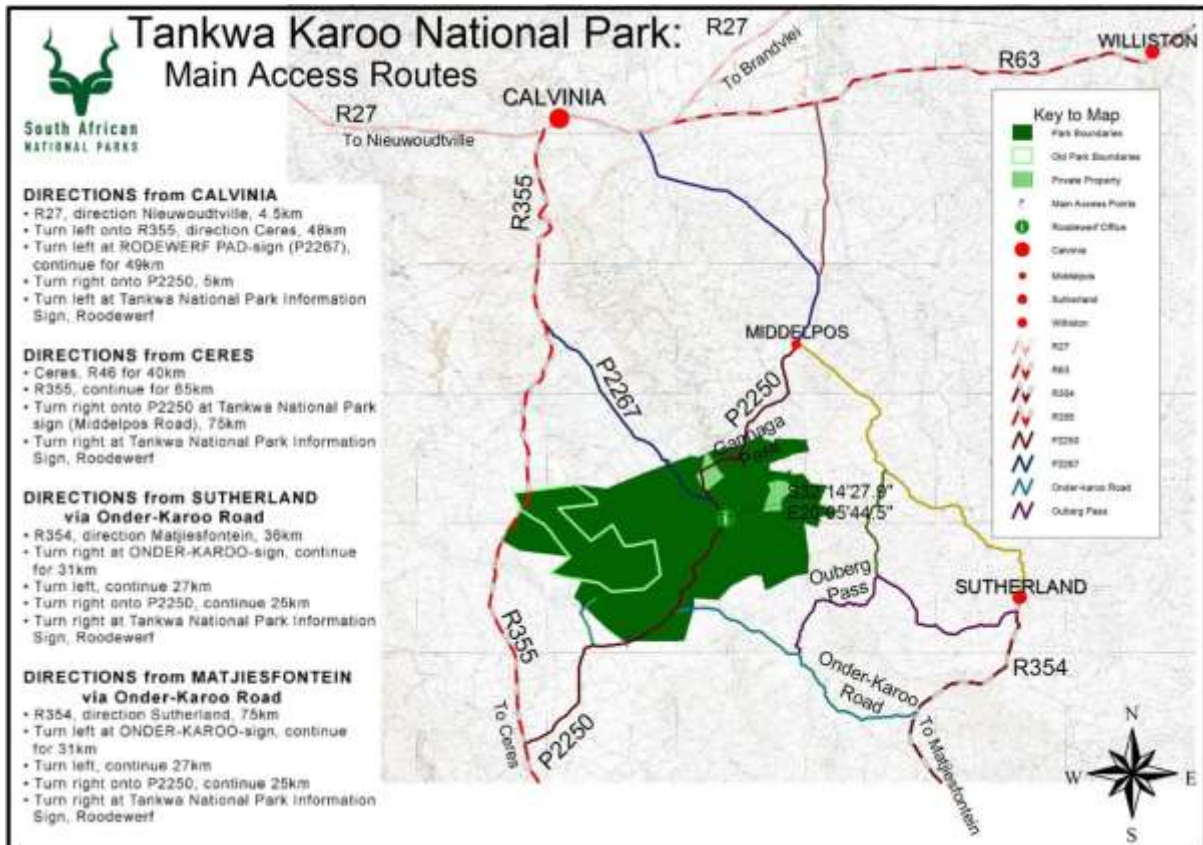


Figure 1: Map showing the location of the Tankwa Karoo National Park (Map courtesy of SanParks TKNP.) The 1:250 000 topographical maps relevant to the TKNP are 3218 Clanwilliam and 3220 Sutherland.



Figure 2: Google earth image showing the position of the Elandsberg Rest Camp and proposed Staff Village, TKNP, relative to Calvinia, Sutherland, the Cederberg and Roggeveld Escarpment, as well as the location of Aspoot Cave.





Figure 3: Tankwa Karoo National Park (TKNP) with the approximate position of the proposed developments – the Elandsberg Rest Camp to the north and the Staff Village in the centre – indicated by blue ovals. (Map courtesy of SanParks TKNP.)

## 2. LEGAL FRAMEWORK

In terms of the National Heritage Resources Act (Act 25 of 1999) protection is provided for heritage resources such as archaeological and palaeontological sites (Section 35 (4)), structures older than 60 years (Section 34) and graves older than 60 years (Section 36 (3)). Section 38 of the National Heritage Resources Act is triggered by certain types of development, including changes of character to an area exceeding 5 000m<sup>2</sup>, and makes provision for compulsory Heritage Impact Assessments to assess the potential impacts of such proposed developments on heritage resources. In terms of Section 38(1), the South African Heritage Resources Agency (SAHRA) was notified of the intent to develop by Enviroworks. Following an Interim Comment (Reference 9/2/017/0020) from SAHRA Phase 1 Impact Assessment reports, including an Archaeological Impact Assessment (AIA), were requested according to Section 38(8) of the Act.

## 3. TERMS OF REFERENCE

The terms of reference for the AIA stipulated a field visit to identify archaeological sites, assess their significance and make recommendations regarding any mitigation required.



## **4. STUDY APPROACH**

### **4.1 Methods**

A survey of relevant background literature was undertaken. Fieldwork for the proposed developments was done from 11 to 13 February 2014. The areas were covered on foot to identify archaeological heritage resources. The tracks and waypoints were recorded by a Garmin GPSMAP 62s set on the WGS84 datum (Figures 4 and 31). The sites were extensively photographed.

### **4.2 Limiting factors**

As the exact positions of some components of the proposed developments were not known at the time of the fieldwork, wider surveys of the areas surrounding the footprints were made to get a general understanding of the context of any archaeological material observed. The visibility of archaeological material on the ground was good in the case of the Elandsberg Rest Camp and varied from good to poor in the area of the proposed staff village near Roodewerf Park Office. The latter variability was due to differences in the vegetation cover.

## **5. DESCRIPTION OF AFFECTED ENVIRONMENT AND SITES**

### **5.1 Archaeological background:**

Little archaeological research has been done in the central part of the Tanqua Karoo, in the area of the Tankwa Karoo National Park. With the exception of a survey and excavations at Aspoort Cave carried out in the 1970s (Smith & Ripp 1978), the only other work done has been part of Archaeological Impact Assessments (Halkett et al. 1997, J. Kaplan, pers. comm.). No further research has been conducted by Smith (pers. comm.), nor do any other archaeological impact assessments appear to have been undertaken in this area recently (D. Morris, T. Hart, L. Webley, J. Orton, pers. comm.). Smith and Ripp's survey was conducted along the stretch of the Doring River which lies south of its confluence with the Tanqua River, and then eastward along the Tanqua River to its headwaters in the Roggeveld Mountains (Figure 2).

Rich surface scatters of stone, pottery and ostrich eggshell (OES) were observed on the banks of the Doring and Groot Rivers and suggested that this area was a focal point for prehistoric hunters, and possibly herders (Smith & Ripp 1978). Several caves and rock shelters were recorded along the foothills of the eastern Cederberg. Aspoort Cave, some 3 km to the northwest of the confluence of the Doring and Tanqua Rivers (Figure 2), was the largest habitable cave on the western side of the Doring River. The excavation at Aspoort Cave (Smith & Ripp 1978) revealed Later Stone Age (LSA) material and dates of 5100 and 6800 BP were obtained (Smith 1999). Smith & Ripp (1978) also investigated two semi-circular stone structures, roughly 3m in diameter, close to a non-perennial pan approximately 5km northeast of the cave. It was suggested that these structures were windbreaks or sleeping areas. As they have a good vantage point over the Tanqua Karoo plains, another possibility is that they were hunters' hides (Smith 1999).

During the survey stone flakes were consistently seen on dune terraces further north along the Doring River, including the confluence with the Tanqua, but no pottery was noted (Smith & Ripp 1978). Little archaeological material, except for a few scattered flakes, was observed along the Tanqua River. Although this area is potentially rich archaeologically as the river would have provided a focus for people in the past, the alluvium within the floodplain has been modified for cultivation and many sites have probably been destroyed. Rock shelters were recorded in the Roggeveld Mountains but, except for a couple with reasonably level floors, most were not regarded as useful for human habitation (Smith & Ripp 1978).

A survey of proposed dam and irrigation sites along the Doring and Olifants Rivers was undertaken by Halkett et al. in 1997. As the proposed inundation zone for the Aspoot Dam was known to incorporate the archaeologically sensitive area of the confluence of the Doring and Groot Rivers investigated by Smith and Ripp, an additional survey of the inundation zone was undertaken. A total of 38 sites, mostly LSA rock shelters and caves with a rich concentration of rock paintings and occupational debris, were recorded near Aspoot and Die Mond, some 4 km to the south of Aspoot. A farmhouse dated to the 18<sup>th</sup> century and colonial period graves were noted at Aspoot and Die Mond respectively. Extensive scatters of Early Stone Age (ESA) and Middle Stone Age (MSA) artefacts were also observed but not recorded due to time constraints (Halkett et al. 1997).

The archaeological remains in the vicinity of Aspoot and Die Mond suggest continual use of the area over a considerable period of time. The favourable position of the area with its access to the rivers of the Tanqua Karoo plains allowed both people and animals easy access to water (Smith & Ripp 1978). Extensive grass cover after good winter rains also provided good winter grazing for hunted and herded animals. Early travellers of the late 18<sup>th</sup> century such as Sparrman, Thunberg and Barrow indicated that the Karoo was already being used by indigenous pastoralists before the appearance of Europeans after the 1740s (Smith & Ripp 1978).

The first Europeans to enter the Tanqua Karoo were the semi-nomadic Trekboers who moved northwards from the Cape Peninsula to find suitable grazing for their livestock (Penn 1986; Smith 1999; Moll et al. 2012). The Trekboers were initially forced to adopt the same cycles of transhumance that the San hunter-gatherers and Khoekhoen pastoralists followed in order to respond to seasonal variations in grazing and water resources (Penn 1986). This pattern of using the area for winter grazing by farmers from other areas such as the Bokkeveld Escarpment continues to some extent to the present day and probably originated in the pre-colonial past.

## 5.2 Elandsberg Rest Camp

**Location:** S 32° 10' 34.20" E 19° 58' 37.00"

**Farm name and number:** Elands Berg 1088

**Proposed development:** The proposed development consists of 5 additional accommodation units with the necessary internal roads to link the units with the existing access road, as well as bulk services such as water and sewage. Proposed Unit 1 will be situated to the northwest of the present units whereas the other four (Units 2 to 5) will be located to the southeast (Figure 4). The maximum footprint of each of the existing units, with a parking area, is approximately 35m x 25m so it was expected that the new units will be similar in size. Additional internal roads add up to approximately 800m in length.

**Environment:** The Elandsberg Rest Camp is situated on the eastern part of the Elandsberg range of low hills situated some 20 km to the northwest of the TKNP offices (Figure 3). The area surrounding the accommodation consists of low dolerite hills and ridges with outcropping boulders and patches of sandy orange soil (Figures 5 to 17). Reworked and *in situ* calcrete is dispersed throughout the area and calcrete outcrop can be seen along a small watercourse to the southeast of proposed Units 4 and 5. The Succulent Karoo vegetation here generally consists of shrubs, dwarf shrubs and succulents on shallow soils. Several species of Asteraceae, *Eberlanzia ferox* and *Euphorbia* occur in the affected area. There is evidence of disturbance by burrowing aardvark and the movement of water downslope.

At present there are five accommodation units and one storage area for water tanks which are dispersed along northeast-facing slopes of the Elandsberg (Figure 4). The cottages are built of traditional materials, namely locally-made, unbaked 'clay and straw' bricks and rocks excavated on site.

The proposed Unit 1 area is situated on a north-facing slope some 100m northwest of the water tank storage area (Figures 4 to 7). The northernmost existing cottage lies just east of the latter (Figure 6). A pipeline extends to the northwest from the water tank area (Figures 4 and 6). Less surface dolerite occurs round Unit 1 than in the rest of the affected area (Figures 5 and 7). The larger area where it is proposed that Units 2 to 5 be built is situated along the dolerite ridge to the southeast of the existing cottages (Figures 4, 8 to 17).

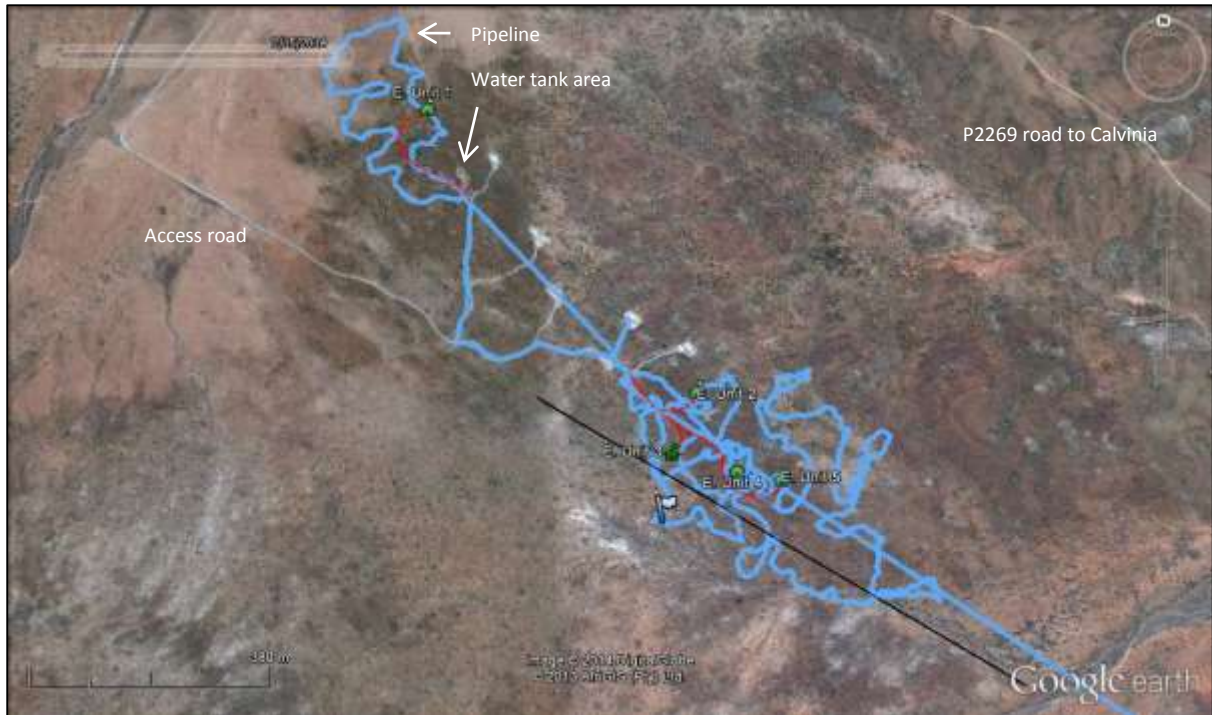


Figure 4: Google earth image showing the location of the Elandsberg Rest Camp in the eastern part of the Elandsberg range. The five existing cottages with linking roads are evident in the centre of the image. The proposed additional units are indicated by the green house icons labelled E Units 1 to 5 and the proposed new roads are indicated by red lines. The black line indicates the position of the low dry stone wall and the flag the possible burial cairn. The relevant 1:50 000 topographical map is 3219BB Ymanskraal.



Figure 5: Proposed Unit 1 - view towards the northeast of the study area and the Roggeveld Escarpment. The area of Unit 1 lies in the foreground.





Figure 6: View towards the southeast with a pipeline in the foreground, the northernmost existing cottage on the left and the water tank area on the right. Figure 7: Proposed Unit 1 – view towards the southeast with the area where the core and flakes shown in Figure 19 were seen in the foreground. The water tank area is barely visible on the skyline.



Figure 8: Proposed Units 2 to 5 - view towards the northwest with the affected area along the dolerite ridge on the left and the existing cottages and water tank area on the right.



Figure 9: Proposed Units 2 to 5 - view towards the north with the area of the proposed internal road in the foreground.



Figure 10: Area of proposed Unit 2 - view towards the northwest with the southernmost existing cottage to the right. Figure 11: view towards the west of the dolerite ridge.



Figure 12: Area of proposed Unit 3 – view towards the east. Figure 13: View towards the west with the site of Unit 3 beyond the green ruler and blue oval marking the area where several stone artefacts were recorded.



Figure 14: View towards the northwest of the area of Unit 4. Figure 15: View towards the south from the area near proposed Unit 4 towards Unit





Figure 16: View to the northwest close to the area of Unit 5. Figure 17: View towards the northwest along a portion of the dry stone wall to the southwest of Units 4 and 5.

**Results of the survey:** As the exact positions of each proposed unit and internal linking road were not available when the fieldwork was done, a wider survey was made of the general area surrounding the development (Figure 4). Visibility of archaeological material on the ground surface was good throughout the affected area. A low density of Stone Age artefacts, distributed on the surface in a patchy manner, a possible burial cairn and low dry stone wall were recorded (Appendix Table 1). Although dolerite boulders are abundant, no rock engravings were observed. A well-developed patina of desert varnish is not present.

The Stone Age material consists of isolated artefacts or low density scatters of artefacts with distances from three to 180m between occurrences. Approximately 55 stone artefacts were recorded in total. The artefacts are made of hornfels and show varying degrees of weathering and patination (Figures 18 to 20, 22 to 30). It is likely that those with the most weathering and patination are older and are possibly in a secondary context. The hornfels would have been locally available where Ecca Group mudrocks have been baked by dolerite intrusions. The artefacts are of MSA/LSA affinity, with the only a couple of clearly diagnostic pieces, e.g. Figure 26. Fragments of ostrich eggshell (OES) were also noted in small clusters, sometimes in association with the stone artefacts. No other organic archaeological remains or pottery fragments were seen.

The possible burial cairn is about 1.5m across and consists of about 14 dolerite boulders in close proximity to each other (Figures 21a and b, Appendix Table 1). One of the boulders is in an upright position. While this may be a natural accumulation of rocks, they appear to be more tightly packed than boulders in other parts of the ridge. A few stone artefacts were recorded in the vicinity of the heap.

The low dry stone wall recorded (Figure 17, Appendix Table 1) lies to the southwest of Units 2 to 5 and is indicated by a black line on Figure 4. From the Google earth image it is evident that the wall is at least 1.5km in length. It is not clear what age this structure is but it is probable that it is older than 60 years. A couple of metal posts were seen in close proximity to the wall, but it is possible that these were added to the original boundary wall. There appear to be no buildings or ruins in the immediate vicinity of the affected area and this was confirmed by Mr C. Strauss (Oom Conrad) who used to farm locally and is the father of the present Park Manager, Mr Conrad Strauss (pers.comm.).



Figures 18, 19 and 20: Hornfels flakes and core (top left in middle photo) with varying degrees of weathering and patination recorded in the area around proposed Unit 1. The scale is in cm.



Figures 21a and b: Views towards the north and northeast respectively of the possible burial cairn at Elandsberg Rest Camp. The ruler is about 15cm in length.

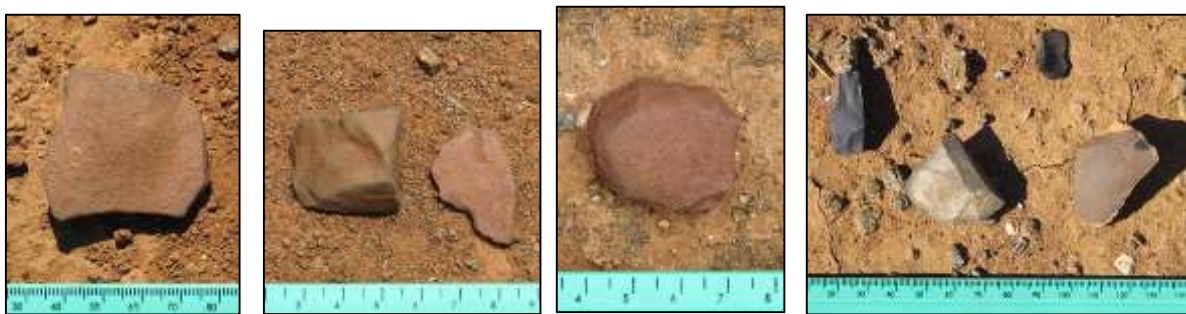


Figure 22: A scatter of hornfels artefacts, mostly weathered, noted in the vicinity of the possible burial cairn. Figure 23: Ostrich eggshell fragments with hornfels flakes and chunk. The scale is in cm.





Figures 24 and 25: Fresh-looking hornfels flakes. Figure 26: Proximal end of MSA hornfels blade. All artefacts recorded in the area of proposed Units 2 to 5, Elandsberg Rest Camp. The scale is in cm.



Figures 27 to 29: Weathered and patinated hornfels artefacts – proximal end of blade, chunk and flake, possible scraper. Figure 30: Flaked hornfels showing different stages of weathering. All artefacts recorded in the area of proposed Units 2 to 5, Elandsberg Rest Camp. The scale is in cm.

### 5.3 Staff Village near the Roodewerf Park Office

**Location:** S 32° 14' 53.16" E 20° 5' 33.45"

**Farm name and number:** Roode Werf 1091

**Proposed development:** The proposed development (Figures 31 to 49) consists of three bands of houses (A to C Bands), a crèche, an access route from the gravel P2250 road, internal roads between the blocks, bulk services (water, electricity and sewage), a storage area for water tanks and a recreation area. The approximate area of the development is 280m x 160m for the western part of the Village (A and B Bands, the crèche and recreation area) and 235m x 60m for the eastern part (C Band and the water tank area). The proposed access road and linking internal road is about 750m in length.

**Environment:** The proposed Staff Village is situated on the alluvial floodplain of the Renoster River to the southwest of the Roodewerf Park Office (Figure 31). The river lies to the south and southeast of the affected area (Figures 32, 40 to 43) and a dolerite hill lies to

the north (Figures 31 and 34). The area has been extensively disturbed due to past farming activities. Some of the alluvium is loose, unconsolidated and silty, whereas other areas are more consolidated. Down-wasted clasts of dolerite, sandstone and hornfels are dispersed or occur in concentrations on top of the alluvium (Figures 38 and 44). River cobbles and boulders also occur at the surface or beneath the silty alluvium. The ground surface shows clear signs of sheetwash and flooding (Figure 38). Stands of dense *Acacia karroo* trees occur within more open, sparsely vegetated areas formerly used for flood irrigation (Figures 35, 40 to 43). [See the results section for more detail about the cultivation 'lane' (avenues) and Figures 39, 42, 43 and 47.] These have subsequently been vegetated by shrubs such as rivierganna (*Salsola* sp.) and kraalbos (*Galenia africana*). Invasive *Prosopis* trees appear to have been felled in the recent past and the dead stumps and branches are found in parts of the affected area (Figure 48).

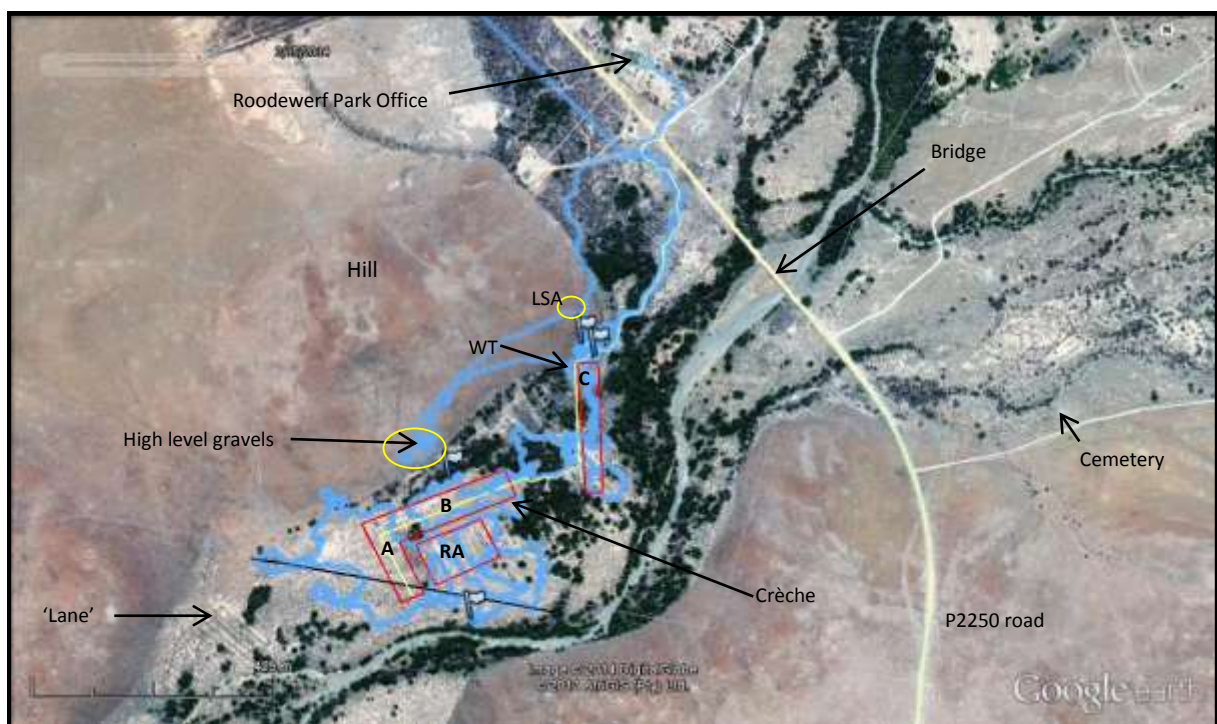


Figure 31: Google earth image showing the layout of the proposed Staff Village close to the Renoster River, tracks of the survey and waypoints indicating recorded historical structures. The black line in the lower left corner of the figure marks the position of a low dry stone wall. The letters A, B and C indicate the A to C Bands of houses, RA the recreation area and WT the water tank storage area. The yellow ovals indicate the approximate extent of the high-level gravels and the approximate position of the LSA site at the top of the hill. Traces of irrigation 'lane' (avenues) are evident to the southwest of the study area. Please note that the vegetation has become denser since this satellite image was taken. The relevant 1:50 000 topographical map is 3220AA Agterkop,

Sequences of photographs which give the context and details of each area of the proposed development follow: Figures 32 and 33 – the access road from the P2250 to C Band of houses; Figures 34 to 39 – C Band of houses; Figures 40 to 49 – A and B Bands of houses, recreation area and crèche.





Figure 32: Area of proposed access to C Band– view towards the east with the P2250 road and bridge over the Renoster River in the background.



Figure 33: View towards the southwest of the start of the proposed access route to the Staff Village. Figure 34: View towards the southwest of the ruin to the north of the proposed C Band. A LSA site is situated towards the top of the hill on the right.



Figure 35: Proposed C Band – view from the dolerite hill towards the south showing part of the area disturbed by cultivation ‘lane’ (avenues) in the past with the ruin at the foot of the hill. The Renoster River lies to the east (left) and south of the bright green *Acacia karroo* trees. The photo was taken from the area of the LSA site.



Figure 36: Proposed C Band – view towards the southeast of the southern part. Figure 37: View towards the northeast of the central part.





Figure 38: Proposed C Band – view towards the northeast showing typical sheetwash clasts. The green ruler is about 15cm in length and lies next to the flaked hornfels cobble in Figure 62. Figure 39: View towards the south with the eroded edge of a 'laan' evident in the foreground.

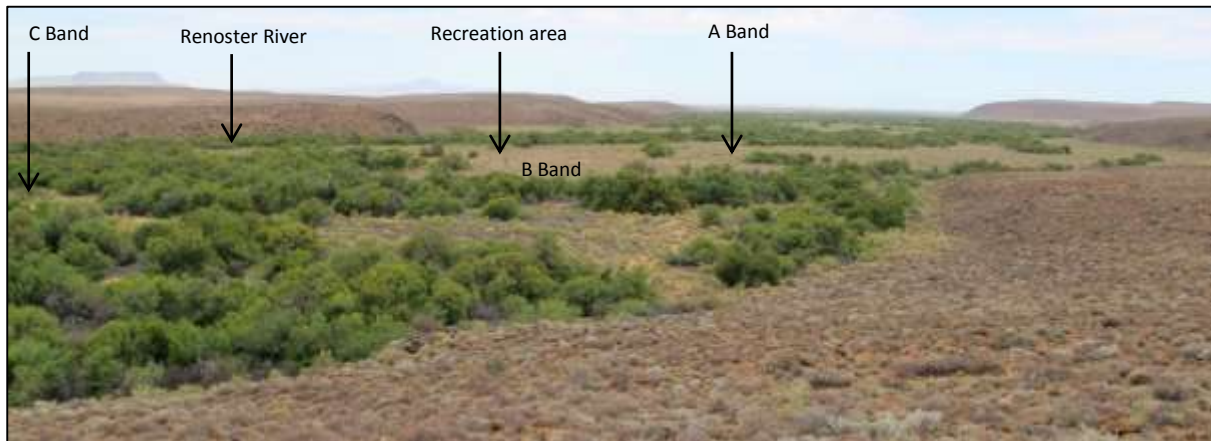


Figure 40: View towards the southwest of the A and B Bands of the proposed Staff Village. C Band lies on the extreme left of the image. The access road cuts through the dense stand of *Acacia karroo* to the left of the B Band label on the image.

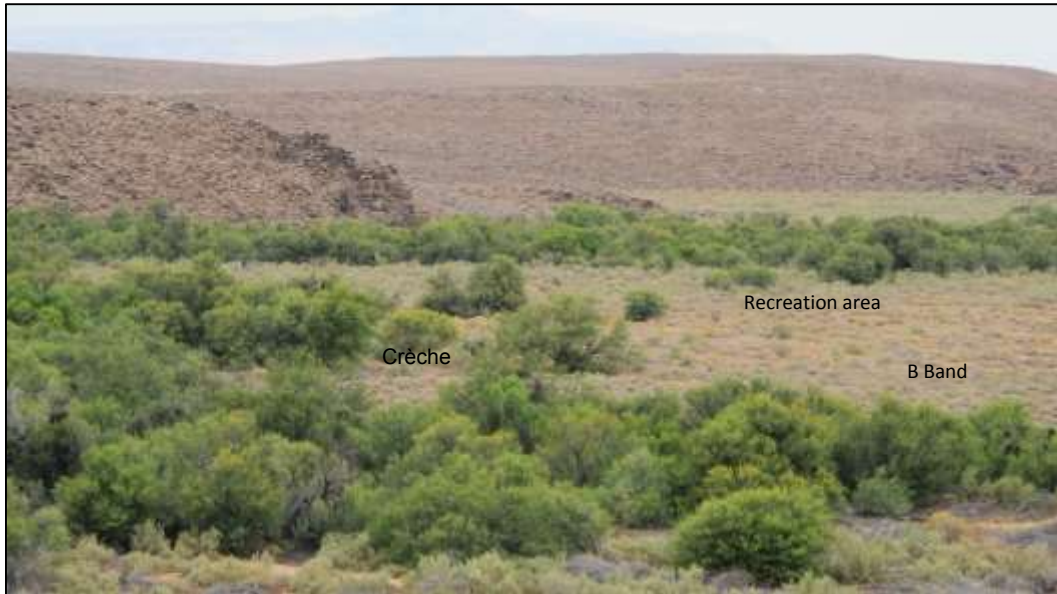


Figure 41: B Band, crèche and recreation area – view towards the south with the Renoster River indicated by the strip of trees at the foot of the hill.

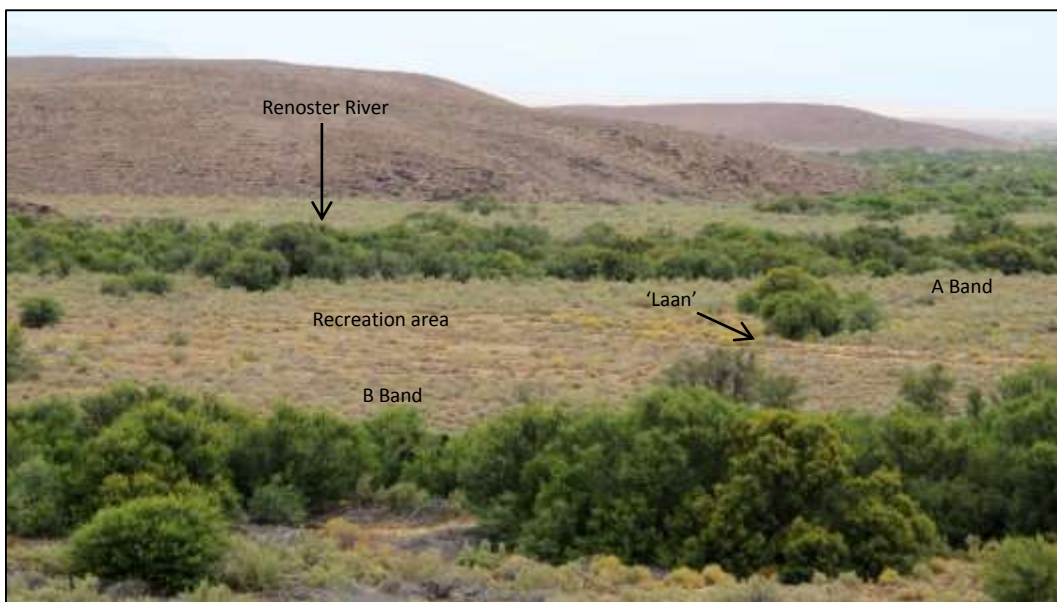


Figure 42: Recreation area, A and B Bands – view towards the southwest. Remains of the 'lane' are particularly evident at the western part of the recreation area.



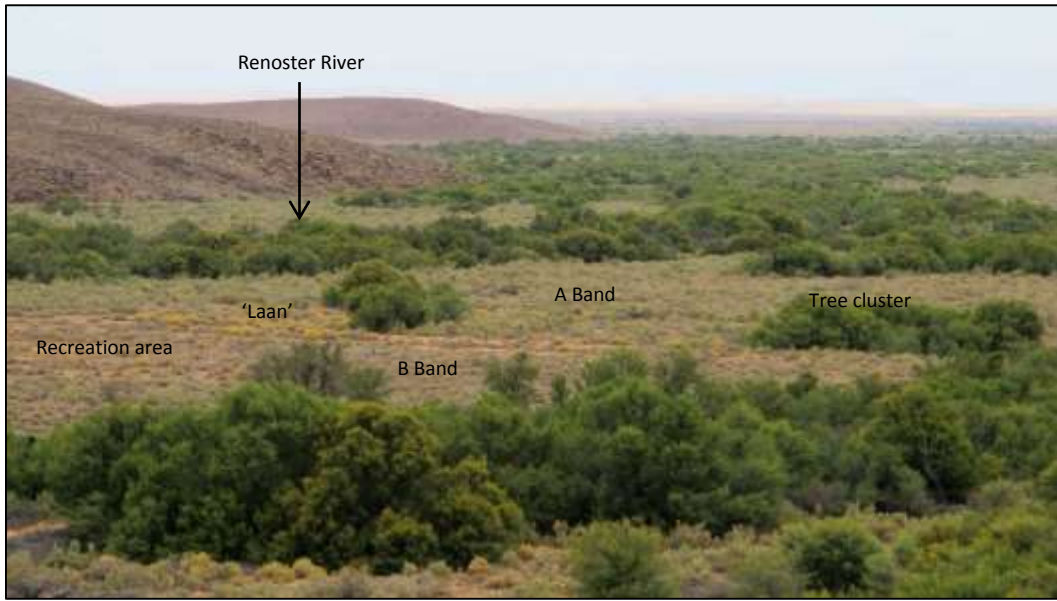


Figure 43: Figure A and B Bands and recreation area with evident 'laan'. View towards the southwest showing the tree cluster near the intersection of the Bands on the right.



Figure 44: B Band - view towards the southwest with the crèche area near the trees on the left and cobbles visible in the foreground. Figure 45: View towards the west with an artificial accumulation of stones in the foreground.



Figure 46: A Band – view towards the south taken from dolerite outcrop to the northwest of A Band. The strip of trees in the background indicates the Renoster River. Figure 47: A Band - view towards the northeast with the embankment of a 'laan' in the centre of the image.



Figure 48: Recreation area – view towards the north of A Band. Figure 49: View towards the north with burrowed alluvium in the foreground and the tree cluster near the intersection of A and B Bands in the background.

**Results of the survey:** A wider area than the actual footprint of the proposed development was covered to place it in a broader context (Figure 31). Visibility of material on the ground was poor in densely vegetated areas, particularly the *Salsola* sp. and *Galenia africana* covered northern part of C Band and sections of the proposed access road where dense stands of *Acacia karroo* occur (Figures 32, 35 and 40). Felled branches of trees, probably alien *Prosopis* sp., also impeded visibility in parts (Figure 48). Burrowing by animals such as aardvark and smaller mammals was common (for example, Figure 49) and there was evidence of small holes dug for gravel. Visibility was good in the more open areas with less vegetation. These in fact included the greater part of the proposed Staff Village - the southern half of C Band, most of the A and B Bands and the recreation area (Figures 36, 44 to 47, 49).

The highly disturbed nature of the affected area due to past cultivation became more obvious during the survey and it was clear that most archaeological material seen would not be in a primary context. The construction of narrow flood irrigation dams, the so-called 'lane' (avenues), in the alluvium along the Renoster River has probably destroyed any Stone Age sites which might have existed. The 'lane' were created by a large scraper pulled by mules (Moll et al. 2012). Crops such as wheat, watermelons, spanspek and peas were grown here once the water had drained away (Mr C. Strauss (Oom Conrad), pers. comm.). The embankments of heaped-up soil, sometimes with boulders, which are evident in parts of the study area (Figures 39, 42 43 and 47) and on Google earth (Figure 31) are the remaining traces of the 'lane'. The 'lane' generally lie fairly parallel to each other and have a northwest/southeast orientation (Figures 42 and 43).

In the past the area between the river and the hill to the north would have been covered by river terrace gravels (J. Almond, pers. comm.). The movement of water by sheetwash and flooding has resulted in the patchy distribution of river cobbles and smaller clasts on top of the finer alluvium. As mentioned above, some clasts were associated with the 'lane' whereas other linear concentrations of boulders and cobbles are natural ridges formed on the alluvial terrace.

Very few of the gravel clasts were flaked – probably fewer than 40 stone artefacts were observed during the survey of the proposed Staff Village development area. Isolated stone artefacts or low density clusters of artefacts were noted. Although hornfels was the predominant type of raw material (Figures 61, 62, 67, 79 and 80), some fine-grained

sandstone was also used (Figures 60 and 67). Most of the stone artefacts recorded were made of fairly fresh-looking hornfels but some weathered and patinated pieces were noted. Hornfels would be locally available where Ecca Group mudrocks have been baked by dolerite intrusions. There is in fact a quarry close to the cemetery to the southeast of the Roodewerf Park Office where slabs of baked mudrock has been exploited for building stone (Figure 31). Some of the Ecca sandstones are fine-grained, homogeneous and dense, so they could have been a reasonably good source of raw material for the manufacture of artefacts (J. Almond, pers. comm.). A single flaked piece of quartzite was seen (Figure 68). Most of the pieces seem to be of LSA or possibly MSA/LSA origin, but a definite ESA handaxe was also recorded (Figure 69). A quartzite cobble with a polished facet was probably used as a grindstone (Figure 61).

One obviously artificial accumulation of sandstone and dolerite blocks was seen in the eastern part of B Band (Figure 45). The rocks appear to be more angular than the usual boulders. The accumulation has a roughly northwest/southeast alignment and is approximately 5 to 6m in length and 1.5 to 2m across. Although it looks different to other concentrations of boulders in the vicinity and alluvium is favoured for the digging of graves, it seems unlikely that this is a burial cairn. A formal cemetery with marked and unmarked graves lies just over one km away to the east (Figure 31). The earliest marked grave dates from 1903 and the most recent gravestone to 2004.

The remains of several historical structures were recorded during the survey. The most prominent of these is the ruin of a small stone house located to the west of the access road and immediately north of C Band (Figures 34, 35, 50 to 52, Appendix Table 2). It has a northeast/southwest orientation and is approximately 5.20m x 4.5m. The survey diagram of 1887 of Crown Land called Roode Werf 1091 indicates a house close to the Renoster River but this is the building which is currently the Park Office (Figure 31). No other structures are shown. The ruin in the affected area is at least 60 years old as the last family of white 'bywoners' had already left the house by 1922 (Mr C. Strauss (Oom Conrad), pers. comm.). Features of the single-roomed house include a monocline roof, subsequently robbed, and an internal corner hearth (Figures 51 and 52). According to Dr Simon Hall (pers. comm.) the structure is in many respects a rectangular version of the corbelled houses found in the Roggeveld.

Two low stone and mortar pillars were observed some 28 m to the southeast of the ruin (Figures 50, 53 and 54, Appendix Table 2). Grooves on the inner facing sides of the pillars suggest that they could be part of a sluice gate to control the flow of water for irrigation (Figure 53). It is possible that embankments of soil, with some associated dressed blocks of stone, to the northeast of the gate indicate the remains of a channel (Figures 53 and 54) which must have been associated with the nearby 'lane'. Signs of digging and disturbance are evident throughout this area but the dense vegetation and heaps of dead branches prevent good visibility of these features.

Besides the sluice gate and the house itself, other features include partly-damaged low walls or borders made of dolerite boulders, a small soil-covered rubbish midden of domestic debris on either side of the house (Figures 55 and 56) and dispersed materials such as fragments of glass, metal (including a square nail and an old chair; Figures 57 and 58), ceramics, bone, dressed stone blocks and more modern cement breeze blocks. These items are scattered amongst the bushes surrounding the house and along the access route. Artefacts, mostly



made of hornfels as well as occasional ones made of sandstone, were also recorded amongst these historical and modern fragments (Figures 60 to 62). Signs of quarrying of dolerite are evident on the slopes of the hill behind the house (Figure 63). There is a small rock niche where a boulder has been wedged between two rock faces (Figure 64) to the northeast of the quarrying area. Several OES fragments were noted at the small overhang.

Other historical structures recorded in the rest of the affected area, away from C Band, are a small fragment of a possible foundation wall (Figures 65 and 66), a low dry stone wall of dolerite boulders marking a boundary (Figures 72 to 74) and the remains of a possible kraal (Figures 75 and 76). The section of foundation wall is only about 4 to 5m in length and approximately 50cm wide. Stone Age remains, as well as a bullet casing, were found in close proximity to historical and/or modern ceramic and glass fragments, (Figures 67 and 68). Weathered and patinated ESA artefacts, probably made of fine-grained sandstone, were seen amongst river cobbles close to the foundation. These consist of a handaxe, a flaked cobble and a large flake (Figures 69 to 71). The dry stone wall is similar to that at the Elandsberg Rest Camp and consists of dolerite and sandstone boulders and blocks (Figures 72 to 74). It is at least 550m in length and is indicated by a black line in Figure 31.

The possible kraal, located close to the Renoster River and to the southeast of the recreation area, is orientated in a northeast/southwest direction. It consists of a rectangular dry stone walled structure, approximately 5.5m x 3m, with a dividing wall (Figures 75 and 76). The walls have collapsed in places and bushes growing amongst them impeded visibility to some extent. Low density scatters of glass and ceramic fragments, a few metal items and pieces of bone were noted in the vicinity of the kraal (Figures 77 to 79). The bone included a piece of rib, part of a long bone and a fragment with cut marks (Figures 77 and 78). Hornfels and fine-grained sandstone artefacts were also observed (Figures 79 and 80).



Figure 50: C Band area – view towards the south with the possible sluice gate indicated by the blue oval. Detail of the rubbish heap to the left (northeast) of the ruin is shown in Figure 55.





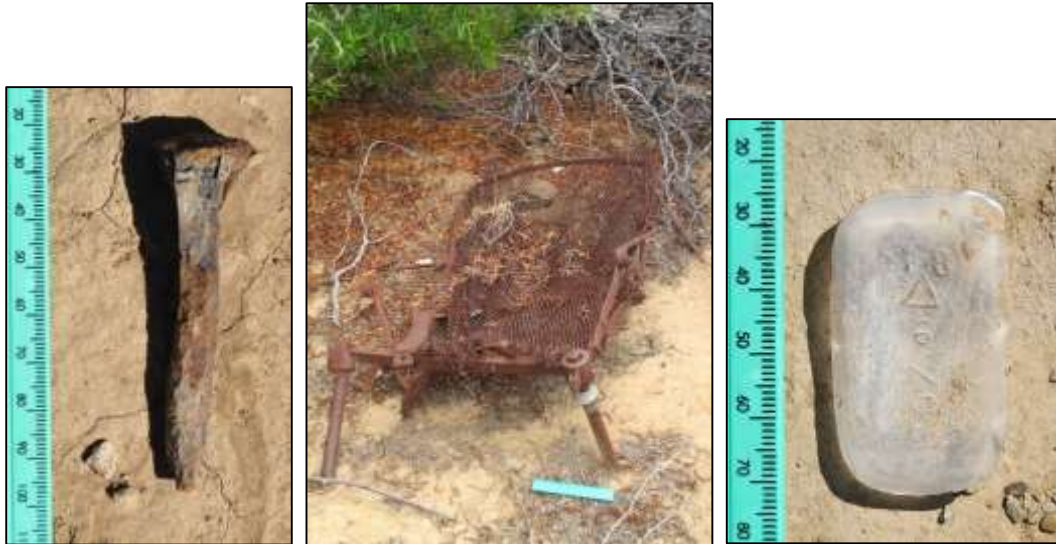
Figure 51: View towards the southeast from the interior of the ruin. Figure 52: Interior showing the corner hearth.



Figures 53 and 54: Views towards the north and southeast of the possible sluice gate and possible remains of a channel. The green ruler is about 15cm in length.



Figure 55: Part of the rubbish dump to the northeast of the ruin. Figure 56: View towards the north of the rubbish dump area to the southwest of the ruin. Quarrying of stone occurred in the past on the lower slopes of the hill (see Figure 63 below).



Figures 57 to 59: Examples of items recorded in the vicinity of the ruin and C Band - square metal nail; metal chair; bottom of glass bottle. The scale is in cm.



Figures 60 to 62: Stone artefacts seen near the ruin and C Band. Weathered tool with one retouched and one damaged edge; hornfels flake and quartzite cobble with polished surfaces; hornfels flakes and flaked pebble. The scale is in cm.



Figures 63 and 64: On the dolerite hill behind the ruin - view to the northeast of some quarried blocks of dolerite; the small rock niche. The green ruler is about 15cm in length.





Figures 65 and 66: B Band area - view towards the west of the possible foundation wall; detail of the wall. The green ruler is about 15cm in length.



Figures 67 and 68: B Band and the vicinity of the possible foundation wall - hornfels and fine-grained sandstone found in association with a bullet and ceramic fragments; the only quartzite flake noted in association with ceramic and glass fragments. The scale is in cm.



Figures 69 to 71: B Band and the vicinity of the possible foundation wall - ESA handaxe; flaked cobble and large flake. The scale is in cm.



Figures 72 to 74: The stone wall near A Band and recreation area – view towards the southeast; detail of section with dolerite boulders; detail of section with sandstone blocks.



Figures 75 and 76: A Band and recreation area - views to the southwest and northeast of the possible kraal to the southeast of A Band. The green ruler is about 15cm in length.



Figures 77 and 78: Area of possible kraal near A Band and recreation area – area with pieces of bone, metal, glass and ceramic fragments; fragments of ceramics and bone, including one showing cut marks (bottom right). The scale is in cm.





Figures 79 and 80: Area of possible kraal near A Band and recreation area – hornfels flakes and glass fragment; fine-grained sandstone and hornfels flakes and chunks. The scale is in cm.

In conclusion, although the proposed Staff Village development area is highly disturbed, there appears to be a suggestion of patterning in the occurrence of the archaeological remains and in particular the historical (and modern) materials such as ceramics, glass, metal. These tend to occur in the vicinity of the stone structures, whereas a few isolated stone artefacts and OES fragments were observed in gaps between the concentrations of mixed historical and stone artefacts. The latter are probably disturbed and out of context.

Although no significant Stone Age material was located in the formerly cultivated area of the proposed Staff Village and the sparse material seen is in a highly disturbed context, the slopes of the dolerite hill to the north of the affected area are extremely rich in terms of stone artefacts. Hundreds of MSA and LSA artefacts are scattered on the hill (Figure 81). Many of these are very weathered and patinated (e.g. Figure 85) and form a background scatter amongst the dolerite boulders covering the hill slopes. High concentrations of flaked hornfels, including numerous fresh-looking artefacts, occur among finer surface gravels and silts overlying bouldery high-level gravels situated on a pediment surface some 6 to 10m above the present valley floor (Figures 82 to 84). The finer surface gravels occur in a fairly well-defined area, the approximate extent of which was marked by the author's tracks (Figure 31, Appendix Table 2). Besides hornfels, other raw materials include fine-grained sandstone and quartzite, with rare chert, including pale grey Matjiesfontein chert probably sourced from the Collingham Formation outcrop in the western Tanqua Karoo (J. Almond, pers. comm.). Several MSA blades observed in association with an armadillo burrow have probably been displaced from lower-lying levels within the silty alluvium (Figure 86). Of the numerous weathered hornfels artefacts seen amongst the bouldery dolerite colluvium on the slopes, the densest concentration of artefacts was located towards the top of the hill, immediately northwest of the ruin (Figure 87). Here LSA artefacts of hornfels and chert occur in association with abundant OES fragments and occasional small pieces of bone (Figure 88).

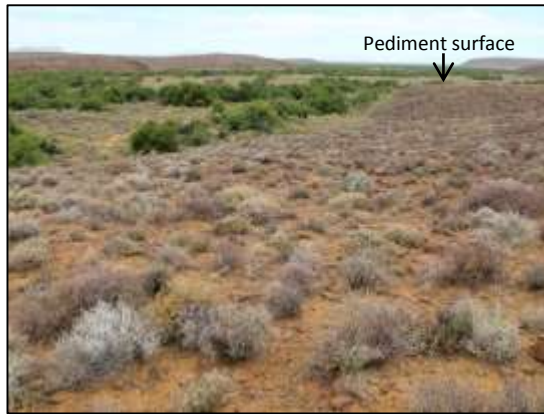


Figure 81: View towards the west of the flat pediment surface mantled in high-level gravels to the north of the affected area. Figure 82: View towards the northeast of the cobbly to bouldery high-level gravels (Photo courtesy of J.E. Almond).



Figure 83: View towards the east of the finer surface gravels overlying the bouldery high-level gravels. Figure 84: Detail of the finer surface gravels including numerous flaked clasts (Photo courtesy of J.E. Almond). The green ruler is about 15cm in length.



Figure 85: Examples of some of the weathered hornfels MSA and LSA artefacts observed on the lower slopes of the hill. Figure 86: Re-exhumed MSA blades close to an aardvark burrow. The green ruler is about 15cm in length.





Figure 87: View towards the south of the top of the dolerite hill. Figure 88: Detail of LSA hornfels artefacts in association with OES and bone fragments at the top of the hill. The green ruler is about 15cm in length.

## 6. SIGNIFICANCE AND RECOMMENDATIONS

### 6.1 Elandsberg Rest Camp

The low density of stone artefacts visible on the surface suggests that the affected area is of generally low Stone Age archaeological heritage significance. However, the possible burial cairn is potentially of high significance and is protected by Section 36 (3) of the National Heritage Resources Act 25 (NHRA) of 1999. The dry stone wall is probably older than 60 years and is thus protected by Section 34 of the same act. Co-ordinates for these features are listed in Table 1 of the Appendix.

It is unlikely that there will be any direct impact on the possible burial cairn as it lies some 72 m beyond the stone wall, to the southwest of Units 3 and 4. Ignorance about its existence may well be the best protection.

In the case of the wall, however, it is possible that building activities and heavy vehicle traffic may have a direct impact on it as it may be damaged or destroyed. At the point closest to the proposed development, it is situated only some 20m to the southwest of proposed Unit 3. It is possible, indeed likely, that boulders from the wall may be robbed for the construction of the proposed units.

It is therefore recommended that:

- The wall be clearly demarcated in the development plan and be declared out of bounds
- No boulders from the wall are to be used for the construction of the proposed accommodation units or the roads. The destruction of such a heritage resource would require a permit from SAHRA.

## **6.2 Proposed Staff Village near the Roodewerf Park Office**

**6.2.1 Area on the alluvial floodplain:** Although some LSA, possible MSA/LSA origin and rare ESA artefacts were seen, the low density of stone artefacts visible on the surface within the proposed development and their disturbed context suggests that the affected area itself is of generally low Stone Age archaeological heritage significance. Within the actual development area of the proposed Staff Village, the ruin and the recorded stone structures (kraal, boundary wall and possible foundation wall) are considered to be of medium to high local significance. As all these remains are probably older than 60 years, they are protected by Section 34 of the National Heritage Resources Act 25 (NHRA) of 1999. Co-ordinates for these features are listed in Table 2 of the Appendix.

Of the structures, the ruin and the associated features (such as the sluice gate and historical rubbish middens) are of the greatest sensitivity, but the significance of these also lies in the fact that they are part of a regional pattern. They are of archaeological and historical importance as part of a broader picture, rather than as isolated structures. Research into the continuity or disturbance of settlement, cultural and subsistence practices, including the management of water, in the Tanqua Karoo can contribute towards larger studies of interactions between indigenous people (San and Khoekhoen) and the trekboers during the 19<sup>th</sup> century and beyond. Such studies are currently being undertaken in the Roggeveld (S. Hall, pers. comm.).

Building activities and heavy vehicle traffic as a result of the proposed development of the Staff Village, as well as the subsequent habitation of the Village by staff members and their families, will have a direct impact on most of the heritage remains observed. The damaging or destruction of such heritage resources will require a permit from the South African Heritage Resources Agency (SAHRA). Such damage and destruction includes the removal of stone blocks and boulders from the boundary wall and kraal.

It is therefore recommended that the structures and associated features (such as the sluice gate, boulder borders and historical rubbish dumps) be mitigated. Mitigation would be undertaken by a professional historical archaeologist with a permit issued by SAHRA and should involve:

- archival work on the history of the farm
- mapping of the structures, the associated features and their broader context
- sampling of the cultural material - this would include small test excavations.

NB: Mitigation is at the cost of the developer.

### **6.2.2 Dolerite hill immediately north of the proposed Staff Village:**

The discrete concentration of MSA and LSA artefacts on and beneath the finer surface gravels overlying the bouldery high-level gravels, as well as the LSA site at the top of the dolerite hill, are considered to be of medium to high local significance. The background scatter of artefacts amongst the dolerite boulders is extensive and considered to be of low significance as the material is not in a primary context.

From the background research done by the author it is clear that the Stone Age archaeology of the Tanqua Karoo is poorly understood. It seems that archaeological material in

association with the high-level gravels of the Tanqua and Renoster rivers has not previously been recorded. The Smith & Ripp study (1978) concerned only the alluvial floodplain of the Tanqua River and very little material was observed. In the present study, MSA artefacts brought to the surface by an aardvark suggest that there may also be *in situ* archaeological material below the ground surface. The Roodewerf area is possibly of special archaeological significance in this semi-arid landscape as a result of the co-occurrence of abundant, high quality raw material (hornfels) and a major watercourse. Proper recording and sampling of the remains noted on the dolerite hill would usefully contribute to the archaeological database of this part of the Karoo and to the TKNP in particular.

The development of the proposed Staff Village will have an impact on the archaeological heritage remains on the hill. Building activities and the subsequent settling of people on the floodplain will result in an increase in pedestrian traffic in the area. It is likely that the inhabitants of the proposed village will walk on the slopes and damage the archaeological sites. These sites are therefore highly vulnerable and fencing is unlikely to be a deterrent.

It is therefore recommended that mitigation be undertaken by a professional archaeologist with a permit issued by SAHRA. This should involve:

- mapping, sampling and describing the archaeological sites. Sampling would entail setting up a grid and collecting all the archaeological material from targeted areas at the discretion of the archaeologist.
- excavating a few test pits to determine if there is indeed *in situ* material below the surface.

### **6.3. General recommendations:**

- If any human remains are found during construction of the proposed developments, work in that area must cease and SAHRA must be notified immediately.
- Archaeological and historical heritage remains are assets which enrich the educational and tourism value of the TKNP and should be conserved. It is therefore recommended that all heritage remains within the TKNP should be recorded and mapped as part of a Heritage Management Plan. [The Moll et al. (2012) booklet is a good example of what can be done.]
- Oral histories about the TKNP should also be recorded. [Mr C. Strauss (Oom Conrad) mentioned that such a study had been started by the University of Stellenbosch but it does not seem to have continued.]

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## 8. ACKNOWLEDGEMENTS

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## 9. APPENDIX

Waypoint	South	East	Description of material found
74	32°14'44.28"	20° 5'40.39"	Possible burial cairn
70	32°10'41.33"	19°58'45.57"	Point along dry stone wall
71	32°10'39.41"	19°58'41.97"	Point along dry stone wall
77	32°10'37.41"	19°58'38.02"	Point along dry stone wall
78	32°10'37.05"	19°58'37.62"	Point along dry stone wall

Table 1: Selected waypoints for significant archaeological features recorded at the Elandsberg Rest Camp. Although the observed stone artefacts were recorded, they are not given in this table. The information can be requested from the author.

Waypoint	South	East	Description of material found
11	32°14'52.01"	20° 5'31.12"	Possible foundation wall
14	32°14'57.02"	20° 5'20.72"	Point along dry stone wall
16	32°14'57.75"	20° 5'24.98"	Point along dry stone wall
22	32°14'58.58"	20° 5'30.30"	Point along dry stone wall
26	32°14'59.06"	20° 5'32.95"	Point along dry stone wall
27	32°15'0.21"	20° 5'32.49"	N corner of possible kraal wall
28	32°15'0.32"	20° 5'32.42"	Intersection of dividing wall and NW wall
29	32°15'0.36"	20° 5'32.38"	W corner of possible kraal wall
30	32°15'0.42"	20° 5'32.46"	S corner of possible kraal wall
31	32°15'0.39"	20° 5'32.52"	Intersection of dividing wall and SE wall
33	32°15'0.30"	20° 5'32.58"	E corner of possible kraal wall
49	32°14'44.28"	20° 5'40.39"	Ruin – W corner
50	32°14'44.36"	20° 5'40.49"	Ruin – S corner
51	32°14'44.22"	20° 5'40.63"	Ruin – E corner
52	32°14'44.15"	20° 5'40.51"	Ruin – N corner
96	32°14'44.99"	20° 5'41.27"	Possible sluice/water control gate
115	32°14'49.52"	20° 5'29.34"	High-level gravels – NW point where gravels were first encountered. The approximate extent of the gravels was marked by the author's tracks. Selected points along the track are given below.
115 (SW)	32°14'50.50"	20° 5'27.32"	High-level gravels – approx. SW extent
115 (S)	32°14'50.87"	20° 5'27.67"	High-level gravels – approx. S extent
115 (SE)	32°14'50.92"	20° 5'28.30"	High-level gravels – approx. SE extent
115 (E)	32°14'50.33"	20° 5'29.61"	High-level gravels – approx. E extent
115 (N)	32°14'49.35"	20° 5'30.01"	High-level gravels – approx. N extent
119	32°14'43.25"	20° 5'40.18"	Highest point of LSA site

Table 2: Selected waypoints for the historical structures, high-level gravels and LSA site recorded in the area of the proposed Staff Village near Roodewal Park Office. Waypoints were recorded for observed stone artefacts and historical remains such as ceramics and glass but they are not given in this table. The information can be requested from the author.