

SCOPING HERITAGE IMPACT ASSESSMENT FOR THE POFADDER WIND AND SOLAR ENERGY FACILITY, KENHARDT MAGISTERIAL DISTRICT, NORTHERN CAPE

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act (No. 25 of 1999) as part of an EIA)

Prepared for

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EXECUTIVE SUMMARY

ACO Associates was appointed by Savannah Environmental (Pty) Ltd to assess the potential impacts to heritage resources that might arise through construction of wind (WEF) and solar energy facilities on four farm portions south of Pofadder in the Northern Cape Province. The facility will comprise of up to 500 wind turbines and an array of PV panels of a CSP plant.

This scoping report includes a desktop study as well as a one day field visit. The site lies in Bushmanland and is very flat. Small hills do occur, however, and occasional pans and dry stream beds are present.

The desktop study revealed that fossils are known from the vicinity with a dinosaur having been named from a find at Kangnas 120 km to the west. Most archaeological resources are scatters of stone artefacts, often close to water sources such as pans and rivers. While Later Stone Age material is more likely to be found near pans and rivers, earlier material from the Early and Middle Stone Age is more widely dispersed. Rock art is also known to occur in Bushmanland. The farms in the area were generally granted very late, in the late 19th or early 20th centuries.

The brief survey revealed much LSA material around the pan at Poortjie and only very scattered material elsewhere. The sites around the pan are of high significance while the background scatter over the remainder of the area is of very low significance. The built environment is generally of medium significance but some aspects and the graveyard are of high significance. Dams and other similar structures carry low-medium significance. All these features should be protected through the institution of buffers around them. The landscape impacts will be of relatively low significance due to the very remote setting of the site.

This heritage scoping study concludes that the site is suitable for the proposed project and that the impact assessment phase should continue. It should be noted that the access road to the site must also be considered as there are areas outside the study area that might be sensitive in this regard.

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1. INTRODUCTION

ACO Associates was appointed by Savannah Environmental (Pty) Ltd to assess the potential impacts to heritage resources that might arise through construction of wind (WEF) and solar energy facilities on four farm portions south of Pofadder in the Northern Cape Province (Figure 1). Pofadder lies approximately 21 km north-north-east of the study area while Aggeney's is 38 km to the west. The affected farm portions are:

- Namies South 212/portion 1;
- Namies South 212/portion 2;
- Poortje 209/remainder; and
- Poortje 209/portion 1 (Figure 2).



Figure 1: Aerial view of the general vicinity of the study area showing the relationship between it and the two nearest towns. The N14 national road runs east to west through Pofadder and Aggeney's and the R358 runs south through Pofadder.

The proposed project entails the establishment of a wind and solar energy facility and associated infrastructure within a site of 175 km². The proposed facility would include:

- Up to 500 wind turbines (each turbine between 1.5 MW – 4MW in capacity).
- An array of either photovoltaic panels (PV) or concentrated photovoltaic panels (CPV) with a generating capacity of up to 250MW.

- Foundations to support the turbine towers and PV panels;
- Cabling between the project components, to be laid underground where practical;
- A 400 kV substation and four satellite 132 kV substations to facilitate grid connection via a loop-in loop-out
- A connection to the existing Eskom Aggenys–Aries 400kV power line which crosses the site;
- Internal access roads; and
- Workshop area for maintenance and storage.

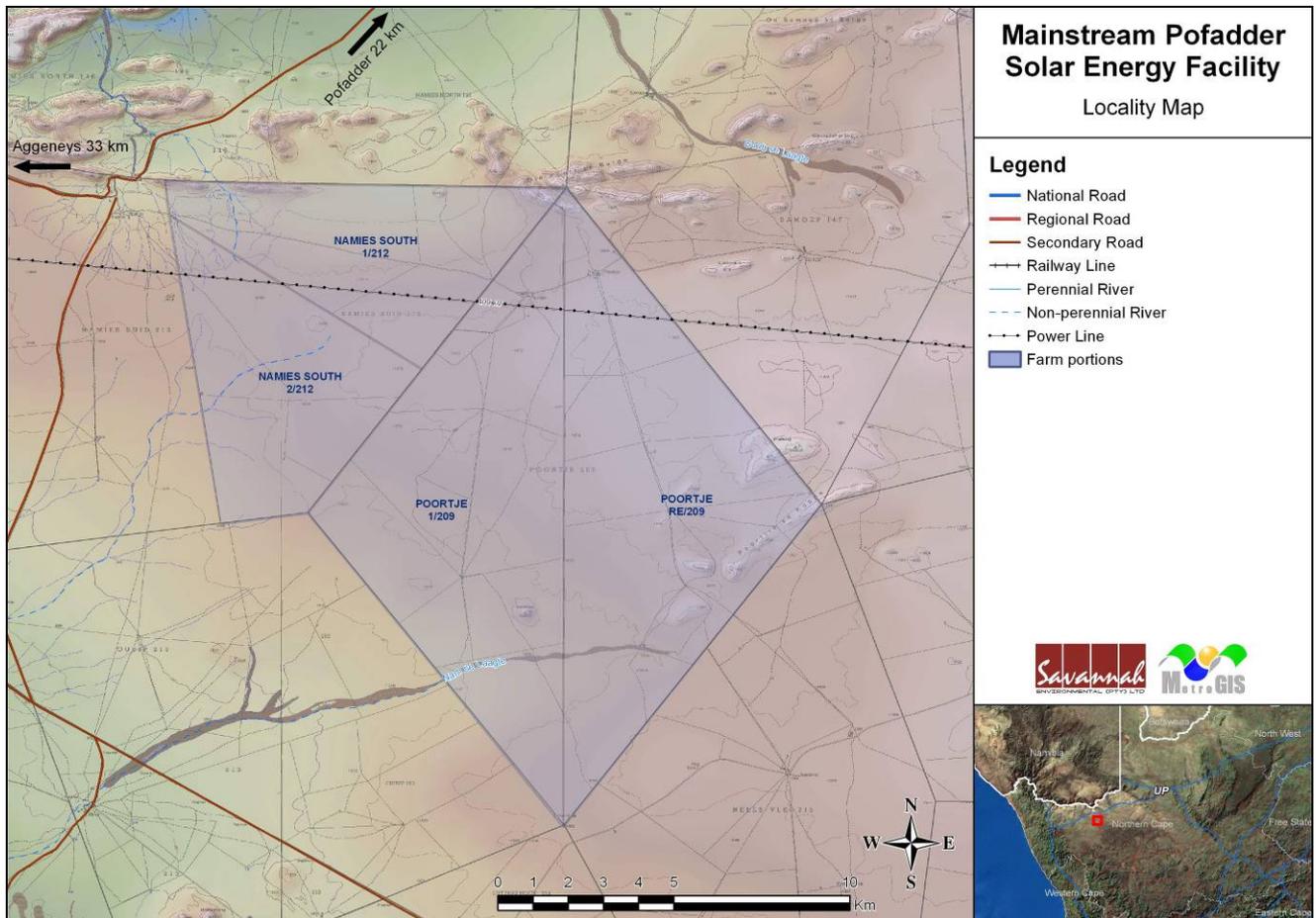


Figure 2: Map showing the affected farm portions.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources including palaeontological, prehistoric and historical material (including ruins) more than 100 years old (Section 35), human remains older than 60 years and located outside of a formal cemetery administered by a local authority (Section 36) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected under the definition of the National Estate (Section 3 (3.2d)). Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report fulfils that requirement.

Since the project is subject to an Environmental Impact Assessment (EIA), Heritage Northern Cape and the South African Heritage Resources Agency are required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs (DEA).

3. METHODS

3.1. Literature survey

A survey of available literature was carried out to assess the general heritage context into which each development was to be set. This literature included published material and unpublished commercial reports. The information so gained was used to inform the field survey.

3.2. Field survey

One day of fieldwork was conducted at the scoping stage in order to identify the kinds of environments that would be most sensitive in terms of impacts to heritage resources. This would in turn guide the layout design before the EIA phase of the project. The survey was done by driving around the site and walking certain areas as appropriate to record heritage resources or conduct sample transects of the landscape. Due to the very large size of the study area binoculars were used to try to identify landscape features that might have attracted prehistoric settlement.

3.3. Impact assessment

No formal assessment of impacts is conducted at the scoping phase, but a sensitivity map has been generated to delimit those areas expected to have the greatest potential impacts to heritage.

3.4. Limitations

The field study was brief and aimed only to target areas most likely to contain heritage resources. Consequently, there are likely to be many archaeological sites that were not identified at the scoping stage.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The site lies on a wide plain between low rocky hills. A very light covering of vegetation with small bushes and grass tufts exists over most of the area but bare patches are present. Some of these are sandy and due to deflation or perhaps are the result of being an ephemeral pan (Figure 3) but other bare areas are gravel-coated and located around the quartzite hills (Figure 4). The site is mostly very flat but short ranges of hills or isolated rocky outcrops do occur in places (Figures 4 & 5). Occasional pans and dry stream beds occur in places.



Figure 3: View across the study area showing typical environment on the plains with rocky hills in the background.



Figure 4: View from a rocky hill over the valley (poort) after which the farm was apparently named.



Figure 5: View across the plains showing grasslands and sporadic rocky hills.

5. HERITAGE CONTEXT

5.1. Palaeontology

ACO Associates does not have a specialist palaeontologist but nonetheless, certain significant fossil finds can be commented upon. The Karoo is well known for its fossil deposits but being on the very edge of the Karoo the fossil potential here will be lower. Although igneous and metamorphic rocks generally underlie the study area, fossils are still likely to be present. This is because fossils have been found at Kangnas and Areb some 120 km even further to the west. The most significant was a fossil believed to represent a dinosaur known as *Kangnasaurus coetzei*. The fossil was named by Sidney Haughton in 1915, the generic name referring to the farm and the specific name to the farmer, Coetzee. It is based on holotype SAM 2732, a tooth found at a depth of 34 m in a well on the farm (Haughton 1915, cited in Wikipedia 2011).

5.2. Archaeology

Although little archaeological research has been conducted in the general area around Pofadder, several impact assessment studies have been conducted in recent years. These form the basis of the present background review.

Early (ESA) and Middle Stone Age (MSA) material, including manufacturing sites, have been found on the northern slopes of the Gamsberg, probably positioned so as to gain easy access to a source of stone material on the mountain. Suitable flaking rock is apparently not easily available on the plains (Morris 2010). Pelsner (2011) reported MSA and Later Stone Age (LSA) material in an area around the Paulputs substation near Pofadder, although his illustrations appear to be of LSA artefacts made on quartz. He also mentions the presence of ostrich eggshell. East of Aggeneys, Webley and Halkett (2012) found a background scatter of predominantly quartz, and some quartzite artefacts. The material is particularly prevalent in those areas where the soil surface is covered in quartz pebbles and cobbles. The size of the artefacts suggests that they

pertain to the Middle Stone Age but diagnostic MSA features were absent. In general, the scatter of stone tools is very widely distributed and does not appear to be concentrated in any specific location.

According to Morris (2011a) LSA sites are the predominant archaeological trace noted in surveys in the Aggeneys-Pofadder region, although his survey of the northern slopes of the Gamsberg identified very few isolated LSA flakes (Morris 2010). However, on the plains below the mountain he did find three LSA settlements. To the northwest of the Gamsberg, he located two stone cairns which could represent graves, as well as a ceramic LSA site. These sites probably represent transient settlement by transhuman hunter-gatherers or herders that moved through the area. Beaumont *et al.* (1995:263) noted that most LSA sites then known in Bushmanland appeared to be ephemeral occupations by small groups of people in the hinterland both north and south of the Orange River. This was in sharp contrast to the substantial herder encampments along the Orange River floodplain itself. Away from the river, LSA material, mainly quartz flakes, appears to often be focused around the base of granite hills (Morris 2011a, b & c; Pelser 2011; Webley & Halkett 2011). (Beaumont *et al.* 1995) agree and add that red dunes and the margins of seasonal pans also served as foci for LSA occupation.

Despite the above observations, archaeological remains are likely to be patchy since, in a 15 km linear survey between Pofadder and Pella, Halkett (2010) failed to record any archaeological material. In general, Morris (2011c) notes that archaeological finds around Aggeneys and Pofadder are sparse.

Rock art is known from the region. Rudner and Rudner (1968) note the scarcity of suitable rock canvases and that art is sparsely distributed through the region. Engravings occur along the Orange River (Morris 1998) where suitable rock exists, while in the rocky areas away from the river there are rare rock paintings. Rudner and Rudner (1968:80-81) described the paintings on the farm Kangnas as follows:

"The paintings on this farm on the road to Pofadder are in a quartzite cave on the northern side of a ravine; on the sooty roof of the cave are crude black handprints and double-headed axe-like designs made in what appears to be black (burnt?) wax, which, when scratched, turned white. Where the pictures had weathered off, a greyish-white image remained. Grey designs are superimposed on red geometric designs.

"In a cave on the opposite side of the ravine are designs in white superimposed by red-brown ones. In this cave there is also an engraving of a wheel, which is probably of European origin as there are initials engraved next to it. A few stone implements were found in these caves, including a crescent in clear quartz, a few potsherds of thin Hottentot ware and some flakes in glass. (SAM 6753.) These caves were mentioned by W. C. Scully (Wilman, 1933), who stated that Bushmen were known to have lived there".

Further to the east, rock art occurs near the pan of Gobees. (We now know this to be the incorrect location – the art he describes is to the south of Kangnas on Koeris. There is also art at Gobees.) Rudner and Rudner (1968:81) described the art:

"In the southern corner of this farm near a small pan a large east-facing shelter contains paintings-crude gemsbok in faded red and some shield-like designs in maroon superimposed by white designs. The names of early visitors are pecked across the maroon pictures with the date 1879, providing us with an upper date for these paintings. Inside and outside this shelter we found a rich Wilton industry containing one large crescent and many small side-scrapers, some of them on reworked Middle Stone Age tools, two thumbnail scrapers, two small bead borers and a few potsherds of Hottentot-type, one with signs of an external lug (Namaqua pot?). (SAM 6751-2.) Some of this pottery has a coarse sand admixture (Rudner, in press)".

Historical accounts of travels through southern Africa frequently provide clues to the pre-colonial occupation of the land. In this case, two travellers, John Barrow and George Thompson, passed through this area leaving observations on the local population.

Barrow (1801:387) wrote of the plains between the Kamiesberg Mountains and the Orange River that:

"These plains are now desolate and uninhabited. All those numerous tribes of Namaquas, possessed of vast herds of cattle, are, in the course of less than half a century, dwindled away to four hordes, which are not very numerous, and in a great measure subservient to the Dutch peasantry, who dwell among them."

Thompson (1824:288) noted the following:

"The extensive plains, lying between the Gariiep and the Kamiesberg, are represented, by old writers, as occupied by a numerous race of people, possessed of large flocks and herds, and living in ease and abundance. Of these, the tribe now resident at Pella and its vicinity, is the only one remaining."

Both texts show that the area was well inhabited in the past but that colonial expansion was taking its toll on the indigenous inhabitants. Nevertheless, these observations suggest that archaeological remains, at least pertaining to the more recent prehistoric period, should be abundant on the landscape.

5.3. History

Three towns lie in an arc to the north of the site. While Aggeneys is modern and centred around the mining activities there, Pofadder was founded as a mission station in 1875 by Reverend Christian Schröder. It was named after a Koranna chief, Klaas Pofadder, who was shot by farmers. Colonists began settling around the perennial spring from 1889 but only in 1917 were the first residential plots surveyed (Northern Cape Tourism Board 2007).

Pella, to the north and closer to the Orange River, is also a mission station but it was founded far earlier. It was founded by the London Missionary Society in 1814 as a sanctuary for the indigenous people who were driven from Namibia. The mission was abandoned in 1872 because of drought but reopened by the Roman Catholic Church in 1878 (Northern Cape Tourism Board 2007).

The farms in this area were generally surveyed very late. Poortje 212 was done in 1895 but no survey diagrams were listed on the surveyor general's website for Namies South 209.

6. FINDINGS

No detailed description of finds is provided here. However, basic information and photographs are provided to show what types of heritage are present on the farm. Full details will appear in the Impact Assessment report to follow. The appendix does, however, list those sites recorded to date.

6.1. Stone Age archaeology

Stone Age archaeology was uncommon and the little we saw during the brief scoping survey was clearly focused on the pan alongside the Poortjie farm werf. Here there were several bedrock outcrops with grooves ground into them (Figures 6 & 7). These grooves would have been used for grinding food (grass and other seeds) and perhaps also ochre. It is typical to find such grooves around water sources in Bushmanland.

A short way from the pan was a slight ridge forming the outermost limit of the hollow in which the pan is located. On this rise were two Later Stone Age occupation sites with stone artefacts, ostrich eggshell fragments, a bead and pottery (Figures 8 & 9). The occupants of these sites may well have made the grooves. These sites have high archaeological significance.

Elsewhere in the study area we located occasional isolated stone artefacts that are part of the background scatter of material that builds up through the many thousands of years that people have occupied the landscape. Many of these artefacts may pertain to the Middle Stone Age. One quarried quartz outcrop was also noted. Stone Age people used the outcrop as a source for rock for making stone artefacts. These finds are all of very low significance.



Figure 6: Grinding grooves in the granite/ gneiss bedrock in the pan close to the Poortjie farm werf.



Figure 7: Close up of one of the deeper grinding grooves in the pan near the Poortjie farm werf.



Figure 8: Stone artefacts and ostrich eggshell fragments (some burnt) from an occupation site close to the pan with the grinding grooves.



Figure 9: Ostrich eggshell bead and a pottery fragment with small impressed decoration just beneath the lip.

6.2. Built environment

The Poortjie farm werf is not very old and contains structures dating back to the 1930s or 1940s (Figure 10). A family graveyard is also present. More significant are the old school building and multiple ruins located immediately outside the entrance to the study area. The main school building is likely early 20th century, while the ruins may be older.

Also present on Poortjie is a stone kraal with dung piled on top of the walls (Figure 12). The kraal probably dates to the 1930s when the first buildings were erected. In the poort after which the

farm was named there is an earth dam which has burst. The internal surface of this dam is stone lined (Figure 13). The dam is probably also from the same period as the other built structures on the farm.



Figure 10: The main farm house at Poortjie.



Figure 11: The old school building on Namies South (just outside of the study area).



Figure 12: The stone kraal with dung on top of the walls at Poortjie.



Figure 13: Earth dam with stone lining on the inner wall in the "poort" of Poortjie.

The werf was placed in an area where water was most easily available. Two hand dug wells were present at the werf, though one has been filled in. These could have been dug in the early 20th century. The pan fills up after rains and during the 1930s a dry-stone wall was built along the edge of it to increase its capacity (Figure 14). The farmer informed us that after heavy summer rain the pan can get deep enough to swim in.



Figure 14: The pan alongside the farm werf at Poortjie. The pan has been 'enlarged' through the addition of stone walling.

6.3. Cultural landscape, sense of place, visual impacts

Given that the farm was only granted in the early 20th century and that all the structures date to this time and later, there are few, if any, cultural landscape elements of concern. The site is very remote and does, as a result, have a distinct sense of place. This pertains to the vast open spaces of Bushmanland which stretch as far as one can see without man-made interruptions. Visual impacts will be very limited due to the remoteness and no scenic routes are within close range of the site, the nearest being the N14 some 20 km to the north. The R358 is also scenic but, being a gravel road, carries far less traffic. It lies some 13 km to the east.

7. CONCLUSIONS

Given the buffers to be instituted around the farm and water features (pans and streams), it is highly unlikely that significant archaeology or other above ground heritage material will be impacted. Palaeontological resources may be impacted, however.

The only major impact that will be experienced is that to the sense of place. However, with so few people present in the landscape and the extreme remoteness of the site this impact is not serious enough to prevent the development of the proposed wind and solar energy facility.

The scoping study concludes that the proposed site is suitable for the intended use and the Impact Assessment phase should continue. Given the use of buffers, no red flag issues have been identified.

Two areas of high sensitivity are identified. These are around the structures and ruins at Namies South and the farm and pan at Poortjie.

8. RECOMMENDATIONS

The planned impact assessment phase should proceed. The heritage studies should include assessment of palaeontological, archaeological and built environment resources. In addition to the standard components of the facility, particular attention should also be paid to the alignment of the access road to the site (the buildings and ruins at Namies South are sensitive).

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APPENDIX – Site listing

Site Name	GPS #	Co-ordinates	Description
PTJ2012/001	002	S29 19 09.2 E19 19 51.4	Poortjie farm werf on eastern side – 1940s to 1960s buildings.
PTJ2012/002	003	S29 19 15.4 E19 19 49.4	Grooves in bedrock near pan. Three rocks with 7, 1 & 3 grooves respectively. Some old bottle glass around the area.
	004	S29 19 16.2 E19 19 48.9	Ground surface on bedrock.
	005	S29 19 16.4 E19 19 48.1	Light groove on bedrock.
	006	S29 19 15.2 E19 19 50.2	Grooves in bedrock – 2 grooves.
	008	S29 19 14.2 E19 19 48.5	Grooves and ground patches in bedrock (at least 14) in pan.
	009	S29 19 13.8 E19 19 49.4	Grooves and ground patches in bedrock (at least 6) in pan.
	010	S29 19 15.8 E19 19 52.2	Grooves and ground patches in bedrock (2 grooves and two ground areas).
	011	S29 19 15.4 E19 19 53.5	Grooves and ground patches in bedrock (at least 5 grooves and ground areas).
	012	S29 19 12.0 E19 19 52.2	Two boulders with 1 groove each. (apparently there were more grooves before they built the “dam” around the pan but pan has silted up a bit.
PTJ2012/003	006B	S29 19 13.8 E19 19 49.4	Pan has a stone and earth wall built around it that was built in the 1930s/1940s to increase water catchment.
PTJ2012/004	007	S29 19 18.8 E19 19 46.4	Occupation site on a very low rise a short way from the pan – OES (lots), clear quartz, milky quartz, fine-grained black rock, CCS, broken and flaked crystals, clear and green glass. Quartz scraper. Site occurs on softer where animals have been digging.
PTJ2012/005	013	S29 19 06.3 E19 20 01.2	Van Niekerk family graveyard. * graves with deaths occurring between 1924 and 1994.
PTJ2012/006	014	S29 19 20.7 E19 19 51.3	Occupation site on a very low rise a short way from the pan – OES (lots), clear quartz, milky quartz, fine-grained black rock, CCS, bone fragment, tortoise carapace fragment, an OES bead of c. 8 mm, decorated pottery rim (typical 2 nd millennium AD impressed style), UG/HS, LG, glass fragments. CCS endscraper. Site occurs on softer where animals have been digging.
PTJ2012/007	015	S29 19 47.9 E19 19 52.6	Quarried quartz outcrop. A few flakes are identifiable among the very dense quartz gravel.
PTJ2012/008	018	S29 23 41.7 E19 21 40.8	Light scatter of quartz and OES in river sand in the Poortjie.
PTJ2012/009	019	S29 23 38.3 E19 21 42.6	Stonelined earth dam in the Poortjie – it has burst.
PTJ2012/010	020	S29 19 10.1 E19 19 42.8	Stone kraal with dung on top of the walls.
PTJ2012/011	021	S29 19 26.9 E19 18 42.7	Farm werf on west half – mostly modern but southern house is probably 1940s.
PTJ2012/012	L001	S29 19 21.9 E19 19 51.3	A very dense scatter of quartz artefacts (cores and flakes) made on quartz crystal and some OES frags
PTJ2012/013	L002	S29 25 12.1 E19 19 21.7	A scatter of about 20 vein quartz artefacts (cores and flakes) over an area of about 3m ² , on the edge of a dried river bed.
NMS2012/001	001	S29 18 11.3 E19 12 36.9	Namies – school building and many ruins nearby.
NMS2012/002	024	S29 19 55.4 E19 15 32.1	Quartz flakes among the gravel on the hill.
NMS2012/003	025	S29 18 54.6 E19 14 27.6	Rock with two ground areas immediately next to a river channel.