Archaeological Phase 1 Impact Assessment Report for a Basic Assessment Report for the Droogfontein 4 Solar and Battery Storage Energy Facility, north of Kimberley, Northern Cape Province.

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September 2022

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1. INTRODUCTION

Environamics has requested an Archaeological Heritage Phase 1 Impact Assessment study for a Basic Assessment Report for the Droogfontein 4 Solar and Battery Storage Energy Facility, situated on the Remaining Extent of farm Droogfontein 62 north of Kimberley, Northern Cape Province. Droogfontein 4 includes two development area alternatives Options A and B which were the focus of an archaeological survey undertaken on 13 July 2022.

1.1 Focus and Content of Specialist Report: Archaeology

The archaeology specialist study included an assessment of archaeological observations within the two Options A and B, and is augmented by observations in borrow pits outside of the Option footprints, given that archaeological visibility across the terrain is significantly obscured by Hutton Sand sediment cover.

This specialist study is a stand-alone report and incorporates the following information:

» Introduction (1)
  - Focus and content of report (1.1)
  - Archaeology specialist (1.2)

» Description of the affected environment (2)
  - Heritage features of the area (2.1)
  - Description and evaluation of environmental issues and potential impacts (2.2)

» Methodology (3)
  - Assumptions and limitations (3.1)
  - Potentially significant impacts to be assessed (3.2)
  - Description and evaluation of environmental issues (3.3)
  - Determining archaeological significance (3.4)

» Observations and assessment of impacts (4)
    - Fieldwork observations (4.1)
    - Characterising the archaeological significance (4.2)
    - Characterising the significance of impacts (4.3)
» Conclusions (5)
» References (6)

1.2 Archaeology Specialist

The author of this report is an archaeologist accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists, having previously carried out surveys and fieldwork on sites in the area around Kimberley (Beaumont & Morris 1990; Morris & Beaumont 2004).

The author works independently of the organization commissioning this specialist input, and I provide these preliminary scoping observations within the framework of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and palaeontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This means that a Heritage Impact Assessment should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

2. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The environment in question is Kimberley Thornveld with a significant/predominating grassland component, comprising relatively flat terrain with andesite or (to the south) dolerite hills in the surrounding landscape. The vicinity is covered by Kalahari sands (Hutton Sands) of up to a few metres deep, over calcrete and underlying dolerite/andesite/shale bedrock (depending on local setting), relatively sparsely vegetated by trees across the grassy plains. The area of the Droogfontein 4 footprint is principally grassland. Surface archaeological traces are likely to be reasonably visible. However, experience of the terrain suggests that Stone Age material would most likely lie subsurface and overlie bedrock, at the base of the sands (e.g. Beaumont & Morris 1990); an observation borne out in this study.

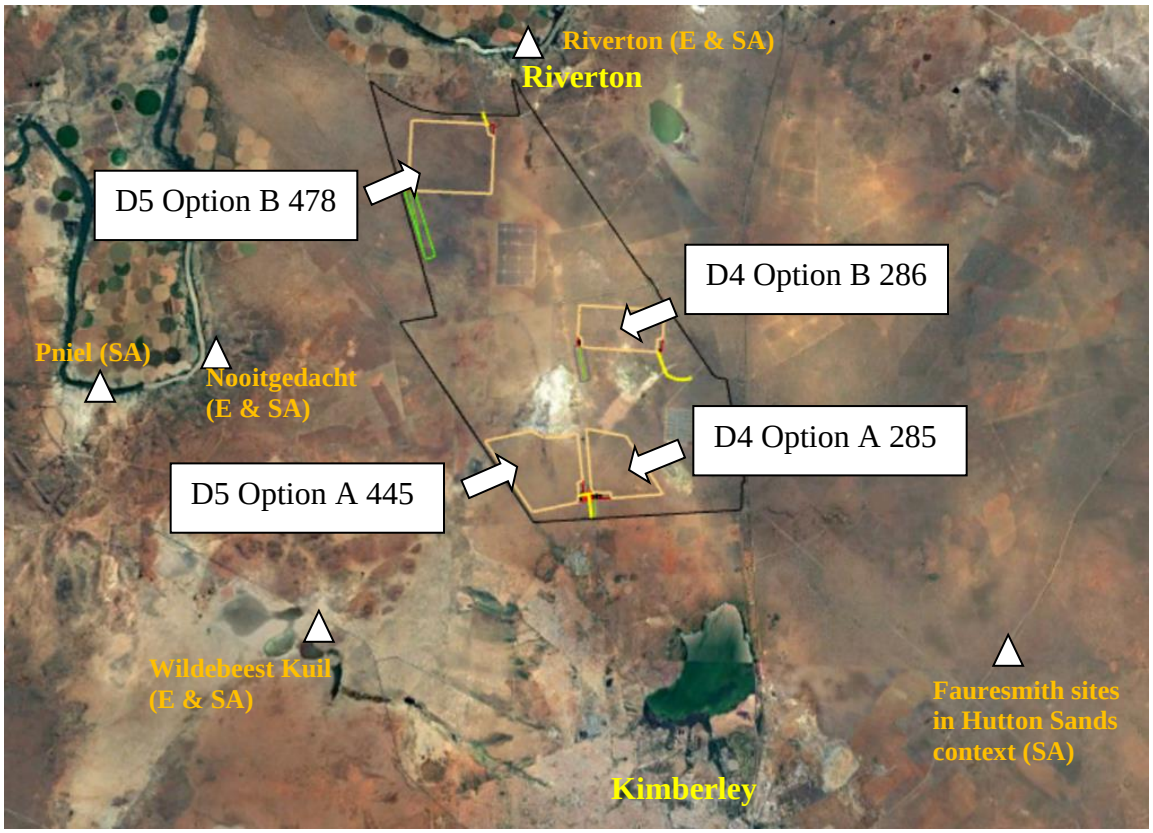

Figure 1a

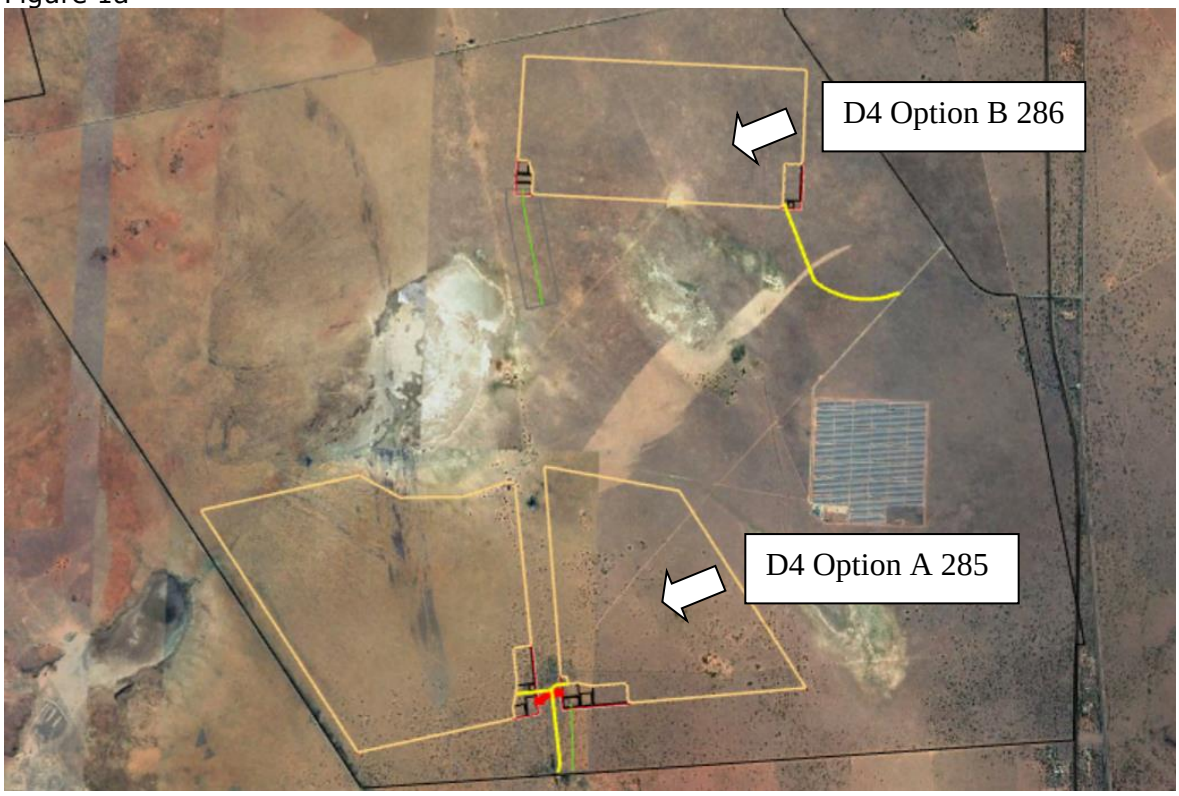

Figure 1b

Figure 1 a. & b.
1a: The Options for Droogfontein 4 (and Droogfontein 5) relative to Kimberley and Riverton. Development footprint options, labelled, are indicated by tan-coloured polygons. White triangles indicate rock engraving (E) and Stone Age (SA) sites in the wider surroundings (as discussed in 2.1).
1b: The Droogfontein 4 Options A and B.

Topographically, the Droogfontein 4 Options A & B are situated on relatively flat homogeneous terrain between the Dronfield hills (to the south east) and the Vaal River (to the north and north west). The presence of andesite and dolerite outcrops in the wider region would raise the possibility of the occurrence of rock engravings, but no such outcrops occur withing the development option footprints. The Vaal River was a focus of marked inhabitation and Stone Age sites in Pleistocene and Holocene times, while areas away from the river may have more of an 'off-site' character.

Figure 2a

Figure 2b

Figure 2 a & b. Terrain within Droogfontein 4 Option A.

Figure 3. Terrain within Droogfontein 4 Option B.

2.1. Heritage features of the area

Heritage features have been recorded for the surrounding areas (McGregor Museum database – some of the principal sites shown in Figure 1a), indicative of the kinds of features which may occur within the project footprint options.

The following observations would be relevant:

» that certain dolerite and andesite koppies in the wider region are known to have rock engravings (Fock & Fock 1989; Morris 1988), particularly Wildebeest Kuil and Nooitgedacht, west of the project options (Fig 1a), with some on record at Riverton (where other engravings were submerged in 1905 when a weir was constructed further downstream). No such outcrops are noted within the project footprint areas.
» that background scatters of Stone Age artefacts are known on plains in the region, notably of Fauresmith industry sites, often resting on calcrete at the base of the Hutton sands (Beaumont & Morris 1990, e.g. the site of Roseberyplain),

while more focussed sites are known from the sediments flanking the Vaal River such as at Pniel, Nooitgedacht and Riverton – Fig 1a).

» that historically noteworthy farm infrastructure may occur including possible colonial/recent farm graves.

» That Anglo-Boer/SA War action took place at the outskirts of Kimberley, but this was either closer to the town (Kamfersdam) or along the railway line north of Kimberley, at Dronfield east of Option A.

A previous HIA report for a proposed 132kV powerline (Fourie 2012) noted no archaeological occurrences, and no graves were seen or reported on by a local informant.

2.2. Description and evaluation of environmental issues and potential impacts

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Areas that would be cleared for development of a solar photovoltaic array can have a permanent destructive impact on such resources, with linear developments such as powerlines tending to have a lesser impact (Sampson 1985). The objective of an impact assessment would be to evaluate the sensitivity of heritage resources where present to assess the significance of potential impacts on them and to recommend no-go areas or measures to mitigate or manage said impacts.

2.2.1. Direct, indirect and cumulative impacts (in terms of nature, magnitude and extent)

The destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. In the long term, the proximity of operations in a given area could result in secondary indirect impacts resulting from the movement of people or vehicles in the immediate or surrounding vicinity.

3. METHODOLOGY

A site visit was undertaken on 13 July 2022 to inspect the project footprints of Options A and B. Heritage traces recorded would be evaluated in terms of their archaeological significance (see tables below).

3.1. Assumptions and limitations

It was assumed that, by and large in this landscape, with its relatively sparse vegetation, some sense of the surface archaeological traces to be found would be readily apparent from surface observations. However, the landscape is entirely veneered by red Hutton Sands which mask expected subsurface occurrences, particularly of Pleistocene age stone artefacts. Therefore, all exposures, e.g. in borrow pits, in the vicinity, even where outside with anticipated impact/footprint areas, were inspected to assess the presence of such sub-surface material.

A proviso is routinely given, that should sites or features of significance be encountered during construction (this could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (cease work, report to heritage authority).

This report does no address palaeontology.

3.2. Potentially significant impacts to be assessed in the EIA process

Scoping before the site visit suggested:

» Where andesite/dolerite koppies occur there is a possibility that rock engravings might be found. None likely.
» Stone Age artefacts may occur, notably Fauresmith industry sites, commonly resting on calcrete/andesite/dolerite/shale at the base of the red Hutton Sands (cf. Beaumont & Morris 1990). A possibility.
» Heritage features may exist in the vicinity of farm infrastructure.

3.3. Description and evaluation of environmental issues and potential impacts identified in the scoping phase

Any area or linear, primary and secondary, disturbance of surfaces in the development locales could have a destructive impact on heritage resources, where present. In the event that such resources of high significance are found, they are likely to be of a nature that potential impacts could be mitigated by documentation and/or salvage following approval and permitting by the South African Heritage Resources Agency and, in the case of any built environment features, by Northern Cape Heritage Resources Authority. Although unlikely, there may be some that could require preservation *in situ* and hence modification of intended placement of development features.

Disturbance of surfaces includes any construction: of a road, erection of a pylon, or preparation of a site for a plant, or building, or any other *clearance* of, or *excavation* into, a land surface. In the event of archaeological materials being present such activity would alter or destroy their context (even if the artefacts themselves are not destroyed, which is also obviously possible). Without context, archaeological traces are of much reduced significance. It is the contexts as much as the individual items that are protected by the heritage legislation.

Some of the activities have a generally lower impact than others. Sampson (1985) has shown that power lines tend to be less destructive on Stone Age sites than roads since access along the route of the line during construction and maintenance tends to be by way of a 'twee-spoor' temporary roadway (not scraped, the surface not significantly modified).

3.4 Determining archaeological significance

In addition to guidelines provided by the National Heritage Resources Act (Act No. 25 of 1999), a set of criteria based on Deacon (nd) and Whitelaw (1997) for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a). These criteria include estimation of landform potential (in terms of its capacity to contain archaeological traces) and assessing the value to any archaeological traces (in terms of their attributes or their capacity to be construed as evidence, given that evidence is not given but constructed by the investigator).

Estimating site potential

Table 1 (below) is a classification of landforms and visible archaeological traces used for estimating the potential of archaeological sites (after J. Deacon nd, National Monuments Council). Type 3 sites tend to be those with higher archaeological potential, but there are notable exceptions to this rule, for example the renowned rock engravings site Driekopseiland near Kimberley which is on landform L1 Type 1 – normally a setting of lowest expected potential. It should also be noted that, generally, the older a site the poorer the preservation, so that sometimes *any* trace, even of only Type 1 quality, can be of exceptional significance. In light of this, estimation of potential will always be a matter for archaeological observation and interpretation.

Assessing site value by attribute

Table 2 is adapted from Whitelaw (1997), who developed an approach for selecting sites meriting heritage recognition status in KwaZulu-Natal. It is a means of judging a site's archaeological value by ranking the relative strengths of a range of attributes (given in the second column of the table). While aspects of this matrix remain qualitative, attribute assessment is a good indicator of the general archaeological significance of a site, with Type 3 attributes being those of highest significance.

Table 1. Classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon, National Monuments Council).

Class	**Landform**	**Type 1**	**Type 2**	**Type 3**
L1	Rocky surface	Bedrock exposed	Some soil patches	Sandy/grassy patches
L2	Ploughed land	Far from water	In floodplain	On old river terrace
L3	Sandy ground, inland	Far from water	In floodplain or near feature such as hill	On old river terrace
L4	Sandy ground, Coastal	>1 km from sea	Inland of dune cordon	Near rocky shore
L5	Water-logged deposit	Heavily vegetated	Running water	Sedimentary basin
L6	Developed urban	Heavily built-up with no known record of early settlement	Known early settlement, but buildings have basements	Buildings without extensive basements over known historical sites
L7	Lime/dolomite	>5 myrs	<5000 yrs	Between 5000 yrs and 5 myrs
L8	Rock shelter	Rocky floor	Sloping floor or small area	Flat floor, high ceiling
Class	**Archaeo-logical traces**	**Type 1**	**Type 2**	**Type 3**
A1	Area previously excavated	Little deposit remaining	More than half deposit remaining	High profile site
A2	Shell or bones visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick; shell and bone dense
A3	Stone artefacts or stone walling or other feature visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick

Table 2. Site attributes and value assessment (adapted from Whitelaw 1997)

Class	**Attribute**	**Type 1**	**Type 2**	**Type 3**
1	Length of sequence/context	No sequence Poor context Dispersed distribution	Limited sequence	Long sequence Favourable context High density of arte/ecofacts
2	Presence of exceptional items (incl regional rarity)	Absent	Present	Major element
3	Organic preservation	Absent	Present	Major element
4	Potential for future	Low	Medium	High

	archaeological investigation			
5	Potential for public display	Low	Medium	High
6	Aesthetic appeal	Low	Medium	High
7	Potential for implementation of a long-term management plan	Low	Medium	High

4. OBSERVATIONS AND ASSESSMENT OF IMPACTS

The manner in which archaeological and other heritage traces or values might be affected by the proposed development may be summed up in the following terms: it would be any act or activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). The most obvious impact in this case would be land surface disturbance associated with infrastructure construction.

4.1 Fieldwork observations

The proposed development footprint areas were visited on 13 July 2022. In summary the findings can be reported relative to predictions made above (see paragraph 3.2):

4.1.1 Possible engraving occurrences on dolerite koppies or exposures:

No rocky exposures were found, hence no engravings.

4.1.2 Occurrences of Stone Age artefacts:

Background scatter occurrences of Pleistocene age material (Beaumont & Morris 1990; Underhill 2011) are known to occur in the wider area, typically within and at the base of the red Hutton Sands overlying calcrete or dolerite/andesite. Almost no such material was observed in the area of archaeological investigation, since essentially all of the proposed development footprint of Droogfontein 4 is mantled by Hutton Sands. However, three observations outside of the specific footprint area were made in situations where 1) the Hutton Sands were eroded and 2) where two borrow pits occur adjacent to the railway which crosses the Droogfontein property area. The sides of the borrow pits were closely examined and revealed very low/close-to-zero density occurrences of stone artefacts. It can be anticipated that

subsurface densities would vary but nowhere amount to much other than 'background scatter' (using Orton's [2016] classification).

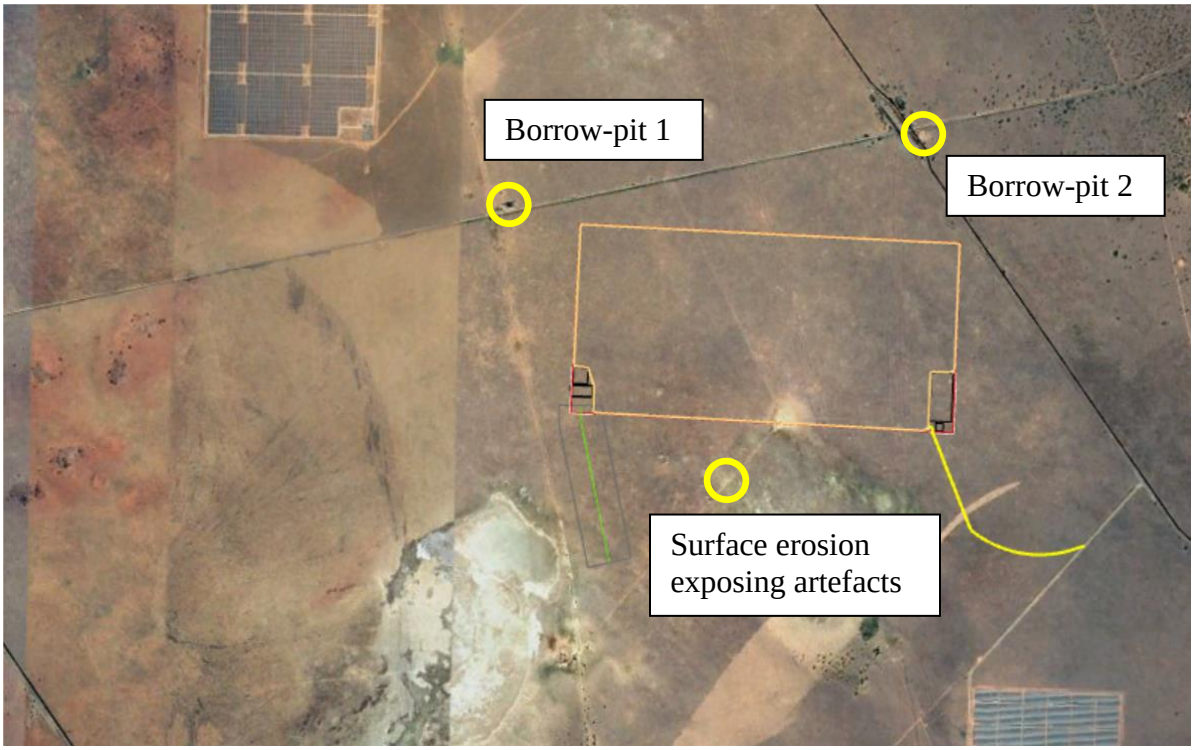

Figure 4. Borrow pits and surface erosion feature (yellow circles) where (in the case of the borrow pits which were recorded in 2018) low density sub-surface Stone Age occurrences were observed and (in the erosion feature, recorded in July 2022) a very small number of the surface artefact finds were noted.

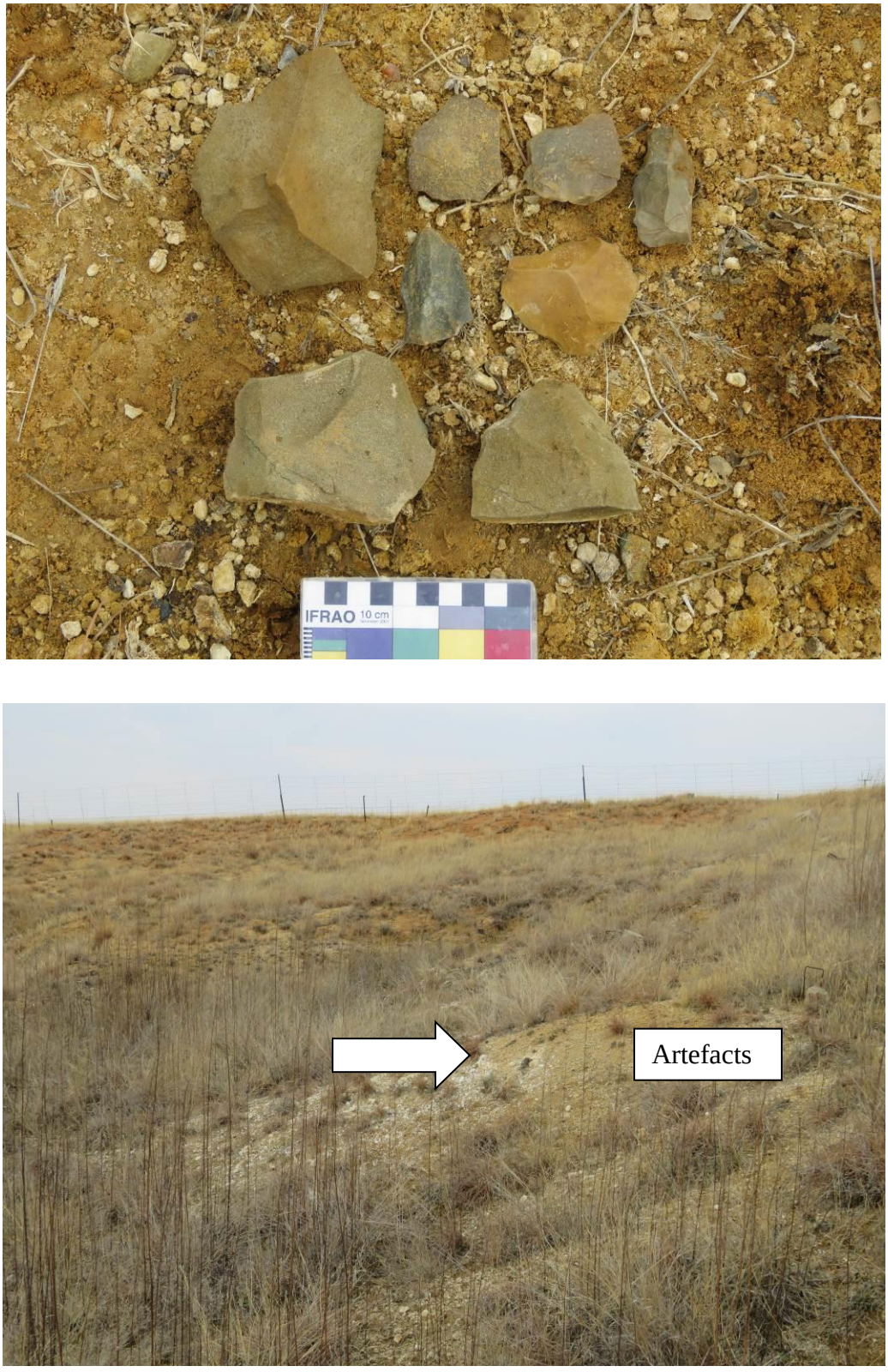

Figure 5 a & b. Artefacts documented in the side of Borrow-pit 1.

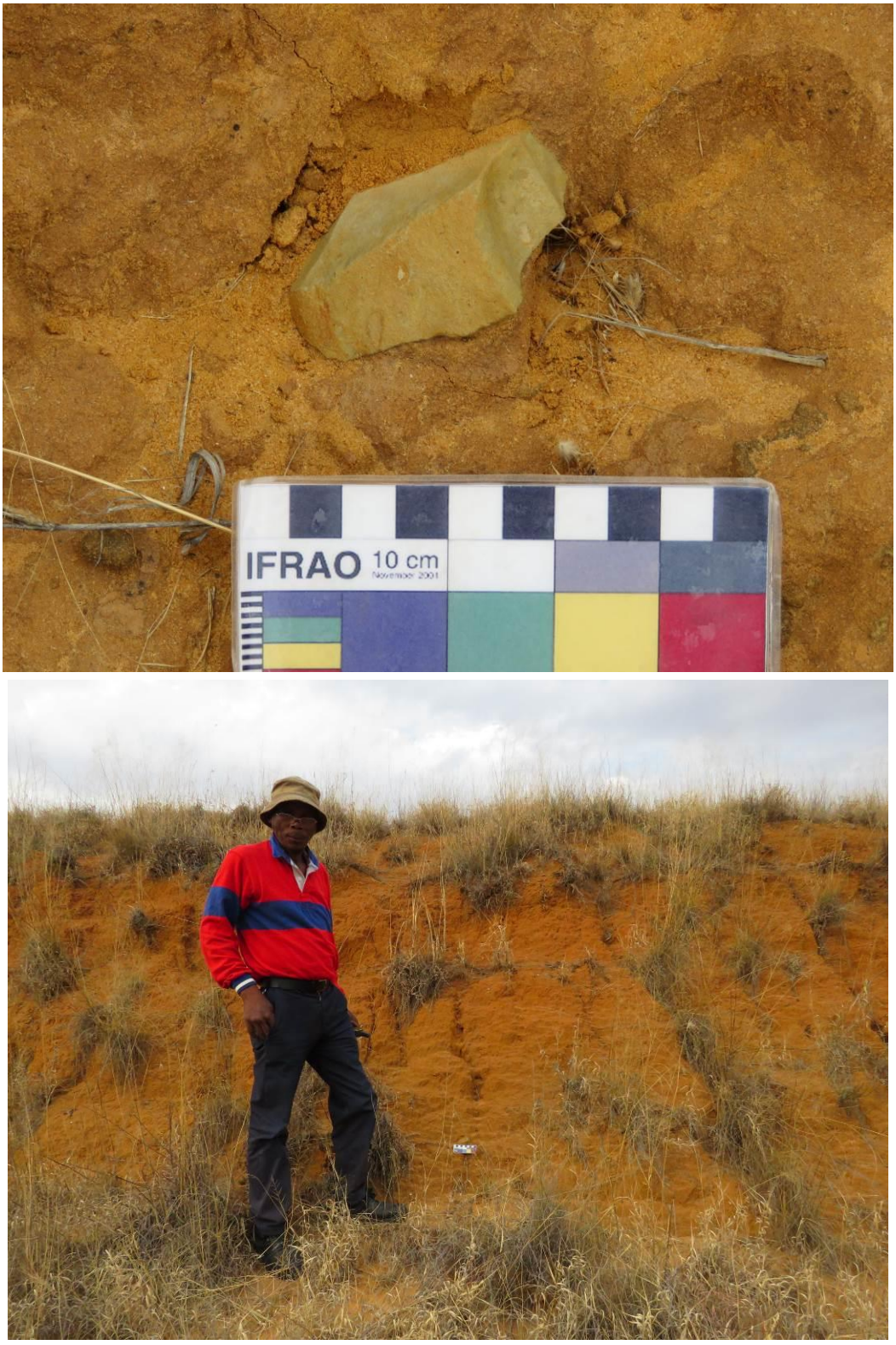

Figure 6 a & b. Single artefact documented in Borrow-pit 2.

Figure 7 a & b. Two artefacts found on the eroded pan-floor setting at the Surface Erosion site shown in Figure 2.

4.1.3 Farm and colonial heritage:

No colonial era graves were found or were reported in previous studies (Fourie 2012, Morris 2018). Of other farm heritage infrastructure, only farm fences and cattle post features of recent date were noted.

Figure 8. Unused farm infrastructure at the south western corner (and outside) of Option A.

Figure 9. Remains of farm infrastructure at the southern edge of Option B.

Running between Riverton and Kimberley, and adjacent to the western edge of Option A, and beyond the western edge of the Option B footprint, is the water pipeline that supplies Kimberley, which is not due to be impacted, and, while following the historic early pipeline route (dating from the late nineteenth century), is subject to on-going maintenance.

4.2 Characterising the archaeological significance (Refer to 3.4 above)

In terms of the significance matrices in Tables 1 and 2 under 3.4 above, the minimal archaeological observations made fall under Landform L3 Type 1. In terms of archaeological traces they all fall under Class A3 Type 1. These ascriptions (Table 1) reflect poor contexts and likely low significance for these criteria.

For site attribute and value assessment (Table 2), all of the observations noted fall under Type 1 for Classes 1-7, reflecting low significance, low potential and absence of contextual and key types of evidence.

On archaeological grounds, the limited occurrences observed can be said to be of low significance.

4.3 Characterising the significance of impacts

METHOD OF ENVIRONMENTAL ASSESSMENT

The environmental assessment aims to identify the various possible environmental impacts that could results from the proposed activity. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in the Table below.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Impact Rating System

Impact assessment takes account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- planning
- construction
- operation
- decommissioning

Given the significance of impact determined by this assessment and in the following tables, no mitigation is regarded as necessary.

The rationale for assessment of significance is given in the following table, with the archaeological importance/significance of observations explained relative to the tables given in 3.4 and 4.2 above.

The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria are used:

Table 1: The rating system

NATURE		
Acts or activities resulting in disturbance of surfaces and/or sub-surfaces containing archaeological artefacts/heritage objects or features (causes) resulting in the destruction, damage, excavation, alteration, removal or collection from its original position (consequences), of any such archaeological material, object or feature (what affected).		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced. Impacts on any artefacts present will be limited to the site.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact. Where artefacts are present (indications pointed out in this study show that where artefacts occur – their density very low and of low archaeological significance – they are almost invariably subsurface, so that surface clearance of terrain may not impact the material at all, but excavation could displace such material if present at specific locales).		

1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity. Should an impact occur on archaeological material it would tend to be permanent, e.g. displacement/disturbance of/from context.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact. Given the very low density of material where it has been observed, and the relatively low probability of impact, intensity/magnitude of impact is likely to be low.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way

		and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity. Disturbance of archaeological material or its context cannot be reversed. Where this occurs it is hence irreversible.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity. Where an impact occurs, this report suggests the loss would be marginal.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in		

question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects

SIGNIFICANCE

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Significance value is calculated as **15**.

Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".

74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

5. CONCLUSIONS

The survey across the footprints of Droogfontein 4 Options A and B revealed what may, in archaeological terms, be characterised as a homogeneous landscape consisting of only slightly undulating/sloping grass-covered plains, lacking in landscape features such as rocky outcrops/shelters and with a present-day surface of Hutton Sands which most likely mask palaeosols (older surfaces) on which Pleistocene age artefacts probably occur in low density as 'background scatter' (as found in two borrow pit exposures and an erosion feature south of Droogfontein 4 Option B).

The situation may be summed up that: extremely sparse heritage traces of low significance were observed (in borrow pits and an erosion feature) outside the footprints of Droogfontein Options A and B (these being the only archaeological artefacts seen in a landscape otherwise completely masked by Hutton Sands). No colonial era traces of significance were observed.

In the event of finding evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources during the proposed development, SAHRA APM Unit (Natasha Higgitt 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings at the expense of the developer. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required at the expense of the developer.

In terms of these findings this report indicates no preference on archaeological grounds between Options A and B for the Droogfontein 4 Solar and Battery Storage Energy Facilit

5.1 Updated layout of PV 4

Subsequent to submission of a draft of this and other environmental reports, the developer has updated the layout of PV 4 to optimize the infrastructure. A map of

the optimized layout (site Option B) is now included here in 5.1 (Figure 10), with this Option B configuration having been identified as the most environmentally suitable for the development.

Consistent with the general conclusion presented above with regard to Options A and B, it is confirmed that the optimized layout (site option B) is acceptable from an archaeological perspective.

Figure 10. Optimized layout (site Option B).

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