HERITAGE IMPACT ASSESSMENT
PROPOSED PV SOLAR PLANT AND BATTERY ENERGY STORAGE SYSTEM ON RE/ERF 2018, RIVERSDALE, HESSEQUA LOCAL MUNICIPALITY, WESTERN CAPE

Assessment conducted under Section 38 (3) of the National Heritage Resource Act (No. 25 of 1999)

Prepared for:

SHARPLES ENVIRONMENTAL SERVICES
PO Box 9087, George, 6530

Applicant:

HESSEQUA MUNICIPALITY

By

ACRM
5 Stuart Road, Rondebosch, 7700
jonathan@acrm.co.za

FEBRUARY
2024

Executive Summary

1. Site name

Proposed PV Solar Energy Plant and Battery Energy Storage System on Remainder Erf 2018 Riversdale, Western Cape (Figures 1 & 2).

2. Location

Alongside Heidelberg Road, about 4kms from the centre of the town of Riversdale.

3. GPS Co-ordinates

S 34° 6'49.08" E 21°14'19.93"

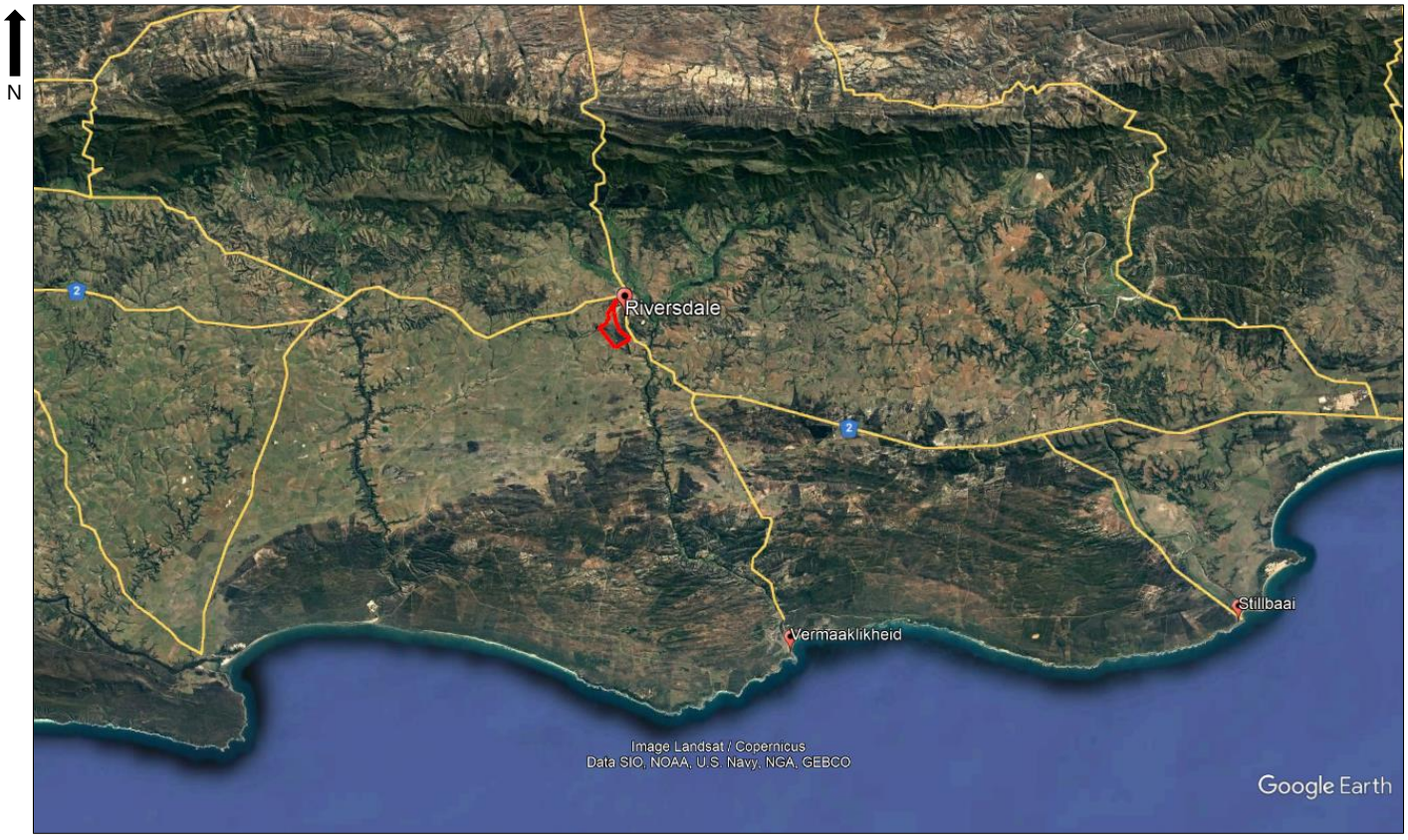

Figure 1. Google aerial satellite map indicating the location of the study site in Riversdale (regional context)

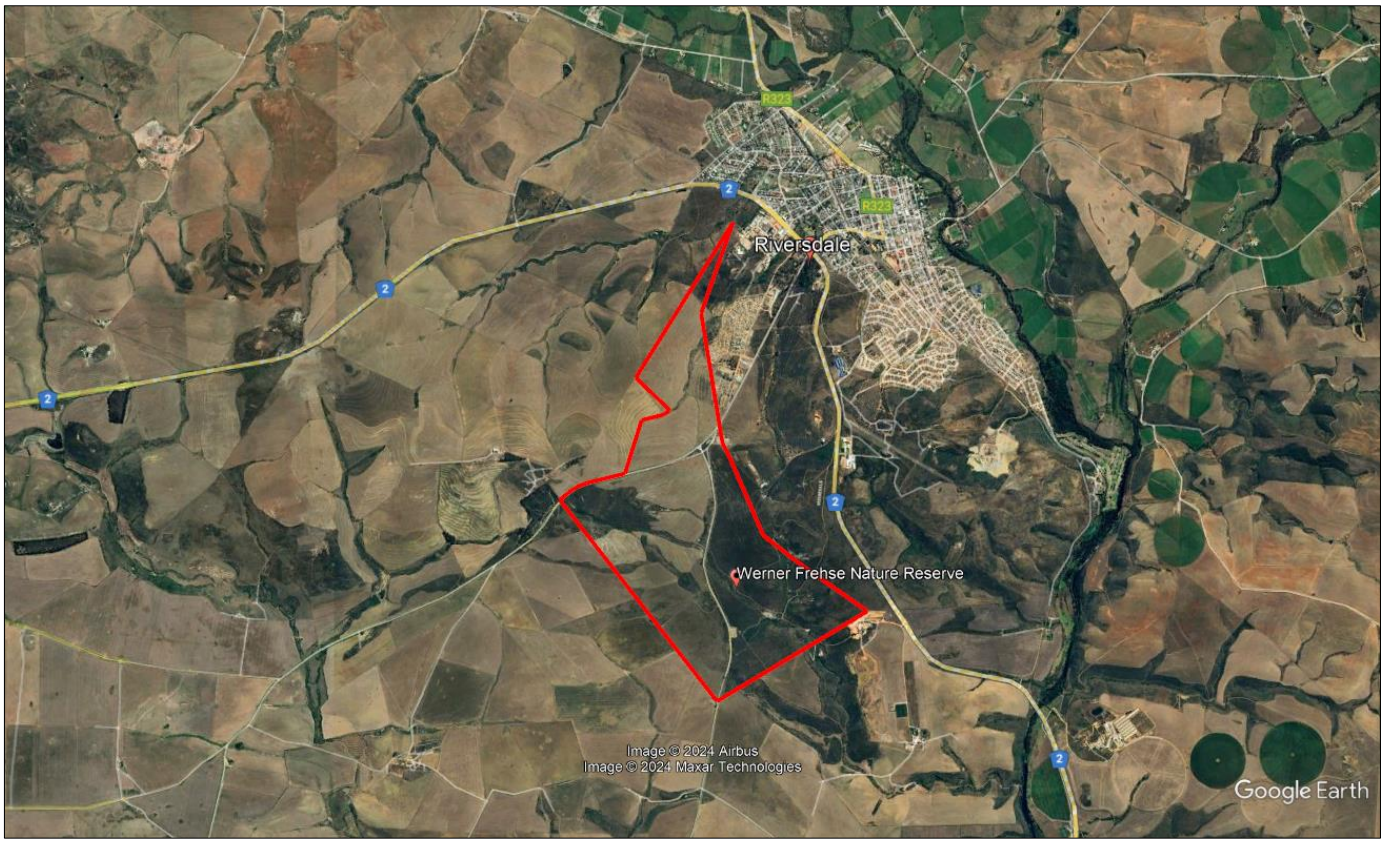

Figure 2. Google aerial satellite map indicating the study site (red polygon) in Riversdale & the surrounding landuse.

2. The development proposal

The proposal entails the development of a 10 Mega Watt (MW) PV Solar Energy Plant and Battery Energy Storage System (BESS) on Re Erf 2108 in the small southern Cape town of Riversdale, in the Overberg region of the Western Cape. The proposed development will be conducted over three Phases, over an estimated three, year period. The preferred site (±18ha in extent) is located directly opposite the Eskom Riversdale Substation (Figure 3). Seven proposed site alternatives have also been identified. A possible grid connection through the Werner Frehse Local Authority Nature Reserve, to Riversdale, has been suggested.

The applicant is the Hessequa Local Municipality.

The following infrastructure components are required for the project.

- Solar Photovoltaic (PV) Arrays

- Battery Energy Storage System (BESS): preferably lithium ion or lithium phosphate or vanadium flow batteries.

- Inverters and Power Electronics

- Grid connection to the electrical grid at the Riversdale municipal substation.

A Site Layout Plan is illustrated in Figure 4.

Figure 3. Google Earth Satellite map of the proposed development site (red polygon). The yellow polygon alongside the Eskom Riversdale Substation is the preferred site. The red pins are the proposed site alternatives.

Figure 4. Proposed layout of the Riversdale 10MW Solar PV Plant with Battery Energy Storage System

5. Heritage resources identified

5.1 Archaeology

A walk down survey of the proposed development site was conducted by ACRM on the 23rd and 24th January 2024. The survey covered the entire proposed site.

The potential archaeological sensitivity of the Werner Frehse Local Authority Nature Reserve was also assessed. The assessment of the Nature Reserve took place mostly by vehicle.

The following heritage resources were recorded.

A low density, ephemeral scatter of Early Stone Age (ESA) resources was recorded across the proposed development site, which are spread very thinly and unevenly over the surrounding agricultural landscape. All the remains occur in a highly transformed context (old agricultural land). Patches of round quartzite cobbles also occur on the surface in the grazing lands across the eastern portion of the site.

Ony six lithics (five chunks & a small flake) were recorded in the footprint area of the preferred site alongside the Eskom Riversdale substation.

More than 95% of the pieces recorded comprised chunks, and broken and flaked (cortex) chunks, while a very small number of modified flakes, and cores were encountered. Only four bifacially flaked tools, including a broken, snapped and incomplete handaxe were recorded during the field assessment. No Large Cutting Tools (LCTs), cleavers or choppers were recorded. All the tools are made on locally available quartzite, struck from rounded colluvial cobbles, while many of the pieces are also burnished and weathered. Some of the pieces across the western portion of the site (dryland wheat) have been brought to the surface because of ploughing activities, which is a common occurrence and confirmed by the literature survey. Several modified pieces of stone (mostly chunks) were also found among the many piles of stone removed from the surrounding fields. Only two Middle Stone Age flakes were found. No Later Stone Age resources or any organic remains such as pottery, or ostrich eggshell were found. No evidence of any human settlement or occupation was noted, and the resources recorded most likely represent discarded flakes and flake debris. Patches of surface cobbles in grazing lands across the eastern portion of the farm were likely targeted as sources of raw materials for making tools.

5.2 Grading

The highly disturbed context in which they were found, and the small number of cores and retouched tools recorded means that the remains have been graded as Not Conservation Worthy (NCW)/low local archaeological significance.

5.3 Palaeontology

According to consulting palaeontologist, John Pether (2024), the upper Bokkeveld Group bedrock occupies the southern portion of RE/2018 and is comprised of marine shelf mudrock shales and thin sandstones of mid-Devonian age (~385 Ma).

The northern part of the site is underlain by the succeeding lowermost formation of the Witteberg Group, viz. the Wagen Drift Formation comprised of shallow-marine sandstones with interbedded mudrocks of late Devonian age (~375 Ma).

The old “High Coastal Platform” is geomorphologically represented by the higher ground occupied by the Grahamstown Formation silcretes and by the “High-level terrace gravels”.

Pether (2024) notes that the Bokkeveld Group `in general' is of high palaeontological sensitivity due to its unique fossil content but in the Southern Cape coastal region it is tectonized and weathered to the extent that its constituent formations cannot be differentiated.

Similarly, the fossil content of the Wagen Drift Fm. has been compromised. The Grahamstown Fm. silcrete rocks are very poorly fossiliferous. The residual gravels on the downwasted Grahamstown Fm and the High-level terrace remnant palaeosurfaces have been subjected to a long history of pedogenesis, fossils are very unlikely to be preserved and fossil finds are not reported.

5.4 Built Environment

There are no buildings, dwellings, structures, or features within the proposed site alternatives. Therefore, no direct impacts to the built environment will occur.

5.5 Cultural landscape

A rural agricultural landscape dominates the Cultural Landscape, with formal and informal housing, small scale farming, and the Riversdale Cemetery located alongside Heidelberg Road.

The Werner Frehse Local Authority Nature Reserve is located directly to the north of the gravel road leading to Still Bay and is within the project study area.

5.6 *Graves*

No graves or typical grave features were, encountered during the field assessment.

6. Comments

Comments from the local Hessequa Municipality, registered Conservation Bodies and Interested and Affected Parties will be included in the Final HIA report to be submitted to HWC.

7. Conclusion

The specialist study has identified no significant impact to pre-colonial Stone Age archaeological resources that will need to be, mitigated prior to construction activities commencing. Early Stone Age may be, exposed during site clearing operations and in shallow excavations for panel footings and underground cables.

According to Pether (2024), `construction of the SEF and BESS is not anticipated to have an impact on palaeontological heritage resources. Typically, the main excavations are the shallow trenches for connecting cabling, while the solar panel arrays are supported on driven posts or concrete sleepers and the transformers/inverters and BESS are located on concrete slabs.

Therefore, there are no objections to the development proposal.

8. Recommendations:

1. All the proposed site alternatives are acceptable, with no one site being preferred over the other.

2. No archaeological mitigation is required prior to construction excavations commencing.

3. No archaeological monitoring is required during the Construction Phase.

4. In the unlikely that any human remains are uncovered during construction activities; these must be immediately reported to the archaeologist (J Kaplan 082 3210172) who will inform Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist.

5. Although the potential for fossils is very, low (Pether 2024), an occurrence cannot be entirely dismissed. The assessment of fossil potential is of a general nature and the fortuitous preservation of fossils in an otherwise unfavourable context could occur. In case of potential fossils being observed Heritage Western Cape (HWC) must then be informed and provided with information on the nature of the find:

1. A description of the nature of the find.
2. Detailed images of the finds (with scale included).
3. Position of the find and depth.
4. Digital images of the context. *i.e*. the excavation (with scales).

The HWC Fossil Finds Procedure and recording form is available from:

https://www.hwc.org.za/sites/default/files/3_11%20Protocol%20Fossil%20Finds%20Final%20June%202016.pdf

9. Author notes

Kaplan, J. 2024. Heritage Impact Assessment, proposed near Riversdale, Western Cape. Report prepared for Sharples Environmental Services.

Pether, J. 2024. Brief Palaeontological Impact Assessment, Proposed Solar PV Energy Facility & Battery Energy Storage System, Re of Erf 2018 Riversdale, Hessequa Municipality, Western Cape

Table of Contents

1. INTRODUCTION

ACRM was, appointed by Sharples Environmental Services (SES) on behalf of Hessequa Local Municipality to conduct a Heritage Impact Assessment (HIA) for the proposed development of a 10 MW PV Solar Energy Plant and Battery Energy Storage System (BESS on Re Erf 2018 on the outskirts of Riversdale in the Overberg Region of the Western Cape (Figure 1).

Sharples Environmental Services cc is the appointed independent Environmental Assessment Practitioner (EAP) responsible for facilitating environmental authorisation for the project.

An Environmental Basic Assessment (BA) process will be followed in the application.

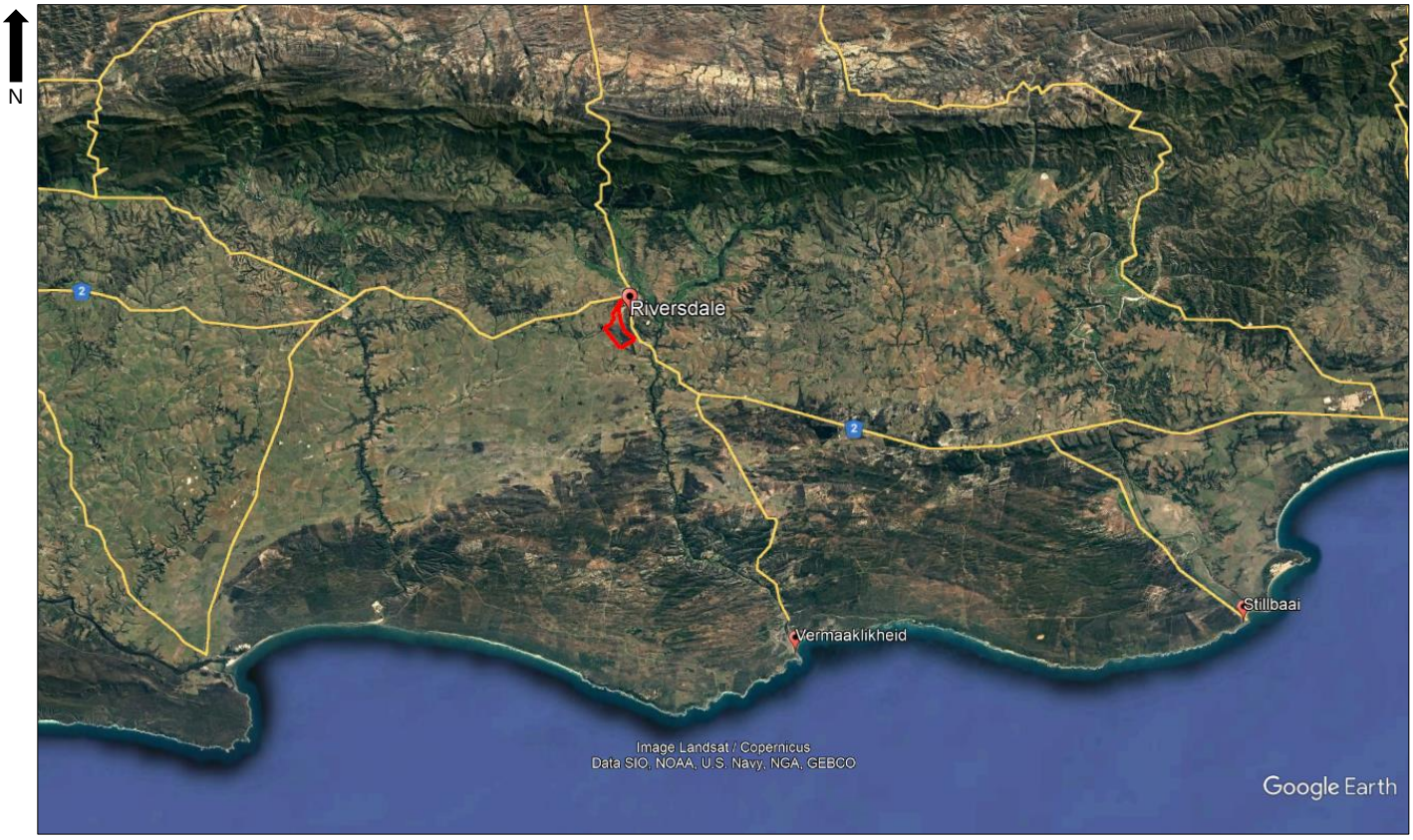

Figure 1. Google aerial satellite map indicating the location of the study site in Riversdale (regional context)

2. THE DEVELOPMENT PROPOSAL

The proposal entails the development of a 10 Mega Watt (MW) PV Solar Energy Plant and Battery Energy Storage System (BESS) on Re Erf 2108 in the small town of Riversdale, in the Overberg region of the Western Cape.

The proposed development will be conducted over three Phases, over an estimated three-year period. The applicant in the project is the Hessequa Local Municipality.

The preferred development site (about 18ha in extent) within Re Erf 2108 is in the south located directly opposite the Eskom Riversdale Substation (Figure 2). Seven proposed site alternatives have also been identified.

A possible grid connection across the Werner Frehse Local Authority Nature Reserve, to the town of Riversdale, has been suggested.

The following infrastructure components are required for the project.

• Solar Photovoltaic (PV) Arrays

• Battery Energy Storage System (BESS): preferably lithium ion or lithium phosphate or vanadium flow batteries.

• Inverters and Power Electronics

• Grid connection to the electrical grid at the Riversdale municipal substation.

A Site Layout Plan is illustrated in Figure 3.

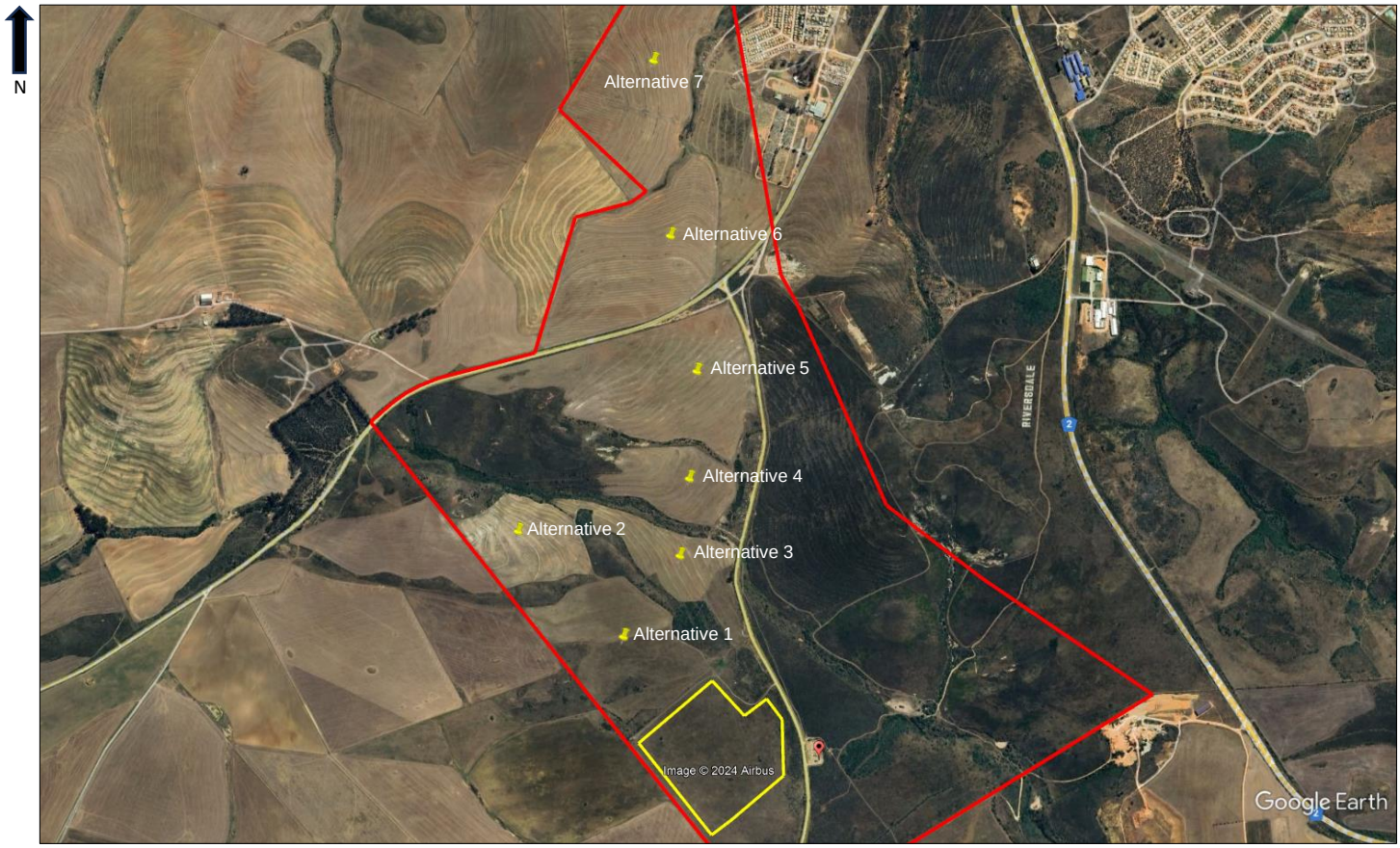

Figure 2. Google Earth Satellite map of the proposed development site (red polygon). The yellow polygon alongside the Eskom Riversdale Substation is the preferred alternative. The yellow pins are the proposed site alternatives.

Figure 3. Proposed layout of the Riversdale 10MW Solar PV facility with Battery Energy Storage System

3. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA No. 25 of 1999) protects archaeological and palaeontological sites and materials, as well as graves/cemeteries, battlefield sites and buildings, structures and features over 60 years old. It is an offence to destroy, damage, excavate, alter of remove from its original place, or collect, any archaeological, palaeontological and historical material or object, without a permit issued by the SAHRA or applicable Provincial Heritage Resources Agency, *viz*. Heritage Western Cape (HWC).

Notification of HWC is required for proposed developments exceeding certain dimensions (Sect. 38), upon which they will decide whether or not the development must be assessed for heritage impacts (an HIA) that may include an assessment of archaeological (a AIA) or palaeontological heritage (a PIA).

4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The proposed site is located about 4kms from Riversdale, where the site is approached via the turnoff from the N2 to Vermaaklikheid/Heidelberg Road (Figures 4-13). The Eskom Riversdale substation is conveniently located on the gravel road to Stillbaai, off Heidelberg Road, directly opposite the preferred development site. The entire site has been historically transformed by agriculture. Most of the site is under dryland wheat, but a portion in the east is given over to grazing land. The wheatfields are heavily terraced and have been ploughed and

ripped over many years. Apart from the grazing lands alongside the Riversdale substation which are fairly level (ideal for the placement of solar arrays), the landholdings are quite steep sided and undulating, with large patches of natural veld intersected by non-perennial streams. There are no significant landscape features such as kopjes or rocky outcrops, or any patches of surface bedrock. Numerous piles of stone occur on the edges of the fields, where surface stone has been collected from the surrounding areas.

Figure 4. View of the proposed development site facing west

Figure 5. The preferred site alternative alongside the Riversdale substation. View facing northeast

Figure 6. Proposed Site Alternative 1. View facing northeast.

Figure 7. Proposed Site Alternative 2. View facing east.

Figure 8. Proposed Site Alternative 3. View facing northwest.

Figure 9. Proposed Site Alternative 4. View facing west.

Figure 10. Proposed Site Alternative 5. View facing east.

Figure 11. Proposed Site Alternative 6. View facing northwest. The road to Vermaaklikheid is on the crest of the hill. The Riversdale Cemetery is to the left of the plate.

Figure 12. Proposed Site Alternative 7. View facing south.

Figure 13. Werner Frehse Local Authority Nature Reserve. View facing south. Arrow indicates Riversdale substation.

5. STUDY APPROACH

5.1 Method

The overall purpose of the study is to assess the sensitivity of Stone Age archaeological and palaeontological resources on the proposed development site, to determine the potential impacts of a development on such resources, and to avoid and/or minimise such impacts by means of management and/or mitigation measures.

A field assessment was conducted by ACRM on the 22nd and 23rd January 2024.

A desktop study was also carried out to assess the heritage context surrounding the proposed development site.

5.2 Constraints and limitations

There were no constraints and limitations associated with the study.

Access to the proposed study site was easy and mobility was unrestricted.

5.3 Identification of potential risks

Early Stone Age tools will likely be exposed during site clearing operations and in shallow excavations for panel footings and underground cables, but the anticipated impact on important Stone Age archaeological resources is, rated as being Low.

5.4. Archaeological context

A search of the South African Heritage Information System (SAHRIS) has shown that no CRM studies have been conducted in Riversdale, and the surrounding area. The Overberg is strongly characterised by agriculture and almost all arable available land in the area has been cultivated (mostly dryland wheat). The proposed PV Solar Energy Plant and BESS will occur within this agricultural landscape, where little is known about the Stone Age archaeological heritage. Early Stone Age (ESA) artefacts are, however, known to occur quite widely in the rural agricultural landscape of the Southern Cape. ESA material would, for example, be found on open terraces, in agricultural land and fields and among alluvial gravels, where such observations have been made in the Riversdale and Heidelberg areas (Webley & Orton 2009). ESA material also occurs prolifically in the agricultural landscape, around Swellendam (Kaplan 2018, 2015, 2010a, b, 2008, 2007, 2006, 2002), and it can be assumed that their presence is replicated across the Overberg, including Riversdale.

6. RESULTS

6.1 Archaeology

A walk down survey of the proposed development site was conducted by ACRM on the 22nd and 23rd January 2024, in which the following observations were made.

Trackpaths and waypoints of archaeological finds are presented in Figures 14-17.

A spreadsheet of waypoints and a description of the archaeological finds is presented in Table 1.

A low density, ephemeral scatter of Early Stone Age (ESA) resources was recorded across the proposed development site, which are spread very thinly and unevenly over the surrounding agricultural landscape. All the remains occur in a highly transformed context (old agricultural land). Patches of round quartzite cobbles also occur on the surface in the grazing lands across the eastern portion of the site. Ony six lithics (five chunk & a small flake) were recorded in the footprint area of the preferred site alongside the Eskom Riversdale substation.

More than 95% of the pieces recorded comprised chunks, and broken and flaked (cortex) chunks, while a very small number of modified and unmodified flakes, and cores were encountered (Figures 18-28). Only four bifacially flaked tools, including a broken, snapped and incomplete handaxe were recorded during the field assessment. No Large Cutting Tools (LCTs), cleavers or choppers were recorded. All the tools are made on locally available quartzite, struck from rounded colluvial cobbles, while many of the pieces are also burnished/weathered. Some of the pieces across the western portion of the site (dryland wheat) have been brought up to the surface because of ploughing activities, which is a common occurrence confirmed by the literature survey. Several modified pieces (mostly chunks) were also found among the many piles of stone removed from the surrounding fields. Only two Middle Stone Age flakes were found. No Later Stone Age resources or any organic remains such as pottery, or ostrich eggshell were found. No evidence of any human settlement or occupation was noted, and the resources recorded most likely represent discarded flakes and flake debris. Patches of surface cobbles in grazing lands across the eastern portion of the farm were also likely targeted as sources of raw materials for making tools.

6.1.2 Grading

The highly disturbed context in which they were found, and the very small number of cores and retouched tools recorded means that the remains have been graded as Not Conservation Worthy (NCW)/low local archaeological significance.

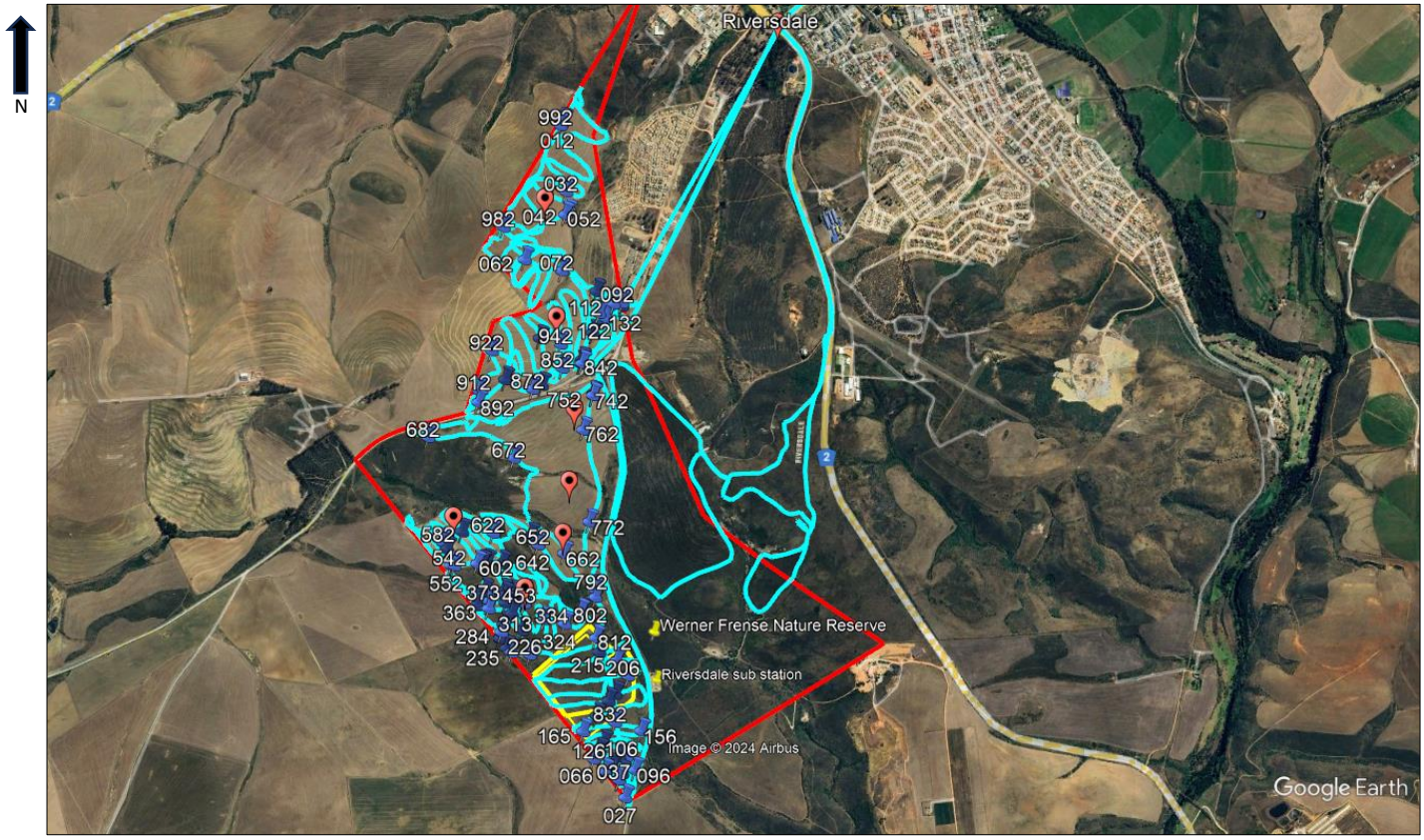

Figure 14. Trackpaths (in blue) across the entire proposed development site.

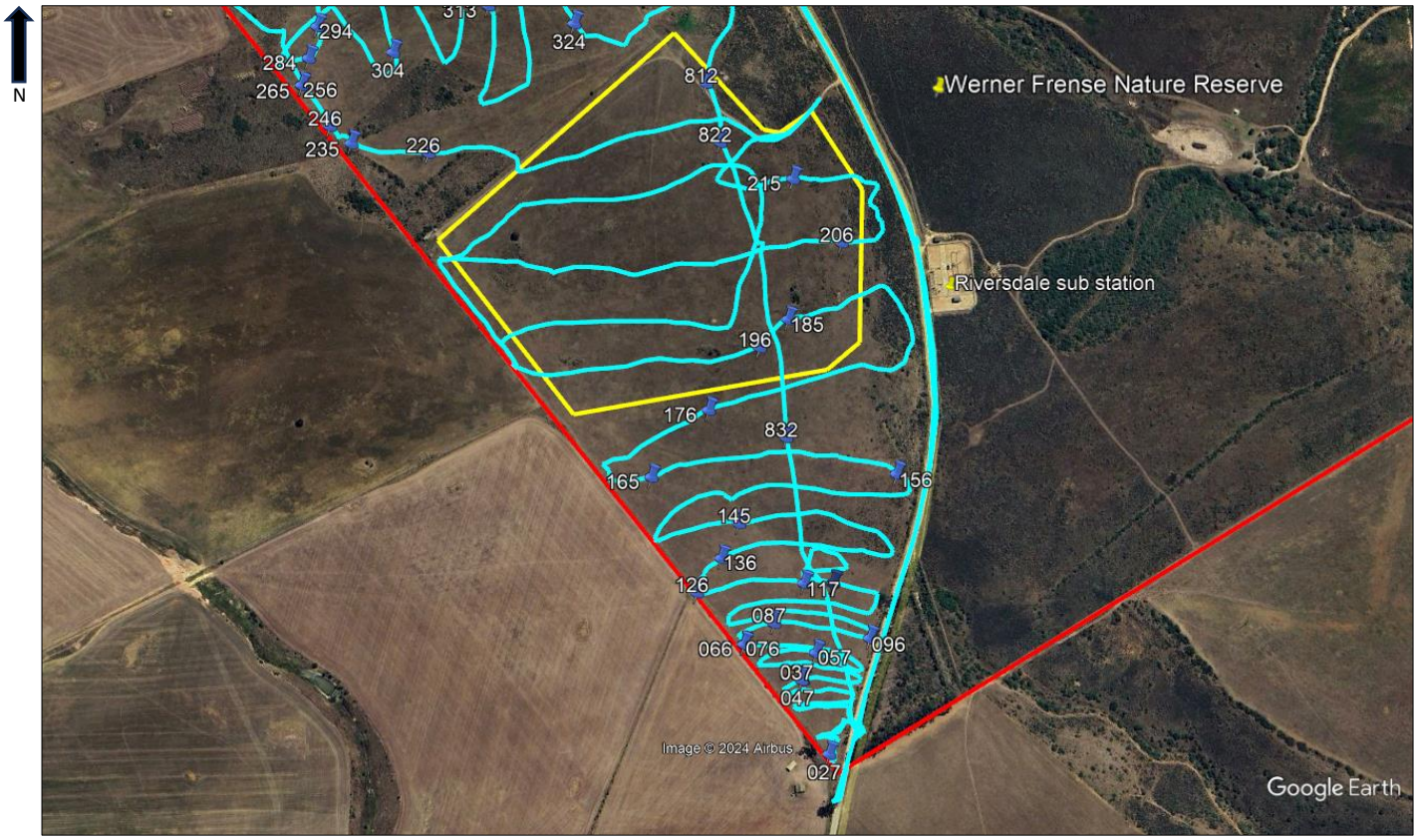

Figure 15. Close up of track path (in blue) & waypoints of archaeological finds. The yellow polygon alongside the Eskom Riversdale substation is the preferred site.

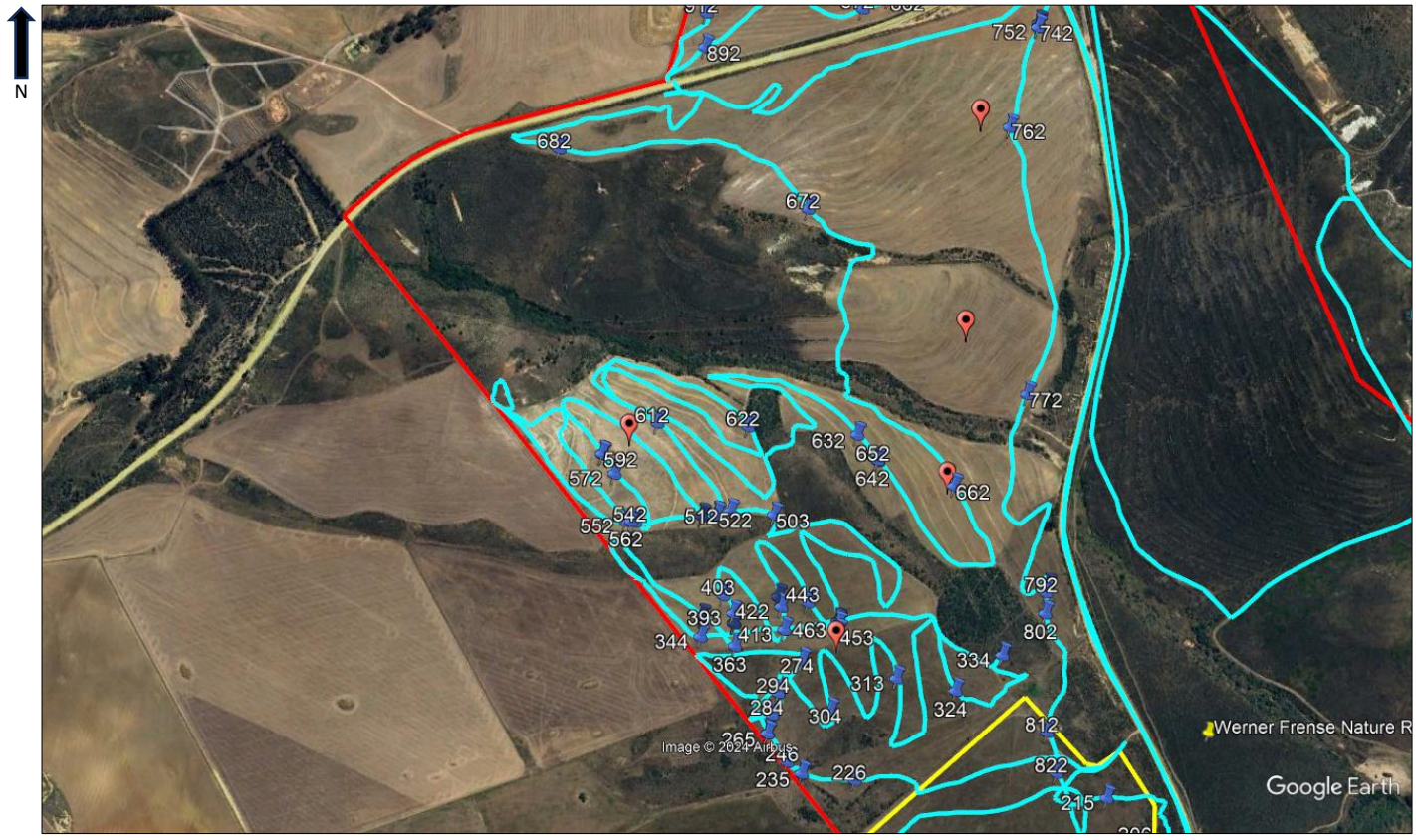

Figure 16. Close up of track path (in blue) & waypoints of archaeological finds

Figure 17. Close up of track path (in blue) & waypoints of archaeological finds north of

Points	Name of Farm	Lat/Long	Description of finds	Grading	Mitigation
	Rem Erf 2018 Riversdale		All in quartzite	NCW = Not Conservation Worthy	
027		S34° 07.911' E21° 14.522'	Broken chunk/cobble	NCW	None required
037		S34° 07.858' E21° 14.498'	Chunk	NCW	None required
047		S34° 07.858' E21° 14.499'	Chunk	NCW	None required
057		S34° 07.839' E21° 14.510'	Flaked/broken chunk	NCW	None required
066		S34° 07.833' E21° 14.449'	Chunk	NCW	None required
076		S34° 07.833' E21° 14.448'	Core	NCW	None required
087		S34° 07.818' E21° 14.474'	Chunk/minimal core	NCW	None required
096		S34° 07.829' E21° 14.557'	Large, burnished flake	NCW	None required
106		S34° 07.789' E21° 14.525'	Chunk	NCW	None required
117		S34° 07.790' E21° 14.500'	Chunk	NCW	None required
126		S34° 07.796' E21° 14.408'	Burnished/weathered flake	NCW	None required
136		S34° 07.772' E21° 14.429'	Minimal core	NCW	None required
145		S34° 07.747' E21° 14.444'	Chunk	NCW	None required
156		S34° 07.712' E21° 14.580'	Round core	NCW	None required
165		S34° 07.714' E21° 14.369'	Chunk/minimal core	NCW	None required
176		S34° 07.667' E21° 14.418'	Chunk	NCW	None required
185		S34° 07.602' E21° 14.487'	Chunk	NCW	None required
196		S34° 07.622' E21° 14.462'	Broken chunk	NCW	None required
206		S34° 07.548' E21° 14.532'	Smaller flake	NCW	None required
215		S34° 07.502' E21° 14.491'	Weathered chunk	NCW	None required
226		S34° 07.484' E21° 14.178'	Core	NCW	None required
235		S34° 07.477' E21° 14.112'	Large, round core	NCW	None required
246		S34° 07.465' E21° 14.094'	Chunk	NCW	None required
256		S34° 07.436' E21° 14.069'	Broken chunk	NCW	None required
265		S34° 07.436' E21° 14.069'	Chunk	NCW	None required

274		S34° 07.361' E21° 14.112'	Chunk	NCW	None required
284		S34° 07.417' E21° 14.075'	Flake/blade	NCW	None required
294		S34° 07.394' E21° 14.083'	Weathered chunk	NCW	None required
304		S34° 07.394' E21° 14.083'	Round, weathered core	NCW	None required
313		S34° 07.379' E21° 14.230'	Chunk	NCW	None required
324		S34° 07.392' E21° 14.303'	Large side struck flake	NCW	None required
334		S34° 07.356' E21° 14.361'	Chunk	NCW	None required
344		S34° 07.337' E21° 13.986'	Broken chunk	NCW	None required
353		S34° 07.316' E21° 13.988'	Weathered core	NCW	None required
363		S34° 07.346' E21° 14.029'	Core	NCW	None required
373		S34° 07.323' E21° 14.028'	Chunk	NCW	None required
383		S34° 07.322' E21° 14.028'	Broken chunk	NCW	None required
393		S34° 07.312' E21° 14.027'	Flake	NCW	None required
403		S34° 07.294' E21° 14.014'	Smaller flake	NCW	None required
413		S34° 07.329' E21° 14.090'	Round core	NCW	None required
422		S34° 07.306' E21° 14.086'	Core	NCW	None required
433		S34° 07.295' E21° 14.082'	Flake	NCW	None required
443		S34° 07.301' E21° 14.120'	Chunk	NCW	None required
453		S34° 07.331' E21° 14.158'	Flaked chunk	NCW	None required
463		S34° 07.324' E21° 14.157'	Broken cortex chunk	NCW	None required
473		S34° 07.323' E21° 14.157'	Cortex chunk	NCW	None required
483		S34° 07.321' E21° 14.157'	Core	NCW	None required
493		S34° 07.321' E21° 14.157'	Partially retouched flake	NCW	None required
503		S34° 07.211' E21° 14.077'	Chunk	NCW	None required
512		S34° 07.208' E21° 14.023'	Core	NCW	None required
522		S34° 07.211' E21° 14.007'	Round/broken chunk	NCW	None required
532		S34° 07.211' E21° 14.006'	Biface/? incomplete handaxe	NCW	None required
542		S34° 07.218' E21° 13.905'	Large flake	NCW	None required
552		S34° 07.218' E21° 13.893'	Chunk	NCW	None required
562		S34° 07.218' E21° 13.900'	core	NCW	None required
572		S34° 07.169' E21° 13.880'	Smaller MSA flake	NCW	None required
582		S34° 07.149' E21° 13.864'	Pointed flake	NCW	None required
592		S34° 07.148' E21° 13.864'	Chunk	NCW	None required
602		S34° 07.212' E21° 13.988'	Broken flaked chunk	NCW	None required
612		S34° 07.116' E21° 13.933'	Retouched piece/biface	NCW	None required
622		S34° 07.120' E21° 14.045'	Chunk	NCW	None required
632		S34° 07.129' E21° 14.181'	Round core	NCW	None required
642		S34° 07.155' E21° 14.206'	Flaked chunk	NCW	None required
652		S34° 07.156' E21° 14.207'	Core	NCW	None required
662		S34° 07.182' E21° 14.301'	Biface/broken handaxe	NCW	None required
672		S34° 06.897' E21° 14.120'	Chunk	NCW	None required
682		S34° 06.835' E21° 13.811'	Flaked chunk	NCW	None required
732		S34° 06.706' E21° 14.406'	Cortex chunk/flaked	NCW	None required
742		S34° 06.710' E21° 14.405'	Round core	NCW	None required
752		S34° 06.710' E21° 14.406'	Large flake	NCW	None required
762		S34° 06.813' E21° 14.370'	Chunk	NCW	None required
772		S34° 07.087' E21° 14.392'	Chunk	NCW	None required
782		S34° 07.284' E21° 14.417'	Round core	NCW	None required
792		S34° 07.291' E21° 14.415'	Chunk	NCW	None required
802		S34° 07.313' E21° 14.414'	Chunk	NCW	None required
812		S34° 07.434' E21° 14.416'	Chunk	NCW	None required
822		S34° 07.476' E21° 14.428'	Flaked chunk	NCW	None required
832		S34° 07.686' E21° 14.485'	Chunk	NCW	None required
842		S34° 06.614' E21° 14.367'	MSA flake	NCW	None required

852		S34° 06.628' E21° 14.296'	Chunk	NCW	None required
862		S34° 06.679' E21° 14.220'	Chunk	NCW	None required
872		S34° 06.691' E21° 14.188'	Large, pointed flake	NCW	None required
882		S34° 06.663' E21° 14.089'	Broken flake	NCW	None required
892		S34° 06.731' E21° 13.992'	Chunk	NCW	None required
912		S34° 06.695' E21° 13.994'	Biface/? handaxe	NCW	None required
922		S34° 06.576' E21° 14.040'	Chunk	NCW	None required
932		S34° 06.539' E21° 14.214'	Incomplete handaxe	NCW	None required
942		S34° 06.556' E21° 14.289'	Chunk	NCW	None required
952		S34° 06.614' E21° 14.360'	Chunk	NCW	None required
962		S34° 06.604' E21° 14.365'	Broken chunk	NCW	None required
982		S34° 06.207' E21° 14.083'	Chunk	NCW	None required
992		S34° 05.903' E21° 14.289'	core	NCW	None required
012		S34° 05.896' E21° 14.294'	Flake	NCW	None required
022		S34° 05.889' E21° 14.299'	Biface	NCW	None required
032		S34° 06.101' E21° 14.309'	Chunk	NCW	None required
042		S34° 06.164' E21° 14.316'	Chunk	NCW	None required
052		S34° 06.170' E21° 14.306'	Chunk	NCW	None required
062		S34° 06.304' E21° 14.159'	Broken flake	NCW	None required
072		S34° 06.338' E21° 14.293'	Chunk	NCW	None required
082		S34° 06.399' E21° 14.419'	Core	NCW	None required
092		S34° 06.433' E21° 14.511'	Chunk	NCW	None required
103		S34° 06.442' E21° 14.511'	Flake	NCW	None required
112		S34° 06.436' E21° 14.481'	MSA flake	NCW	None required
122		S34° 06.465' E21° 14.427'	Chunk	NCW	None required
132		S34° 06.479' E21° 14.453'	Chunk	NCW	None required
142		S34° 06.523' E21° 14.405'	Chunk	NCW	None required

Table 1. Waypoints and description of archaeological finds

Figure 18. Collection of ESA tools, including chunks & flakes Ruler scale in cm

Figure 19. Collection of ESA tools. Ruler scale in cm

Figure 20. Context in which some of the remains were found.

Figure 21. Collection of ESA tools. Ruler scale in cm

Figure 22. Collection of ESA tools. Ruler scale in cm

Figure 23. Collection of ESA tools, including cores, flakes & bifaces. Ruler scale in cm

Figure 24. Collection of ESA flakes & cores. Ruler scale in cm

Figure 25. Collection of ESA and MSA tools. Ruler scale in cm

Figure 26. Collection of ESA tools, including flakes and bifaces. Ruler scale in cm.

Figure 27. Collection of ESA tools. Ruler scale in cm

Figure 28. Collection of ESA tools, including cores and bifaces. Ruler scale in cm

6.2 Palaeontology

According to Pether (2024), the upper Bokkeveld Group bedrock occupies the southern portion of Re Erf 2018 (Figure 29) and is comprised of marine shelf mudrock shales and thin sandstones of mid-Devonian age (~385 Ma). The northern part of the site is underlain by the succeeding lowermost formation of the Witteberg Group, viz. the Wagen Drift Formation comprised of shallow-marine sandstones with interbedded mudrocks of late Devonian age (~375 Ma). The old "High Coastal Platform" is geomorphologically represented by the higher ground occupied by the Grahamstown Formation silcretes (Figure 29) and by the "High-level terrace gravels".

The Bokkeveld Group `in general' is of high palaeontological sensitivity (Figure 30) due to its unique fossil content but in the Southern Cape coastal region it is tectonized and weathered to the extent that its constituent formations cannot be differentiated. Similarly, the fossil content of the Wagen Drift Fm. has also been compromised. The Grahamstown Fm. silcrete rocks are very poorly fossiliferous. The residual gravels on the downwasted Grahamstown Fm and the High-level terrace remnant palaeosurfaces have been subjected to a long history of pedogenesis, fossils are very unlikely to be preserved and fossil finds are not reported (Pether 2024).

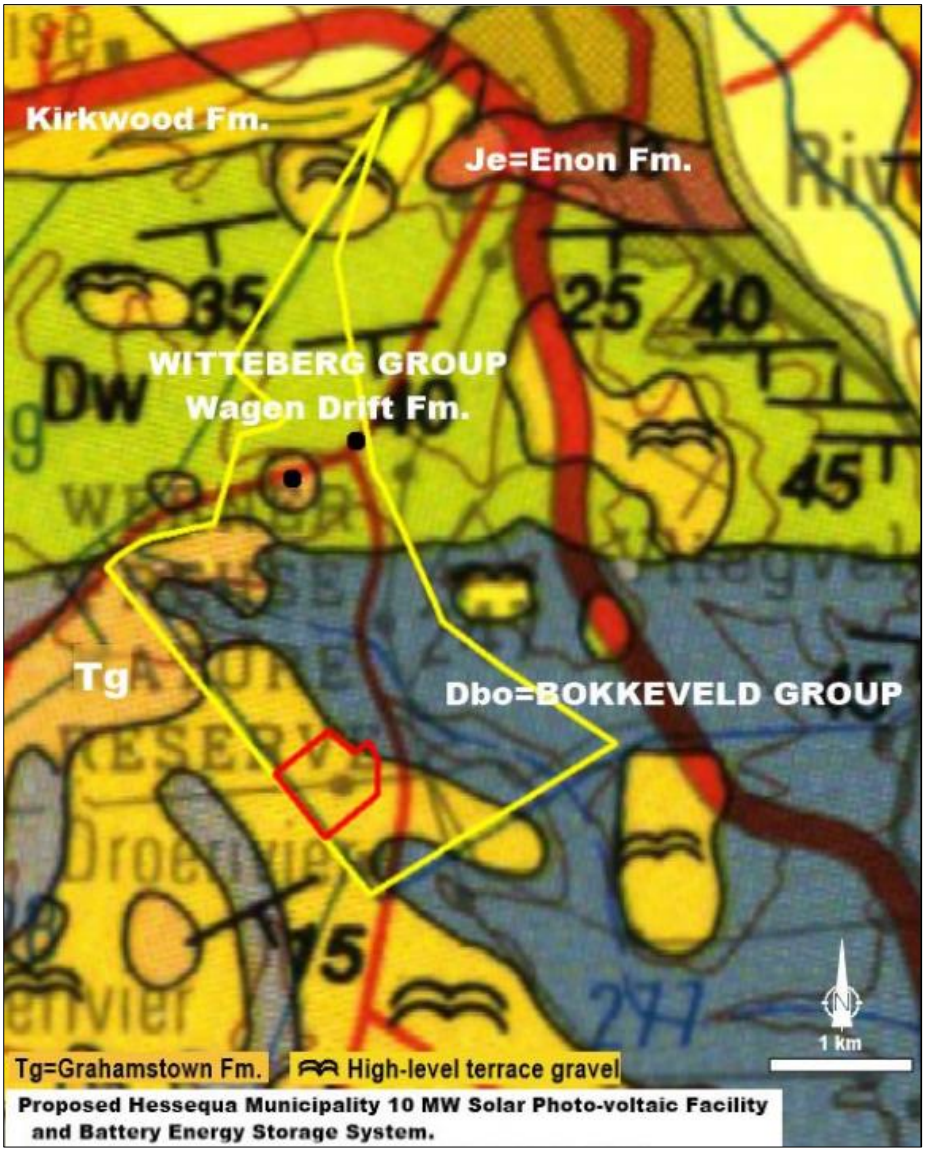

Figure 29. 1:250k Geological Sheet 3420 Riversdale – CGS (Pether 2024)

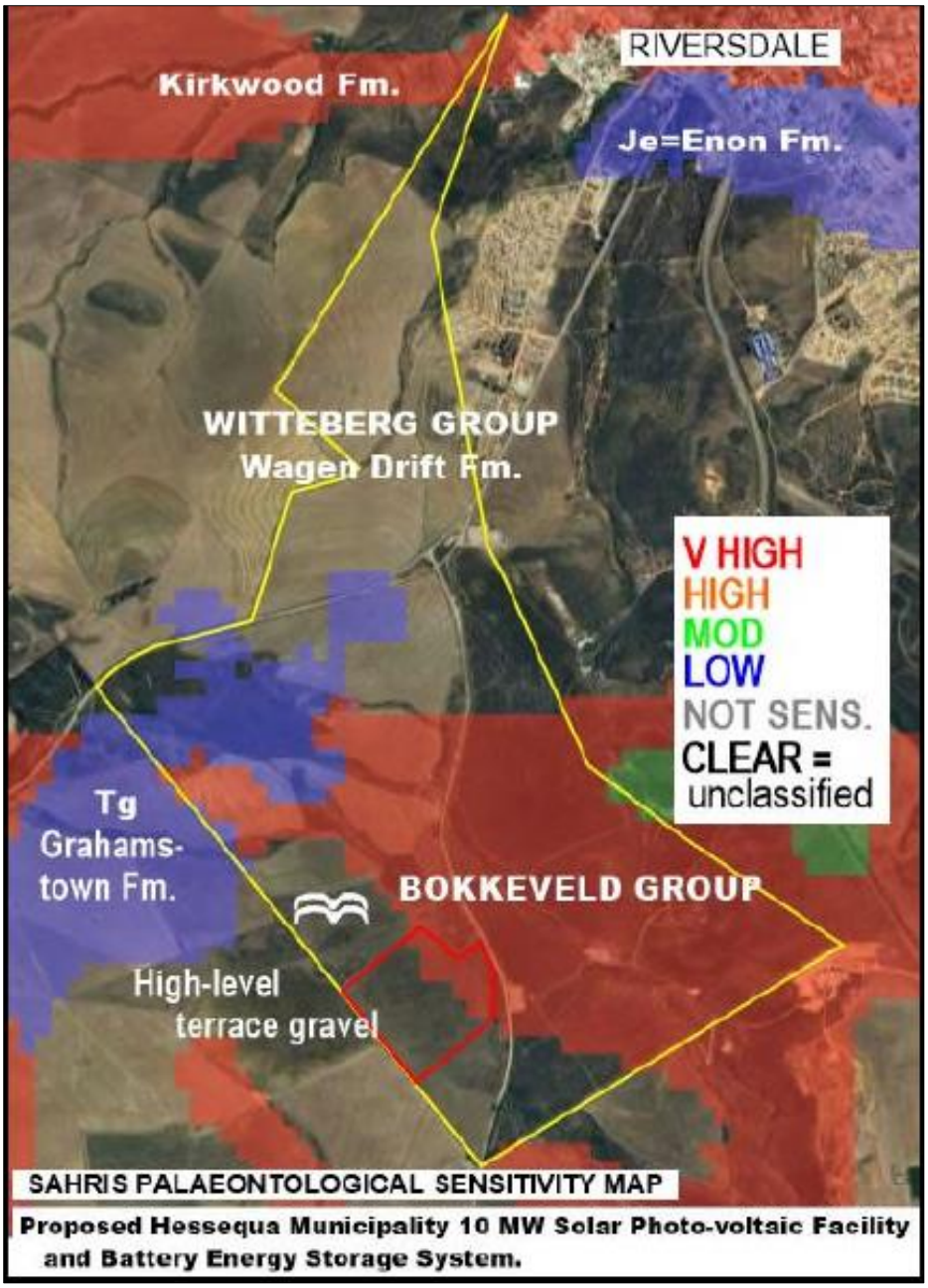

Figure 30. Palaeontological Sensitivity Map. Proposed Hessequa 10MW Solar PV Facility & Battery Energy Storage System (Pether 2024)

6.3 Graves

No graves or typical grave features were, encountered during the field assessment.

6.4 Built Environment

There are no buildings, dwellings, structures, or features within the proposed site alternatives. Therefore, no direct impacts to the built environment will occur.

6.5 Cultural landscape

A rural agricultural landscape dominates the Cultural Landscape, with formal and informal housing, small scale farming, and the Riversdale Cemetery located alongside Heidelberg Road.

7. COMMENTS

Comments from the local Hessequa Municipality, registered Conservation Bodies and Interested and Affected Parties will be included in the Final HIA report to be submitted to HWC.

8. IMPACT STATEMENT

Indications are that the proposed development of a Photovoltaic Solar Energy Plant and Battery Energy Storage System near Riversdale will not impact on important archaeological and palaeontological heritage resources.

9. CONCLUSION

The specialist study has identified no significant impact to pre-colonial Stone Age archaeological resources that will need to be, mitigated prior to construction activities commencing. Early Stone Age may be, exposed during site clearing operations and in shallow excavations for panel footings and underground cables.

According to Pether (2024), `construction of the SEF and BESS is not anticipated to have an impact on palaeontological heritage resources'. Typically, the main excavations are the shallow trenches for connecting cabling, while the solar panel arrays are supported on driven posts or concrete sleepers and the transformers/inverters and BESS are located on concrete slabs.

10. RECOMMENDATIONS

Regarding a proposed PV Solar Energy Plant and Battery Energy Storage System on Remainder Erf 2018 Riversdale, the following recommendations are, made:

1. All the proposed site alternatives are acceptable, with no one site being preferred over the other.

2. No archaeological mitigation is required prior to construction excavations commencing.

3. No archaeological monitoring is required during the Construction Phase.

4. In the unlikely that any human remains are uncovered during construction activities; these must be immediately reported to the archaeologist (J Kaplan 082 3210172) who will inform Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist.

5. Although the potential for fossils is very, low (Pether 2024), an occurrence cannot be entirely dismissed. The assessment of fossil potential is of a general nature and the fortuitous preservation of fossils in an otherwise unfavourable context could occur. In case of potential fossils being observed Heritage Western Cape (HWC) must then be informed and provided with information on the nature of the find:

1. A description of the nature of the find.
2. Detailed images of the finds (with scale included).
3. Position of the find and depth.
4. Digital images of the context. *i.e*. the excavation (with scales).

The HWC Fossil Finds Procedure and recording form is available from:

https://www.hwc.org.za/sites/default/files/3_11%20Protocol%20Fossil%20Finds%20Final%20June%202016.pdf

11. REFERENCES

Kaplan, J. 2018. Heritage Impact Assessment, Proposed Sand and Gravel Surface Mine Farm Kluitjieskraal No 710, Swellendam Western Cape. Report prepared for Ludgar Consulting. ACRM, Cape Town

Kaplan, J. 2015. Amendment to report, Archaeological Impact Assessment, Biotherm - Excelsior Wind Energy Farm, near Swellendam, Western Cape, Report prepared for Savanah Environmental (Pty) Ltd

Kaplan, J. 2010a. Archaeological Impact Assessment, of a proposed wind energy facility on Portions 2 and 5 of the Farm Kluitjieskraal 256 and Portions 0 and 4 of the Farm Uitvlucht 362, Swellendam, Western Cape. Report prepared for the CSIR. ACRM, Cape Town

Kaplan, J. 2010b. Archaeological Impact Assessment proposed enlargement of the Oudepont storage dam on Farm 620 Swellendam. Report prepared for EnviroAfrica. ACRM Cape Town

Kaplan, J. 2008. Archaeological Impact Assessment proposed construction of new park management offices, new ablution facilities, and new access road. Bontebok National Park. Report prepared for South African National Parks. ACRM Cape Town

Kaplan, J. 2007. Archaeological Investigation proposed borrow pit development for the regravelling of trunk, main and divisional road sections in the Overberg District, Western Cape. Report prepared for CCA Environmental Consultants. ACRM Cape Town

Kaplan, J. 2006. Phase 1 Archaeological impact assessment proposed extension of Swellendam Cemetery Western Cape Province. Report prepared for DJ Environmental consultants. ACRM Cape Town

Kaplan, J. 2002. Phase 1 Archaeological study a Portion of the remainder of Erf 1, Swellendam. Report prepared for Doug Jeffery Environmental Consultants. ACRM Cape Town

Kaplan, J. 1993. The state of archaeological information in the coastal zone from the mouth of the Orange River to Ponto do Ouro. Report prepared for the Department of Environmental Affairs and Tourism. ACRM, Riebeek West

Pether, J. 2024. Brief Palaeontological Impact Assessment, Proposed Solar PV Energy Facility & Battery Energy Storage System, Re of Erf 2018 Riversdale, Hessequa Municipality, Western Cape

Webley, L. & Orton, J. 2009. An archaeological impact assessment for proposed bentonite mining on the farms Vette Rivier 240 Re, Hooikraal 304 Re & Re Portion 1, Erf 1247 Re Heidelberg and Uitspanskraal 585 Re, Heidelberg Municipality, Western Cape. Unpublished report prepared for Shangoni Management Services. University of Cape Town, Archaeology Contracts Office.