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**A PHASE 1 HERITAGE IMPACT ASSESSMENT & REPORT FOR THE
PROPOSED KOLOMELA AIRFIELD DEVELOPMENT
ON THE FARM GRUISPAN 538
SOUTH OF POSTMASBURG IN THE NORTHERN CAPE PROVINCE**

For:

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REPORT: **APAC022/95**

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SUMMARY

APelser Archaeological Consulting (APAC) was appointed by EXM Environmental Advisory (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed development of an airfield on the farm Gruispan 538. The study & proposed development area is located south of the town of Postmasburg in the Northern Cape Province.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, while a number of sites, features and material of some cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study area and proposed development boundaries during the October 2022 field assessment. This report discusses the results of both the background research and physical assessment and provides recommendations on the way forward.

From a Cultural Heritage point of view it can be concluded that the proposed airfield development should be allowed to continue taking into consideration the recommended mitigation measures provided in this report.

CONTENTS

1. INTRODUCTION	5
2. TERMS OF REFERENCE.....	5
3. LEGISLATIVE REQUIREMENTS	5
4. METHODOLOGY.....	9
5. DESCRIPTION OF THE AREA	9
6. DISCUSSION	11
7. CONCLUSIONS AND RECOMMENDATIONS	34
8. REFERENCES.....	35
APPENDIX A: DEFINITION OF TERMS:.....	37
APPENDIX B: DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE	38
APPENDIX C: SIGNIFICANCE AND FIELD RATING:	39
APPENDIX D: PROTECTION OF HERITAGE RESOURCES:	40
APPENDIX E: HERITAGE IMPACT ASSESSMENT PHASES	41

1. INTRODUCTION

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Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, while a number of sites, features and material of some cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study area and proposed development boundaries during the October 2022 field assessment.

The client indicated the location and boundaries of the study & development area and the assessment focused on this. The report was drafted and developed in line with Appendix 3 of the EIA Regulations. The overall aim of the study was to determine if there are any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance in the area that had to be assessed and if the proposed development will impact on these resources negatively. Mitigation measures to negate these impacts would then be recommended in the report.

2. TERMS OF REFERENCE

The Terms of Reference for the study was to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
3. Describe the potential impact of the proposed development on these cultural remains, according to a standard set of conventions;
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources; and
5. Review applicable legislative requirements.

3. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural resources are dealt with mainly in two Acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

3.1. The National Heritage Resources Act

According to the Act the following is protected as cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and paleontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. A HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m² or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000m²
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

Structures

Section 34(1) of the Act states that no person may demolish any structure or part thereof that is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology and meteorites

Section 35(4) of the Act deals with archaeology, palaeontology and meteorites. The Act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial)

- a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;
- c. trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or
- d. bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Human remains

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b. destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations (Ordinance no. 12 of 1980)** (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated to) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

3.2. The National Environmental Management Act (Act 107 of 1998)

This Act states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

The specific requirements that specialist studies and reports must adhere to are contained in Appendix 6 of the EIA Regulations.

4. METHODOLOGY

4.1. Survey of literature

A detailed review of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized, including i.e. previous Heritage Assessment and government databases, are indicated in the bibliography.

4.2. Field survey

The field assessment section of the study was conducted on the 29th of September 2022 according to generally accepted HIA practices contained in the SAHRA 2007 Minimum Standards related to the Archaeological & Paleontological Components of Impact Assessments & Reports. The assessment aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detailed photographs are also taken where needed.

4.3. Documentation

All sites, objects, features and structures identified are documented according to a general set of minimum standards. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality. The significance of each site is assessed and documented.

5. DESCRIPTION OF THE AREA

The study & proposed development area is located approximately 15km south of Postmasburg in the Northern Cape Province, and on the farm Gruispan 538. The R325 road runs partially to and through the study area, with sections of the study area located on opposite sides of this road.

The topography of the study & proposed development area is for the most part relatively flat and open, although there are some low rocky outcrops in places. During the field assessment the vegetation (tree/shrubs/bush and grass cover) was very dense in some sections, hampering visibility on the ground. Some sections were more open as a result of erosion, with two relatively large quarries found in the study area as well. Large-scale developments (such as urban residential) has not occurred in the area in the recent past, with agriculture (mostly livestock farming) being the dominant activity in historical and recent time. Other potential impacts include a number of telephone lines and servitudes, while currently the area is also being newly fenced. This activity, as well as the resultant clearance around the fence area and access roads has had some impact on the natural landscape.

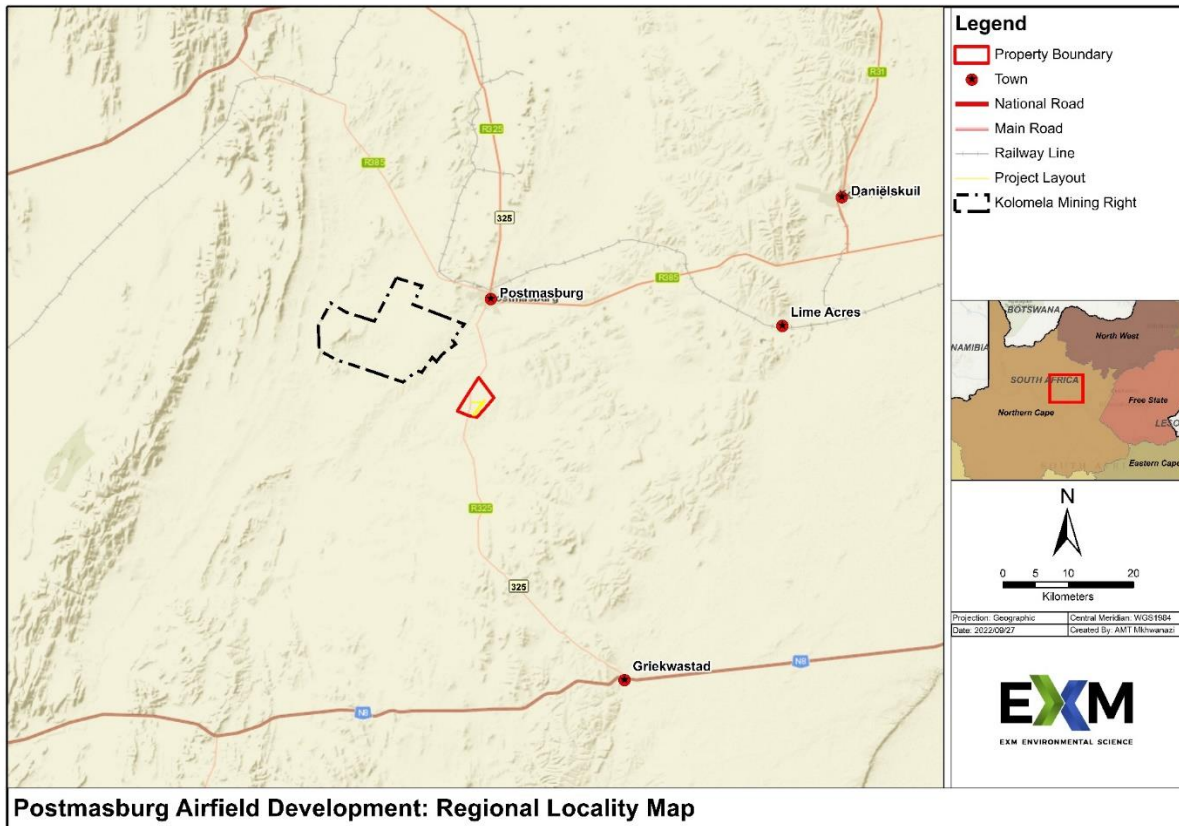


Figure 1: General location of study & proposed development area footprint indicated by the red polygon (EXM Environmental).

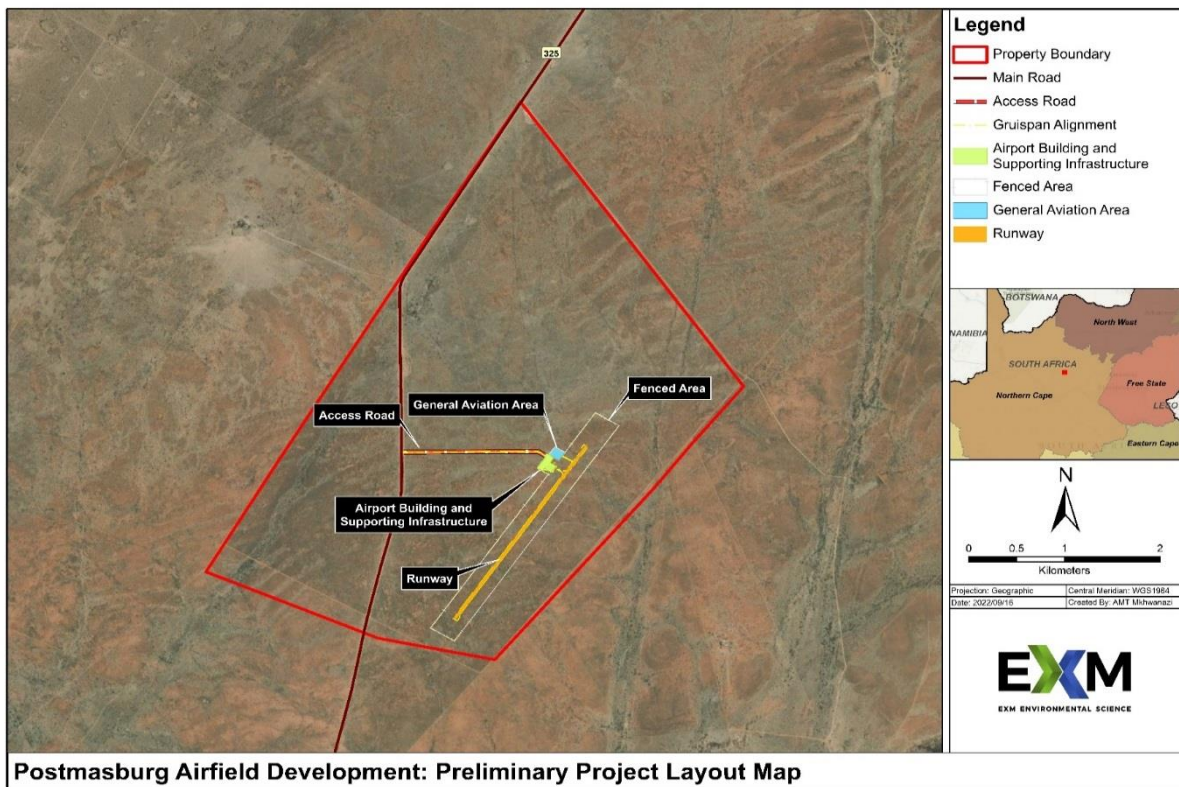


Figure 2: Closer view of study & development area footprint (EXM Environmental).

6. RESULTS AND DISCUSSION

6.1 Literature Review

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided basically into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

- Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago
- Middle Stone Age (MSA) less than 300 000 – 20 000 years ago
- Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125).

The archaeology of the Northern Cape is rich and varied, covering long spans of human history. The Karoo is particularly bountiful. Some areas are richer than others, and not all sites are equally significant. The significance of sites encountered in the study area may be assessed against previous research in the region and subcontinent. The region's remoteness from research institutions accounts for a relative lack of archaeological research in the area. The area has probably been relatively marginal to human settlement for most of its history, yet it is in fact exceptionally rich in terms of Stone Age sites and rock art, as a number of studies have shown (Morris 2006).

Stone Age sites are known to occur in the larger geographical area, including the well-known Wonderwerk Cave in the Kuruman Hills, Tsantsabane, an ancient specularite working on the eastern side of Postmasburg, Doornfontein, another specularite working north of Beeshoek and a cluster of important Stone Age sites near Kathu (including the Kathu Pan sites). Additional specularite workings with associated Ceramic Later Stone Age material and older Fauresmith sites (early Middle Stone Age) are known from Lylyfeld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount Huxley to the north. Rock engraving sites are known from Beeshoek and Bruce (Morris 2005: 3). A large number of Stone Age sites have been identified during previous studies in the Kolomela Mine Area not far from the study area (Morris 2005, van der Ryst 2011, Miller 2011, Küsel 2011, PGS: 2015 and 2021). During a previous HIA for the Kolomela Mine Airport on the Remaining Extent of the Farm Kalkfontein 474 not far from the current study area a number of open-air Stone Age sites were also recorded (PGS 2020).

As discussed in the subsequent section, some Stone Age sites and artifacts (open-air surface scatters) were identified and recorded in the study & proposed development footprint area during the October 2022 assessment.

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts. In South Africa it can be divided in two separate phases (Bergh

1999: 96-98), namely:

- Early Iron Age (EIA) 200 – 1000 A.D
- Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

- Early Iron Age (EIA) 250 – 900 A.D.
- Middle Iron Age (MIA) 900 – 1300 A.D.
- Late Iron Age (LIA) 1300 – 1840 A.D.

The expansion of early farmers, who, among other things, cultivated crops, raised livestock, made ceramic containers (pots), mined ore and smelted metals, occurred in this area between AD 400 and AD 1100 and brought the Early Iron Age (EIA) to South Africa. They settled in semi-permanent villages (De Jong 2010: 35).

While there is some evidence that the EIA continued into the 15th century in the South African Lowveld, on the escarpment it had ended by AD1100. The Highveld became active again from the 15th century onwards due to a gradually warmer and wetter climate. From here communities spread to other parts of the interior. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements, such as the Thlaping capital Dithakong, 40 km north of Kuruman (De Jong 2010: 35-36).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups, the so-called 'first people'. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is sometimes known as the Ceramic Late Stone Age and is represented by the Blinkklipkop specularite mine near Postmasburg and finds at the Kathu Pan (De Jong 2010: 36).

No Iron Age sites, features or objects were found during the recent assessment.

Factors such as population expansion, increasing pressure on natural resources, the emergence of power blocs, attempts to control trade and penetration by Griquas, Korana and white communities from the south-west resulted in a period of instability in Southern Africa that began in the late 18th century and effectively ended with the settlement of white farmers in the interior. This period, known as the difaqane or Mfecane, also affected the Northern Cape Province, although at a relatively late stage compared to the rest of Southern Africa.

Here, the period of instability, beginning in the mid-1820s, was triggered by the incursion of displaced refugees associated with the Tlokwa, Fokeng, Hlakwa and Phuting tribal groups. The difaqane coincided with the penetration of the interior of South Africa by white traders, hunters, explorers and missionaries. The first was P.J. Truter's and William Somerville's journey of 1801, which reached Dithakong at Kuruman. They were followed by Cowan,

Donovan, Burchell and Campbell and resulted in the establishment of a London Mission Society station near Kuruman in 1817 by James Read.

The Great Trek of the Boers from the Cape in 1836 brought large numbers of Voortrekkers up to the borders of large regions known as Bechuanaland and Griqualand West, thereby coming into conflict with many Tswana groups and also the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities became involved and later also the British government. The conflict mainly centered on land claims by various communities. For decades the western border of the Transvaal Boer republic was not fixed. Only through arbitration (the Keate Arbitration), triggered by the discovery of gold at Tati (1866) and diamonds at Hopetown (1867) was part of the western border finally determined in 1871. Ten years later, the Pretoria Convention fixed the entire western border, thereby finally excluding Bechuanaland and Griqualand West from Boer domination (De Jong 2010: 36).

As discussed in the subsequent section, some recent historical sites and features were identified and recorded in the study area in October 2022, including an informal cemetery.

The oldest map obtained from the Chief Surveyor General's database (www.csg.dla.gov.za) is a copy of the original 1877 map of the farm Gruispan 538 (CSG Document 10021564). It shows that the farm was surveyed in 1877, and that at the time it was in the Hay Division of Griqualand-West and was numbered as No.64. A later stamp on the map also indicates that the farm was granted by Title Deed to one Isaac Haai on the 10th of January 1879. No historical sites or features are shown on this map.

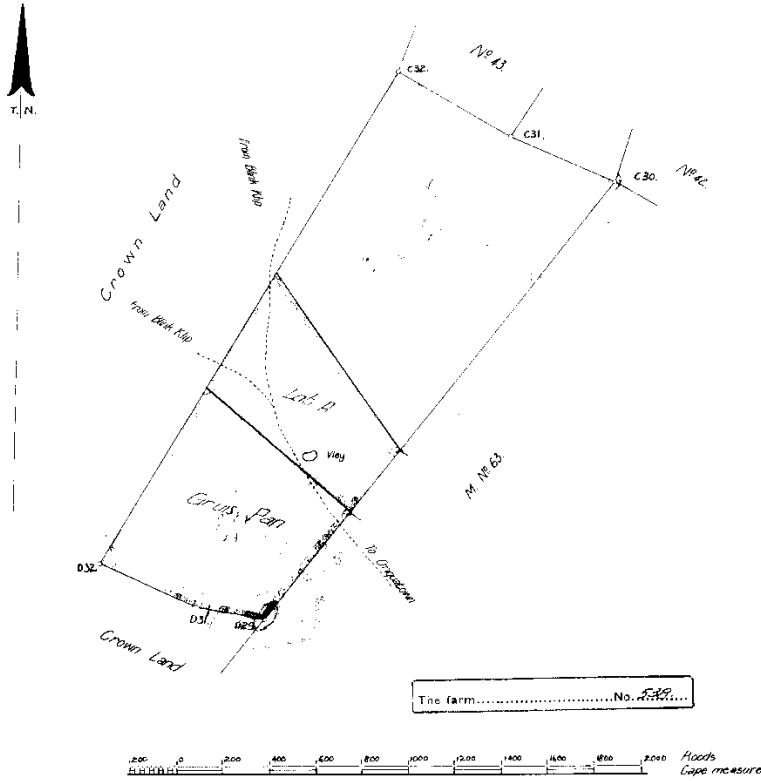
F Dg N° 8 2556-1878

The numerical data of this diagram are sufficiently consistent.

(Sgd) Alex C. Baihe

Examiner:

SIDES		ANGLES		
Cape Roads			°	'
C32 - C31	568.65	C32	87	51 16
C31 - C30	499.89	C31	106	43 56
C30 - D29	2522.83	C30	78	05 52
D29 - D31	297.63	D29	114	54 04
D31 - D32	463.70	D31	167	53 53
D32 - C32	2617.85	D32	84	30 59



The above diagram c32. c31. c30. D29. D31. D32, represents 3841 morgen 150 square Roods of land on the Kaab Plateau, being THE FARM M. N° 64 in the Division of Hay, Griqualand West.

Bounded as indicated above

Surveyed by me
(Sgd) John Mintern
Govt. Survr.
1877.

This is a copy of the original to
Land. Roads. This Deed dated the
12.11.1877 in favour of
John...
R. v. G. v. G. 1877
-1 NOV. 19...
N° 555-1846

SHEET GM. 3.

538

25. 2995/1878

71538

Figure 3: Copy of 1877 map of the farm Gruispan 538 (www.csg.dla.gov.za).

6.2 Results of the October 2022 Field Assessment

As illustrated in the map below, a number of heritage sites were identified and recorded in the study area during the field assessment. The sites are discussed in the subsequent sections.



Figure 4: Map showing the location of sites recorded in the study area (Google Earth 2022).

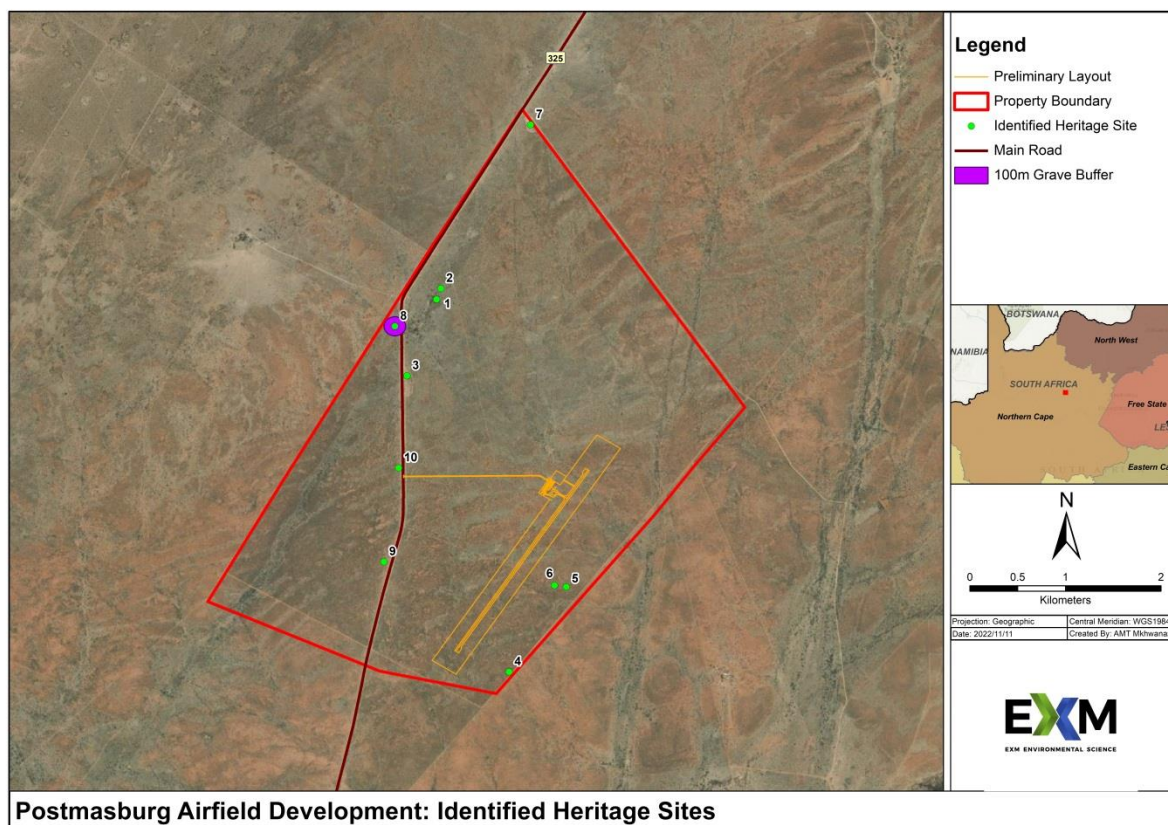


Figure 5: Map showing the location of the identified heritage sites in relation to the proposed development (EXM Environmental).

6.2.1 Stone Age Sites

The Stone Age sites (Numbered 2-7 and 9-10 on the map below) are all represented by scatters of MSA & LSA stone tools of varying density. In some instances only single objects were present, while at other locations the finds consisted of a few stone tools. The objects consist mostly of cores, flakes and flake-tools such as scrapers and blades. Most of these sites (surface scatters) were found in open eroded sections and it is possible that many similar unrecorded scatters could be located in areas where the grass and vegetation cover on the ground limited visibility. Two of the sites (Sites 3 & 7) were located close to and around the edge of large quarries in the area, with Site 7 containing a relatively dense scatter of material of red jaspelite. From an archaeological perspective this site would be rated as Medium-High in significance, but the site will not be impacted on by the intended airfield development.

In general the significance of the Stone Age sites and finds are rated as Medium, with the fairly low density of material found at most sites the determining factor. It is however possible that locations with denser scatters of material could be located in the area and it is therefore recommended that limited archaeological mitigation work be carried out prior to the development work being conducted. This will be in the form of Surface Sampling of representative material from the study area. This will assist in interpreting the Stone Age of the specific geographical area.

It should be noted that the current site layout provided will not disturb any of these sites.

GPS Location of Sites: S28 27 05.30 E23 02 40.50 (2); S28 27 34.90 E23 02 29.00 (3); S28 29 15.20 E23 03 03.60 (4); S28 28 46.40 E23 03 23.00 (5); S28 28 45.90 E23 03 19.00 (6); S28 26 09.80 E23 03 10.90 (7); S28 28 37.90 E23 02 21.20 (9) & S28 28 06.10 E23 02 26.20 (10)

Cultural Significance: Medium

Heritage Significance: Grade III: Other Heritage resources of local importance and therefore worthy of conservation.

Field Ratings: General protection B (IV B): Site should be recorded before destruction (Medium significance)

Mitigation:

- Surface Sampling of Stone Age material from the area. A SAHRA Permit will be required if the development will disturb these sites.
- Implement a Chance Find Procedure during the construction phase. The procedure must be communicated to the contractor.

6.2.2 Historic Sites

Two other sites dating to more recent historical times were also identified in the study area (numbered 1 & 8 on the map below). Site 1 consists of a water furrow and windmill and associated infrastructure, but these are less than 60 years of age and will not be impacted by the proposed airfield development activities.

Site 8 is an informal cemetery containing 4 graves. Two of these are formally demarcated and have headstones, with 2 unmarked and only stone-packed. The ages of the graves date between 1928 and 1940 (based on the legible inscriptions on the 2 graves with headstone) and are therefore older than 60 years of age and protected under the National Heritage Resources Act of 1999.

The site has been fenced-in and cleaned by Kolomela Mine and will not be impacted by the proposed development. However, as graves always carry a High Significance Rating from a Cultural Heritage point of view, it is recommended that the site be managed by means of a Graves Heritage Management Plan and that a Graves Register be drafted as part of this.

It should be noted that the current site layout provided will not disturb any of these sites.

GPS Location of Sites: S28 27 09.00 E23 02 39.00 (1); S28 27 18.10 E23 02 24.90 (8)

Cultural Significance: Low (1); High (8)

Heritage Significance: Low (1); High (8)

Field Ratings: General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (Low significance)[1]; Local Grade IIIB: should be included in the heritage register and may be mitigated (High/Medium significance)[8]

Mitigation:

Site 1. None required.

Site 8 (the cemetery)

It is recommended that a Grave Register be drafted, with each grave numbered, including a map showing the position of each grave on the site. A Graves Management Plan for the site should be implemented. A buffer zone of 100m around the outer perimeter fence of the site should be implemented wherein no development should be allowed.

If the buffer zone is to be intruded as a result of future proposed development SAHRA should be approached to motivate the relaxing of the required buffer. If the grave sites and graves on it are then to be directly negatively impacted and there is a need to relocate them, a permit from SAHRA & other authorities will be required after all legal processes have been adhered to.

6.2.3 Site Photographs

Photographs taken of the respective sites during the site assessment are provided below:



Figure 6: A recent structure close to Site 1 (the windmill).



Figure 7: MSA & LSA material from Site 2.



Figure 8: Stone Age material at Site 3.



Figure 9: The large quarry at Site 3.



Figure 10: General view of the area. Some areas like this were fairly open and it is in these open patches that Stone Age material was sometimes located.



Figure 11: In large section the vegetation cover was dense, limiting visibility on the ground.



Figure 12: A large MSA/LSA core at Site 5.



Figure 13: Stone Age material at Site 6.



Figure 14: The general area around Site 6.



Figure 15: Some of the Stone Age material from the Site 7 quarry area.



Figure 16: The quarry at Site 7.



Figure 17: The general area around Site 9 & 10.



Figure 18: Broken MSA blade at Site 9.



Figure 19: Stone Age material at Site 10.



Figure 20: The Site 8 cemetery.



Figure 21: One of the marked graves at Site 8.



Figure 22: Details of the headstone inscription on the grave from Figure 20. Hendrik Carolus Swanepoel passed away in 1940.



Figure 23: The 2nd marked grave at the site. The headstone is broken.



Figure 24: Some details could be read on the headstone inscription indicating that this individual was born in 1927 and passed away in June 1928.



Figure 25: The 3rd grave on the site was only stone packed.



Figure 26: The 4th identified grave at Site 8 was also stone packed with no headstone.

Based on the desktop research and the results of the October 2022 field assessment, it is clear that there are a number of cultural heritage sites and features present in the larger area, as well as in the specific area. It should be noted that the proposed development layout will not disturb any of the identified sites. Care should however be taken to avoid any possible negative impacts on the identified sites. However, if this is not possible a number of measures can be implemented to mitigate the potential impacts. If these are implemented then there should be no reason why the proposed development should not be allowed to continue.

Impact Assessment and Mitigation Measures

The significance of impacts is determined using the following criteria:

Probability: describes the likelihood of the impact actually occurring

- **Improbable:** the possibility of the impact occurring is very low, due to the circumstances, design or experience.
- **Probable:** there is a probability that the impact will occur to the extent that provision must be made therefore.
- **Highly probable:** it is most likely that the impact will occur at some stage of the development.
- **Definite:** the impact will take place regardless of any prevention plans and there can only be relied on mitigation measures or contingency plans to contain the effect.

Duration: the lifetime of the impact

- **Short Term:** the impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.
- **Medium Term:** the impact will last up to the end of the phases, where after it will be negated.
- **Long Term:** the impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent:** the impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: the physical and spatial size of the impact

- **Local:** the impacted area extends only as far as the activity, e.g. footprint
- **Site:** the impact could affect the whole or measurable portion of the abovementioned property.
- **Regional:** the impact could affect the area including the neighboring residential areas.

Magnitude/Severity: Does the impact destroy the environment, or alter its function

- **Low:** the impact alters the affected environment in such a way that natural processes are not affected.
- **Medium:** the affected environment is altered, but functions and processes continue in a modified way.
- **High:** function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This 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.

- **Negligible:** the impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.
- **Low:** the impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.
- **Moderate:** the impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

- **High:** The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

The significance is calculated by combining the criteria in the following formula:

Sum (Duration, Scale, Magnitude) x Probability

S = Significance weighting; Sc = Scale; D = Duration; M = Magnitude; P = Probability

Although some sites, features and material of cultural heritage origin and significance were found in the area during the assessment, the current site layout provided will not impact any of these sites. The impact of the proposed development on the recorded and known heritage sites is therefore deemed as Low.

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short Term	1
	Medium Term	3
	Long Term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude)	x Probability
	Negligible	≤20
	Low	>20≤40
	Moderate	>40≤60
	High	>60

Results: 1+1+2×12 = 4 i.e. ≤20

The impact of the proposed development on the recorded and known cultural heritage sites in the area is therefore deemed as Negligible based on the Impact Assessment criteria used. However, there is always a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often subterranean nature of cultural heritage resources (including low stone-packed or unmarked graves). These factors need to be taken into consideration and it is therefore recommended that a Chance Finds Protocol be drafted and implemented for the proposed Kolomela Airfield Development.

For the historical cemetery in the area it is recommended that a Grave Register be drafted, a Grave Site Management Plan developed and a buffer zone of 100m around the outer perimeter fence of the site should be implemented.

7. CONCLUSIONS AND RECOMMENDATIONS

APelser Archaeological Consulting (APAC) was appointed by EXM Environmental Advisory (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed development of an airfield on the farm Gruispan 538. The study & proposed development area is located south of the town of Postmasburg in the Northern Cape Province.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, while a number of sites, features and material of some cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study area and proposed development boundaries during the October 2022 field assessment. Most of these are represented by scatters of Stone Age material (stone tools) of varying density, while 2 sites of recent historical age were also recorded.

The Stone Age sites are all represented by scatters of MSA & LSA stone tools of varying density. In some instances only single objects were present, while at other locations the finds consisted of a few stone tools. The objects consist mostly of cores, flakes and flake-tools such as scrapers and blades. Most of these sites were found in open eroded sections and it is possible that many similar unrecorded scatters could be located in areas where the grass and vegetation cover on the ground limited visibility. Sites 3 & 7 were located close to and around the edge of large quarries in the area, with Site 7 containing a relatively dense scatter of material of red jaspelite. From an archaeological perspective this site would be rated as Medium-High in significance, but the site will not be impacted on by the intended airfield development.

The impact of the proposed development on the recorded and known cultural heritage sites in the area is therefore deemed as Negligible based on the Impact Assessment criteria used. However, there is always a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often subterranean nature of cultural heritage resources (including low stone-packed or unmarked graves). These factors need to be taken into consideration and it is therefore

recommended that a Chance Finds Protocol be drafted and implemented for the proposed Kolomela Airfield Development.

The informal cemetery contains 4 visible graves dating to between 1928 and 1940. They are therefore older than 60 years of age and protected under the National Heritage Resources Act of 1999. The site has been fenced-in and cleaned by Kolomela Mine and will not be impacted by the proposed development. It is however recommended that the site be managed by means of a Graves Heritage Management Plan and that a Graves Register be developed as part of this. A Buffer Zone of 100m around the outer perimeter fence of the site should be implemented as well.

To conclude it can be said that the Phase 1 Heritage Impact Assessment for the proposed Kolomela Airfield on Gruispan 538 was conducted successfully. From a Cultural Heritage point of view there should be no objection to the proposed development should the recommended mitigation measures be implemented.

The often subterranean nature of cultural heritage resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

8. REFERENCES

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APPENDIX A: DEFINITION OF TERMS:

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artifacts, found on a single location.

Structure: A permanent building found in isolation or which forms a site in conjunction with other structures.

Feature: A coincidental find of movable cultural objects.

Object: Artifact (cultural object).

(Also see Knudson 1978: 20).

APPENDIX B: DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE

Historic value: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.

Aesthetic value: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Scientific value: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period

Social value: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

Rarity: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.

Representivity: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

APPENDIX C: SIGNIFICANCE AND FIELD RATING:

Cultural significance:

- Low: A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium: Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- High: Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Also any important object found within a specific context.

Heritage significance:

- Grade I: Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II: Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III: Other heritage resources of local importance and therefore worthy of conservation

Field ratings:

- i. National Grade I significance: should be managed as part of the national estate
- ii. Provincial Grade II significance: should be managed as part of the provincial estate
- iii. Local Grade IIIA: should be included in the heritage register and not be mitigated (high significance)
- iv. Local Grade IIIB: should be included in the heritage register and may be mitigated (high/medium significance)
- v. General protection A (IV A): site should be mitigated before destruction (high/medium significance)
- vi. General protection B (IV B): site should be recorded before destruction (medium significance)
- vii. General protection C (IV C): phase 1 is seen as sufficient recording and it may be demolished (low significance)

APPENDIX D: PROTECTION OF HERITAGE RESOURCES:

Formal protection:

National heritage sites and Provincial heritage sites – Grade I and II

Protected areas - An area surrounding a heritage site

Provisional protection – For a maximum period of two years

Heritage registers – Listing Grades II and III

Heritage areas – Areas with more than one heritage site included

Heritage objects – e.g. Archaeological, palaeontological, meteorites, geological specimens, visual art, military, numismatic, books, etc.

General protection:

Objects protected by the laws of foreign states

Structures – Older than 60 years

Archaeology, palaeontology and meteorites

Burial grounds and graves

Public monuments and memorials

APPENDIX E: HERITAGE IMPACT ASSESSMENT PHASES

1. Pre-assessment or Scoping Phase – Establishment of the scope of the project and terms of reference.
2. Baseline Assessment – Establishment of a broad framework of the potential heritage of an area.
3. Phase I Impact Assessment – Identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
4. Letter of recommendation for exemption – If there is no likelihood that any sites will be impacted.
5. Phase II Mitigation or Rescue – Planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
6. Phase III Management Plan – For rare cases where sites are so important that development cannot be allowed.