



PHASE 1 AIA FIELD REPORT PROPOSED DEVELOPMENT OF PIPELINES NEAR NOENIEPUT, NORTHERN CAPE PROVINCE

PROPOSED DEVELOPMENT OF PORTABLE WATER SUPPLY PIPELINES FROM
NOENIEPUT TO SWARTKOPDAM IN THE DAWID KRUIPER LOCAL MUNICIPALITY,
ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE

PREPARED FOR:
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For this project, Mr Engelbrecht was responsible for the field survey of the development footprint, identification of heritage resources, and recommendations. Ms Fivaz was responsible for report compilation.

Declaration of independence:

We, Jan Engelbrecht and Heidi Fivaz, partners of UBIQUE Heritage Consultants, hereby confirm our independence as heritage specialists and declare that:

- we are suitably qualified and accredited to act as independent specialists in this application;
- we do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- the work was conducted in an objective and ethical manner, in accordance with a professional code of conduct and within the framework of South African heritage legislation.



Signed:
J.A.C. Engelbrecht & H. Fivaz
UBIQUE Heritage Consultants

Date: 2020-01-31

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ABBREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
BIA:	Basic Impact Assessment
CRM:	Cultural Resource Management
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment*
EIA:	Early Iron Age*
EMP:	Environmental Management Plan
ESA:	Earlier Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
LIA:	Late Iron Age
LSA:	Later Stone Age
MEC:	Member of the Executive Council
MIA:	Middle Iron Age
MPRDA:	Mineral and Petroleum Resources Development Act
MSA:	Middle Stone Age
NEMA:	National Environmental Management Act
NHRA:	National Heritage Resources Act
OWC:	Orange River Wine Cellars
PRHA:	Provincial Heritage Resource Agency
SADC:	Southern African Development Community
SAHRA:	South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations it must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological:	<p>material remains, resulting from human activity, which is in a state of disuse and is in or on land and is older than 100 years, including artefacts, human and hominid remains and artificial features and structures;</p> <ul style="list-style-type: none"> – rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years (as defined and protected by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999) including any area within 10 m of such representation; – wrecks, being any vessel or aircraft, or any part thereof, which were wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined
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respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;

- features, structures and artefacts associated with military history, which are older than 75 years and the sites on which they are found.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Earlier Stone Age: >2 000 000 - >200 000 years ago

Middle Stone Age: <300 000 - >20 000 years ago

Later Stone Age: <40 000 - until the historical period

Iron Age: (Early Farming Communities). The period covering the last 1800 years, when immigrant African farmer groups brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and herded cattle as well as sheep and goats. As they produced their iron tools, archaeologists call this the Iron Age.

Early Iron Age: AD 200 - AD 900

Middle Iron Age: AD 900 - AD 1300

Later Iron Age: AD 1300 - AD 1850

Historic: Period of the arrival of white settlers and colonial contact. AD 1500 to 1950

Historic building: Structures 60 years and older.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (historic places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources: These mean any place or object of cultural significance, tangible or intangible.

Holocene: The most recent geological period that commenced 10 000 years ago.

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site that contains such fossilised remains or traces

Cumulative impacts: “Cumulative Impact”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity that may not be significant, but may become significant when added to existing and

reasonably foreseeable impacts eventuating from similar or diverse activities.

Mitigation: Anticipating and preventing negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

A 'place': a site, area or region;

- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

'Public monuments and memorials': mean all monuments and memorials—

- erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
- which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual;

'Structures': any building, works, device or other facility made by people and which are fixed to land, and include any fixtures, fittings and equipment associated therewith.

1. INTRODUCTION

UBIQUE Heritage Consultants were appointed by CTS Heritage as independent heritage specialists to conduct the Phase 1 field surveys for the Archaeological Impact Assessment of the proposed development of a portable water supply pipeline between Noenieput and Swartkopdam, Dawid Kruiper Local Municipality, ZF Mgcawu District Municipality, Northern Cape, as required by Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA).

The project, as proposed by the Kalahari - East Users Association, involves the construction of a 25km portable water supply pipeline commencing at Noenieput, supplying water to small and commercial farmers along the pipeline route as well as for Swartkopdam. The new pipeline will connect at Noenieput with the water supply pipeline currently under construction. The water will flow from Noenieput to Swartkopdam with connection points for small and commercial farmers along the pipeline route. The peak summer demand is estimated at 0.9l/s. usage per month. The pipeline will be constructed from UPVC of various pipe classes and diameters and installed in a trench with at least 600mm cover above the pipe. At the two crossings of the Molopo River, the pipe cover will increase to 1.2 meters. Noenieput is located approximately 160km northwest of Upington within the ZF Mgcawu District Municipality in the Northern Cape Province.

This report covers the survey of the two alternative pipeline routes proposed. These routes are referred to in this report as the Noenieput alignment and the Swartkopdam alignment (see Fig. 1).

The identified heritage resources and anticipated, and cumulative impacts that the development of the proposed project may have on the identified heritage resources are presented objectively in this report. Alternatives, should any significant sites be impacted adversely by the proposed project, are offered. All effort will be made to ensure that all studies, assessments and results comply with the relevant legislation and the code of ethics and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in responsibly managing the documented heritage resources, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

1.1 Technical information

Project description	
Project name	PROPOSED DEVELOPMENT OF PIPELINES NEAR NOENIEPUT, NORTHERN CAPE PROVINCE
Description	The development of portable water supply pipelines from Noenieput to Swartkopdam in the Dawid Kruiper Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province.
Developer	
Kalahari - East Users Association	
Development type	Agricultural infrastructure
Property details	
Province	Northern Cape
District municipality	Z.F. Mgcawu (previously Siyanda District Municipality)

Local municipality	Dawid Kruiper (previously Mier Local Municipality)
Topo-cadastral map	1:50 000 2720CA
Farm name	Farm Witkop No. 350 (Portions 2, 3, 4, 5, 14, 15, 18, 21, 33, 34, 35, 36, & 39) and Farm Abiquas Aar No. 352 (Portions 0, 1, 2, 3, 5, 8 & 9)
Closest town	Noenieput, Upington
GPS Co-ordinates	27 ° 36'12.33"S 20 ° 10'19.87"
Property size	10 ha
Development footprint	25 km
Land use	
Previous	Agriculture
Current	Agriculture
Rezoning required	No
Sub-division of land	No
Development criteria in terms of Section 38(1) NHRA	
	Yes/No
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	Yes
Construction of bridge or similar structure exceeding 50m in length.	No
Construction exceeding 5000m ² .	Yes
Development involving three or more existing erven or subdivisions.	No
Development involving three or more erven or divisions that have been consolidated within the past five years.	No
Rezoning of site exceeding 10 000m ² .	No
Any other development category, public open space, squares, parks, recreation grounds.	No

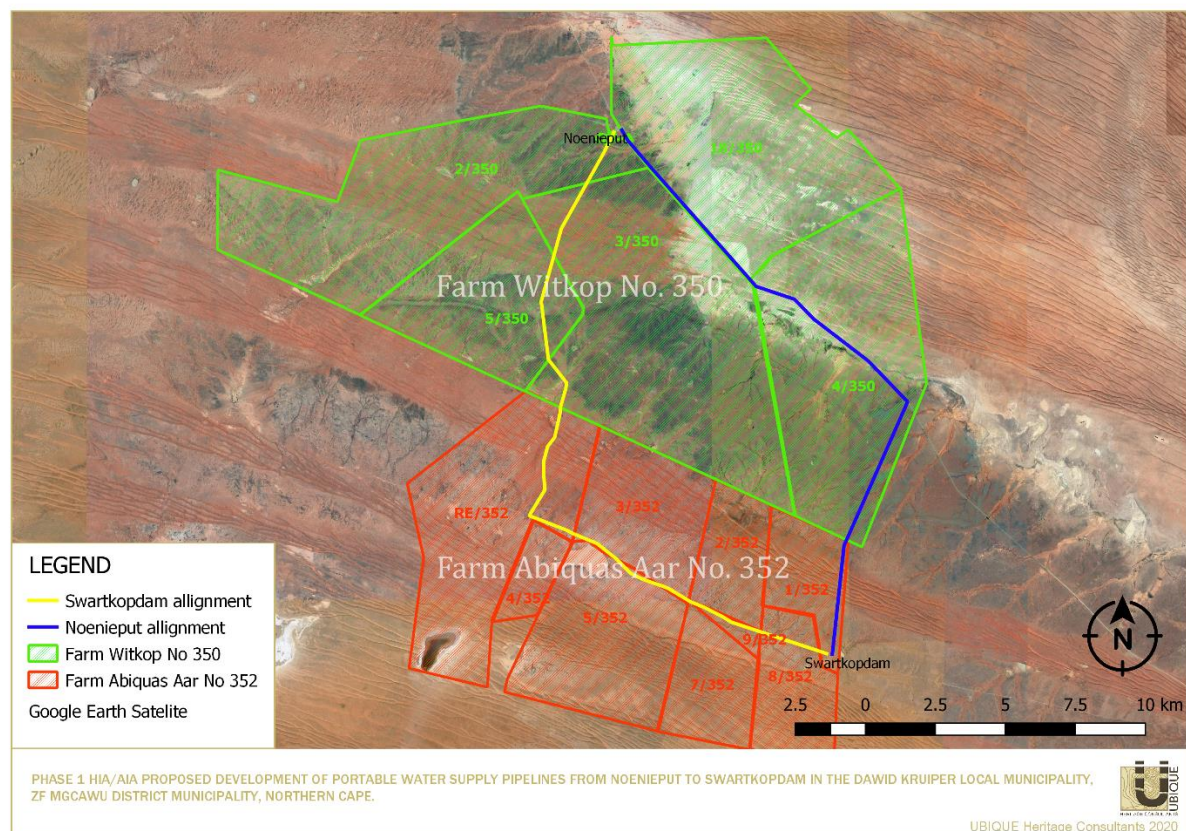


Figure 1 Proposed alternatives for the water supply pipeline, Noenieput, Northern Cape Province, indicated on Google Earth Satellite Imagery.

2. FIELD ASSESSMENT

2.1 Methodology

2.1.1 Systematic survey

A systematic survey of the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest, was completed.

UBIQUE Heritage Consultants inspected the proposed development corridors and surrounding areas on the 20th and 21st of January 2020. The areas surveyed for the impact assessment was dictated by the Google Earth maps of the development footprints provided by the client, as well as the Heritage Screener compiled by CTS Heritage. The two pipeline routes were surveyed from Noenieput towards Swartkopdam. The access point for the surveys was 27° 30' 42.49" E; 20° 08' 16.36" S. All the study areas were surveyed in transects of approximately 30 - 50m where possible. The development corridors were surveyed on foot and by 4x4 vehicle by a team of two experienced surveyors.

We conducted an inspection of the surface of the ground, wherever the surface was visible. The archaeological survey was done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures fortuitously observed.

2.1.2 Recording significant areas

GPS points of identified significant areas were recorded with handheld Garmin global positioning units (Garmin eTrex 10) and Android Locus Maps application on Hisense U605 smartphone. Photographs were taken with a Canon Ixus 190 20-megapixel camera. Detailed field notes were taken to describe observations (Appendix B).

2.1.3 Determining significance

Levels of the significance of the various types of heritage resources observed and recorded in the project area have been determined according to criteria set out in Appendix A.

2.1.4 Assumptions and limitations

It is assumed that the description of the proposed project, as provided by the client, is accurate. Furthermore, it is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is comprehensive and does not have to be repeated as part of the heritage impact assessment.

The significance of the sites, structures and artefacts is determined through their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the

evaluation of any site is done with reference to any number of these aspects. Cultural significance is site-specific and relates to the content and context of the site.

Although all possible care has been taken during the comprehensive field survey and intensive desktop study to identify sites of cultural importance within the development areas, it is essential to note that some heritage sites may have been missed due to their subterranean nature, or due to dense vegetation cover. No subsurface investigation (i.e. excavations or sampling) were undertaken since a permit from SAHRA is required for such activities. Therefore, should any heritage features and/or objects such as architectural features, stone tool scatters, artefacts, human remains, or fossils be uncovered or observed during construction, operations must be stopped, and a qualified archaeologist contacted for an assessment of the find. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to assess the significance of the site (or material) in question.

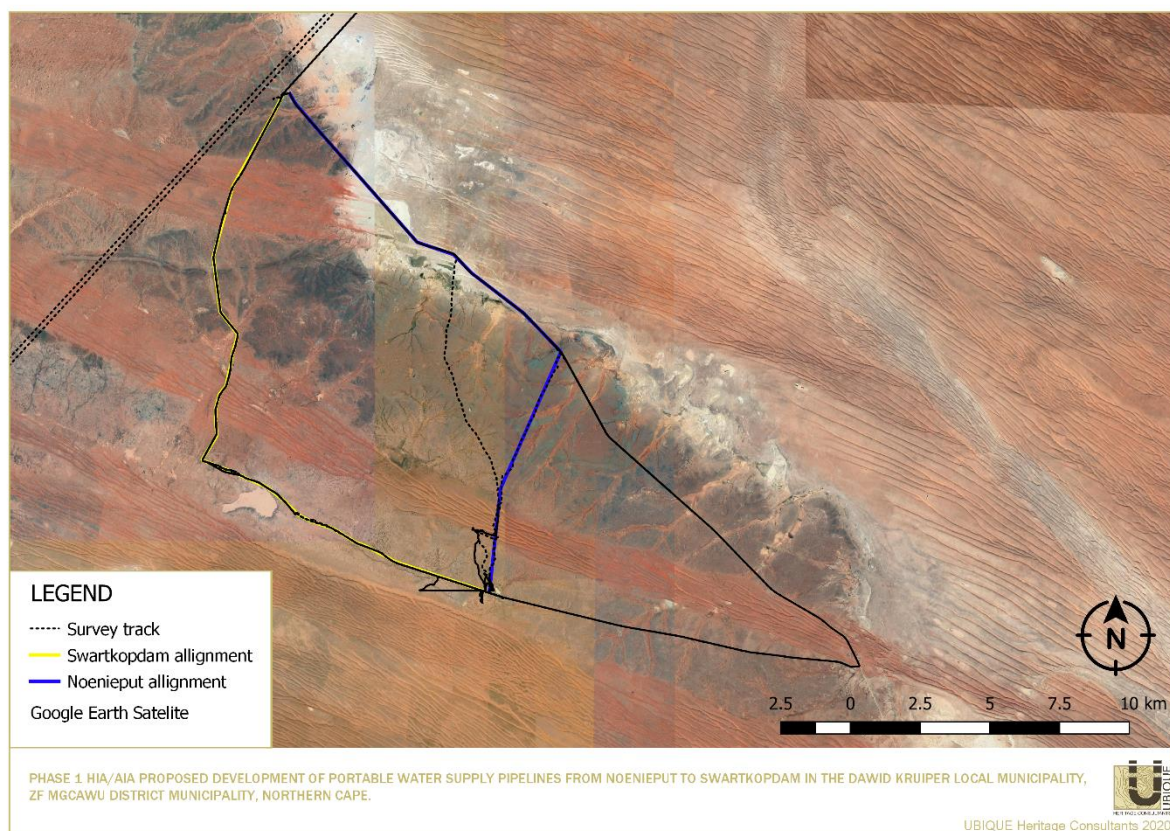


Figure 2 Recorded tracks of the survey along the proposed development footprints

2.2 Description of the affected environment

The landscape of the study area is typical Kalahari Karroid Shrubland belts alternating with belts of *Gordonia* Duneveld and interspersed with Southern Kalahari Salt Pans (Mucina & Rutherford 2006). There are calcrete and Dwyka Group tillites outcrops, with red-yellow apedal sand, fixed parallel dunes, and intermittent superficial deposits of gravels, clays, sandstone, silcrete, calcrete,

shale, mudstones and quartzite. Various types of vegetation like Camel Thorn trees (*Acacia erioloba*), Black Thorn trees (*Acacia mellifera*), Three Thorn/Driedoring (*Rhigozum trichotomum*), Skaapbossie (*Aizoon schellenbergii*), Shepherd tree (*Boscia albitrunca*), Suurgras (*Enneapogon desvauxii*), Wild Basil (*Ocimum americanum*), Honey Locust (*Prosopis glandilosa*), Tall Bushman grass (*Stipagrostis hirtigluma*), Silky Bushman grass (*Stipagrostis uniplumis*), Kortbeen Boesmangras (*Stipagrostis obtuse*), Kalahari dune Bushman grass (*Stipagrostis amabilis*) is visible across the development footprint. Several dry riverine beds are present on the site flowing from north to south and from west to east.

The development footprint is bounded in the north by Noenieput settlement, in the south by open field and the border fence between the farms Lemoenkolk No. 346, Witkop No. 350, and Abiquas Aar No. 352. Towards the west, the development footprint is bounded by a servitude road running from Noenieput to Swartkopdam settlement, and in the east, by the main secondary gravel road running from Noenieput towards Upington. Anthropogenic disturbances occur predominantly along existing servitude roads within the development footprint, especially along the Swartkopdam alignment.



Figure 3. Panoramic view of the service road, Swartkopdam alignment.



Figure 4. Panoramic view of Swartkopdam alignment.



Figure 5. Panoramic view of the proposed pipeline route from Swartkopdam to the main secondary road of Noenieput to Upington.



Figure 6. Panoramic view of servitude road from Noenieput towards Upington, Noenieput alignment.



Figure 7. Panoramic view pipeline route, Noenieput alignment.



Figure 8. Panoramic view of servitude road and Noenieput settlement, Noenieput alignment.



Figure 9. Panorama view of Swartkopdam settlement.



Figure 10. Panoramic views of Swartkopdam cemetery and Noenieput cemetery.

2.3 Archaeological resources identified

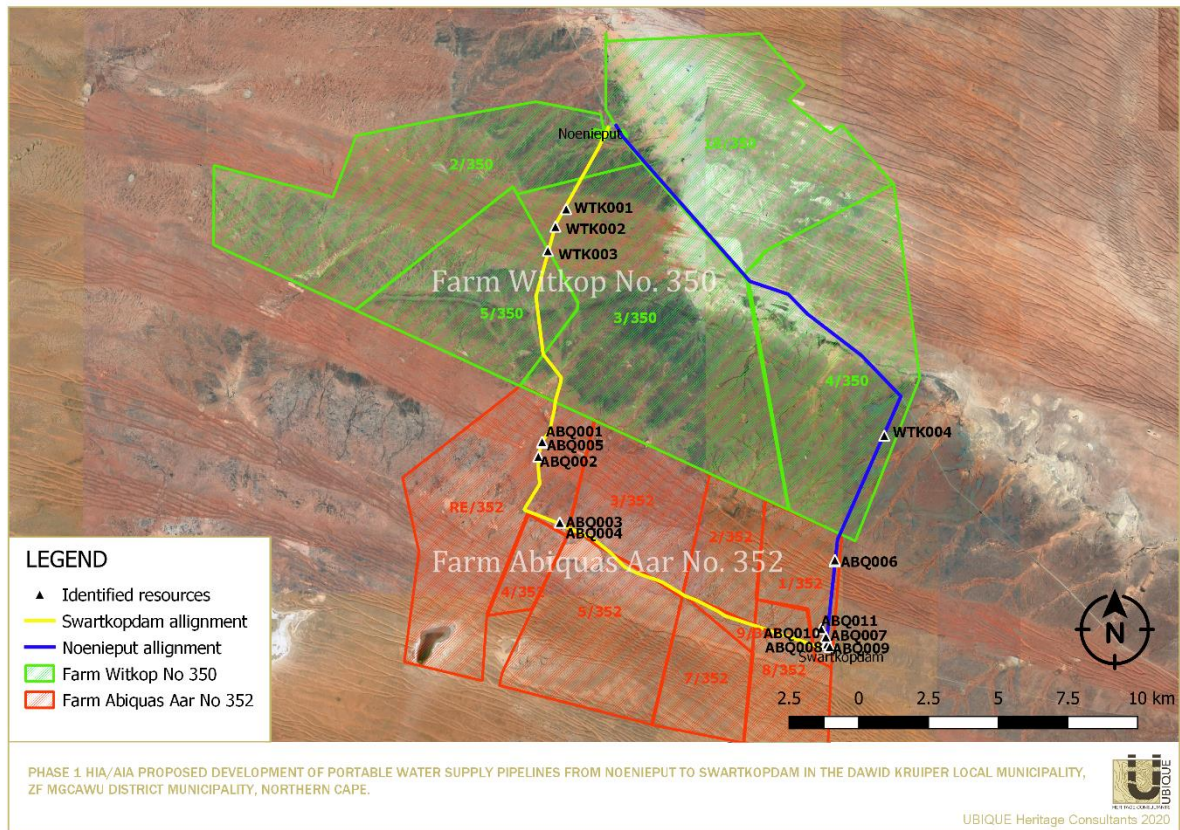


Figure 11. Recorded heritage resources across the development alternatives.

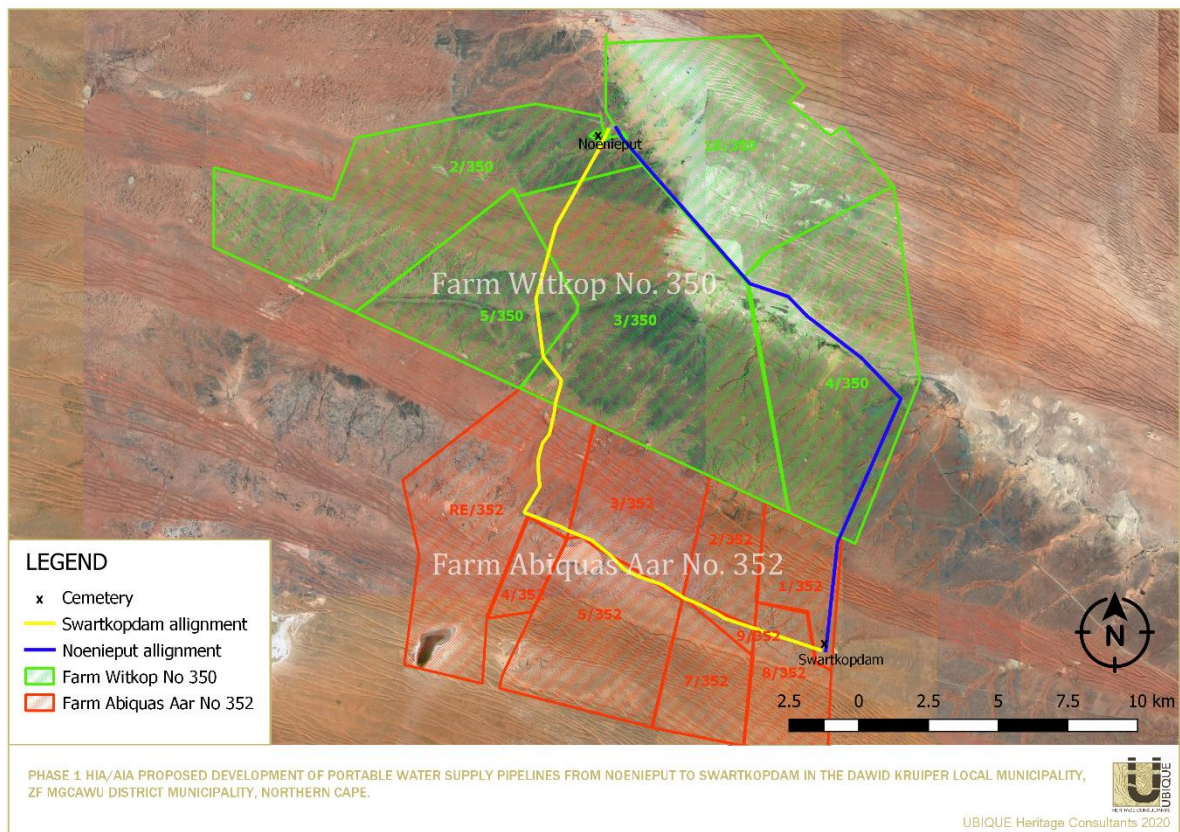


Figure 12 Locations of cemeteries in the vicinity of the development alternatives

Point ID	Site No.	Site name	Description	Co-ordinates	Grading	Mitigation
Swartkopdam alignment						
002	WTK001	Witkop No. 350/3-001	Surface scatter (n=8 /100 m ²) of chunks, chips, flakes and small cores made of quartzite, dolerite and BIF. Possible micro knapping site with knapping debris.	27° 32' 12.5" S 20° 07' 24.3" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
003	WTK002	Witkop No. 350/3-002	Possible knapping site surface scatter (n=10/1 m ²) with chunks, flakes, chips, upper grinders, small cores, and knapping debris. Raw materials include quartzite, dolerite, hornfels, basalt, chert and CCS.	27° 32' 31.9" S 20° 07' 10.9" E	IIIB	The site should be included in the heritage register and may be mitigated (high/ medium significance)
013	WTK003	Witkop No. 350/5-003	Possible LSA knapping site with surface scatter (n=10/20 m ²) of chunks, cores, chips, flakes, a scraper, and upper and lower grinder. Raw materials include quartzite, dolerite and CCS.	27° 32' 58.6" S 20° 07' 01.6" E	IIIB	The site should be included in the heritage register and may be mitigated (high/ medium significance)
004	ABQ001	Abiquas Aar No. 352/0-001	Possible LSA knapping site surface scatter (n=10/20 m ²) with chunks, chips, cores, upper grinder and flakes made from quartzite, hornfels, dolomite, dolerite, and CCS.	27° 36' 29.6" S 20° 06' 54.3" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
005	ABQ002	Abiquas Aar No. 352/0-002	Possible LSA knapping site/workshop/temporary settlement site. Surface scatter (n=20/10 m ²) with chunks, scrapers, flakes, chips, cores, points and OES fragments. Raw materials include quartzite, dolerite, hornfels and CCS.	27° 36' 45.8" S 20° 06' 49.7" E	IIIB	The site should be included in the heritage register and may be mitigated (high/ medium significance)
006	ABQ003	Abiquas Aar No. 352/0-003	Surface scatter of colonial period debris. Vent-hole (1900-1980) and machine-soldered side seam (>1880) cans, historic glass (diagnostic black glass fragments 1840-1880; cobalt blue glass fragments 1840-1930), and European ceramics.	27° 37' 58.7" S 20° 07' 16.3" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
007	ABQ004	Abiquas Aar No. 352/0-004	Low-density surface scatter (n=5/100 m ²) with quartzite, dolerite, hornfels flakes and chunks.	27° 37' 58.7" S 20° 07' 16.4" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
014	ABQ005	Abiquas Aar No. 352/0-005	Low-density surface scatter (n=6/50 m ²) with cores, chips, chunks, flakes of quartzite and dolerite.	27° 36' 30.7" S 20° 06' 54.6" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)

Point ID	Site No.	Site name	Description	Co-ordinates	Grading	Mitigation
Noenieput alignment						
008-009	ABQ006	Abiquas Aar No. 352/1-006	High-density surface scatter (n=50-100/10 m ² , some places n=250-500/10 m ²) consisting of flakes, chunks, points, cores, blades, chips, OES fragments, local low-fired ceramics, upper and lower grinders. Raw materials include quartzite, BIF, dolomite, dolerite, basalt, chert, hornfels, CCS. Possible LSA knapping/temporary settlement or <i>Hxaro</i> site.	27° 38' 41.9" S 20° 12' 59.3" E And 27° 38' 40.1" S 20° 12' 59.4" E	IIIA	The site should be included in the heritage register and not be mitigated (high significance)
016	ABQ007	Abiquas Aar No. 352/1-007	Low-density surface scatter (n=6 /100 m ²) with flakes, chips, and scraper. Raw materials include hornfels, basalt, CCS, quartzite and dolerite.	27° 40' 10.8" S 20° 12' 50.0" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
017	ABQ008	Abiquas Aar No. 352/1-008	Low-density surface scatter (n=8/100 m ²) with retouched flakes and scraper. Raw materials include quartzite, CCS, and dolerite.	27° 40' 12.7" S 20° 12' 50.0" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
018	ABQ009	Abiquas Aar No. 352/1-009	Low-density surface scatter (n=5/100 m ²) with retouched flakes and scraper. Raw materials include quartzite and dolerite.	27° 40' 15.9" S 20° 12' 53.1" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
019	ABQ010	Abiquas Aar No. 352/1-010	Low-density surface scatter (n=4/100 m ²) with flakes and chunks of quartzite, hornfels, chert, and CCS.	27° 40' 05.1" S 20° 12' 48.2" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)
020	ABQ011	Abiquas Aar No. 352/1-011	Outcrop of dolomite with graffiti and percussion marks. Could be rock gongs.	27° 39' 56.0" S 20° 12' 42.4" E	IIIA	The site should be included in the heritage register and not be mitigated (high significance)
010	WTK004	Witkop No. 350/4-004	Isolated occurrence of stone tool (n=1/100 m ²). Hornfels blade, or retouched flake.	27° 36' 22.7" S 20° 14' 01.1" E	IIIC	Phase 1 is seen as sufficient recording, and it may be demolished (low significance)

2.3.1 Alternative 1: Swartkopdam alignment

Along the Swartkopdam alignment, seven incidences of lithic material were recorded, and one occurrence of historical/colonial material. The sites WTK001, WTK002 and WTK003, are situated on a series of parallel dunes to the east of the servitude road along this alignment. These sites consist of lithic debris and material associated with knapping sites. The lithic surface scatters documented at WTK002 and WTK003 are of a high density and extends further east into the dunes, while WTK001 comprises of a smaller sample on the periphery of the activity area. The lithic assemblage observed during the survey include few formal tools and predominantly consist of cores, untrimmed flakes, and geometric shaped segments. Raw materials include quartzite, dolerite, hornfels, basalt, chert and BIF (Banded Ironstone Formation) and CCS (Crypto-Crystalline Silicates). The cultural material shows various degrees of weathering and may either be representative of the Early Later Stone Age, or a mere mixture of LSA and MSA artefacts (Lombard 2011). Even though the horizontal extent of the site was not fully explored, this area is deemed medium to high significance due to the density and amount of stone artefacts on the surface.

ABQ001, ABQ002, and ABQ005 are situated further south, on the next belt of Duneveld. ABQ001 and ABQ005 consist of low-density lithic surface material with chunks, chips, cores, an upper grinder and flakes made from quartzite, hornfels, dolomite, dolerite, and CCS. These identified archaeological materials are of low significance, as the archaeological sample is small, and therefore of little scientific value. ABQ002, however, is a possible LSA knapping site/workshop/temporary settlement site. The surface deposit is dense and chunks, scrapers, untrimmed flakes, chips, cores, geometrically shaped segments and OES fragments were documented. Raw materials include quartzite, dolerite, hornfels and CCS. The full scope of this site was not determined at this time, but it is assumed that more material could be found on the dunes in an easterly direction. The volume of lithics dispersed horizontally across these dunes is of scientific significance.

ABQ003 and ABQ004 lie further southeast on the gravel plain between two Duneveld belts. A random low-density surface scatter with quartzite, dolerite, and hornfels flakes and chunks were recorded at ABQ004 and an arbitrary scatter of colonial period debris (date range ca. 1840-1930) at ABQ003. These samples are small and without archaeological context, and therefore of low significance.

2.3.2 Alternative 2: Noenieput alignment

Although all the sites recorded on the survey of the Noenieput alignment occur along the small section of the proposed pipeline route between the main Upington-Noenieput road and the Swartkopdam settlement, two of these sites are of high significance. ABQ006 is situated on the same belt of parallel dunes as ABQ001, ABQ002, and ABQ003. It comprises of a high-density surface scatter ($n=50-100/10\text{ m}^2$ to $n=250-500/10\text{ m}^2$) with flakes, chunks, points, cores, blades, chips, OES fragments, upper and lower grinders, and low-fired ceramics as part of the assemblage. Lithic raw materials include quartzite, BIF, dolomite, dolerite, basalt, chert, hornfels, and CCS. The ceramics are undecorated, low fired, thin-walled, mineral tempered and often associated with hunters-with-livestock/herders (Lombard & Parsons 2008; Mitchell 2002). The material culture points to the site possibly being utilised during the LSA as a knapping, temporary settlement, or *hxaro* aggregation site (Mitchell 2002). The scope of the site was not mapped at this time, but it is

expected that the occurrence of more cultural material on the dunes to the east and west of this site is likely. The authors have observed similar lithic scatters along the South African-Namibian border fence on the same belt of dunes on which ABQ001, ABQ002, ABQ003, and ABQ006 are situated. The horizontal dispersal of cultural material along this dune belt could be indicative of seasonal migratory patterns and possible aggregation and dispersal phases of hunter-gatherers/hunter-herders in the Kalahari. These sites, therefore, are not just of local significance.

The outcrop of black boulders, from which Swartkopdam might have derived its name, has been marked as site number ABQ011. Situated approximately 200m to the west of the proposed pipeline route, the large dolomite rocks exhibit areas where it seems as if the patina has been worn off by what could be percussion marks, and patches of patina have been cleared by grinding or rubbing a stone against the surface. Different initials have also been scratched into the patina. Experimental hitting of large stones against these rocks did produce a ringing sound. These boulders could probably have been utilised as rock gongs. Rock gongs (or lithophones) are rocks that ring when struck and are characterised by beating marks that reflect ancient use (Morris 2017). They are usually found in association with rock art, and are a feature of the LSA, with alleged ritual connotations (Morris 2017). Even though no artefacts, rock art, or other temporal markers were found in association with this site, its position within the broader cultural landscape seems noteworthy. Albeit of cultural or natural value, this outcrop is regarded as highly significant.

Low-density surface scatters of low significance were further recorded at ABQ007, ABQ008, ABQ009, ABQ010 and WTK004. The lithics recorded at the locations included untrimmed and retouched flakes, chips, chunks and scrapers. Raw materials include hornfels, basalt, CCS, quartzite and dolerite.

2.3.3 Other

No graves were recorded within the proposed development footprints, but there are cemeteries situated outside the settlements at Swartkopdam and Noenieput. The Noenieput cemetery is located less than 300m west of the Swartkopdam alignment towards the southwest of the Noenieput settlement, and the Swartkopdam cemetery is located less than 100m west of the Noenieput alignment, north of the Swartkopdam settlement. Their proximity to the proposed pipeline routes should be noted.

2.3.4 Selected photographic record

Swartkop alignment



WTK001



WTK002



WTK003



WTK003



ABQ001



ABQ005



ABQ002



ABQ002



ABQ003



ABQ004

Figure 13 Heritage recorded within Alternative 1: Swartkopdam alignment

Noenieput alignment



ABQ006



ABQ006



ABQ006



ABQ006



ABQ006



ABQ007



ABQ009



WTK004



ABQ011



ABQ011

Figure 14 Heritage recorded within Alternative 2: Noenieput alignment

3. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

Description	Development Impact		Mitigation	Field rating/ Significance
Alternative 1: Swartkopdam alignment				
1. Three high-density surface scatters of lithic material associated with knapping sites (WTK002, WTK003 and ABQ002).	Nature	Negative	Sites should be recorded and mitigated before destruction	Field Rating IVA, IVB, IIIB (high/medium significance)
	Extent	Medium		
	Duration	High		
	Intensity	Medium		
	Potential of impact on irreplaceable resource	High		
	Consequence	High		
	Probability of impact	Medium		
2. Five incidences of low-density lithic scatters (WTK001, ABQ001, ABQ003, ABQ004, ABQ005).	Nature	Negative	No mitigation required	Field Rating of Local Grade IVC, IIIC (low significance)
	Extent	Low		
	Duration	High		
	Intensity	High		
	Potential of impact on irreplaceable resource	Low		
	Consequence	Low		
	Probability of impact	Low		
Significance	Low			
Alternative 2: Noenieput alignment				
3. Large surface scatter of cultural material with high-density lithic deposit and low-fired ceramics associated with LSA temporary settlement, knapping, or <i>hxaro</i> site (ABQ006).	Nature	Negative	Sites should be included in the heritage register and may not be mitigated	Field Rating of Local Grade IIIA (high significance)
	Extent	High		
	Duration	High		
	Intensity	High		
	Potential of impact on irreplaceable resource	High		
	Consequence	High		
	Probability of impact	High		
4. Possible rock gongs (ABQ011).	Nature	Negative	Sites should be included in the heritage register and may not be mitigated	Field Rating of Local Grade IIIA (high significance)
	Extent	High		
	Duration	High		
	Intensity	High		
	Potential of impact on irreplaceable resource	Low		
	Consequence	High		
Probability of impact	Low			

5. Five incidences of low-density lithic scatters (WTK004, ABQ007, ABQ008, ABQ009, ABQ010).	Significance	High	No mitigation required	Field Rating of Local Grade IVC, IIIC (low significance)
	Nature	Negative		
	Extent	Low		
	Duration	High		
	Intensity	High		
	Potential of impact on irreplaceable resource	Low		
	Consequence	Low		
	Probability of impact	Low		
Significance	Low			
Other				
6. Two local cemeteries situated at Noenieput and Swartkopdam settlements.	Nature	Negative	Sites should be included in the heritage register and may not be mitigated	Field Rating of Local Grade IIIA (high significance)
	Extent	High		
	Duration	High		
	Intensity	High		
	Potential of impact on irreplaceable resource	Low		
	Consequence	High		
	Probability of impact	Low		
	Significance	High		

The proposed development will have a negative impact on the heritage resources situated on the two different route alternatives proposed for the water supply pipeline project. Sites along the Swartkopdam alignment marked as IIIB can and should be mitigated before they can be destroyed, while those graded as IIIC have been sufficiently recorded through the Phase 1 field survey. The cemeteries and sites classified as IIIA should be avoided as far as possible.

4. RECOMMENDATIONS AND CONCLUSIONS

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

1. Archaeologically speaking, proposed Alternative 1, the Swartkopdam alignment, is deemed the most feasible and provided that the recommended mitigations are implemented on sites that may be negatively impacted upon, there are no objections to the proposed development proceeding along the Swartkopdam alignment.
2. It is recommended that a no-go buffer of 50 m from the edge of each site extent, be implemented for sites graded as IIIB.
3. If it is not possible to avoid the sites mentioned above, they must be mitigated by a qualified archaeologist. A permit in terms of section 35 of the NHRA and Chapter II and IV of the NHRA Regulations must be applied for from SAHRA via SAHRIS before construction.
4. We recommend the appointment of a Heritage officer to monitor development during the construction phase of the project to mitigate the impact on resources that may be uncovered by the excavation process.

5. From a heritage standpoint, proposed Alternative 2, the Noenieput alignment, is deemed NOT feasible and identified sites along this alignment are no-go areas.
6. All the dunes within this area should be treated as sensitive zones and potential heritage sites and avoided where possible.
7. The sites graded as IIIA and IIIB should be added to the heritage register.
8. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If any 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 are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA.
9. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;
10. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred as a result of such omissions.

5. REFERENCES

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APPENDIX A

Determining significance and development impacts

Levels of the significance of the various types of heritage resources observed and recorded in the project area will be determined to the following criteria:

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 as less important due to several factors, such as date and frequency. Likewise, 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 categorised as of high importance. Likewise, any principal 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) |

Heritage value, statement of significance:

- a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or unique association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. its strong or unique association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i. sites of significance relating to the history of slavery in South Africa.

Assessment of development impacts

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are adverse and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and/or
- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative, as implied by the examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessment criteria have been used to assess the impacts of the proposed development on possible identified heritage resources:

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered, and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particularly vulnerable resource that will be impacted.
Consequence, (a combination of extent, duration, intensity, and the potential for impact on irreplaceable resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium, and all three other criteria are rated low.
	Medium	Intensity is medium, and at least two of the other criteria are rated medium.
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.

Criteria	Rating Scales	Notes
	High	It is more than 75 % certain that the impact will occur, or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability.
		Low consequence and medium probability.
		Low consequence and high probability.
	Medium	Medium consequence and low probability.
Medium consequence and medium probability.		
Medium consequence and high probability.		
High consequence and low probability.		
High	High consequence and medium probability.	
	High consequence and high probability.	

APPENDIX B

Fieldnotes



FIELD NOTES

Phase 1 Archaeological/Heritage Impact Assessment

Site ID: Proposed Kalahari East Water Pipeline from Noenieput to Swartkopdam, Z.F. Mgcawu District Municipality, Dawid Kruiper Local Municipality, Northern Cape Province

Phase 1 survey conducted			
CRM Archaeologist	Jan Engelbrecht	Date/s	2020-01-20 to 2020-01-21
Additional surveyors	N. Titus.		
Type of survey	Pedestrian/Vehicular	Transects	30m to 50m where possible
Technical equipment	GPS	eTrex 10 Garmin Hisense Mobile Locus maps	Camera Canon IXUS Digital Camera

Technical information

Project description	
Project name	Proposed development of a water pipeline from Noenieput to Swartkopdam in the Z.F. Mgcawu District Municipality and within the Dawid Kruiper Local Municipality in the Northern Cape Province.
Description	The proposed pipeline commences at Noenieput and will supply water to small and commercial farmers along the pipeline route as well as for Swartkopdam. The Kalahari- East Users Association proposes the construction of the portable water supply pipeline (25km), Noenieput, Northern Cape Province. The connection point will be at Noenieput, where the water supply pipeline that is currently under construction terminates. The water will flow from the connection point at Noenieput to Swartkopdam. Connection points will be provided for small and commercial farmers along the pipeline route. The approximate usage per month is 0.9l/s at peak summer demand. The pipeline material is UPVC of various pipe classes and diameters. The pipeline shall be installed in a trench with at least 600mm cover above the pipe. At the two crossings of the Molopo River, the pipe cover will be 1.2 meters. Noenieput is located approximately 160km northwest of Upington within the ZF Mgcawu District Municipality in the Northern Cape Province.
Developer	
Z.F. Mgcawu District Municipality and Dawid Kruiper Local Municipality	
Contact information	054-337 2800/054-338 7000
Development type	Water Pipeline
Landowner	
Contact information	Various

Consultants		
Environmental	N/A	
Heritage and archaeological	UBIQUE Heritage Consultants	
Paleontological	N/A	
Property details		
Province	Northern Cape	
District municipality	Z.F. Mgcawu	
Local municipality	Dawid Kruiper	
Topo-cadastral map	1: 50 000	
Farm name	Witkop 350 and Abiquas Aar 352	
Closest town	Upington/Noenieput	
GPS Co-ordinates	27° 30' 42.49" E 20° 08' 16.36" S	
Property size	10ha	
Development footprint size	Approximately 10ha	
Land use		
Previous	Agriculture and road servitude	
Current	Agriculture and road servitude	
Rezoning required	No	
Sub-division of land	No	
Development criteria in terms of Section 38(1) NHRA		Yes/No
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.		Yes
Construction of bridge or similar structure exceeding 50m in length.		No
Construction exceeding 5000m ² .		Yes
Development involving three or more existing erven or subdivisions.		No
Development involving three or more erven or divisions that have been consolidated within the past five years.		No
Rezoning of site exceeding 10 000m ² .		No
Any other development category, public open space, squares, parks, recreation grounds.		No

Site description

Description of the general area affected by development
Type of environment
Water pipeline through typical Kalahari environment
Terrain description
The terrain consists of Kalahari Desert terrain with mostly flat areas. The project area varies from dunes, <i>Klipveld</i> and pans.
Geology
The terrain varies between Quartzite, Quartz, Dolomite and Calcrete visible on the surface. There are several Dolomite outcrops on the landscape. The <i>klipveld</i> consist mostly of Dolomite and quartzite with BIF to a lesser degree. Mostly igneous stones and calcrete sedimentary rocks.
Vegetation
The site footprint is covered by various types of vegetation: Camel Thorn trees (<i>Acacia erioloba</i>), Black Thorn trees (<i>Acacia mellifera</i>), Three Thorn/Driedoring (<i>Rhigozum trichotomum</i>), Skaapbossie (<i>Aizoon schellenbergii</i>), Shepherd tree (<i>Boscia albitrunca</i>), Suurgras (<i>Enneapogon desvauxii</i>), Wild Basil (<i>Ocimum americanum</i>), Honey Locust (<i>Prosopis glandilosa</i>), Tall Bushman grass (<i>Stipagrostis hirtigluma</i>), Silky Bushman grass (<i>Stipagrostis uniplumis</i>), Kortbeen Boesmangras (<i>Stipagrostis obtuse</i>), Kalahari dune Bushman grass (<i>Stipagrostis amabilis</i>).

Waterways/sources	
Several dry riverine beds are present on the site flowing from north to south and from west to east: no perennial rivers or riverine on site.	
Site boundaries	
North: Bounded by Noenieput settlement, South: Bounded by open field and the border fence between Lemoenkolk farm, Witkop 350 farm and Abiquas Aar 352 farm, West: Bounded by a servitude road running from Noenieput to Swartkopdam settlement, East: Bounded by the main secondary gravel road running from Noenieput towards Upington.	
Site access	GPS Co-ordinates
Access to the proposed pipeline development site was obtained from Noenieput settlement towards Swartkopdam alongside the entire pipeline site.	27° 30' 42.49" E 20° 08' 16.36" S
Disturbances	
Natural erosion	
The only natural disturbances detected were the minor dry riverine (non-perennial) flowing in various directions on the site at several areas on the site footprint.	
Human-made	
Existing roads	
Notes	

Environmental recording/Panorama

Way point	Site Name	Description	Location	Photo No.
001		Entrance point Noenieput settlement	27° 30' 42.49" E 20° 08' 16.36" S	096-099
N/A	N/A	Panorama view of servitude road for pipeline construction Swartkopdam alignment	N/A	001-005
N/A	N/A	Panorama view of servitude road for pipeline construction Swartkopdam alignment	N/A	009-012
N/A	N/A	Panorama view of site Swartkopdam alignment	N/A	017-018
N/A	N/A	Panorama view of site Swartkopdam alignment	N/A	039-047
N/A	N/A	Panorama view of proposed pipeline route from Swartkopdam to main secondary road of Noenieput to Upington	N/A	076-085
011	N/A	Corner at Noenieput-Upington main Secondary road where pipe turn towards Noenieput on servitude road. Panorama view of servitude road from Noenieput towards Upington	27° 35' 39.2" E 20° 14' 21.7" S	091-093
012	N/A	Entrance to Witkop farm	27° 35' 38.5" E 20° 14' 21.3" S	N/A
N/A	N/A	Panorama view of servitude road and Noenieput settlement Noenieput alignment	N/A	094-100
N/A	N/A	Panorama view of Swartkopdam settlement	N/A	116-120

Heritage recording

STONE AGE

Way Point/ Site No.	Photo No.	Description	Period	Location	Field rating/ Significance	
002 WTK001	Photo 006-008	Type lithic/s	LSA	27° 32' 12.5" S 20° 07' 24.3" E	IIIC	
		Raw material				Chunks, chips, flakes and small cores
		N in m ² .				Quartzite, dolerite, and BIF
		Context				8 per 100 m ²
		Additional				Surface scatter-Micro knapping site
		Knapping debris				
003 WTK002	Photo 013-016	Type lithic/s	LSA	27° 32' 31.9" S 20° 07' 10.9" E	IIIB	
		Raw material				Chunks, flakes, chips, axe, upper grinders, small cores, points and blades
		N in m ² .				Quartzite, dolerite, hornfel, basalt, chert and CCS
		Context				10 per 1 m ²
		Additional				LSA knapping site
		Knapping debris and tools				
004 ABQ001	Photo 019-024	Type lithic/s	LSA	27° 36' 29.6" S 20° 06' 54.3" E	IIIC	
		Raw material				Chunks, blades, points, chips, cores, upper grinder and flakes
		N in m ² .				Quartzite, dolerite, hornfel, chert and CCS
		Context				10 per 20 m ²
		Additional				LSA knapping site
		LSA debris and tools Disturbed				
005 ABQ002	Photo 025-028	Type lithic/s	LSA	27° 36' 45.8" S 20° 06' 49.7" E	IIIB	
		Raw material				Chunks, scrapers, blades, chips, cores, points and OES
		N in m ² .				Quartzite and Dolerite
		Context				20 per 10 m ²
		Additional				LSA knapping site/workshop site. Possible temporary settlement site.
		LSA debris				
007 ABQ004	Photo 037-038	Type lithic/s	LSA	27° 37' 58.7" S 20° 07' 16.4" E	IIIC	
		Raw material				Flakes and chunks
		N in m ² .				Quartzite and dolerite, hornfel
		Context				5 per 100 m ²
		Additional				Surface scatter: no context
		LSA debris				
008 and 009 ABQ006	Photo 048-075	Type lithic/s	LSA	27° 38' 41.9" S 20° 12' 59.3" E And 27° 38' 40.1" S 20° 12' 59.4" E	IIIA	
		Raw material				Flakes, chunks, points, cores, blades, chips, OES, local ceramics, upper and lower grinders
		N in m ² .				Quartz, quartzite, BIF, dolerite, chert, basalt, hornfel, CCS
		50-100 per 10 m ² some places 250-500 per 10 m ²				

		Context	LSA knapping and temporary settlement site or <i>hxaro</i> site			
		Additional	Knapping debris, tools and ceramics (Settlement site)			
010	Photo 086-090	Type lithic/s	Blade	LSA	27° 36' 22.7" S 20° 14' 01.1" E	IIIC
WTK004		Raw material	hornfels			
		N in m ² .	1 per 100 m ²			
		Context	Surface scatter: no context			
		Additional	LSA debris			
013	Photo 106-112	Type lithic/s	Chunks, cores, chips, flakes, scraper, upper and lower grinder	LSA	27° 32' 58.6" S 20° 07' 01.6" E	IIIB
WTK003		Raw material	Quartzite and dolerite			
		N in m ² .	10 per 20 m ²			
		Context	Knapping site			
		Additional	LSA debris and tools			
014	Photo 113-115	Type lithic/s	Cores, chips, chunks, flakes	LSA	27° 36' 30.7" S 20° 06' 54.6" E	IIIC
ABQ005		Raw material	Quartzite and Dolerite			
		N in m ² .	6 per 50 m ²			
		Context	Knapping site			
		Additional	LSA debris and tools			
016	Photo 125-127	Type lithic/s	Flakes, chips, scraper	LSA	27° 40' 10.8" S 20° 12' 50.0" E	IIIC
ABQ007		Raw material	Quartzite and Dolerite			
		N in m ² .	6 per 100 m ²			
		Context	Surface scatter: no context			
		Additional	LSA debris			

017	Photo 128-130	Type lithic/s	Retouched flakes and scraper	LSA	27° 40' 12.7" S 20° 12' 50.0" E	IIIC
ABQ008		Raw material	Quartzite and Dolerite			
		N in m ² .	8 per 100 m ²			
		Context	Surface scatter: no context			
		Additional	LSA debris			
018	Photo 131-133	Type lithic/s	Retouched flakes and scraper	LSA	27° 40' 15.9" S 20° 12' 53.1" E	IIIC
ABQ009		Raw material	Dolerite, Dolomite and Quartzite			
		N in m ² .	5 per 100 m ²			
		Context	Surface scatter: no context			
		Additional	LSA debris			
019	Photo 134-136	Type lithic/s	Flakes and chunks	LSA	27° 40' 05.1" S 20° 12' 48.2" E	IIIC
ABQ010		Raw material	Quartzite and Dolerite hornfels, chert, and CCS			
		N in m ² .	4 per 100 m ²			
		Context	Surface scatter: no context			
		Additional	LSA debris			
020	Photo 137-143	Type lithic/s	N/A	ESA to Later Iron Age?	27° 39' 56.0" S 20° 12' 42.4" E	IIIA
ABQ011		Raw material	Dolomite			
		N in m ² .	N/A			
		Context	N/A			
		Additional	Possible Ghong stones			

HISTORICAL /COLONIAL FINDS

Waypoint And Site No.	Photo No.	Description	Period	Location	Field Rating
006 ABQ003	029-036	Colonial debris. Hole in cap tin, glass, ceramics and machine soldered tin	Ca. 1890 to 1950	27° 37' 58.7" S 20° 07' 16.3" E	IIIC

GRAVES

Waypoint And Site No.	Photo No.	Description	Period	Location	Field Rating
015 Abiquas Aar 352/11	121-124	Swartkopdam cemetery	Currently in use: official cemetery	27° 40' 07.1" S 20° 12' 50.0" E	II
021 Witkop 350/06	144-145	Noenieput cemetery	Currently in use: official cemetery	27° 30' 46.3" S 20° 08' 05.0" E	II

Discussion

Stone Age finds
<p>Stone Age artefacts are quite densely scattered throughout the landscape. Sporadic scatters of LSA material are located along servitude roads, along the route of the proposed pipeline development, but it is out of context and primarily scattered on previously disturbed areas disturbed by previous road construction. Material resembling Stone Age artefacts are also present but might be the product of construction machinery during road construction. Undisturbed dunes are very sensitive i.t.o Stone Age sites and should be avoided at all costs. The dunes along and beside the servitude road located on private land are also very sensitive i.t.o Stone Age material and should be avoided.</p> <p>Sites located at Waypoint 008 and 009 (Abiquas Aar 352/04) is a typical LSA type site where major knapping activities are evident. Local thin-walled, low fired and undecorated local ceramics are also present on these sites possibly indicating a longer time of settlement and possible Khoi influence. The entire site consists of approximately 1,5 to 2 ha and is located within the route of the proposed pipeline development. OES fragments are scattered throughout the site and it is evident that this site was a prominent workshop/ knapping or hxaro site. Noenieput and surrounding areas are historically known for its Khoi-San origins</p>
Historical finds
<p>Artefacts from the Colonial period were located at one location at Waypoint 006 (Abiquas Aar 352/05). Artefacts vary from glass, European industrial ware ceramics and soldered tins. Noenieput also has extensive colonial history i.t.o agriculture, the school and hostel located in Noenieput which served the surrounding European people from the region as well as from Namibia (SWA) when SWA was still part of the RSA. According to oral history, the settlement developed around a water well located beside a large !Nxuni Tree (Swarthaak) as water was the main reason to sustain life and agriculture during historical times. The word !Nxuni has Khoi origins.</p>
Identified graves
<p>No graves were identified on the development footprint. Two official cemeteries were recorded which are currently in use at Noenieput and Swartkopdam.</p>

Recommendation

Stone Age finds
All undisturbed dunes must be avoided. Mitigation must be enforced to protect site Abiquas Aar 352/04. No development may take place through this site and a safety buffer zone of at least 200m around this site is recommended. Other Stone Age sites as recorded should also be avoided, although thorough registration and recording were done of all locations along the route during our investigation. Refer to field ratings for mitigation.
We recommend the appointment of a Heritage officer to monitor development through this region and to ensure the conservation of recorded sites. Regular Heritage progress reports should be submitted to SAHRA as development progresses.
Historical finds
Historical/Colonial rule finds are of low significance and development may continue in this context.
Identified graves
No graves or burial grounds of any kind were located, identified or recorded on the proposed development footprint or surrounding areas. Two official cemeteries were recorded which are currently in use at Noenieput and Swartkopdam. Development may continue in this context.
Other
Should the pipeline be divided into two alternatives, we still recommend a heritage officer on site while construction, primarily through sensitive areas.

Additional notes

AIA fieldwork commenced on 2020-01-20 to 2020-01-21. The pipeline construction is currently approximately 30km from Noenieput to the North East of Noenieput settlement.
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Declaration of independence:

I, Jan Engelbrecht, hereby confirm my independence as a heritage specialist and declare that:

- I am suitably qualified and accredited to act as an independent specialist in this application;
- I do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- The work was conducted in an objective and ethical manner, in accordance with a professional code of conduct and within the framework of South African heritage legislation.



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Signed
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Date: 2020-01-23
UBIQUE Heritage Consultants