

**Lady Grey Bulk Water Supply – Zachtevlei Dam Long Term Water Supply Project,
Lady Grey, Joe Gqabi District Municipality Drought Relief Programme, Eastern Cape**

- 25 August 2017 -

Report to:

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Specialist Declaration of Interest

I, Karen van Ryneveld (Company – ArchaeoMaps; Qualification – MSc Archaeology), declare that:

- o I act as independent specialist in this application;
- o I do not have any financial or personal interest in the application, its proponent or subsidiaries, aside from fair remuneration for specialist services rendered;
- o I am suitably qualified, accredited and experienced to act as independent specialist in this application;
- o That work conducted have been done in an objective manner – and that any circumstances that may have compromised objectivity have been reported on transparently;
- o That all material information collected for purposes of this application, that may reasonably influence the decision of the competent authority, are transparently disclosed in the report; and
- o That work conducted have been done in accordance with relevant heritage legislation, regulations and policy guidelines, and with cognisance to environmental legislation, regulations and policies, including the principle of Integrated Environmental Management (IEM).



Signature –

- 25 August 2017 -

Lady Grey Bulk Water Supply – Zachtevlei Dam Long Term Water Supply Project, Lady Grey, Joe Gqabi District Municipality Drought Relief Programme, Eastern Cape

Executive Summary

Project Description –

Indwe Environmental Consulting have been appointed as independent EAP by UWP Consulting Engineers on behalf of the project proponent, the JGDM, to apply for EA, including an EIA and EMPr to the Eastern Cape DEDEAT for the proposed *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape. The proposed Zachtevlei Dam, Zagte Vally 32, is situated at general development co-ordinate S30°41'33.8"; E27°10'57.4". The scope of the Zachtevlei Dam development includes:

- The construction of an approximate 0.45MAR zoned earth embankment dam with clay core on Portion 2 of Zagte Vally 32, with inundation on Portions 1 and 10 of Zagte Vally 32, complete with outlet works, spillway and appurtenant works;
- Pump station below the dam delivering raw water to the existing treatment plant;
- Pumping main between the pump station and water treatment plant; and
- Reservoir and / or division structure to receive waters from Lady Grey and / or Zachtevlei dams, and to deliver the combined flows to the water treatment plant under gravity; and
- New and refurbished access roads to the dam / pump station; and
- New medium voltage electricity point supply to the pump station / dam.

The current EIA focus on development of the Zachtevlei Dam only, and excludes bulk conveyance and associated infrastructure, the particulars of which will be defined and designed upon approval of the Zachtevlei Dam development.

The Phase 1 Archaeological & Cultural Heritage Impact Assessment –

Project Name & Locality: Lady Grey Bulk Water Supply – Zachtevlei Dam Long Term Water Supply Project, Lady Grey, Joe Gqabi District Municipality Drought Relief Programme, Eastern Cape [1:50,000 Map Ref – 3027Ca].

Summary of Findings:

Four (4) archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the field assessment, namely Sites ZVD-S1 to ZVD-S4. All 4 sites are classified as Colonial Period structure sites, with these dating to the period circa 1851, by definition constituting archaeological sites [manmade structures older than 100 years, as per the NHRA 1999, Section 2(ii)(a)]. Of the identified sites 3 will be conserved, namely Site ZVD-S1, ZVD-S2 and ZVD-S3. Site ZVD-S4 will be directly impacted by development. Based on the low archaeological heritage significance of Site ZVD-S4, it is recommended that destruction of the site proceed without the developer having to apply for a Site Destruction Permit.

- The proposed development poses no 'fatal flaws' with reference to archaeological and cultural heritage resources.
- From an archaeological and cultural heritage point of view consideration of a 'No-Go' option is irrelevant.
- Conservation of specifically Site ZVD-S3, or 'The Mill', will from a cultural landscape and cumulative heritage perspective enhance the development during the operational phase.
- [In the event of any incidental archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, being identified during the course of development the process described in 'Appendix B: Heritage Protocol for Incidental Finds during the Construction Phase' should be followed.]

Heritage Compliance Summary – Zachtevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Zachtevlei Dam, Zagte Vally 32 (S30°41'33.8"; E27°10'57.4")			
Site ZVD-S1	Colonial Period: Structure	S30°42'00.9"; E27°10'29.0"	Temporary heritage signage during the construction phase. (Formal heritage conservation measures in place)
Site ZVD-S2	Colonial Period: Structure	S30°41'59.5"; E27°10'31.2"	Temporary heritage signage during the construction phase. (Formal heritage conservation measures in place)
Site ZVD-S3	Colonial Period: Structure 'The Mill'	S30°41'52.4"; E27°10'53.2"	Temporary heritage fencing and signage during the construction phase. (Permanent heritage conservation measures during the operational phase not recommended due to negative impact thereof on the cultural landscape)
Site ZVD-S4	Colonial Period: Structure	S30°41'51.2"; E27°10'55.4"	Site destruction without the developer having to apply for a Site Destruction Permit

Recommendations –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed Zachtevlei Dam development, Zagte Vally 32, near Lady Grey, JGDM, Eastern Cape, proceed as applied for provided the developer comply with the above-mentioned heritage compliance recommendations.

The EC PHRA-APM Unit HIA Comment will state legal requirements for development to proceed, or reasons why, from a heritage perspective, development may not be further considered.

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Resumé: Karen van Ryneveld

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1 – Project Description & Terms of Reference

Indwe Environmental Consulting have been appointed as independent Environmental Assessment Practitioner (EAP) by UWP Consulting Engineers on behalf of the project proponent, the Joe Gqabi District Municipality (JGDM), to apply for Environmental Authorization (EA), including an Environmental Impact Assessment Report (EIA) and Environmental Management Plan (EMPr) to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) for the proposed *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape. The proposed Zachtevlei Dam, Zagte Vally 32, is situated at general development co-ordinate S30°41'33.8"; E27°10'57.4", with development inferred to take an estimated 5-10 years, but with the development motivated by severe water shortages in the Lady Grey area (Lady Grey town and CBD, Transwilger and Khwezi Naledi), including significant current and future net supply deficits associated with general poor groundwater potential and exacerbated by recent droughts. The scope of the Zachtevlei Dam development includes (UWP Consulting 2017):

- o The construction of an approximate 0.45MAR zoned earth embankment dam with clay core on Portion 2 of Zagte Vally 32, with inundation on Portions 1 and 10 of Zagte Vally 32, complete with outlet works, spillway and appurtenant works;
- o Pump station below the dam delivering raw water to the existing treatment plant;
- o Pumping main between the pump station and water treatment plant; and
- o Reservoir and / or division structure to receive waters from Lady Grey and / or Zachtevlei dams, and to deliver the combined flows to the water treatment plant under gravity; and
- o New and refurbished access roads to the dam / pump station; and
- o New medium voltage electricity point supply to the pump station / dam.

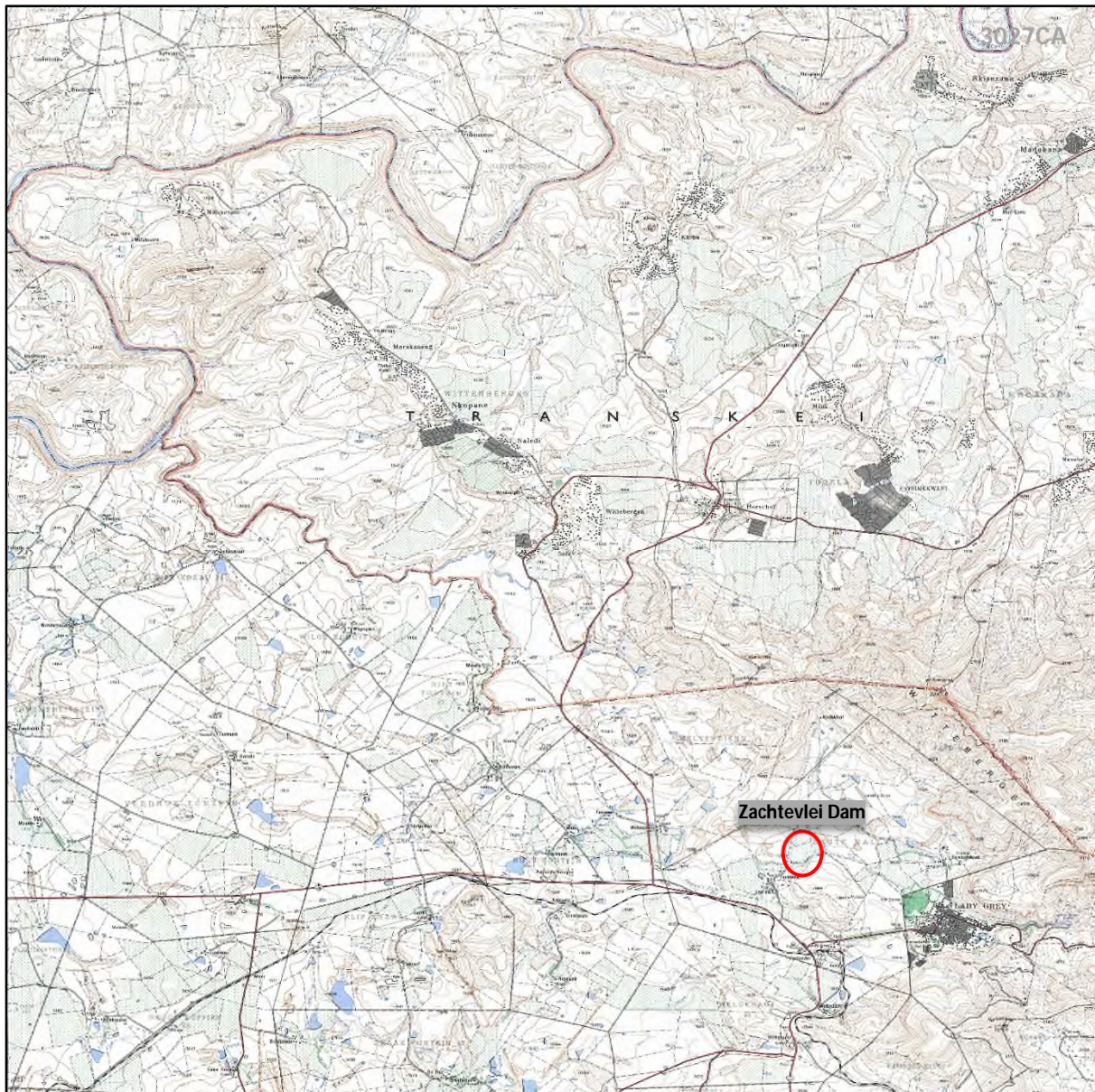
The current EIA focus on development of the Zachtevlei Dam only, and excludes bulk conveyance and associated infrastructure, the particulars of which will be defined and designed upon approval of the Zachtevlei Dam development.

ArchaeoMaps have been appointed by Indwe Environmental Consulting to compile the Phase 1 Archaeological & Cultural Heritage Impact Assessment (AIA) for the development, as specialist component to the application's Heritage Impact Assessment (HIA), and with findings and recommendations thereof to be included in the EIA and EMPr. Terms of Reference (ToR) for the Phase 1 AIA are summarized as:

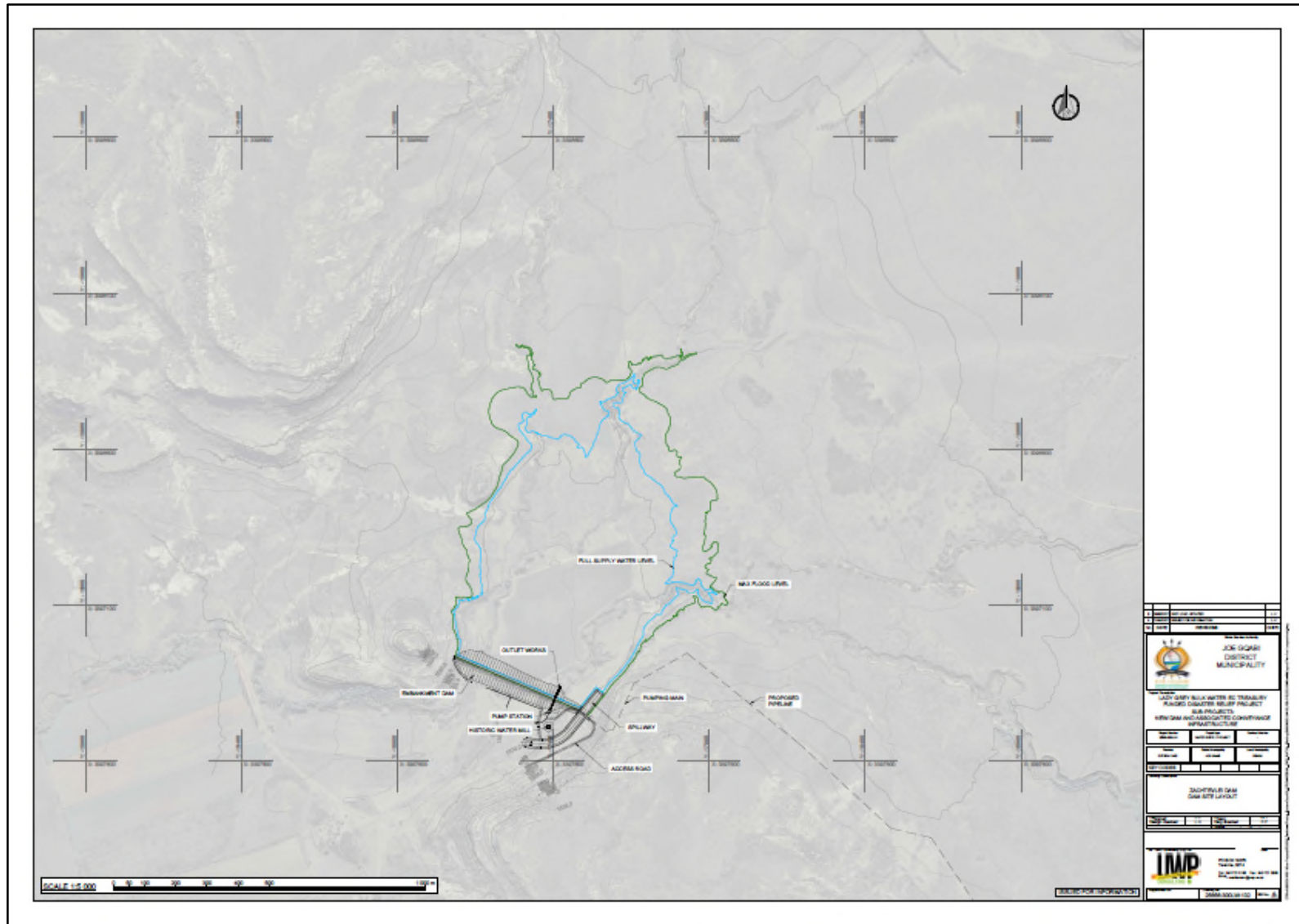
- o Describe the existing area to be directly affected by the proposal in terms of its archaeological and cultural heritage characteristics as formally protected by the National Heritage Resources Act, No 25 of 1999 (NHRA 1999) and the general sensitivity of these components to change;
- o Describe the likely scope, scale and significance of impacts (positive and negative) on the archaeological and cultural heritage resources of the area associated with the 1) construction and 2) operation or use phases of the proposal;
- o Make recommendations on the scope of any mitigation measures that may be applied during the 1) construction and 2) operation or use phases to reduce / avoid the significance of identified related impacts. Mitigation measures could be design recommendations as well as operational controls, monitoring programmes, Phase 2 mitigation, management procedures and the like;
- o Broadly describe the implication of a 'No-Go' option;
- o Broadly comment on the cumulative impact (positive or negative) on archaeological or cultural heritage resources associated with the 1) construction and 2) operation or use phases of the proposal; and
- o Confirm if there are any outright 'fatal flaws' to the proposal at its current location from an archaeological and cultural heritage perspective.



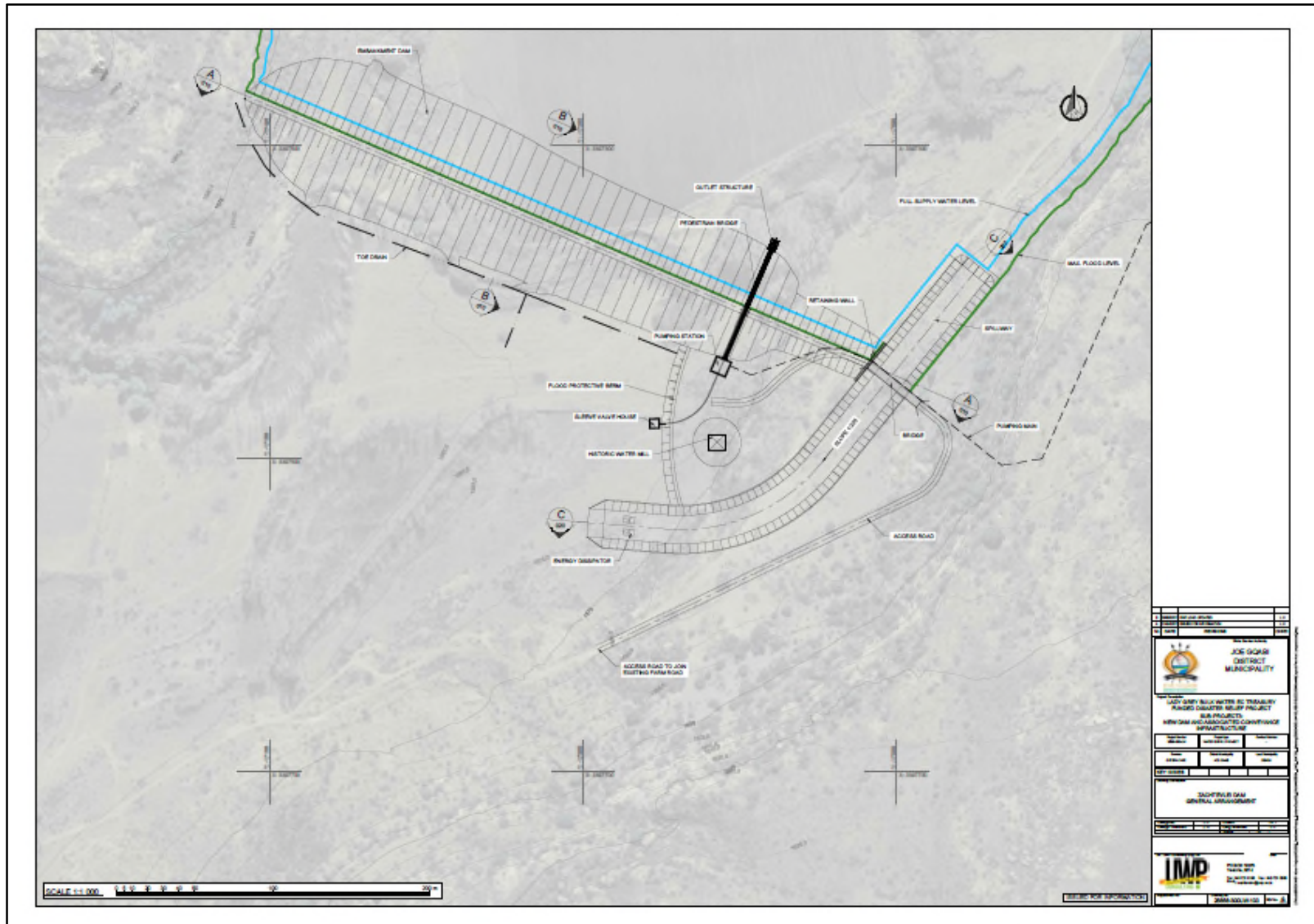
Map 1: General locality of the Zachevlei Dam, Zagte Vally 32, Lady Grey, JGDM, Eastern Cape (Base Map – MapStudio, 2008)



Map 2: Locality of the Zachevlei Dam, Zagte Vally 32, Lady Grey, JGDM, Eastern Cape, study site [1: 50,000 Map Ref – 3027CA]



Map 3: Design plan: Zachtevei Dam (UWP Consulting 2017)



Map 4: Design plan: Zachtevlei Dam, close-up of the dam wall (UWP Consulting 2017)

2 – The Phase 1 Archaeological & Cultural Heritage Impact Assessment

2.1) Archaeological & Cultural Heritage Legislative Compliance

The Phase 1 Archaeological & Cultural Heritage Impact Assessment (AIA) for the *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape, was requested to meet the Eastern Cape Provincial Heritage Resources Authority's (EC PHRA) requirements with reference to archaeological and basic cultural heritage resources in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Section 38(1)(c)(i). This report is submitted in (partial) fulfilment of the NHRA 1999, Section 38(3) requirements, for purposes of a NHRA 1999, Section 38(4) / Section 38(8) Heritage Impact Assessment (HIA) Comment by the EC PHRA.

NHRA 1999, Section 38	
1)	Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorized as –
a)	The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
b)	The construction of a bridge or similar structure exceeding 50m in length;
c)	Any development or other activity which will change the character of a site –
i.	Exceeding 5,000m² in extent; or
ii.	Involving three or more existing erven or subdivisions thereof; or
iii.	Involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
iv.	The costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d)	The rezoning of a site exceeding 10,000m ² in extent;
e)	Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
Must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.	

Table 1: Extract from the NHRA 1999, Section 38

The Phase 1 AIA aimed to locate, identify and assess the significance of archaeological and cultural heritage resources, inclusive of archaeological deposits / sites (Stone Age, Iron Age and Colonial Period), rock art and shipwreck sites, built structures older than 60 years, sites of military history older than 75 years, certain categories of burial grounds and graves, graves of victims of conflict, basic living heritage and cultural landscapes and viewsapes as defined and protected by the NHRA 1999, Section 2, 34, 35 and 36, that may be affected by the development.

This report comprises a Phase 1 AIA, including a basic pre-feasibility study and field assessment only. The report was prepared in accordance with the 'Minimum Standards' specifications for Phase 1 AIA reports, as stipulated by SAHRA (2007).

Additional relevant legislation pertaining to the Phase 1 AIA is listed as:

- National Environmental Management Act, No 107 of 1998 (NEMA 1998) and associated Regulations (2017).

2.2) Methodology & Gap Analysis

The Phase 1 AIA includes a basic pre-feasibility study and field assessment:

- The pre-feasibility assessment is based on the Appendix A schematic outline of South Africa's Pre-colonial and Colonial past, associated with introductory archaeological as well as general and scientific literature available and relevant to the study site. Databases consulted include the SAHRA 2009 Mapping Project Database (MPD), the South African Heritage Resources Information System (SAHRIS) and SAHRA database(s) on declared Provincial Heritage Sites (PHS) pertaining to the study site. The study excludes consultation of museum and university databases.
- The field assessment was done over a 1 day period (2017-08-19) with fieldwork conducted by the author. The assessment was done by vehicle and foot and limited to a Phase 1 surface survey. GPS co-ordinates were taken

with Garmin Montana 650 (Datum: WGS84) Photographic documentation was done with a Canon EOS 1300D camera. A combination of Garmap (Base Camp) and Google Earth software was used in the display of spatial information.

The Phase 1 AIA was done according to the system and 'Minimum Standards' prescribed for the 3-tiered Phase 1-3 Heritage Impact Assessment (HIA) process (SAHRA 2007):

- Phase 1 HIA – A Phase 1 HIA is compulsory for development types as stipulated in the NHRA 1999, Section 38(1) and Section 38(8), including any other development type or study site as required by the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Authority (PHRA). A Phase 1 HIA comprises at minimum of an archaeological (AIA) and palaeontological (PIA) study, but aims to address all heritage types protected by the NHRA 1999 and to alert developers to additional heritage specialist study requirements, if and where relevant to a development. Phase 1 HIA studies focusses on pre-feasibility and desktop studies, routinely coined with field assessments in order to locate, describe and assign heritage site significance ratings to identified resources that may be impacted by development. The aim of a Phase 1 AIA is to make site specific and general development recommendations regarding identified heritage resources for development planning and implementation purposes and may include recommendations for conservation, heritage site declaration, monitoring, Phase 2 mitigation (excavation), or destruction.
- Phase 2 HIA – Phase 2 HIAs are as a norm required where heritage resources of such significance have been identified during the Phase 1 HIA that mitigation (excavation) thereof is necessary for development purposes. Aside from large scale Phase 2 mitigation (routinely to precede development impact), lower keyed Phase 2 requirements may well include sampling, testing and monitoring during the construction or implementation phase of a development. Phase 2 HIA work is as a norm done under a compulsory heritage permit.
- Phase 3 HIA – As an extension to Phase 2 HIA work or cases where recommendations for heritage declaration formed part of a development's heritage compliance requirements, heritage resources of such scientific or heritage tourism significance, that their long-term conservation and continued research would be necessary within a development framework is proposed as a Phase 3 HIA.

Archaeological and cultural heritage site significance assessment and associated mitigation recommendations are done according to the combined NHRA 1999, Section 7(1) and SAHRA (2007) system.

SAHRA Archaeological & Cultural Heritage Site Significance System			
Site Significance	Field Rating	Grade	Recommended Mitigation
High Significance	National Significance	Grade I	Heritage site conservation / Heritage site development
High Significance	Provincial Significance	Grade II	Heritage site conservation / Heritage site development
High Significance	Local Significance	Grade III-A	Heritage site conservation or extensive mitigation prior to development / destruction
High Significance	Local Significance	Grade III-B	Heritage site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	Grade IV-A	Heritage site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	Grade IV-B	Heritage site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	Grade IV-C	On-site sampling, monitoring or no heritage mitigation required prior to or during development / destruction

Table 2: SAHRA archaeological and cultural heritage site significance assessment ratings and associated mitigation recommendations

2.1.1) Pre-feasibility Summary

Based on the Appendix A schematic outline of the Pre-colonial and Colonial Periods in South Africa and background literature and database information, the probability of archaeological and cultural heritage resources affected by, or situated in proximity to *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape, can briefly be described as:

Archaeological and Basic Cultural Heritage Probability Assessment – Zachtevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape			
Primary Type / Period	Sub-period	Sub-period type site	Probability
EARLY HOMININ / HOMINID	-	-	None
	Graves / human remains: High scientific significance		
STONE AGE	Earlier Stone Age (ESA)		Low
	Middle Stone Age (MSA)		Low
	Later Stone Age (LSA)		Medium-High
		Rock Art	High
		Shel Middens	None
	Graves / human remains: ESA & MSA - High scientific significance; LSA – High scientific & social significance		
IRON AGE	Early Iron Age (EIA)		None
	Middle Iron Age (MIA)		None
	Later Iron Age (LIA)		Low-Medium
	Graves / human remains: EIA – High scientific significance; MIA & LIA – High scientific & social significance		
COLONIAL PERIOD	Colonial Period		High
		LSA – Colonial Period Contact	Low-Medium
		LIA – Colonial Period Contact	Low-Medium
		Industrial Revolution	Low
		Apartheid & Struggle	Low
	Graves / human remains: Medium-high scientific & high social significance		

Table 3: Archaeological and basic cultural heritage probability assessment

2.1.2) The SAHRA 2009 MPD & SAHRIS

Two (2) archaeological Cultural Resources Management (CRM) reports are recorded in the SAHRA 2009 Mapping Project Database (MPD) and situated within an approximate 20km radius from the proposed *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape, study site, referenced as:

- Dreyer, C. 2005. (Private). *Archaeological and Cultural Heritage Assessment of the Proposed Installation of a Sewer Plant at Herschel, Eastern Cape.*
- Dreyer, C. 2008. (Private). *First Phase Archaeological and Cultural Heritage Investigation of the Proposed New Solid Waste Landfill Site at Sterkspruit, Eastern Cape.*

Post compilation of the SAHRA 2009 MPD four (4) SAHRIS cases have been recorded, with study sites situated within the rough 20km radius from the *Zachtevlei Dam Long Term Water Supply Project* study site. One (1) recorded SAHRIS case is not associated with a heritage report (SAHRIS CaseID 6608), while three (3) of the SAHRIS cases are associated with archaeological CRM reports, referenced as:

- Anderson, G. 2013. (Umlando). *Heritage Survey of the Melkspruit-Riebeeck 132kV Powerline Project.* (SAHRIS CaseID 1716).
- Rossouw, L. (Undated). (Palaeo Field Services). *Phase 1 Heritage Impact Assessment of the Proposed New Construction of a New Waste Water Treatment Works (WWTW) and Associated Pipeline Infrastructure in the Town of Sterkspruit, Eastern Cape Province.* (SAHRIS CaseID 6442).
- (Unauthored). 2015. (Heritage Screener). *Lady Grey Bulk Water Supply Scheme.* (SAHRIS CaseID 8860).
- Van Schalkwyk, L. & Wahl, E. 2011. (eThembeni). *Phase 1 Heritage Impact Assessment of Construction of 132kV Overhead Line from Melkspruit to Riebeeck Substations and the Installation of Transformers at the Riebeeck and Sterkspruit Substations, Maletswai Local Municipality, Eastern Cape Province, South Africa.* (SAHRIS CaseID 1716).

2.1.3) SAHRA Provincial Heritage Site Database – Eastern Cape

One geo-referenced declared Provincial Heritage Site (PHS) is recorded in the SAHRA – Eastern Cape database (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape) and situated within the approximate 20km radius from the proposed *Zachtevelei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape, study site, with the site being situated in the town of Lady Grey, approximately 3,5km from the proposed Zachtevelei Dam development, and referenced as:

- SAHRA Identifier 9/2/057/0004 - Dutch Reformed Church, Joubert Street, Lady Grey



Map 5: Spatial distribution of geo-referenced PHSs in the SAHRA – Eastern Cape database in relation to the *Zachtevelei Dam Long Term Water Supply Project* study site (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape)

2.1.4) General Discussion

To date no Earlier Stone Age (ESA) sites or occurrences have been reported on in archaeological CRM reports consulted. A number of Stone Age occurrences simply documented as ‘stone tool scatters’ by Anderson (2013) at the Melkspruit-Riebeeck study site may represent ESA or Middle Stone Age (MSA) findspots, but the inferred amorphous character of the occurrences, or absence of lithic *fossils directeurs*, typological lithic identifiers at these findspots largely fails to confirm temporal association. At the Melkspruit-Riebeeck study site Anderson (2013) documented a single confirmed MSA occurrence, two (2) MSA / Later Stone Age (LSA) mixed occurrences, two (2) LSA lithic sites, one (1) LSA lithic site found in association with historical (Colonial Period) artefacts, and one (1) LSA Rock Art shelter, with a number of painted panels including human and animal figurines in a fine lined style. From a Stone Age perspective, it seems that LSA type sites dominate, with these, with specific reference to Rock Art being of prime importance. Van Riet Lowe (1941) documented a number of painted Rock Art shelter sites across the greater terrain, along the foothills of the Drakensberg, and including the Witteberg Mountains. However, early documentation standards do not allow easy or accurate inclusion in geo-spatial analysis, but nonetheless serves as testimony to the rich and valued LSA heritage of the area. Henry (2010) describes the Rock Art of the Eastern Cape Drakensberg foothills as primarily fine lined art, attributable to the San, with a number of San and other cultural groups having had been recorded living in the area during the latter part of the 19th Century. Aside from fine lined painted panels Henry identified a Type 2 and Type 3 art, including brush and finger type painted panels respectively, which she associated with either Khoe (Type 2) or LIA groups (Type 3) present in the area, or in the case of Type 2 paintings representative of significant social-political pressure and change amongst the San.

Recorded Iron Age sites are scarce, with these being confirmed Later Iron Age sites (LIA), set firmly in a Colonial Period context and including labourers cottages reported on by Anderson (2013) and possibly two (2) sites documented as low rising stone wall sites, although these may be Colonial Period sites by cultural association, situated within the Melkspruit-Riebeeck study site. Dreyer (2005) reported on the ruined remains of an approximate 2m in diameter, circular stone built structure at the Herschel sewer plant study site, but again with no tangible confirmation of site assignment as pastoralist LSA, LIA or Colonial Period.

Confirmed Colonial Period recorded resources include two (2) buildings older than 60 years, one (1) of which is an original farmstead and can reasonably be inferred to pre-date 100 years of age, and an old stone mill (Anderson 2013).

Grave and cemetery type sites include a single grave dated to 1915, identified by Anderson (2013) during his Melkspruit-Riebeeck assessment and a small cemetery located near the entrance to the proposed Sterkspruit WWTW study site (Rossouw, undated).

Lady Grey, situated in the foothills of the Witteberg Mountains, was established on the Farm Waaihoek after the property was purchased in 1857 by the Dutch Reformed Church with the purpose of establishing a new congregation. The first church was completed in 1860. Initially the Reverend from Aliwal-North conducted a service once a month in Lady Grey, but in 1863 Reverend David Ross from Scotland accepted an invitation from the Lady Grey congregation. Upon his arrival Lady Grey consisted of little more than a church, a parsonage, two (2) shops and a few houses. The first Magistrates Court, with a post office and goal on the same property, was completed in 1889, and evacuated in 1923 when the new Magistrates Court was built on the property. Lady Grey became a municipality in 1893, with B.J. Brummer as the first Mayor. A number of Boer War (1899-1902) sites are present in the Lady Grey area, with of the surrounding gorges used as hideouts by both Boer and Brit. By 1905 the railway line between Aliwal-North and Lady Grey was completed and Lady Grey became an important trading centre with an ever-growing economy, with at least 3 hotels hosted by the town at the time; the Poplar Hotel, the Central Hotel and the Commercial Hotel. By 1925 construction of the Lady Grey dam, also known as the 'groot dam' or reservoir was completed. In 1926 the David Ross School was built, named after the Reverend David Ross, with the building currently restored and still in use by the Lady Grey Arts Academy. The economy of Lady Grey declined radically from the 1960s to the mid-1990s, but the town has revived itself economically in more recent years (https://en.wikipedia.org/wiki/Lady_Grey,_Eastern_Cape; www.ladygrey.co.za/index_files/Page425html).

According to the records of the Chief Surveyor General (CSG) the Zachtevlei Dam study site, situated on the Farm Zagte Vally 32, with the property first registered in 1851 to R.P. van Wyk, further indicates that a 2 morgen area of Zagte Vally 32 was registered as 'The Mill', with the registration similarly dated 1851, and also granted to R.P. van Wyk.

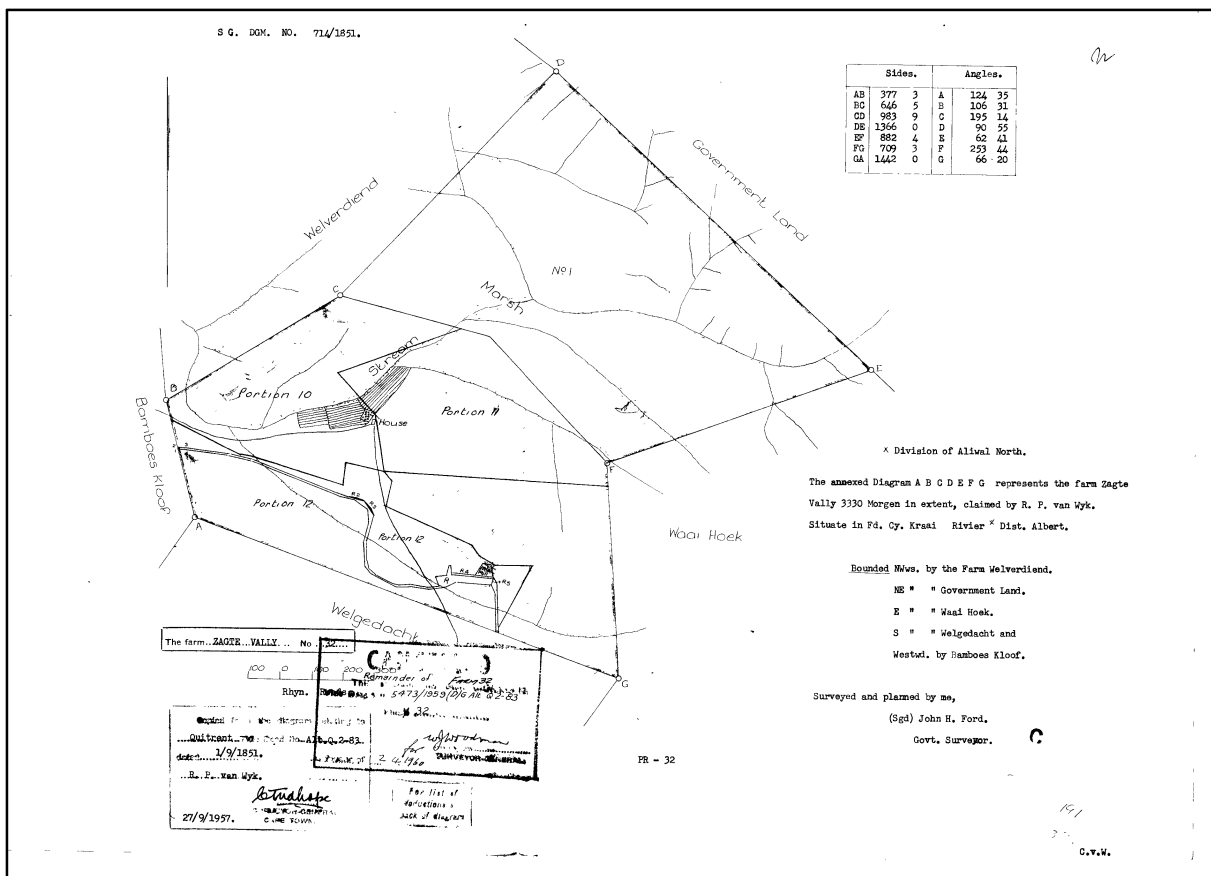


Figure 1: Registration of Zagte Vally 32 in 1851 (CSG Record nr – 492/1921)

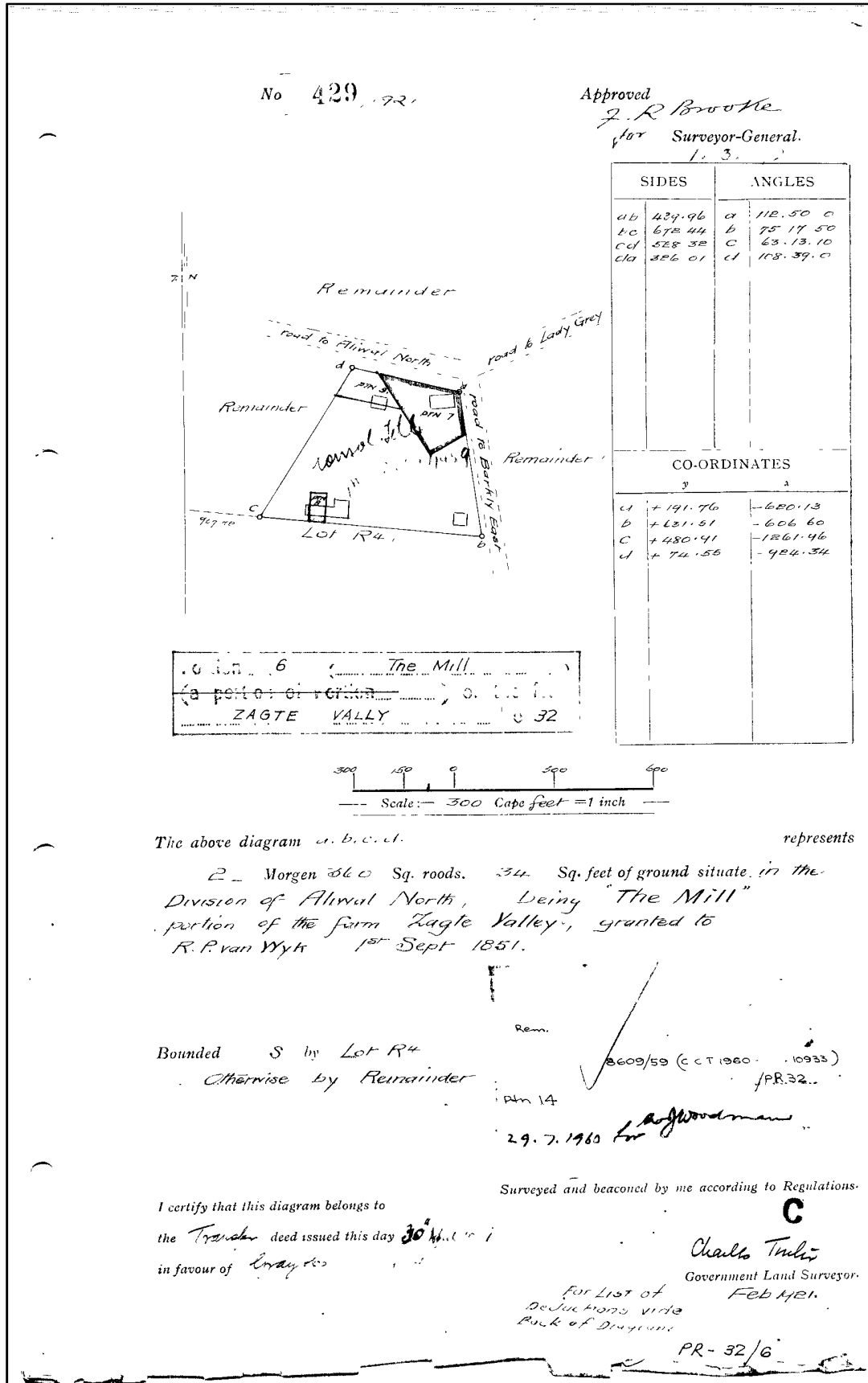


Figure 2: Registration of 'The Mill' on a portion of Zagte Vally 32, 1851 (CSG Record nr 714/1851)

Four (4) archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the field assessment of the proposed *Zachtevlei Dam Long Term Water Supply Project*, near Lady Grey, JGDM, Eastern Cape, study site, namely Sites ZVD-S1 to ZVD-S4. All 4 sites are classified as Colonial Period structure sites, with these dating to the period circa 1851, by definition constituting archaeological sites [manmade structures older than 100 years, as per the NHRA 1999, Section 2(ii)(a)]. Of the identified sites three (3) will be conserved, namely Site ZVD-S1, ZVD-S2 and ZVD-S3. Conservation of specifically Site ZVD-S3, or 'The Mill', will from a cultural landscape and heritage cumulative assessment perspective enhance the development during the operational phase. Site ZVD-S4 will be directly impacted by development. Based on the low archaeological heritage significance of Site ZVD-S4, it is recommended that destruction of the site proceed without the developer having to apply for a Site Destruction Permit.

Visibility across the study site at the time of the field assessment can be described as good. Aside from the reported on heritage resources, no other surface heritage indicators, or sub-surface anthropogenic stratigraphic members or lenses, present in exposed, in excess of 1m in depth river and streambeds, signified a heritage sensitivity other than that reported on in this report. However, despite the apparent absence of sub-surface heritage resources, the possibility of such resources being encountered during the course of construction cannot be excluded. In the event of any heritage resources, as defined and protected by the NHRA 1999, being encountered during the course of construction, the process described in 'Appendix B: Heritage Protocol for Incidental Finds during the Construction Phase' should be followed.

2.2.1) Site ZVD-S1 – Colonial Period: Structure – S30°42'00.9"; E27°10'29.0"

Site ZVD-S1 comprises a Colonial Period structure (barn). The site is formally protected by the NHRA 1999, both as a structure older than 60 years of age and as an archaeological site / manmade structure older than 100 years, believed to have been constructed around the time of registration of the property in 1851 and built with bricks made of termite mounds. Site ZVD-S1 is fairly well conserved and still in use. The site is situated approximately 550m from the dam wall, with the portion of the farm on which the site is situated formally fenced with an access gate. The site will not be impacted by development, with current conservation measures (permanent fence with access gate) complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation.

- **Site Significance and Recommendations:** Site ZVD-S1 receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating* (NHRA 1999, Section 34). However, from an archaeological perspective [NHRA 1999, Section 2(ii)(a), and Section 35] the site is ascribed a SAHRA / EC PHRA *Medium Significance* with a *Generally Protected IV-B Field Rating*. With specific reference to the NHRA 1999, Section 2(ii)(a) it is argued that the site's classification as an archaeological site takes precedence over its description as a NHRA 1999, Section 34 site. Site ZVD-S1 will not be impacted by development.

Formal conservation measures (permanent fence with access gate) are already in place with these complying with SAHRA / EC PHRA Minimum Standards. It is recommended that temporary signage be attached at the existing conservation fence indicating the site as a '*Caution – Heritage Site*' to ensure no accidental impact during the construction phase. Temporary conservation signage should be removed upon completion of construction.

2.2.2) Site ZVD-S2 – Colonial Period: Structure – S30°41'59.5"; E27°10'31.2"

Site ZVD-S2 comprises the ruined wall remains of a Colonial Period structure, situated in close proximity to Site ZVD-S1. Similar to Site ZVD-S1, Site ZVD-S2 is formally protected by the NHRA 1999 as a structure older than 60 years and as an archaeological site older than 100 years, with the site reasonably inferred to have been constructed around 1851. The site is no longer in use. Formal conservation measures (permanent fence with access gate) are in place, affecting the farm portion on which the site is situated. Site ZVD-S2 is situated more or less 550m from the dam wall and will not be impacted by development.

- **Site Significance and Recommendations:** Site ZVD-S2 receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating* (NHRA 1999, Section 34). From an archaeological perspective [NHRA 1999, Section 2(ii)(a), and Section 35] the site is ascribed a SAHRA / EC PHRA *Low Significance* with a *Generally Protected IV-C Field Rating*. With reference to the NHRA 1999, Section 2(ii)(a) it is argued that the site's classification as an archaeological site takes precedence over its description as a NHRA 1999, Section 34 site. Site ZVD-S2 will not be impacted by development. Current formal conservation measures (permanent fence with access gate) affecting the farm portion on which both Site ZVD-S1 and Site ZVD-S2 are situated comply with SAHRA / EC PHRA Minimum Standards.

Similar to the recommendations for Site ZVD-S1, it is recommended that temporary heritage signage, indicating the site as '*Caution – Heritage Site*' be attached at the existing conservation fence during the construction phase of development to ensure no accidental impact on Site ZVD-S2 (and Site ZVD-S1). Temporary heritage signage should be removed upon completion of construction.

2.2.3) Site ZVD-S3 – Colonial Period: Structure 'The Mill' – S30°41'52.4"; E27°10'53.2"

Site ZVD-S3 comprises the Colonial Period 'The Mill', registered in 1851 to R.P. van Wyk (see Figure 2, CSG Record nr 714/1851). The site is characterized by the fairly well conserved, but ruined remains of the old stone mill, complete with a stream that feeds the horizontal water wheel and the mill structure itself. The mill has fallen into disuse many years ago. More recent investigation into the rehabilitation of the site by landowner Soon Cloete has proven financially not viable, based both on cost and availability of technical expertise to restore or re-manufacture parts. The site is situated approximately 40m from the dam wall, with no formal conservation measures in place.

- **Site Significance and Recommendations:** Site ZVD-S3 receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating* (NHRA 1999, Section 34). From an archaeological perspective [NHRA 1999, Section 2(ii)(a), and Section 35] the site is ascribed a SAHRA / EC PHRA *High / Medium Significance* with a *Generally Protected IV-A Field Rating*. With reference to the NHRA 1999, Section 2(ii)(a) it is argued that the site's classification as an archaeological site takes precedence over its description as a NHRA 1999, Section 34 site. Despite close proximity (approximately 40m) to the dam wall, Site ZVD-S3 will not be directly impacted by development; Site ZVD-S3, or 'The Mill' will be conserved.

It is recommended that temporary conservation measures, including a temporary fence (construction netting, or a similar type visually clear demarcation) be erected around the site and that temporary signage, indicating the site as '*Caution – Heritage Site*' be attached at intervals to the temporary fence for the tenure of construction. All temporary heritage conservation measures should be removed after the construction phase.

Long-term (operational phase) formal conservation measures (permanent fence with access gate) are not recommended. Based on landscape gradient and the impact of formal conservation measures on natural resources (stream that feeds the water wheel) permanent conservation measures may not be feasible, whilst it is also argued that such measures will have a negative impact on the cultural landscape. Comment needs to be made that proper conservation of Site ZVD-S3 will enhance the development during the operational phase from a heritage perspective: The setting of the old mill against the backdrop of the dam wall will provide a unique historical ambiance to the development, with direct reference also to its early technological significance to farming development in the Lady Grey area.

2.2.4) Site ZVD-S4 – Colonial Period: Structure – S30°41'51.2"; E27°10'55.4"

Site ZVD-S4 constitutes the ruined mud wall remains of an old grain storage facility, directly related to operation of 'The Mill', or Site ZVD-S3, circa 1851 onwards. Ruined wall remains represents a structure originally measuring approximately 8x4m in surface size, with walls standing in places to more or less 80cm high. No conservation measures are in place. The site will be directly impacted by development.

- **Site Significance and Recommendations:** Site ZVD-S4 receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating* (NHRA 1999, Section 34). From an archaeological perspective [NHRA 1999, Section 2(ii)(a), and Section 35] the site is ascribed a SAHRA / EC PHRA *Low Significance* with a *Generally Protected IV-C Field Rating*. With reference to the NHRA 1999, Section 2(ii)(a) it is argued that the site's classification as an archaeological site takes precedence over its description as a NHRA 1999, Section 34 site.

The site will be directly impacted (destroyed) by development. Based in the site's low archaeological heritage significance and inevitable continued natural weathering of the site's mud walls, with the mud walls beyond repair or restoration status, it is recommended that destruction of the site proceed, as an archaeological site [manmade structure older than 100 years as per the definition of an archaeological site, NHRA 1999, Section 2(ii)(a)], within the development framework, by approval of destruction by the EC PHRA – APM Unit only and without the developer having to apply for a NHRA 1999, Section 34 permit to the EC PHRA – BE Unit.



Map 6: Phase 1 AIA findings for the Zachtevlei Dam development, Farm Zagte Vally 32, near Lady Grey, JGDM, Eastern Cape



Plate 1: General view of Sites ZVD-S1 and ZVD-S2



Plate 3: View of Site ZVD-S2



Plate 2: View of Site ZVD-S1



Plate 4: General view of 'The Mill', Site ZVD-S3 [1]



Plate 5: General view of 'The Mill', Site ZVD-S3 [2]



Plate 7: General view of 'The Mill', Site ZVD-S3 [3]



Plate 6: General view of 'The Mill', Site ZVD-S3 [2]



Plate 8: View of the area immediately south of the Zagtevei Dam wall



Plate 9: View across the area where the dam wall will be constructed



Plate 11: General view – Zachtelei Dam inundation area [2]



Plate 10: General view – Zachtelei Dam inundation area [1]



Plate 12: General view – Zachtelei Dam inundation area [3]



Plate 13: General view – Zachtelei Dam inundation area [4]



Plate 15: General view – Zachtelei Dam inundation area [6]



Plate 14: General view – Zachtelei Dam inundation area [5]



Plate 16: General view – Zachtelei Dam inundation area [7]

3 – Environmental Impact Assessment Rating

Identified archaeological and cultural heritage resources are ascribed an Environmental Impact Assessment (EIA) rating, based on the outline presented below to provide a significance rating of development impact on resources, both during the 1) construction and 2) operation and use phases of development (in accordance with NEMA 1998, Regulations 2014):

Overall Nature:	1) Negative (negative impact on affected biophysical or human environment), or 2) Positive (benefit to the affected biophysical or human environment).
Type:	1) Direct (caused by the action and occur at the same time and place), 2) Indirect or secondary (caused by the action and are later in time or further removed in distance but reasonably foreseeable), or 3) Cumulative (impact which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions; can result from individually minor, but collectively significant actions taking place over a period of time).
Spatial Extent:	1) Site (immediate area of activity, incorporating a 5m zone from the edge of the affected area), 2) Local (area up to and/or within 10km from the 'site' as defined above), 3) Regional (entire community, basin or landscape), or 4) National (South Africa).
Duration:	1) Short-term (impact would last for the duration of activities; quickly reversible), 2) Medium-term (impact would affect project activity; reversible over time), 3) Long-term (impact would continue beyond project activity), or 4) Permanent (impact would continue beyond decommissioning).
Severity:	1) Low , 2) Medium , or 3) High , being +) Positive , or -) Negative (based on separately described categories examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functionality or slightly alters the environment itself).
Reversibility:	1) Completely reversible (completely reversible impact with implementation of correct mitigation measures), 2) Partly reversible (partly reversible impact with implementation of correct mitigation measures), or 3) Irreversible (impact cannot be reversed, regardless of mitigation or rehabilitation measures).
Irreplaceable loss:	1) Resource will not be lost (resource will not be lost provided mitigation measures are implemented), 2) Resource will be partly lost (partial loss or destruction of the resource will occur even though management and mitigation measures are implemented), or 3) Resource cannot be replaced (resource is irreplaceable no matter which management or mitigation measures are implemented).
Probability:	1) Unlikely (<40% probability), 2) Possible (40% probability), 3) Probable (>70% probability), or 4) Definite (>90% probability).
Mitigation potential:	1) High or completely mitigatable (relatively easy and cost effective to manage. Specialist expertise and equipment generally not required. Nature of impact easily understood and may be mitigated through implementation of a management plan or 'good housekeeping', including regular monitoring and reporting regimes. Significance of the impact after mitigation is likely to be low or negligible), 2) Moderate or partially mitigatable (management requires higher level of expertise and resources to maintain impacts with acceptable levels. Mitigation can be tied up in the design of the project. Significance of the impacts after mitigation is likely to be low to moderate. It may not be possible to mitigate the impact entirely, with residual impacts resulting), or 3) Low or un-mitigatable (will not be possible to mitigate the impact entirely, regardless of expertise and resources. Potential to manage the impacts may be beyond the scope of the project. Management of the impact is not likely to result in a measurable change in the level of significance).
Impact significance:	1) Negligible , 2) Low (largely of HIGH mitigation potential, after consideration of other criteria), 3) Moderate (largely of MODERATE or partial mitigation potential, after consideration of other criteria), or 4) Substantial (largely of LOW mitigation potential, after consideration of other criteria).

Environmental Impact Assessment Rating: Zachtevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape												
Potential Impacts	Overall nature	Type	Spatial extent	Duration	Severity	Reversibility	Irreplaceable loss	Probability	MITIGATION POTENTIAL	IMPACT SIGNIFICANCE		MITIGATION MEASURES
										Without mitigation	With mitigation	
SITES: ZVD-S1, ZVD-S2 and ZVD-S3												
Construction phase	Negative	Direct	Site	Permanent	High Positive	Irreversible	Resource will not be lost	Definite	High / Completely mitigatable	Moderate / Substantial	Negligible	Heritage Site Conservation (Temporary heritage conservation measures during the course of construction)
Operational phase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mitigation details: Temporary heritage conservation measures (fence & signage or signage only) during the construction phase. All temporary conservation measures should be removed upon completion of construction												

Table 4: Environmental Impact Assessment Rating: Sites ZVD-S1, ZVD-S2 and ZVD-S3

Environmental Impact Assessment Rating: Zachtevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape												
Potential Impacts	Overall nature	Type	Spatial extent	Duration	Severity	Reversibility	Irreplaceable loss	Probability	MITIGATION POTENTIAL	IMPACT SIGNIFICANCE		MITIGATION MEASURES
										Without mitigation	With mitigation	
SITES: ZVD-S4												
Construction phase	Negative	Direct	Site	Permanent	Low Negative	Irreversible	Resource cannot be replaced	Definite	Low / Unmitigatable	Low / Moderate	Negligible	Heritage Site Destruction (Without the developer having to apply for a Site Destruction Permit)
Operational phase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mitigation details: Heritage site destruction without the developer having to apply for a Site Destruction Permit, based on the low archaeological significance of the site												

Table 5: Environmental Impact Assessment Rating: Site ZVD-S4

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed Zachevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape, proceed as applied for provided the developer comply with the below-listed heritage compliance recommendations.

Four (4) archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the field assessment, namely Sites ZVD-S1 to ZVD-S4. All 4 sites are classified as Colonial Period structure sites, with these dating to the period circa 1851, by definition constituting archaeological sites [manmade structures older than 100 years, as per the NHRA 1999, Section 2(ii)(a)]. Of the identified sites (three) 3 will be conserved, namely Site ZVD-S1, ZVD-S2 and ZVD-S3. Site ZVD-S4 will be directly impacted by development. Based on the low archaeological heritage significance of Site ZVD-S4, it is recommended that destruction of the site proceed without the developer having to apply for a Site Destruction Permit.

- The proposed development poses no ‘fatal flaws’ with reference to archaeological and cultural heritage resources.
- From an archaeological and cultural heritage point of view consideration of a ‘No-Go’ option is irrelevant.
- Conservation of specifically Site ZVD-S3, or ‘The Mill’, will from a cultural landscape and cumulative heritage perspective enhance the development during the operational phase.
- [In the event of any incidental archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, being identified during the course of development the process described in ‘Appendix B: Heritage Protocol for Incidental Finds during the Construction Phase’ should be followed.]

Heritage Compliance Summary – Zachevlei Dam Long Term Water Supply Project, near Lady Grey, JGDM, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Zachevlei Dam, Zagte Vally 32 (S30°41'33.8"; E27°10'57.4")			
Site ZVD-S1	Colonial Period: Structure	S30°42'00.9"; E27°10'29.0"	Temporary heritage signage during the construction phase. (Formal heritage conservation measures in place)
Site ZVD-S2	Colonial Period: Structure	S30°41'59.5"; E27°10'31.2"	Temporary heritage signage during the construction phase. (Formal heritage conservation measures in place)
Site ZVD-S3	Colonial Period: Structure ‘The Mill’	S30°41'52.4"; E27°10'53.2"	Temporary heritage fencing and signage during the construction phase. (Permanent heritage conservation measures during the operational phase not recommended due to negative impact thereof on the cultural landscape)
Site ZVD-S4	Colonial Period: Structure	S30°41'51.2"; E27°10'55.4"	Site destruction without the developer having to apply for a Site Destruction Permit

Table 6: Heritage compliance summary

The EC PHRA-APM Unit HIA Comment will state legal requirements for development to proceed, or reasons why, from a heritage perspective, development may not be further considered.

Notes:

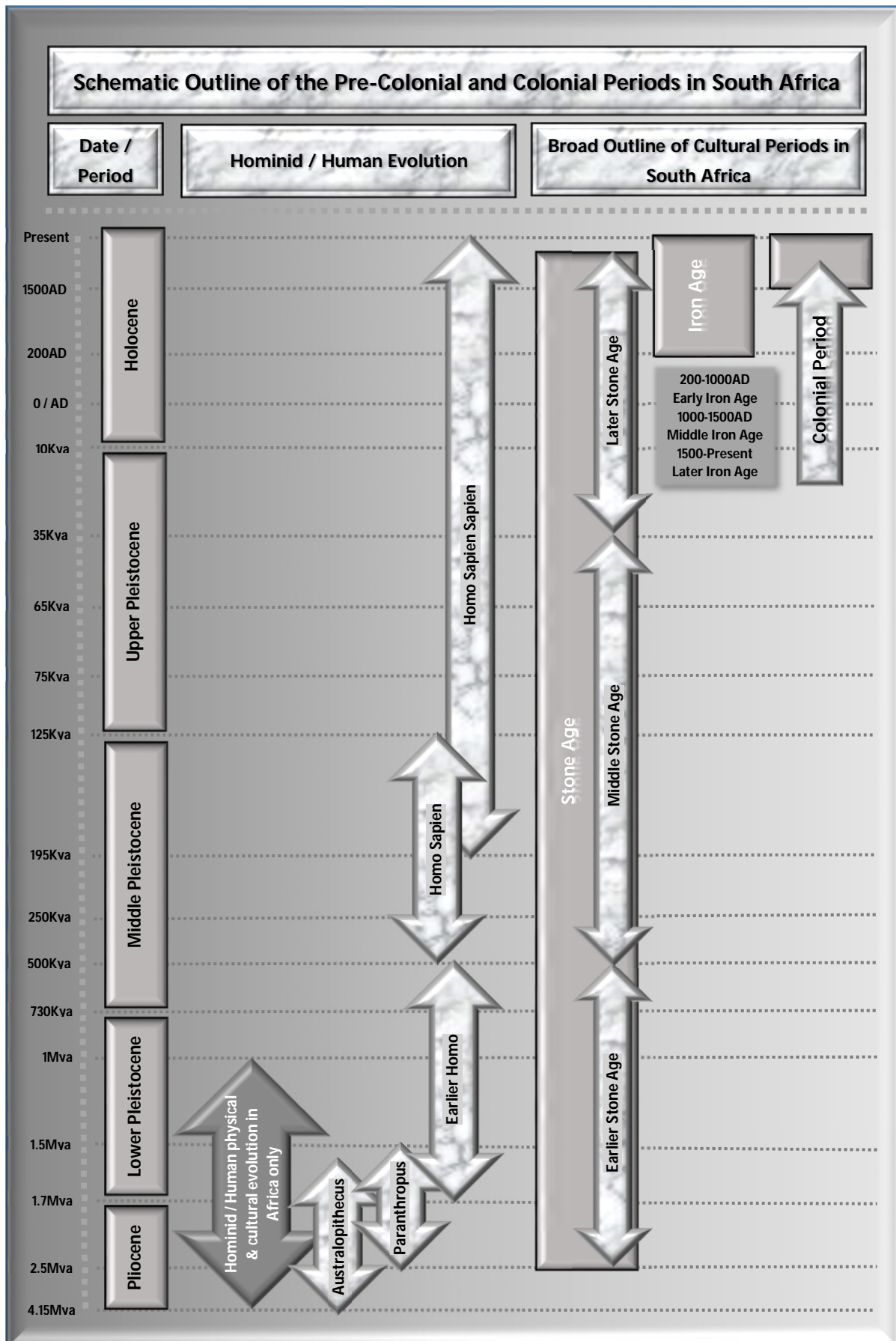
Should any registered Interested & Affected Party (I&AP) wish to be consulted in terms of Section 38(3)(e) of the NHRA 1999 (socio-cultural consultation / SAHRA SIA) it is recommended that the developer / EAP ensures that the consultation be prioritized within the timeframe of the environmental assessment process.

Simplified Guide to the Identification of Archaeological Sites:

- ❖ **Stone Age** – Knapped stone display flakes and flake scars that appear unnatural and may result in similar type ‘shaped’ stones often concentrated in clusters or forming a distinct layer in the geological stratigraphy. ESA shapes may represent ‘pear’ or oval shaped stones, often in the region of 10cm or larger. Typical MSA types include blade-like or rough triangular shaped artefacts, often associated with randomly shaped lithics or flakes that display use- or edge-wear around the rim of the artefact. LSA types are similar to MSA types, but generally smaller (≤ 3 cm in size), often informally shaped, and are frequently found in association with bone, pieces of charcoal, ceramic shards and food remains.
 - **Rock Art** – Includes both painted and engraved images.
 - **Shell Middens** – Include compact shell lenses that may be quite extensive in size or small ephemeral scatters of shell food remains, often associated with LSA artefact remains, but may also be of MSA and Iron Age cultural association.
- ❖ **Iron Age** – Iron Age sites are often characterized by stone features, i.e. the remains of former livestock enclosures or typical household remains; huts are identified by either mound or depression hollows. Typical artefacts include ceramic remains, farming equipment, beads and trade goods, metal artefacts (including jewellery) etc. Remains of the ‘Struggle’ – events, histories and landmarks associated therewith are often, based on cultural association, classed as part of the Iron Age heritage of South Africa.
- ❖ **Colonial Period** – Built environment remains, either urban or rural, are of a Western cultural affiliation with typical artefacts representing early Western culture, including typical household remains, trade and manufactured goods, such as old bottle, porcelain and metal artefacts. War memorial remains, including the vast array of associated graves and the history of the Industrial Revolution form important parts of South Africa’s Colonial Period heritage.

AD	: Anno Domini (the year 0)
AIA	: Archaeological Impact Assessment
AMAFA	: Amafa aKwaZulu-Natali (Natal PHRA)
ASAPA	: Association of Southern African Professional Archaeologists
BAR	: Basic Assessment Report
BC	: Before the Birth of Christ (the year 0)
BCE	: Before the Common Era (the year 0)
BID	: Background Information Document
BP	: Before the Present (the year 0)
cm	: Centimetre
CMP	: Conservation Management Plan
CRM	: Cultural Resources Management
DAC	: Department of Arts and Culture
DEAT	: Department of Environmental Affairs and Tourism
DME	: Department of Minerals and Energy
EAP	: Environmental Assessment Practitioner
ECO	: Environmental Control Officer
ELO	: Environmental Liaison Officer
EC PHRA	: Eastern Cape Provincial Heritage Resources Authority
EIA ₁	: Environmental Impact Assessment
EIA ₂	: Early Iron Age
EMPr	: Environmental Management Plan / Programme Report
ESA	: Earlier Stone Age
ha	: Hectare
HIA	: Heritage Impact Assessment
HWC	: Heritage Western Cape
ICOMOS	: International Council on Monuments and Sites
IEM	: Integrated Environmental Management
km	: kilometre
Kya	: Thousands of years ago
LIA	: Later Iron Age
LSA	: Later Stone Age
m	: metre
m ²	: Square meter
MIA	: Middle Iron Age
Mm	: millimetre
MPRDA 2002	: Mineral and Petroleum Resources Development Act, No 28 of 2002
MSA	: Middle Stone Age
Mya	: Millions of years ago
NEMA 1998	: National Environmental Management Act, No 107 of 1998
NHRA 1999	: National Heritage Resources Act, No 25 of 1999
PIA	: Palaeontological Impact Assessment
PHRA	: Provincial Heritage Resources Authority
PSSA	: Palaeontological Society of South Africa
PPP	: Public Participation Process
SAHRA	: South African Heritage Resources Agency
SAHRIS	: South African Heritage Resources Information System
SIA	: Social Impact Assessment

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Heritage Impact Assessment (HIA) – Lady Grey Bulk Water Supply – Zachtevlei Dam Long Term Water Supply Project, Lady Grey, Joe Gqabi District Municipality Drought Relief Programme, Eastern Cape

Heritage Protocol for Incidental Finds during the Construction Phase

Should any palaeontological, archaeological or cultural heritage resources, including human remains / graves, as defined and protected by the NHRA 1999, be identified during the construction phase of development (including as a norm during vegetation clearing, surface scraping, trenching and excavation phases), it is recommended that the process described below be followed.

➤ **On-site Reporting Process:**

1. The identifier should immediately notify his / her supervisor of the find.
2. The identifier's supervisor should immediately (and within 24 hours after reporting by the identifier) report the incident to the on-site SHE / SHEQ officer.
3. The on-site SHE / SHEQ officer should immediately (and within 24 hours after reporting by the relevant supervisor) report the incident to the appointed ECO / ELO officer. [Should the find relate to human remains the SHE / SHEQ officer should immediately notify the nearest SAPS station informing them of the find].
4. The ECO / ELO officer should ensure that the find is within 72 hours after the SHE / SHEQ officers report reported on SAHRIS and that a relevant heritage specialist is contacted to make arrangements for a heritage site inspection. [Should the find relate to human remains the ECO / ELO officer should ensure that the archaeological site inspection coincides with a SAPS site inspection, to verify if the find is of forensic, authentic (informal / older than 60 years), or archaeological (older than 100 years) origin].
5. The appointed heritage specialist should compile a 'heritage site inspection' report based on the site specific findings. The site inspection report should make recommendations for the destruction, conservation or mitigation of the find and prescribe a recommended way forward for development. The 'heritage site inspection' report should be submitted to the ECO / ELO, who should ensure submission thereof on SAHRIS.
6. SAHRA / the relevant PHRA will state legal requirements for development to proceed in the SAHRA / PHRA Comment on the 'heritage site inspection' report.
7. The developer should proceed with implementation of the SAHRA / PHRA Comment requirements. SAHRA / PHRA Comment requirements may well stipulate permit specifications for development to proceed.
 - Should permit specifications stipulate further Phase 2 archaeological investigation (including grave mitigation) a suitably accredited heritage specialist should be appointed to conduct the work according to the applicable SAHRA / PHRA process. The heritage specialist should apply for the permit. Upon issue of the SAHRA / PHRA permit the Phase 2 heritage mitigation program may commence.
 - Should permit specifications stipulate destruction of the find under a SAHRA / PHRA permit the developer should immediately proceed with the permit application. Upon the issue of the SAHRA / PHRA permit the developer may legally proceed with destruction of the palaeontological, archaeological or cultural heritage resource.
 - Upon completion of the Phase 2 heritage mitigation program the heritage specialist will submit a Phase 2 report to the ECO / ELO, who should in turn ensure submission thereof on SAHRIS. Report recommendations may include that the remainder of a heritage site be destroyed under a SAHRA / PHRA permit.
 - Should the find relate to human remains of forensic origin the matter will be directly addressed by the SAPS: A SAHRA / PHRA permit will not be applicable.

NOTE: Note that SAHRA / PHRA permit and process requirements relating to the mitigation of human remains requires suitable advertising of the find, a consultation, mitigation and re-interment / deposition process.

➤ **Duties of the Supervisor:**

1. The supervisor should immediately upon reporting by the identifier ensure that all work in the vicinity of the find is ceased.
2. The supervisor should ensure that the location of the find is immediately secured (and within 12 hours of reporting by the identifier), by means of a temporary conservation fence (construction netting) allowing for a 5-10m heritage conservation buffer zone around the find. The temporary conserved area should be sign-posted as a 'No Entry – Heritage Site' zone.
3. Where development has impacted on the resource, no attempt should be made to remove artefacts / objects / remains further from their context, and artefacts / objects / remains that have been removed should be collected and placed within the conservation area or kept for safekeeping with the SHE / SHEQ officer. It is imperative that where development has impacted on palaeontological, archaeological and cultural heritage resources the context of the find be preserved as good as possible for interpretive and sample testing purposes.
4. The supervisor should record the name, company and capacity of the identifier and compile a brief report describing the events surrounding the find. The report should be submitted to the SHE / SHEQ officer at the time of the incident report.

➤ **Duties of the SHE / SHEQ Officer:**

1. The SHE / SHEQ officer should ensure that the location of the find is recorded with a GPS. A photographic record of the find (including implementation of temporary conservation measures) should be compiled. Where relevant a scale bar or object that can indicate scale should be inserted in photographs for interpretive purposes.
2. The SHE / SHEQ officer should ensure that the supervisors report, GPS co-ordinate and photographic record of the find be submitted to the ECO / ELO officer. [Should the find relate to human remains the SHE / SHEQ officer should ensure that the mentioned reporting be made available to the SAPS at the time of the incident report].
3. Any retrieved artefacts / objects / remains should, in consultation with the ECO / ELO officer, be deposited in a safe place (preferably on-site) for safekeeping.

➤ **Duties of the ECO / ELO officer:**

1. The ECO / ELO officer should ensure that the incident is reported on SAHRIS. (The ECO / ELO officer should ensure that he / she is registered on the relevant SAHRIS case with SAHRIS authorship to the case at the time of appointment to enable heritage reporting).
2. The ECO / ELO officer should ensure that the incident report is forwarded to the heritage specialist for interpretive purposes at his / her soonest opportunity and prior to the heritage site inspection.
3. The ECO / ELO officer should facilitate appointment of the heritage specialist by the developer / construction consultant for the heritage site inspection.
4. The ECO / ELO officer should facilitate access by the heritage specialist to any retrieved artefacts / objects / remains that have been kept in safekeeping.
5. The ECO / ELO officer should facilitate coordination of the heritage site inspection and the SAPS site inspection in the event of a human remains incident report.
6. The ECO / ELO officer should facilitate heritage reporting and heritage compliance requirements by SAHRA / the relevant PHRA, between the developer / construction consultant, the heritage specialist, the SHE / SHEQ officer (where relevant) and the SAPS (where relevant).

➤ **Duties of the Developer / Construction Consultant:**

The developer / construction consultant should ensure that an adequate heritage contingency budget is accommodated within the project budget to facilitate and streamline the heritage compliance process in the event of identification of incidental palaeontological, archaeological and cultural heritage resources during the course of development, including as a norm during vegetation clearing, surface scraping, trenching and excavation phases, when resources not visible at the time of the surface assessment may well be exposed.

Resumé
Karen van Ryneveld
2017

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2) E-mail – karen@archaeomaps.co.za
3) Website – www.archaeomaps.co.za
4) Postal address – Postnet Suite 239, Private Bag X3, Beacon Bay, 5205

Company: ArchaeoMaps cc

Occupation: Archaeologist

Qualification: MSc Archaeology (WITS University – 2003)

Accreditation: 1) Association of Southern African Professional Archaeologists (ASAPA) accredited Cultural Resources Management CRM practitioner [member nr – 163]
 o 2010 – ASAPA CRM Section: Principle Investigator – Stone Age
 o 2005 – ASAPA CRM Section: Field Director – Iron Age & Colonial Period
 2) SAHRA, AMAFA, EC PHRA and HWC listed ASAPA accredited CRM archaeologist

Tertiary Education

2015 – Present **University of Fort Hare (UFH), East London** (MPhil Environmental Studies)

2010 **University of South Africa (UNISA), Pretoria** (Project Management 501)

2006 – 2007 **Nelson Mandela Metropolitan University (NMMU), Port Elizabeth** (Undergraduate Certificate in Geographical Information Systems – GIS)

2001 – 2003 **University of the Witwatersrand (WITS), Johannesburg** (MSc Archaeology)

1999 – 2000 **University of Pretoria (UP), Pretoria** (BA Hons. Archaeology)

1991 – 1993 **University of Pretoria (UP), Pretoria** (BA Archaeology & History of Art)

Courses

2016/01 SPA (Safety Passport Alliance) – Petrol Retail [SA Safety Management Training Services – SMST]

Employment – Professional Archaeology

2007/04 – Present ArchaeoMaps [Self-employed] (Archaeologist – CRM)

2006/06 – 2007/03 National Museum, Bloemfontein (Archaeologist – CRM, Dept. of Archaeology)

2005/04 – 2006/05 McGregor Museum, Kimberley (Archaeologist – CRM / Research, Dept. of Archaeology)

2004/04 – 2005/01 Amafa aKwaZulu-Natali (HoD: Archaeology, Palaeontology & Meteorites Unit – APM Unit)

2002/09 – 2004/03 McGregor Museum, Kimberley (Archaeologist – CRM / Research, Dept. of Archaeology)

Employment – Freelance: Ground Penetrating Radar

2015/10 – Present Terra Scan assistant (BCM area, EC) – GPR & underground utilities focussing on petrol retail (oil & gas) industry

Archaeology – Summary

Karen has been involved in CRM archaeology since 2003 and has been the author (including selected co-authored reports) of approximately 500 Phase 1 AIA studies. Phase 1 AIA work is centred in South Africa, focussing on the Northern and Eastern Cape provinces and the Free State. She has also conducted Phase 1 work in Botswana (2006 / 2007). In 2007 she started ArchaeoMaps, an independent archaeological and heritage consultancy. In 2010 she was awarded ASAPA CRM Principle Investigator (PI) status based on large scale Phase 2 Stone Age mitigation work (De Beers Consolidated Mines – Rooipoort, Northern Cape, 2008 / 2009) and has also been involved in a number of other Phase 2 projects including Stone Age, Shell Middens, Grave / Cemetery projects and Iron Age sites.

In addition to CRM archaeology she has been involved in research, including the international collaborations at Maloney's Kloof and Grootkloof, Ghaap Plateau, Northern Cape (2005 / 2006). Archaeological compliance experience includes her position as Head of the Archaeology, palaeontology and Meteorites (APM) Unit at AMAFA aKwaZulu-Natali (2004).

Company Profile

Company Name : ArchaeoMaps cc
 Registration Number : 2005/180719/23
 VAT Number : Not VAT Registered
 Accountant : AZIMA Financial Services
 Members / Shareholders : Karen van Ryneveld (100%)
 BBBEE Status : Exempted Micro Enterprise (EME)