

Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, Eastern Cape

- 30 July 2016 -

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Specialist Declaration of Interest

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

- I am suitably qualified and accredited to act as independent specialist in this application;
- I do not have any financial or personal interest in the application, its' proponent or subsidiaries, aside from fair remuneration for specialist services rendered; and
- That work conducted have been done in an objective manner – and that any circumstances that may have compromised objectivity have been reported on transparently.



Signature –

- 30 July 2016 -

Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, Eastern Cape

Executive Summary

Project Description –

Imithi Services have been appointed as independent EAP by the consulting engineer, Newground Projects, on behalf of the project proponent, the Sunday's River Valley Local Municipality (SRVLM), to apply for EA, including an EIR and EMPr to the Eastern Cape DEDEAT for the proposed *Kirkwood Bulk Water Supply Scheme* development, situated at general development co-ordinate S33°23'50.1"; E25°26'37.3" (Kirkwood), SRVLM, Eastern Cape.

The proposed *Kirkwood Bulk Water Supply Scheme* development is intended to be implemented in 2 phases, with development aspects of each phase described as:

- Phase 1: Construction of an abstraction chamber and pump (with pump rate of 93l/s) at the Korhaansdrift Dam west of Kirkwood; A 355mm Class 9 mPVC pipeline will be laid from the abstraction point to the Kirkwood Water Treatment Works (WTW) (~13.2km). The pipeline will for the most part follow the existing canal; Air valves, scour valves and isolation valves will be installed in concrete chambers along the pipeline; and the pipe will discharge water at the head of the Kirkwood WTW.
- Phase 2: Extension of the existing pump house at Kirkwood WTW with about 6m to accommodate two (2) additional pumps; Installation of pumps and pipework into the pump house; Construction of a new 3ML reservoir 200m north of the Kirkwood WTW; Construction of a pipeline connecting the pump station and the reservoir; and construction of a new 3.5ML reservoir at Moses Mabida, and manipulation of pipework around these reservoirs.

The Phase 1 Archaeological & Cultural Heritage Impact Assessment –

Project Name & Locality: *Kirkwood Bulk Water Supply Scheme*, Sunday's River Valley Local Municipality, Sarah Baartman District Municipality, Eastern Cape [1:50,000 Map Ref – 3325AD].

Summary of Findings:

- A total of four (4) archaeological and cultural heritage sites were identified, three (3) of which [Sites KBW-S1, KBW-S3 and KBW-S4] are formally protected by the NHRA 1999. Two (2) of the identified sites [Sites KBS-S1 and KBW-S3] comprise Colonial Period farmsteads, with Site KBS-S4 comprising a Colonial Period church. Sites are situated in close proximity to the study site. Despite proximity all sites will be conserved by development, with formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation already in place.
- Site KBW-S2 comprise a contemporary bridge across the canal. The bridge, constructed in 1963 post-dates 60 years of age and is not formally protected by the NHRA 1999. The site was recorded for heritage database purposes only.
- Declared PHS 'The Look Out' (SAHRA Identifier 9/2/051/0003) is situated approximately 4km south of the study site.
- The development proposal poses no 'fatal flaws' with reference to archaeological and cultural heritage resources or to the cultural landscape within which the development is set. No alternative study sites or realignment of portions of the line route is recommended.
- [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 – Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Kirkwood Bulk Water Supply Scheme			
Site KBW-S1	Colonial Period: Farmstead	S33°22'45.4"; E25°21'18.1"	Permanent heritage conservation measures in place
Site KBW-S2	Contemporary: Bridge	S33°24'17.4"; E25°22'09.9"	N/A (Recorded for heritage database purposes only)
Site KBW-S3	Colonial Period: Farmstead	S33°24'14.1"; E25°22'21.7"	Permanent heritage conservation measures in place
Site KBW-S4	Colonial Period: Church	S33°23'35.0"; E25°26'36.9"	Permanent heritage conservation measures in place

Recommendations –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the *Kirkwood Bulk Water Supply Scheme* development, Sunday's River Valley Local Municipality, Eastern Cape, proceed as applied for without the developer having to comply with additional heritage compliance requirements.

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

Imithi Services have been appointed as independent Environmental Assessment Practitioner (EAP) by the consulting engineer, Newground Projects, on behalf of the project proponent, the Sunday's River Valley Local Municipality (SRVLM), to apply for Environmental Authorization (EA), including an Environmental Impact Report (EIR) and Environmental Management Plan (EMPr) to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) for the proposed *Kirkwood Bulk Water Supply Scheme* development, situated at general development co-ordinate S33°23'50.1"; E25°26'37.3" (Kirkwood), SRVLM, Eastern Cape.

The proposed *Kirkwood Bulk Water Supply Scheme* development is intended to be implemented in 2 phases, with development aspects of each phase described as (Pers. Comm.: Izak du Plessis, Newground & Brett Dustan, Imithi Services):

Phase 1:

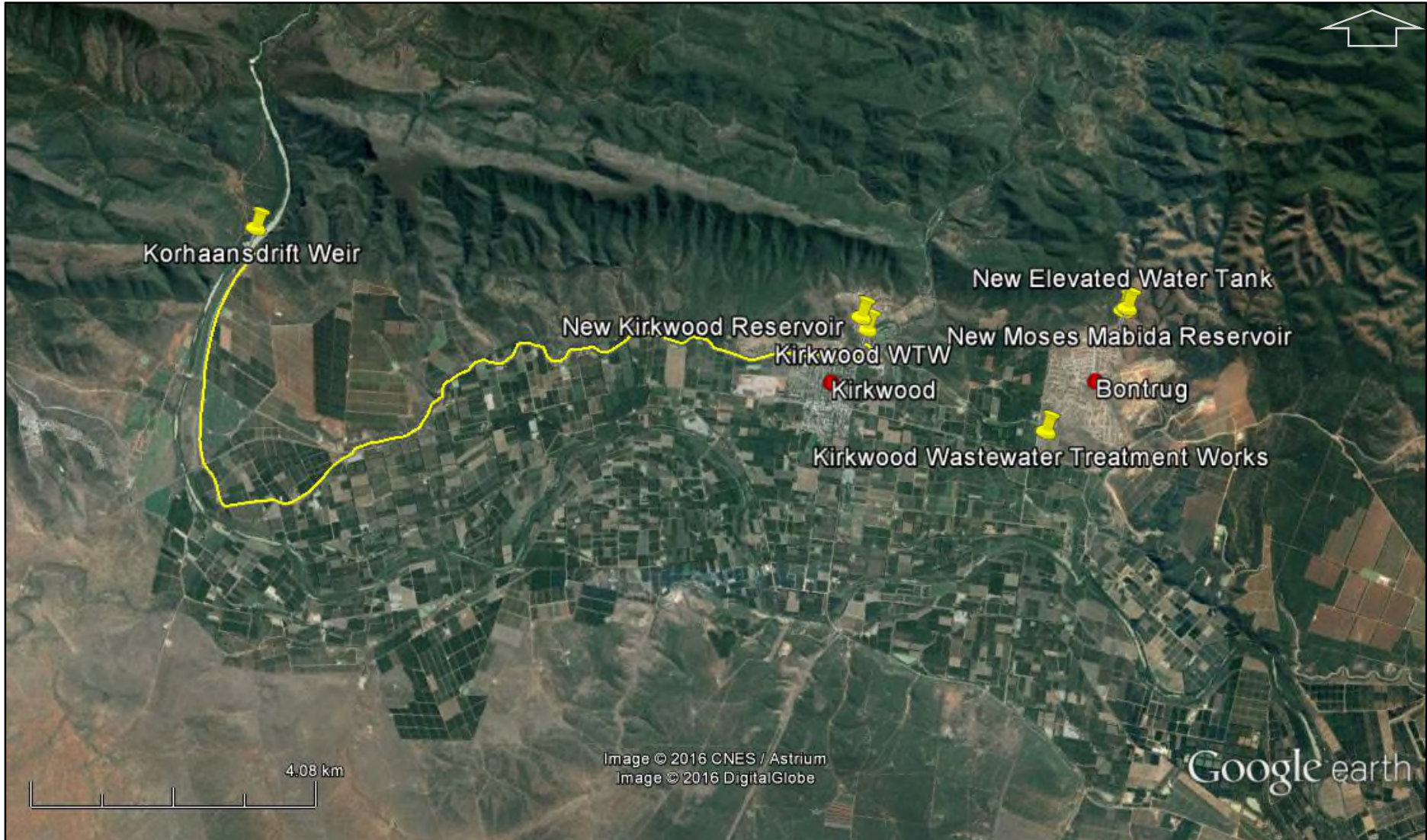
- o Construction of an abstraction chamber and pump (with pump rate of 93l/s) at the Korhaansdrift Dam west of Kirkwood;
- o A 355mm Class 9 mPVC pipeline will be laid from the abstraction point to the Kirkwood Water Treatment Works (WTW) (~13.2km). The pipeline will for the most part follow the existing canal;
- o Air valves, scour valves and isolation valves will be installed in concrete chambers along the pipeline; and
- o The pipe will discharge water at the head of the Kirkwood WTW.

Phase 2:

- o Extension of the existing pump house at Kirkwood WTW with about 6m to accommodate two (2) additional pumps;
- o Installation of pumps and pipework into the pump house;
- o Construction of a new 3ML reservoir 200m north of the Kirkwood WTW;
- o Construction of a pipeline connecting the pump station and the reservoir; and
- o Construction of a new 3.5ML reservoir at Moses Mabida, and manipulation of pipework around these reservoirs.

ArchaeoMaps have been appointed by Imithi Services 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 EIR 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: Kirkwood Bulk Water Supply Scheme development layout, Sunday's River Valley Local Municipality, Easter Cape



Map 2: Kirkwood Bulk Water Supply Scheme study site, SRVLM, Eastern Cape [1:50,000 Map Ref – 3325AD]

2 – The Phase 1 Archaeological & Cultural Heritage Impact Assessment

2.1.1) Archaeological & Cultural Heritage Legislative Compliance

The Phase 1 Archaeological & Cultural Heritage Impact Assessment (AIA) for the proposed *Kirkwood Bulk Water Supply Scheme* development, Sunday's River Valley Local Municipality, 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)(a), Section 38(1)(c)(i) and Section 38(1)(c)(ii). 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 views as defined and protected by the NHRA 1999, Section 2, 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 (2014).

2.1.2) 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 one (1) day period [2016-07-26] 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 has 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 sapling, 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

2.2.1) 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 situated on, or in proximity to the proposed *Kirkwood Bulk Water Supply Scheme* development, Sunday's River Valley Local Municipality, Eastern Cape, can briefly be described as:

Archaeological and Basic Cultural Heritage Probability Assessment – Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, EC			
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)		None
	Middle Stone Age (MSA)		Low-Medium
	Later Stone Age (LSA)		None-Low
		Rock Art	None
		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	None
		LIA – Colonial Period Contact	None-Low
		Industrial Revolution	Medium
		Apartheid & Struggle	Low
	Graves / human remains: Medium-high scientific & high social significance		

Table 3: Archaeological and basic cultural heritage probability assessment

2.2.2) The SAHRA 2009 MPD & SAHRIS

Two (2) archaeological Cultural Resources Management (CRM) reports are recorded in the SAHRA 2009 Mapping Project Database (MPD) with applicable study sites situated within an approximate 20km radius from the proposed *Kirkwood Bulk Water Supply Scheme* study site, referenced as:

- Van Schalkwyk, L.O. & Wahl, B. 2007. (eThembeni). *Heritage Impact Assessment of Gamma-Grassridge Power Line Corridors and Substations, Eastern, Western and Northern Cape Provinces, South Africa.*
- Webley, L. 2002. (Albany Museum). *Proposed Koboega Dam – Phase 1 Heritage Impact Assessment.*

Post compilation of the SAHRA 2009 MPD ten (10) SAHRIS cases have been recorded, with study sites situated within the rough 20km radius from the proposed *Kirkwood Bulk Water Supply Scheme* study site. Of the recorded SAHRIS cases SAHRIS CaseID 1223, Swanepoelskraal, was recorded for 'noting' only, while SAHRIS CaseID 5953, the Sun Citrus Rooftop Solar Energy project, required no heritage assessment. Archaeological CRM reports pertaining to the remainder of the relevant SAHRIS cases are referenced as:

- Binneman, J. 2012. (EHC). *A Phase 1 Archaeological Impact Assessment for the Proposed Expansion of the Existing Agricultural Activities on Falcon Ridge, Portion 274 Strathsamers Estate No 42, Sundays River Municipality, Eastern Cape Province.* [SAHRIS CaseID 872].
- Binneman, J. 2013a. (EHC). *A Phase 1 Archaeological Impact Assessment for the Proposed Clearing of Indigenous Vegetation for the Construction of a Boundary Fence around the South African Police Services Training Facility at Slagboom, near Addo, Sundays River Valley Municipality, Eastern Cape Province.* [SAHRIS CaseID 5722].
- Binneman, J. 2013b. (EHC). *A Phase 1 Archaeological Impact Assessment for the Proposed Clearing of Land for Agricultural Purposes at Panzi Citrus Farm near Kirkwood, Division of Uitenhage, Sundays River Valley Municipality, Eastern Cape Province.* [SAHRIS CaseID 6454].
- Binneman, J. & Reichert, K. 2016. *Phase 1 Archaeological Impact Assessments for the Proposed Clearing of Vegetation in Three Areas to Establish Citrus Orchards on the Farm Boschkraal near Kirkwood, Sundays River Valley Local Municipality, Eastern Cape Province.* [SAHRIS CaseID 6454].

- Heritage Screener. 2016a. (CTI). *Summerville Citrus Packing and Cold Storage Facility Expansion, East London (?)*. [SAHRIS CaseID 9190]
- Heritage Screener. 2016b. (CTI). *Dunbrody Citrus Farm, Kirkwood, Eastern Cape Province*. [SAHRIS CaseID 9191].
- Van Ryneveld, K. 2012. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Utilization of Existing Gravel Borrow Pits, Cacadu District, Eastern Cape, South Africa*. [SAHRIS CaseID 299].
- Van Ryneveld, K. 2014. (ArchaeoMaps). *Phase 1 Archaeological and Cultural Heritage Impact Assessment – The Dassiesridge Wind Energy Facility (WEF), between Kirkwood and Uitenhage, Cacadu District, Eastern Cape, South Africa*. [SAHRIS CaseID 9252].

2.2.3) SAHRA Provincial Heritage Site Database – Eastern Cape

One (1) 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 *Kirkwood Bulk Water Supply Scheme* study site, listed as:

- SAHRA Identifier 9/2/051/0003 - The Look Out, Kirkwood District.



Map 3: Spatial distribution of geo-referenced PHSs in the SAHRA – Eastern Cape database in relation to the *Kirkwood Bulk Water Supply Scheme* study site (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape)

2.2.4) General Discussion

Van Schalkwyk & Wahl (2007) reported on a number of miscellaneous Stone Age occurrences identified along the ‘Blue Corridor’ of the Gamma-Grassridge study site, including Earlier (ESA) and Middle Stone Age (MSA) deposits. MSA occurrences in particular seem to be fairly characteristic of the greater terrain, reported on by Binneman (2012, 2013a, 2013b) and Van Ryneveld (2012, 2014), with a single MSA-Later Stone Age (LSA) lag deposit representing lithic LSA presence on the landscape.

Identified Iron Age remains are limited, and restricted to the Later Iron Age (LIA), possibly coined with LSA pastoralist remains, represented by a possible grave near the Baroe railway station (Van Schalkwyk & Wahl 2007), a farmworkers cemetery at the Kaboega study site (Webley 2002), a single grave and two (2) farmworkers cemeteries at the Panzi Citrus site (Binneman 2013b) and a further farmworkers cemetery at the Boschkraal site (Binneman & Reichert 2016).

Colonial Period recorded heritage resources seem to dominate the record: Van Schalkwyk & Wahl (2007) reported on a number of buildings older than 60 years situated along the ‘Blue Corridor’ of the Gamma-Grassridge line route, but with possible impact limited to the historical Wolwefontein farmstead near Kleinpoort. Webley (2002) recorded the historical Keevey and Watson family cemetery from the Kaboega study site. Van Ryneveld (2012) documented a Colonial Period farmstead, the Baroe railway station (~1875) and a contemporary memorial stone during the Cacadu District borrow pits

project, with a further two (2) Colonial Period farmsteads and related farming infrastructure present at the Dassiesridge WEF study site (Van Ryneveld 2014).

Previously unknown, or undocumented archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, were identified in all eight (8) of the Phase 1 AIA studies consulted. Accordingly, the Heritage Screener (2016b) assessment for the Dunbrody Citrus Farm recommended that a Phase 1 AIA be conducted for purposes of development, to record relevant and protected heritage resources and make suitable recommendations regarding their conservation or mitigation for development. However, the Heritage Screener (2016a) for the Summerville Citrus Facility indicated that: *'The heritage resources in the area proposed for development are sufficiently recorded. – It is recommended that: No further archaeological assessments are necessary at this proposed area of development...'*, without any former archaeological study having been done at the study site, and with previously unknown or undocumented resources being routinely identified in archaeological studies in the vicinity; raising concern about the suitability of the Heritage Screener recommendation.

Sir John Francis Cradock, Governor of the Cape Colony, gave a number of farms from the greater Sunday's River Valley to leaders of his successful commandos during the Fourth Frontier War (1811-1812), including, amongst others, the farm *Gouvernements Belooning* to JS van Niekerk; the farm on which Kirkwood was to be established many decades later. Almost 60 years later, in 1877 an auctioneer from Port Elizabeth, James Somers Kirkwood, arrived to auction *Gouvernements Belooning*. With floods preventing him from reaching his destination, he climbed a hill in the Rietberg Mountains overlooking the valley (the Look Out, today a declared PHS). He envisioned the property transformed into irrigated fields with fruit trees, with produce delivered via river barges to Port Elizabeth. Soon thereafter Kirkwood purchased *Gouvernements Belooning*, as well as a number of other farms in the valley and founded the *Sundays River Land Irrigation Company*, but his prospective venture received little support, most probably because it coincided with the Diamond Rush in Kimberley, and was finally declared bankrupt. Kirkwood's vision however realized a century later when the *Sundays River Irrigation Project* was built, today still serving the Kirkwood Community, and central to the economy of the town (https://en.wikipedia.org/wiki/Kirkwood,_Eastern_Cape).

Four (4) archaeological and cultural heritage sites, namely Sites KBW-S1, KBW-S2, KBW-S3 and KBW-S4, were recorded during the *Kirkwood Bulk Water Supply Scheme* field assessment. Of the recorded sites three (3) are formally protected by the NHRA 1999, namely Sites KBW-S1, KBW-S3 and KBW-S4, all comprising Colonial Period structures older than 60 years of age, all situated in proximity to the study site, with formal conservation measures in all cases in place. Site KBW-S2, also comprising a structure, dating to 1963 and thus younger than 60 years of age, was recorded with reference to its temporal heritage significance, seven (7) years from formal protection status. (Heritage site recording was limited to sites visible and verifiable from the study site).

The proposed bulk water line route development runs from the Korhaansdrift weir (S33°22'43.3"; E25°21'24.5") for approximately 15km, ending at the Kirkwood WTW (S33°23'32.5"; E25°26'56.5"). The proposed development line route closely follows existing infrastructure; the canal and associated access road. Existing development dates invariably to the 1960s, 1970s and 1980, including Site KBW-S2, a bridge across the canal dating to the 1960s, the Korhaansdrift weir itself dating to the 1970s and with cement inscribed 1980s dates identified along the canal, which may represent later reparations thereto. No identified, formally protected archaeological or cultural heritage resources will be directly impacted by development. Recorded Colonial Period sites are situated in proximity to the study site, but as stated all with suitable formal conservation measures already in place. Lenses of surface gravel characterize the general study site. Infrequent lithic artefacts were found within these lenses. Low artefact densities, with artefact ratios (artefacts: m²) of <1:25, making suitable assignation thereof difficult, but based on size preliminary ascribed primarily to the Middle Stone Age (MSA) are not worthy of conservation or mitigation recommendations for purposes of development.

Development at the Kirkwood WTW (S33°23'33.5"; E25°26'51.6") and of the new Kirkwood reservoir (S33°23'27.8"; E25°26'51.6"), with both study sites situated on a hill, characterized by surface gravel lenses, but with the Kirkwood WTW site already largely disturbed by development, poses no threat to identified formally protected or significant heritage resources, with reference to lithic characteristics of surface gravel lenses as described above.

The proposed new Moses Mabida reservoir (S33°23'27.9"; E25°29'16.2") and elevated water tank (S33°23'26.7"; E25°29'18.1") study sites, again situated on the foot of a hill with surface gravels, with inferred reasonable depth, as evidenced by disturbance at the existing water tank development, characteristic of the area. Investigation of disturbed gravels at the existing development yielded only infrequent lithic flakes, indicating that the low heritage significance of the surface identified gravel lenses does not necessarily increase with stratigraphic depth.

No archaeological or cultural heritage resources were identified at the Kirkwood WWTW (S33°24'22.9"; E25°28'33.1) study site.

2.2.1) Site KBW-S1 – Colonial Period: Farmstead – S33°22'45.4"; E25°21'18.1"

Site KBW-S1 comprise a Colonial Period farmstead with buildings pre-dating 60 years of age; the site is by implication formally protected by the NHRA 1999. The site is still in use and fairly well conserved. Current conservation measures comprise a permanent fence with access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The proposed development alignment runs between 10-20m from the formal conservation fence, and is with specific reference to landscape gradient and existing infrastructure deemed suitable for development purposes.

- **Site Significance and Recommendation:** Site KBW-S1 comprise a Colonial Period farmstead with structures pre-dating 60 years of age; the site is by implication formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are already in place. It is recommended that development in the vicinity of the site proceed without the developer having to comply with additional heritage compliance requirements.

2.2.2) Site KBW-S2 – Contemporary Period: Bridge – S33°24'17.4"; E25°22'09.9"

Site KBW-S2 demarcates the locality of a contemporary bridge across the canal. The bridge was constructed in 1963; comprising a structure younger than 60 years of age and not formally protected by the NHRA 1999. The site is reported on for temporal heritage sensitivity and heritage site database purposes only.

- **Site Significance and Recommendation:** Site KBW-S2 comprise a bridge constructed in 1963, thus post-dating 60 years of age and not as yet formally protected by the NHRA 1999. Accordingly, a SAHRA / EC PHRA heritage site significance assignment does not pertain. The site was recorded for heritage site database purposes only. The developer need not comply with heritage recommendations prior to or during construction impact in the vicinity of Site KBW-S2.

2.2.3) Site KBW-S3 – Colonial Period: Farmstead – S33°24'14.1"; E25°22'21.7"

The Site KBW-S3 co-ordinate demarcates the locality of a Colonial Period farmstead, with selected structures comprising the farmstead being older than 60 years; the site is thus formally protected by the NHRA 1999. The site is still in use and fairly well conserved. Current conservation measures comprise a permanent fence with access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The proposed development alignment runs between 0-10m from the formal conservation fence; despite proximity the site will not be impacted by development, being situated on the neighbouring property.

- **Site Significance and Recommendation:** Site KBW-S3 comprise a Colonial Period farmstead with structures pre-dating 60 years of age; the site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. It is recommended that development in the vicinity of the site proceed without the developer having to comply with additional heritage compliance requirements.

2.2.4) Site KBW-S4 – Colonial Period: Church – S33°23'35.0"; E25°26'36.9"

Site KBW-S4 comprises a Colonial Period church. The site pre-dates 60 years of age and is formally protected by the NHRA 1999. The site is no longer in use, abandoned, weathering and vandalism have taken its toll on conservation standards. The site is formally fenced with an access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation for development purposes. Site KBW-S4 is situated approximately 100m from the proposed development corridor and will not be impacted by development.

- **Site Significance and Recommendation:** Site KBW-S4 comprise a Colonial Period church which is older than 60 years and formally protected by the NHRA 1999. The site is formally protected by the NHRA 1999. Site KBW-S4 receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. It is recommended that development in the vicinity of the site proceed without the developer having to comply with additional heritage compliance requirements.



Map 4: Spatial distribution of the declared PHS 'The Look Out' and identified heritage resources in relation to the Kirkwood Bulk Water Supply Scheme study site



Plate 1: View of the Korhaansdrift dam and weir demarcating the beginning of the line route



Plate 3: General view of the line route [2]



Plate 2: General view of the line route [1]



Plate 4: General view of the line route [3]



Plate 5: General view of the line route [4]



Plate 7: General view of the line route [6]



Plate 6: General view of the line route [5]



Plate 8: General view of the line route [7]



Plate 9: General view of the line route [8]



Plate 11: Primarily anthropogenic sterile sections in proximity to the line route



Plate 10: End of the line route in Kirkwood



Plate 12: Anthropogenic sterile sections in proximity to the line route



Plate 13: The Kirkwood WTW, with the proposed study site immediately adjoining the back pond



Plate 15: General view of the proposed new Kirkwood reservoir study site [2]



Plate 14: General view of the proposed new Kirkwood reservoir study site [1]



Plate 16: Existing Moses Mabida reservoir development



Plate 17: General view of the new Moses Mabida reservoir and elevated water tank study site(s)



Plate 19: General view of the Kirkwood WWTW, Bontrug [1]



Plate 18: Moses Mabida area – gravels containing infrequent lithic artefacts



Plate 20: General view of the Kirkwood WWTW, Bontrug [2]



Plate 21: View of Site KBW-S1



Plate 23: View of Site KBW-S3



Plate 22: View of Site KBW-S2, the 1963 bridge across the canal



Plate 24: View of Site KBW-S4

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: Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, 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: KBW-S1, KBW-S3, KBW-S4												
Construction phase	2	3	2	4	3(+)	N/A	N/A	N/A	N/A	N/A	N/A	Conservation
Operational phase	2	3	2	4	3(+)	N/A	N/A	N/A	N/A	N/A	N/A	Conservation
Mitigation details: Heritage site conservation - permanent heritage conservation measures already in place												

Table 4: Environmental Impact Assessment Rating

4 – Recommendations

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the *Kirkwood Bulk Water Supply Scheme* development, Sunday's River Valley Local Municipality, Eastern Cape, proceed as applied for without the developer having to comply with additional heritage compliance requirements.

- A total of four (4) archaeological and cultural heritage sites were identified, three (3) of which [Sites KBW-S1, KBW-S3 and KBW-S4] are formally protected by the NHRA 1999. Two (2) of the identified sites [Sites KBW-S1 and KBW-S3] comprise Colonial Period farmsteads, with Site KBW-S4 comprising a Colonial Period church. Sites are situated in close proximity to the study site. Despite proximity all sites will be conserved by development, with formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation already in place.
- Site KBW-S2 comprise a contemporary bridge across the canal. The bridge, constructed in 1963 post-dates 60 years of age and is not formally protected by the NHRA 1999. The site was recorded for heritage database purposes only.
- Declared PHS 'The Look Out' (SAHRA Identifier 9/2/051/0003) is situated approximately 4km south of the study site.
- The development proposal poses no 'fatal flaws' with reference to archaeological and cultural heritage resources or to the cultural landscape within which the development is set. No alternative study sites or realignment of portions of the line route is recommended.
- [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 – Kirkwood Bulk Water Supply Scheme, Sunday's River Valley Local Municipality, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Kirkwood Bulk Water Supply Scheme			
Site KBW-S1	Colonial Period: Farmstead	S33°22'45.4"; E25°21'18.1"	Permanent heritage conservation measures in place
Site KBW-S2	Contemporary: Bridge	S33°24'17.4"; E25°22'09.9"	N/A (Recorded for heritage database purposes only)
Site KBW-S3	Colonial Period: Farmstead	S33°24'14.1"; E25°22'21.7"	Permanent heritage conservation measures in place
Site KBW-S4	Colonial Period: Church	S33°23'35.0"; E25°26'36.9"	Permanent heritage conservation measures in place

Table 5: 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.

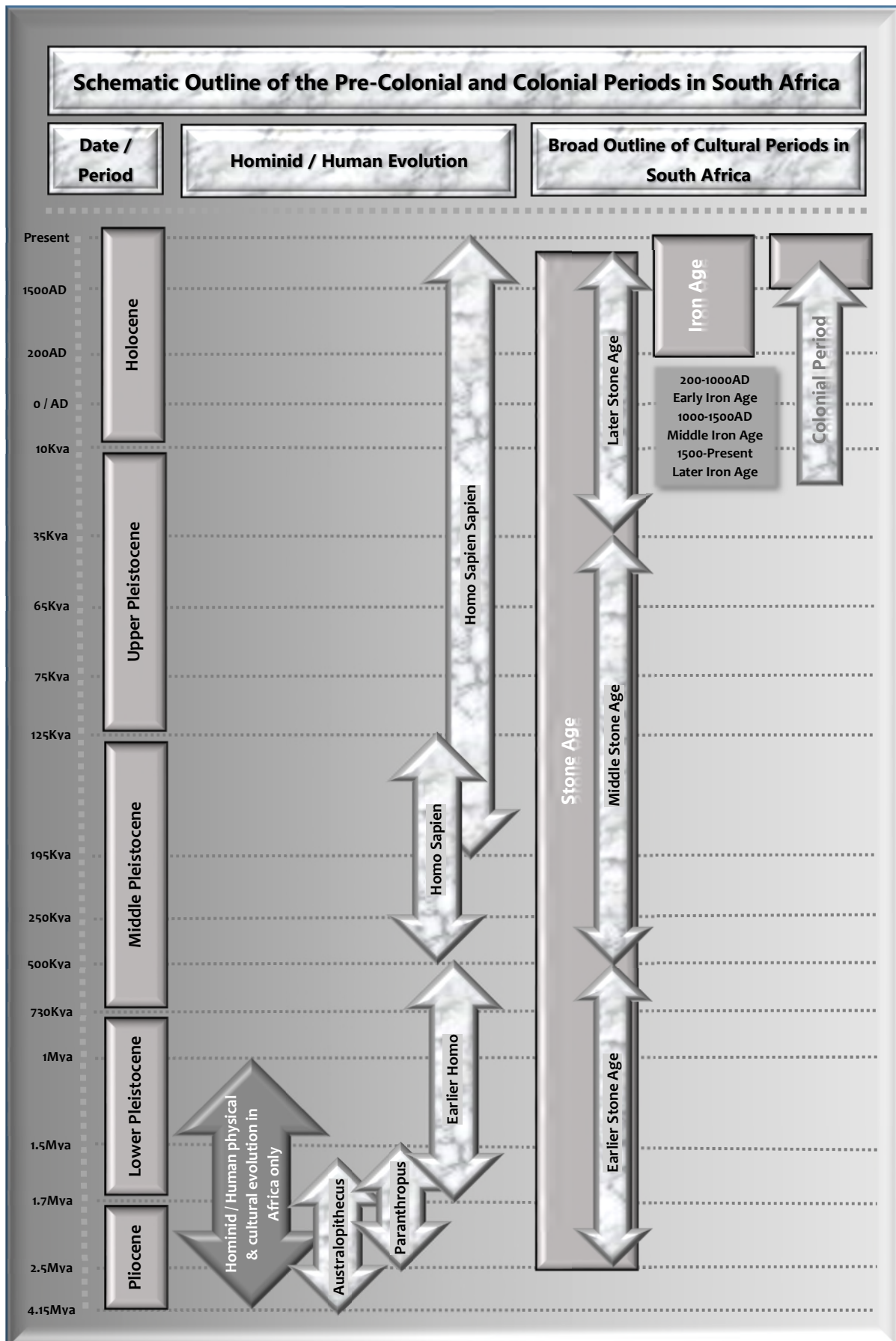
Simplified Guide to the Identification of Archaeological Sites:

- ❖ **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.

5 – Acronyms & Abbreviations

AD	: Anno Domini (the year o)
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 o)
BCE	: Before the Common Era (the year o)
BID	: Background Information Document
BP	: Before the Present (the year o)
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) – Kirkwood Bulk Water Supply Scheme, Sunday’s River Valley Local Municipality, 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
2016

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Company: ArchaeoMaps cc

Occupation: Archaeologist

Qualification: MSc Archaeology (WITS University – 2003)

Accreditation:

- 1) Association of Southern African Professional Archaeologists (ASAPA) accredited Cultural Resources Management gCRM 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]
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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
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Archaeology – Summary

Karen has been involved in CRM archaeology since 2003 and has been the author (including selected co-authored reports) of approximately 450 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)