Revised Phase 1 Archaeological Impact Assessment for the Gamma (Victoria West, Northern Cape) - Kappa (Ceres, Western Cape) second 765kV Eskom power transmission line

For ESKOM Holdings on behalf Nzumbululo Holdings (Pty) Ltd.

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1. Executive summary

In 2012, Nzumbululo HS (Pty) Ltd. on behalf of Eskom Holdings contracted Siyathembana Trading 293 (Pty) Ltd. to carry out a Scoping Archaeological Impact Assessment for the proposed construction of the 765kV, powerline from Gamma (south of Victoria West, Northern Cape) to Kappa (Ceres, Western Cape). The scope of the work also required an assessment of the alternatives to accommodate the powerline in sections of Northern Cape and Western Cape provinces. The project was not finalised and this report is a revised version of the study, taking into account the subsequent developements and studies in the research area.

The proposed development covers multiple districts from Victoria West in the Northern Cape to Beaufort West, Three Sisters, Merweville, Murraysburg, Prince Albert, Laingsburg, Touwsriver and Ceres in the Western Cape. The extent of the proposed (+/- 383km) development falls within the requirements for an archaeological impact assessment as required by Section 38 of the South African Heritage Resources Act (No. 25 of 1999). The proposed development falls within farms used for animal and crop agriculture, urban and rural settlements, as well as associated infrastructure such as roads, solar farms and existing powerlines. The implications of these settings are that sections of the proposed development may occur in areas that are no longer pristine (have been affected by modern developments) and the archaeological fingerprint of those segments may be better appreciated.

Dedicated literature and database searches, targeted drive-throughs and limited walk-down surveys revealed that this very long stretch of cultural landscapes hosts significant archaeological resources dating from the Early Stone Age, through the Middle Stone Age to the Late Stone Age and the historical period. Material fingerprints of Khoekhoen (Khoesan) herders, trekboer settlements and places associated with the Xhosa migration of the late 19th century are also known in the broader region. Sections of the proposed area represent frontiers where different groups interacted, and as such they are archaeologically sensitive. Nonetheless, very few of these archaeological resources occur within the 2km corridor (actual corridor within which a 110m servitude would be placed) or the 4km corridor of the studied area. Some sections of specific routes have been flagged because of difficulties in mitigating for existing (known) and potential sites, but most of the sites can easily be mitigated.

Based on this study, the following findings were made:

1. The proposed powerline will traverse a sensitive archaeological landscape.
2. Overall, information about the study area is thin and patchy, and AIAs are the main conduits to the documentation of new sites.
3. The most threatened aspect of the archaeology of the study area has until recently been poorly studied stone walling associated with various groups ranging from Khoekhoen herders, 19th century Xhosa farmers and the historical white farming occupational phase.
4. There is also a very high potential to encounter graves of farm inhabitants.
5. Route Option 3 is the most pristine (less affected by modern developments) and it traverses the longest section of the archaeologically rich mountainous areas. The south-western and north-eastern segments of Route Option 1 also traverse relatively pristine landscapes. Having consulted the studies associated with Route Options 1 and 3, subsequent field work concentrated on small sections of these two routes, and bigger segments of hot spots along Route Option 2.

6. The immediate areas along the first 765kV Gamma-Kappa line and associated 400kV line are relatively better researched, making it possible to consider the cumulative impact.
7. Route Option 2 parallels (to the north), the first 765kV line (and associated 400kV lines) for the longest stretches of all the proposed options.
8. Route Option 1 has limited sections where it runs parallel to linear infrastructure but its longest stretches cut across pristine ground, making it less preferable
9. The current distribution of sites along the route options reflects, more than anything else, the research coverage, such that absence of sites on a particular route is not evidence of the actual absence of sites on the ground. Table 1 below summarises the distribution of documented sites in this study.

Table 1: Summary of sites and their classification and significance[1].

Sites	**Route option 1**		**Route option 2**		**Route option 3**		**Sites outside 4km corridor of all routes**
	2km corridor	4km but outside 2km	2km corridor	4km but outside 2km	2km corridor	4km but outside 2km	
ESA	0	0	0	1	0	1	1
MSA	3	1	15	3	0	0	7
LSA	0	0	2	0	1	0	18
Historical	0	0	8	11	1	0	13
ESA/MSA	0	0	0	0	0	3	0
ESA/MSA/LSA	1	0	3	0	0	1	3
MSA/LSA	2	1	4	0	0	1	2
LSA/Historical	0	0	2	0	0	2	0
Unknown period	0	1	13	10	3	0	43
Total number of sites	**6**	**3**	**47**	**26**	**5**	**8**	**87**
Site significance/ Grading							
Very high (II)	0	0	2	0	0	1	1
High (IIIA)	3	0	6	7	2	0	23
Medium (IIIB)	0	2	12	4	1	0	11
High/medium (IIIB)	0	0	0	0	1	0	29
Low (IIIC)	0	0	18	12	1	1	12
Medium/low (IIIC)	0	0	0	3	0	0	3
Very low (III upgradeable/NCW)	3	1	9	0	0	0	0
Unknown (ungraded)	0	0	0	0	0	6	8
Total sites	**6**	**3**	**47**	**26**	**5**	**8**	**87**
Comment	**This is the second preferable route. It follows a few powerlines from Gamma but then cuts across some pristine areas.**		**This is the most preferable option but it must be re-routed south of the first 765kV powerline throughout.**		**This route is the least preferable because it cuts across pristine ground for the longest section.**		

[1] The grading/site significance given in this table is not a standard system for SAHRA or the PHRAs but a reconciliation of the variable classifications given in the studied AIAs with the standard national and provincial schemes.

Based on the above findings, the following recommendations are made:

- **i.** Detailed field walking must be carried out along whichever route option is selected because archaeological material of various significances is widely distributed.
- **ii.** The proposed position of pylons when determined must be surveyed, and if the sites are archaeologically sensitive they (pylons) must be moved. If this is not possible, detailed mitigation must be carried out. Furthermore, areas associated with the development, for example access roads and camps, must also be surveyed to mitigate the potential impact on archaeological sites.
- **iii.** If archaeological sites or graves are exposed during construction work, they must be reported to the heritage authorities so that an investigation and evaluation of the finds can be made under an approved permit.
- **iv.** Should any archaeological site be exposed during the development, the developer should carefully safeguard these, preferably in situ, and alert Heritage Western Cape, Ngwa Boswa yaKapa Bokone (Northern Cape PHRA) or the SAHRA Head office.
- **v.** Given the predictably random nature of site distribution in the study area, the preferred route should follow an existing corridor where the location of sites, their density and significance is relatively well established and can be minimized. This calls for a consideration of the cumulative impact of adding another 765kV line next to the first one. Route Option 2 is only one that can fulfill this requirement.
- **vi.** Route Option 2 is the most preferable but its current position (north of existing 765kV) is in some cases not preferable and in most instances not an option at all. The No-Go areas along this route (and also Route Option 3) include the extensively stone walled area around Saaiplaas farm. To minimise the risk of impacting on these stone walled features, this route option must be moved to the south of the existing 765kV line, pending further investigations in this area. In fact, throughout the Gamma-Kappa line, Route Option 2 (the preferable route) must be moved to the immediate southern side of the first 765kV lines.

Stakeholders and people responsible for decisions

The following stakeholders are collectively and individually responsible for implementing the recommendations of this study:

1. The developer, Eskom, must ensure that no heritage sites are altered, damaged or destroyed without permission from the relevant authority in terms of sections 35, 36 and 38 of the NHRA.
2. Archaeologists must carry out detailed Phase II impact assessments for the selected route.
3. The South African Heritage Resources Agency (SAHRA) and Heritage Western Cape (HWC) and Ngwa-Boswa yaKapa Bokone (NBKB) must ensure that adequate work is done to mitigate impact on archaeological resources. All these bodies are important statutory commenting authorities but they are not responsible for final compliance as this study forms part of an Environmental Impact Assessment (EIA) process for

which the Department of Environment Affairs is the compliance authority (in terms of section 38(10) of the National Heritage Resources Act).

In summary, the AIA study indicates that the area proposed for development is very archaeologically sensitive. Some areas are highly significant, such as Saaiplaas farm area with its stone walling related to LSA occupation and 19th century Xhosa and white farming settlements. Archaeological research is generally sparse in the study area but the size and concentration stone walled sites farms around Saaiplaas ares exceptional. This makes this area a No-Go segment and the proposed Route Options 2 and 3 must not proceed in this area. Option 2 may be re-routed south of the existing 765kV line in this area but this option requires another study. As such, it is important to carry out detailed walk downs to identify sites on the proposed pylons sites and other supporting infrastructure such as access roads.

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5. ABBREVIATIONS

AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
EIA	Environmental Impact Assessment
EIA	Early Iron Age
	(EIA refers to both Environmental Impact Assessment and the Early Iron Age but in both cases the acronym is internationally accepted. This means that it must be read and interpreted within the context in which it is used.)
EIAR	Environmental Impact Assessment Report
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
ICOMOS	International Council of Monuments and Sites
LIA	Late Iron Age
LFC	Late Farming Community
LSA	Late Stone Age
MAA	Mineral Amendment Act, No 103 of 1993
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MSA	Middle Stone Age
NBKB	Ngwa Boswa yaKapa Bokone (Northern Cape PHRA)
NEMA	National Environmental Management Act 107 of 1998
NHRA	National Heritage Resources Act 25 of 1999
NID	Notice of Intention to Develop
PHRA	Provincial Heritage Resource Agency
SAHRA	South African Heritage Resources Agency
ToR	Terms of Reference

6. DOCUMENT INFORMATION

6.1 Periodisation

Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This periodisation is usually region-specific, such that the same label can have different start and end dates for different areas and there are instances of overlap. This makes it important to clarify and declare the periodisation of the area one is studying. In the present study, relevant *archaeological* periods are given below:

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

Historical (~ AD 1840 to 1950, but a 'historical' building is classified as over 60 years old)

6.2 Definitions

Just like periodisation, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best-practice. The following aspects have a direct bearing on the investigation and the resulting report:

Development: any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

> i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
> ii. carrying out any works on or over or under a place;
> iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
> iv. constructing or putting up for display signs or boards;
> v. any change to the natural or existing condition or topography of land; and
> vi. any removal or destruction of trees, or removal of vegetation or topsoil

Cultural (heritage) resources are both non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture or archaeology of human development.

Cultural significance is determined means of aesthetic, historic, scientific, social or spiritual values for past, present or future generations.

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

Isolated finds are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, they do not usually constitute the core of an impact assessment, unless they have intrinsic cultural significance and value.

In-situ refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Archaeological site / materials are remains or traces of human activity that are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures. According to the NHRA, no archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorization from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

Historic material are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

Chance finds means archaeological artefacts, features, structures or historical remains accidentally found during development.

A grave is a single interment (variably referred to as burial) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historical). There is also a distinction between a cemetery (administered by a place of worship or local authority), graveyard (on actual church plot) and burial ground.

A site is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Heritage Impact Assessment (HIA) refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project which requires authorization of permission by law and which may significantly affect the cultural and natural heritage resources. Accordingly, a HIA must include recommendations for appropriate mitigation measures for minimizing or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Impact is the positive or negative effects on human well-being and / or on the environment.

Mitigation is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the prehistoric, historical or the relatively recent past.

Study area or 'project area' refers to the area where the developer wants to focus its development activities (refer to plan).

Phase I studies refer to surveys using various sources of data and limited field walking in order to establish the presence of all possible types of heritage resources in any given area.

7. Terms of Reference

On behalf of Eskom, Nzumbululo contracted Dr Foreman Bandama to revise and update the preliminary draft AIA he conducted with Prof Shadreck Chirikure in 2012 on the three alternatives for the proposed second 765kV powerline from Gamma to Kappa. The task involves updating research conducted after 2012 and targeted fieldwork on "sensitive areas" along the proposed route options.

8. Introduction and description of project area

Electricity provisioning is of high strategic importance to South Africa in general and the Western Cape in particular, making the establishment of infrastructure to transport electricity to the latter of paramount importance. In 2012 Eskom planned to establish a second 765kV powerline that will transmit electricity from Victoria West to the Western Cape. Nzumbululo HS (Pty) Ltd., on behalf of Eskom Holdings, first contracted Siyathembana Trading 293 (Pty) Ltd. to carry out a Scoping Archaeological Impact Assessment for the proposed construction of the second 765kV, power line from Gamma (south of Victoria West, Northern Cape) to Kappa (Ceres, Western Cape).

This revised version of the study was conducted by Dr Foreman Bandama alone. The scope of the work also required an assessment of the alternatives to accommodate the power line in sections of Northern Cape and Western Cape provinces. The project is a joint Heritage Impact Assessment-Environmental Impact Assessment and assesses the potential impacts of three possible routes between Gamma substations in Victoria West to Kappa in the Western Cape. The proposed transmission route traverses the Northern Cape in two sections. The Gamma substation south of Victoria West is on the border between the Northern Cape and the Western Cape. Route Option 3 re-enters the Northern Cape just above its border with the Western Cape and also in Victoria West district. The lines then travel through the Western Cape until re-entering Northern Cape just north of Laingsburg and exiting east of the Breede River in the Ceres Mountains.

This ±383 kilometre long power line will pass through different areas of cultural landscape from the Great Karoo, through the Moordenaars Karoo and terminates in the Ceres Karoo (Figure 1). Portions of the proposed route options (especially Option 2) were previously assessed as part of the first proposed Eskom 765kV power line. The present study covers the Gamma-Kappa stretch which corresponds to Section 4 and Section 5 of the first Gamma-Kappa 765 kV project.

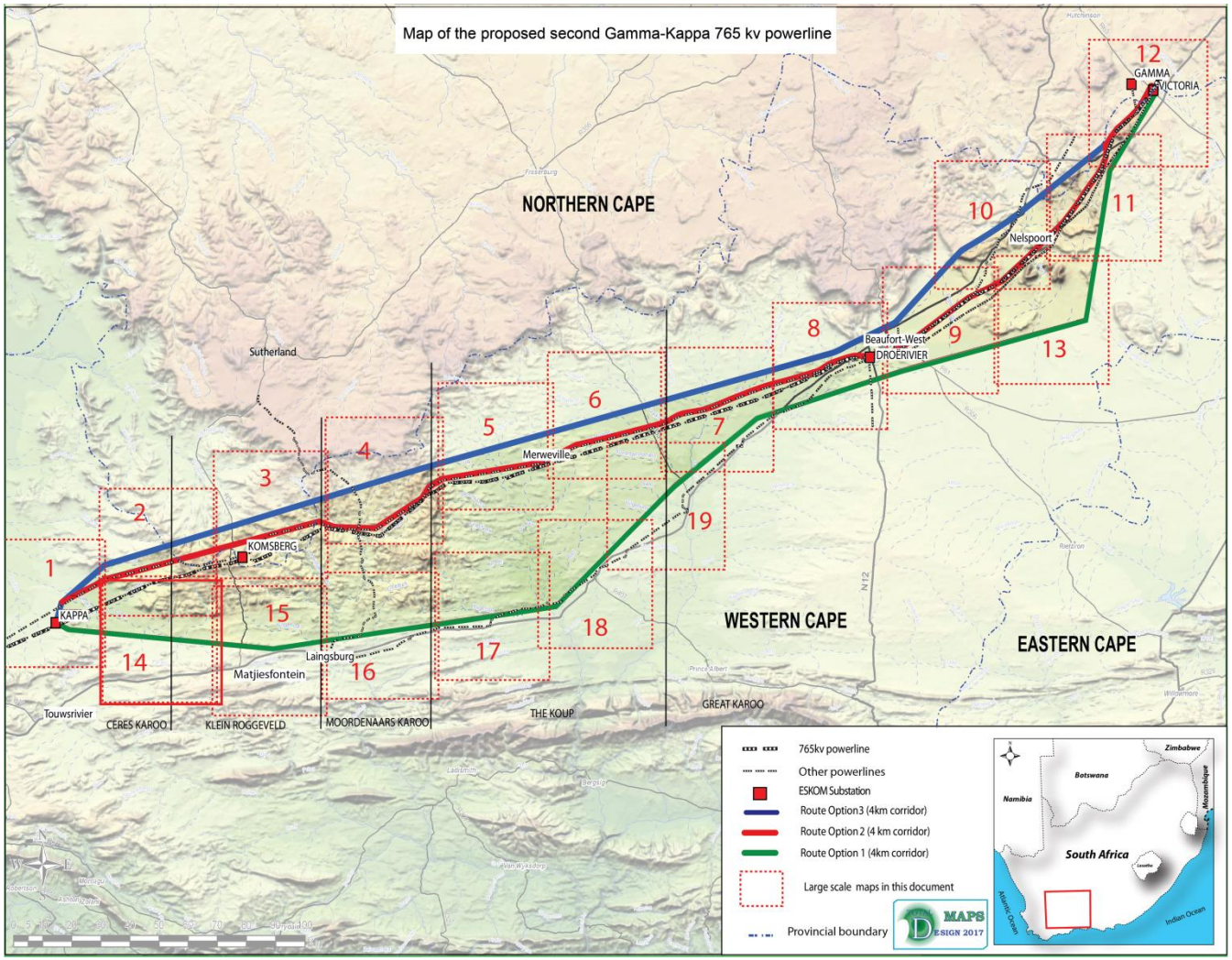

Figure 1: Area of study showing routes. Due to the long distance involved, detailed mapping was done in 19 Large scale maps indicated here.

The main purpose of this study is to establish the archaeological sensitivity of the proposed routes to avoid or mitigate their impact on archaeological sites. The AIA is essential for highlighting the potential impact of the alternative routes and associated services on the archaeological sites and to inform subsequent archaeological assessment and mitigation. The study is primarily desk-based research with limited fieldwork and therefore suffers from the limitation that it is not based on ground observations on most sections of the proposed routes. This caveat does not negate the significance of this phase of the project: a full walk down involving detailed archaeological surveys must be carried out to identify sites along the route that is selected.

In contrast to regions such as the southern Cape Coast, that have received sustained archaeological research since the 1920s, the Karoo area is relatively unknown. The major source of information comes from previous archaeological impact assessment reports. A comprehensive literature review indicated that the study area hosts a variety of archaeological sites, stretching from the Early Stone Age (ESA) (2.6 million – 200 000 BP), through the Middle Stone Age (MSA) (300 000 – 40 000 BP) and the Late Stone Age (LSA) (30 000 -to the recent present) to recent historical time (last 2000 years) (Sampson 1974, 1985 Sadr 2008, Barham & Mitchell 2008). The material signatures for all these cultural periods have been witnessed in the area under study and should be taken cognisance of.

In the last 2000 years, the Khoekhoen pastoralists settled into this part of the Karoo. This group interacted with the LSA hunter gatherer communities, such as the San, leading to the creation of a creolised 'Khoisan' group (Sampson 1974). The Karoo is presently suited to small stock rearing such as sheep and goats, but during the 'mini Ice Age' (1200-1400AD) increased rainfall in the area made it possible to raise cattle. Herders occupied the landscape until the arrival of Europeans in the 17th century AD (Sampson 2008). Stone kraals attest to this herder occupation. From then on, a new cultural period ('historical period') commenced but it was not until the late 18th century AD that European farmers (trekboer) spread into this area. Prins (2011) states that the earliest farm in the area under study dates to around AD 1770 and this date has since been taken to mark the start of the Historical Period. By the 1790s, some Xhosa (Bantu-speaking communities) from the Eastern Cape frequented the area to the north until they settled in the adjacent Pramberg region in the early 19th century (Anderson 1985). Several military and non-military encounters between (1) trekboer farmers and the Khoesan, (2) trekboer farmers and the Xhosa speaking groups, and (3) the Khoesan and the Xhosa-speaking groups, left fingerprints on the landscape. Determined indigenous resistance to trekboer expansion occurred in the harsh environment of the escarpment of the interior plateau, and has been well documented in areas such as the Roggeveld to the northwest of the study area (Penn 2005). Therefore, although relatively archaeologically unknown, the area where the proposed powerline lies is rich in archaeological resources located on mountains, foothills of the escarpment and river valleys.

9. Legislative context

The purpose of this Archaeological Impact Assessment report is to assist the developer to comply with the relevant South African legislations noted above and to ensure that development is done in a sustainable way. The legislation also provides useful working definitions on what constitute heritage resources, archaeological resources, cultural significance and development. The identification, evaluation and assessment of any cultural heritage sites, artefacts or finds in the South African context is required and governed by the following legislation:

(a) National Heritage Resources Act (NHRA) Act 25 of 1999
- (i) Protection of Heritage resources – Sections 34 to 36; and
- (ii) Heritage Resources Management – Section 38

(b) National Environmental Management Act (NEMA) Act 107 of 1998
- (i) Basic Environmental Assessment (BEA) – Section (23)(2)(d)
- (ii) Environmental Scoping Report (ESR) – Section (29)(1)(d)
- (iii) Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
- (iv) Environmental Management Plan (EMP) – Section (34)(b)

The NHRA (25 of 1999) stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 3 (1) of the NHRA states that "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…". Subsection 35(4) of the same act states that: "No person may, without a permit issued by the responsible heritage resources authority-

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist with the detection or recovery of metals or archaeological material or objects, or use such equipment for the recovery of meteorites."

The NEMA (107 of 1998) states that an Integrated Environmental Management Plan should (23:2(b)): "… identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage".

Table 2: Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA

ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq. m	No
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within past five years	No
	Rezoning of site exceeding 10 000 sq. m	No
	Any other development category, public open space, squares, parks, recreation grounds	No
NHRA Section 34	Impacts on buildings and structures older than 60 years	Subject to identification during Phase 1
NHRA Section 35	Impacts on archaeological and paleontological heritage resources	Subject to identification during Phase 1
NHRA Section 36	Impacts on graves	Subject to identification during Phase 1
NHRA Section 37	Impacts on public monuments	Subject to identification during Phase 1
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	Yes

10. Methodology and limitations

The study was largely based on desktop research of the available literature and databases. The literature consulted includes both published and unpublished archaeological, historical, anthropological and cartographic works. Previous AIA reports and related archaeological heritage studies formed a key component of this research. In addition, SAHRA and Heritage Western Cape databases were also consulted together with the database hosted by the Chief Directorate of Surveys and Mapping in Mowbray. The study revealed significant geographical imbalances in research coverage with some areas relatively better known than others. There were many inconsistencies, particularly in the existing impact assessment reports, with some sites lacking geographical coordinates, while some databases were incomplete. In this respect, a full walk-down would have been necessary but was impractical given the distances concerned and the fact that there are three preferred routes. However, this makes walk-downs for the selected routes important.

11. Description of the archaeology of the project area

Targeted fieldwork involved drive-throughs and limited fieldwork, aimed at capturing the landscape and locating sites along parts of the proposed routes. The drive-through path originated in the lower segment of the existing 765kV powerline at Kappa, following a dirt road from the R356 to Matjiesfontein via Kappa station along Option 1 before re-crossing this southern route option towards Option 2 and 3 using the R354. Limited foot surveys were carried out in Saaiplaas farm, before proceeding with drive-throughs into adjacent farms and wiggling across the current 765kV line several times before turning right and heading towards Laingsburg. The path then continued on the N1, going past Leeu-Gamka and Beaufort West, before proceeding to Gamma/Victoria Station along R63. Limited foot surveys were undertaken at that point before heading back to Nelspoort and surveying the farm Bruinrug on foot. The drive-through ended with inspection of the flat area where the proposed Route Option 1 crosses the dirt road from Nelspoort to Murraysburg. Figures 2A to D shows the landscape photos of the surveyed portions.

Figure 2A: Landscape photographs showing approach to Kappa and Komsberg stations.

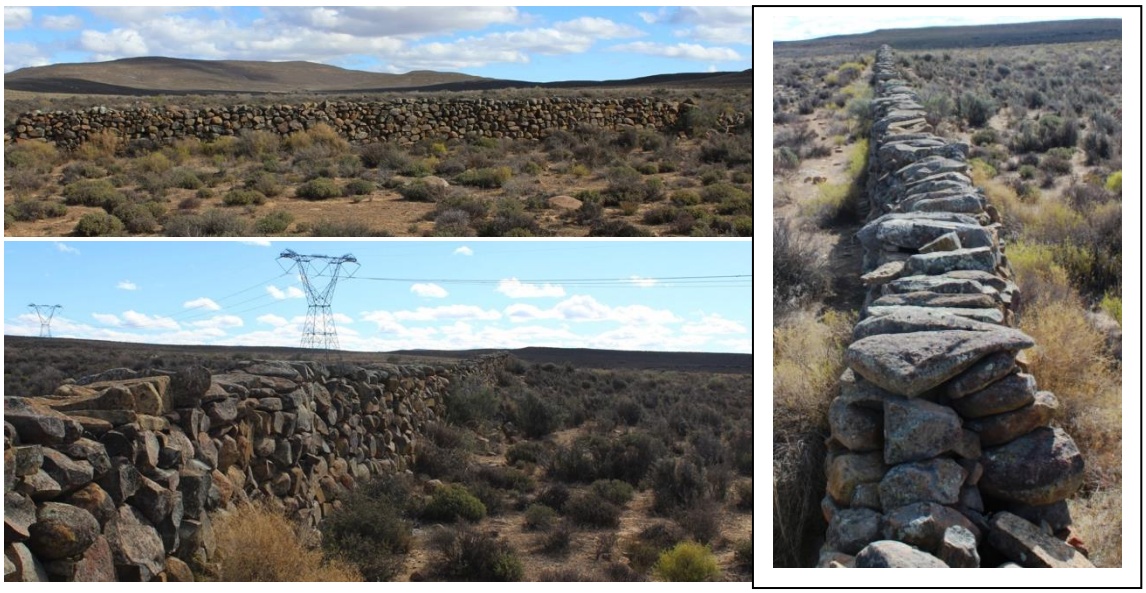

Figure 2B: Photographs of the 8km long stone walling at Saaiplaas. Part of the wall has been destroyed to make way for construction vehicles.

Figure 2C: Photographs of the historic wall clusters adjacent to Saaiplaas, and the approach to Three Sisters.

Figure 2D: Gamma substation, the 765kV and 400kV powerlines near Nelspoort, and the flat plain across which Route Option 1 will cross the dirt road from Nelspoort to Murraysburg.

Based on the literature survey and targeted fieldwork, the description of the archaeology of the area is as follows:

ESA

Stone tools are the principal ESA material found in the area under study. These include crude choppers and other unifacial tools that belong to the Oldowan industry, as well as the characteristic Acheulian hand axes and cleavers (Goodwin and Van Riet Louw 1926; Humphreys 1979; Sampson 1972, 1984). However, as noted by Kaplan (2001), the majority

of these tools have now lost their sharp edges and their flake scars are barely recognisable. As such their identification demands careful inspection, especially because most of them appear to have been subsequently modified during either the Middle or Later Stone Age periods (Nilssen 2011). This section of the Karoo is endowed with dolerite dykes, which host hornfels / indurated shale which was used for making these tools (Parkington 1984). The ESA tools in the study area mostly occur in open sites, next to dry riverbeds, pans, vleis, ancient river valleys and mountains. They are rarely associated with organic remains such as bone (Kaplan 2001, Hart and Webley 2011). However, only two ESA sites were reported within the 4km corridors of Route Option 2 and 3 and all of them occur outside the critical 2km corridors within which construction will take place when approved. The overall significance of these sites has been shown to be low but researchers have cautioned that they should not be dismissed outright because of their potential to inform research on the distribution of the ESA in the dry interior (Kaplan 2001).

MSA

The MSA is a cultural period which in southern Africa is associated with the emergence of archaic *Homo sapiens*, thought to be responsible for changes in the stone tool technology as well as the beginning of art and symbolic expression (Henshilwood and Marean 2003). Unlike the ESA lithics that were mostly core tools (Sampson 1974), the MSA tools are characterised by flakes and blades and which are relatively smaller when compared to those used in the preceding ESA (Figure 3).

Figure 3: MSA/LSA flakes from site 142 near Kappa station.

MSA sites found in the research area are defined by clusters of tools or isolated occurrences of stone implements that include cores, hammer stones, flakes, chunks, blades, convergent flakes, unifacial and bifacial points, adzes and several retouched pieces (Prins 2011, Kaplan 2001). Of all the Stone Age periods, the MSA sites occur more frequently in the area under study but just like the ESA, they rarely occur in their original contexts (Kaplan 2001). While this does not necessarily render the sites insignificant, it means threats to their integrity and preservation can be mitigated or eliminated by careful siting of particular pylons without completely changing the direction of the power lines (see Kaplan 2001). Thus care should be taken when siting pylons close to dry riverbeds, pans, vleis and ancient river valleys since they are associated most MSA sites in this area. Route Option 2 has the highest occurrence of MSA sites, followed by Route Option 1, but one must not read too much into these occurrences because they most likely reflect research coverage more than the true presence-absence determination.

LSA

More technological and behavioural changes than those witnessed during the MSA, occurred during the LSA, which is also associated with *Homo sapiens* (Barham and Mitchell 2008). Comparatively, lithics became much smaller, specialised and with more retouch than those of

the MSA. Various core types, including bladelet cores, hammer stones, flakes, chips, chunks, blades, bladelets, adzes and retouched pieces, have been reported in isolated clusters (Prins 2011, Kaplan 2001). These lithics were overwhelmingly made with hornfels though some appear in quartzite, sandstone and mud rock. Closer to Beaufort West, Prins (2011) reports the occurrence of production sites where the sequence of toolmaking can be reconstructed through refitting of flake debris to cores. A variety of organic tools, art and symbolic expressions are recorded in the LSA of southern Africa in general, but the LSA expression in the area under study is limited to lithics and isolated occurrence of rock art (both rock paintings and engravings). Other organic materials associated with lithics in this area include ostrich egg shells. Kaplan (2001), for instance, noted the occurrence of a low density scatter of LSA tools and some ostrich eggshell on the farm La-De-Da, just to the south of the Karoo National Park.

San hunter-gatherer groups are credited with producing most of the rock art during the last 10 000 years but some rock art and engravings depict horses, guns, wagons steam trains, from the historical period. Parkington et al (2008) reported on the occurrence of rock engravings in this area, of which the best known sites occur at Nelspoort near Beaufort West. The direct threats to this rock art by power lines are generally low and can be easily mitigated, but other associated services such as roads would need to be sited with great care to ensure that these sites are not affected. Kaplan (2001) red-flagged the mountainous portions in this area because of the occurrence of such rock art sites, amongst other sites. The animals depicted include sheep, which together with goats and cattle were introduced in this area by the Khoekhoen herders (Deacon and Deacon 1999, Sampson 1985). The latter are also associated with the introduction of ceramic vessels, but these have not been widely reported in the area under study. At about 1200–1400AD, a global climatic fluctuation (known as the Little Ice Age) is thought to have caused an increased rainfall in the now dry Karoo, resulting in the area being more suitable for the grazing of cattle and occupation by Khoekhoen pastoralists. Prins (2011) argues that the archaeology of pastoralist occupation of the Karoo is indicated by various stone kraal complexes similar to several hundreds that have been recorded by Sampson (1985) in the Seacow River Valley. It is now known that stone walling in this part of the world began during the Stone Age (Sadr 2012). Further systematic identification of stone walling is important because similar structures are also associated with the 19th century AD Xhosa-speaking communities (Zachariou 2013).

Precolonial circular and lobed stone kraals are dissimilar to the rectangular ones of the colonial period, but information about the various groups that produced them is still fragmented and poorly understood. Clustered between 1000 AD and the 1700s, the dry stone built stock kraals come in versions ranging from 3-9m in diameter and less than half a metre high (for adult stock) to 1m diameter and slightly higher walls for smaller animals (*lamerkraals*/ lambs' kraals) (Webley 1986). Below the escarpment, the Khoekhoen stone

walled sites tend to be associated with numerous stone features, some of which average about 80m in diameter and include stone marked graves (Hart et al. 2010). The material signature for some of the sites includes European products, confirming that the places may have been used well into the historical period.

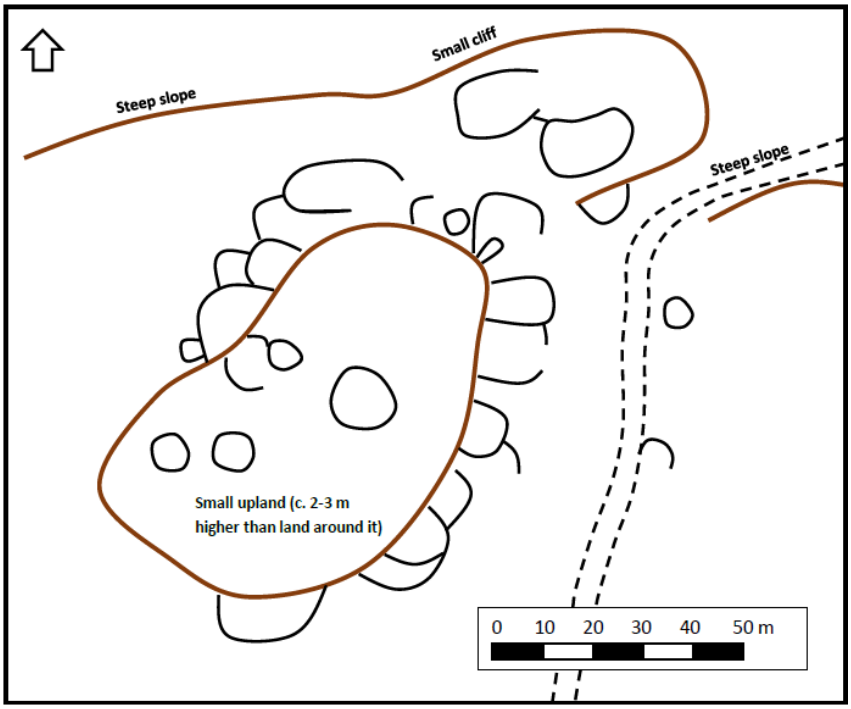

Figure 4: Plan of typical LSA stone walling on the edge of the escarpment to the west of Merweville and immediately north of Route Option 3 (from Orton 2017: 20). Note that, as at Saaiplaas, the site has been dissected by an access road. The wall height is less than half a meter and there is no clear coursing.

Other groups with stone building experience (Sotho and Xhosa speakers) entered the region to live alongside the later Khoesan settlers during the historical period, and some of them were 'hired' by the trekboer farmers to make rectangular and linear stone structures of the colonial period.

Current research indicates the occurrence of clusters of precolonial stone enclosures close to Route Option 1 as it approaches Kappa station, and a very significant cluster also occurs together with historical stone walling in the area around Saaiplaas farm, affecting Route Option 2 and 3.

Historical Period

The archaeology of this area dating after 1770 AD also reflects the cohesion and interactions that relate to the trekboer and other LSA cultural groups, as well as some Iron Age groups Prins (2011). Being pastoralists, the trekboer settled on the escarpment where most of the springs were found, and they also followed a pattern of transhumance to seek seasonal pastures (Penn (2005). Conflict was inevitable both with pastoral groups and the San, who raided their livestock. Not surprisingly, a period of conflict ensued until the 1880s when San resistance to colonial expansion in the Karoo came to an end, and the skirmishes resulted in several marked and unmarked graves (Penn 2005, Adhikari 2010, Gall 2002). The landscape of the Roggeveld and Great Escarpment is a historic conflict landscape associated with the last stand of the Cape Khoesan. During the period of conflict some Khoekhoen groups aided the trekboers in exterminating the San groups, a common enemy. Thus their 'archaeological signature' (typical material culture) during this period included the introduction of European goods and weapons (Prins 2011, Smith et al. 2000). Care should be taken when approaching the Kappa Station along Route Option 1 because previous studies have documented some rectangular stone walled sites not very far from the existing servitude. Hart and Webley (2011) and Fourie (2010) also recorded sites near and directly under the servitude for the existing 765kV line.

Corbelled buildings are another critical archaeological feature that developed as a vernacular architectural design to cope with a scarcity of wood as a building resource and as a measure to combat San attacks during the nineteenth century (Oberholster 1972). Corbelled buildings include dwellings, kafhokke and shelters, and some of these occur near Beaufort-West and near Merweville (Oberholster 1972, Kramer 2010).

Figure 5: A corbelled building (left) on Koppiesfontein (Kramer 2010: 5) and an isolated "shepherd's hut" at site 170, just north of Route Option 3 and northwest of Merweville (Orton 2017: 24), confirming the occurrence of stone building traditions close to Route Option 3.

The appearance of the Xhosa-speaking communities in this part of the Karoo dates back to the 1790s (Anderson 1985). These Bantu-speaking communities moved into the area in order to participate in the ivory trade which initially included the Khoisan and the trekboer (Zachariou 2013). They also built in stone walled structures, most of which appear similar to those of the Khoisan groups at first glance. Indeed, in most of the previous literature, no distinctions were made. Most of these Xhosa sites occur in the Pramberg area, closer to Victoria West, but this may as well be a reflection of lack of dedicated research into this type of archaeology. Although they built stone walls and kraals, the Xhosa lived a nomadic lifestyle with easily transportable mat huts, on the borders of Beaufort West in 1830, Pramberg (near Victoria West) from 1809, and much earlier in the far Northern Cape. Around the same time, and perhaps for similar reasons (as well as escaping the dislocations of the *Mfecane*), smaller groups of Sotho-speakers arrived, identified in most literature as "Mantatees". These groups also came from a stone-building tradition (Lye 1967: 107). While the Khoesan, Xhosa and "Mantatees" all constructed dwellings in a dome shape, the latter actually built corbelled huts in stone (Kramer 2012). During the colonial period, most Sotho masons constructed theirs and their trekboer masters' kraals and cottages (Beinart 2003: 59). Whatever the origin or mechanism of technological transfer, extensive dry stone walling (fences, kraals and dwellings) became a prominent feature of the 19th century historical period in the Karoo.

The preservation and survival of these sites is not uniform across the escarpment and its adjacent areas but the area around Saaiplaas farm retains some of the most outstanding and extensive examples. These need to be protected against further developmental threat, as damage was observed from previous activities. The farm Saaiplaas itself retains some of the spectacular sections of these dry stone walled fences that rise to about 1,5m and can be traced for about 8 km. More stone-walled sites of the earlier period occur on the edge of the escarpment, forming a continuum that stretches from the Klein Roggeveld to the end of the Moordenaars Karoo. This section affects Route Options 2 and 3. Precolonial dry stone walled kraals add to the sensitivity of the area, and should therefore be re-flagged (Figure 6). A few approved (and ongoing applications) affect parts of this area and a 765kV powerline will undoubtedly impact negatively on what is significant heritage. Route Option 2 can still be considered, but only if it is re-routed southwards of the existing 765kV line. As one approaches Kappa following Route Option 1, there are a few other stone-walled sites that also make this section very sensitive and must also be red-flagged (Figure 6).

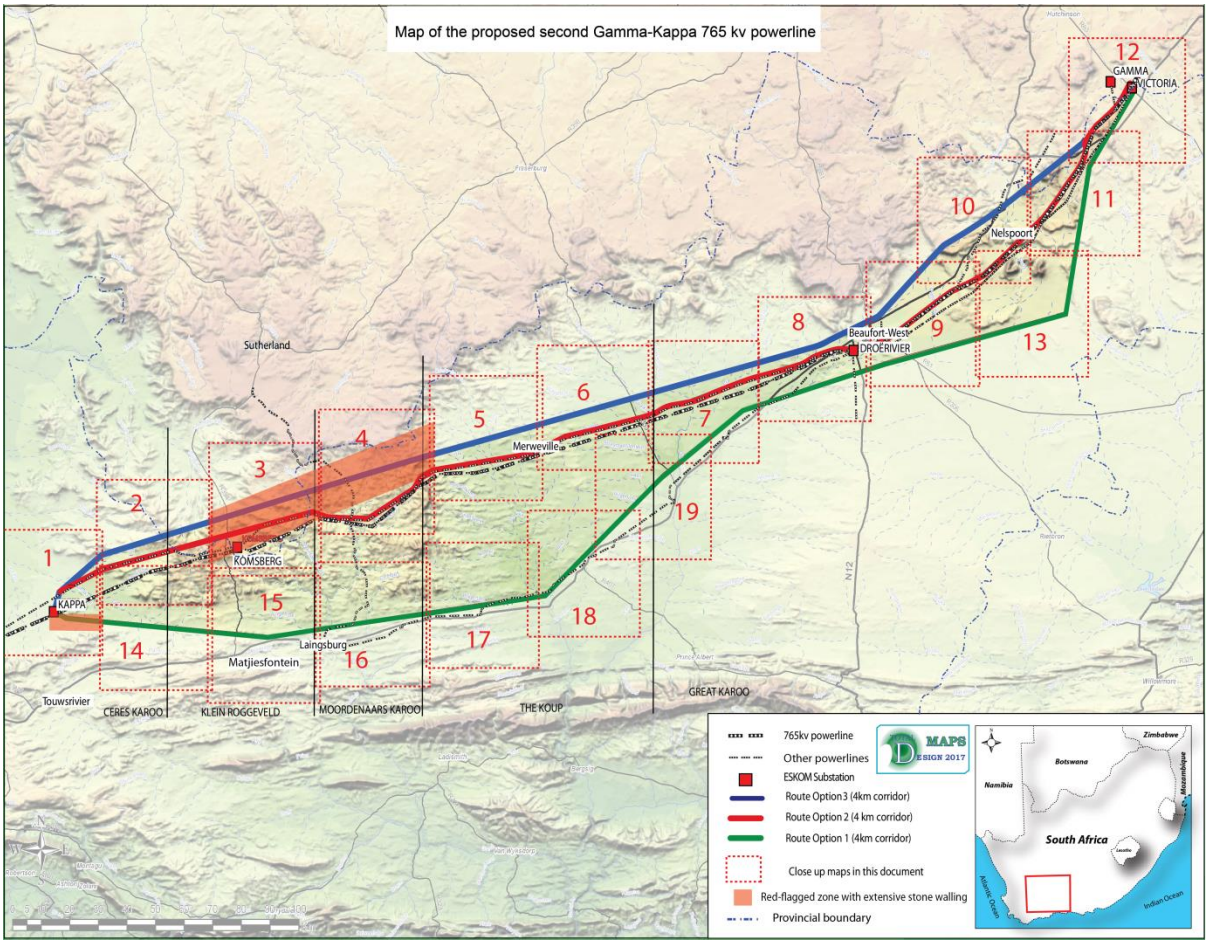

Figure 6: Red-flagged zones based on the archaeological study.

12. Statement of significance and site grading

The archaeological sites in the area proposed for development are associated with numerous values ranging from cultural, scientific, spiritual, aesthetic and historical. There is general agreement that this area is as yet archaeologically under-researched and holds significant potential for enhancing our knowledge of communities that lived in the interior over the course of human history. As such, adequate care must be taken to ensure that negative impact of the development is mitigated. However, one should note the significant challenges with assessing significance because the various AIA reports in the study area use different terms for grading and some of the subsequent explanations do not seem to tally with the significance level ascribed to sites. While some researchers use grading categories based on built environment and regional survey guidelines (e.g. IIIA, IIIB, IIIC), others use descriptive significance based on environmental assessment practice (e.g. high, medium, low, etc). To ensure consistency and some level of comparability, a comment on site grading is provided.

In South Africa, the grading of sites is provided for in Section 7 of the NHRA, where heritage resources of National significance are Grade I, those of Provincial significance are Grade II and those of Local significance are Grade III. This is very important for the purposes of identifying the appropriate level of management, with Grade I and II resources being reserved for national and provincial heritage resources authorities, while Grade III resources would be managed by the relevant local planning authority. The grading is also important for establishing formal protection of significant resources. Provincial authorities can also formulate a system for the further detailed grading of heritage resources of local significance and HWC (2016) further divides resources of local significance into Grade IIIA, IIIB and IIIC. The majority of the sites under study corresponds to this local grading and approximately equate to high, medium and low local significance, while sites of very low or no significance (and generally not requiring mitigation or other interventions) are referred to as Not Conservation Worthy (NCW) (Orton 2017). This format is not religiously followed by most research, leading to the creation of several other subcategories such as "high/medium, medium/low" that cannot be easily related to grading numbers. To appreciate the grading in this study in relation to national and international classification, I attempted to reconcile the ICOMOS, NHRA and HWC ranking with the various classifications in the AIA reports affecting this area (Table 3).

Table 3: The reconciliation of different gradings / significances from various AIAs with that of the PHRA and national and international guidelines.

ICOMOS	**National Heritage Resources Act**	**HWC**	**Previous AIAs**
Very high (World Heritage)	National Heritage Sites (Grade 1)		
High (Nationally significant)	National Heritage Sites (Grade 1), Grade 2 (Provincial Heritage Sites), burials		Grade 2 (Very high)
Medium (regionally significant)	Grade 3a	Grade IIIA (High local significance)	Grade 3a (High)
Low (locally significant)	Grade 3b	Grade IIIB (Medium local significance)	Grade 3b (Medium) (High/medium)
Negligible	Grade 3c	Grade IIIC (Low local significance)	Grade 3c (Low) (Medium/low)
Unknown	Grade 3a	Very low; none (NCW)	Unknown (ungraded)

13. Assessment of Scale of Specific Impact and Change

Positive and negative impacts on heritage resources take many forms: they maybe direct or indirect, cumulative, short term or long term, reversible or irreversible, visual, and physical. According to the ICOMOS (2011) guidelines, the impacts must be triggered by the proposed development in order for them to be relevant to the HIA/AIA study.

Direct impacts are those that arise as a primary consequence of the proposed development or change of use. They can result in the physical loss of part or all of an attribute, and/or changes to its setting - the surroundings in which a place is experienced, its local context, embracing present and past relationships to the adjacent landscape (ICOMOS 2011). In the process of identifying direct impacts effort must be invested in considering **cumulative impact** because little impact on a few sites may cause extensive damage on a large scale. This is relevant for the present study because redirection of Route Option 2 to the south of an existing 765kV powerline is being recommended. Cumulative impacts resulting in physical loss are usually permanent and irreversible.

Indirect impacts occur as a secondary consequence of construction or operation of the development, and can result in physical loss or changes to the setting of an asset beyond the development footprint.

The scale or severity of impacts or changes can be judged taking into account their direct and indirect effects and whether they are short or long term, reversible or irreversible. The cumulative effect of separate impacts should also be considered. The scale or severity of impact was ranked qualitatively without regard to the value of the asset as follows:

- No change
- Negligible change (beneficial or adverse)
- Minor change (beneficial or adverse)
- Moderate change (beneficial or adverse)
- Major change (beneficial or adverse)

NB: Major change refers to change that is irreversible and would result in the loss of physical integrity of the heritage resource (ICOMOS 2011). Beneficial refers to actions that enhance the value of heritage assets, while adverse refers to actions that result in the erosion of value.

Generally speaking, most of the archaeological resources under study can be easily mitigated against adverse changes through re-positioning of pylons or mitigation excavations, but the stone-walled clusters around Saaiplaas pose a challenge. The linear nature of walling, as opposed to the localized pattern for lithic clusters or other “point forms” of archaeological resources, creates an impenetrable barrier to approach road construction and the only way to successfully built a powerline without the costly “helicopter drop option” is to destroy sections of the walls. This has already happened in places (see Figure 7 below).

Figure 7: Section of the 8km long dry stone wall at Saaiplaas farm that was destroyed to make way for construction vehicles for the 400kV powerline approaching Komsberg station.

14. Summary of findings

Large scale maps 1 to 19 present the detailed depiction of sites in relation to the route options.

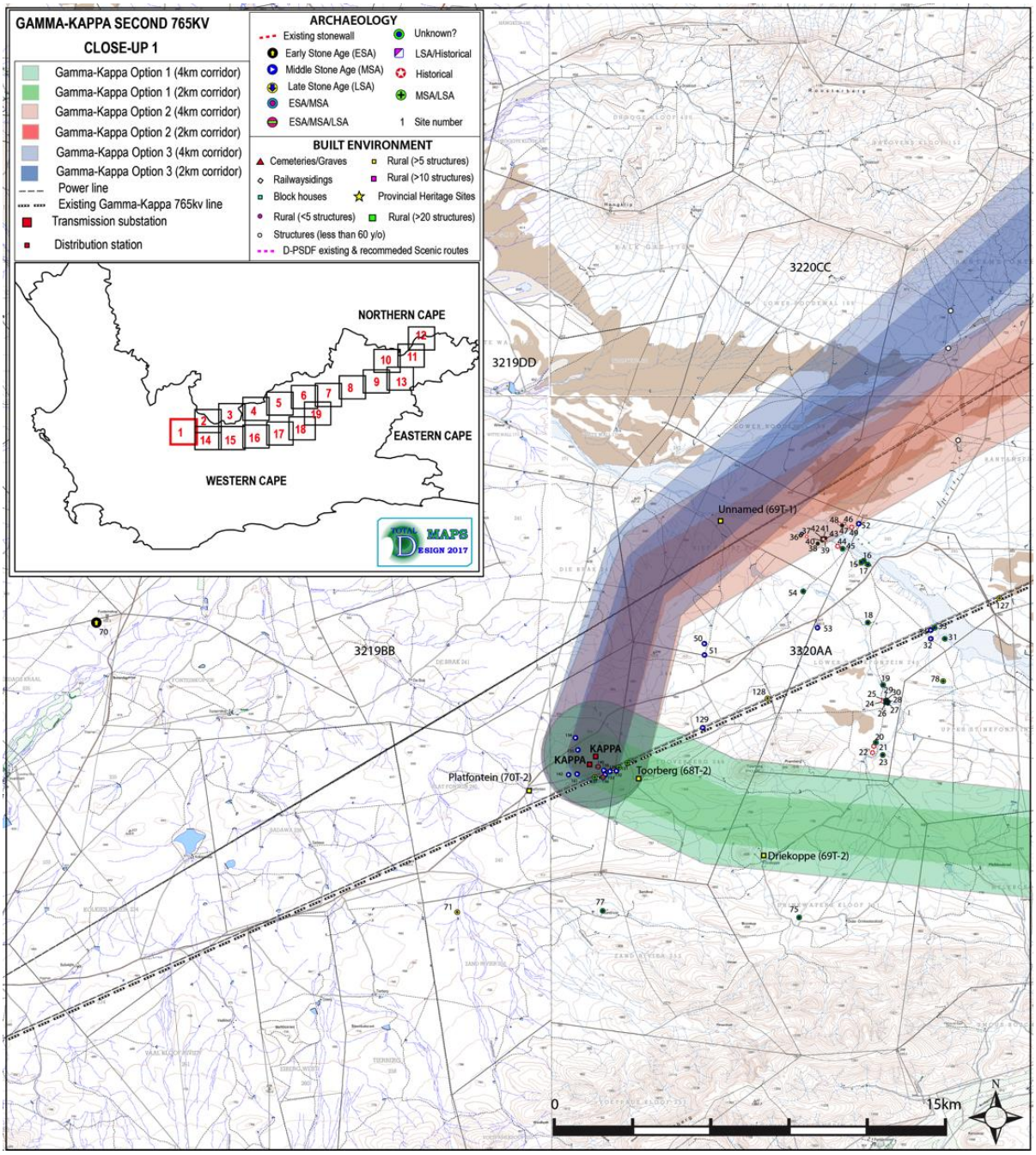

Figure 8A: Large scale map 1

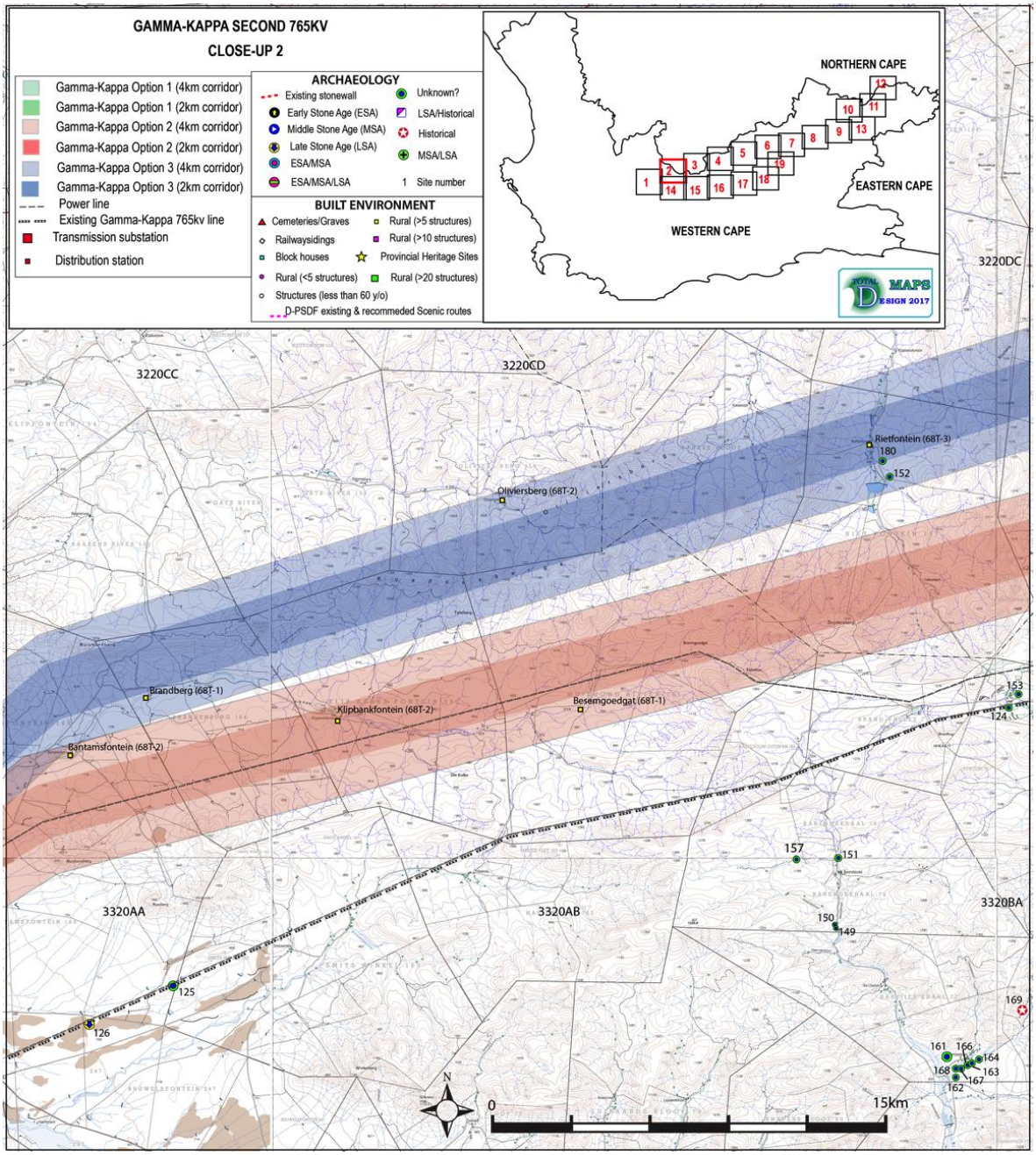

Figure8B: Large scale map 2

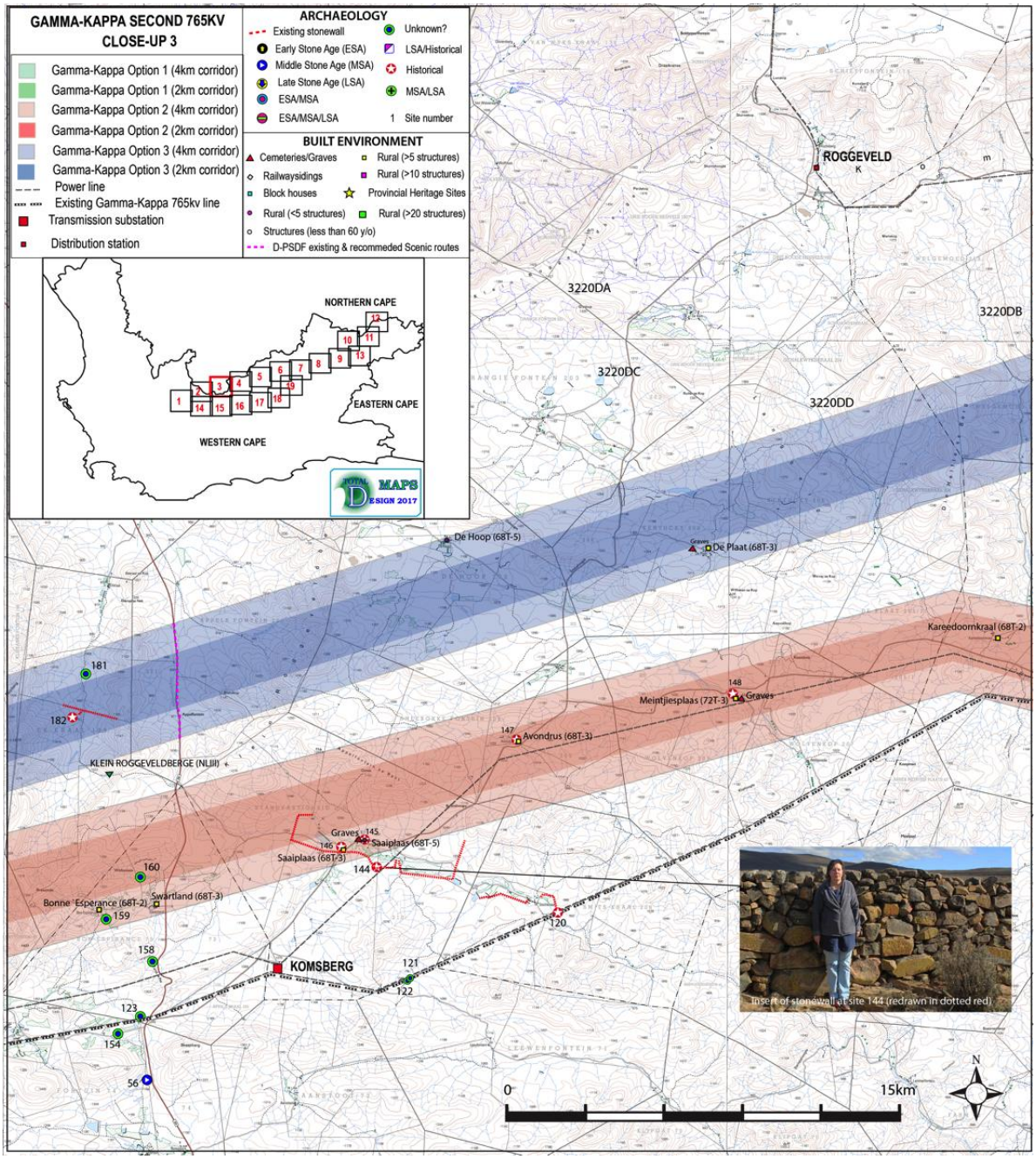

Figure 8C: Large scale map 3

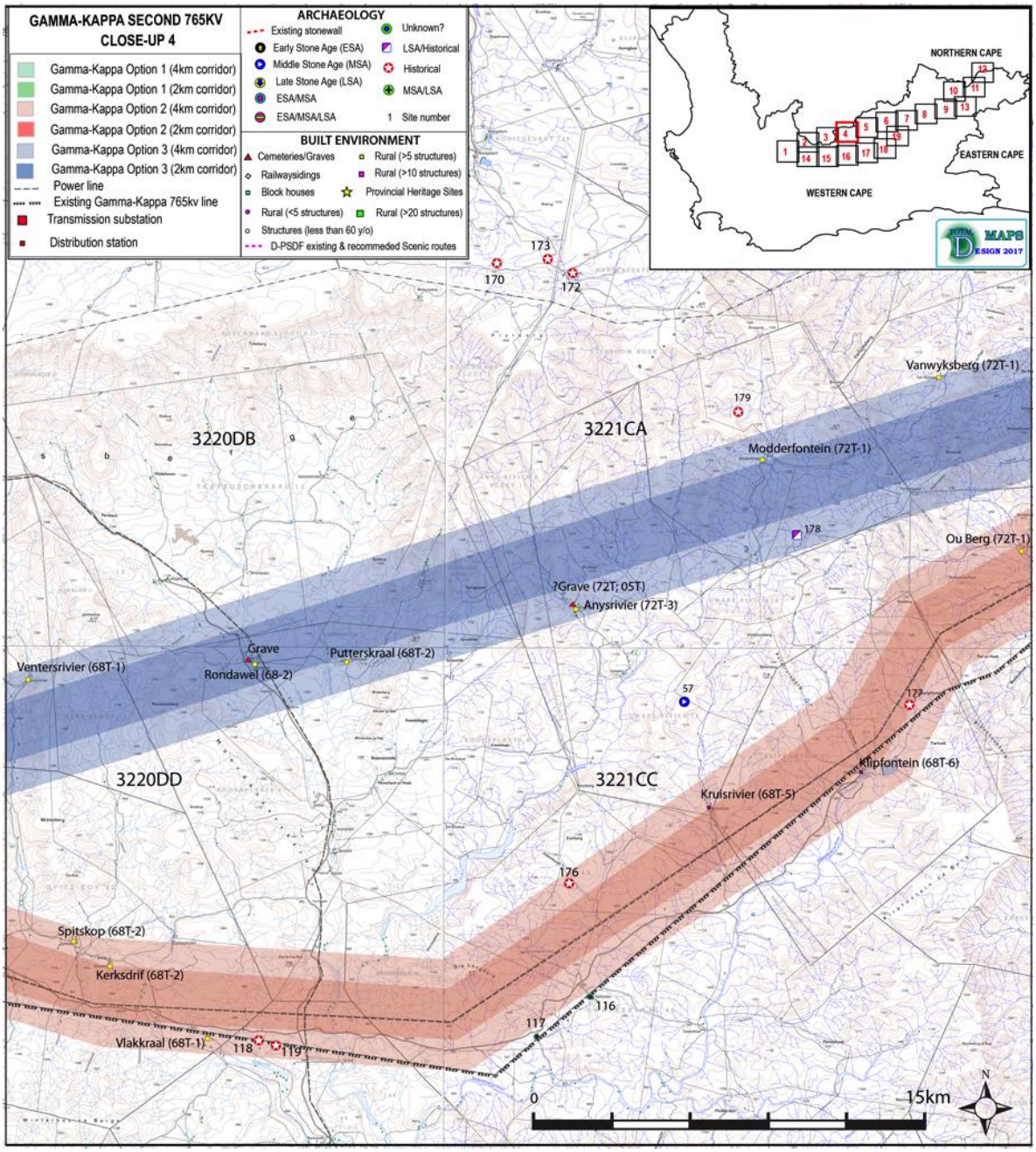

Figure 8D: Large scale map 4

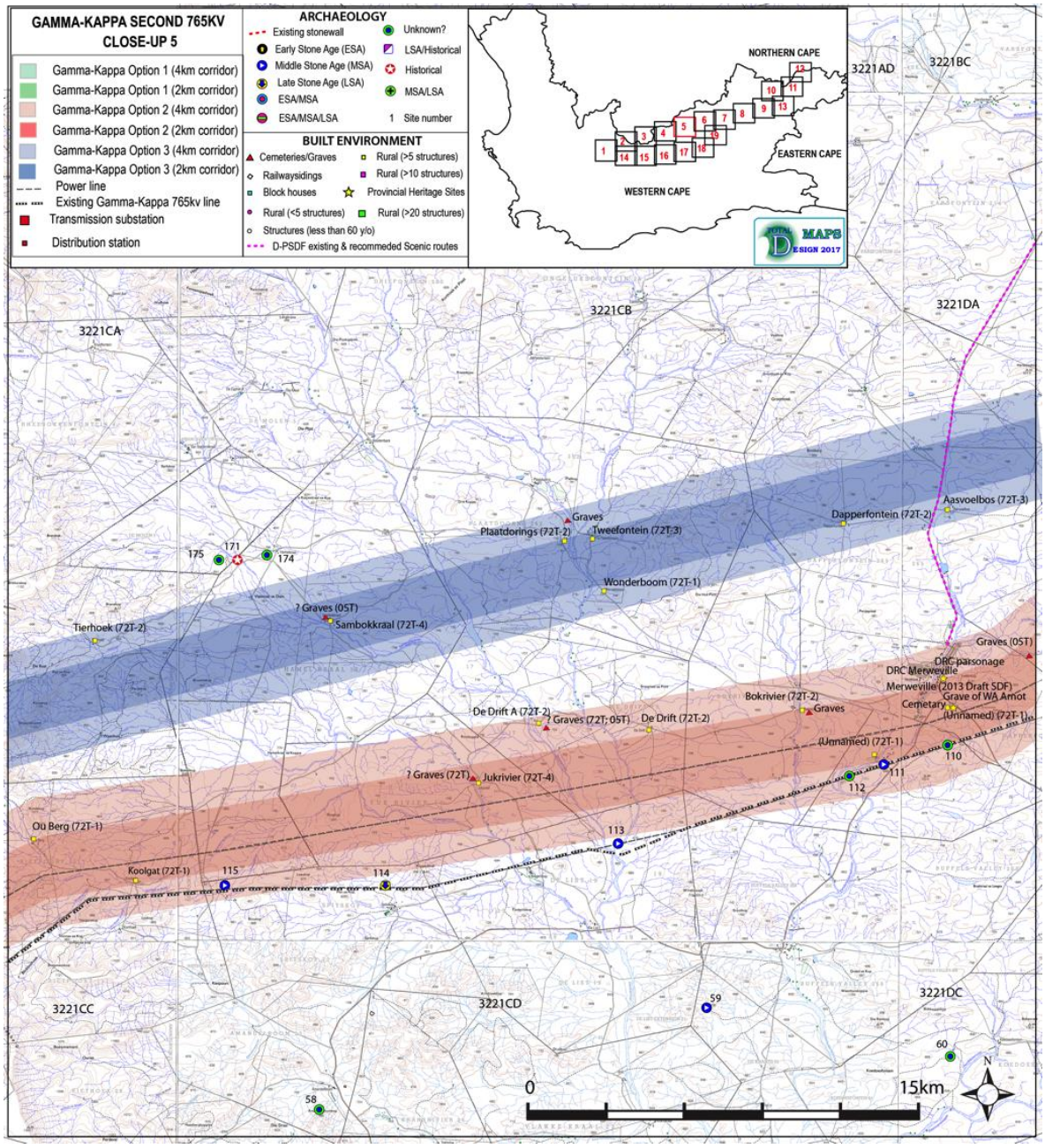

Figure 8E: Large scale map 5

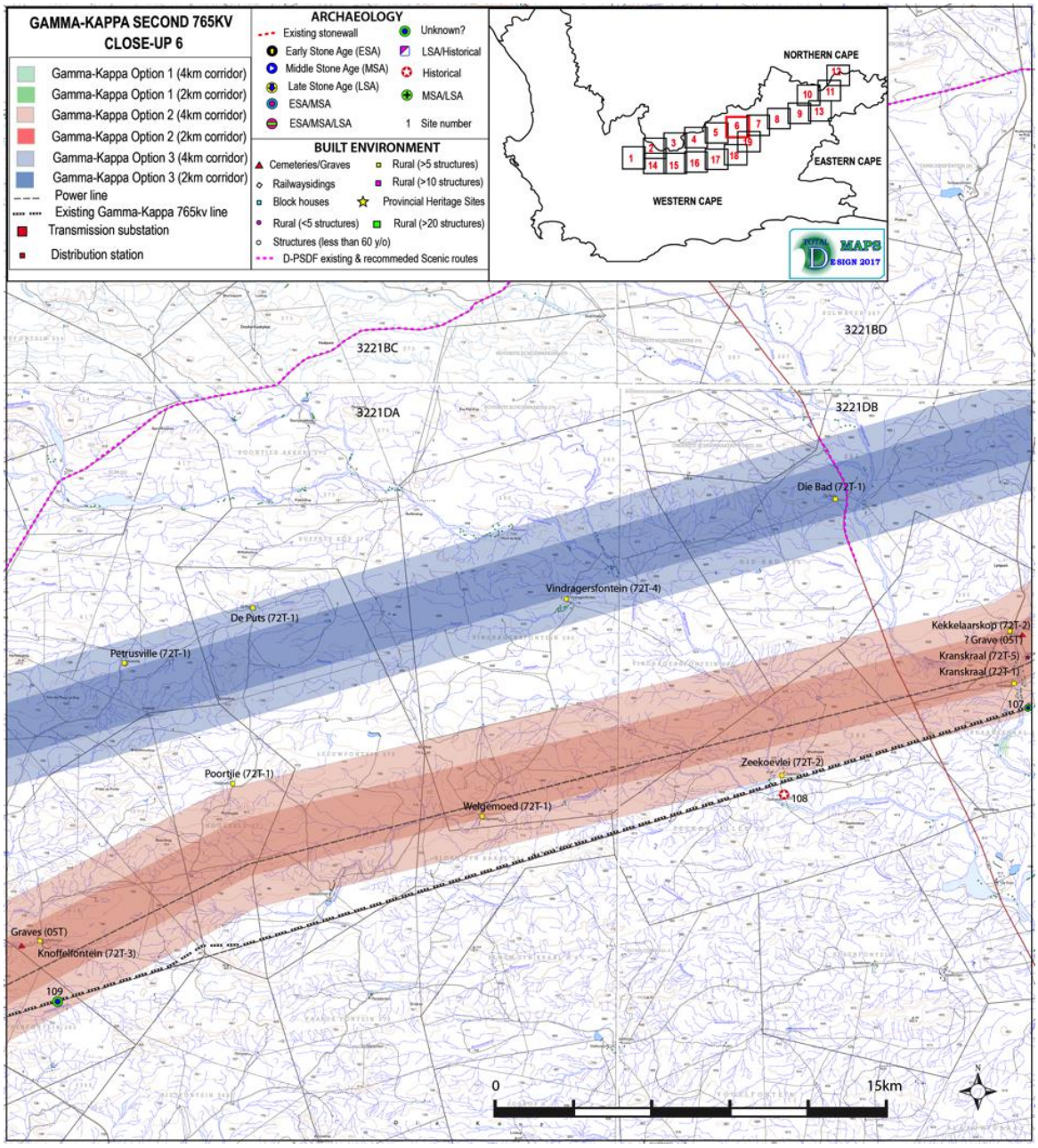

Figure 8F: Large scale map 6

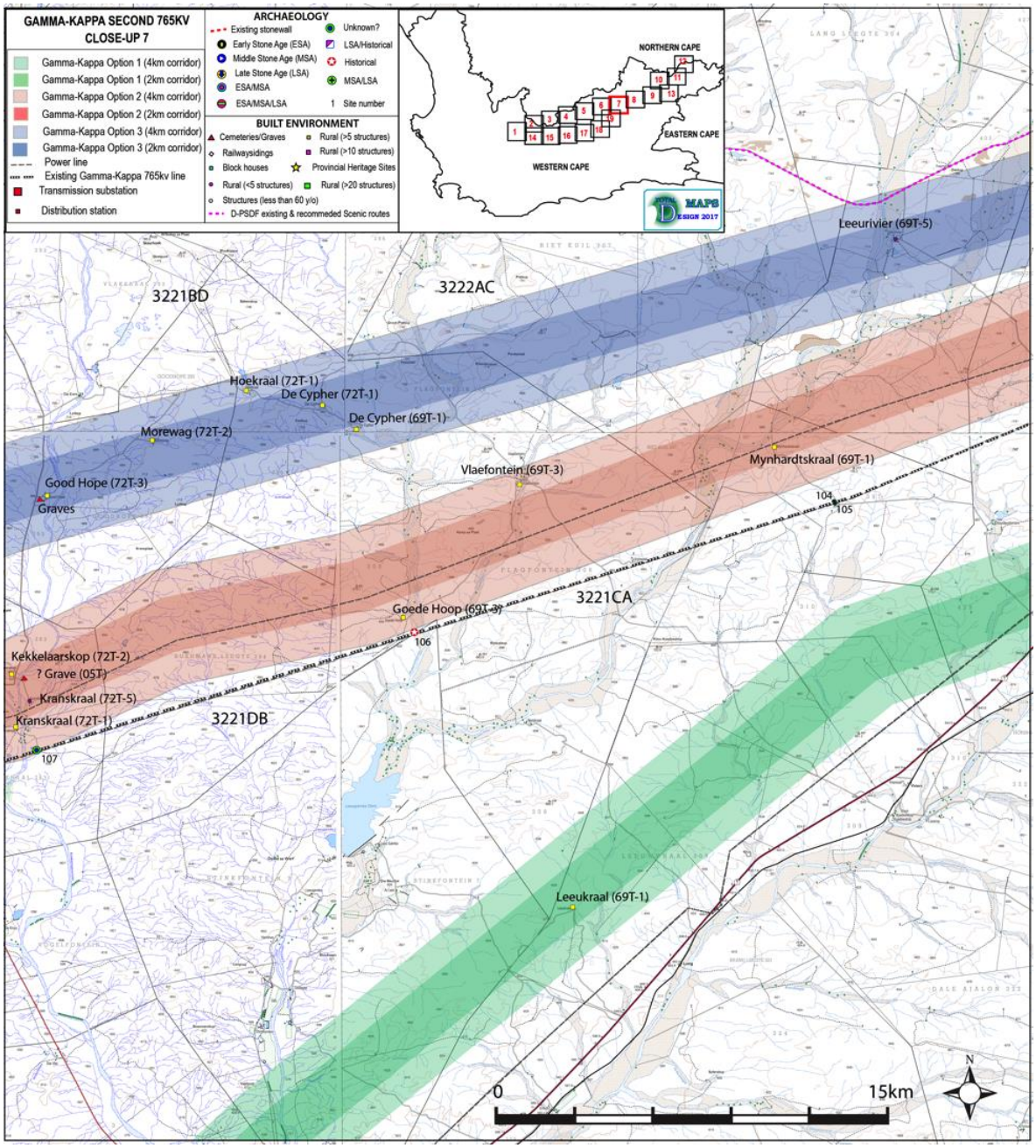

Figure 8G: Large scale map 7

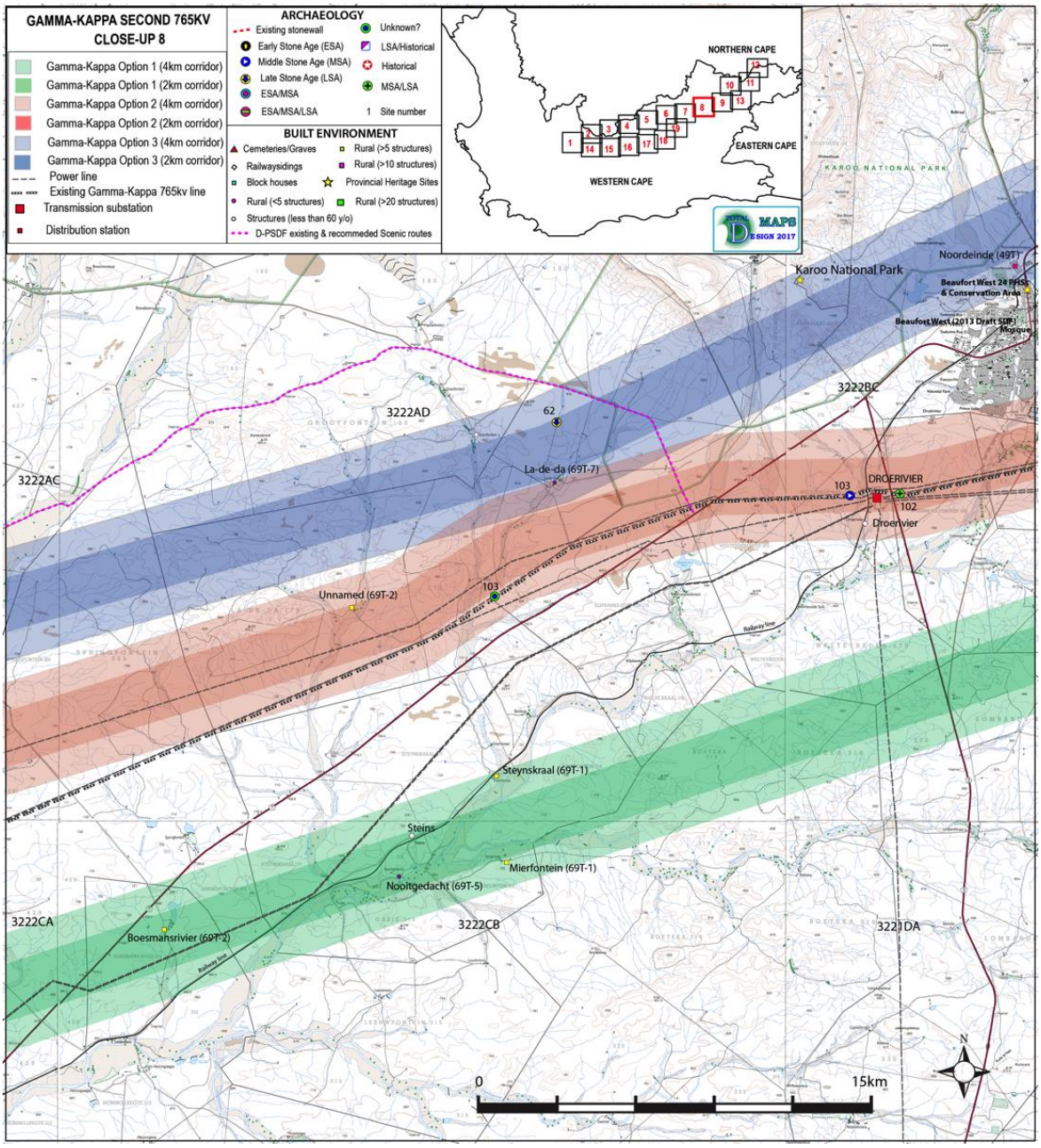

Figure 8H: Large scale map 8

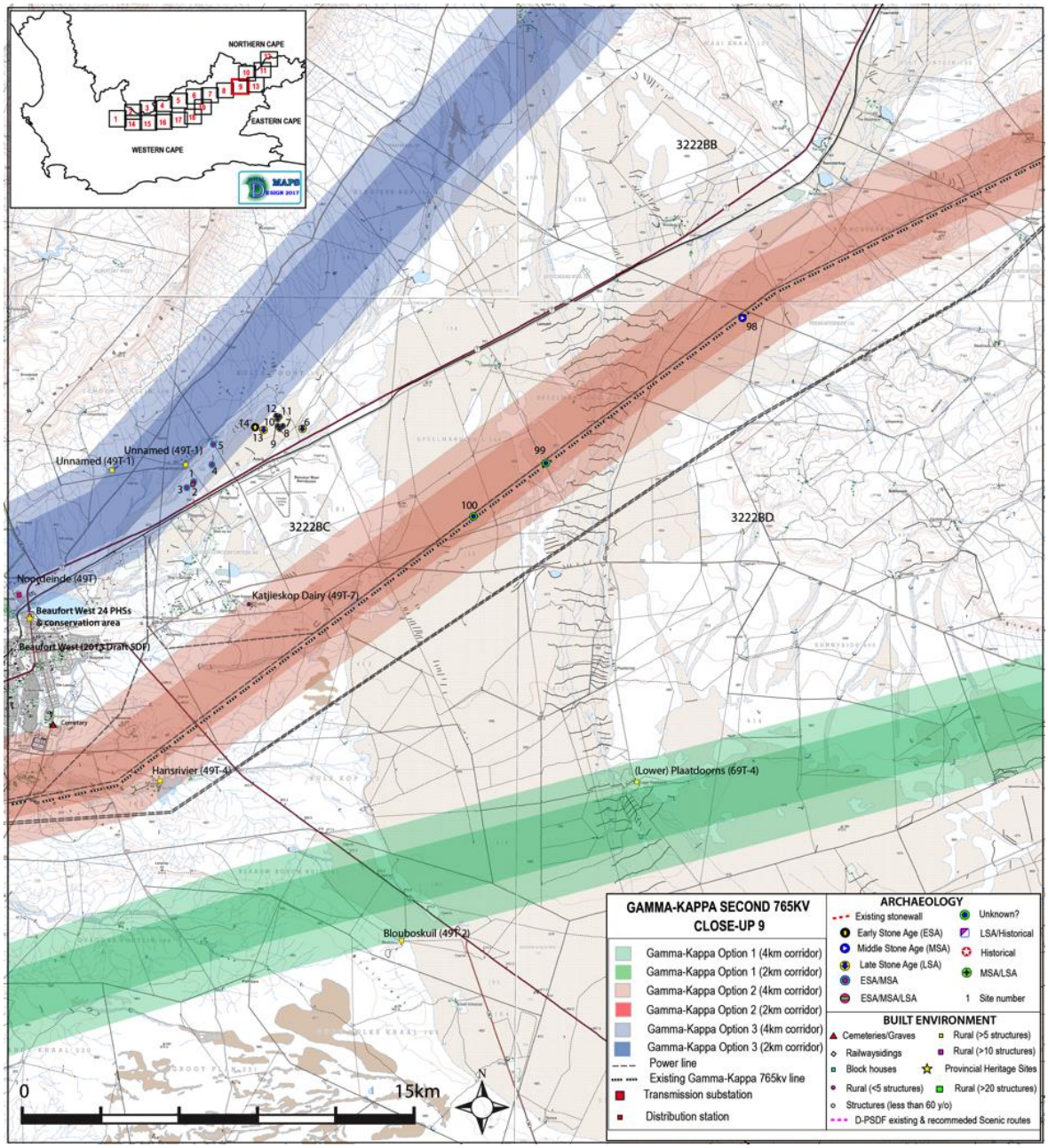

Figure 8I: Large scale map 9

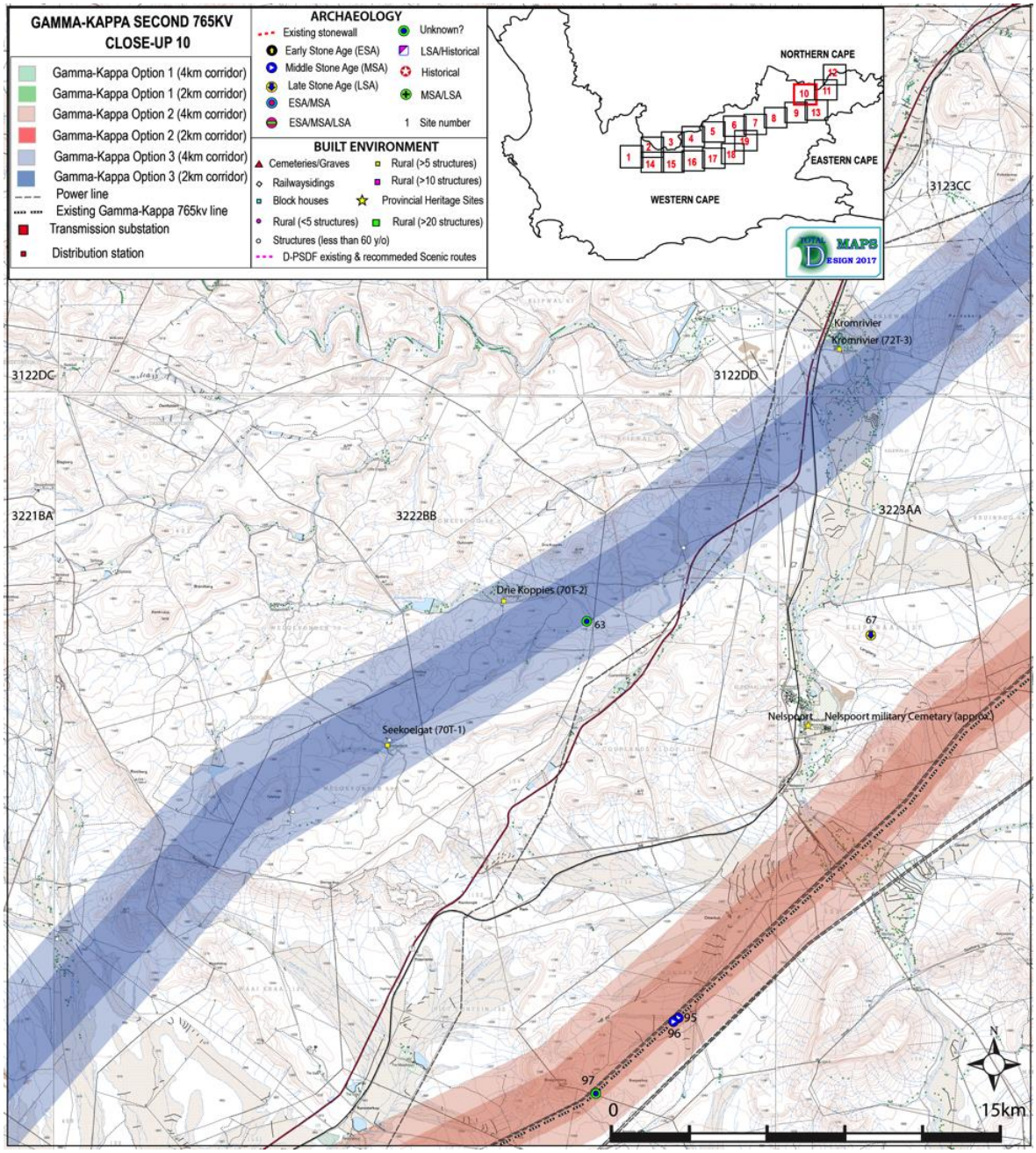

Figure 8J: Large scale map 10

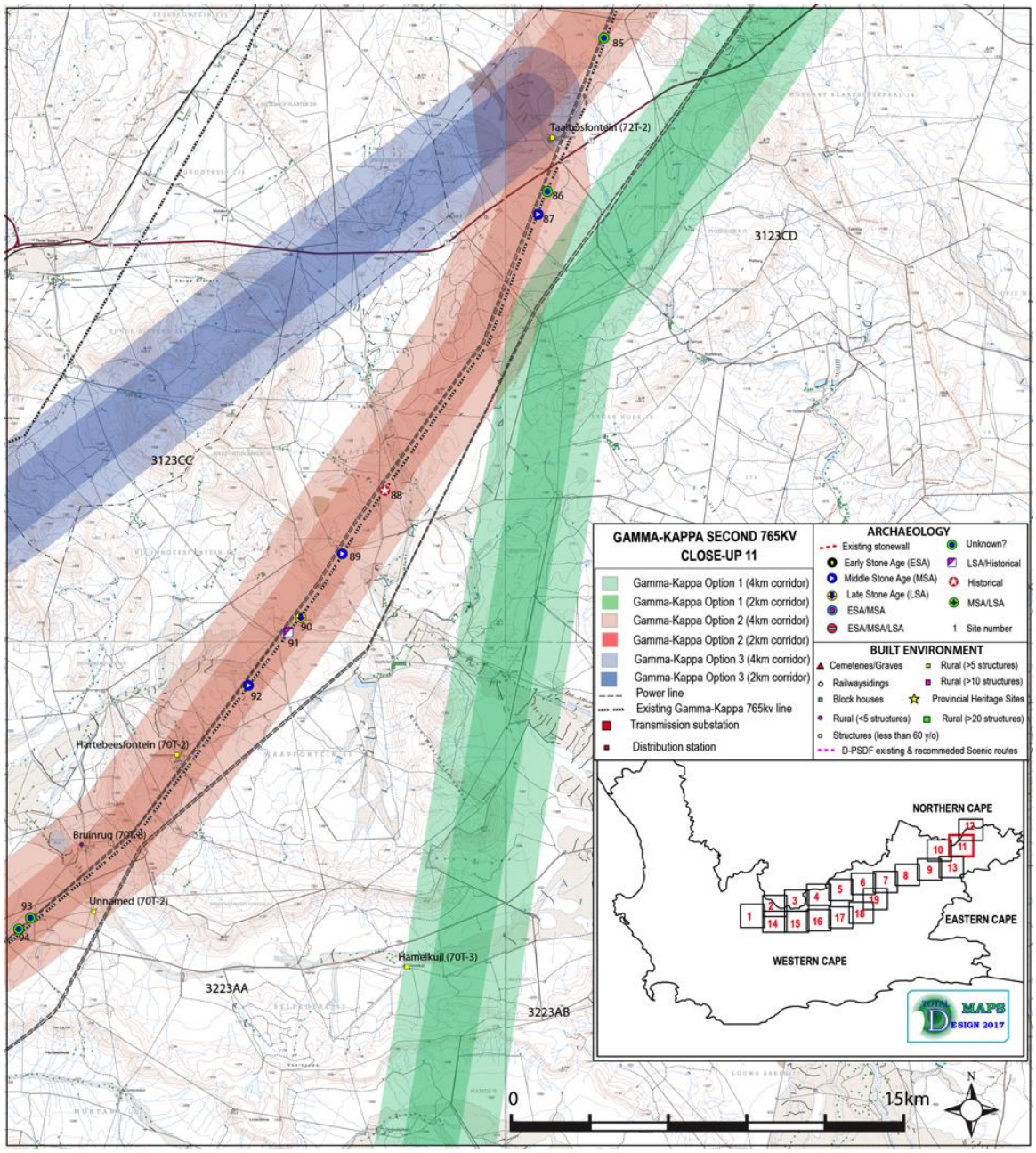

Figure 8K: Large scale map 11

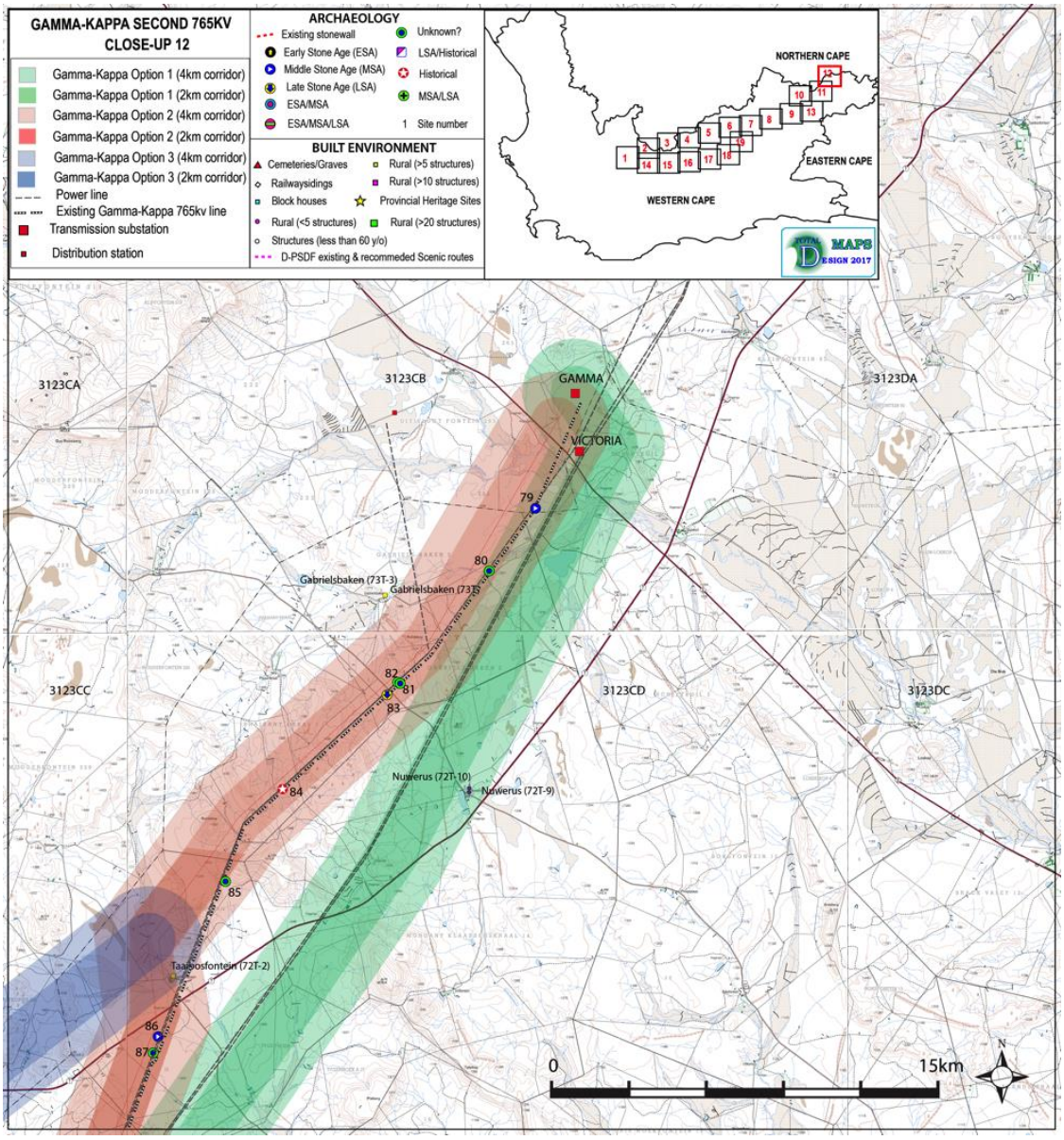

Figure 8L: Large scale map 12

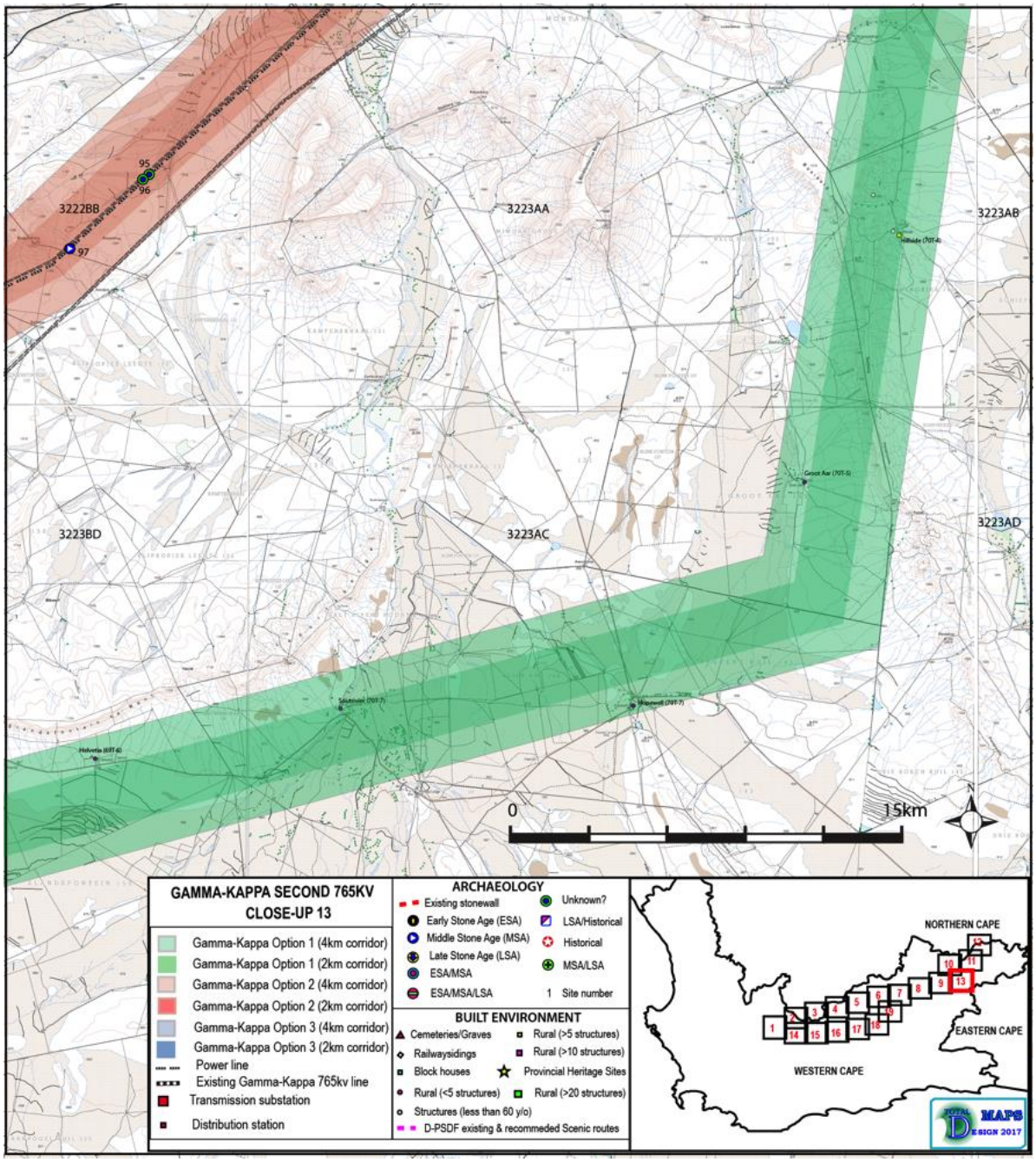

Figure 8M: Large scale map 13

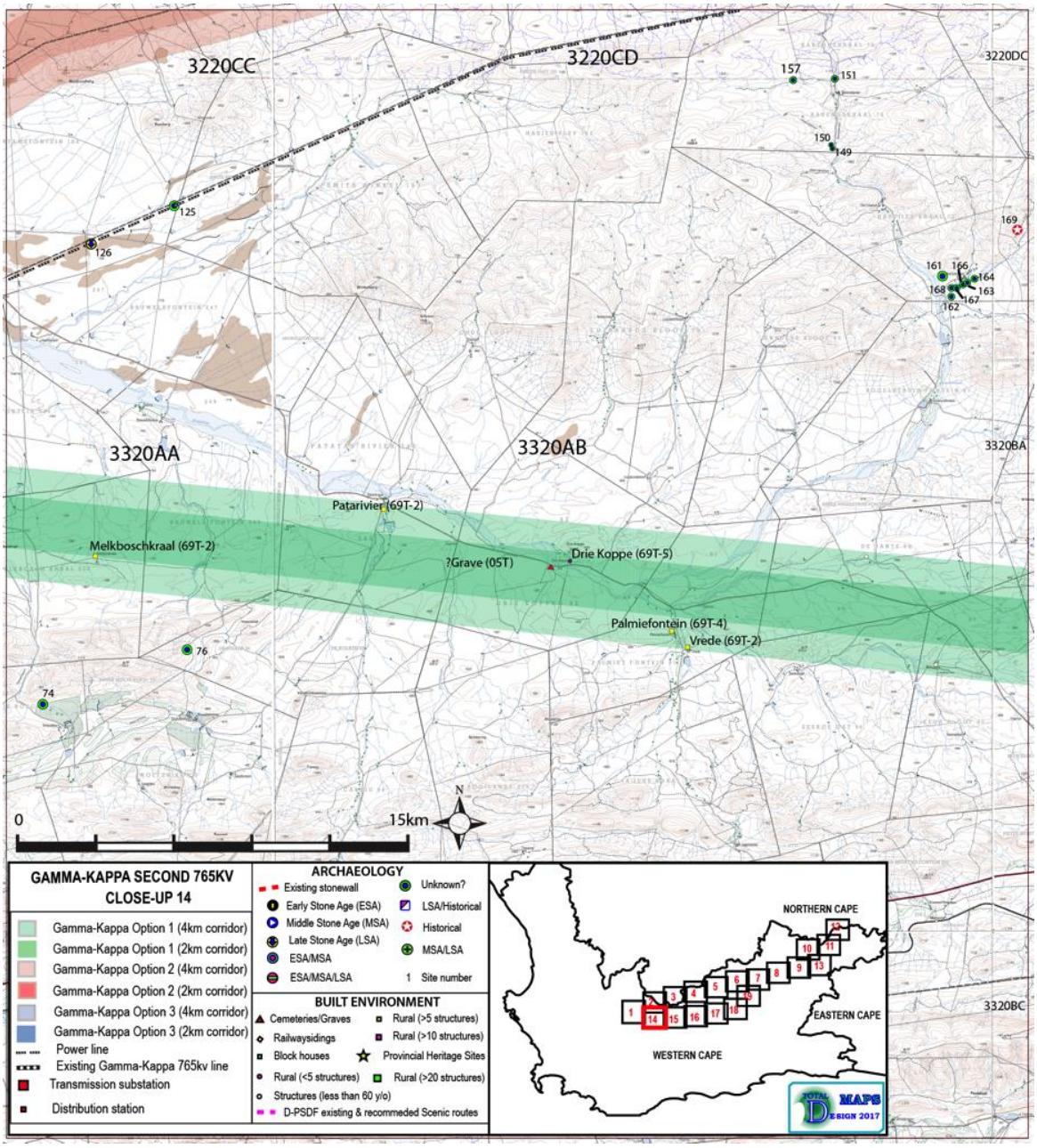

Figure 8N: Large scale map 14

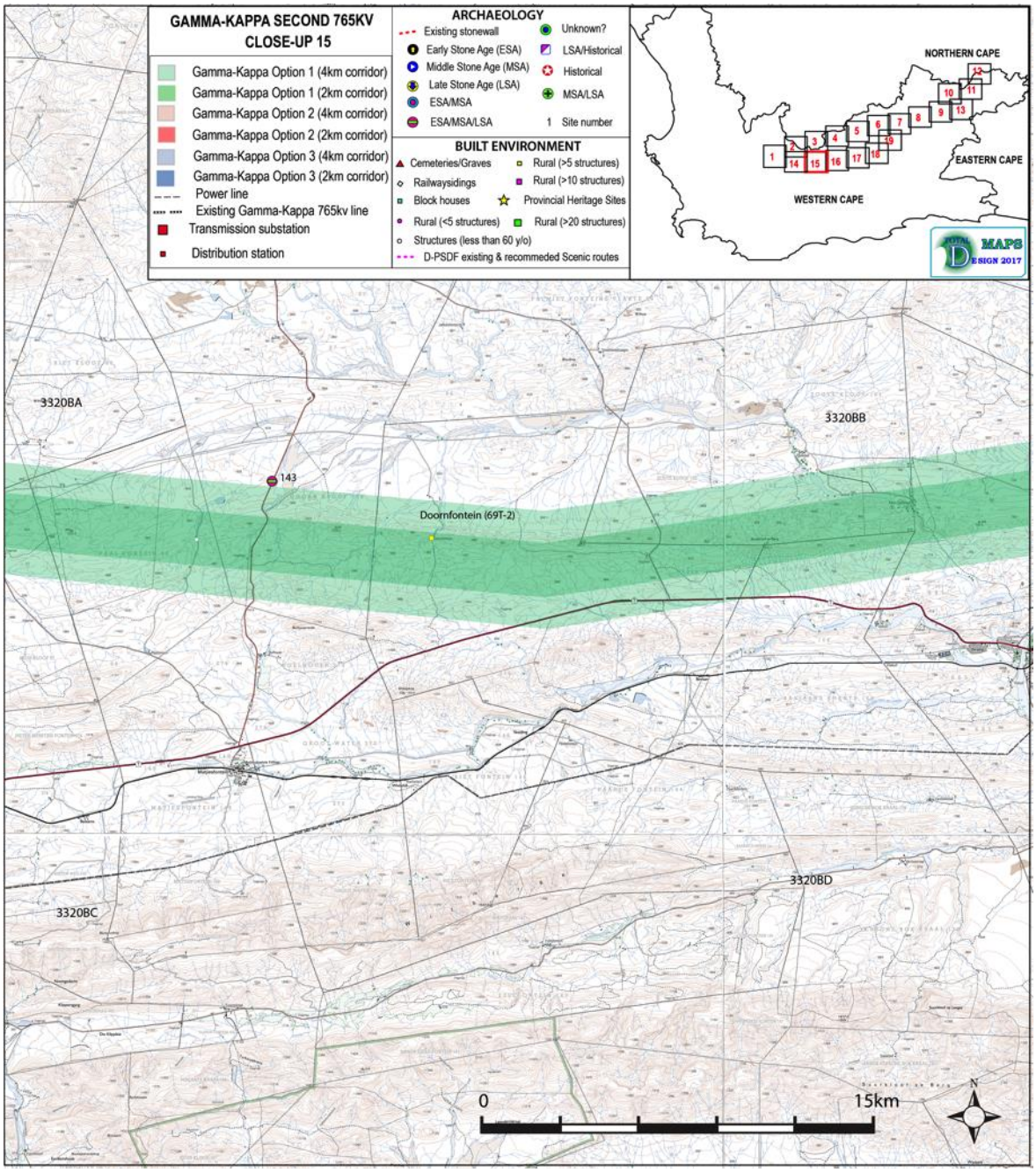

Figure 8O: Large scale map 15

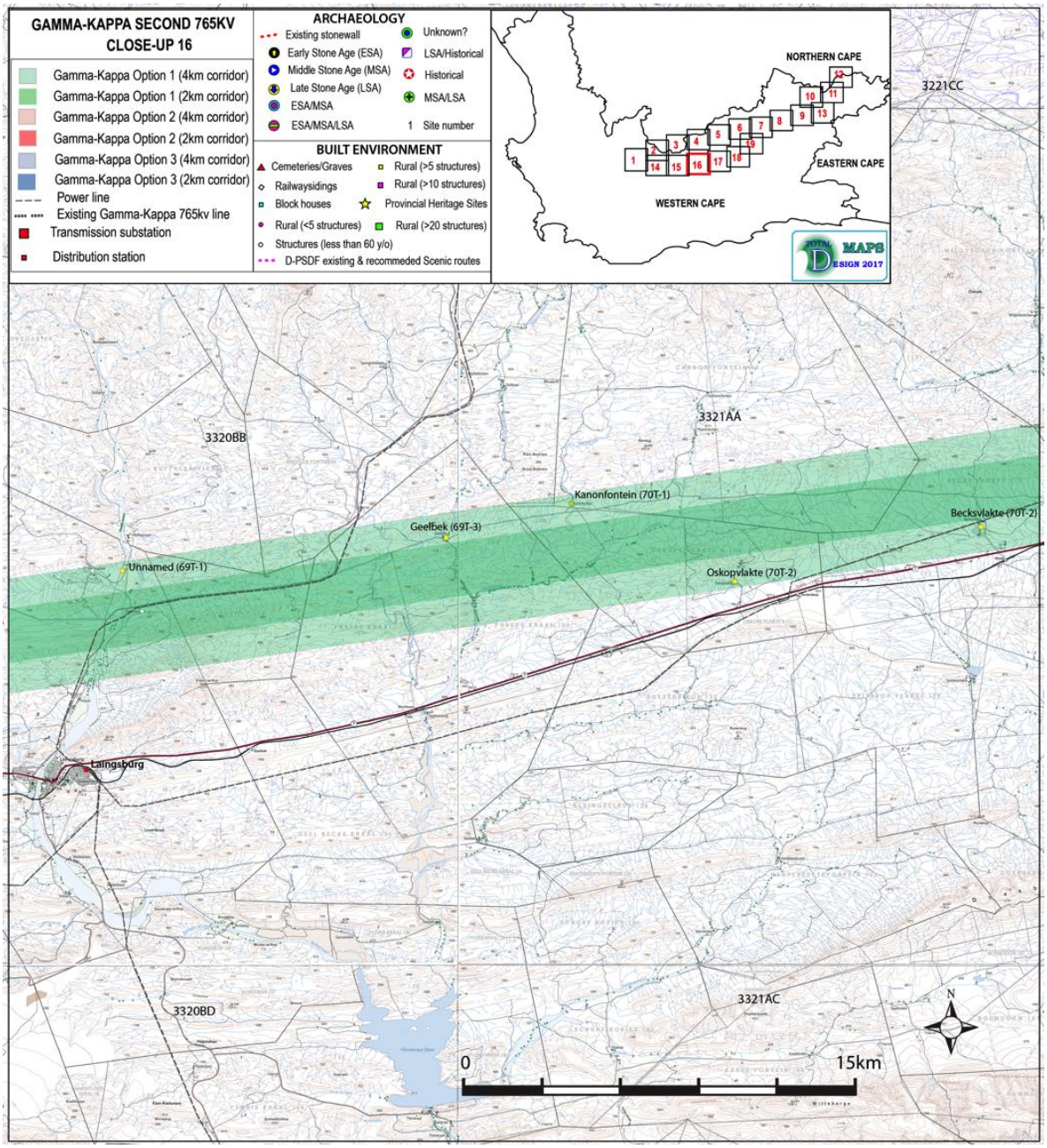

Figure 8P: Large scale map 16

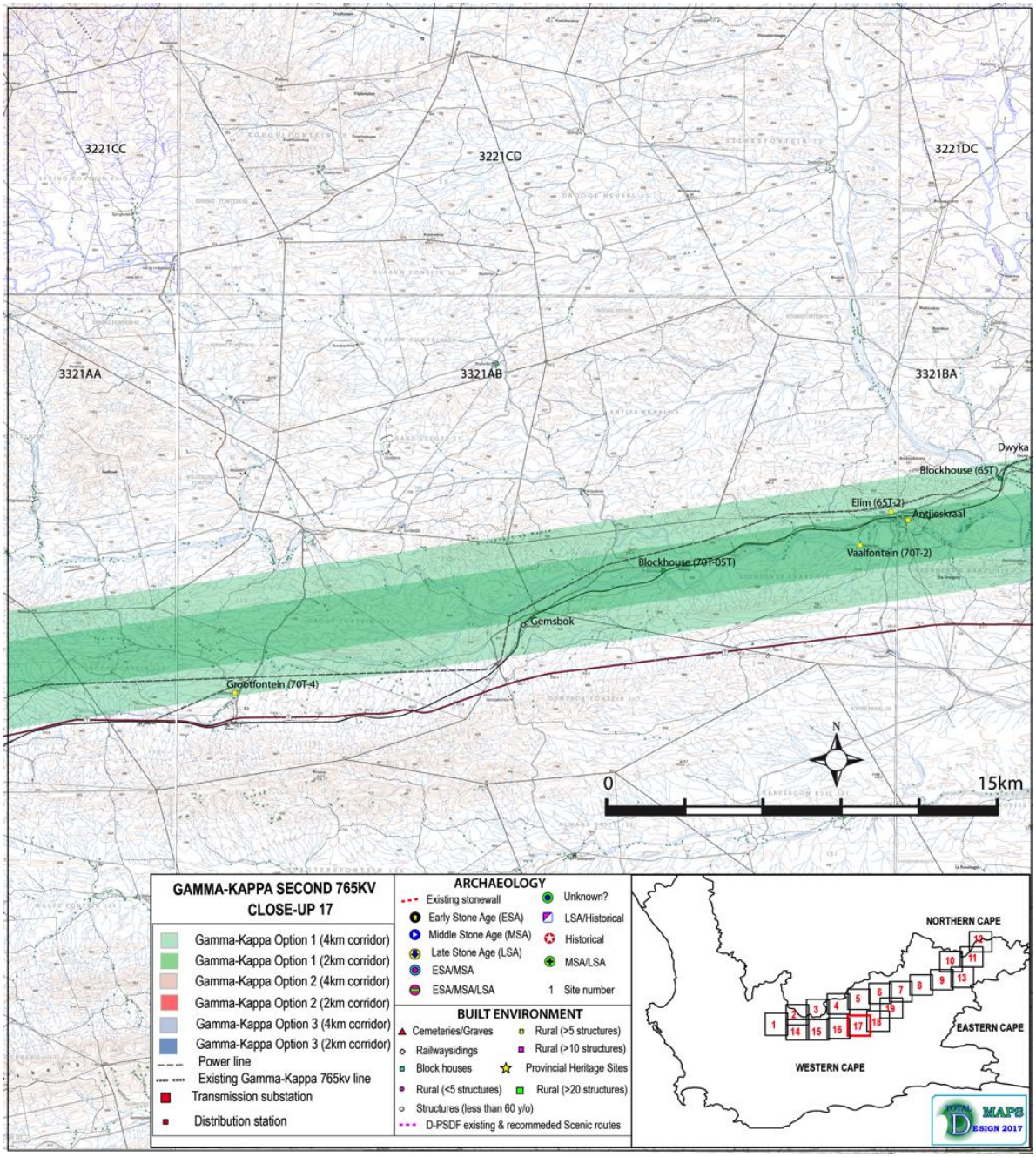

Figure 8Q: Large scale map 17

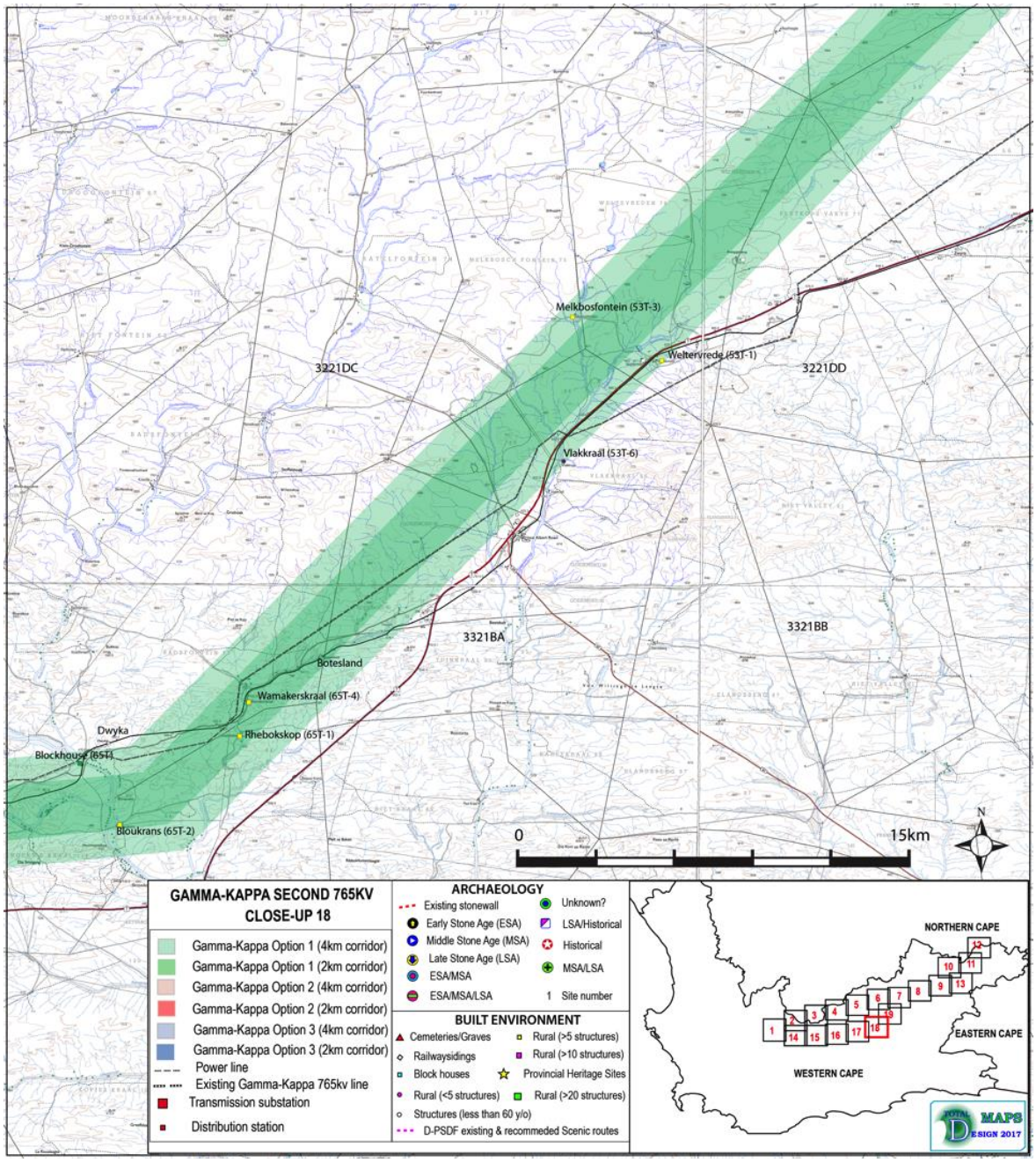

Figure 8R: Large scale map 18

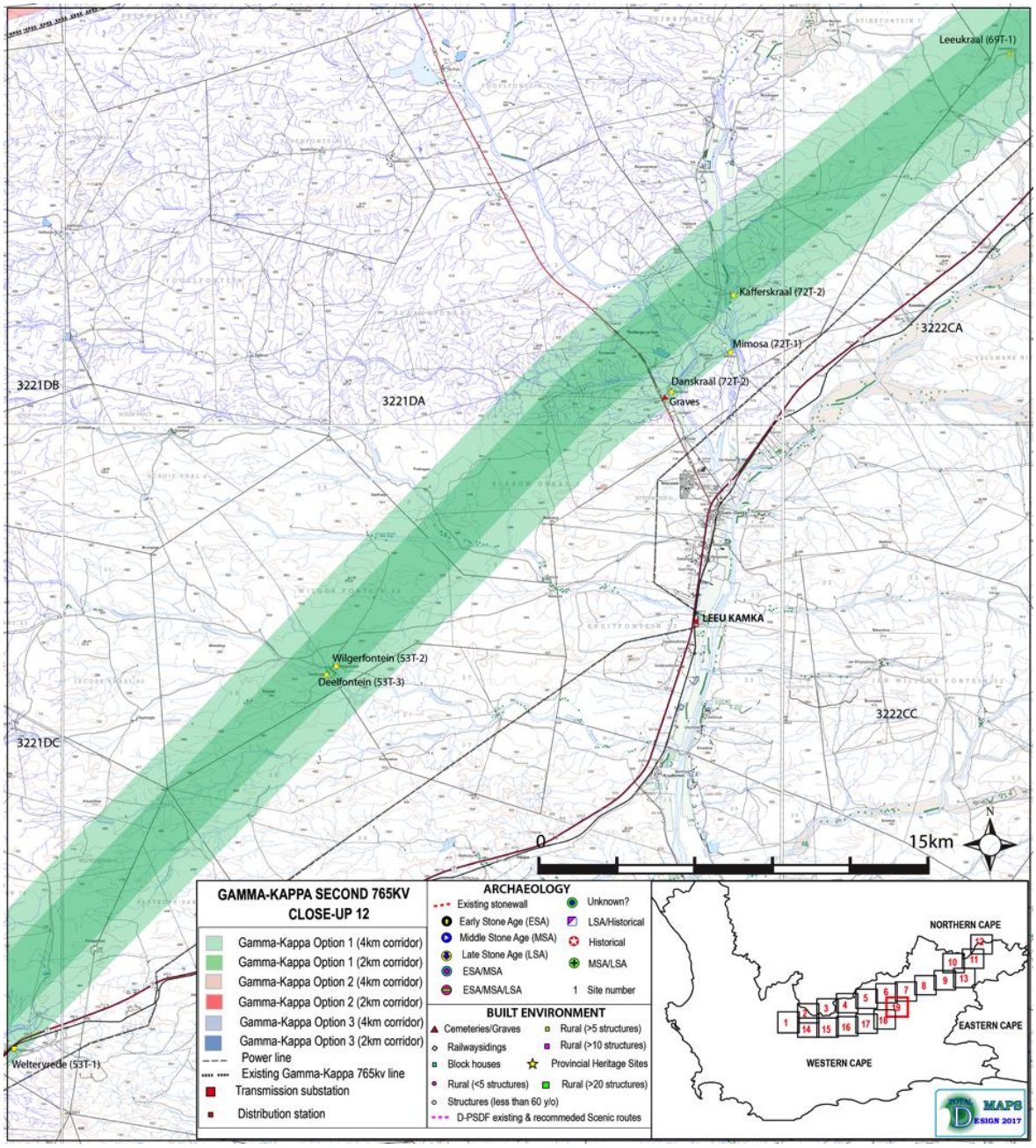

Figure 8S: Large scale map 19

Table 4: A tabulated summary of the findings

Heritage resource	**Status/Findings**	**Impact**
Buildings, structures, places and equipment of cultural significance	Several exist, refer to Appendix 1	Adverse moderate along most routes but care is still needed in some sections.
Areas to which oral	Several farms such as Saaiplaas, refer to	Adverse and high if

traditions are attached or which are associated with intangible heritage	Appendix 1	Route Options 2 or 3 are approved as they are.
Historical settlements and townscapes	Several exist, refer to Appendix 1.	Adverse moderate to high in some sections.
Landscapes and natural features of cultural significance	Different sections of the Karoo (Ceres, Klein Roggeveld, Moordenaars and the Koup)	Adverse high, especially on northern route (Option 3)
Archaeological and paleontological sites	At least 182 archaeological sites. Refer to paleontological report for palaeontological sites	Adverse moderate for most sites but high around Saaiplaas farm (Route Options 2 and 3) and close to Kappa along Route 1
Graves and burial grounds	Several exist, refer to Appendix 1	Adverse high without walk-down survey
Movable objects	ESA/MSA/LSA/Historical artefacts	Adverse low to moderate on most sites
Overall comment	The surveyed area has identifiable heritage resources on the surface and sub-surface chance finds are still possible. Route Option 3 is the least preferable, followed by Option 1, even though the two options have less sites because both traverse pristine and less studied areas but where finds are still possible and more probable.	Impacts are adversely high on stone walled sites but generally low to moderate on other forms of archaeological resource

15. Chance findings procedures

It has already been highlighted that sub-surface materials may still be lying hidden from surface surveys. Therefore, absence (during surface survey) is not evidence of absence altogether. The following monitoring and reporting procedures must be followed in the event of a chance find, in order to ensure compliance with heritage laws and policies for best-practice. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. Accordingly, all construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

- If during the construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.

- The senior on-site Manager must then make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area before informing SAHRA or the relevant PHRA.
- If a human grave/burial is encountered, the remains must be left as undisturbed as possible before the local police and SAHRA or PHRA are informed. If the burial is deemed to be over 60 years old and no foul play is suspected, an emergency exhumation permit may be issued by SAHRA or PHRA for an archaeologist to exhume the remains. HWC is now responsible for section 35 and section 36 in the Western Cape Province.

16. Conclusion and Recommendations

Desktop and field surveys for the three alternatives for the +/-383 km long Gamma-Kappa ESKOM transmission line identified the presence of archaeological sites ranging in antiquity from the ESA, through the MSA and LSA to the recent past. The landscape is therefore a palimpsest of activities spanning different time and cultural periods. The most important observation is that, although this area is relatively under-researched and archaeologists who have worked in this area indicate that the sites with sparse scatters of artefacts have low significance, there actually occur significant sites related to dry stone walling of various periods. The impacts on these sites and features cannot be mitigated and they should therefore be red-flagged and the proposed development should be re-routed to completely avoid them.

It is also important to consider the cumulative impact on the significance of the overall ensemble of sites on the landscape. Accordingly, this archaeological study recommends Route Option 2, but only if it is re-routed south of the existing 765kV line. The adverse cumulative impact of two lines in this area would be less than opening a major new route anywhere else, because archaeological sites are unevenly spread across the landscape. It is recommended that a detailed walk down survey *must* be conducted along the approved route.

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18. Appendix 1: Gazetteer of known sites from published and unpublished sources

Site # in our study	Site# in source	Lat S	Long E (dec°)	Period	Description	Significance	Source
1	2	32.30492	22.63969	ESA/MSA	Scatter of lithics	Unknown	Nilssen 2011
2	3	32.30552	22.63997	ESA/MSA/ LSA	Scatter of lithics	Unknown	Nilssen 2011
3	9	32.30894	22.63409	ESA/MSA	Scatter of lithics	Unknown	Nilssen 2011
4	74	32.30047	22.64524	ESA/MSA	Scatter of lithics	Unknown	Nilssen 2011
5	109	32.29356	22.64487	MSA/ LSA	Scatter of lithics. Only one MSA tool	Unknown	Nilssen 2011
6	243	32.28988	22.67518	LSA	Scatter of lithics	Unknown	Nilssen 2011
7	249	32.28991	22.66876	LSA	Scatter of lithics	Unknown	Nilssen 2011
8	250	32.29014	22.66833	LSA	Scatter of lithics	Unknown	Nilssen 2011
9	251	32.28995	22.66822	LSA	Scatter of lithics	Unknown	Nilssen 2011
10	253	32.28902	22.66737	LSA	Isolated scatter of lithics	Unknown	Nilssen 2011
11	254	32.28893	22.66739	LSA	Isolated scatter of lithics	Unknown	Nilssen 2011
12	255	32.28886	22.66725	LSA	Isolated scatter of lithics	Unknown	Nilssen 2011
13	313	32.29037	22.66198	LSA	Scatter of lithics	Unknown	Nilssen 2011
14	334	32.28934	22.65836	ESA	Hand axe	Unknown	Nilssen 2011
15	001	33.04823500	20.10783000	Unknown	Graves, at least 4, marked by mounds covered by local pebbles	High	Hart &Webley 2011
16	002	33.04816400	20.10803200	Unknown	Graves, 2 probable, immediately adjacent to track, crude stone cairns	High	Hart &Webley 2011
17	003	33.04850400	20.10923900	Unknown	Stone mounds possibly graves	High	Hart &Webley 2011
18	004	33.06549800	20.11025200	Unknown	Stone walling (possible kraal or windbreak, on rock outcrop	Medium - low	Hart &Webley 2011
19	005	33.08436200	20.11490200	Unknown	Graves, 3, on river bank marked by rock cairns	High	Hart &Webley 2011

20	006	33.10268400	20.11363700	Unknown	Grave, big circular rock cairn	High	Hart &Webley 2011
21	007	33.10322700	20.11350300	Historical	Remains of a stone structure and associated artefactual material in the form of bottles, wire, tin cans etc. (1960's)	Low	Hart &Webley 2011
22	008	33.10532300	20.11252300	Historical	Stone structure, 3 sided, probable kraal. Also some early 20th c ceramics. A small baking oven nearby	High-medium	Hart &Webley 2011
23	009	33.10552100	20.11351000	?	Stone walling? on koppie opposite 008. No enclosure defined?	Low	Hart &Webley 2011
24	010	33.08942900	20.11603100	Historical	Ruined stone cottage (approx 15x7m) with hearth stack, probably 3 rooms (incl kitchen). Evidence of cement plaster on outside. Associated artefactual material includes blue, green, and white glass, Annular ware, other plain refined earthenware, blue and white pattern refined earthenware. Tin cans.	High	Hart &Webley 2011
25	011	33.08928300	20.11629200	Historical	Well, quarried into bedrock associated with 010	Medium - low	Hart &Webley 2011
26	012	33.08938100	20.11668100	Unknown	Kraal, small stone square	Medium - low	Hart &Webley 2011
27	013	33.08972400	20.11724400	Unknown	Stone structure, possibly small dwelling	Low	Hart &Webley 2011
28	014	33.08934000	20.11712000	Unknown	Grave on river bank	High	Hart &Webley 2011
29	015	33.08925400	20.11688900	Unknown	Grave on river bank	High	Hart &Webley 2011
30	016	33.08925500	20.1169800	Unknown	Grave on river bank	High	Hart &Webley 2011
31	017	33.07178200	20.13738100	Unknown	Graves, 2 possible	High	Hart &Webley 2011
32	018	33.07108300	20.13192000	MSA	Artefact scatter, silcrete cores, flakes next to road	Low	Hart &Webley 2011
33	019	33.06748600	20.13323100	Unknown	Graves, 2 neatly packed stone mounds, probably graves.	High	Hart &Webley 2011

34	020	33.06778000	20.13250000	MSA	Artefact scatter consisting of MSA flakes, cores, chunks made on quartzite, hornfels and silcrete.	Low	Hart &Webley 2011
35	021	33.04086200	20.08564500	MSA	Scatters of lithics next to the river	Low	Hart &Webley 2011
36	022	33.04252900	20.08522100	ESA	Isolated artefact, probable ESA handaxe	Low	Hart &Webley 2011
37	023	33.04217800	20.09090400	Historical	Graves, possibly 4-5 marked by stone piles, associated white ceramics (1950's?).	High	Hart &Webley 2011
38	024	33.04343000	20.09717700	Unknown	Circular (8 m diameter) stone feature, possibly a trapvloer	Low	Hart &Webley 2011
39	025	33.04321000	20.09776800	Historical	Rectangular stone outline, 8 m x 3 m, representing a worker's house?	Low	Hart &Webley 2011
40	026	33.04315300	20.09766900	Unknown	Graves, approx 8, close to 025. Covered by large cobbles	High	Hart &Webley 2011
41	027	33.04304700	20.09769000	Historical	Domestic dump, containing glass, bone, metal, charcoal. Medicinal type bottle, white ceramic with floral decoration	Medium	Hart &Webley 2011
42	028	33.04300600	20.09766200	Unknown	Similar to 027 above	Medium	Hart &Webley 2011
43	029	33.04300000	20.09774300	Unknown	Graves, approx 5 possible with associated ceramics and glass fragments	High	Hart &Webley 2011
44	030	33.04394300	20.10189300	Historical	Small rectangular stone feature (4x3m) next to farm road. Associated aqua and green glass	---	Hart &Webley 2011
45	031	33.04430600	20.10226000	Unknown	Small stone feature next to farm road	Low	Hart &Webley 2011
46	032	33.03841300	20.10384100	Historical	Domestic refuse dump, held in place by retaining wall on river side. Glass, ceramics,	Medium	Hart &Webley 2011

					metal		
47	033	33.03847400	20.10367000	Unknown	Kraal, small circular stone.	Medium - low	Hart &Webley 2011
48	034	33.03847400	20.10358700	Historical	Various wall footings and possible graves. One "grave" has exotic marine shell (oyster and whelk).	High	Hart &Webley 2011
49	035	33.03959900	20.10616400	Historical	Formal graves associated with old farmstead	High	Hart &Webley 2011
50	039	33.07359200	20.05386300	MSA	Artefact scatter, heavily patinated grey hornfels. Chunks, flakes, blades, cores but also quite a number of retouched pieces including denticulates	Medium	Hart &Webley 2011
51	040	33.07576700	20.05388600	MSA	Artefact scatter, extensive as for 039	Medium	Hart &Webley 2011
52	L01	33.03888530	20.10781410	MSA	Site above river. Discrete scatter of MSA stone tools, fine-grained, patinated hornfels. Single large blade.	Low	Hart &Webley 2011
53	L02	33.07031700	20.09097310	MSA	Located at T114. A scatter of MSA flakes on grey hornfels.	Low	Hart &Webley 2011
54	Wall	33.05773780	20.08818950	Unknown	Long single row of cobbles, representing stones packed along the bottom of a wire fence (now gone).	Low	Hart &Webley 2011
55	*3220CC*	32˚ 50.5	20˚ 00	LSA	Stone tools, ostrich eggshell at Bizarsgat	Medium/ high	Smith 2008
56	*3220DC*	32˚ 58	20˚ 33	MSA	MSA scatter at Fortuin	Medium/ high	Smith 2008
57	*3221CC*	32˚ 46	21˚ 05	MSA	Lithics at Swaerskraal	Medium/ high	Smith 2008
58	*3221CD*	32˚ 48	21˚ 18	LSA	Rock paintings, human skeleton at Amandelboom	Medium/ high	Smith 2008
59	*3221CD*	32˚ 46	21˚ 26	MSA	Buffelsvlei	Medium/ high	Smith 2008
60	*3221DC*	32˚ 47	21˚ 31	LSA	Rock paintings at Koedoesfontein	Medium/ high	Smith 2008

61	*3222AD*	32˚ 15	22˚ 22	LSA	Rock engravings at Doornhoek	Medium/ high	Smith 2008
62	*3222AD*	32˚ 23	22˚ 25	LSA	Lithics & ostrich eggshell at La-De-Da	Medium/ high	Smith 2008
63	*3222BB*			LSA	Stone artefacts, rock engravings at Klipkraal	Medium/ high	Smith 2008
64	*3222BB*	32˚ 04	22˚ 56	LSA	Rock engravings at Courlands Kloof	Medium/ high	Smith 2008
65	*3222BC*			ESA/MSA/ LSA	Scatter of lithics around the entrance to Municipal Commonage , Loxton Road, Beaufort West	Medium/ high	Smith 2008
66	*3222BC*			MSA/LSA	MSA & LSA flakes on road to windmill in Kleinplat	Medium/ high	Smith 2008
67	*3223AA*	32˚ 04	23˚ 02	LSA	Stone artefact scatters, decorated pottery at Gamma Siding in Klipkraal	Medium/ high	Smith 2008
68	*3223AA*			LSA	Stone artefact scatter and rock engravings around the gate to old quarry, within 20m of National Road at Courtland Kloof Estate	Medium/ high	Smith 2008
69	*3223AA*			LSA	Rock engravings on kopje just above confluence of Krom & Salt Rivers, South side of Salt	Medium/ high	Smith 2008
70	*3318BB*	33˚ 04	19˚ 50	ESA	Lithics at Fonteins Kop	Medium/ high	Smith 2008
71	*3318BB*	33˚ 09	19˚ 58.5	LSA	Lithics around Zand Rivier	Medium/ high	Smith 2008
72	*3318BB*	33˚ 13.41	19˚ 53.1		Stone artefacts, pottery, rock paintings at Vaalkloof	Medium/ high	Hall & Mazel 2006
73	*3318BB*	33˚ 07	19˚ 59	MSA	MSA lithics at Platfontein	Medium/ high	Kaplan 2001
74	*3320AA*	33˚ 11.5-33˚ 12	20˚ 09-20˚ 10.5	LSA	3 sites at Smousbos with stone artefacts, ostrich eggshell, rock paintings	Medium/ high	Smith 2008
75	*3320AA*	33˚ 9.5-33˚ 9.7	20˚ 8	LSA	2 sites at Melkbosch Kraal with stone artefacts, pottery, rock paintings	Medium/ high	Smith 2008
76	*3320AA*	33˚ 9.5-33˚10.5	20˚ 13.1-20˚ 13.9	**LSA**	Stone artefacts, pottery at Brewelsfontein	Medium/ high	Smith 2008
77	*3320AA*	33˚ 9.5	20˚ 01	LSA	Stone artefacts, rock paintings around	Medium/	Smith 2008

					Zand Rivier	high	
78	*3320AA*	33˚ 05	20˚ 08	MSA/LSA	Stinkfontein	Medium/ high	Kaplan 2001
79	Gk001	31.71536	23.38842	MSA	Low density scatter of MSA flakes	Medium	Fourie 2010
80	Gk002	31.73297	23.37333	LSA/historical	Circular stone walled structure probably used as small stock pen	Medium	Fourie 2010
81	Gk004	31.76409	23.34422	ESA	Low density scatter of lithics with a large hand axe	Medium	Fourie 2010
82	Gk005	31.76409	23.34422	MSA	A low/medium density scatter of stone tools that include flakes and debitage	Medium	Fourie 2010
83	Gk006	31.76799	23.33961	LSA	Low density lithic scatter	Low	Fourie 2010
84	Gk007	31.78719	23.31553	Historical	Rock engravings of train	Medium	Fourie 2010
85	Gk008	31.82368	23.28237	Unknown	A small cave of which the entrance was partially closed off with rocks	Low	Fourie 2010
86	Gk009	31.86669	23.26297	Historical	A single line of packed rocks (about 200m) that could have formed the edge of a road or track, or could have formed part of a fence.	Low	Fourie 2010
87	Gk010	31.87593	23.25852	MSA	Low density lithic scatter	Low	Fourie 2010
88	Gk011	31.95319	23.20754	Historical	A dam wall or the wall for a weir	Low	Fourie 2010
89	Gk012	31.97362	23.19182	MSA	Low density scatter of lithics	High	Fourie 2010
90	Gk013	31.99256	23.17659	LSA	Low/medium density of lithic scatter & a potsherd	High	Fourie 2010
91	Gk014	31.99623	23.17362	LSA/Historic	3 circular stone walled enclosures, an extended stone wall, glass fragments of which was written “The Property of Brookes Lemos Bros, Ltd” & lithics and potsherds	High	Fourie 2010
92	Gk015	32.01403	2315922	MSA	A low density scatter of stone tools	Medium	Fourie 2010
93	Gk016	32.08010	23.08736		A low density scatter of stone tools	Medium	Fourie 2010
94	Gk017	32.08549	23.08003		Low density lithic scatter	Low	Fourie 2010
95	Gk018	32.18406	22.96104	MSA	A low density scatter of MSA cores only	Medium	Fourie 2010
96	Gk019	32.18495	22.96019	MSA	A low density scatter of MSA cores & flakes	Medium	Fourie 2010
97	Gk020	32.20197	22.93866		A medium density scatter of cores & flakes	Medium	Fourie 2010

98	Gk022	32.25761	22.82218	MSA	A low density scatter of stone tools	Low	Fourie 2010
99	Gk023	32.29726	22.75992		A low density scatter of stone tools	Low	Fourie 2010
100	Gk024	32.31575	22.73141		A low density scatter of stone tools	Low	Fourie 2010
101	Gk031	32.40196	22.54005	MSA/LSA	Scatter of originally MSA tools later modified in LSA	Medium	Fourie 2010
102	Gk032	32.40281	22.52232	MSA	A low density scatter of stone tools	Low	Fourie 2010
103	Gk033	32.43424	22.39852		Consists of half circle shaped stone wall approx 5m in circumference. No cultural materials associated.	Medium	Fourie 2010
104	Gk034	32.52057	22.17075		The remains of a dilapidated stone circular structure	Medium	Fourie 2010
105	Gk035	32.52087	22.17099		Dilapidated remains of an unknown collapsed structure associated with several broken glasses	Low	Fourie 2010
106	Gk036	32.55921	22.02481	Historic	Rectangular stone structure	Medium	Fourie 2010
107	Gk037	32.59191	21.89938		Circular/slightly oval stone structure (1.0m x 1.5m) that might possibly be a grave	Medium	Fourie 2010
108	Gk038	32.61796	21.80763	Historic	A small fenced cemetery that belongs to the Le Roux family (local farmers) and consists of 15 graves arranged in three rows. The graves date from 1892 to more recent.	Low	Fourie 2010
109	Gk039	32.68060	21.55845		A long extended stone wall, partly damaged during the construction of a pylon of the existing line	Low	Fourie 2010
110	Gk040	32.69029	21.52057		A dry stone wall running north south over the transmission line servitude. It varies in height between 0,5m and 1,50m in sections.	Low	Fourie 2010
111	Gk041-2	32.69647	21.49681	MSA?	Consists of a low, dispersed scatter of cores & flakes. Most of the flakes can be refitted to a single prepared core	Low	Fourie 2010
112	Gk043	32.69962	21.48319		A single bifacial hand axe and a single struck blank	Low	Fourie 2010
113	Gk044	32.71825	21.41269	MSA	A low to medium dispersed scatter of cores & flakes	Low	Fourie 2010

114	Gk045	32.73334	21.31924	LSA?	A single lithic core	Low	Fourie 2010
115	Gk046	32.73396	21.26608	MSA	A single MSA blade with double patination	Low	Fourie 2010
116	Gk047	32.85098	21.05001	Historic	Remains of two dilapidated structures associated with a midden, glass bottle fragments (blue and clear glass), ceramic fragments and metal objects such as wire and tins	High	Fourie 2010
117	Gk048	32.86120	21.03590		A single ESA biface/cleaver	Low	Fourie 2010
118	Gk049	32.86436	20.93613	Historic	Ruins of a farmstead with a stone build main house and the remains of some stone built outbuildings, a threshing floor and a visible ash midden containing bone debris as well as glass and metal artefacts	High	Fourie 2010
119	GK050	32.86664	20.94917	Historic	A low stone wall constructed as part of a small holding dam for run-off water	Low	Fourie 2010
120	GK051	32.91761	20.69140		An extended stone wall running for about 400 m	Medium	Fourie 2010
121	GK052	32.93701	20.64026		A single round stone structure approximately 10.0 metres in diameter with a single opening of 1.0 metre on the east side of the structure.	Medium	Fourie 2010
122	GK053	32.93746	20.63956		3 round stone packed structures approximately 20 metres on the east of the structure discussed in GK052	High	Fourie 2010
123	GK054	32.94880	20.54806		Consist of 4-5 stone lined graves aligned east-west	High	Fourie 2010
124	GK055	32.95595	20.50446		Consists of 3 stone lined graves aligned east-west	High	Fourie 2010
125	GK057	33.03746	20.21531		A possible informal grave	High	Fourie 2010
126	GK058	33.04815	20.18619		2 lithic artefacts	High	Fourie 2010
127	GK059	33.05962	20.15575	LSA	A sparse scatter of LSA tools made from exotic chert and crypto crystalline silica	Low	Fourie 2010
128	GK060	33.08934	20.07628	LSA	A medium to high dispersed scatter of cores & flakes, as well as an upper grinding stone	High	Fourie 2010

129	GK061	33.09793	20.05255	MSA	A low to medium dispersed scatter of cores & flakes	High	Fourie 2010
130	GK062	33.10745	20.02695	MSA&LSA	A low to medium dispersed scatter of cores & flakes	High	Fourie 2010
131	GK063	33.10915	20.02187	MSA&LSA	A low to medium dispersed scatter of cores & flakes	High	Fourie 2010
132	GK064	33.11021	20.02026	MSA	A low to medium dispersed scatter of cores & flakes	High	Fourie 2010
133	GK065	33.11137-33.11158	20.01688-20.01659	MSA	consists of some MSA cores and numerous flakes with facetted platforms	High	Fourie 2010
134	PFN2008/001	33° 06 09.5	20° 00 23.1	MSA	Gravel with lithics	Very low	Orton 2008
135	PFN2008/002	33° 06 17.0	20° 00 23.3	MSA	Gravel with lithics	Very low	Orton 2008
136	PFN2008/003	33° 06 41.9	20° 00 59.6	ESA? MSA & LSA	Deflation with conflated artefacts of varying age and the hollow is probably not a living spot	Very low	Orton 2008
137	PFN2008/004	33° 06 43.4	20° 00 50.7	MSA & LSA	Good scatter of artefacts, no evidence of organics, just two MSA lithics	Very low	Orton 2008
138	PFN2008/005	33° 06 37.4	20° 00 59.0	MSA	Gravel with lithics	Very low	Orton 2008
139	PFN2008/006	33° 06 38.2	20° 01 03.1	MSA	Gravel with lithics	Very low	Orton 2008
140	PFN2008/007	33° 06 35.6	20° 00 53.8	ESA? MSA & LSA	Low density scatter of lithics with only 1 LSA piece	Very low	Orton 2008
141	PFN2008/008	33° 06 40.4	20° 00 29.4	MSA	Concentration of lithics on a hilltop	Very low	Orton 2008
142	PFN2008/009	33° 06 39.7	20° 00 21.4	MSA		Very low	Orton 2008
143		33° 8'41.68"S	20°35'38.15"E	ESA/MSA/LSA	Lithic scatter	low	This study
144		32°54'15.94"S	20°37'48.50"E	Historical	Extensive stone walling stretching for about 8 kilometres. Built prior to 1920 as fencing to stop horses from eating plants in the field	High. When combined with several related site, this can form a	This study

						Grade 11 site	
145		32°53'47.56"S	20°37'33.59"E	Historical	Stone walled rectangular animal enclosure	Medium/low	This study
146		32°54'0.36"S	20°36'55.36"E	Historical	Collapse farm house and small stone built animal enclosure	Medium/low	This study
147		32°52'4.42"S	20°40'38.31"E	Historical	Stone walled rectangular animal enclosure	Medium	This study
148		32°51'15.87"S	20°44'54.37"E	Historical		Medium	This study
149	ROG024	33° 1'19.80"S	20°26'45.10"E	Historical	Threshing floor	IIIb	Cedar Tower Services 2015: 18
150	ROG035	3.021111	20.445361	LSA/historical	Stone ruin 0.5m from road and a few metres from river	IIIc	Cedar Tower Services 2015: 18
151	ROG036	33.004861	20.446111	LSA/historical	Stone kraal. A second one occurs 200m east and a third 250m northwest	IIIc	Cedar Tower Services 2015: 18
152	ROG008	32.889528	20.4628611	LSA/historical	Many stone piles with mostly small cobbles, perhaps 30 40 of them. Spread	IIIc	Cedar Tower Services 2015: 18
153	ROG009	32.952639	20.5066389	Historical	Ou Mure farm complex	IIIc	Cedar Tower Services 2015: 18
154	ROG010	32.953139	20.539944	Historical	Small white building		Cedar Tower Services 2015: 18
155		32.889528	20.4628611	LSA/historical	Many stone piles with mostly small cobbles, perhaps 30 40 of them. Spread	IIIc	Cedar Tower Services 2015: 18
156	BV_SA1	32°57’14.67”S	20°32’43.15”E	Unknown	Stone artefact scatter	IIIb	Booth 2016a:29
157	BV_SA2	32°57’25.22”S	20°28’46.86”E	Unknown	Stone artefact scatter	IIIb	Booth 2016a:29
158	BV_SA3	32°58’04.57”S	20°25’53.32”E	Unknown	Stone artefact scatter	IIIb	Booth 2016a:29

159	BV_SW1	32°57’16.25”S	20°32’42.98”E	Unknown	Circular stone packed feature, Fortuin 74	IIIc	Booth 2016a:29
160	RKPL_SA1	33°03’33.31”S	20°28’59.88”E	Unknown	Stone artefact scatter	IIIb	Booth 2016b:32
161	RKPL_SA2	33°03’51.88”S	20°29’03.69”E	Unknown	Stone artefact scatter	IIIb	Booth 2016b:32
162	RKPL_SA3	33°03’32.98”S	20°29’39.89”E	Unknown	Stone artefact scatter	IIIb	Booth 2016b:32
163	RKPL_SA4	33°03’25.32”S	20°29’51.36”E	Unknown	Stone artefact scatter	IIIb	Booth 2016b:32
164	RKPL_G1	33°05’33.42”S	20°28’35.20”E	Unknown	Graves/burials	High	Booth 2016b:32
165	RKPL_G2	33°03’36.29”S	20°29’28.23”E	Unknown	Graves/burials	High	Booth 2016b:32
166	RKPL_SW1	33°00’35.50”S;	20°29’00.70”E	Historical	Stone walling	IIIc	Booth 2016b:32
167	RKPL_SW2	33°02’33.00”S	20°28’59.46”E	Historical	Stone walling	IIIc	Booth 2016b:32
168	RKPL_SW3	33°02’47.02”S	20°30’34.95”E	Historical	Stone walling	IIIc	Booth 2016b:32
169	RKPL_Hist1	33°06’23.52”S	20°32’06.70”E	Historical	Historical artefact scatter associated with the original Rietkloof homestead	IIIb	Booth 2016b:32
170	524	32° 38'10.10"S	21°1'3.70"E	Historical	Small stone structure in a small, steep-sided river valley. Almost certainly a shepherd’s hut. More intact than many other historical finds.	Medium	Orton 2017:32
171	492	S32 38 16.5	E21 15 59.4	LSA	Rock art site with eight finger-painted vertical stripes applied to three different ‘canvases’ (small faces on a very irregular surface). No associated artefacts seen and there is no proper rock	IIIa	Orton 2017:32

					shelter. The site overlooks a river valley.		
172	525	S32 38 24.3	E21 02 37.4	Historical	Two historical kraals, one rectangular and one circular.	Medium/low	Orton 2017:32
173	546	S32 38 09.9	E21 02 11.8	LSA	Pre-colonial kraal complex with numerous enclosures and stone-walled features (about 27 or 29 in total) scattered around and on top of a low rocky outcrop. A few Stone Age artefacts were found as well as a number of fragments of ostrich eggshell. A few recent items	IIIa	Orton 2017:32
174	490	S32 38 11.6	E21 16 54.1	Historical	Five graves and what seem to be an empty grave. Deaths in 1954, 1958, 1979, 1995, 1996	IIIa	Orton 2017:32
175	616	S32 37 49.0	E21 14 07.6	Unknown	A 2.5 x 2.5 m possible grave or a collapsed structure. One standing stone 'post' might be a headstone and would be in position for one burial in a double grave but it's position would mean the grave is facing north instead of east. The stones are not well-ordered suggesting it to more likely be a collapsed structure. It also lies on a rocky slope which would not be suited to the excavation of a grave. The stones are not deep enough for a stone-packed surface grave. There is a second stone feature some 10 m to the southwest.	IIIa	Orton 2017:32
176	KLK63	S32 34.865	E21 02.386	Historical	Farmworker cottage associated with Brakdak house rectangular footprint, built with dressed and faced stone. Corrugated metal roof with single-pitch down to south; single window on western end of house.	IIIc	
177	KLK69	S32 46.054	E21 09.776	Historical	Historical stone kraal not well preserved. Large open site extending both sides of the road, ashy soil containing fragments	II	Hart & Webley 2010: 47

					charcoal and bone. Spread of pottery (5-6mm thick, red burnish, fine grained reverted rims, OES fragments (one bead blank), flakes shale artefacts (flakes and cores), freshwater mussel fragments and 20th century brown and clear glass near some stone cairns/graves?.		
178	MDF83A-D	S32 43.394	E21 07.143	LSA	Midden, lthics, grindstone and pottery	II	Hart & Webley 2010: 47
179	MDF85	S32 41.587	E21 06.709	Historical	Modderfontein. Fragments of gine grained burnished sherds located between the river and a graveyard with at least 20 graves (4 with headstones), Inscriptions in Dutch. Spanning 19th century but othe graves are stone cairns.	II	Hart & Webley 2010: 47
180	22	S32 53 08.5	E20 27 35.6	Unknown	Graves? 6 piles of rocks on east side of road. Not in any order but one group of three and other three more widely spread. Two gps points for the ends (E+W).	High	Hart & Webley 2013: 48
181	40	S32 53 08.5	E20 27 35.6	Unknown	Graves? Two mounds of rocks, biggish ones. Also a stone line along the very edge of the road.	High	Hart & Webley 2013: 50
182	44	S32 51 38.5	E20 31 35.4	Historical	Very long stone walling above river. L-shape with foot at 90 degrees to river about 6m long. GPS at both ends.		Hart & Webley 2013: 50