HERITAGE IMPACT ASSESSMENT

In terms of Section 38(8) of the NHRA for the
PROPOSED DEVELOPMENT OF THE GOURITZ ABALONE
FARM, PORTION 6 OF FARM 453 LANGE FONTEIN, HESSEQUA
MUNICIPALITY

HWC Ref: 16100429AS1006E

Prepared by

CTS HERITAGE

For PHS Consulting
January 2017
EXECUTIVE SUMMARY

It is proposed that an abalone farm and photovoltaic facility be built on Portion 6 of Farm Langefontein 453 near Gouritzmond in the Hessequa Municipality by the proponent Aquion (Pty) Ltd. The area in general has a mix of tourism, conservation and agricultural uses.

The Heritage Screener and NID form submitted by CTS in October 2016 (Annexure 1) noted that the proposed development is likely to impact on buried or visible Later Stone Age shell midden deposits, Stone Age artefact clusters, intertidal historical fish traps, and possible informal burial grounds or graves. During the Archaeological Impact Assessment [AIA] (Kaplan 2016), a total of 36 sites (shell middens, fish traps, stone walling and a possible grave) were recorded. Furthermore, with the presence of ruined buildings in the area (Kaplan 1995), it is noted that it is possible that graves associated with these structures may exist within the development area. Palaeontologically, the area is underlain by formations of low fossil sensitivity, as well as a significant portion of unknown fossil sensitivity in the Wankoe Formation (SAHRIS Palaeosensitivity Map 2016). Considering the limited depth of bulk earthworks and the inability to foresee discoveries of high palaeontological significance, the Palaeontological Impact Assessment [PIA] (Pether 2016) has rated palaeontological sensitivity as moderate, with a magnitude of medium.

Three project alternatives are proposed:

- **ALTERNATIVE 1:**
  An approximate 750 ton abalone farm, in one phase of approximately 18 ha. This alternative was the applicant's first concept and had limited specialist input.

- **ALTERNATIVE 2:**
  An approximate 440 ton abalone farm, comprising of two phases of approximately 16 ha.

Note that this alternative has evolved with specialist input, resulting in "no development" areas across the site. Specialist comment has also resulted in the creation of two smaller production areas with ecological no-go areas in between. The farm has been set back from the coast as recommended by the coastal setback line and climate change specialist. Important archaeological sites have been avoided. The solar farm has also been shifted north on the farm, to manage the potential visual impact that the solar array may have on neighbouring landowners, and to allow optimal functionality.

- **ALTERNATIVE 3:**
  No-go alternative.

The proposed construction at the Gouritz Abalone Farm will result in sustainable development, local economic growth, job creation and skills transfer. There is a market demand for farmed abalone for export. Due to the high archaeological sensitivity of the area in which the farm is located, however, the proposed development is likely to impact on significant archaeological heritage resources.
Alternative 2 (preferred) has evolved with guidance from the specialist team and therefore includes ‘no development areas’, buffers, and test excavations for potential archaeological materials. This has resulted in a smaller alternative with less impacts than the former alternative. The coastal waters discharge permit (CWDP) will ensure that effluent water quality is monitored and adheres to acceptable standards.

The impacts of the proposed development of Alternative 2 can be mitigated through the implementation of the recommendations below.

Shovel testing must be undertaken to determine the significance of subsurface archaeological deposits. The focus of test excavations will be on the narrow dune cordon in the south western portion of the proposed development site. This will require the submission of a workplan to HWC for approval.

The historic stone wall (SAHRIS Site ID: 99004) alongside the gravel road (inside the footprint area) must be protected and incorporated into the final development proposal. A 10m protective buffer is required.

The possible grave/burial (SAHRIS Site ID: 99002) in the Eskom servitude must be avoided. The ‘grave’ must be demarcated (possibly enclosed inside a small fence), or simply left alone.

Bulk earthworks (i.e. excavations for building foundations, terracing cut backs, & services) must be monitored by a professional archaeologist. The site must be inspected once a week by the archaeologist during the construction phase of the project.

It is not necessary for the archaeologist to monitor vegetation clearing operations, but the Environmental Control Officer (ECO) must be briefed on site by the archaeologist, prior to the commencement of site clearing. The site must also be inspected once vegetation clearing has been completed.

If any unmarked human remains are exposed or uncovered during excavations and earthworks, these must immediately be reported to Heritage Western Cape (Att: Mr Andrew September), or the archaeologist (Jonathan Kaplan 082 321 0172).

- The HWC Fossil Finds Procedure must be implemented.
- The mitigation recommendations included in section 5 of the VIA Report (PHS Consulting, 2017, Annexure 4) must be implemented and adhered to.

The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development.
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1. Heritage Screener
5. Results of Public Consultation
1. INTRODUCTION
1.1 Background Information on Project

It is proposed that a 440 ton abalone farm and photovoltaic facility will be built on an area of 16 to 18 ha of Portion 6 of Farm Langefontein 453 near Gouritzmond in the Hessequa Municipality. PHS consulting is the Environmental Assessment Practitioner managing the process for this project.

The majority of fixed infrastructure will be set back above the road separating the farm from the coastline, with the exception of the pumps and pipelines. Due to its remote location, a package plant will be required for sewage treatment. The electricity will be supplemented by an onsite solar array. An additional borehole may be required to supplement the freshwater supply. Refuse will be sorted on site and transferred to the local municipal waste disposal facility [Draft BAR, 2016].

The following additional activities are proposed:

- 7.1 Ha production area, split into two phases
- Phase one – 3.7 Ha, 230 ton production
- Phase two – 3.4 Ha, 210 ton production
- Hatchery (3400 m$^2$)
- Pumphouse and sump – 500 m$^2$, with a total pumping capacity of 12 000m$^3$/h
- Filtration reservoir – 530 m$^2$, includes drum filters for the filtering of incoming seawater
- Basket cleaning area – 95 m$^2$ x 8 rooms for the cleaning and repairing of the abalone baskets
- Split and grading rooms – 95 m$^2$ x 8 rooms for the splitting and size grading of the abalone stock
- Blower and feed stores – 35 m$^2$ x 16 rooms, used to securely house feedstock away from vermin / pests.
  - Blower rooms – soundproof for air supply
- Diesel store – 173 m$^2$, on site diesel storage of 80 000 l
- Refuse area and package plant – 600 m$^2$
- Power transmission room – 800 m$^2$ for back up generators and main distribution systems
- Canteen – 1025 m$^2$, containing canteen, ablutions and lockers for employees
- Workshop – 450 m$^2$ for maintenance and repairs
- Parking area – 3930 m$^2$, comprising entrance access and parking
- Admin / office building – 600 m$^2$ for admin staff
- Transfer and pre-processing building – 1100 m$^2$, to transfer animals from one farm to the next and to prep animals for transport for processing
- Effluent / outgoing channel / pipeline – transfers effluent seawater, possible surf zone discharge or beyond surf zone, dependent on the conditions of the CWDP
- Solar array of approximately 6.14 Ha with an output capacity of 2.5 Mva / 2.2. Mw
- Inverter room – 225 m$^2$, used to house inverters to convert solar to usable power and step up into eskom line at 11kv
- Eskom overhead line - already existing
- Jeep track to solar farm / pv – 1.7 Km, two track informal road for servicing the site
- Borehole
1.2 Description of Property and affected Environment

The area proposed for development is located on a coastal farm situated approximately 10 km from Gouritzmond. It borders the Gourikwa Private Nature Reserve to the west, and the Gouritzmond coastline to the south. The site is currently vacant, however there is evidence of previous agricultural activities having taken place on site. The property on which the abalone farm is proposed is separated from the coast by a public dirt road. The coastal strip south of the access road is classified as a Critical Biodiversity Area.

Surrounding the farm, land use includes agriculture, nature conservation and tourism. The northern part of the farm, and the area proposed for the PV facility, is north facing on a slope behind the upper hill slopes of the property about 1.2km inland from the coast, and is covered in natural veld (Restio, grassland, groundcover, Proteas & Fynbos) with a soft sandy substrate. No springs or streams exist in this area, nor any rocky outcrops or other significant landscape features. The southern part of the farm along the coast is situated on vegetated windblown cover sands and low dunes backing a rocky intertidal shoreline, about 10kms south of the mouth of the Gouritz River (Figures 4-8 in Appendix 2, AIA). Existing infrastructure comprises two holiday cottages, some old farming infrastructure (concrete drinking trough), a barely visible demolished building, fencing, informal roads/tracks, and an Eskom servitude. A small dam/old excavation pit occurs in the north east, on the lower slopes of the proposed development site.

The majority of the site is covered in very dense vegetation on a substrate of dark brown cover sands. Informal access roads have recently been constructed (mostly bush cut/tractor trampled) to facilitate planning and access. Protected Milkwood trees cover the upper slopes of the property. The site is underlain by deep coastal sands which stretch from the seashore northwards to beyond the study site. The study site can be described as a gentle slope, rising from the seashore northwards to the top of the coastal escarpment. The lower portion, at roughly sea level and along the road is relatively flat behind which the landscape rises fairly steeply. There is evidence of past use of the land for grazing.
2. METHODOLOGY
2.1 Purpose of HIA
The purpose of this Heritage Impact Assessment (HIA) is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999). This HIA is drafted in response to the "Response to NID" letter received from HWC dated 28 October 2016. HWC requires that an HIA be submitted with specific reference to impacts on archaeological and palaeontological heritage resources, and visual impacts.

2.2 Summary of steps followed
- A desktop study (Heritage Screener, Appendix 1) was conducted for the proposed development area.
- An archaeologist was contracted to conduct a survey of archaeological resources likely to be impacted by the proposed development (AIA, Appendix 2).
- A palaeontologist was contracted to conducted a survey of palaeontological resources likely to be disturbed by the proposed development (PIA, Appendix 3).
A Visual Impact Assessment was undertaken (VIA, Appendix 4)
The identified resources were mapped and assessed to evaluate their heritage significance in terms of the grading system outlined in section 3 of the NHRA (Act 25 of 1999).
Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner
The report was circulated to the Local Authority and registered Conservation Bodies for comment for 30 days from 15 November 2016 to 15 December 2016.
Comments received as part of the commenting period were integrated into the report and the report was amended accordingly.

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

3.1 Definition of the property
An abalone farm and PV facility are proposed for development on portion 6 of the farm Langefontein 453. Situated 28km southwest of Mossel Bay in the Hessequa Municipality between the Gouritzriver and Stillbaai, the farm itself is approximately 1 407,704 ha.

Figure 2: Topographical map of Farm Langefontein 453, Portion 6
3.2 Geology, geomorphology, climate and vegetation

The proposed abalone farm site is situated on vegetated windblown coversands and low dunes backing a rocky sandstone intertidal shoreline, at the foot of the gently concave coastal slope of a broad rounded ridge composed of ancient dune sands which rises to above 100 m above sea level. Pale Quaternary aeolian coversands extend from the edge of the shoreline rock and lap onto old Wankoe Formation aeolianites. Beneath the Quaternary coversands are raised beach deposits of the Klein Brak Formation, which may be present in the form of terraces, beach ridges and gravel beds, and overlying the eroded Wankoe aeolianites and the sandstone bedrock. The new site for the solar PV array on the crest of the Wankoe Formation salient is mantled by thin Quaternary coversands derived from weathering of the underlying Wankoe Formation aeolianites.

The vegetation affected by the proposed abalone farm and PV facility includes Blombos Strandveld along the coastline, Canca Limestone Fynbos and Albertinia Sand Fynbos, only the last of which is considered to have a * conservation status in terms of the South African National Biodiversity Assessment. The average annual temperature in Gouritsmond is 17.6 °C, while the rainfall averages 479 mm (climate-data.org, 2016).

3.3 Archaeological and Historical Background of the Southern Cape

The southern Cape coast has been occupied for roughly 1 million years. is likely to have evolved before 160,000 years ago (Jerardino and Marean 2010). The period between this point in time and the start of the Holocene at approximately 11,000 years ago is significant for understanding how humans have evolved. Our complex behavioural and cultural traits all developed during this time, and are associated with the development of cognition and ‘modernity’ (Deacon and Deacon 1999, Marean et al 2014). This area of Africa is particularly interesting in terms of human origins, because, while the rest of the continent experienced extreme climatic variability during various periods of glacial maxima and marine transgressions, small pockets of South Africa could sustain thriving human populations. Studies done along the Southern Cape coastline have shown that the evolution of humans during the Middle and Later Stone Age depended largely on rich and varied resources (especially the more focussed and successful exploitation of coastal resources), optimal environmental patterns, and the types of adaptive responses that humans had to pressure and population stress (Parkington 1984, 1986, 1988, 2008, Klein et al 2004, Steele and Klein 2005/2006, Högberg 2016). Extensive research has been conducted for the period between 160-50,000 years ago (Fisher et al 2010, Marean et al 2014). It has been suggested that the unique environmental and resource-rich nature of this area was what helped to sustain small populations of that took advantage of the rich marine shellfish resources along the coast, large game on the open coastal plains, and smaller fauna abundant in the shrubland of the Fynbos Biome (Henshilwood and Marean 2003, Marean et al 2007, 2010). Additionally, carbohydrate-bearing plants like geophytes within the highly diverse Cape Floral Region are known to have been a common food source for hunter-gatherers during both the Middle and Later Stone Age (Deacon and Deacon 1999, Parkington 2001b, de Vynck et al 2016). All these resources together (and their
availability at different times during the year) would have offered mobile hunter-gatherers a varied diet of protein- and carbohydrate-rich foods.

The Later Stone Age (the precise start of which is still contested but which lasted from roughly 40,000 years ago until historical times) is the final cultural period of southern African hunter-gatherer peoples after the evolution of human ancestors through the Early Stone Age (the start of which is also ambiguous, but which has been pushed back to 3.3 million years ago [McPherron et al 2010, Harmand et al 2015] until ~250,000 years ago) and the Middle Stone Age (250,000 to ~40,000 years ago). The Later Stone Age is characterised as having a mixture of various types of stone tool industries as well as better-preserved organic materials (Goodwin and van Riet Lowe 1929, Deacon J. 1982, Barham and Mitchell 2008), and is significant in that it holds key evidence for the final stages of the modernisation of humans in terms of behaviour, adaptation to major environmental changes, technological advancements and symbolic development (Deacon, J. 1982, 1984, Barham and Mitchell 2008). The dense shell middens found along the shorelines of the southern coast demonstrate the sustained exploitation of coastal resources over several thousands of years (Kaplan 1995, Parkington 2006), and hold a wealth of information about the diet, behaviour and technology of San hunter-gatherers. Rapid sea level rise at around 13,000 years ago resulted in a large portion of the coastal plains along the southern coast being inundated, and any archaeological sites there to be lost. Following the Later Stone Age, research has been done on the more recent historical past, and particularly toward an understanding of Khoi and San ethnographies to inform the more distant past (Bleek and Lloyd 1911, Bleek and Lloyd 1924, Bleek 1935, Wiessner 1984, Deacon and Dowson 1996). Up until a century ago, hunter-gatherer groups still lived in southern Africa and practiced a relatively modest and traditional way of life, offering great insight into this ancient lifestyle.

Historically, the town of Gouritzmond was named after the Gouriqua Khoikhoi people that lived in the area. This seaside fishing village was established in 1915, however the areas surrounding the river mouth were colonised by farmers by the early 1700's (Hessequa Tourism 2015).
4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Summary of findings of Specialist Reports

The Archaeological Impact Assessment conducted by Kaplan (2016, Annexure 2) notes that the proposed abalone farm is likely to impact on buried shell midden deposits, thinly disturbed stone tool collections, historical stone walling, a possible burial/grave near the entrance to the farm and the remains of a small fishtrap in the intertidal zone (Figure 5a). Furthermore, unmarked burials, or buried shell middens and artefact sites may be exposed or uncovered during project-related earthworks and excavations. No archaeological resources were located in the northern portion proposed for the PV facility, and no subsurface resources are anticipated.

A palaeontological assessment was drafted by Pether (2016, Annexure 3) to ascertain likely impacts to palaeontological resources. According to Pether’s assessment, it is expected that the Wankoe Formation aeolianites will be intersected, with an impact to Quaternary coversand raised beach deposits of the Klein Brak Formation. The sparse, vertebrate fossil bone material that has been found in the coastal aeolianites is of profound scientific value and international interest. However, in consideration of the relatively limited depth of bulk earthworks, a major fossil find of international significance is not expected nor can it be predicted. As such, the palaeontological sensitivity is rated as MODERATE, with a magnitude of MEDIUM by Pether (2016). The marine fossil shell content of the raised beaches of the Klein Brak Formation is of LOW palaeontological sensitivity. Due to the exposed coastal setting, the shell assemblages expected to be impacted are those composed of modern species, the fossils of which are abundant, easily sampled and, in addition, natural exposures of these assemblages occur in many places along the coast.

Figure 3: Spatialisation of known heritage resources near and within the proposed Gouritz abalone farm (See Annexure 1).
A Visual Impact Assessment was conducted by PHS Consulting (2017, Annexure 4). According to the VIA, the majority of the site is covered in very dense vegetation on a substrate of dark brown cover sands. The site is underlain by deep coastal sands which stretch from the seashore northwards to beyond the study site. The study site can be described as a gentle undulating slope, rising from the seashore northwards to the top of the coastal escarpment. The lower portion, at roughly sea level and along the road is relatively flat after which the landscape increases in steepness fairly quickly.

- Sea & Coastal Plain – Scenic value and visually exposed. An elevated stone mound and coastal thicket exists parallel to the road and the plain with screening qualities.
- Coastal slopes – Visually exposed with scenic value.
- Hills - Ridges visually sensitive and have scenic value. Valleys are visually absorptive.
The hill basin where solar array is to be located is within a view shadow and is therefore not visible to receptors. The proposed abalone farm is located on the coastal plain behind a secondary stone mound viewshed at the base of the coastal slopes and is therefore hidden from road users.

The proposed abalone farm is located at the foot of a gentle slope which limits visibility from the north, north-east and north-west. The proposed solar array indicated will be located on a northern slope which limits visibility from the south, south-east and south-west. Due to the continuous rise in the landscape, views from the north are also blocked. It is therefore anticipated that the solar component will not be visible to any receptors.

The assessment revealed that for the farm site next to the coastline, three limited view corridors exist:

1) **Narrow corridor north-west to south-east.** The receptors here are the Gouriqua Reserve houses located approximately 1.35 km from the proposed development with very limited sporadic views of the development area (due to the topography).

2) **Corridor from the west to the east.** The receptors here are Gouriqua Reserve infrastructure approximately 580 m west of the development boundary. Due to the topography, the receptors are located in a slight dip relative to the proposed development area. In addition, the unit’s primary scenic views are towards the south-east and the west. As such, views of the proposed development site are limited. The development is proposed to the east of the receptors and not in line with the orientation of the reserve units.
3) Corridor from the east to west. Although receptors within the corridor from the east are located within the zone of visual influence, visibility is negligible due to distance and topography. However, the proposed development will be visible from the direct neighbour located to the east of the development.

The assessment also revealed that for the solar array site, two view corridors exist from the east and west. The site is located in a natural basin with no receptors located to the east or west from the proposed solar array site.

4.2 Heritage Resources identified
The archaeological assessments (Kaplan 1995, 2016) that have been carried out on this farm have identified 36 sites of significance within the farm boundary:

Burial Grounds & Graves
GRTZ01 (Site 424, SAHRIS Site ID: 99002)
A possible grave was found in the Eskom servitute near the entrance to the farm. Comprising several round quartzite boulders, no grave goods such as glass jars were found, and no head or foot stone indicating a Christian burial is visible, suggesting that the feature might represent a pre-colonial burial. Some shellfish fragments (Site 424) were recorded a few meters from the stones.

Stone Walling
GRTZ03 (Site 443, SAHRIS Site ID: 99004)
A dry packed, partially collapsed, cobble stone wall was recorded 20m from the property fence alongside the coastal road. The standing wall is about 1m high and approximately 30m long. Assuming the feature is a boundary wall; it most likely dates to the late 1800s / early 1900s and may be contemporaneous with the tidal fishtrap (Site 444) – constructed with the same round beach cobbles. The surrounding wind shorn vegetation is extremely dense.

Fish Traps
GRTZ07 (Site 444, SAHRIS Site ID: 99011)
The remains of a fishtrap (Site 444) were found in the intertidal zone. The walls have mostly collapsed, but some form still exists. Research by Hine (2008) has indicated that fishtraps on the southern Cape coastline were constructed by “bywoners” in the late 1800s and early 1900s, who rented properties from absent farmers at the time.

Artefacts
GRTZ21 (Site 464, SAHRIS Site ID: 99025)
A few fragments of shell and quartzite stone were identified in the back dune area, behind the dune cordon.
Shell Middens

RNR 1 (SAHRIS Site ID: 98974)

"Reins Nature Reserve archaeological site 1" is a shell midden site containing abundant scatters of fragmented and crushed marine shell, numerous stone artefacts, pieces of ostrich eggshell and pottery. The bones of seal, small antelope and bird (cormorant) were also found (Kaplan 1995, Annexure 3).

SAHRIS Site IDs: 99003, 99005, 99006, 99007, 99012 - 99024, 99026 - 99039

It is clear that most of the remains are concentrated on the narrow, frontal dune cordon in the south western portion of the proposed development site, alongside the coastal road (i.e. Sites 445-477). Shellfish deposits are visible on patches of soft brown sands inside the fence line, and alongside the coastal track, while an extensive, albeit patchy, scatter of fragmented shellfish is visible on the flat top of the dune cordon itself. Most of the shellfish on the dune cordon appears to be , while some compacted shell also appears in places.

In contrast, much of the shellfish on the loose brown sands below the dune cordon is associated with burrowing, and dune mole rat activity, indicating that shell midden deposits occur below the surface sands, extending into the dune slack area as well. As with most of the shell midden deposits recorded so far in the southern Cape, the shellfish identified on this site is dominated by the species (round turban shell) whose habitat is intertidal, while some limpets such as (both low - mid & infratidal species), were also recorded. Operculum (the hard knobby foot bone of ) is, not surprisingly, present, while a few fragments of perlemoen ( ), and some whelk and low spring tide periwinkle ( ) were also recorded.

The desktop palaeontological assessment (Pether 2016) noted that the palaeontological sensitivity of the Wankoe Formation is MODERATE (Pether 2016) due to previous fossil bone finds of high scientific importance, while marine fossil shell in the Klein Brak Formation is LOW. Although no foot survey was conducted for palaeontological resources, there remains a possibility that significant palaeontological resources within the Wankoe Formation may be impacted by the proposed development.

Table 1: Details of Archaeological sites with SAHRIS Site IDs known in the vicinity of the proposed abalone farm.

<table>
<thead>
<tr>
<th>No.</th>
<th>SAHRIS SITEID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>Grading</th>
<th>Latitude</th>
<th>Longitude</th>
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<tbody>
<tr>
<td>1</td>
<td>99002</td>
<td>GRTZ01</td>
<td>Burial Grounds &amp; Graves</td>
<td>Grade IIIa</td>
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<td>21.76971</td>
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<td>2</td>
<td>98974</td>
<td>RNR 1</td>
<td>Shell Midden</td>
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<td>3</td>
<td>99004</td>
<td>GRTZ03</td>
<td>Stone walling</td>
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</tr>
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<td>6</td>
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<td>8</td>
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<td>Shell Midden</td>
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<td>21.768483</td>
</tr>
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</table>
According to the Visual Impact Assessment (PHS Consulting, 2017, Annexure 4), the visual significance rating for the area is based on the scenic value of the Hessequa Coastline. The sparsely developed surrounding agricultural area plays an important role in giving this landscape its identity. The nature of the site in this specific area is influenced by old farm houses and in some cases ruins and dilapidated structures (identified in the Archaeological Assessment).

The coastline was clearly well developed in the past and recently, after many farms were sold, it is experiencing a resurgence. The neighboring Gauriqua Reserve to the west consists of a large tourism development footprint representing the predominant tourism attraction in the area. Other smaller tourism establishments exist between the site and Gouritsmond, in addition to lifestyle, agricultural and conservation farms. The coastline is popular for its shore angling and is frequented by local and visiting fisherman.

The VIA recommends that the development should conform to the local architecture, and mitigating measures to limit visual impacts should be implemented.

4.3 Mapping and spatialisation of heritage resources
Figure 5a: Revised Site Layout Plan indicating the boundary of proposed Alternative 2 (preferred) in relation to identified heritage resources (with SAHRIS site IDs indicated)
Figure 5b: Constraints Map from the VIA (Annexure 4) indicating the areas suitable for development within the proposed Alternative 2 (preferred) in relation to identified heritage resources (post-archaeological survey)

5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Heritage Resources

The impact of the proposed development will be limited, and will most likely occur during the Construction Phase of the project (i.e. excavations for building foundations, terracing cutback, installation of services, etc).

The following impacts are anticipated for the Photovoltaic facility:
- Considering the paucity of archaeological sites in this area of the farm, no impacts to archaeological resources are anticipated.
- Considering the low fossil sensitivity of this area of the farm, no impacts to palaeontological resources are anticipated.

The following impacts are anticipated for the abalone farm:
- Construction activities, including bulk earthworks (for example foundation excavations for buildings, terrace cuttings etc), and excavations for services (water pipelines & installation of cables for the solar array), will likely impact on fragile heritage resources (refer to impact assessment table 2). Unmarked (Later Stone Age) human remains may also be uncovered.
Table 2: Impacts to archaeological resources during the Construction Phase from Appendix 2

<table>
<thead>
<tr>
<th>Potential impact on archaeological resources</th>
<th>Damage to, or destruction of archaeological resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of impact</td>
<td>Damage to, or destruction of archaeological resources</td>
</tr>
<tr>
<td>Extent and duration of impact</td>
<td>Localized short term</td>
</tr>
<tr>
<td>Intensity of impact</td>
<td>Potentially high – particularly raised dune cordon</td>
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<tr>
<td>Probability of occurrence</td>
<td>Probable</td>
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<tr>
<td>Degree to which impact can be reversed</td>
<td>Reversible</td>
</tr>
<tr>
<td>Irreplaceability of resources</td>
<td>Low</td>
</tr>
<tr>
<td>Cumulative impact prior to mitigation</td>
<td>High</td>
</tr>
<tr>
<td>Significance of impact pre-mitigation</td>
<td>Potentially High</td>
</tr>
<tr>
<td>Degree of mitigation possible</td>
<td>High</td>
</tr>
<tr>
<td>Proposed mitigation</td>
<td>Test excavations to be carried out to determine</td>
</tr>
<tr>
<td></td>
<td>significance of sub surface archaeological deposits.</td>
</tr>
<tr>
<td></td>
<td>If exposed, burials must be removed/left alone</td>
</tr>
<tr>
<td></td>
<td>Bulk earthworks to be monitored by a professional</td>
</tr>
<tr>
<td></td>
<td>archaeologist</td>
</tr>
<tr>
<td>Cumulative impact post mitigation</td>
<td>Low</td>
</tr>
<tr>
<td>Significance after mitigation</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

Once the development is complete, there are unlikely to be additional impacts to archaeological heritage resources. However, impacts are likely in terms of visual impacts. Recommendations are included in the VIA report to mitigate these impacts.

Table 3: Impacts to archaeological resources during the Operational Phase from Appendix 2

<table>
<thead>
<tr>
<th>Potential impact on archaeological resources</th>
<th>Damage to or destruction of archaeological resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of impact</td>
<td>Damage to or destruction of archaeological resources</td>
</tr>
<tr>
<td>Extent and duration of impact</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Intensity of impact</td>
<td>Very Low</td>
</tr>
<tr>
<td>Probability of occurrence</td>
<td>Very Low</td>
</tr>
<tr>
<td>Degree to which impact can be reversed</td>
<td>Very Low</td>
</tr>
<tr>
<td>Irreplaceability of resources</td>
<td>Very Low</td>
</tr>
<tr>
<td>Cumulative impact prior to mitigation</td>
<td>Very Low</td>
</tr>
<tr>
<td>Significance of impact pre-mitigation</td>
<td>Very Low</td>
</tr>
<tr>
<td>Degree of mitigation possible</td>
<td>Very Low</td>
</tr>
<tr>
<td>Proposed mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Cumulative impact post mitigation</td>
<td>Low</td>
</tr>
<tr>
<td>Significance after mitigation</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>
5.2 Sustainable Social and Economic Benefit

The closest town to the proposed development area is Gouritzmond, which consists of a small coastal community. The area proposed for development is surrounded by active agriculture, conservation and tourism activities. Employees will be sourced from Riversdale, Albertinia and other, larger towns nearby. The proposed development is in line with the planning policies and IDP for the municipal area, in that it promotes job creation, investment in the area, skills transfer, sustainable seafood harvesting, alternative energy use (solar) and sustainable development.

| What is the expected capital value of the activity on completion? | R 350,000,000.00 |
| What is the expected yearly income or contribution to the economy that will be generated by or as a result of the activity? | R 150,000,000.00 |
| Will the activity contribute to service infrastructure? | YES | NO |
| How many new employment opportunities will be created in the construction phase of the activity? | |
| What is the expected value of the employment opportunities during the construction phase? | |
| What percentage of this will accrue to previously disadvantaged individuals? | % |
| How will this be ensured and monitored (please explain): | |
| How many permanent new employment opportunities will be created during the operational phase of the activity? | 200 |
| What is the expected current value of the employment opportunities during the first 10 years? | R 150,000,000.00 |
| What percentage of this will accrue to previously disadvantaged individuals? | 66 % |
| How will this be ensured and monitored (please explain): | |

- Abalone farming is a highly labour intensive activity. The farm needs labour to operate.
- This is unlikely to change dramatically in the next 10 years.

5.3 Proposed development alternatives

ALTERNATIVE 1:
An approximate 750 ton abalone farm, in one phase comprising of the following:

- 12 ha production area
- Hatchery
- Pumphouse
- Sump located at -2m sea level, gravity fed with 4 x 1.2 M pipelines
- Generator room
- Canteen 1 to cater for 180 employees
- Canteen 2 to cater for 180 employees
- Workshop
- Parking area
- Admin and processing
- Effluent / outgoing channel / pipeline
- 4 mva solar array of approximately 6 ha
- Solar control and grid tie in room
- Borehole

Total area - approximately 18 ha
This alternative was the applicant's first concept and had limited specialist input.

Figure 7: Site Layout Plan indicating proposed Alternative 1

ALTERNATIVE 2: PREFERRED
An approximate 440 ton abalone farm, comprising of two phases. (Note that the sizes and volumes described below are approximate):

- 7.1 Ha production area, split into two phases
- Phase one - 3.7 Ha, 230 ton production
- Phase two - 3.4 Ha, 210 ton production
- Hatchery (3400 m²)
- Pumphouse and sump - 500 m², with a total pumping capacity of 12 000 m³/h
- Filtration reservoir - 530 m³, includes drum filters for the filtering of incoming seawater
- Basket cleaning area - 95 m² x 8 rooms for the cleaning and repairing of the abalone baskets
- Split and grading rooms - 95 m² x 8 rooms for the splitting and size grading of the abalone stock
- Blower and feed stores - 35 m² x 16 rooms, used to securely house feedstock from vermin / pests. Blower rooms - soundproof for air supply
- Diesel store - 173 m², on site diesel storage of 80 000 l
- Refuse area and package plant - 600 m²
● Power transmission room – 800 m² for back up generators and main distribution systems
● Canteen – 1025 m², containing canteen, ablutions and lockers for employees
● Workshop – 450 m² for maintenance and repairs
● Parking area – 3930 m², comprising of entrance access and parking
● Admin / office building – 600 m² for admin staff
● Transfer and pre-processing building – 1100 m², to transfer animals from one farm to the next and to prep animals for transport for processing
● Effluent / outgoing channel / pipeline – transfers effluent sea water, possible surf zone discharge or beyond surf zone, dependent on the conditions of the cwdp
● Solar array of approximately 6.14 Ha with an output capacity of 2.5 Mva / 2.2. Mw
● Inverter room – 225 m², used to house inverters to convert solar to usable power and step up into eskom line at 11kv
● Eskom overhead line - already existing
● Jeep track to solar farm / pv – 1.7 Km, two track informal road for servicing the site
● Borehole

Total area – approximately 16 ha

Note that this alternative has evolved with specialist input, resulting in no development areas across the site. Specialist comment has also resulted in the creation of two smaller production areas with ecological no-go areas in between. The farm has also been set back from the coast as recommended by the coastal setback line and climate change specialist. Important archaeological sites have also been avoided. The solar farm has also been shifted north on the farm, to manage the potential visual impact that the solar array may have on neighbouring landowners and to allow optimal functionality.
Most of the sites identified by Kaplan (2016) fall below the 7 m contour line and, as such, it is agreed that the majority of the infrastructure for the proposed development will be located above the 7m contour line. This complies with the recommendations of the coastal setback engineers. The proposed no. 9 pumphouse (Figure 8b) is located within the 100 meter visual constraints buffer that has been identified for the proposed development. The location of the pumphouse in Alternative 2 will not impact any of the sites identified in Kaplan’s report (2016).

The no. 17 water lines (Figure 8b) will impact some of the resources identified by Kaplan (2016), and, as such, archaeological monitoring is recommended to mitigate this impact. The location of the pump itself must be below the 7 m contour line, and, due to the position of intake and height above sea level, must be located in the South West corner of the proposed development area. In this regard, while identified resources will be impacted by the installation of the pump and water lines, this impact can be mitigated through test excavations and archaeological monitoring as per the recommendations below.

In addition, it is noted that Alternative 2 will have a medium to low significance impact overall, with the solar array impacts being and the impacts of the proposed abalone farm over the short to medium term. Alternative 2 will have a local , as well as where effective screening and design influence is possible due to the solar array location and by implementing design and layout guidelines as mitigation.

Figure 8b: Revised Site Layout Plan indicating the infrastructure layout of proposed Alternative 2 (preferred).
ALTERNATIVE 3:
No-go alternative.
6. RESULTS OF PUBLIC CONSULTATION

The Integrated HIA was provided to the Local Authority for consultation from 26 January 2017 to 26 February 2017. According to the HWC website (http://www.hwc.org.za/conservation-bodies) there are no Heritage Conservation Bodies registered for this area. In addition, the HIA has been circulated as part of the Public Participation Process for the Draft BAR (see Table 5 below). Please see Appendix 5 for the results of the PPP.

Table 5: Details of Draft BAR PPP from the Draft BAR

<table>
<thead>
<tr>
<th>1. Were all potential interested and affected parties notified of the application by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) fixing a notice board at a place conspicuous to the public at the boundary or on the fence of:</td>
</tr>
<tr>
<td>(i) the site where the activity to which the application relates is to be undertaken: YES X DEVATED</td>
</tr>
<tr>
<td>(ii) any alternative site mentioned in the application: YES X DEVATED</td>
</tr>
<tr>
<td>(b) giving written notice to:</td>
</tr>
<tr>
<td>(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land: YES X N/A</td>
</tr>
<tr>
<td>(ii) the occupier of the site where the activity is to be undertaken and to any alternative site where the activity is to be undertaken: YES X DEVATED</td>
</tr>
<tr>
<td>(iii) owners and occupiers of land adjacent to the site where the activity is to be undertaken and to any alternative site where the activity is to be undertaken: YES X DEVATED</td>
</tr>
<tr>
<td>(iv) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area: YES X DEVATED</td>
</tr>
<tr>
<td>(v) the municipality which has jurisdiction in the area: YES X DEVATED</td>
</tr>
<tr>
<td>(vi) any organ of state having jurisdiction in respect of any aspect of the activity: YES X DEVATED</td>
</tr>
<tr>
<td>(vii) any other party as required by the competent authority: YES X DEVATED</td>
</tr>
<tr>
<td>I placing an advertisement in:</td>
</tr>
<tr>
<td>(1) one local newspaper and</td>
</tr>
<tr>
<td>(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations: YES S DEVATED N/A</td>
</tr>
<tr>
<td>(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: YES S DEVATED N/A</td>
</tr>
</tbody>
</table>

2. Provide a list of all the state departments that were consulted:

- DEAPD
- DAF
- DEAPD OCEANS AND COASTS
- APPLICABLE ROADS AUTHORITY
- HESSEQUA BAY MUNICIPALITY
- EDEN DISTRICT MUNICIPALITY
- HERITAGE WESTERN CAPE
- GOVERNMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING: POLLUTION MANAGEMENT
- GOVERNMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING: SPATIAL PLANNING AND COASTAL IMPACT MANAGEMENT
- GOVERNMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING: TRANSPORT AND PUBLIC WORKS
- CAPE NATURE
- DOA
- BGCMA
7. CONCLUSION AND RECOMMENDATIONS

The proposed construction at the Gouritz Abalone Farm will result in sustainable development, local economic growth, job creation and skills transfer. There is a market demand for farmed abalone for export. Due to the high archaeological sensitivity of the area in which the farm is located, however, the proposed development is likely to impact on significant archaeological heritage resources.

Alternative 2 (preferred) has evolved with guidance from the specialist team and therefore includes ‘no development areas’, buffers, and test excavations for potential archaeological materials. This has resulted in a smaller alternative with fewer impacts than the previous alternative. The coastal waters discharge permit (CWDP) will ensure that effluent water quality is monitored and adheres to acceptable standards.

The impacts of the proposed development can be mitigated through the implementation of the recommendations below.

Shovel testing must be undertaken to determine the significance of subsurface archaeological deposits. The focus of test excavations will be on the narrow dune cordon in the south western portion of the proposed development site. This will require the submission of a workplan to HWC for approval.

The historic stone wall (SAHRIS Site ID: 99004) alongside the gravel road (inside the footprint area) must be protected and incorporated into the final development proposal. A 10m protective buffer is required.

The possible grave/burial (SAHRIS Site ID: 99002) in the Eskom servitude must be avoided. The ‘grave’ must be demarcated (possibly enclosed inside a small fence), or simply left alone.

Bulk earthworks (i.e. excavations for building foundations, terracing cut backs, & services) must be monitored by a professional archaeologist. The site must be inspected once a week by the archaeologist during the construction phase of the project.

It is not necessary for the archaeologist to monitor vegetation clearing operations, but the Environmental Control Officer (ECO) must be briefed on site by the archaeologist, prior to the commencement of site clearing. The site must also be inspected once vegetation clearing has been completed.
If any unmarked human remains are exposed or uncovered during excavations and earthworks, these must immediately be reported to Heritage Western Cape (Att: Mr Andrew September), or the archaeologist (Jonathan Kaplan 082 321 0172).

- The HWC Fossil Finds Procedure must be implemented.
- The mitigation recommendations included in section 5 of the VIA Report (PHS Consulting, 2017, Annexure 4) must be implemented and adhered to.

The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development.
8. REFERENCES


Bleek, D. F. 1935. Beliefs And Customs Of The Xam Bushmen: From material collected by Dr. WHI Bleek and Miss LC Lloyd between 1870 and 1880. Bantu Studies, 9(1), 1-47.


APPENDIX 1: Heritage Screener
APPENDIX 2: Archaeological Impact Assessment
APPENDIX 3: Palaeontological Impact Assessment
APPENDIX 4: Visual Impact Assessment
APPENDIX 5: Results of Public Consultation