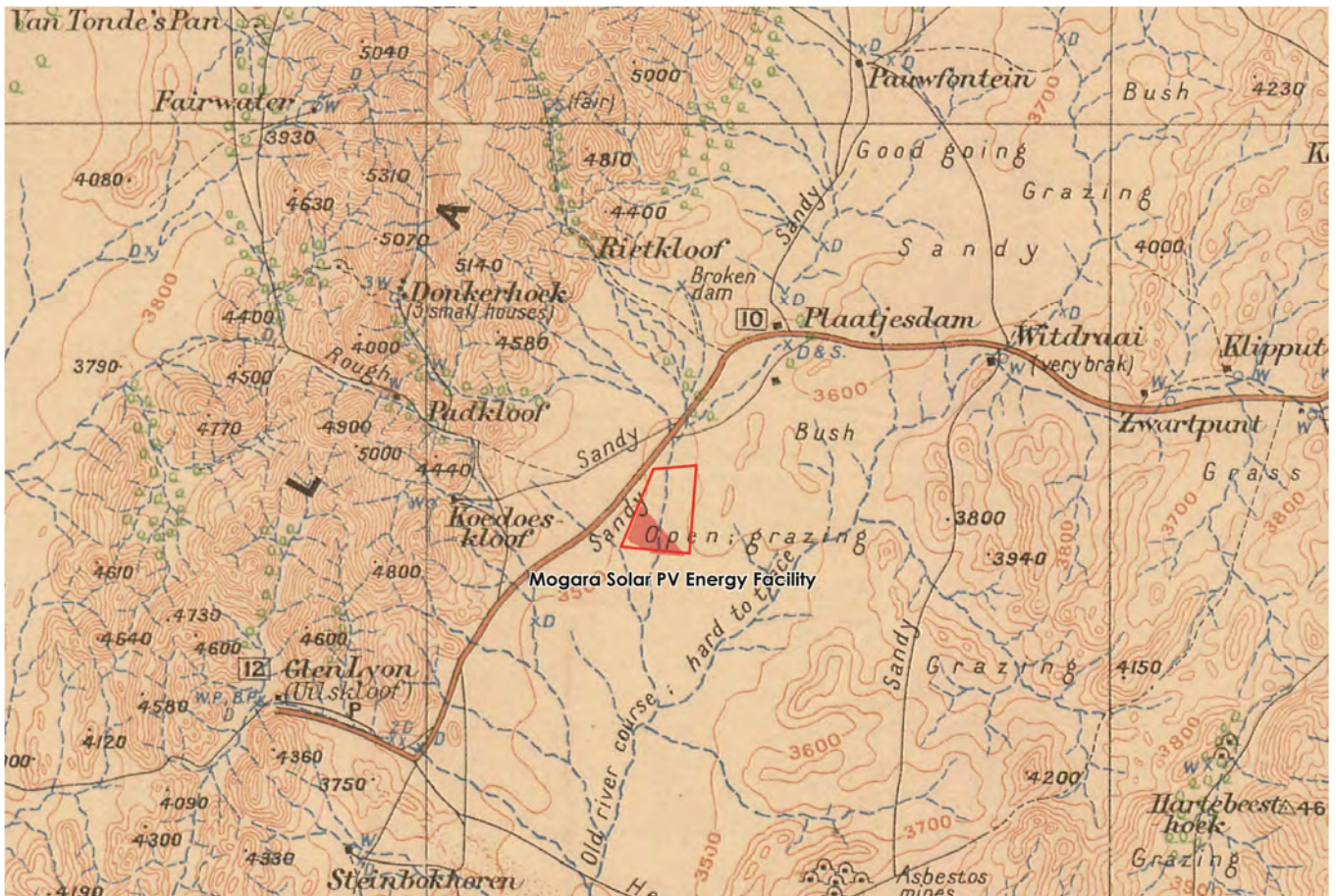


INTEGRATED HERITAGE IMPACT ASSESSMENT IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT 25 OF 1999)

PROPOSED DEVELOPMENT OF THE MOGARA SOLAR FACILITY ON PORTION 1 & 2 OF THE FARM LEGOKO 460 AND GRID CONNECTION ON THE FARM SEKGAME 461, (KATHU), KURUMAN DISTRICT, GAMAGARA LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE



On behalf of: K2018091776 (SOUTH AFRICA) (PTY) LTD

November 2018

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REFERENCES and ACKNOWLEDGEMENTS

1. Phase 1a Archaeological Impact Assessment, Proposed development of the Mogara Solar Facility on Portion 2 of the Farm 460 Legoko, Kathu, Northern Cape Province, Dr. Peter Nilssen, 27th July 2018.
2. Palaeontological specialist assessment: desktop study: Proposed 75 MW Mogara Solar PV Energy Facility and Associated Infrastructure on the Farm 460 Legoko Portion 1 and 2, and Farm 461 Sekgame near Kathu, Gamagara Local Municipality, Northern Cape, Dr. John Almond, May 2018.

3. Visual Impact Assessment for the Proposed Mogara Solar PV Energy Facility, Northern Cape, VRM Africa (Stephen Stead), 30th October 2018.

ABBREVIATIONS

1. NGSi – National Geo-Spatial Information, Department of Rural Development and Land Reform, Mowbray
2. HWC – Heritage Western Cape
3. NHRA - National Heritage Resources Act, 1999 (Act 25 of 1999)
4. HIA – Heritage Impact Assessment
5. SAHRA – South African Heritage Resources Agency

COVER: Extract from 115 Mount Huxley Imperial (1900-1919) (Source: National Geo-Spatial Information, Department of Rural Development and Land Reform, Mowbray).

1 INTRODUCTION

PERCEPTION Planning was appointed by K2018091776 (South Africa) (Pty) Ltd to undertake an Integrated Heritage Impact Assessment (HIA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999) as part of a proposal to establish a commercial solar energy facility - currently referred to as **Mogara Solar** which would have a proposed development footprint of approximately 225 ha. The cadastral land units subject to this application are as follows:

- Portion 2 of the farm Legoko 460, situated in the District of Kuruman, Northern Cape Province, measuring 856,5320 ha, registered to the Carel Reitz Family Trust and held under title deed T 3018/1997.
- Portion 1 of the farm Legoko 460, situated in the District of Kuruman, Northern Cape Province, measuring 1060.65 ha, registered to Henque 3516 BK.
- The Grid connection for this project will also cross the Farm Sekgame No.461

The purpose of this report is to integrate the findings and recommendations of heritage-related studies providing specialist input to the Environmental Impact Assessment (EIA) currently underway and managed by Cape Environmental Assessment Practitioners (Pty) Ltd.

Please note the proposed development site to which this proposal relates is directly south of the proposed Gaetsewe Solar PV Energy Facility, which is the subject of a separate application.

2 PROJECT TEAM AND STATEMENT OF INDEPENDENCE

With relation to the authors' appointment as an independent specialists responsible for the compilation of an Integrated Heritage Impact Assessment in terms of Section 38(3) of the National Heritage Resources Act, 1999 (Act 25 of 1999) for this project, it is hereby declared that the undersigned:

- Acts as an independent specialist in this application;
- Regards the information contained in this report as it relates to my specialist input/study to be true and correct;
- Have and will not have any vested interest in the proposed activity proceeding;
- Does not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- Have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- Is fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 982) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- Is aware that a false declaration is an offence in terms of regulation 48 of GN No. R. 982.

It is certified that SE de Kock has 21 years professional experience as urban planner (3 years of which were abroad) and 13 years professional experience as professional heritage practitioner. He is professionally registered/ affiliated as follows:

- Professional Heritage Practitioner (Association for Professional Heritage Practitioners)
- Professional Planner (South African Council for Planners, South African Planning Institute)

It is certified that GJR Narainne has 5 years professional experience as urban planner and 4 years professional experience as candidate heritage practitioner. He is professionally registered/ affiliated as follows:

- Candidate Heritage Practitioner (Association for Professional Heritage Practitioners)
- Candidate Planner (South African Council for Planners)

3 METHODOLOGY

Compilation of the Integrated HIA report for the proposed development activity (including relevant development alternatives) includes professional inputs from the following specialist reports sanctioned as part of the HIA process:

- Basic archival background research, Cultural landscape assessment, Built environment analysis and assimilating inputs from various specialist report (*Perception Planning, S. de Kock*);
- Visual Impact Assessment (*VRM Africa, S. Stead*);
- Archaeological Impact Assessment (*Dr. Peter Nilssen*);
- Desktop Palaeontological Impact Assessment (*Natura Viva, Dr. J. Almond*).

As part of the compilation of this Integrated HIA report the site and its environs was studied, visited,

photographed and assessed, which more specifically involved the following (for broad overview of HIA process refer to explanatory flow diagram below):

- Field work carried out by Dr. Peter Nilssen from 11th to 15th May 2015;
- Liaising with project manager, environmental consultant and various specialist consultants;
- Assimilating findings and recommendations emanating from specialist inputs into HIA;
- Identification of heritage-related issues and concerns;
- Analysis of development site and its environs;
- Identification of contextual spatial informants;
- Establishing cultural significance, based on criteria set out in NHRA;
- Identification of heritage-related design informants based on the above;
- Focussed public participation process to be coordinated as part of Environmental Impact Assessment facilitated by Cape Environmental Impact Assessment Practitioners (Pty) Ltd;
- Assess conformity of final proposed site layout to design informants identified;
- Submission to competent authorities (SAHRA and Ngwao Boswa Kapa Bokoni) via SAHRIS.

4 BRIEF DESCRIPTION OF STUDY AREA

The irregular-shaped study area (± 225 ha in extent) is situated ± 8 km southeast of the town of Kathu and ± 2 km east of the N 14 National Road connecting Kathu with the town of Olifantshoek, ± 50 km further southwest. The Kumba Iron Mine is $\pm 6,5$ km directly west of the study as shown in **Figure 1**. Vehicular access is via the N14 National Road, towards to the north, then east into a gravel road (T442) as shown.



Figure 1: Location of property and proposed site in relation to town of Kathu and direct environs (Source: GoogleEarth)

The following observations pertaining to the study area were recorded by Dr. Peter Nilssen in the Phase 1a Archaeological Impact Assessment (2018:11):

"The terrain is essentially flat with very minor undulation in places. A few small, shallow pans or depressions were noted, however, and these are likely to collect rain water and may have been attractive to game animals and hunters in the past. Surface sediments consist mostly of orange-red Hutton Sands that overlie a very flat plane of calcrete. The latter is intermittently exposed at the surface and is variably solid and nodular. More surface calcrete was observed here relative to that on Portion 1 of Farm 460 Legoko. Vegetation is generally open, but not sparse, and consists of grasses, bush and some thorny shrubs as well as a variety of thorny Acacia trees. There are notably fewer Acacia trees here in comparison with Portion 1 of Farm 460 Legoko. From a botanical perspective, the current study area is less sensitive than the adjacent property, which is situated immediately to the south. The environmental setting of both the proposed PV area, access road as well as the grid connection route is very similar".

The surrounding land use is agricultural and undeveloped and is mainly used for the grazing of domestic stock (cattle, sheep and goats). Recent human related disturbances to the environment include a road (N14), vehicle tracks, fencing, farmsteads and associated structures and infrastructure, minor earthmoving activities and overhead power lines. Natural disturbances include burrowing by large and small animals.

5 DEVELOPMENT PROPOSAL

K2018091776 (SOUTH AFRICA) (Pty) Ltd is proposing the establishment of a commercial photovoltaic (PV) solar energy facility (SEF), called Mogara Solar, on the farms known as Legoko Farm No 460 portion 2 and Legoko Farm No 460 portion 1, situated in the District of Kuruman Rd, Northern Cape Province, within the jurisdiction area of the Gamagara Local Municipality. The total development footprint of the Mogara Solar Energy Facility will not exceed 225ha. This footprint includes the total footprint of PV panels, auxiliary buildings, an onsite substation, inverter stations and internal roads.

The technology under consideration is PV modules mounted on either fixed-tilt or tracking structures. Other infrastructure includes inverter stations, internal electrical reticulation, internal roads, an on-site switching station/ substation, a 132 kV overhead distribution line (OHL), auxiliary buildings, construction laydown areas and perimeter fencing and security infrastructure. The on-site switching station/ substation will locate the main power transformer/s that will step up the generated electricity to a suitable voltage level for evacuation into the national electricity grid, via the OHL. Auxiliary buildings include, inter alia, a control building, offices, warehouses, a canteen and visitors centre, staff lockers and ablution facilities and gate house and security offices.

5.1 Layout Alternative 1 (Preferred)

The preferred layout alternative is depicted in **Figure 2** below. Layout Alternative 1 (Preferred) constitutes a preliminary layout area mostly within the initial/ conceptual area, however, due to the high sensitivity erioloba density in the south west corner of the initial/ conceptual area, Layout Alternative 1 has avoided this and has instead extended into Portion 1 of Legoko 460 so that the solar facility footprint occupies only Medium and Medium-High sensitivity area.

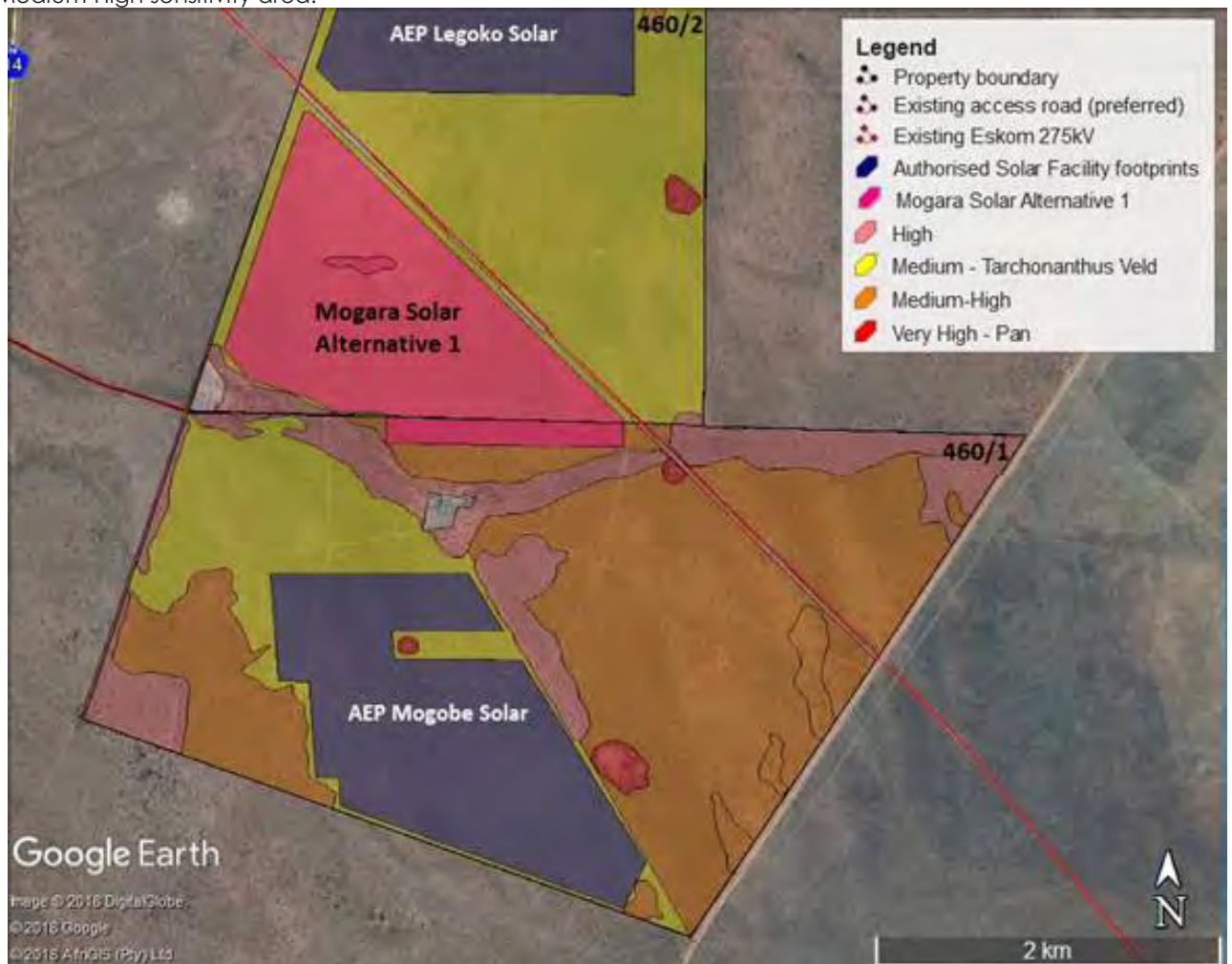


Figure 2: Layout Alternative 1 (Preferred)

5.2 Grid Connection and Cabling

It is proposed to connect the SEF directly to the planned Sekgame Switching Station located ±5km to the south of the existing Ferrum MTS. The SEF substation will be approximately 100m x 100m in size and feature a step-up transformer/s to evacuate electricity via a 132kV OHL directly to the Sekgame Switching Station. The OHL is envisaged to be ±4km in length, a max. height of 24m and occupy a servitude width of between 31m–51m.

A 75 MW_{AC} installation will require specific electrical components to meet the national grid code requirements in order to generate and supply electricity into the national grid. The conversion from DC (modules) to AC is achieved by means of inverter stations. A single inverter station is connected to a number of solar arrays, and will be placed along the internal service roads for ease of access. A number of inverter stations will be

installed for the SEF (up to maximum of ± 60 centralised inverters, or ± 840 string inverters), each of which is connected to the on-site/ facility substation.

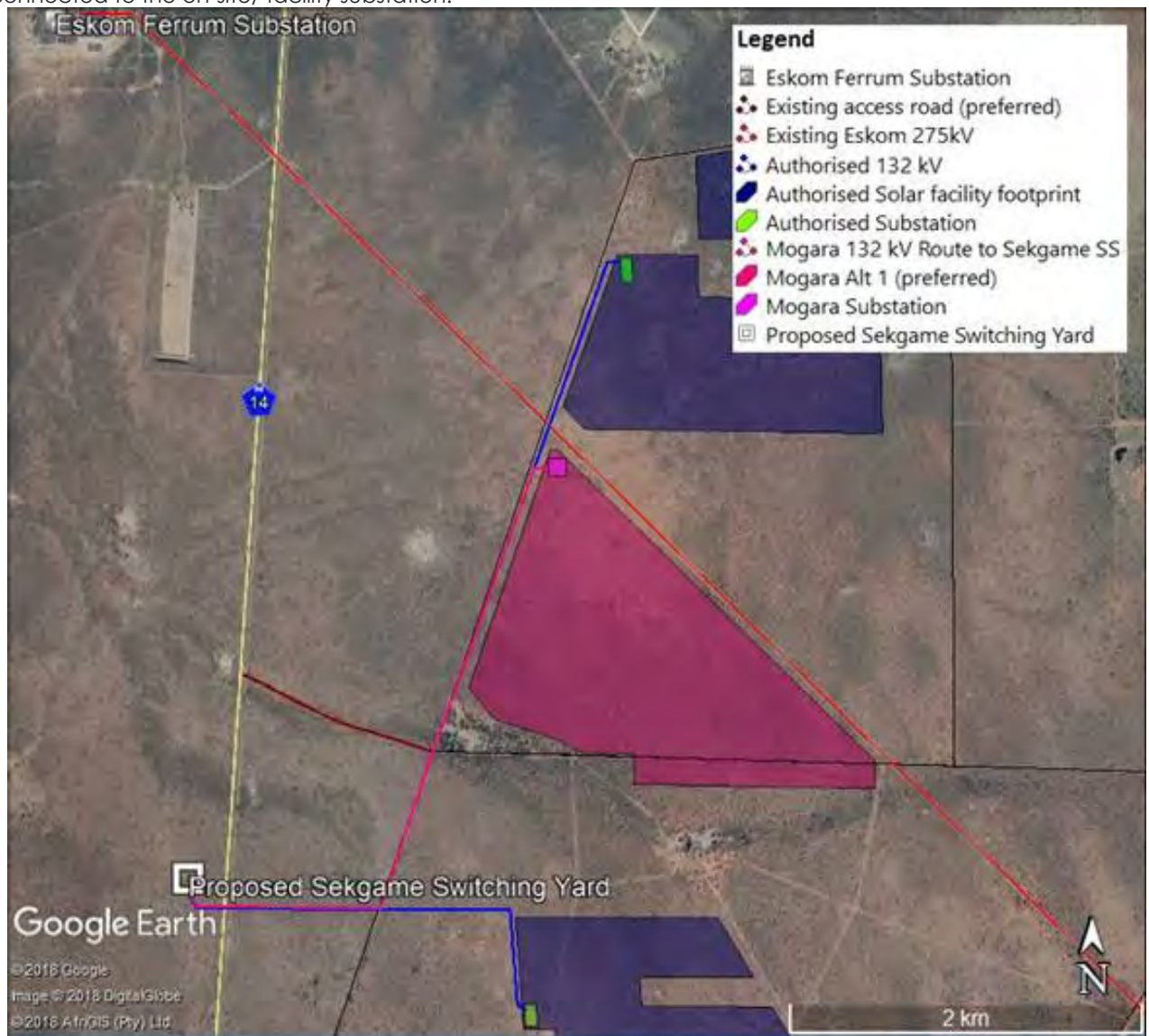


Figure 3: Proposed Grid connection

Final placement of the inverter stations and on-site / facility substation will need to take ground conditions into consideration. Interconnecting electrical cabling will be trenched where practical and follow internal access roads to the greatest extent. Sensitive areas will consequently be avoided as far as possible, or alternatively, cables will be fastened above- ground to the mounting structures so as to avoid excessive excavation works and clearing of vegetation.

5.3 Technical details

Component	Description / dimensions
Height of PV panels	Maximum of ± 3.5m
Area of PV Array	± 200 ha
Number of inverters required	A maximum of ± 60 centralised inverters or ± 840 string inverters
Area occupied by inverter / transformer stations / substations	Centralised inverter stations are mounted at a height of ± 3m and string Inverters are mounted at a minimum height of ± 300mm above ground
Capacity of on-site substation	22/132kV or 33/132kV Substation (22kV or 33kV medium voltage level, and 132kV high voltage level)
Area occupied by both permanent and construction laydown areas	Temporary laydown areas for construction: ± 5 ha
Area occupied by buildings	± 1 ha
Length of internal roads	± 12 km
Width of internal roads	± 4 - 5m
Proximity to grid connection	± 4km
Height of fencing	± 3 – 5m
Type of fencing	Clear view/ see-through, and either/ combination of meshed, razor wire or electric fencing.

6 SPATIAL PLANNING CONTEXT

A Professional Planner will be appointed for this project and will be responsible for compiling and lodging the necessary applications, which we include:

- A land use change application for the rezoning of approximately 225ha, from Agricultural Zone I to Special Zone, will be lodged at the Gamagara Local Municipality, in accordance with the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013);
- If there are restrictive Title Deed conditions burdening the proposed development, an application for the removal thereof will be included in the above application;
- Parallel to the rezoning application, a long term lease application will be lodged at the National Department of Agriculture, in accordance with the Subdivision of Agricultural Land Act (Act 70 of 1970);
- Relevant planning documents, on all spheres of Government, will be evaluated before any land use change application is launched.

7 BRIEF HISTORIC BACKGROUND

Basic historic background research focussed on primary sources obtained through the Cape Town Archives, Deeds Office, Surveyor General's Office as well as existing research as referenced.

7.1 Basic Pre-Colonial perspectives (LSA¹)

There is archaeological evidence that specularite deposits in this part of the Northern Cape were mined during the Later Stone Age. Beaumont and Boshier (1974) excavated a prehistoric pigment (specularite) mine four (4) kilometers to the west of Bleskop at Jonas Vlakte on Doornfontein 446. The Doornfontein site represents a number of chambers which have been dug into a hillside. Archaeological excavations resulted in the discovery of large numbers of stone artefacts comprising mainly stone choppers and hammerstones which had been used to mine the specularite. In addition, the archaeologists discovered pottery, decorated ostrich eggshell pieces, beads and bone implements as well as faunal (bone) remains which provide information on the diet of the pre-colonial miners (Beaumont & Boshier 1974). Radiocarbon dates place the mining activities at about 1200 BP (00 AD). Fragmentary human remains from the Blinkklipkop mine which is 5km to the north-east of Postmasburg suggest that the early miners were of Khoisan physical type rather than representing Iron Age settlement.

During his survey Morris (2005a) found a Later Stone Age shelter site on Wolhaarkop. Small specularite workings were pointed out on Wolhaarkop. Beaumont and Boshier (1974) also refer to some engraving sites nearby at Paling which is located on Driehoekspan 435 as well as on Beeshoek to the west of Postmasburg. These roughly pecked engravings occur on shale outcrops.

According to Humphreys and Thackeray, Iron Age farmers only settled in the Northern Cape after A.D. 1600. The main area of Iron Age settlement and the only area, in which there is direct archaeological evidence for such settlement in the form of stone walling, are to the north-east of Kuruman. By the time the first European travellers arrived in this area they met only Iron Age Tswana-speaking people such as the Tlhaping. The Tswana settlement of Dithakong was located to the north-east of Kuruman in an area with many large springs. During the Webley et al (2010) survey, a site on the farm Gaston (to the west of MaCarthy) was discovered with pottery and stone tools. The remains could relate to the Koranna, a Khoekhoen group who were active along the Orange River in the 18th century, or conversely the Iron Age Tswana – although they are believed to have settled more to the north-east.

7.2 Colonial perspectives

Morris (1990) points out that numerous early travellers, such as Lichtenstein, Campbell, Burchell, Backhouse and others visited and described the site of Blinkklipkop (ancient specularite mine which were mined by indigenous peoples in pre-colonial times) to the north of Postmasburg. However, European missionaries and farmers only began to settle in the Northern Cape during the 19th century. Their numbers were relatively small until the use of borehole water for agricultural purposes became a reality.

From a colonial perspective both the farms Legoko and Sekgame were first surveyed in 1893² and transferred to the Government of the Colony of the Cape of Good Hope. The original extent of these farms was stated as being: Legoko - 3,850 morgen (\pm 3,298 ha) and Sekgame - 4,860 morgen (\pm 4,163 ha). While early (1904-1914) mapping for the area highlights the location of several early farmsteads (e.g. Steinbokhoren, Uilskloof, Koedoeskloof, Padkloof, Donkerhoek, Rietkloof, Plaatjesdam and Witdraai), none of these were situated in or within the environs of the proposed development site (**Figure 4**).

Early mapping provides insight into Pre-Modern (traditional) land use patterns within the study area, highlighting for example the alignment of historic roads and, interestingly, asbestos mines, some distance southeast of the proposed development site. Annotations to the map describe water availability at the farmsteads of Glen Lyon

¹ ACO Associates, November 2014

² SG Diagrams 411 and 412, respectively

and Plaatjesdam to be “unlimited” and of “fair quality”. Further annotations do however allude to water scarcity during dry periods. It furthermore records several dams, wind pumps and boreholes at both location and mentions a “considerable amount of cattle” at Plaatjesdam at the time of survey. The mapping highlights topographical features, describes vegetation as “bush” and indicates the alignment and condition of roads, river courses, etc.

Basic historic background research did not identify or highlight any significant historic or other heritage-related themes, which may be negatively impacted through the proposed development.

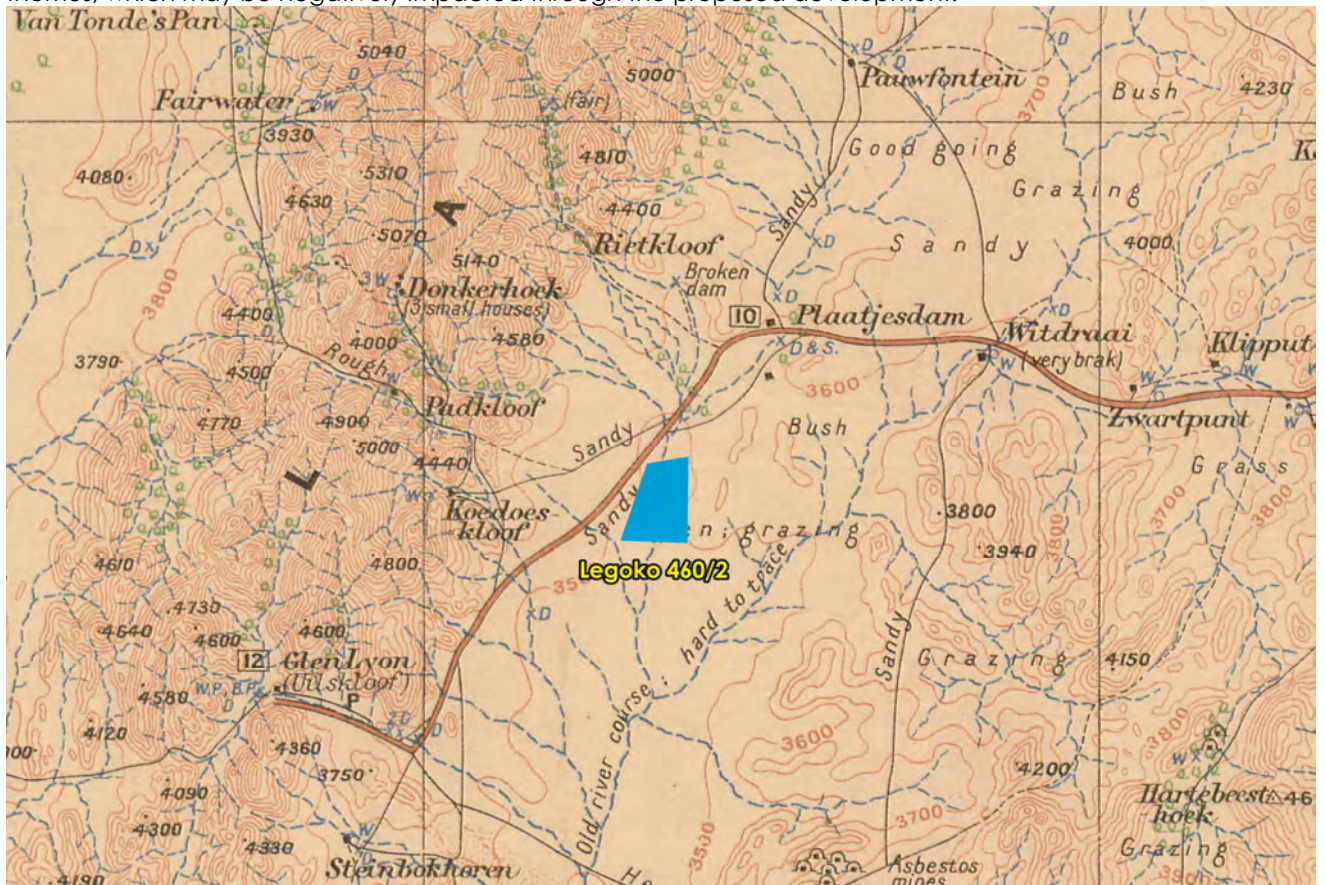


Figure 4: Approximate locate of site transposed onto extract from 1906-1914 mapping for the study area and its environs (Source: 08_Langeberg_Reconnaissance_1906-1914, NGIS)

8 HERITAGE RESOURCES AND ISSUES

8.1 Cultural landscape context

While the NHRA does not clearly define the term “cultural landscape”, it is briefly referred to in the schedule of definitions. Based on local and international best-practice and within the context of definitions assigned to the terms heritage resource, place and cultural significance, cultural landscape can be defined as “A place of cultural significance, which engenders qualities relating to its aesthetic, architectural, historical, scientific, social, spiritual, linguistic, technological, archaeological or palaeontological value³”.

From a practical perspective the term “cultural landscape” therefore refers to the imprint created on a natural landscape through human habitation and cultivation over an extended period of time, as aptly defined by a human geographer (Carl O. Sauer, 1925):

“The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape is the result”.

A more recent definition, which offers insight into the complexity of cultural landscapes from a broader, holistic perspective (Green, B.H., 1995):

“The concept of landscape gives expression to the products and processes of the spatial and temporal interaction of people with the environment. It may thus be conceived as a particular configuration of topography, vegetation cover, land use and settlement pattern which establishes some coherence of natural and cultural processes and activities”.

³Winter, S (October 2004)

The study area forms part of an arid rural landscape defined by a myriad of mining activities - particularly between Olifantshoek and Postmasburg. While relatively flat, the landscape is interspersed with low koppies, most of which have been scarred through mining activities. The Lohatla military base is just east of the proposed development site, while the Blinkklipkop specularite mine, (ancient specularite mine which were mined by indigenous peoples in pre-colonial time), is just south of Postmasburg. The landscape west of the study area has been materially and permanently altered through the Kumba Iron Mine complex.

From a broad, regional perspective the cultural landscape is considered highly complex and potentially significant in terms of pre-colonial as well as pre-modern (traditional) landscape patterns. Given the cumulative impact of mining activities and more recent development patterns, it is therefore recommended that the relevant authority commission a broad-scale mapping, as meant within the context of this paragraph, as required in terms of Section 30(5) of the National Heritage Resources Act, 1999 (Act 25 of 1999).

Without the benefit of the above research and mapping and given the pattern of existing development on and within the direct proximity of the site, it is therefore our contention that from a cultural landscape perspective, the proposed development site is of no local cultural significance.

8.2 Archaeology

Findings and recommendations from the Archaeological Impact Assessment (Dr Peter Nilssen) are summarised below with permission from the author (quoted *verbatim*). Kindly also refer to specialist's full report and findings (**Annexure 1**).

"Previous archaeological studies in the area showed that the surroundings of Kathu are rich in archaeological resources, particularly those of the Stone Age period. It was surprising, therefore, that no significant archaeological sites were identified during this investigation. Although several Later Stone Age stone artefacts were identified, they occur in the main as isolated finds or in very low density scatters that are in unstratified contexts and that lack organic remains and other cultural materials. No other tangible heritage resources of value were identified. Consequently, the archaeological record in the studied areas is considered to be of low significance, and therefore, it is recommended that no further archaeological studies are required prior to the development.

From an archaeological perspective there are no fatal flaws, and therefore, no objections to the authorisation of the proposed development of either of the alternative layouts for the Mogara Solar facility, associated grid connection routes and access road.

Recommendations to be included in the EMP:

- *Archaeological resources identified during this study do not require further recording/studies, and because they are considered to be of low heritage value and have been adequately recorded through this assessment, it is suggested that they can be disturbed or damaged without a permit from SAHRA;*
- *In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately;*
- *If exposed during development, archaeological resources must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer;*
- *In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer."*

8.3 Palaeontology

Findings and recommendations from the Desktop Palaeontological Impact Assessment (Dr John Almond) are summarised below with permission from the author (quoted *verbatim*). Kindly also refer to specialist's full report and findings (**Annexure 2**).

"According to geological maps, satellite images and recent palaeontological assessments in the Kathu area (e.g. Almond 2013a, 2014), the flat-lying Mogara Solar PV Solar Energy Facility study area is underlain by a considerable thickness of Plio-Pleistocene to Recent sediments of the Kalahari Group. The underlying Precambrian bedrocks – viz. dolomites, cherts and possible iron formations of the Transvaal Supergroup – are too deeply buried to be directly affected by the proposed development. The Kalahari Group succession near Kathu mainly comprises well-developed calcretes or surface limestones (Mokolanen Formation) that may total 30 m or more in thickness in the region, together with a thin (probably < 1 m) surface veneer of aeolian sands (Gordonia Formation), alluvial deposits and sparse near-surface gravels. In general the Kalahari Group calcretes and sands are of low palaeontological sensitivity, mainly featuring widely-occurring plant and animal trace fossils (e.g. invertebrate burrows, plant root casts). Recent palaeontological field assessments in the Sishen – Hotazel region by the author have not recorded significant fossil material within these near-surface Kalahari sediments. A very important fossil assemblage of Pleistocene to Holocene mammal remains - predominantly teeth with scarce bone material associated with Earlier, Middle and Later Stone Age artefacts, well-preserved peats and pollens - is recorded from unconsolidated doline (solution hollow) sediments at the well-known Kathu Pan site, located some 5.5 km northwest of Kathu. There are at present no obvious indications of comparable fossiliferous, tool-bearing solution hollow infills exposed at present within the study area although such sediments might conceivably be present but hidden beneath cover sands.

The overall impact significance of the proposed solar energy development, including the 132 kV grid connection to Sekgame Switching Station, access roads and on-site substation, is rated as LOW as far as palaeontological heritage is concerned; there is therefore no preference for either solar facility site option on palaeontological grounds. Likewise, cumulative impacts are likely to be of LOW significance, given the scarcity of important fossils (especially vertebrate remains) within the sedimentary rock units concerned as well as the huge outcrop area of the Kalahari Group as a whole. The degree of confidence for this assessment is rated as medium because of the uncertainty surrounding the presence or absence of potentially fossiliferous buried doline infill deposits within the study area.

Due to the inferred low impact significance of the proposed Mogara Solar PV Energy Facility development as far as fossil heritage resources are concerned, no further specialist palaeontological studies or monitoring are recommended at this stage. The following mitigation measures to safeguard fossils exposed on site as chance finds during the construction phase are recommended (Please also see the tabulated Chance Fossil Finds Procedure appended to the report):

- The ECO and / or the Site Engineer responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he / she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains. If any substantial fossil remains (e.g. vertebrate bones, teeth, horn cores) are found during construction SAHRA should be notified immediately (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented, at the developer's expense.
- A chance-find procedure should be implemented so that, in the event of fossils being uncovered, the ECO / Site Engineer will take the appropriate action, which includes:
 - Stopping work in the immediate vicinity and fencing off the area with tape to prevent further access;
 - Reporting the discovery to the provincial heritage agency and/or SAHRA;
 - Appointing a palaeontological specialist to inspect, record and (if warranted) sample or collect the fossil remains;
 - Implementing any further mitigation measures proposed by the palaeontologist; and
 - Allowing work to resume only once clearance is given in writing by the relevant authorities.

If the mitigation measures outlined above are adhered to, the residual impact significance of any construction phase impacts on local palaeontological resources is considered to be low. The mitigation measures proposed here should be incorporated into the Environmental Management Programme (EMP) for the Mogara Solar PV Solar Energy Facility project. The palaeontologist concerned with mitigation work will need a valid collection permit from SAHRA. All work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies published by SAHRA (2013)."

8.4 Visual Impact Assessment

Findings and recommendations from the Visual Impact Assessment (VRM Africa, Stephen Stead) are summarised below with permission from the author (quoted verbatim). Kindly also refer to specialist's full report and findings (**Annexure 3**).

"The visibility of the proposed PV and power lines project is rated **Local**. Visibility of the proposed 4m high PV structures would effectively dissipate outside of the 2km high exposure zone. Topographic screening to the north and east, and from Sishen dumps to the west, localise the viewshed. Exposure is rated **Medium to Low** with the main receptors, the N14 National Highway, located approximately 1.2km to the west of the proposed PV site. The exposure of the proposed power line is rated **High** due to the crossing over the N14 National Road. Receptor sensitivity to landscape change for all the proposed development areas was rated **Low** due to the mining landscape context where landscape based tourism is limited.

Scenic quality for all proposed development areas was rated **Low**, due to the strong negative influence of the Sishen Mine as well as the two Eskom transmission line corridors located north of the proposed site. No significant scenic resources were identified within the area. As such, the Class I and Class II Visual Objectives that require landscape preservation were not assigned. Due to the zoning of the property as Agriculture, a Class III Visual Objective was assigned to the proposed development site to protect the surround agricultural sense of place.

The cumulative visual assessment found that two authorised PV projects are located within the immediate vicinity, with another proposed adjacent to the proposed Mogara PV site. Legoko Solar is located directly north of the proposed PV development site, with Mogobe Solar located approximately 1km to the south of the site. Although authorised, both of the facilities are yet to be constructed and as such the existing bushveld rural agricultural scenery dominates the local landscape context. Another PV solar facility, Gaetsewe Solar, is also proposed adjacent to the proposed site along the northeast border. Although the Mogara and Gaetsewe EIA status is yet to be defined, the combined footprint of these proposed PV projects, in conjunction with the authorised Legoko Solar facility, will create a large combined visual footprint. The combined views of the

three solar facilities once constructed are likely to create a strong, but localised, visual massing effect within the agriculturally zoned area. Retaining the bushveld vegetation around the proposed PV areas, will retain the agricultural sense of place. Due to the close proximity to the Sishen Mine, the visual resources of the area are not utilised for landscape-based tourism. As such, the cumulative visual impact is rated Low Risk.

As visual resources are **low**, receptor sensitivity to landscape change is **low**, and the zone of visual influence can be **locally contained**, it is recommended that the proposed Mogara PV project be authorised as visual resources will not be significantly impacted. With the contained zone of visual influence of the site, the consolidation of the three PV projects into the triangular portion of property would be visually preferred to fragmentation of larger portions of land to the south. As such, the Mogara Preferred Alternative 1 would be marginally preferred over the southern alternative layout."

8.5 Eco-Tourism

One of the goals of ecotourism is to offer tourists insight into the impact of human beings on the environment, and to foster a greater appreciation of our natural habitats and from an economic perspective, heritage resources may prove to be valuable resources when used in sustainable manner through eco-tourism. This may for example include investment in adaptive reuse of historic buildings so as to conserve and enhance the unique character and historic themes pertinent to this area. Heritage tourism can therefore serve as a driver for economic development, including infrastructure development and poverty alleviation through job creation.

Given the location as well as pattern of existing land use within the proximity of the site and furthermore, the relative low density of heritage resources considered of cultural significance noted as part of this assessment, we do not consider that the proposed development would offer significant heritage-related eco-tourism opportunities associated with the development site.

9 HERITAGE INFORMANTS AND INDICATORS

According to the requirements of Section 38(3) of the NHRA, land use planning and EIA processes must be informed by and incorporate heritage informants and indicators (as done through the mapping and grading of relevant heritage resources in Section 8 of this report). It is the purpose of this Section to define heritage informants and indicators pertaining to the way in which heritage resources must be incorporated into the overall layout and design of the proposed development as read in conjunction with preceding Sections.

9.1 Cultural landscape issues

From a regional and natural landscape perspective, the proposed development site forms part of a highly-transformed landscape altered through mining activities. While potentially significant, there is a lack of broad-scaled recording and mapping of regional cultural landscape patterns and therefore, based on the information available as well as the pattern of existing development within the proximity of the site, it is considered that the proposal would not a cultural landscape of significance.

9.2 Archaeology

All recommendations contained in the AIA, as summarised in Section 8.2 of this HIA report shall be adhered to.

9.3 Palaeontology

It is recommended that no further palaeontological studies or mitigation be undertaken in respect of the proposed development site. All recommendations contained in PIA, as summarised in Section 8.3 of this HIA report shall be adhered to.

10 PUBLIC PARTICIPATION

Due to the fact that there are no known local heritage conservation bodies in the Kathu/Sishen area (registered as such with the relevant provincial heritage resources authority in terms of Section 25 of the National Heritage Resources Act, 1999 (Act 25 of 1999)), the Public Participation Process (PPP) for this HIA will be coordinated with that of the EIA Process facilitated by Cape Environmental Assessment Practitioners (Pty) Ltd (Cape EAPrac) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), so as to solicit possible heritage-related comments with relation to the proposed development.

11 ASSUMPTIONS AND LIMITATIONS

- This report is limited to the assessment of the potential impact of the proposed facility on heritage resources found on/ within the proximity of the development site as defined in this report;
- There is a limitation in terms of understanding the cumulative impacts of the project when taken in conjunction with other similar future development projects in the surrounding area.

12 RECOMMENDATIONS

Having regard to the above assessment, it is recommended that, should the proposal as put forward herein be supported, the following recommendations be inscribed to the Conditions of Approval to be imposed by the Department of Environmental Affairs as outlined in the schedule below:

Schedule: Recommended Heritage-related Conditions	
12.1	<p>Archaeology:</p> <ul style="list-style-type: none"> • Archaeological resources identified during this study do not require further recording/studies, and because they are considered to be of low heritage value and have been adequately recorded through this assessment, it is suggested that they can be disturbed or damaged without a permit from SAHRA; • In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately; • If exposed during development, archaeological resources must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer; • In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer.
12.2	<p>Palaeontology:</p> <ul style="list-style-type: none"> • The ECO and / or the Site Engineer responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he / she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains. If any substantial fossil remains (e.g. vertebrate bones, teeth, horn cores) are found during construction SAHRA should be notified immediately (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented, at the developer's expense. • A chance-find procedure should be implemented so that, in the event of fossils being uncovered, the ECO / Site Engineer will take the appropriate action, which includes: <ul style="list-style-type: none"> – Stopping work in the immediate vicinity and fencing off the area with tape to prevent further access; – Reporting the discovery to the provincial heritage agency and/or SAHRA; – Appointing a palaeontological specialist to inspect, record and (if warranted) sample or collect the fossil remains; – Implementing any further mitigation measures proposed by the palaeontologist; and – Allowing work to resume only once clearance is given in writing by the relevant authorities.
12.3	<p>Visual Impact Assessment:</p> <ul style="list-style-type: none"> • The Mogara Preferred Alternative 1 is preferred marginally over the southern alternative layout.

PERCEPTION Planning
5th November 2018

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