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Department:
Environment & Nature Conservation
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

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Navrae :

Date :
Leshupelo : 24/01/2020
Umhla :
Datum :

Reference : DE Ref.: 14/12/16/3/3/1/2012
Tshupelo : 14/12/16/3/3/1/2013
Isalathiso :
Verwysing :

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Dear Aurecon South Africa

RE: BASIC ASSESSMENT FOR VELD PV NORTH AND SOUTH ENERGY FACILITIES ON FAMR 53 HARAMOEP, KHAI MA LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY

In order to ensure that there is sufficient information for an informed decision to be made, please address the necessary ecological issues as outlined in the letter. Please note that the comments only pertain to the biodiversity related impacts and not to the overall desirability of the proposed development.

The ecological specialist study was conducted for a PV solar development. If another solar technology should be decided upon, depending on the specific technology, the environmental impacts may differ. Any associated infrastructure (e.g. roads, powerlines, pipelines and buildings) impacts must be assessed.

The farm Haramoep (RE of farm 53 & Portion 53/1) consist of natural vegetation and the area has been determined as a Critical Biodiversity Area (CBA 1 and 2) according to the Northern Cape Critical Biodiversity (CBA) Map. Any further loss of biodiversity in this area is also considered to be highly negative impact especially when taking into consideration the cumulative impacts of all surrounding developments. The sites should therefore be surveyed by a botanical specialist between late February and at the end of March to confirm the presence or absence of Species of Conservation Concern (SCC). Should a significant population of any SCC be found on an area it should be avoided. Search and rescue should only be undertaken for protected species found in low numbers and that have a high chance of surviving transplantation. Both for clearance and search and rescue activities require a permit from the DENC.

The study area also falls within important ecological corridors such as the Gariep Centre of Endemism, and the Aggeney's Haramoep Important Bird Area (Figure 1). The farm Haramoep also falls within the Northern Cape Protected Area Expansion Focus Areas (Figure 2).

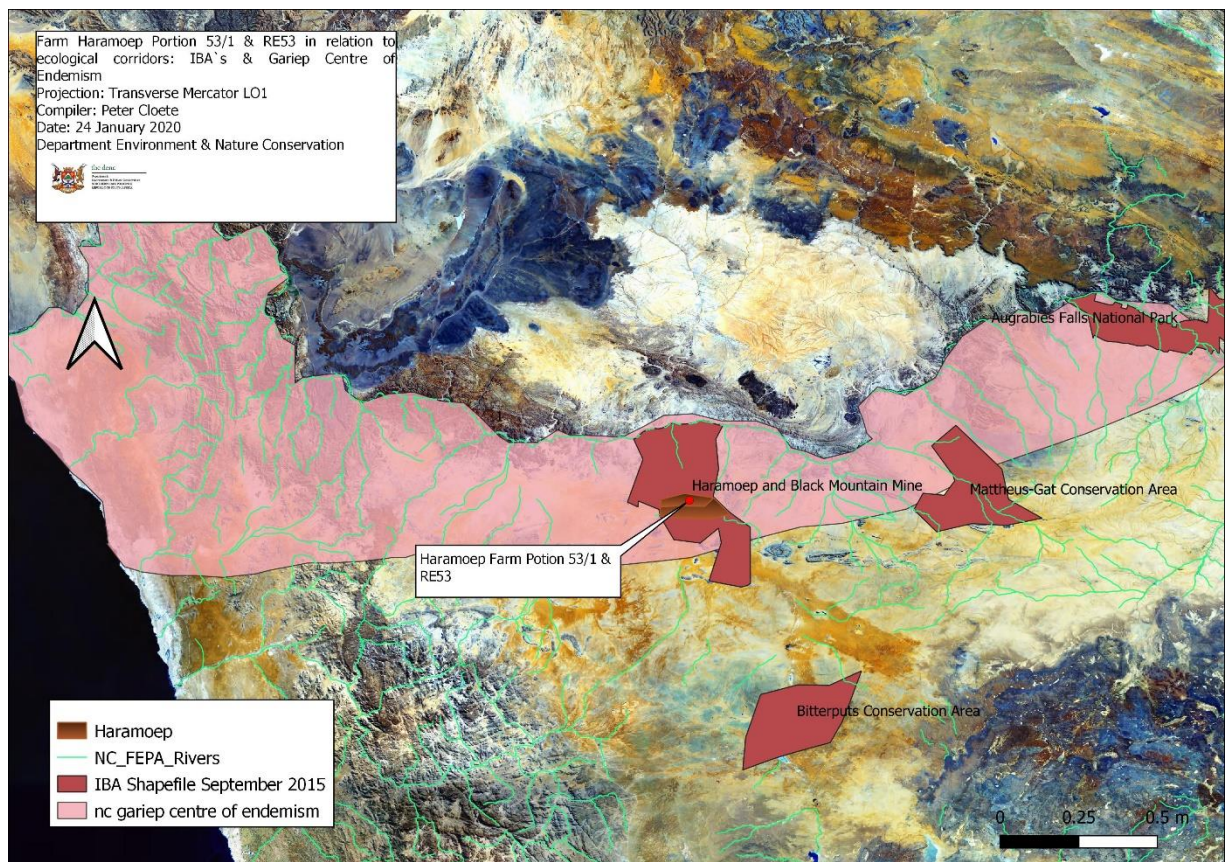


Figure 1: Farm Haramoep in relation to ecological Corridors: Gariep Centre of Endemism and Important Bird Area

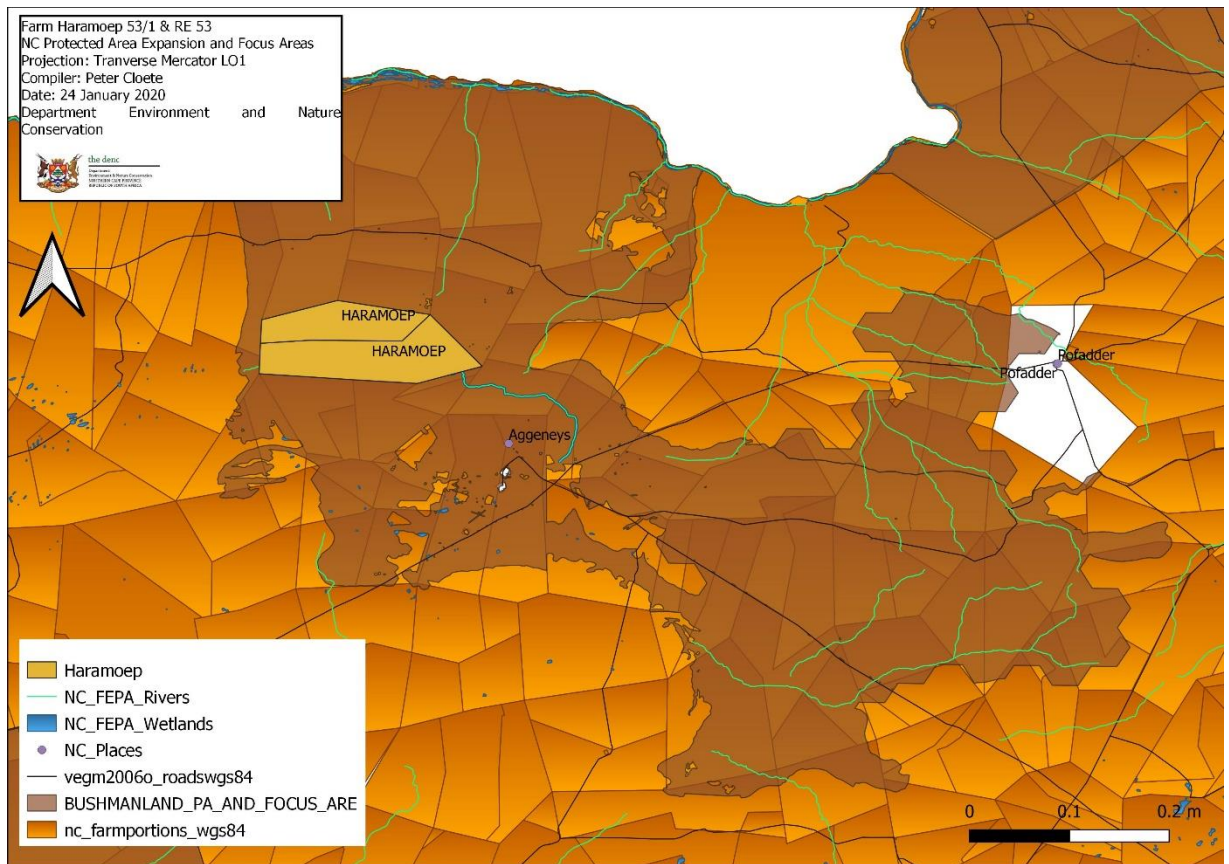


Figure 2: Northern Cape Protected Area Expansion and Focus Areas

The cumulative impacts of the other developments (e.g. mining as well as other solar developments) in the surrounding area were not considered in the study. Not to say that the applicants needs to take responsibility for other developers but to assess the impacts of the proposed development on ecosystem function and specific vegetation units and/or protected species status on a local and regional scale is required.

The waste management measures should be adequately addressed. What will happen to defective panels during the lifespan of the project? Will they be recycled or disposed of, and where will this be done? Up to 90% of the PV panels' weight (namely aluminum, glass and silicon) can be recycled. Heavy metals and Cadmium (Cd) used in PV panels are however toxic substances. All toxic or hazardous waste generated during the lifespan (and at the end of its lifespan) of the project's lifespan must be disposed of on a licensed hazardous waste site.

Water is a vulnerable resource in the Northern Cape. Demand issues such as increased water use, peak use, seasonal variability, poor water use planning, poor conservation and water losses have in the past contributed to water shortages in the Northern Cape (Mukheibir, 2007). It is recommended that the applicant obtains confirmation from the Pella Drift Water Board, whether it is capable to supply the project with the required amount of water during each phase of the project. The proponent is advised to include written confirmation in

the EIA from organizations such as Eskom and the Khai Ma Local Municipality which confirms that basic services such as water and electricity provision can be provided for the proposed development during the construction phase.

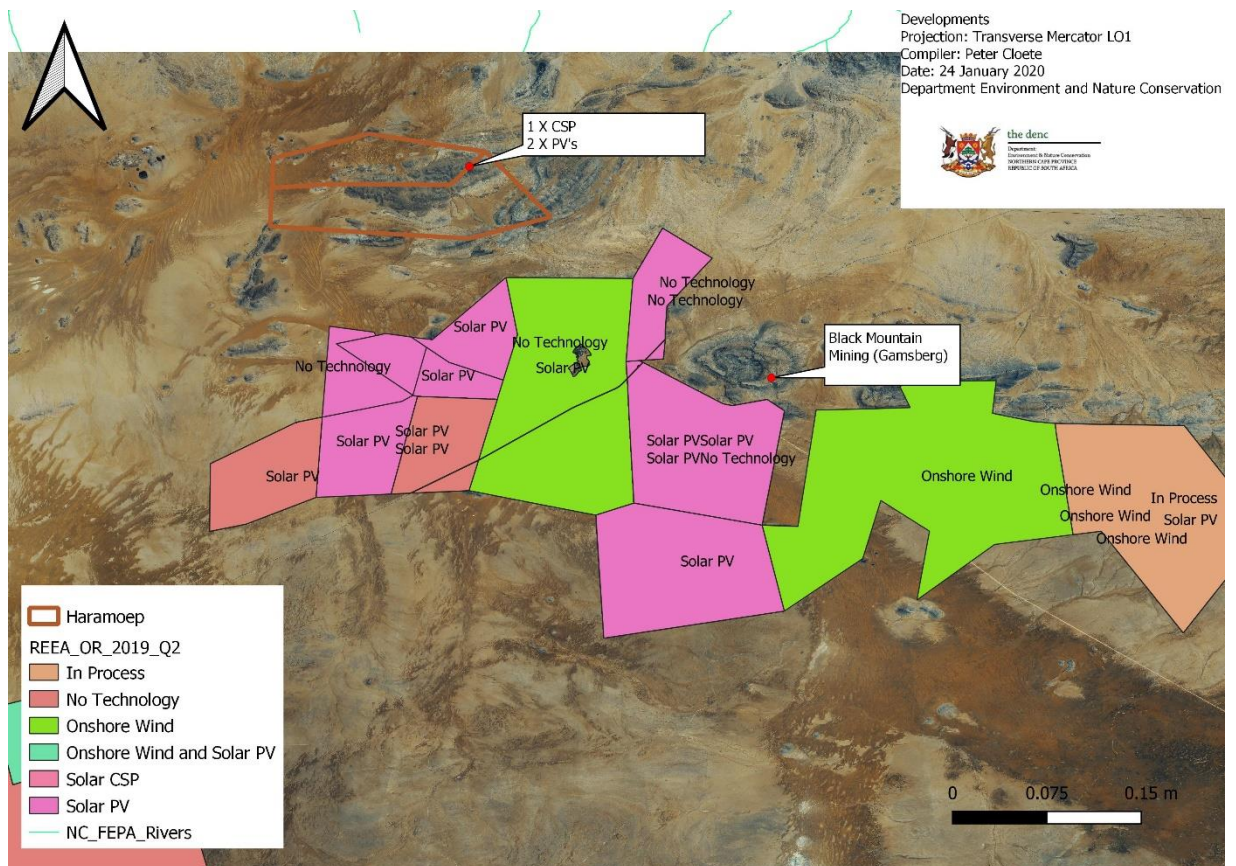


Figure 3: Solar and mine developments within the surrounding area

Solar energy facilities require large land surface to harness sunlight and convert to electricity. Many of the areas being considered in the Northern Cape for solar development are at present, relatively undisturbed (NBA, 2018). The extend of surface disturbance for CSP's is related to the cooling technology used. Because of the scarcity of water in the study area, dry-cooling system, which according to EPRI, 2002., consume 90% - 95% less water than wet-cooling systems. Dry-cooling systems are becoming a more viable option for concentrating solar facilities. Although wet-cooling systems are more economical and efficient, they consume larger amounts of water per kilowatt-hour (Torcellini et al., 2003). Unlike wet-cooling systems, dry-cooling systems use ambient air, instead of water, to cool the exhaust steam from the turbines. However, to achieve a heat-rejection efficiency similar to that in a wet-cooling system, Khalil and colleagues (2006) estimated that a direct dry-cooling system will require a larger footprint and would thus affect more wildlife habitat. As most CSP plants make use of a stream cycle and use of additional water for mirror washing, water use and/or the impacts of consuming water resources is

considered to be potentially significant in arid environments (Tsoutus et al., 2005).

The calculated amount of water use for cleaning of the panels should be elaborated upon, specifying e.g. the estimated amount of water used per panel, expected number of times panels will be cleaned per year etc. Will the water used for cleaning solar panels be treated, re-used or recycled? Clarity is needed on the management of waste water. This information will inform the water use license application.

The freshwater specialist study recommends that the stormwater management plan has taken into consideration the freshwater constraints and is supported from the aquatic ecosystem perspective.

Clarity is needed on the chemicals used for dust suppression. The proponent is thus advised to put measures in place to control chemically treated water for dust suppression during the construction phase.

The dominant land use on the property is livestock farming. Customarily livestock requires large areas for grazing. Literature has revealed that solar energy facilities require substantial site preparation (including removal of vegetation) that alters topography and thus, drainage patterns to divert the surface flow associated with the rainfall away from plant communities. Channelling runoff away from plant communities can have effects on habitat quality (Scheisinger, et al., 2000). The proponent should be aware of the destruction and modification of habitats as well as impacts on surrounding livestock grazing, hence appropriate mitigation measures should be implemented.

The method of vegetation control below PV panels was not clearly described in the EIA report. A clear description of flora removal should be provided (e.g. removal by hand or chemically controlled). Only legally registered herbicides may be used for appropriate plant groups.

Above-ground electrical cables and lighting deterrent devices will have an impact on the local as well as migratory avifauna. It is recommended that below-ground electrical cabling is used if a comparative analysis of the advantages and disadvantages of aerial vs underground cabling reflect that underground cabling will have a lower environmental impact.

The management actions for Noise and Heritage Resources have to be strictly implemented. Furthermore, the management actions for the construction and waste generation also have to be implemented very strictly, but it has to include that waste containers must have lids to prevent the scattering of waste due to wind distribution. The proponent has to be informed that he needs to check the

conditions of his Waste Site License again to ensure that they comply with the addition of more general waste taken into account.

Avifauna impacts

The primary concern with the proposed development relates to the cumulative impacts on avifauna, particular the Kori Bustard (*Ardeotis kori*). The farm Haramoep is centrally located within a BirdLife Important Bird Area (Haramoep-Black Mountain Mine Nature Reserve) (Figure 7). **The farm Haramoep (Remainder of Farm no. 53) development of large-scale solar energy facilities in Important Bird Areas (IBA`s) is of a particular concern. Biodiversity offset should be considered should the development occur within the proposed alternative sites. Future biodiversity offsets discussions with DENC will have to take place before an Environmental Authorisation may be issued.** BirdLife South Africa has drafted Guidelines to Minimize the Impact on Birds of Solar Facilities and Associated Infrastructure in South Africa. These guidelines should be followed in conjunctions with the EMPR for the proposed development.

Approximately six threatened of the 64 bird species listed is of particular concern. Of these, 20 species are classified as priority solar species, 13 as powerline priority species, and 20 as IBA trigger species. These species included Red Lark (*Callendulaude burra*); Sclaters`s Lark (*Spizocorys sclateri*); Ludwig`s Bustard (*Neotis ludwigii*); Martial Eagle (*Polemaetus bellicosus*) and Black Harrier (*Circus maurus*). The distribution of Red Larks was associated with the red sand dunes of the Bushmanland Sandy Grassland vegetation type (Mucina and Rutherford, 2006), specifically the taller dunes. The washes and drainage lines in the study area are important features for the Important Bird Area (IBA) and even ephemeral pans should be given consideration in the ecological impact assessment.

Botanical Assessments

While the botanical assessment gives a good general description of the area, more site-specific information should be provided such as location of protected plant species (e.g. *Pachypodium namaquanum*, *Aloidendron dichotomum*,

Boschia albitrunca, and the smaller succulents protected under the NCNCA), sizes of important habitats, conditions and context of the potential habitat impacted, conditions and context of proposed areas to be conserved for ecological connectivity and ecosystem services in the landscape. Appropriate buffers must be determined by a suitably qualified specialist to avoid impacting on these habitats and particular attention should be paid to avoiding the loss of intact habitat, maximizing connectivity at a landscape scale, maximizing habitat heterogeneity and reducing fragmentation at a local and regional scale.

CONCLUDING RECOMMENDATIONS AND COMMENTS

1. Overall, the development cannot be supported due to the location within CBA, PAES and PSDF environmental integration principles. Lastly, it falls within a property already committed for declaration under the Protected Areas Act (details of the latter are confidential and should further information be needed the process under the Access to Information Act procedures will have to be followed).
2. The impact of these proposed developments on a landscape and ecological function scale on species and their habitats are insufficiently addressed. Further contextualization is needed of other environmental impacts in the area within the local, district and landscape contexts, taking into consideration the cumulative impacts of all other developments within this landscape (including e.g. mining, prospecting, Protected Area Expansions Plans, CBA map, Centers of Endemism, threatened species ranges and conservation status, etc.). Then, these need to be interpreted in term of their impact on not only species alone, but also ecosystem function and connectivity, and lastly ecosystem services.
3. The impacts of these developments on avifauna has insufficiently being addressed.
4. It is **strongly recommended that the CSP is not pursued** and that only the PV technology may be considered. However, this can only be considered if the location is moved to less sensitive sections of the property, i.e. the western to south wester corner. This is based on the extent of environmental

- impacts of the different technologies and its potential 'compatibility' with a current process underway and to secure connectivity on a landscape level.
5. The PV development can only be considered if it is towards the western tip of the farm on the plains, as close as possible to the western border fence of the property.
 6. It is suggested that a Biodiversity Offset Assessment would be appropriate and necessary for *both development sites* before environmental authorisation is considered. Although the specialist reports do not propose biodiversity offset, nothing precludes the option of exploring an *off-site* offset and we strongly encourage that this be considered and investigated.
 7. Proposed conditions and monitoring that must be included if the PV development is considered:
 - a. Amphibian and reptile movement on the facility, with specific focus on sexual ratios present (to determine the impact of the PV heat island effect on cold blooded species);
 - b. Bird injuries and mortalities to be monitored.
 - c. Insect monitoring to determine if the plant attracts more insects and if there is a change in insect composition and movement (e.g. attracting night activities and insect seasonality shifts).
 - d. PV heat island monitoring to determine the extent of the heat island generated and associated climate / wind pattern impacts (e.g. swirl wind incidence and strength increase or decrease).

PV heat islands research is inconclusive, but due to public pressure being received, blaming solar developments for such climatic changes, it must be monitored. It has been found in the Sonoran Desert that these developments do create heat islands and they regard is as a concern for arid environments.
 - e. No footprint impacts may occur on sensitive habitats and/or threatened species (especially also not range restricted species).
 - f. No footprint impacts within the washes / drainage lines should occur.
 - g. The development must be fenced off and localized to limit its impacts on the remainder part of the property optimally.

We hope you find these recommendations in order

Your sincerely



E Swart
Scientific Manager Gr B
Research and Development Support



Peter Cloete <peter.denc87@gmail.com>

FW: Proposed Veld PV North Energy Facility and proposed Veld PV South Energy Facility on the remainder of farm (53) Haramoep / Voorgestelde Veld PV Noord Energie Fasiliteit en Veld PV Suid Fasiliteit op die restant van plaas (53) Haramoep: Draft BARs

2 messages

Peter Cloete <peter.denc87@gmail.com>
To: Corlie Steyn <Corlie.Steyn@aurecongroup.com>

Thu, Jan 23, 2020 at 11:25 AM

Dear Corlie

Herewith I would like to request extension of the commenting period for the above mentioned applications. The Department are in the process of finalising the comments and it will be forward for your attention by Friday, 31 January 2020.

Hope it is in order

Best regards
Mr. Peter Cloete (Pr. Sci. Nat.)
Production Scientist, Grade A, District Ecologist
Northern Cape Department Environment and Nature Conservation
C/O Voortrekker and Magasyn Street
Springbok
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Tel. 027 718 8800

Corlie Steyn <Corlie.Steyn@aurecongroup.com>
To: Peter Cloete <peter.denc87@gmail.com>

Thu, Jan 23, 2020 at 11:30 AM

Dear Peter,

Thank you for your email.

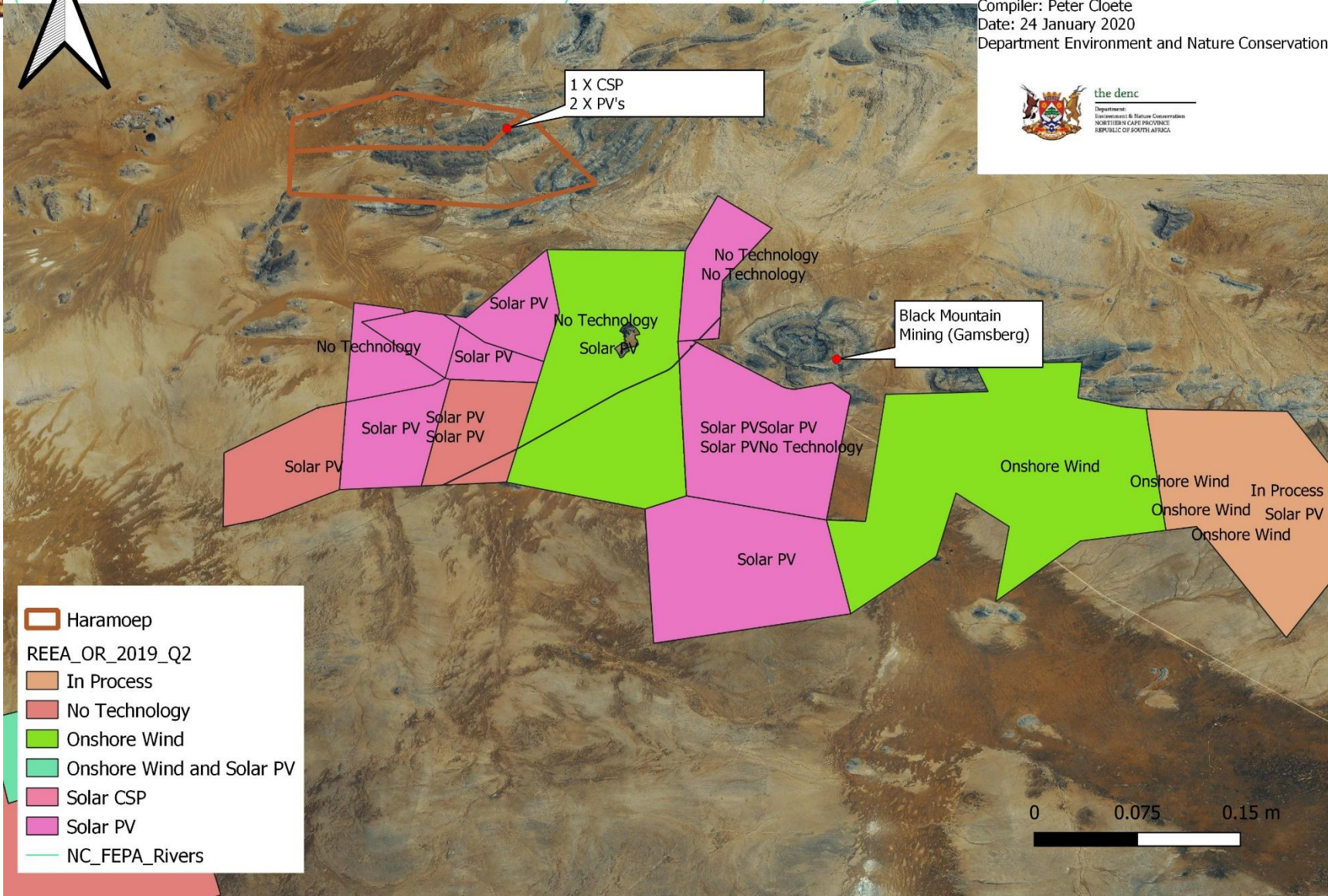
We take note of your request and will await your comment by Friday 31 January 2020.

Kind regards

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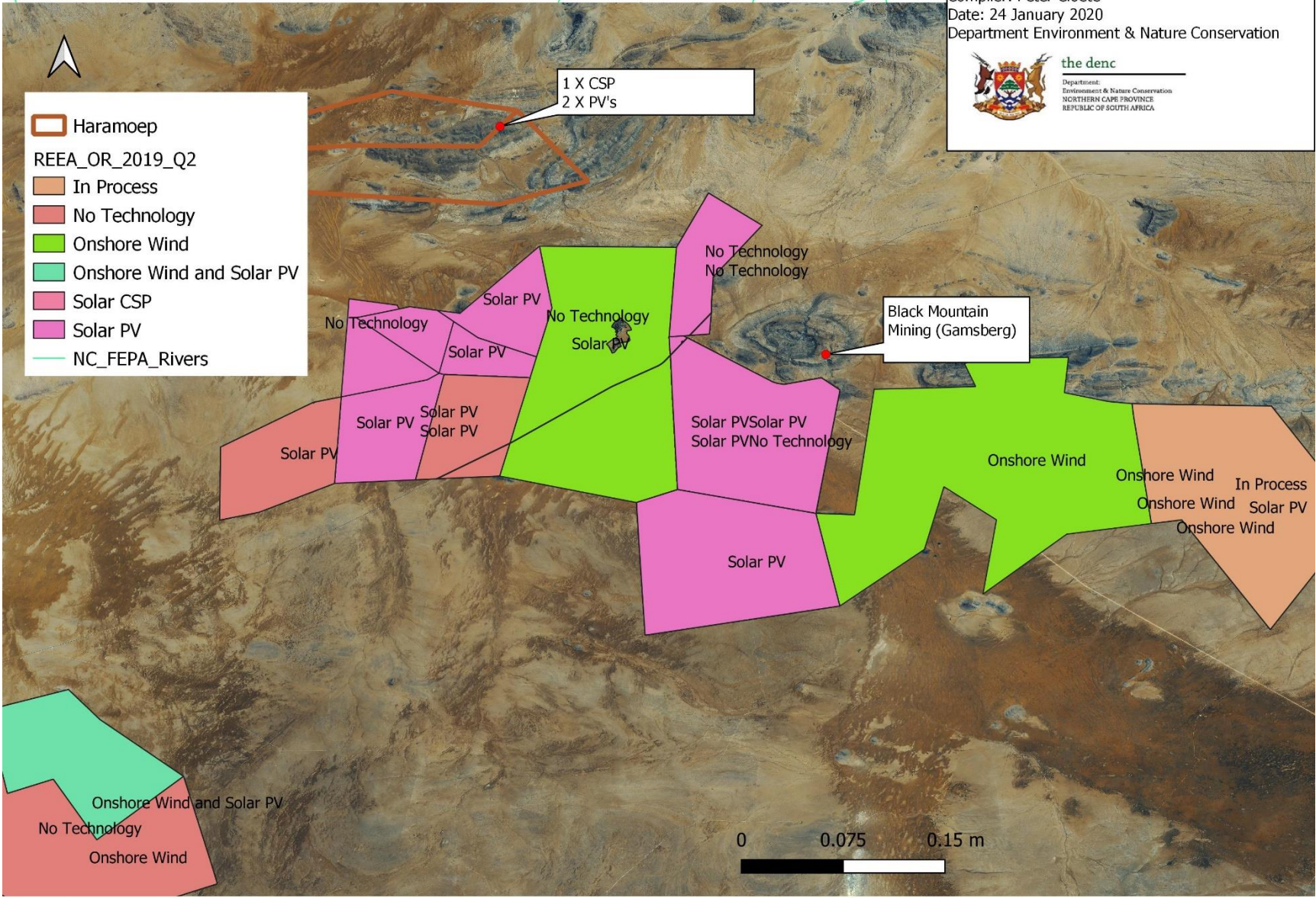
- Haramoep
- REEA_OR_2019_Q2
- In Process
- No Technology
- Onshore Wind
- Onshore Wind and Solar PV
- Solar CSP
- Solar PV
- NC_FEPA_Rivers



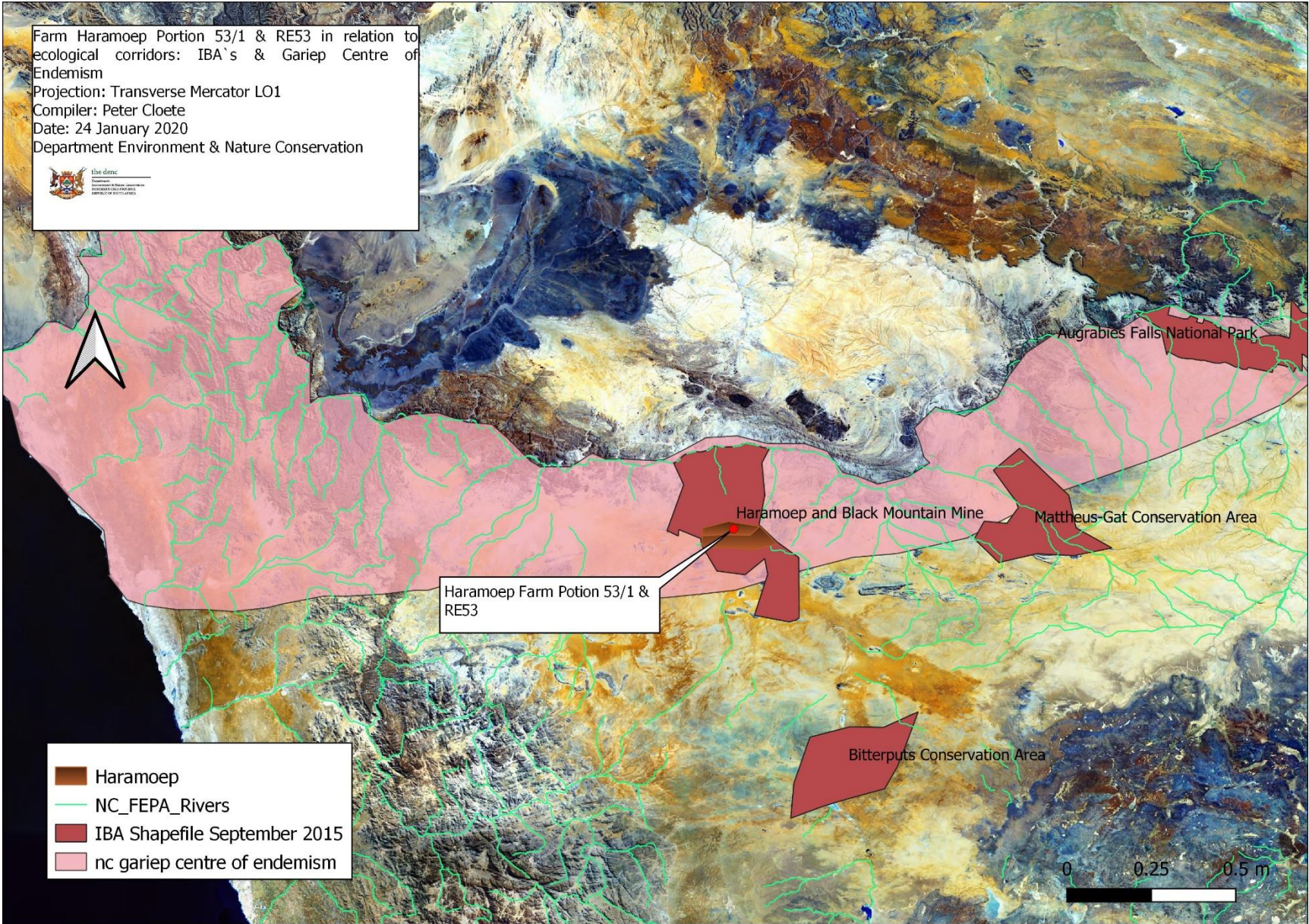
Compiler: Peter Cloete
Date: 24 January 2020
Department Environment & Nature Conservation



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Department:
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NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA



Farm Haramoep Portion 53/1 & RE53 in relation to ecological corridors: IBA's & Gariep Centre of Endemism
Projection: Transverse Mercator LO1
Compiler: Peter Cloete
Date: 24 January 2020
Department Environment & Nature Conservation



- Haramoep
- NC_FEPA_Rivers
- IBA Shapefile September 2015
- nc gariep centre of endemism