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Att: Rendani Rasivhetshela
SiVEST Environmental Division

Dear Ms Rasivhetshela

RE: PART 1 ENVIRONMENTAL AUTHORIZATION AMENDMENT APPLICATION FOR THE CONSTRUCTION OF 75MW PV PLANT ON PORTION 1 OF THE FARM DROOGFONTEIN NO. 62 NEAR KIMBERLEY WITHIN SOL PLAATJIE LOCAL MUNICIPALITY IN THE NORTHERN CAPE PROVINCE

Project description

South Africa Mainstream Renewable Power Droogfontein PV 3 (Pty) Ltd (hereafter referred to as "Mainstream") was issued with an Environmental Authorisation (EA) for the proposed 75MW Droogfontein Photovoltaic (PV) Solar Energy Facility (SEF), located in Kimberly within the Sol Plaatjie Local Municipality, Frances Baard District Municipality in the Northern Cape Province of South Africa on September 2012 (DFFE Reference No.: 12/12/20/2024/1/1).

Subsequent to the issuing of the original EA in September 2012, the following amendments have been undertaken and granted for the authorised SEF:

- The EA was amended on 19 September 2013 to change the details of the Environmental Authorisation holder (DFFE Reference No.: 12/12/20/2024/1/1/AM1).
- The EA was amended on 19 of June 2015 to extend the validity period of the EA and to change the contact details of the EA holder (DFFE Reference No.: 12/12/20/2024/1/1/AM2).
- The EA was amended on 11 August 2017 in order to extend the validity of the EA (DFFE Reference No.: 12/12/20/2024/1/1/AM3).
- The EA was amended on 02 September 2020 in order to extend the validity of the EA (DFFE Reference No.: 12/12/20/2024/1/1/AM4).

The Droogfontein Photovoltaic (PV) Solar Energy Facility is to be constructed within the project site which comprises the following farm portion:

- Portion 1 of the farm Droogfontein No. 62

The following infrastructure have been authorised by the DFFE:

- Photovoltaic (PV) panels array with a maximum 320 000 panels
- Concrete or screw pile foundations used to support the panel arrays
- The panel arrays (between 5m and 10m high) footprint of approximately 15m x 4m in area
- A single storey building with warehouse / workshop space & access (eg. 8m high, 20m long, 20m wide)
- The distribution substation of approximately 90m x 120m in size and inverters between 75 and 93
- An access road with a gravel surface from the public road onto the site

- A 5m high permanent solar resource measuring station which will measure 100m² to measure incoming solar radiation levels on site.
- A lay down area of maximum of 10000m² adjacent to the site or access route and a contractors site offices which will require a maximum of 5000m²

Proposed amendments

The proposed amendments are as follows:

- **Extension of the Commencement Period**

The applicant applied for is the extension of the commencement period of the Environmental Authorisation issued on 07 September 2012. The application falls within the ambit of amendments to be applied for in terms of Part 1 of Chapter 5 of the Environmental Impact Assessment Regulations, 2014, as amended. The applicable legislation is Regulation 30 of the EIA Regulations, 2014 as amended.

Information required to be provided

The following information in terms of Regulation 30(1)(a) of the EIA Regulations, 2014 as amended is required to be provided to the Department of Forestry, Fisheries and the Environment for the application for amendment to be processed:

- A detailed motivation as to why the Department should extend the commencement period of the authorised development, including the advantages and disadvantages associated with the approval or refusal to the request for extension;
- The status (baseline) of the environment (social and biophysical) that was assessed during the initial assessment (by the relative specialist, if applicable);
- The current status of the assessed environment (social and biophysical) (by the relative specialist, if applicable);
- A review of all specialist studies undertaken, and a detailed assessment, including a site verification report providing an indication of the status of the receiving environment (by the relative specialist, if applicable);
- The terms of reference for the specialist reports and declaration of interest of each specialist must be provided;
- The report mentioned above, must indicate if the impact rating as provided in the initial assessment remains valid; if the mitigation measures provided in the initial assessment are still applicable; or if there are any new mitigation measures which need to be included into the EA, should the request to extend the commencement period be granted by the Department;
- An indication if there are any new assessments/guidelines which are now relevant to the authorised development which were not undertaken as part of the initial assessment, must be taken into consideration and addressed in the report;
- A description and an assessment of any changes to the environment (social and biophysical) that has occurred since the initial EA was issued;
- A description and an assessment of the surrounding environment, in relation to new developments or changes in land use which might impact on the authorised project, the assessment must consider the following:
 - similar developments within a 30km radius;
 - Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e., hectares of cumulatively transformed land.
 - Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
 - The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
 - A cumulative impact environmental statement on whether the proposed development must proceed.

The information requirements listed above serve as the Terms of Reference for this ecological review.

Assessment guidelines applicable since original assessment

The original ecological assessment was undertaken in 2012 (final report dated 23 May 2012) according to the Environmental Impact Assessment Regulations, 2006. At that time specialist studies were required to comply with Appendix 6 of the EIA Regulations. These have now been superseded by Protocols that have been published in terms of sections 24(5)(a) and 24(5)(h) of NEMA. For Biodiversity-related themes, protocols have been published for the specialist assessment and minimum report content requirements for environmental impacts on the following:

1. terrestrial biodiversity
2. aquatic biodiversity
3. terrestrial animal species
4. terrestrial plant species

Regulation 16(1)(b)(v) of the EIA Regulations provides that an applicant for an EA is required to submit a report generated by the screening tool as part of its application (available at <https://screening.environment.gov.za>). The screening tool and the protocols have the force of regulations made in terms of NEMA and both instruments are therefore legally binding and must be applied. When the report generated by the screening tool identifies a theme, the relevant protocol for that theme, including the procedure that must be followed for site sensitivity verification and the information requirements for a relevant specialist report, must be applied.

Screening Tool report

A sensitivity screening report from the DFFE Online Screening Tool was requested in the application category: Utilities Infrastructure|Electricity|Generation|Renewable|Solar|PV.

The DFFE Screening Tool report for the area, dated 15/10/2022, indicates the following sensitivities:

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Animal Theme		X		
Aquatic Biodiversity Theme				X
Plant Theme			X	
Terrestrial Biodiversity Theme	X			X

Sensitivity features for the Animal Theme are indicated as follows:

Sensitivity	Feature(s)
High	Aves-Neotis ludwigii
Medium	Aves-Sagittarius serpentarius
Medium	Aves-Gyps africanus

Note that all the animal theme sensitivities are due to bird species, which are being assessed by a separate specialist and are therefore not discussed further here.

Sensitivity features for the Plant Theme are indicated as follows:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 257

Status of the biophysical environment originally assessed

The original ecological assessment by Liesl Koch is dated 23 May 2012. The report states that fieldwork for the assessment was undertaken in August 2010 and March 2011.

The site is described as *"fairly uniform in habitat with stands of camel thorn trees surrounded by rolling grasslands. A large level of transformation of the natural regime has taken place due to grazing activities"*. It is assumed that the author meant that overgrazing has affected the natural vegetation since the site was not

transformed (altered from natural vegetation to some other land cover class) at that date. The camel thorn was described as common on site. A checklist of plant species that occur on site was provided, which included a variety of grasses, forbs and trees, all of which are indigenous and indicative of natural vegetation. A view of the neighbouring site is shown in Figure 1, which matches this description.

For animal species, lists are provided of species that could possibly occur in the general area, of which only a small number were found on site. The Giant Bullfrog is confirmed to occur in the area, but not on the site itself.

Google Earth provides historical aerial imagery that can be used to evaluate changes in a landscape over time. For the current site, detailed imagery is available as far back as 2006. Examples for the site from various dates going back in time are shown in Figure 2. At the time that the original ecological assessment was undertaken, imagery from Google Earth shows that the site was in a natural state, with one localised bare area in the southern half of the site that is probably a waterpoint for domestic livestock. There were also some vehicle tracks across the site. The vegetation appears from the imagery to be grassland with some concentrations of trees in places. From the report (Koch 2012), these are camel thorn trees. This pattern extends in all directions and for some distance away from the site. The relative uniformity of the area is confirmed from these images.

A walk-through survey of the neighbouring site was conducted by myself in 2017, and from this I confirm that the neighbouring site was very similar to the study area at that date, and that the description provided in the original ecological report (Koch 2012) is accurate in terms of the vegetation observed on site, namely a grassland with localised concentrations of camel thorn trees, along with a low density of other woody trees and shrubs. The neighbouring site is now the location of a constructed solar PV energy facility (visible in the 2020 and 2022 Google Earth images in Figure 2).

The conclusion by Koch (2012) was that the habitat on site had low sensitivity, based on the absence of any unique habitats, as well as the absence of any plant and/or animal species of concern. The only issue of concern described for the site is the high density of camel thorn trees.



Figure 1: Typical vegetation of the study area, as observed on the neighbouring property.

Current status of the biophysical environment

Imagery from Google Earth shows that there have been no changes on site over time. The vegetation pattern as originally described (Koch 2012) appears to have remained stable aside from the construction of the solar energy facility on the adjacent site in 2019. The general status and species composition of the site will be confirmed during an upcoming field assessment, but it is not expected that any fundamental changes will be observed. The preliminary conclusion is therefore that the baseline conditions on site have not changed.

Changes to the status of the biophysical environment

As described in the previous paragraph, available information indicates that the biophysical environment on site is unchanged between the original assessment and the current date, except for the construction of the solar energy facility on the adjacent site.

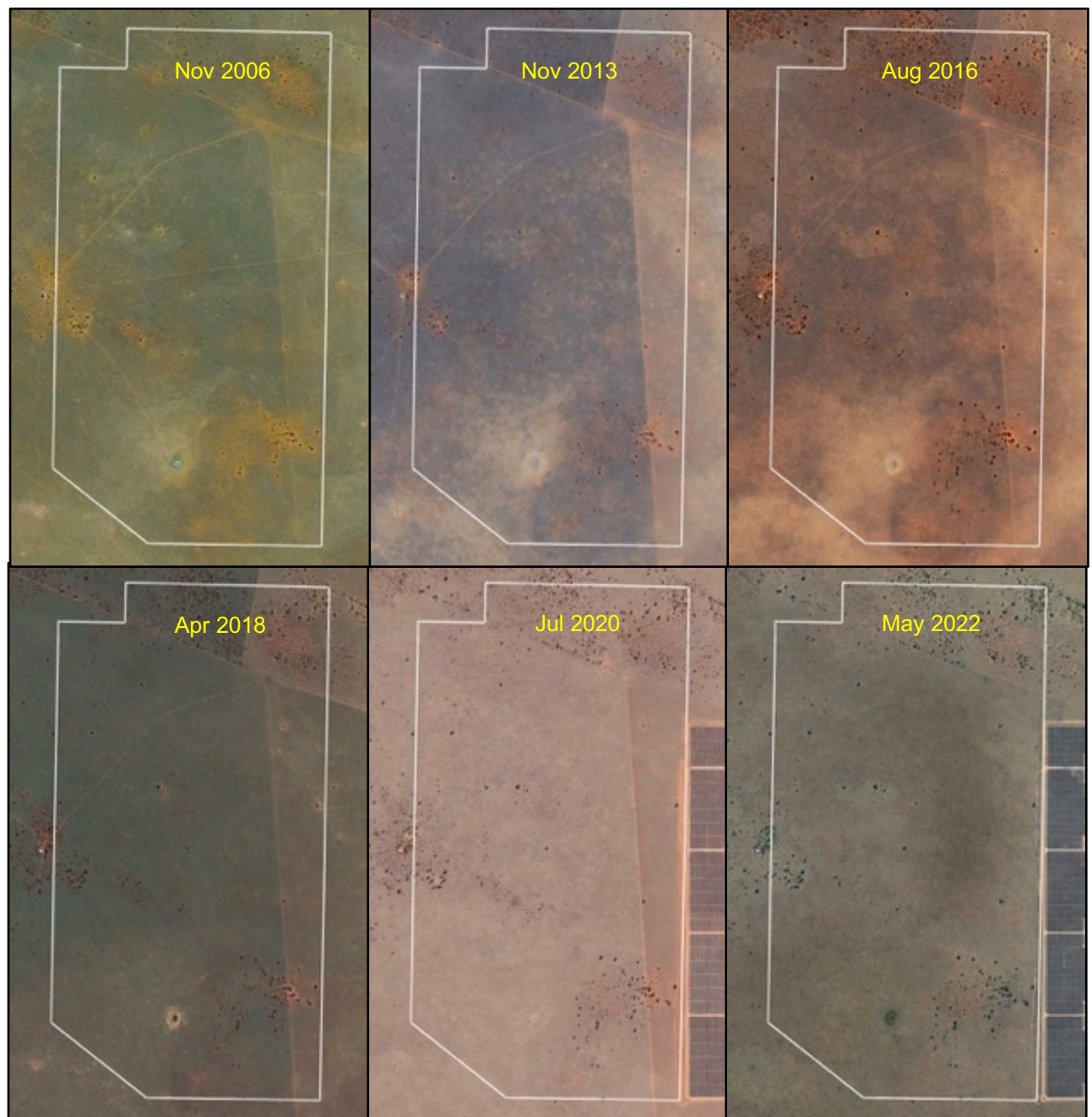


Figure 2: Google Earth imagery of the site for different dates.

Review of initial assessment and mitigation measures

The original assessment (Koch 2012) identified three impacts for the proposed project, as follows:

- Loss of habitat for Red List / general species (Low significance, low after mitigation)
- Edge effect (on biodiversity) (Medium significance, low after mitigation)
- Bird collisions (Low significance, low after mitigation).

Several mitigation measures were proposed in the original assessment (Koch 2012), as follows (with comments in italics and square brackets):

- An on-site ecologist should be present when site clearing takes place to ensure that any uncovered species are protected from destruction. [*Any measures related to plant species should be contained in the appropriate Management Plan, e.g., Plant Rescue Management Plan*].
- Demarcation of sensitive areas prior to construction activities starting. [*Note that no sensitive areas were identified within the project area in the original assessment - the entire site was mapped as having low sensitivity. The first sentence of the "Conclusions" section of the report states: "Sensitive areas have been identified outside the proposed PV site. These relate to pans, intact vegetation and rivers. These features will not be affected by the development"*].
- Care taken during construction given the presence of Giant Bullfrogs in the wider area. Should frogs be discovered, a herpetologist should be contacted to suitably relocate the specimen. [*The Giant Bullfrog is protected under NEMBA. If individuals are expected to be encountered on site, a specific Management Plan should be compiled to account for these, and a permit obtained for any individuals expected to be lost to the development*].
- Use of appropriate construction methods in the sensitive area. [*No sensitive areas were identified within the project area in the original assessment - the entire site was mapped as having low sensitivity*].
- A copy of the Environmental Impact Report and associated Environmental Management Programme as well as the specialist study must be present at the construction site for easy reference to specialist recommendations in sensitive areas.
- It is recommended that the construction crew be educated about the sensitivities involved in these areas as well as the potential species they could encounter. A poster of sensitive species (compiled by a qualified specialist) should be kept on the construction site for easy reference. [*No sensitive areas were identified within the project area in the original assessment - the entire site was mapped as having low sensitivity. A flora permit is required for any protected plant species expected to be lost to the development - the identity of such species and numbers affected must be compiled during a Pre-Construction Walkthrough Survey*].
- Rehabilitation to be undertaken as soon as possible after construction in sensitive area has been completed. [*No sensitive areas were identified within the project area in the original assessment - the entire site was mapped as having low sensitivity*].
- Only vegetation within the study area must be removed. [*Assume specialist meant "within the footprint of the construction and infrastructure of the proposed project"*].
- Vegetation removal must be phased in order to reduce impact of construction. [*The phasing of vegetation removal within the project footprint area will make no difference to the final outcome*].
- Construction site office and laydown areas must be clearly demarcated, and no encroachment must occur beyond demarcated areas. [*In general, project activities should be within the approved footprint area only*].
- All natural areas impacted during construction must be rehabilitated with locally indigenous plant species. [*Assume this applies to temporary construction impacts. This should be covered in the Rehabilitation/Revegetation Management Plan*].
- A buffer zone should be established in areas where construction will not take place to ensure that construction activities do not extend into these areas. [*A buffer is usually applied around sensitive features, for which none were identified within the project footprint area, or in any immediately adjacent areas. The proposed mitigation measure is therefore irrelevant*].
- Construction areas must be well demarcated, and these areas strictly adhered to.
- The use of pesticides and herbicides in the study area must be discouraged as these impacts on important pollinator species of indigenous vegetation.
- Soils must be kept free of petrochemical solutions that may be kept on site during construction. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora. [*It is assumed that there is a legal obligation to adhere to any measures related to dangerous / hazardous chemicals and*

- *that these measures are contained in the relevant Management Plan*].
- Six monthly checks of the area should take place for the emergence of invader species. [*Management of alien plant species should be detailed in an Alien Invasive Management Plan, which should also include monitoring requirements. Management of alien plant species is a legal requirement, as per NEMBA and CARA. The impact of alien plant species should have been assessed as a potential impact.*].
- Mitigation measures mentioned for the construction phase above must be implemented for any maintenance of the development that may be undertaken during the operation phase.
- Correct rehabilitation with locally indigenous species.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion and the edge effect are avoided. [*Edge effects are unavoidable where infrastructure is located in previously natural spaces.*]
- Constant maintenance of the area to ensure re-colonisation of floral species. [*This should be covered in the Rehabilitation/Revegetation Management Plan*].
- Regular removal of alien species which may jeopardise the proliferation of indigenous species. [*Management of alien plant species should be detailed in an Alien Invasive Management Plan*].
- More recent information should be consulted to ensure that no Red Data species have colonised the areas which were previously rehabilitated. [*This mitigation measure makes no sense and must be omitted. With few exceptions, Red Data species only occur in natural vegetation*].
- Mainstream plan to initiate a monitoring programme in conjunction with the Endangered Wildlife Trust to quantify the long-term effects of such plants in South Africa. This Monitoring programme will be initiated for the PV plant proposed on the site to the immediate south of the proposed CPV/ PV site. It is anticipated that this monitoring programme will suffice. [*This mitigation measure makes no sense - it is assumed that it related to the previous measure, but there is no explanation for what it would suffice. It appears to relate to Red List plant species, of which none were found on site. The measure is therefore irrelevant.*].

The second conclusion of the report by Koch (2012, page 57) is that "*the proposed alternatives will not result in losses of Camel Thorn trees as these areas are largely devoid of the species. Some small specimens might emerge prior to construction and the relevant permits for removal must be undertaken if required.*" I disagree with this statement, based on a walk-through survey on the adjacent property in 2017 prior to the construction of the solar PV facility at that location. Large numbers of juvenile, medium-sized and large camel thorn trees occurred on this neighbouring property (over 300 individuals in total), and it is likely that the same pattern exists on the current site. The presence and number of camel thorn trees is information that is required for a permit application for protected trees under the National Forests Act.

Following current legislation, an assessment of the site would have required compliance with gazetted Species Protocols. A Screening Tool report for the site shows that Terrestrial Biodiversity and Aquatic Biodiversity Themes have low sensitivity. This would be confirmed by an on-site field verification, followed by a Site Sensitivity Verification. Information from the original assessment (Koch 2012) indicates that the low sensitivity for these two themes is confirmed. For the Plant Theme (Medium sensitivity) and Animal Theme (High sensitivity), the sensitivity would need to be confirmed on-site and either a Compliance Statement provided by the specialist, or an Assessment. No plant species of concern were detected by Koch (2012, see checklist on page 15 - 16), therefore a Compliance Statement would have sufficed. For the Animal Theme, two of the three bird species flagged for the site were recorded by Koch (2012), as well as the Giant Bullfrog. An Animal Species Assessment would therefore have been required. A full Avian Specialist Assessment is being undertaken for this project, which covers this component, but the effect on Giant Bullfrog is an impact of potential concern for this project that should be properly assessed.

New proposed mitigation measures

The following mitigation measures are proposed to replace those in the original assessment:

1. Ensure that impacts during construction and operation are restricted to the project footprint area and do not spread into surrounding natural areas.
2. Compile and implement the following management plans, each of which should include appropriate monitoring guidelines:
 - a. Rehabilitation Management Plan.
 - b. Alien Invasive Management Plan.
 - c. Open Space Management Plan.
 - d. Plant Rescue/Protection Management Plan.

- e. Giant Bullfrog Management Plan (in consultation with EWT).
3. Obtain all required protected fauna, protected flora and protected tree permits from the relevant authorities. This will require a detailed pre-construction walk-through survey of the infrastructure footprint area. This is primarily a legal compliance measure and is not necessarily to mitigate any specific impacts.

Assessment of cumulative impacts on the biophysical environment

The original ecological assessment (Koch 2012) states that "*due to the negligible amount of infrastructure present within the study area, cumulative impacts are anticipated to be low during construction*" and "*Decommissioning of the plant will result in the elimination of the cumulative impacts mentioned above*". The second statement is incorrect; loss of natural habitat is irreversible. This is because secondary vegetation that develops in areas where the soil profile is disturbed do not recover the original species composition. The reasons are ecologically complex and, with rare exceptions, means that any loss of natural habitat is permanent. The first statement is explored below.

The spatial extent of cumulative impacts can be calculated by determining the loss of habitat within the footprint area of the project relative to the extent of similar habitat within an assessed area. The 2018 National Land Cover dataset has land cover data in 73 natural, degraded and transformed categories. Statistics can be extracted using a GIS algorithm that provides proportions of different land cover classes within 30 km of the current site. Only those classes that occur within the footprint area are of interest to the analysis since it is these classes that are affected by the proposed project. Within the entire project site are the following land cover classes:

Land cover	Amount on site	Amount within 30 km of site
Open woodland	0 ha (0.0% of site)	4 665 ha (1.7%)
Low shrubland	311 ha (93.7% of site)	70 884 ha (25.1%)
Natural grassland	28 ha (6.3% of site)	80 808 ha (28.6%)
Transformed	0 ha (0.0 of site%)	30 480 ha (10.8%)

The total number of hectares within 30 km of a point is 282743 ha.

Other renewable energy projects within 30 km of the current site are as follows:

Ref no.	Project	Technology
12/12/20/2581	75mw Photovoltaic Solar Facility (Inyanga Energy Project 5) On The Remainder Of Farm No. 241	Solar PV 75 MW
14/12/16/3/3/2/266	Proposed Photovoltaic Solar energy Power Plant phase 2	Solar PV
4/12/16/3/3/2/257/2	Solar energy facility on morgenzon farm- phase 2(75mw)	Solar PV 75 MW
14/12/16/3/3/1/505	19.5mw Photovoltaic Solar Facility And Its Associated Infrastructure On A Portion Of Portion 24 Of The Farm Zoutpansfontein 34	Solar PV 20 MW
14/12/16/3/3/2/307/AM1	75mw Photovoltaic Solar Facility On A Portion Of Portion 1 Of The Farm Hanskopfontein 40	Solar PV 75 MW
2/12/20/2024	Mainstream Construction of a CSP and CPV/ PV Plant	Solar 200 MW
12/12/20/2024/2	Mainstream Droogfontein	Solar PV 48 MW
14/12/16/3/3/1/508/1	132kv Power Line Associated With The 75mw Concentrating Photovoltaic and Photovoltaic Plant On The Farm Droogfontein (Pv 2)	Power line
12/12/20/2251/2/AM5	The construction of 100MW Molten salt Parabolic Trough (MSPT) technology with dry cooling on the farm Plaatfontein 68 and Windebeerstkuil 69	Solar MPST 100 MW
12/12/20/2440	Proposed 100MW PV solar energy facility on the Farm Kenilworth Estate No. 71	Solar PV 100 MW
14/12/16/3/3/2/527	Proposed PV farms on the Farm Table Farm 242 in the district of Boshof,	Solar PV 50 MW?
12/12/20/2148/A1	Proposed Establishment Of A Photovoltaic (Pv) Installation At The Kimberley Airport	Solar PV 50 MW?

The exact areas for each of these projects is now known, but an estimate of 2000 ha is made for the total footprint of the combined projects. It is also assumed that similar land cover classes are affected as for the current project. The outcomes of the analysis of possible impacts on spatial extent are as follows:

1. Within 30 km of the current project, 88.6% of the landscape (250595 ha) is still in a natural state.
2. The loss of habitat predicted to occur due to the current project is 0.13% of the remaining natural habitat within 30 km of the current site. This is negligible.
3. A maximum of 0.93% of the remaining natural habitat within 30 km of the current site is potentially affected by all combined projects on the renewable energy database. Note that for some of these the status is "lapsed/withdrawn", therefore it is possible that they will not be built. This total cumulative spatial effect is considered to be small.

Conclusions

In conclusion, the proposed amendment of the Environmental Authorisation to extend the commencement period will have no implications for the original assessment. They will not change the potential impacts. The baseline conditions have also not changed; therefore, the original assessment is valid. It is recommended that the amendment to the extension of the commencement period be approved. Revised mitigation measures are proposed to align with current best practice.

The cumulative impact due to the proposed current project is negligible.

Yours faithfully,



Dr David Hoare
Director