RETROSPECTIVE PART 2 ENVIRONMENTAL AUTHORISATION AMENDMENT APPLICATION:
75 MW HUMANSRUS PHOTOVOLTAIC (PV) 1 SOLAR POWER FACILITY

DFFE Ref: 12/12/20/1903/1/AM2

SEPTEMBER 2023

EARTHnSKY
environmental

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DOCUMENT CONTROL	
Document Title	**ENVIRONMENTAL IMPACT REPORT:** **RETROSPECTIVE PART 2 - ENVIRONMENTAL AUTHORISATION AMENDMENT APPLICATION: 75 MW HUMANSRUS PHOTOVOLTAIC (PV) 1 SOLAR POWER FACILITY**
Date	September 2023
Client Details	Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (Trading as Lesedi Power Company (Pty) Ltd.)
Status	Final for Public Participation (Round 2)
Author	Rachelle Botha (Environmental Consultant) (EARTHnSKY Environmental)
Registered Environmental Assessment Practitioner – Review and Approval	Lizette Kloppers (Registered EAP) (EARTHnSKY Environmental)
Report Distribution	Competent Authority: Department of Forestry, Fisheries and the Environment (Ms. Nyiko Nkosi) Client: Lesedi Power Company (Pty) Ltd. (Mr. Kubendran Naicker) Registered I&AP's: Refer to I&AP list in Annexure F3
Report Version	0.0

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DECLARATION OF INDEPENDENCE

I, Lizette Kloppers, in my capacity as Environmental Assessment Practitioner, hereby declare that I –

- Act as an independent consultant;
- Do not have any business, financial, personal or other interest in the activity or application in respect of which I have been appointed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), other than fair remuneration for the work performed; and
- That there are no circumstances that may compromise my objectivity in performing the work that I have been appointed for.

Lizette Kloppers (Pr.Sci.Nat.)
Environmental Assessment Practitioner
SACNASP Reg. No. 115453
EAPASA Reg No. 2019/767

5 September 2023
Date

LIST OF ACRONYMS

AC	Alternating Current
AWS	Autonomous Weather Stations
CHMP	Cultural Heritage Management Plan
CSP	Concentrated Solar Plant
DC	Direct Current
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
GA	General Authorisation
GN	Government Notice
I&APs	Interested and Affected Parties
IPP	Independent Power Producer
kV	Kilo Volt
MW	Mega Watt
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act, 1998 (Act 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
NERSA	National Energy Regulator of South Africa
NFEPA	National Freshwater Ecosystem Priority Area
NS	Norms and Standards
NWA	Nation Water Act, 1998 (Act 36 of 1998)
OEMP	Operational Environmental Management Programme
O&M	Operations and Maintenance
PPP	Public Participation Process
PV	Photo Voltaic
RO	Reverse Osmosis
SACNASP	South African Council for Natural Scientific Professions
SWSAs	Strategic Water Source Areas
TOPS	Threatened or Protected Plant Species
WTP	Water Treatment Plant
WUL	Water Use License

EXECUTIVE SUMMARY

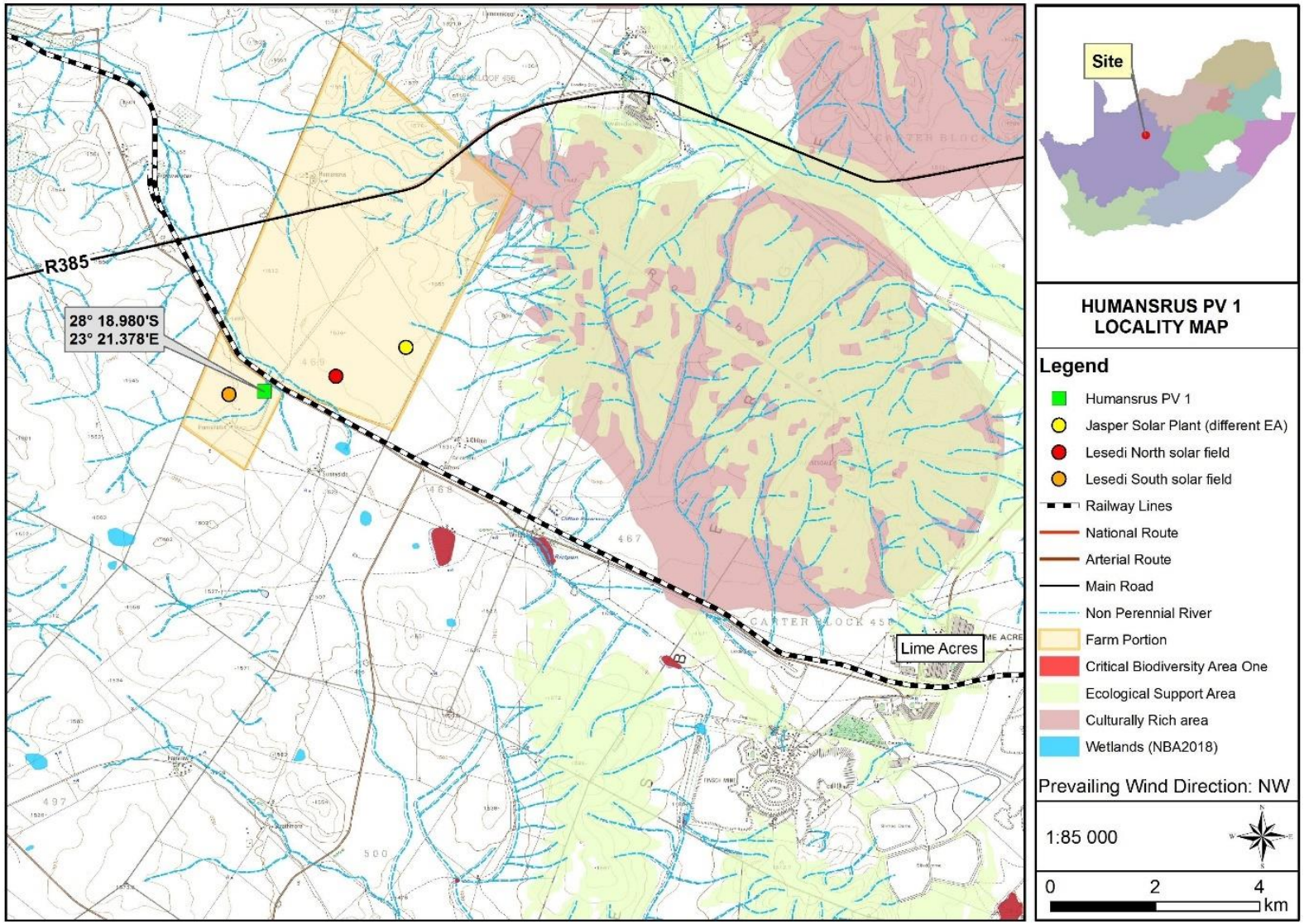
EARTHnSKY Environmental (Pty) Ltd. was appointed as independent Environmental Assessment Practitioner (EAP) by Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (t/a Lesedi Power Company (Pty) Ltd.) to undertake the retrospective Part 2 Environmental Authorisation (EA) Amendment Application process, as required in terms of Section 32 of the National Environmental Management (NEMA) and the Environmental Impact Assessment Regulations (EIA), 2014 (as amended), for the EA (12/12/20/1903/1) issued for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility (referred to as Lesedi Power Project) located on the Remainder of Farm 469, Hay RD.

The existing Lesedi Solar Power Facility is located 4 km southeast of the Groenwater settlement and 30 km east of Postmasburg in the Northern Cape. Construction of the Lesedi Solar Power Facility commenced in November 2012, within the EA validity period (August 2011 to August 2014) and is currently operational, supplying renewable energy electricity into the national electricity grid. Full operations of the Lesedi Solar Power Facility commenced on 21 May 2014 and the facility is expected to have an operational lifespan of around 25 years.

The Lesedi Solar Power Facility comprises of the following components and infrastructure:

- A facility that generates up to 75 MW direct current (DC) of electricity that is fed into the national power grid; and
- Key infrastructure components which include *inter alia* the following:
    - Lesedi north and south solar fields with fixed Photovoltaic (PV) arrays with an output of 64$MW_{AC;}$
    - Electrical connections;
    - Substation, capacitor banks, grid connection and associated infrastructure;
    - Access roads and site access; and
    - Additional infrastructure (O&M buildings, waste-, water-, sewage- and stormwater infrastructure etc).

PLEASE NOTE: NEW/AMENDED PARTS OF THIS REPORT HAVE BEEN HIGHLIGHTED IN YELLOW FOR EASE OF REFERENCE.



Lesedi Solar Power Facility locality

Application context and proposed amendments

The Applicant, Oakleaf Investment Holdings, is applying for the following amendments to its EA (12/12/20/1903/1, dated 23 February 2012) issued for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility as follows:

1. Confirmation of the change of the contact person for Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (Trading as Lesedi Power Company (Pty) Ltd).;
2. To amend the size and location of the substation, and indicate that the substation area comprises a control room, external 132kV transformers, electric switchgear, capacitor banks and is fenced for security and safety;
3. To indicate the location of the Operations and Maintenance (O&M) buildings, and to show this consists of an office and storage buildings, security, ablution facilities, parking, outdoor store and water treatment facility.
4. To include the aboveground 22kV powerlines between northern solar field and substation – across railway line and D3381 road;
5. Removal of the 200m and 50m visual buffers for the aboveground 22kV powerlines;
6. To show the PV arrays of up to 1km in length across the south solar field and up to 1,5km in length across the north solar field, made up of approximately 100m sections;
7. To accommodate the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008);
8. To align the authorised development footprint with the farm boundary, to accommodate the overburden stockpile, and to indicate that a small borrow pit on site was not needed during the construction phase, as excess overburden was used for filling;
9. To indicate that the solar irradiation measuring panel was in place during the feasibility stage, to collect data on the solar resource which information the layout of the facility, but is not permanent, and was removed prior to the commencement of operations;
10. To include three autonomous weather stations (AWS), approx. 4m in height for the continuous monitoring of local conditions during the operational phased, and three soiling stations, measuring approximately 4m^2 in size each, to monitor and determine operational efficiencies; and
11. Approval of the as-built drawings and layout plans for the entire operation.

Note: previous EA Amendment Applications were submitted and/or granted. The history of the respective EA Amendment Applications and its associated statuses/outcomes are as follows:

Date issued	EA reference	Holder of the EA	Notes and status
29/08/2011	12/12/20/1903	Intekon Energy (160MW)	Issued. In response, due to Eskom's restrictions in terms of the Renewable Energy Independent Power Producer (IPP) Procurement Programme an amendment application was lodged to split the 160 MW Humansrus Solar Power Farm into two separate 75 MW solar facilities (for Lesedi- and Jasper Power Projects - 75MW, respectively Humansrus 1 and Humansrus 2).
23/02/2012	12/12/20/1903/1	Intekon Energy (75MW)	Issued. In response, an EA amendment to amend the holder / ownership of the EA to Oakleaf Investments (Lesedi Power Company) was applied for.
11/07/2012	12/12/20/1903/1	Oakleaf Investments (75MW)	Issued. In response, an EA amendment application process was commenced by ERM (previous EAP). However, this application was never completed and the Public Participation Process (PPP) was not undertaken as it was confirmed that approval was first required for Section 21 (c)&(i) water uses in terms of the National Water Act, 1998.
	12/12/20/1903/1AM3	Oakleaf Investments (75MW)	Initial application to amend the EA submitted in 2017, but the process was suspended until the water use authorizations were obtained from DWS.

Legislative context

National Environmental Management Act, 1998 (Act No. 107 of 1998) and Environmental Impact Assessment (EIA) Regulations 2014 (as amended):

The proposed amendments applied for result in a change to the scope of the valid EA (12/12/20/1903/1, dated 23 February 2012). Accordingly, an application in terms of Section 31 of the NEMA EIA Regulations, 2014 (as amended) for a Part 2 EA Amendment Application process is required. The process undertaken as well as this Environmental Impact Report (EIA) responds to and fulfils the requirements detailed in Section 32 of the NEMA EIA Regulations. No new listed activities will be triggered as a result of this Application.

National Environmental Management: Waste Act, 2008 (Act 59 of 2008):

Compliance with the National Environmental Management: Waste Act, 2008 (Act 59 of 2008): National Norms and Standards for the Storage Waste (GN926 of 2013) is required for the temporary storage of waste PV modules. The Applicant will submit an application for the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste. Relevant management and compliance requirements have been included in the Operational Environmental Management Programme (OEMP).

Public participation

Public Participation is required for a Part 2 EA Amendment Application. The process has been undertaken in terms of the requirements as outlined in Chapter 6 Public Participation Regulations 39 - 44 of the NEMA EIA Regulations 2014 (as amended). The following has been undertaken in terms of the Public Participation Process and stakeholder engagement to date:

1. A pre-consultation meeting with Department of Forestry, Fisheries and Environment (DFFE), the Competent Authority (CA), was undertaken on 14 October 2022. The planned Part 2 EA Amendment Application process, specialist assessment requirements and PPP were discussed and agreed to;

2. Interested and Affected Parties (I&APs) identification. I&APs from the original NEMA EIA 2011 Application, as well as relevant Competent Authorities and Organs of State were added to the I&AP Register. The register included the following parties, among others:
    - Registered I&APs
    - LED parties
    - Adjacent landowners
    - The Department of Forestry, Fisheries and Environment (DFFE)
    - Tsantsabane Local Municipality, including the Municipal Ward councillor
    - ZF Mgcawu District Municipality
    - Eskom
    - SANRAL
    - Northern Cape Provincial Heritage Authority
    - SAHRA
    - Transnet
    - Bird Life South Africa
    - DWS
3. Draft EIR and OEMP is made available for review as required for the following period: 19 May 2023 to 28 June 2023. I&APs have been notified of the availability of the report for download and comment.

a. Hardcopies Draft EIR, OEMP and supporting documentation is available for review at:
    i. Lesedi Solar Facility (Site):
    ii. Postmasburg Library: 13 Springbok Street, Postmasburg
b. Site notices were placed at the following locations:
    i. Corner of the D3381 and Lesedi access road: 28°18'49"S, 23°21'19"E;
    ii. Lesedi North solar gate: 28°18'54"S, 23°21'14"E;
    iii. Lesedi South solar gate: 28°18'47"S, 23°21'37"E;
    iv. Refentse Primary School (Groenwater Community) and
    v. Postmasburg Library: 13 Springbok Street, Postmasburg
c. Newspaper advertisements were placed:
    i. Beeld newspaper on 25 May 2023;
    ii. Noordkaap Bulletin on 25 May 2023; and
    iii. Kathu Gazette newspaper on 19 May 2023.
d. A public meeting was be held at the Refentse Primary School on 13 June 2023 (17:00-19:00).

4. All comments and responses received from I&AP's have been considered and integrated into the process and reports. The Comments and Responses Report and all PPP proofs are included as Appendix F of the EIR. As a result of comments raised by I&APs during the 1st round of Public Participation, amendments specifically relating to heritage aspects and the management thereof, have been made to the EIR, OEMP and Heritage Compliance Statement report.
5. A 2nd round of Public Participation will be undertaken from **8 September 2023 to 10 October 2023**. I&APs have been notified of the availability of the report for download and comment. To this effect, hardcopies of the EIR, OEMP and supporting documentation will be available for review at: Lesedi Solar Facility (the Site) and the Postmasburg Library: 13 Springbok Street, Postmasburg from **8 September 2023**. Electronic copies of the report will be provided to registered I&APs via email or other means, as relevant. Please inform us should you require a copy of the report. The reports are also available for download using the following link: www.dropbox.com/sh/ey7b9gtcajyw6yi/AACbmW-VaquX0SlVFrk2-k6Wa?dl=0.

Specialists' findings

All specialist assessments that were commissioned as part of the original 2011 NEMA EIA Application for the approved EA (12/12/20/1903), have been reviewed together with the proposed amendments and associated potential impacts as a result of the as-built infrastructure and operations. The specialist reviews and concluding statements undertaken in respect of this Part 2 EA Amendment application includes:

- Visual;
- Palaeontological;
- Heritage;
- Ecological - Fauna; and
- Ecological - Vegetation

The scope of work for the respective specialist input required included *inter alia* the following:

- Review of findings and impact assessment as per the initial specialist assessments undertaken as part of the original application and EA issued;
- Determine and assess the possible impacts of significance, specifically in relation to the various amendments to be applied for (particularly to the localities and sizes of specific infrastructures, property boundary etc.); and
- Review and update of any mitigation and management measures (if any) for inclusion into the Operational Environmental Management Programme (OEMP) (if required).

All of the specialists' reviews concurred with the findings and impact statements of the 2011 specialist assessments as part of the 2011 NEMA EIA Application for EA (12/12/20/1903). Below is a summary of their respective concluding statements as part of the Application:

Visual review and statement

- None of the amendments relating to the as-built project would have any significant visual implications when seen in the context of the overall Humansrus PV 1 Solar Power Project and the Redstone Concentrated Solar Plant (CSP) project (under construction) to the north of the Lesedi Solar Facility;
- The overall visual impact significance for the project is therefore not expected to change from that of the authorised layout;
- Amendments to the related infrastructure, such as internal access roads and overhead powerline, would result in no change in the overall visual impact significance ratings and would be low before and after mitigation; and
- Accordingly, the amendments to the as-built project will not result in an increased level or change in the nature of the visual impacts, and the final as-built layout is acceptable from a visual perspective.

Paleontological review and statement

- The geology underlying the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility comprises the Ghaap Group of the Transvaal Supergroup and sand of the Gordonia Formation;
- Rocks of the Ghaap Group are world renowned for significant finds of paleontological heritage objects, including highly significant fossils of micro-bacteria called Stromatolites. The dolomites can contain significant deposits of cave breccia with human remains, but these do not underlie the study sites for the Lesedi Solar Power Facility;
- Findings concur with the initial conclusions of the consultants who recommended limited precaution for paleontological heritage; and
- No further mitigation for paleontological heritage is required, specifically where most of the development is underlain by moderately sensitive rock units.

Heritage review and statement (updated)

- The impact of the developments on the old farmstead, shed, kraal, loss or damage to graves outside of solar PV areas is considered as negligible;
- The impact of the developments on the graves inside the south solar PV area is considered as low;
- The Cultural Heritage Management Plan (CHMP) and Graves Register as developed and included in the OEMP, must be implemented for the grave sites inside the South Site Solar PV Array area (within Lesedi's Lease Agreement)'and
- It is recommended that Exemption from undertaking any further Phase I Heritage Impact Assessments as part of this Part 2 EA Amendment Application for the proposed 75 MW Humansrus Photovoltaic (PV1) Solar Power Facility be granted to the Applicant.

Ecological - Fauna review and statement

- In terms of non-avian fauna species, the findings are in agreement that the site has low sensitivity for animal species;
- The site is also considered limited in terms of unique biodiversity features of relevance to non-avian terrestrial fauna, limited to ecological corridors associated with the Groenwaterspruit which have been marginally affected by stream crossings; and
- In terms of the terrestrial fauna, no potential additional significant impacts have been identified as a result of the existing layout and there should be no reason not to authorise and accept the existing layout of the development.

Ecological – Vegetation review and statement

- This assessment found that the amended infrastructure did not have a significant negative impact on surrounding vegetation;
- Edge effects were limited, and current impacts can be mitigated;
- The historic ecological report of 2011 also did not observe extensive areas of floral sensitivity and habitat diversity, species richness and uniqueness of the vegetation was classified as low;
- The 2011 report concluded that the proposed development would have a medium local impact on the plant communities on-site and was not regarded as a significant threat to the status and presence of these species as they occur abundantly in the general area; and
- This assessment, as well as the 2011 ecological assessment (du Preez, 2011) thus concurs with the screening tool report for the site in that the vegetation and plant species sensitivity are low. However, impacts to the surrounding vegetation must be limited and alien invasive plant species must be controlled for the duration of the operation phase.

Impact summary

The impacts identified and assessed as part of this Part 2 EA Amendment Application are summarised in below. No new impacts have been identified as a result of the existing layout and as-built infrastructure. It is also confirmed that the proposed amendments applied for will not result in an increased level or change in the nature of the impacts identified in the NEMA 2011 EIA Application.

Impacts	Part 2 EA Amendment Impact Assessment		NEMA 2011 EIA Application
	Significance before mitigation	Significance after mitigation	Significance after mitigation
Visual Visual impact on rural landscape (Substation, solar arrays and O&M buildings)	High	Medium	Medium
Visual Visual impact on rural landscape (internal access roads and powerlines)	Low	Low	Medium
Paleontological resources Loss of paleontological resources	Low	Low	Low
Heritage resources Impact on old farmstead, shed, kraal, loss or damage to graves	Negligible	Negligible	Low
Heritage resources Impact on graves inside the south solar PV area	Low	Low	N/A
Heritage resources Loss of stone tool scatters & other archaeological resources	Low	Low	Low
Ecological – Terrestrial Fauna Habitat loss: destruction, disturbance and displacement (vertebrates)	Negligible	Negligible	Low
Ecological – Terrestrial Fauna Habitat loss: destruction, disturbance and displacement (invertebrates)	Low	Low	Low
Ecological – Flora / Vegetation Destruction, disturbance or loss of protected species	Low	Low	Low
Ecological – Flora / Vegetation Alien species invasion	Low	Low	Low
Ecological – Flora / Vegetation Soil compaction and disturbance of vegetation	Low	Low	Low
Avifauna Disturbance, collisions and electrocutions of birds	Medium	Low	Low
Waste Contamination of natural resources through incorrect storage, handling and disposal of hazardous waste	Low	Low	Negligible
Surface and groundwater Impact on surface water quality as a result of treated sewage effluent qualities not in accordance with discharge standards	Low	Low	Low
Surface and groundwater Impact of infrastructure on surface water resource quality, flow and geomorphology	Low	Low	Low

There would be no negative environmental impacts if the amendments are not granted. However, the 'No-go' option would prevent the site from complying with the NERSAs requirement to install capacitor banks; preventing the evacuation of power to the National Grid, should the substation modifications not have been possible. The visual absence of overhead powerlines or the need for underground powerlines only, would have cost and maintenance implications for the project. Environmental impacts due to maintenance of underground powerlines would include disturbance to the soil and watercourse environments, while maintenance activities could impact public transport (roads and railway line) infrastructure and disrupt road and rail traffic when temporarily closed for maintenance of underground powerline.

Should the proposed amendments on waste module storage onsite not be authorised and not implemented, the main environmental impact would be a four-fold increase of carbon emissions due to more frequent transportation of waste panels off site to licensed facilities (i.e. every 3 months (90 days) versus once a year approximately), as well as the associated financial implications. A potential also exists for inefficient waste management program at the facility. This could affect the effective sorting of solid waste for recycling and where applicable, safe disposal at the Waste Disposal facility.

Positive environmental impacts:

- No impact to the soil or watercourse habitat (of the Groenwaterspruit) below the 5km 22kV overhead powerline from maintenance activities, as the powerline does not need to be dug up/excavated;
- No impact to road or rail infrastructure as an underground powerline does not need to be excavated, and no road or rail traffic disruptions occur;
- Less impact on the non-perennial tributary of the Groenwaterspruit, as the original locality of the substation was proposed to be wedged between the solar field in the west and this stream in the east and could have had an impact on the stream as it would have been closer to it. The substation is located outside of the 1:100 year floodline of the watercourse,
- Reduced road traffic impacts from waste removal vehicles due to waste PV module storage on site, as these need only be removed approximately once a year and not every 3-months;
- Reduced carbon footprint from less diesel use and emissions due to limiting removal of waste PV modules to once a year and not every 3-months;
- No additional environmental impacts from PV arrays of up to 1,5km in length across Lesedi north solar field, as the area covered by solar panels would still be approximately 75ha (in a more square layout than the current elongated rectangular layout) if the arrays were limited to 1km length;
- No further impacts from the outdoor storage of equipment as the area is within the development footprint and fenced to prevent sprawl; and
- Current ecological state of overburden stockpile – semi-natural state and in a fair ecological condition (ecological function is maintained). The vegetation surrounding the stockpile serves as a seedbank to vegetate the stockpile.

Advantages and disadvantages of the proposed amendments

The advantages of the proposed amendments applied for the Lesedi Power - 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility includes:

1. Updating the EA holder details will ensure that the correct entity (Oakleaf Investments Holdings 79 (RF) (Pty) Ltd.) is responsible for implementing and adhering to the conditions specified in the EA and OEMP;
2. Updating of infrastructure (substation, capacitor banks, overhead powerline, PV arrays, AWS & soiling stations) i.t.o. location and size will ensure appropriate management and monitoring of any associated impacts;
3. Update and inclusion of the O&M facility and associated infrastructure: an office and storage buildings, security, ablution facilities, parking, outdoor store and water treatment facility, will ensure that appropriate management and monitoring of any associated impacts with the infrastructure;
4. The application for the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008) will ensure compliance with relevant legislative requirements;
5. The alignment of the authorised development footprint with the farm boundary and approval of the as-built drawings as the approved Layout Plan will ensure compliance with the EA and appropriate management and monitoring of any associated impacts as required; and
6. The application for the removal of the 50m and 200m visual buffers for the aboveground 22kV Powerlines will ensure compliance with the EA.

There are no disadvantages associated with the proposed amendments applied for.

Recommendation

Based on the findings of the independent specialist reviews, the impact assessment and taking into account the successful implementation of the EA (12/12/20/1903/1) and OEMP, it is reasoned by the EAP that the proposed Part 2 Amendment Application

for the EA (12/12/20/1903/1) for the Lesedi Power - 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility should be granted. The amendments applied for do not cause any significant increase in the impacts associated with the current authorised development. The specialist recommendations must be included in the EA and OEMP as relevant and required.

1. INTRODUCTION

1.1 PROJECT TITLE

Part 2 Environmental Authorisation Amendment Application: 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility.

1.2 APPLICANT DETAILS

Table 1: Applicant details

Applicant	Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (t/a Lesedi Power Company (Pty) Ltd.)
Contact Person	Thighesh Velen (CEO)
Postal Address	Office 6A, 6th Floor, Sinosteel Plaza, 159 Rivonia Road, Sandton, Gauteng
Telephone Number	011 217 7420
Fax Number	086 596 1313
Email	thigesh.velen@lesedipv.com

1.3 ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS

Table 2: EAP details

EAP	EARTHnSKY Environmental (Pty) Ltd.
Contact Person	Lizette Kloppers
Postal Address	PO Box 5419, Rietvalleirand, 0174
Telephone Number	061 524 2211
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Email	lizette@earthnsky.co.za / lizette.earthnsky@gmail.com
Qualifications of the EAP	MSc Environmental Management – University of London External Programme; More than 12 years' experience as an EAP
Professional affiliation/registration	SACNASP Reg. No. 115453; EAPASA Reg No. 2019/767 EAP's Curriculum Vitae is attached to this report under Annexure A.

1.4 BACKGROUND

EARTHnSKY Environmental (Pty) Ltd. was appointed as independent Environmental Assessment Practitioner (EAP) by Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (t/a Lesedi Power Company (Pty) Ltd.) (hereafter referred to as Lesedi Power Project) to undertake the Part 2 Environmental Authorisation (EA) Amendment Application process, as required in terms of Section 32 of the National Environmental Management (NEMA) and the Environmental Impact Assessment Regulations (EIA), 2014 (as amended), for the EA (12/12/20/1903/1) issued for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility located on the Remainder of Farm 469, Hay RD (Refer to Figure 1 and Annexure C1).

The existing Lesedi Solar Power Facility is located 4 km southeast of the Groenwater settlement and 30km east of Postmasburg in the Northern Cape. Construction of the Lesedi Solar Power Facility commenced in November 2012, within the EA validity period (Aug 2011 to Aug 2014) and is currently operational supplying renewable energy into the national electricity grid. Full operations of the Lesedi Solar Power Facility commenced on 21 May 2014 and is expected to have an operational lifespan of around 25 years.

The Lesedi Solar Power Facility comprises of the following components and infrastructure as listed below (Refer to Annexure C for supporting maps and technical drawings):

- A facility that generates up to 75 MW direct current (DC) of electricity which is fed into the national power grid; and
- Key infrastructure components which include *inter alia* the following:
    - Lesedi north and south solar fields with fixed Photovoltaic (PV) arrays with an output of 64$MW_{AC;}$
    - Electrical connections;
    - Substation, capacitor banks, grid connection and associated infrastructure;
    - Access roads and site access;
    - Additional infrastructure (O&M buildings, waste, water, sewage and stormwater infrastructure etc).

Section 4 of this Report provides detailed information on the Lesedi Solar Power Facility operational aspects as well as infrastructure in place.

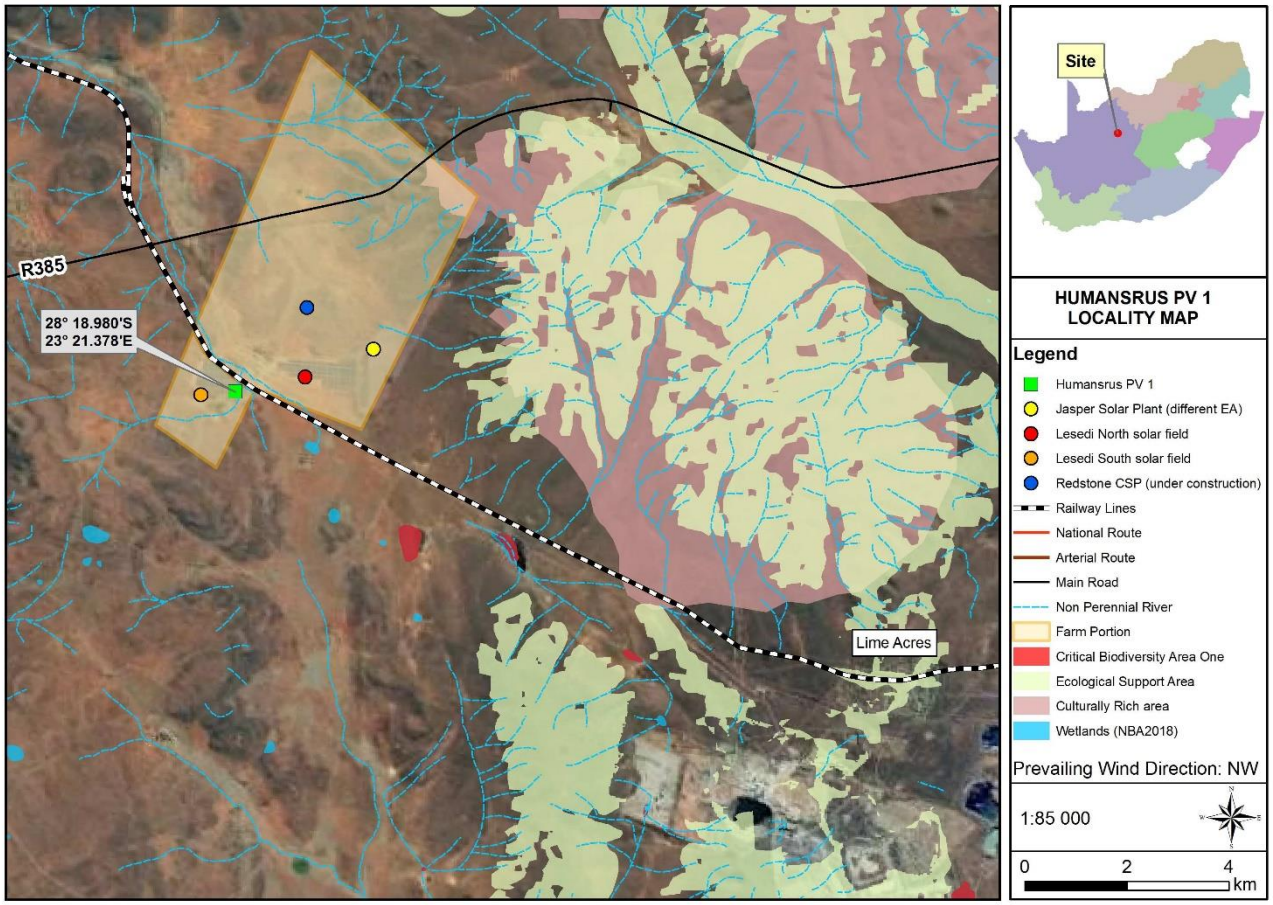

Figure 1: 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility

2. LEGISLATIVE REQUIREMENTS

Section 2 of this report summarises the relevant legislation, policies and plans, which are applicable and have been considered in this Part 2 Amendment Application process. Table 3 below indicates how the proposed application complies with and/or responds to the respective legislation and regulations and plans.

Table 3: Legislative context of the application

Legislation / Policy/ Other	Applicability	Specific compliance reference
The Constitution of South Africa, 1996 (Act No. 108 of 1996), as amended	The project needs to adhere to the provisions of this legislation.	N/A
National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended	The application is lodged in terms of the provisions of this legislation. The	Refer to Section 2.1.1 & 2.1.2 of this report.

Legislation / Policy/ Other	Applicability	Specific compliance reference
	Applicant needs to comply with general Duty of Care as per Section 28.	
Environmental Impact Assessment (EIA) Regulations 2014 (as amended)	The application is lodged in terms of the provisions of this legislation	Refer to Section 2.1.2 of this report.
National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended	This legislation has been considered by the Heritage specialist in their report and the report will be submitted to I&APs for commenting.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA)	This legislation has been considered by the Fauna and Flora specialists review and reports.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA) Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal and or Avifaunal Species	This protocol has been considered by the Fauna specialist review and report.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Threatened or Protected Species Regulations, February 2007 (TOPS Regulations)	This regulation has been considered by the Flora and Fauna specialists in their reports.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Publication of lists of species that are threatened or protected, activities that are prohibited and exemption from restriction, February 2007	This regulation has been considered by the Flora specialist in their review and report. Reference to protected tree management is included in the OEMP.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Alien and Invasive Species Lists, September 2020	This legislation has been considered by the Flora specialists in their review and report. Alien species management in included in the OEMP.	N/A
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): requirements for the Assessment and Reporting of Environmental Themes (GN1150 & GN320 of 2020)	This regulation has been considered by the Flora specialist in their review and report.	N/A
Northern Cape Critical Biodiversity Areas (CBA) Map	This map was consulted by the Flora specialist as required during their review and report.	N/A
Northern Cape Nature Conservation Act, 2009 (Act No.9 of 2009)	This legislation was consulted by the Flora specialist as required during their review and report.	N/A
National Forest Act, 1998 (Act No. 84 of 1998)	This legislation has been considered by the specialists in their review and reports. Specific reference to management measures have been included in the OEMP.	N/A
National Water Act, 1998 (Act No. 36 of 1998) and its regulations	This legislation has been considered by the Flora and Aquatic specialists in their review and reports.	Refer to Section 2.2 & of this report detailing Section 21 of NWA compliance matters.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008)	This legislation has been considered by the EAP and specific reference regarding waste management and mitigation have been included in the OEMP.	Refer to Section 2.3 of this report detailing specific compliance requirements.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008):	The Applicant will submit an application for the temporary storage of up to 300	Refer to Section 2.3 of this report detailing specific compliance requirements.

Legislation / Policy/ Other	Applicability	Specific compliance reference
National Norms and Standards for the Storage Waste (GN926 of 2013)	waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste. Relevant management and compliance requirements have been included in the OEMP.	
Occupational Health and Safety Act, 1993 (Act No.385 of 1993)	This legislation has been considered by the EAP and specific management and mitigation have been included in the OEMP.	N/A

2.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

2.1.1 EA AMENDMENT APPLICATION HISTORY

The proposed amendments to be applied for as part of the Part 2 Amendment Application process, relates to the EA dated 23 February 2012 (DEA Reference: 12/12/20/1903/1). ***Note: previous EA Amendment Applications were submitted and/or granted. The history of the respective EA Amendment Applications and its associated statuses/outcomes are detailed Table 4 below: EA amendment application history.***

Table 4: EA amendment application history

Date issued	EA reference	Holder of the EA	Notes and status
29/08/2011	12/12/20/1903	Intekon Energy (160MW)	Issued (EA Attached in **Annexure B1**). In response, due to Eskom's restrictions in terms of the Renewable Energy IPP Procurement Programme (an amendment application was lodged to split the 160 MW Humansrus Solar Power Farm into two separate 75 MW solar facilities (for Lesedi- and Jasper Power Projects - 75MW respectively Humansrus 1 and Humansrus 2).
23/02/2012	12/12/20/1903/1	Intekon Energy (75MW)	Issued (EA Attached in **Annexure B2**). In response, an EA amendment to amend the holder/ ownership of the EA to Oakleaf Investments (Lesedi Power Company) was applied for.
11/07/2012	12/12/20/1903/1	Oakleaf Investments (75MW)	Issued (EA Attached in **Annexure B3**). In response, an EA amendment application process was commenced by ERM (previous EAP). However, this application was never completed and the Public Participation Process (PPP) was not undertaken as it was confirmed that approval was first required for Section 21 (c)&(i) water uses in terms of the National Water Act, 1998. Refer to Section 2.2 of this report for details.
	12/12/20/1903/1AM3	Oakleaf Investments (75MW)	Initial application to amend the EA submitted in 2017, but the process was suspended until the water use authorizations were obtained from DWS.

EARTHnSKY Environmental was appointed by Lesedi Power to undertake the Part 2 EA Amendment Application process required in terms of Section 32 of the EIA Regulations (2014) (as amended), issued for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility (EA12/12/20/1903/1). Amendments to be applied for are summarised in Table 7 of this report: Summary of EA Amendments to be applied for.

2.1.2 EA AMENDMENT PROCESS REQUIREMENTS

The EIA Regulations promulgated in terms of the National Environmental Management Act (NEMA) Act no. 107 of 1998 (as amended) dated 8th of December 2014, were amended in 2017 and 2021. In terms of Section 32 of Chapter 5 of the EIA Regulations, an Amendment Report must accompany the application made in terms of Section 31. Section 32 notes:

"The Applicant must within 90 days of receipt by the Competent Authority of the application made in terms of Regulation 31, submit to the competent authority,

(a.) a report, reflecting

(i) an assessment of all impacts related to the proposed change;

(ii) advantages and disadvantages associated with the proposed change;

(iii) measures to ensure avoidance, management, and mitigation of impacts associated with such proposed change; and

(v) any changes to the EMPr

which report-

(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and;

(bb) reflects the incorporation of comments received, including any comments of the competent authority.

The Part 2 EA Amendment Process for Lesedi Power - 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility aims to ensure that the requirements described above are met. In line with this, an outline of the EIR Amendment Report (and its relationship to the requirements of Section 32 of the 2014 EIA Regulations (as amended) is provided in Table 5 below:

Table 5: Section 32 report requirements

Chapter / report section	Requirements of Section 32 of the EIA Regulations, 2014 (as amended)	Included in this report	Supplementary / supporting information
1. Introduction	N/A	√	N/A
2. Legislative requirements	N/A	√	Annexure B
3. Proposed amendments	N/A	√	N/A
4. Operational and infrastructure overview	N/A	√	Annexure C

Chapter / report section	Requirements of Section 32 of the EIA Regulations, 2014 (as amended)	Included in this report	Supplementary / supporting information
5. Public participation	Which Report had been subjected to a Public Participation Process (PPP), which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and reflects the incorporation of comments received, including any comments of the competent authority.	√	Annexure F
6. Specialist assessments findings	N/A	√	Annexure E & D
7. Impact assessment	An assessment of all impacts related to the proposed change	√	Annexure E
8. Advantages and disadvantages of proposed change	Advantages and disadvantages associated with the proposed change	√	N/A
9. Recommended mitigation measures	Measures to ensure avoidance, management, and mitigation of impacts associated with such proposed change	√	Annexure E and Annexure G
10. Proposed changes to Operational Environmental Management Plan (OEMP)	Any changes to the OEMP	√	Annexure G
11. Reasoned opinion	N/A	√	N/A.
12. Annexures	N/A	√	All

2.2 NATIONAL WATER ACT

Infrastructure and operational requirements of the Lesedi Solar Power Facility requires compliance with the National Water Act, 1998 (Act 36 of 1998) (NWA). Compliance with Section 21 of NWA was specifically required:

- *Section 21 (c): Impeding or diverting the flow of water in a watercourse;*
- *Section 21 (i): Altering the bed, banks, courses or characteristics of a watercourse; and*
- *Section 21(f): Discharging waste or water containing waste into a water resource.*

The water use compliance history is summarised below:

- General Authorisation (GA) confirmation dated 21 January 2019: S21 (c) and (i) for concrete road crossing over the non-perennial tributary of the Groenwater spruit (access road to the substation);
- Revised GA is issued by the DWS on 24 June 2021 to include two additional access roads and the overhead powerline crossings of a watercourse S21 (c) and (i) (File No 27 2 2 /D 173 18 1);
- The DWS also issued a letter, dated 13 July 2021 (File No 27 2 2 /C 591 55 1) confirming that sewage effluent discharge on site falls within the ambit of a GA under Section 21 (and is a permissible water use under Section 22 of the NWA); and
- **Email to DWS (Annexure D3) indicating the correct GPS locations of structures in the watercourse (as per Table 6 below).

Refer to Annexure D2 for copies of GA's.

Table 6: Section 21 water uses

Water Use	Description	Purpose	Property and GPS Coordinates**
S21 (c) and (i)	Concrete road crossing over a non-perennial tributary of the Groenwater Spruit	Road crossing provides access to the Substation for the PV plant.	Remaining Extent of Farm 469 S 28°18'55.5" E 23°21'23.4"
S21 (c) and (i)	Gravel road in the northern side of the Transnet Railway Line, crossing a non-perennial tributary of the Groenwater Spruit	Road crossing 2: to access the Northern PV field from D3381.	Remaining Extent of Farm 469 S 28°18'49.5" E 23°21'31.0"
S21 (c) and (i)	Tarred road in the southern side of the Transnet Railway Line, crossing a non-perennial tributary of the Groenwater Spruit	Road crossing 3: to access the Lesedi Power Plant from D3381.	Remaining Extent of Farm 469 S 28°18'49.9" E 23°21'19.2"
S21 (c) and (i)	Pylon 3 (4 poles) within the regulated area	Transmission Pylon Powerline	Remaining Extent of Farm 469 S 28°18'54.1" E 23°21'32.4"
S21 (c) and (i)	Pylon 4 (4 poles) within the regulated area	Transmission Pylon Powerline	Remaining Extent of Farm 469 S 28°18'54.1" E 23°21'32.4"
Section 21 (f)	Discharging effluent generated from the wastewater facility into the water resource.	Once the pumping chamber is full, treated effluent is discharged into the tributary of the Groenwater spruit. Volume: 274m^3/a	Remaining Extent of Farm 469 S 28°18'55.7" E 23°21'16.4"

2.3 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT

Compliance is required with the provisions in the National Environmental Management Waste Management Act, 2008 (Act No. 59 of 2008) (NEM:WA) and its supporting regulations. Waste generated at Lesedi Solar Power Facility is managed in accordance with the principles and waste management hierarchy of NEM:WA (i.e., reduce, reuse, recycle, recover and disposal as a final option), as to ensure valuable resources are not discarded or wasted. Waste management is detailed in Section 4.5.2 of the OEMP.

Waste PV modules are generated during operations. An application will be lodged with the DFFE for the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards (N&S) for the Storage of Waste.

3. PROPOSED AMENDMENTS

The Applicant, Oakleaf Investment Holdings is applying for the following amendments to EA (DEA Reference: 12/12/20/1903/1, dated 23 February 2012) issued for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility as depicted in Table 7 below:

Table 7: Summary of EA Amendments to be applied for

Amendment applied for		Relevance to EA (12/12/20/1903/1) / condition	Potential impact relevance
1.	Confirmation of the change of the contact person for Oakleaf Investment Holdings 79 (RF) (Pty) Ltd. (Trading as Lesedi Power Company (Pty) Ltd.).	Holder of EA and contact person and details.	None.
2.	To amend the size and location of the substation, and indicate that the substation area comprises a control room, external 132kV transformers, electric switchgear, capacitor banks and is fenced for security and safety.	**Authorised Infrastructure: *f -*** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m² in size"*	Heritage Fauna Vegetation Visual Paleontological Aquatic
3.	To indicate the location of the Operations and Maintenance (O&M) buildings, and to show this consists of an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility.	**Authorised Infrastructure: *f -*** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m² in size"* **Authorised Infrastructure: *i -*** *"Additional infrastructure that will form part of the development will include:* - *A permanent solar irradiation panel (16m² in size) to be erected to collected data on the solar resource of the site;* - *A small office and storage building with security and ablution facilities;* - *Site fencing of 2,5m in height;* - *A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.*	Heritage Fauna Vegetation Visual Paleontological
4.	To include the aboveground 22kV powerline connecting the northern solar field to the substation – across railway line and D3381 road.	**Authorised Infrastructure**: ***f -*** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m² in size"* By default, Condition 32 indicates that above-ground electrical infrastructure was considered during the initial authorization as it indicates: "...all pylons and power lines associated with the proposed development …(to) comply with the "bird friendly" design…"	Heritage Vegetation Visual Paleontological Aquatic
5.	Removal of the 200m and 50m visual buffers for the aboveground 22kV powerlines.	**Condition 29:** *"….a 200m visual buffer must be maintained from the D3381 secondary road…"* **Condition 30:** *"A 50m buffer must be maintained from the railway line".*	Visual
6.	To show that the PV arrays of up to 1km in length across the south solar field and up to 1,5km in length across	**Authorised Infrastructure: *a -*** *"The PV arrays will occupy 150 ha /1,5km² of the site area in total".*	Visual Heritage Paleontological

<table>
<tr><td></td><td>the north solar field, made up of approximately 100m sections.</td><td>Authorised Infrastructure: d - “The PV arrays will be 1km in length and made up of approx. 100m sections”</td><td></td></tr>
<tr><td>7.</td><td>To accommodate the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008).</td><td>Condition 36 of the EA requires an integrated waste management approach to be implemented and compliance with relevant legislation. The National Norms and Standards for the Storage of Waste, 2013 as per the National Environmental Management Waste Act Regulations govern the temporary storage of waste PV modules. The Applicant shall continue to ensure compliance with respective and relevant legislation & Condition 36 of the EA making reference to integrated waste management and compliance on site. In this case, the Applicant must ensure compliance for the temporary storage of the waste PV modules as required in terms of the National Norms and Standards for the Storage of Waste, 2013) as per the National Environmental Management: Waste Act Regulations.</td><td>Waste</td></tr>
<tr><td>8.</td><td>To align the authorised development footprint with the farm boundary, to accommodate the overburden stockpile, and to indicate that a small borrow pit on site was not needed during the construction phase, as excess overburden was used for filling.</td><td>Condition 4: “The activities authorised may only be carried out at the property as described on page 4 of this authorisation, namely:

The proposed Lesedi Solar Power Farm is hereby approved – as described in the EIR Report dated January 2012 at:
<table><tr><td>Location</td><td>Latitude</td><td>Longitude</td></tr><tr><td>Humansrus PV1</td><td>28°18’58.81”S</td><td>23°21’22.71”E</td></tr></table>
- For the construction of a 75MW PV1 Solar Facility (Lesedi power Company), covering an area of 150ha (1,5m²), on part of the Farm Humansrus (Farm 469) within the Tsanstabane Local Municipality, Northern Cape Province”.

Authorised Infrastructure: i - “Additional infrastructure that will form part of the development will include:
- A permanent solar irradiation panel (16m² in size) to be erected to collected data on the solar resource of the site;
- A small office and storage building with security and ablution facilities;
- Site fencing of 2,5m in height;
- A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.</td><td>Heritage
Fauna
Vegetation
Visual
Paleontological
Aquatic</td></tr>
<tr><td>9.</td><td>To indicate that a solar irradiation measuring panel was in place during the feasibility stage, to collect data on the solar resource which information the layout of the facility, but is not permanent, and was removed prior to the commencement of operations.</td><td>Authorised Infrastructure: i - “Additional infrastructure that will form part of the development will include:
- A permanent solar irradiation panel (16m² in size) to be erected to collected data on the solar resource of the site;
- A small office and storage building with security and ablution facilities;
- Site fencing of 2,5m in height;
- A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.</td><td>None.</td></tr>
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<td>10.</td>
<td>To include three autonomous weather stations (AWS), approx. 4m in height installed for the continuous monitoring of local conditions during the operational phased, and three soiling stations, measuring approx. 4m^2 in size each, to monitor and determine operational efficiencies.</td>
<td>Authorised Infrastructure: i - “Additional infrastructure that will form part of the development will include:
- A permanent solar irradiation panel (16m^2 in size) to be erected to collected data on the solar resource of the site;
- A small office and storage building with security and ablution facilities;
- Site fencing of 2,5m in height;
- A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site”.</td>
<td>None.</td>
</tr>
<tr>
<td>11.</td>
<td>Approval of the as-built drawings and layout plans for the entire operation.</td>
<td>Condition 1: “The construction of the 75MW PV1 Solar Power Plant on 150ha of land on the farm Humansrus (Farm 469), using the Humansrus Proposed PV Phase 1 Layout Map is approved”.

Condition 4: “The activities authorised may only be carried out at the property as described on page 4 of this authorisation, namely:

The proposed Lesedi Solar Power Farm is hereby approved – as described in the EIR Report dated January 2012 at:
<table>
<tr><td>Location</td><td>Latitude</td><td>Longitude</td></tr>
<tr><td>Humansrus PV1</td><td>28°18’58.81”S</td><td>23°21’22.71”E</td></tr>
</table>
- For the construction of a 75MW PV1 Solar Facility (Lesedi power Company), covering an area of 150ha (1,k5m^2), on part of the Farm Humansrus (Farm 469) within the Tsanstabane Local Municipality, Northern Cape Province”.

Authorised Infrastructure: f - “A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m^2 in size”

Authorised Infrastructure: i - “Additional infrastructure that will form part of the development will include:
- A permanent solar irradiation panel (16m^2 in size) to be erected to collected data on the solar resource of the site;
- A small office and storage building with security and ablution facilities;
- Site fencing of 2,5m in height;
- A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site”.</td>
<td>Heritage
Fauna
Vegetation
Visual
Paleontological
Aquatic</td>
</tr>
</table>

4. OPERATIONAL AND INFRASTRUCTURE OVERVIEW

4.1 KEY INFRASTRUCTURE COMPONENTS

The Lesedi Solar Power Facility generates up to 75 MW of electricity of which up to 64 MW_{AC} is fed into the national power grid. The key components of the site include the following:

- Lesedi north and south solar fields with fixed Photovoltaic (PV) arrays with an output of 64MW_{AC};
- Electrical connections;
- Substation, capacitor banks, grid connection and associated infrastructure;
- Additional infrastructure (O&M building, waste-, water-, sewage- and stormwater infrastructure etc.); and
- Access roads and site access.

4.2 PV ARRAYS

The Lesedi north- and south solar fields have fixed PV arrays with an output of 64MW_{AC}. The solar fields have PV solar panels that occupy an area less than 150ha (1.5 km^2) of the site in total. The solar field is divided in two, as the D3381 gravel road and a railway line bisect the facility. The panels are installed in rows (called PV arrays), extending across the site. Individual PV panels are 2m^2 in size, arranged in modules of up to 15m^2, in PV arrays of up to 1.5km in length across the Lesedi north solar field (red polygon) and up to 1km in length across Lesedi south solar field (red polygon), made up of approximately 100m sections (Refer to Figure 2).

The panels are mounted on metal frames with a maximum height of approximately 3m above the ground, supported by a combination of friction and end bearing pile foundations, and face north in order to capture the maximum sunlight. The facility is a fixed-tilt PV plant where the solar panels are stationary. Figure 3 (A & B) indicates the PV panels / arrays.

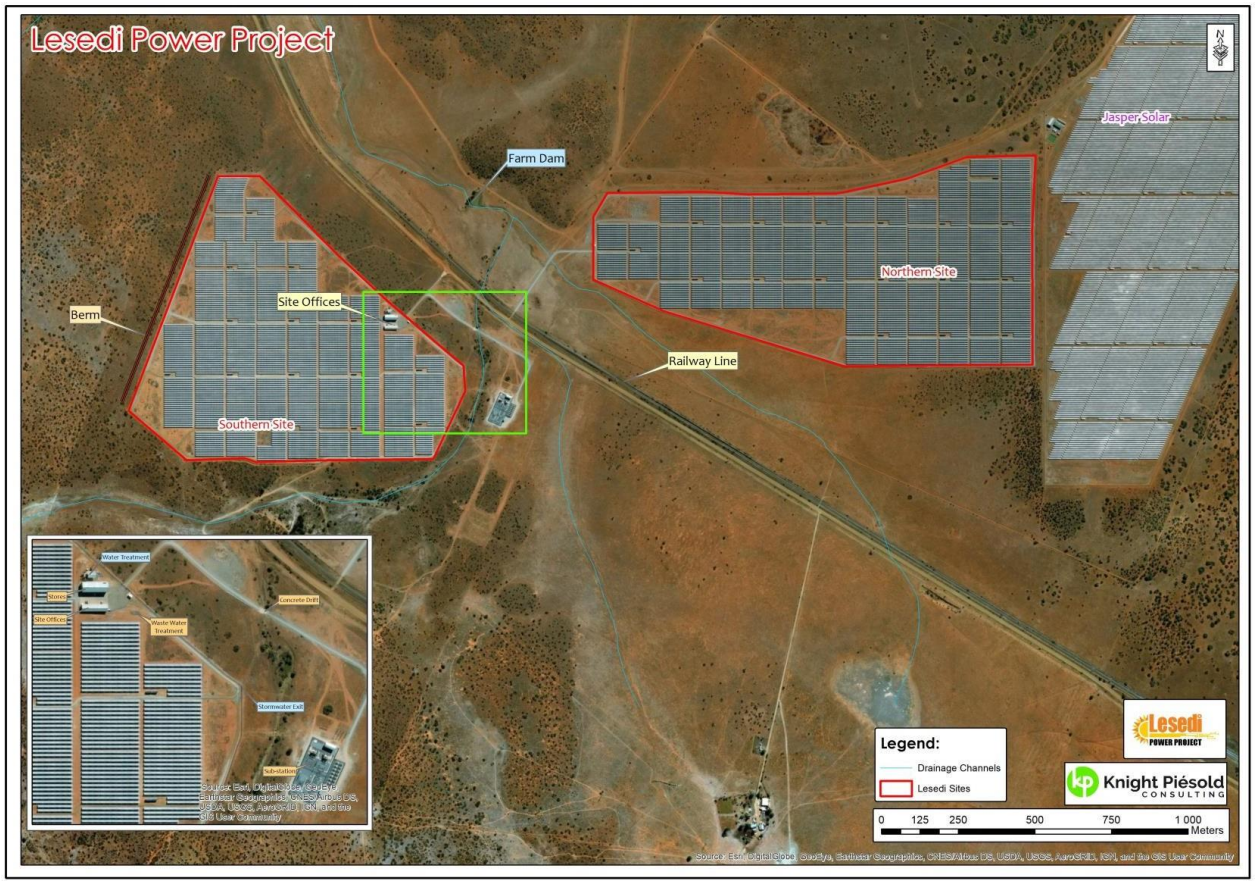


Figure 2: Lesedi north and south solar fields with PV arrays (Knight Piesold, 2018)

A: Lesedi north PV arrays illustration

B: PV arrays in Lesedi south solar field

Figure 3: PV arrays

4.2.1 PV ARRAYS – AMENDMENT CONTEXT

Reference is made to the relevant amendments applied for as part of this Part 2 Amendment Application as per extract of Table 7.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To indicate that the PV arrays of up to 1km in length across the south solar field and up to 1,5km in length across the north solar field, made up of approximately 100m sections	**Authorised Infrastructure: *a -*** *"The PV arrays will occupy 150 ha/ 1,5m² of the site area in total".* **Authorised Infrastructure: *d -*** *"The PV arrays will be 1km² in length and made up of approx. 100m sections"*

The as-built north and south solar fields with PV arrays, differs in terms of location, orientation and total footprint to what was initially applied for and authorised - EA (12/12/20/1903/1). Figure 4 below indicates the proposed vs. as-built solar fields. The north and south solar fields with PV arrays occupy a total of less than 150ha of the site in total. The north solar field covers an area of approx. 75ha with PV arrays of up to 1,5km in length, while the south solar field covers an area of approx. 67ha with PV arrays of up to 1km in length.

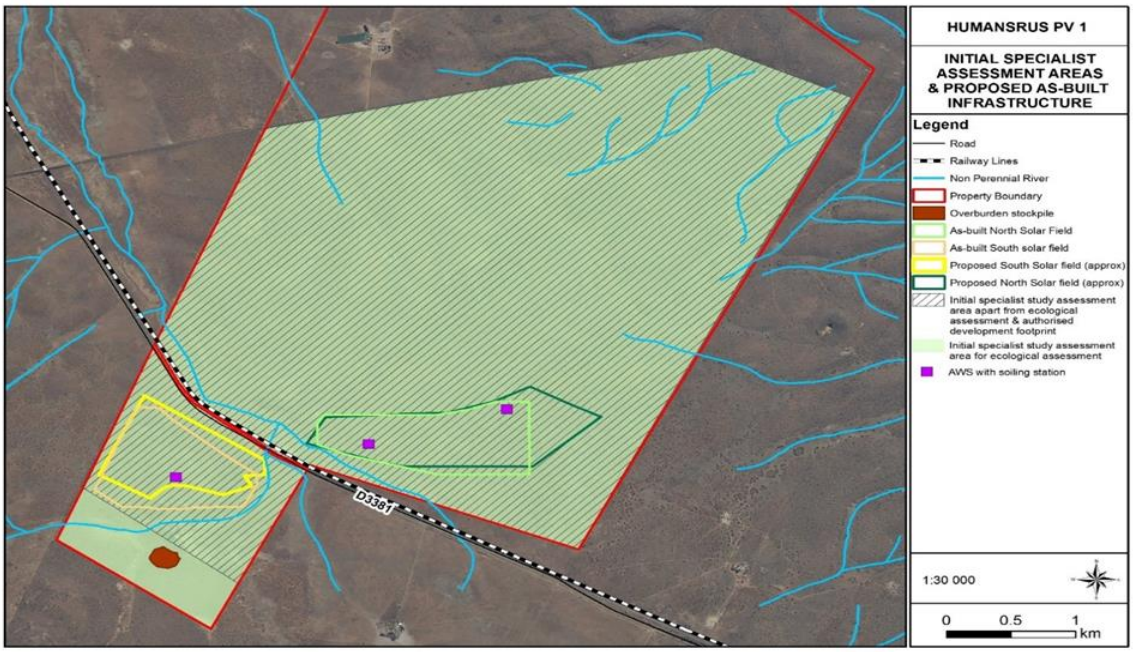


Figure 4: As-built and proposed infrastructure (north and south solar fields with PV arrays, AWS and soiling stations)

4.3 ELECTRICAL CONNECTIONS

Each row of PV panels is connected via an internal underground electrical reticulation system, running up to an inverter building, to convert the direct current (DC) output to alternating current (AC). The inverters are connected to a number of step-up transformers, which convert the low voltage AC to a medium voltage (22 kV) internal collection system. The medium voltage collection system is comprised primarily of underground cables, while the solar field to the north is connected to the substation via a 22kV overhead transmission line with a total length of less than 500 meters (Refer to Figure 5 A & B).

A: Inverters and transformers in south solar field

B: 22kV Overhead transmission line to substation from north solar field

Figure 5: Electrical connections

4.3.1 ELECTRICAL CONNECTIONS – AMENDMENT CONTEXT

Reference is made to the relevant amendments applied for as part of this Application as per extract of Table 7.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To include an aboveground 22kV powerlines connecting the northern solar field to the substation – across railway line and D3381 road.	**Authorised Infrastructure**: ***f -*** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m^2 in size".*

During the planning phase of the original NEMA EIA Application (EA 12/12/20/1903), the 22kV powerline connection connecting the northern solar field and substation – across railway line and D3381 road, was proposed to have been installed underground. This proposal was due to the potential visual impact associated with the construction of above-ground powerlines as recommended by the visual specialist.

Figures 5 and 6 respectively show the 22kV powerline connects the northern solar field and substation – across railway line and D3381 road, and has been installed above-ground. The are several disadvantages associated with the installation of underground lines including: time to repair, cost of installation, more complex construction (especially with a road crossing and through culverts under the railway line) and poorer heat dissipation. Therefore, for these reasons, and for Lesedi Power Project to comply with Eskom's specifications, overhead powerlines were constructed over the railway line and D3381 Road Crossing in 2014.

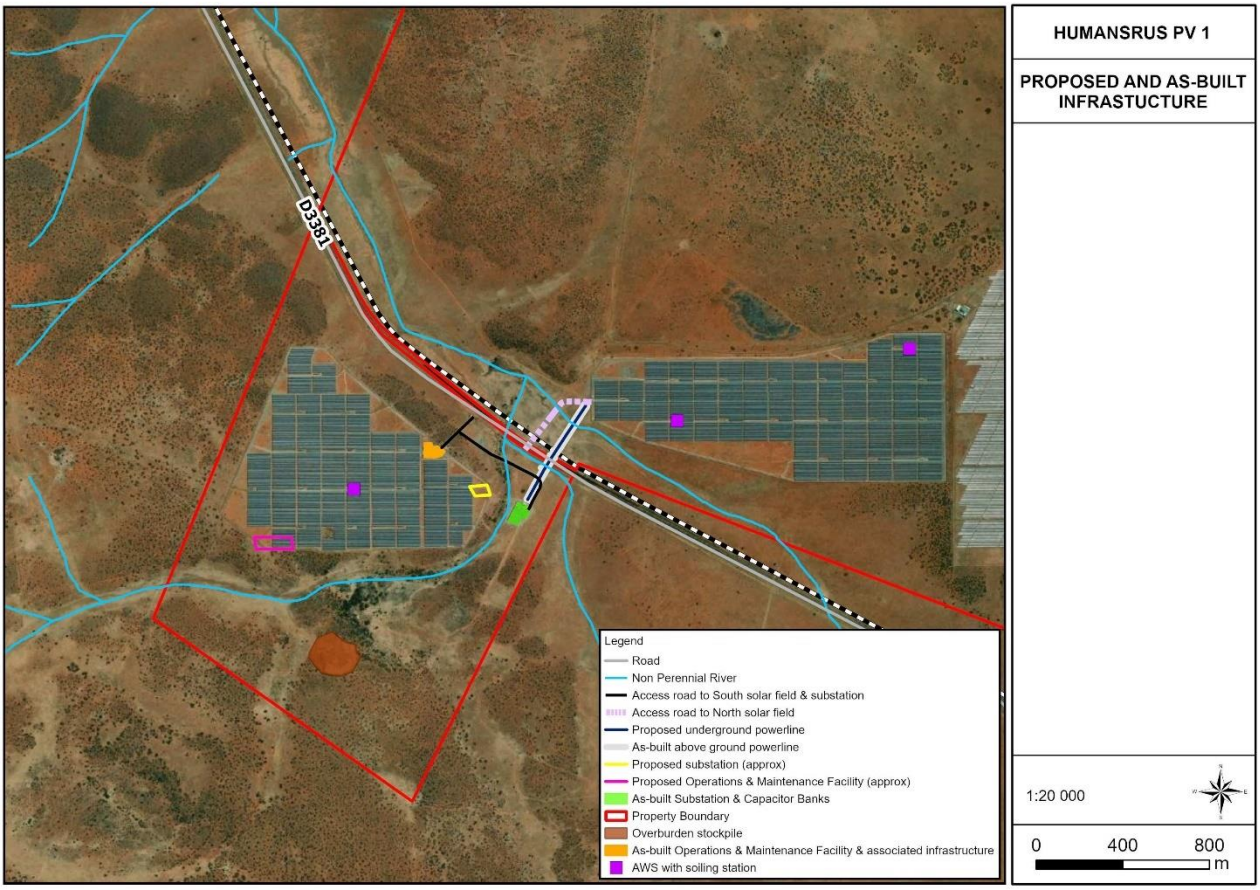


Figure 6: Proposed and as-built infrastructure (powerlines, substation and O&M facility)

4.4 SUBSTATION, CAPACITOR BANKS AND GRID CONNECTION

A substation, transformer bays and associated switching facilities were built to facilitate connection of the solar facility to the national transmission and distribution grid network (Refer to Figure 7). The high voltage side of the substation is maintained and owned by Eskom. The substation is located close to Eskom's existing 132kV overhead transmission line, situated to the south-west of the site (Refer to Figure 9 A & B). The substation and capacitor banks over an area of up to 5 970m^2 and includes external 132kV transformers, electrical switchgear and capacitor banks which is fenced for security and safety. The substation and associated infrastructure are shown in Figures 7 & 8 (A & B). The capacitor banks were installed to satisfy the National Energy Regulator of South Africa (NERSA) regulations and the national Grid Code put in place in 2014.

Figure 7: Substation, capacitor banks and grid connection

A: Capacitor banks with a footprint of approx. 900m² located to the east of the substation's infrastructure footprint.

B: Substation with secure fencing and access control as approved by Eskom. Substation footprint is around 4 873m².

Figure 8: Installed capacitor banks and substation with security

A: Grid connection into Eskom 132kV overhead powerline.

B: Eskom 132kV overhead powerline running to the south west away from the substation.

Figure 9: Eskom 132 kV overhead powerline connection

4.4.1 CAPACITOR BANKS, SUBSTATION AND GRID CONNECTION - AMENDMENT CONTEXT

Reference is made to the amendment proposal part of this Application as per Table 7.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To amend the size and location of the substation, and indicate that the substation area comprises a control room, external 132kV transformers, electric switchgear, capacitor banks and is fenced for security and safety.	**Authorised Infrastructure: *f* -** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000 m² in size"*

The initial impact report indicated (erroneously) that the substation would have a footprint of 1 000m² and would be located close to the existing transmission line in the west, adjacent to the south solar field. The approved EA (12/12/20/1903/1) makes reference to the size and infrastructure authorised as per Table 7 above.

However, the solar irradiation assessment conducted prior to construction informed the optimal layout of the PV panels and other infrastructure, therefore the as-built location, size and infrastructure of the substation differs to the specifications planned and authorised. The location, size and infrastructure of the substation was modified and constructed in accordance with Eskom's specifications and standards as follows:

- Substation and capacitor banks with a final as-built footprint of approx. 5 970m², located further east of its original proposed location and east of a non-perennial tributary of the Groenwater Spruit (Refer to Figure 7 and 8);
- Substation with capacitor banks as required in terms of National Energy Regulator of South Africa (NERSA), under the new Grid Code of 2014. The capacitor banks were constructed in 2016. In terms of the specifications of these facilities, the footprint of the infrastructure is 42.74m (length), 17.67m (width) and 2.25m in height. Refer to Figures 9 & 8 A.

Supplementary information in support of the final infrastructure developed is attached to this report in the following Annexures:

- C3_Subsation_General Layout
- C4_Substation_Electrical Reticulation
- C5_Substation_Eskom Approved
- C6_Capacitor Banks As-built
- C7_Capacitor Banks_Reticulation

An Aquatic assessment was undertaken in 2018 by Knight Piesold Consulting (Pty) Ltd. (as attached in Annexure D1). The scope of this assessment included an aquatic impact assessment and floodline determination for regulatory compliance aspects associated with the substation and access related infrastructure. The findings of the assessment concluded the following:

- The as-built substation and capacitor banks are located outside of the 1:100 floodline of the tributary feeding the Groenwater Spruit;
- The watercourse on the southern part of the farm is episodic in nature;
- The concrete low level crossing constructed has no significance impact on the river channel, flow and geomorphology of the system; and
- The substation is not threatened by the 1:50 and/or 1:100 year floodline (Figure 10).

Copies of the water uses registered are attached in Annexure D2.

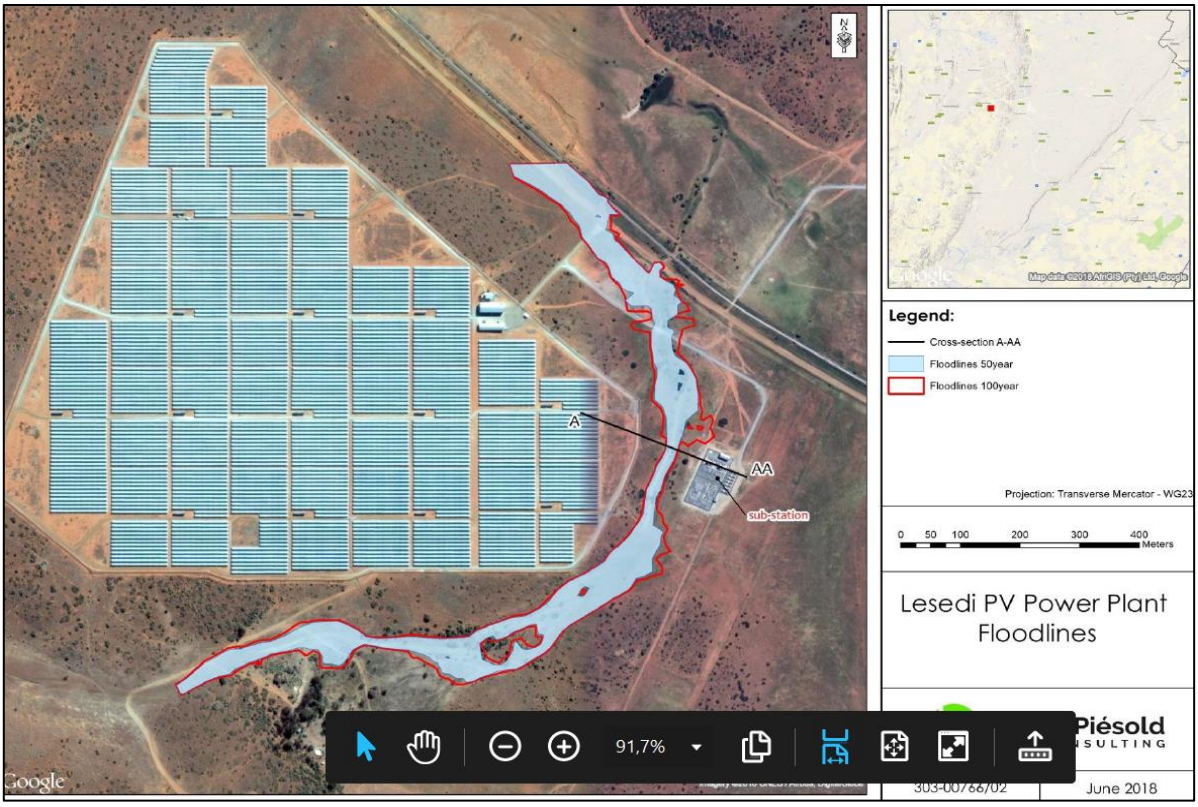


Figure 10: Substation in relation to 1:50 and 1:100 year floodlines (Knight Piesold, 2018)

4.5 ADDITIONAL INFRASTRUCTURE – AMENDMENT CONTEXT

The following infrastructure was constructed as part of the Lesedi Solar Power Facility: O&M building, waste-, water-, sewage- and stormwater infrastructure etc.) (Figure 11). Sections 4.5.1 – 4.5.4 below details the respective infrastructure as well as amendments applied for.

Figure 11: O&M buildings and associated infrastructure

4.5.1 O&M BUILDING & ASSOCIATED INFRASTRUCTURE

Reference is made Figure 12 below extracted from the 2011 EIR report of the original NEMA EIA Application (EA 12/12/20/1903), where it is indicated that several alternatives were identified and considered for the location and construction of the O&M building.

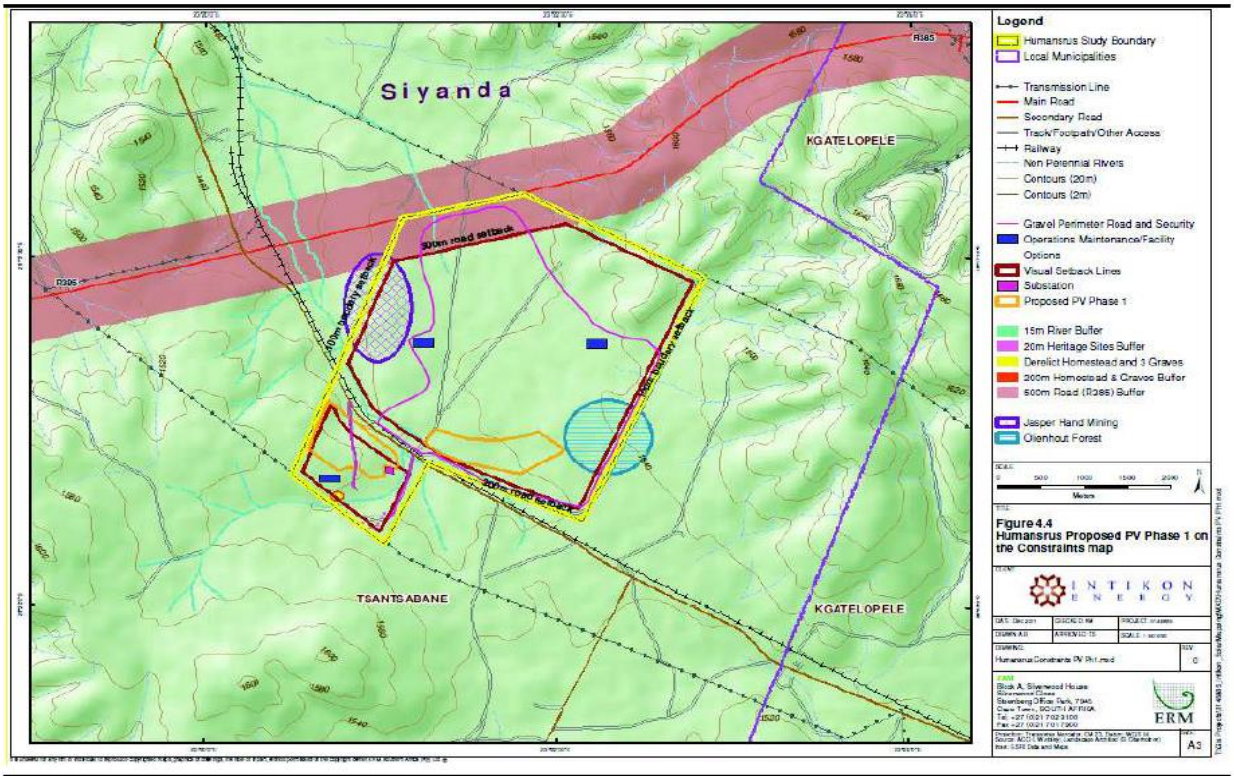


Figure 12: Indicative Site Layout Plan (ERM, 2011)

Reference is made to the amendment proposal part of this Application as per Table 7 regarding the location of the O&M buildings and associated infrastructure.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To indicate the location of the Operations and Maintenance (O&M) buildings, and to show this consists of an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility.	**Authorised Infrastructure: *f -*** *"A new Substation which would include a control room, and operations and maintenance facility, parking, external 132KV transformers and electronic switchgear and will have a footprint of up to 1000m^2 in size"* **Authorised Infrastructure: *i -*** *"Additional infrastructure that will form part of the development will include:* - *A permanent solar irradiation panel (16m^2 in size) to be erected to collected data on the solar resource of the site;* - *A small office and storage building with security and ablution facilities;* - *Site fencing of 2,5m in height;* - *A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.*

The O&M building comprises of offices, ablution facilities and parking (total area approx. 6160m^2). The associated infrastructure includes:

- Outdoor store with Water Treatment Plant (WTP);
- Security office and access control;
- Sewage Treatment Plant (STP); and
- Operations and maintenance warehouse.

Figures 13 A – F below highlights the as-built O&M building and associated infrastructure that was constructed within a fenced footprint of the south solar field at 28°31'52"S and 23°35'40'' E within authorised 150ha footprint of the solar field, as indicated in Figure 12 above.

A: Offices and parking area.

B: Operations and maintenance warehouse.

C: Outdoor store with WTP and water storage infrastructure (arrow).

D: Authorised Sewage Treatment Plant (STP).

E: Site access control office with fencing. Waste separation evident on site.

F: Access control to O&M buildings.

Figure 13: O&M facilities including offices, warehouse, parking, access control and sewage treatment plant etc.)

Supplementary information in support of the O&M building and associated infrastructure developed is attached to this report in the following Annexures:

- C10_O&M Buildings _General Location and Layout
- C11_O&M Buildings_Warehouse_Layout and Elevations

4.5.2 AUTONOMOUS WEATHER AND SOILING STATIONS

Reference is made to the amendment proposal part of this Application as per Table 7 regarding the three autonomous weather stations (AWS) and two soiling stations.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To indicate that a solar irradiation measuring panel was in place during the feasibility stage, to collect data on the solar resource which information the layout of the facility, but is not permanent, and was removed prior to the commencement of operations.	**Authorised Infrastructure: *i -*** *"Additional infrastructure that will form part of the development will include:* - *A permanent solar irradiation panel (16m^2 in size) to be erected to collected data on the solar resource of the site;* - *A small office and storage building with security and ablution facilities;* - *Site fencing of 2,5m in height;* - *A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.*
To include three autonomous weather stations, approx. 4m in height installed for the continuous monitoring of local conditions during the operational phased, and three soiling stations,	**Authorised Infrastructure: *i -*** *"Additional infrastructure that will form part of the development will include:* - *A permanent solar irradiation panel (16m^2 in size) to be erected to collected data on the solar resource of the site;* - *A small office and storage building with security and ablution facilities;*

measuring approx. 4m² in size each, to monitor and determine operational efficiencies.	- *Site fencing of 2,5m in height;* - *A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site".*

- Three Autonomous Weather Stations (AWS), approximately 4m in height, are located within the solar fields; for continuous monitoring of local conditions during the operational phase (Figure 14). GPS coordinates of the AWS' are as follows:
    - AWS1 located at: 28°19'0.58"S and 23°21'1.89"E
    - AWS2 located at: 28°18'39.63"S and 23°22'24.87"E
    - AWS3 located at: 28°18'50.38"S and 23°21'50.19"E
- Two soiling stations, consisting of two PV panels each, measuring approximately 4m² in size each have been installed to monitor and determine operational efficiencies (Figure 14). GPS coordinates of the soiling stations are as follows:
    - Soiling Station 1 located at: 28°19'0.58"S and 23°21'1.89"E
    - Soiling Station 2 located at: 28°18'39.63"S and 23°22'24.87"E
    - Soiling Station 3 located at: 28°18'50.38"S and 23°21'50.19"E

A: AWS2 installed in Lesedi south solar field.

B: Soiling station installed to monitor and determine operational efficiencies in Lesedi south solar field.

Figure 14: Autonomous weather and soiling stations installed

4.5.3 WASTE RELATED INFRASTRUCTURE

4.5.3.1 CONSTRUCTION WASTE

All general and hazardous waste generated during the construction phase was managed in accordance with the EA conditions and relevant regulatory requirements and approved EMPr. However, of relevance to this Part 2 EA Amendment Application is the following:

- A small borrow-pit that was approved as per EA was not required during the construction phase; and
- Surplus material (topsoil and overburden) excavated for foundations was used, where needed, and excess overburden was stored in an area as agreed with the Landowner (Figures 4 and 6 respectively).

The EA amendment Application accordingly is to request the alignment of the authorized development footprint with the farm boundary, to accommodate the overburden stockpile.

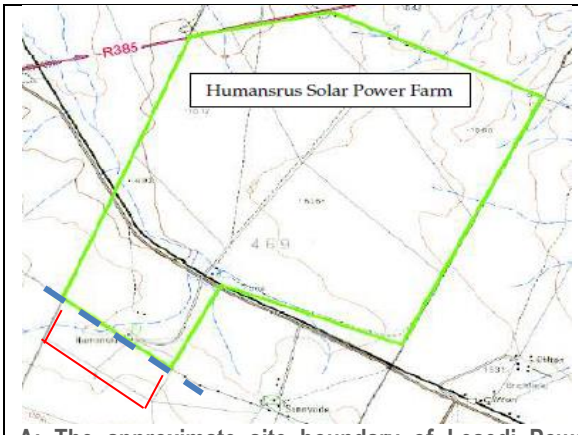
Reference is made to the amendment proposal part of this Application as per Table 7.

<table>
<tr><th>Amendment applied for</th><th>Relevance to EA (12/12/20/1903/1) / Condition</th></tr>
<tr><td>To align the authorised development footprint with the farm boundary, to accommodate the overburden stockpile, and to indicate that a small borrow pit on site was not needed during the construction phase, as excess overburden was used for filling.</td><td>Condition 4: “The activities authorised may only be carried out at the property as described on page 4 of this authorisation, namely:

The proposed Lesedi Solar Power Farm is hereby approved – as described in the EIR Report dated January 2012 at:
<table>
<tr><td>Location</td><td>Latitude</td><td>Longitude</td></tr>
<tr><td>Humansrus PV1</td><td>28°18’58.81”S</td><td>23°21’22.71”E</td></tr>
</table>
- For the construction of a 75MW PV1 Solar Facility (Lesedi power Company), covering an area of 150ha (1,5m²), on part of the Farm Humansrus (Farm 469) within the Tsanstabane Local Municipality, Northern Cape Province”.

Authorised Infrastructure: i - “Additional infrastructure that will form part of the development will include:
- A permanent solar irradiation panel (16m² in size) to be erected to collected data on the solar resource of the site;
- A small office and storage building with security and ablution facilities;
- Site fencing of 2,5m in height;
- A laydown area for temporary storage of materials during the construction activities and a small borrow pit on site.</td></tr>
</table>

Figure 15 A - D summarises the activities outside of the authorised development footprint relating to the location of the overburden stockpile. The EA allowed for a small borrow pit to be established for construction activities. However, fill-material was not needed, and excess material (topsoil and overburden) was removed and stored. The location of the stockpile, south of the 132kV Eskom powerline and behind the old homestead is indicated by the orange circle in Figure 15C. The “approximate site boundary” was presented in Figure 1.1 of the 2011 EIR, which shows the southern boundary of the study area, as the Eskom transmission line (blue dash-line added to Figures16 A-C). The Eskom transmission line transects the landowner’s property (i.e. the proposed project area includes the old homestead). The 2011 Ecological Specialist Report shows the southern-most boundary of the study area as the boundary of the landowner’s property (see Figure 15B). The overburden stored on the landowner’s property is within the authorised property, namely Humansrus Farm (Farm 469) however not within the authorised development footprint, which was taken as the proposed “approximate site boundary”.



A: The approximate site boundary of Lesedi Power Facility, showing the southern-most boundary as the

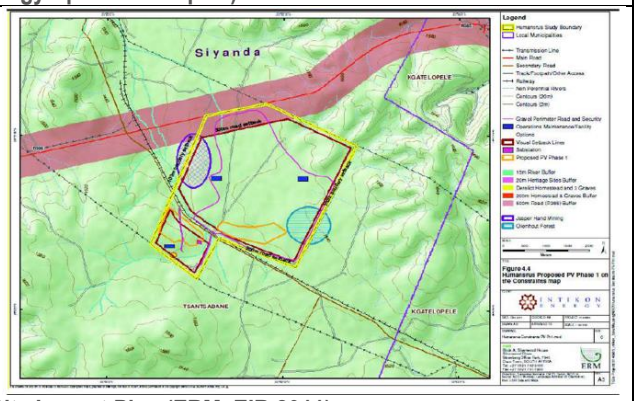
Eskom transmission line (blue dash-line) transecting the landowner's property; boundary fence shown by red line (Figure 1.1 in EIR, 2011).	B: The property boundary (red lines) demarcated the study area of the 2011 Ecology Specialist Study. The blue dash-line shows the location of the Eskom transmission line (Figure 1 in 2011 Ecology Specialist Report).
	
C: Location of overburden stockpile (orange circle) in relation to Eskom powerline (blue dash-line) and owner's property boundary (red line). The green line shows the approximate site boundary as depicted in the 2011 EIR.	D: Site Layout Plan (ERM, EIR 2011)

Figure 15: Overburden stockpile in relation to authorized development footprint and farm boundary

The overburden stockpile appears to be on the edge of a watercourse (refer to Figure 15C). The 2011 Wetland Delineation and Assessment report applied the "*Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas*" (DWAF, 2005) and demarcated "a single riparian zone associated with the Groenwater Spruit and one of its tributaries within the study area", running west-east then in a north-westerly direction as indicated in Figure 16B and reported "though isolated patches along the water course did display some wetland characteristics and subsurface water seepage, most notably a small spring located upslope and outside of the study area in close proximity to the site boundary, as well as the area located immediately below the old farm house", the watercourse was classified as a "riparian zone". The 2018 Aquatic Assessment and Floodline Determination report shows all Lesedi Solar Power Facility infrastructure is located outside the 1:100 year floodline (refer to Figure 16D). The overburden stockpile is located well away from the floodline and watercourse.

From the vegetation shown in image 5 of Figure 16E below, it appears as if the overburden stockpile (the grass-covered circle at the centre of the satellite image in Figure 16E is located on the edge of a watercourse (running south north (orange arrow)) and joining the watercourse running west-east (red arrow), which is described in the 2011 Wetland Assessment report and the 2018 Aquatic Assessment report. This (orange arrow) drainage line is not shown on the Topographical Map (see Figure 16E). Furthermore, a site investigation conducted on 28 January 2021 confirmed this to be a very wide, open valley with red Hutton soils and no obvious active drainage channel (see images 1, 3 and 4 in Figure 16E). Images 5, 6 and 7, taken across the watercourse running west-east, shown grey soils, which are also evident in the central Google Map image in Figure 16E. The only water seen on site, was in the vicinity of the ruined farmstead (see image 11 in Figure 16E) and where the road crosses the drainage line. This in spite of the region having received in excess of 150mm of rain (more than a quarter of the annual rainfall) on the 26th and 27th of January 2021 (the day before the site investigation). This standing water is located on the other side of the rise/hill from the stockpile.

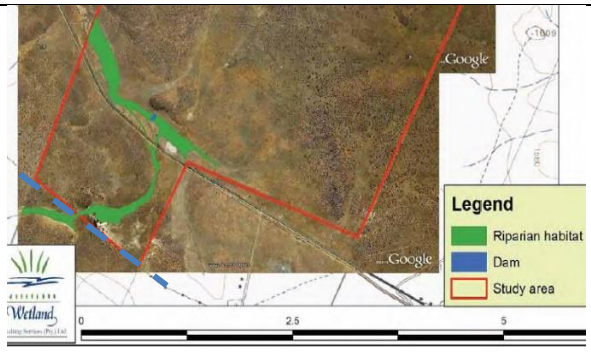
The Heritage Specialist Study (Annexure G of the 2011 EIR) recorded that Mr. Schultz (the landowner's representative), reported that the wind pump at the old farmstead "is located on a natural seepage which, after heavy rains, flows down a gully as a fast-flowing stream into the non-perennial river, which crosses the southern portion of the Study Area". The rehabilitation success is shown in images 2, 9 and 10 (taken from on top of the stockpile), and image 8 of Figure 16 shows the side-view of the overburden and topsoil stored to a height of approximately 1.5m.

It is our opinion that the storage of the topsoil and overburden, south of the Eskom transmission line, has not had any negative impact on any watercourse, and any attempt to remove this pile (prior to site decommissioning and rehabilitation) would result in unnecessary loss of vegetation cover, erosion, siltation of watercourses and dust impacts to the region.

Refer to Section 6 of this Report detailing Specialist findings and impacts. The following specialist reports includes reviews and impact statements on the overburden stockpile:

- Ecological – Vegetation (2023) as included in Annexure E5; and
- Aquatic Assessment and Floodline Determination (2018) as included in Annexure D1.

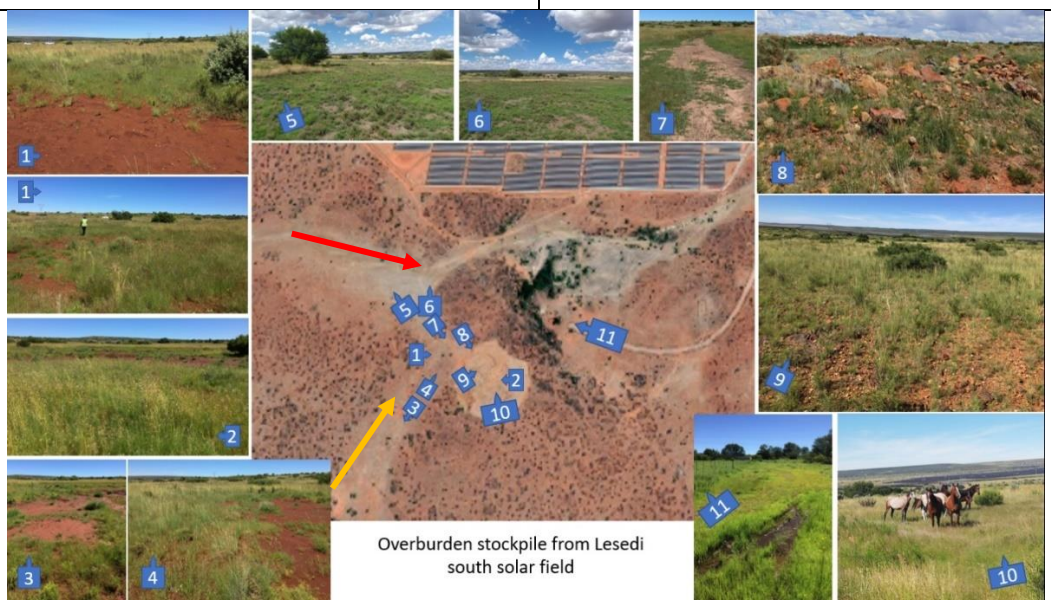
A: Location of Lesedi Solar Power Facility (south solar field on the left, and north solar field on the right), in 3D relief, showing Eskom transmission line (blue dash line) (Source: Google Maps, 2021).



B: Delineated riparian habitat (Source: Figure 6 of the 2011 Wetland Delineation Assessment).

C: Topographical map, showing watercourses.

D: Floodline around Lesedi south solar field; blue shaded area shows 1:50-year floodline, and red border shows 1:100-year floodline (Source: Figure 3 of the 2018 Aquatic Assessment and Floodline Determination.



E: Site investigation of the overburden stockpile undertaken in January 2011.

Figure 16: Overburden stockpile in relation to the delineated riparian habitat and floodlines (Knight Piesold, 2018)

4.5.3.2 OPERATIONAL WASTE

All waste generated at the facility is managed in accordance with the National Environmental Management Waste Management Act, 2008 (Act No. 59 of 2008) and its supporting regulations. Waste management and mitigation measures are detailed in the OEMP (Section 4.5.2). The waste management hierarchy is applied at the Lesedi Solar Power Facility (i.e., reduce, reuse, recycle, recover and disposal as a final option), to ensure valuable resources are not discarded or wasted.

General waste possibly generated during the operational phase includes:

- Domestic waste;
- Business waste not containing hazardous waste or chemicals;
- Garden waste;
- Waste packaging;
- Building and demolition waste not containing hazardous waste or chemicals; and
- Excavated earth not containing hazardous waste or chemicals.

Hazardous waste possibly generated during the operational phase includes:

- Waste products (expired, spoilt or unusable hazardous products) (e.g. PV module waste);
- General waste, excluding domestic waste, which containing hazardous waste or chemicals; and
- Mixed hazardous waste.

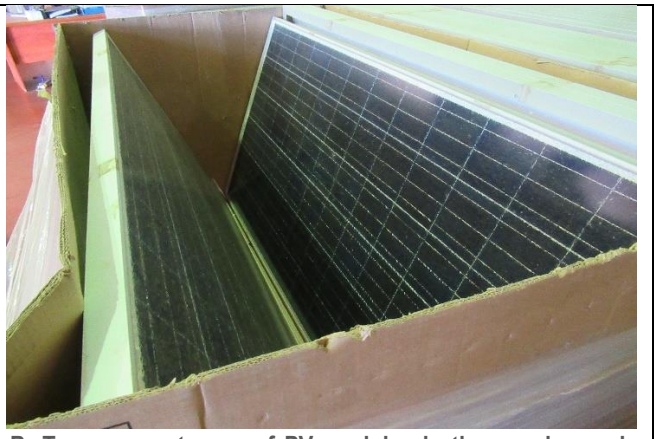
4.5.3.2.1 PV MODULE WASTE

Reference is made to the amendment proposal part of this Application as per Table 7.

Amendment applied for	Relevance to EA (12/12/20/1903/1) / condition
To accommodate the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008).	Condition 36 of the EA requires an integrated waste management approach to be implemented and compliance with relevant legislation. The National Norms and Standards for the Storage of Waste, 2013 as per the National Environmental Management Waste Act Regulations govern the temporary storage of waste PV modules. The Applicant shall continue to ensure compliance with respective and relevant legislation & Condition 36 of the EA making reference to integrated waste management and compliance on site. In this case, the Applicant must ensure compliance for the temporary storage of the waste PV modules as required in terms of the National Norms and Standards for the Storage of Waste, 2013) as per the National Environmental Management: Waste Act Regulations.

Waste PV modules are generated during operations. It is however not financially viable to remove waste PV panels from the facility within 90 days since generation. This is mainly due to high transport costs to licensed waste disposal facilities. Accordingly, an application will be lodged with the DFFE for the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008). Figure 17 A & B demonstrates the PV models and storage conditions.

A: Temporary storage of PV modules in the warehouse (roofed structure with a cement floor).



B: Temporary storage of PV modules in the warehouse in original packaging until removal by a licensed contractor.

Figure 17: Temporary storage of waste PV modules

The waste PV modules removed from the facility to date include:

- 15-Feb-2018 220 panels
- 26-Nov-2020 119 panels
- 09-Dec-2021 240 panels
- 24-Oct-2022 273 panels

4.5.3.2.2 SEWAGE

Sewage from the ablution and kitchen facilities is received, contained and treated in an onsite Sewage Treatment Plant (STP) located to the south-east of the office block (refer to Figures 11 and 18 A&B). After treatment, treated effluent is discharged into the tributary of the Groenwater spruit in accordance with the management and mitigation measures contained in *Section 4.5.6.C. Ablution facilities and sewage system* of the OEMP as well as the provisions of General Authorisation (GA) dated 13/07/21(27/2/2/C591/55/1) (attached in Annexure D1) which authorises the Section 21 (f) water use under the National Water Act. Table 8 provides a summary of the relevant registered water use relating to wastewater discharge into a natural water resource.

Table 8: Registered Water Use: Section 21 (f) (GA 27/2/2/C591/55/1)

Water Use	Purpose	Property and GPS Coordinates
Discharging effluent generated from the wastewater facility into the water resource.	Once the pumping chamber is full, treated effluent is discharged into the tributary of the Groenwater spruit. Volume: 274m^3/annum.	Remaining Extent of Farm 469 S 28°18'55.5" E 23°21'23.4"

Supplementary information on the STP is attached to this report in Annexure Refer to C15_Sewage Treatment Design.

A: Sewage Treatment Plant with fencing and controlled access. The O&M building, warehouse and security office is visible beyond.

B: Discharge pipe from the Sewage Treatment Plant for treated effluent discharge into a tributary of the Groenwater Spruit in accordance with relevant limits and qualities as per GA.

Figure 18: Sewage Treatment Plant

4.5.4 WATER RELATED INFRASTRUCTURE

Water for operational use at the Lesedi Solar Power Facility is supplied by Sedibeng Water from the Vaal Gamagara Scheme. Any additional water that may be temporarily required, would be brought in by truck.

Water is used for the following:

- Kitchen and ablution;
- Washing of solar panels and other equipment; and
- Dust suppression.

Water Treatment Plant:

For optimal electricity production, the solar panels must be kept clean (free from dust, debris and salt deposits). Raw water from Sedibeng must be demineralised to prevent chlorine, calcium and other salt deposits accumulating on the panels. Solar panel washing is scheduled for February/March and October/November each year (as required). Infrastructure for the Water Treatment Plant (WTP) comprises a cement foundation and roofed structure over 4 JoJo water tanks (2 x 15,000L tanks and 2x 5,000L tanks, therefore 40,000 litres in total) for storing raw water and treated water (Figures 19 A & C).

Up until December 2020, Reverse Osmosis (RO) technology was used to demineralise the water. This produced 1m^3 of brine for every 3m^3 of raw water treated. Brine discharged from the 5,000L tank, via a 50mm2 PVC pipe approximately 30m from the water treatment plant, was discontinued in March 2018 on instruction from Department of Water and Sanitation (DWS). Through the water use application process, DWS advised that brine discharge would not be authorised and advised on exploring alternative technology to treat water. Brine was removed from site to a licensed facility between March 2018 and December 2020, when the RO technology was replaced with an unGer model, which does not produce a wastewater stream (Figure 19B).

Supplementary information on the WTP is attached to this report in Annexure C12_Water Treatment Plant Location.

A: Water Treatment Plant for the storage and treatment of water received from Sedibeng Water. The facility has a cement foundation and roofed structure over 4 JoJo water tanks (2 x 15,000L tanks and 2x 5,000L tanks, therefore 40,000 litres in total).

B: The mobile UnGer water treatment system with no wastewater stream after treatment.

C: Decommissioned Water Treatment Plant (foreground) and the water storage tank.

D: Mobile water trailer used for the washing of PV solar panels.

Figure 19: Water Treatment Plant

Stormwater infrastructure:

All stormwater and associated infrastructure at the facility is managed in accordance with management and mitigation measures in the OEMP. Figure 20 A & B illustrates existing stormwater infrastructure on site. Supplementary information on Stormwater Infrastructure is attached to this report in Annexures:

- C13_Stormwater Design
- C14_Rainwater Drainage

A: Existing maintained stormwater channel on site.

B: Stormwater infrastructure running adjacent to the facility's fencing.

Figure 20: Stormwater infrastructure at Lesedi Solar Power Facility

4.5.5 ACCESS ROADS AND SITE ACCESS

The Lesedi Solar Power Facility is accessed via the D3381 gravel road, from the R385 tarred toad. Within the facility, new gravel roads were developed to facilitate movement of construction and maintenance vehicles. Access tracks are adjacent to each PV array, and all components of the development are joined by gravel access roads up to 6m wide with drainage trenches adjacent to the road. The facility is bisected by an existing railway and the D3381 district road to Lime Acres. The access road to the northern solar field crosses the railway line.

A cement low-water crossing over a watercourse providing access to the substation, as well as other internal roads, required authorisation in terms of the National Water Act, Act 36 of 1998 (NWA). In response, an application was submitted to the Department of Water and Sanitation (DWS) and General Authorisation (GA) dated 13/07/21(27/2/2/C591/55/1) (attached in Annexure D1) was obtained for the following water uses: Section 21 (c), (i) and (f) of the National Water Act (Act 36 of 1998). Table 9 provides a summary of the relevant registered water uses relating to access roads and associated infrastructure.

Table 9: Registered Water Uses

Water Use	Description	Purpose	Property and GPS Coordinates**
S21 (c) and (i)	Concrete road crossing over a non-perennial tributary of the Groenwater Spruit	Road crossing provides access to the Substation for the PV plant.	Remaining Extent of Farm 469 S 28°18'55.5" E 23°21'23.4"
S21 (c) and (i)	Gravel road in the northern side of the Transnet Railway Line, crossing a non-perennial tributary of the Groenwater Spruit	Road crossing 2: to access the Northern PV field from D3381.	Remaining Extent of Farm 469 S 28°18'49.5" E 23°21'31.0"
S21 (c) and (i)	Tarred road in the southern side of the Transnet Railway Line, crossing a non-perennial tributary of the Groenwater Spruit	Road crossing 3: to access the Lesedi Power Plant from D3381.	Remaining Extent of Farm 469 S 28°18'49.9" E 23°21'19.2"
S21 (c) and (i)	Pylon 3 (4 poles) within the regulated area	Transmission Pylon Powerline	Remaining Extent of Farm 469 S 28°18'54.1" E 23°21'32.4"
S21 (c) and (i)	Pylon 4 (4 poles) within the regulated area	Transmission Pylon Powerline	Remaining Extent of Farm 469 S 28°18'54.1" E 23°21'32.4"
Section 21 (f)	Discharging effluent generated from the wastewater facility into the water resource.	Once the pumping chamber is full, treated effluent is discharged into the tributary of the Groenwater spruit. Volume: 274m^3/a	Remaining Extent of Farm 469 S 28°18'55.7" E 23°21'16.4"

Reference is made to the Aquatic specialist assessment and floodline delineation undertaken in 2018 as part of GA application (attached in Annexure D2). Concrete drift, crossings and the substation were assessed accordingly. The specialist findings conclude:

- The watercourse on the southern part of the farm is episodic in nature;
- The concrete low level crossing constructed has no significance impact on the river channel, flow and geomorphology of the system; and
- The sub-station is not threatened by the 1:50 and/or 1:100 year floodline.

5. PUBLIC PARTICIPATION

Regulation 32 (1)(a)(i)(aa) of the EIA Regulations 2014 (as amended), states the following relating to Public Participation required for a Part 2 EA Amendment Application:

- *"Which report had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and*
- *Reflects the incorporation of any comments received, including any comments of the competent authority"*

The Public Participation Process (PPP) required for Part 2 EA Amendment Application is undertaken in terms of the requirements as outlined in Chapter 6 Public Participation Regulations 39 - 44 of the NEMA EIA Regulations 2014 (as amended). Sections 5.1 – 5.7 below summarises the PPP process and actions undertaken for this project.

5.1 PRE-CONSULTATION WITH COMPETENT AUTHORITY

A pre-consultation meeting with Department of Forestry, Fisheries and Environment (DFFE), the Competent Authority (CA), was undertaken on 14 October 2022. The planned Part 2 EA Amendment Application process, specialist assessment requirements and PPP were discussed and agreed to.

The presentation, minutes of the Pre-Application Meeting and minutes acceptance are included in Annexure F1 of this Report.

5.2 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Regulation 42 of the EIA Regulations 2014 (as amended) states the following requirements relating to register of Interested and Affected Parties (I&APs):

"A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of—

(a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;

(b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and

(c) all organs of state which have jurisdiction in respect of the activity to which the application relates"

A detailed I&AP register was compiled and includes registered I&APs from the original NEMA EIA Application, as well as relevant Competent Authorities and Organs of State. The register included the following parties, among others:

- Registered I&APs
- LED parties
- Adjacent landowners;
- The Department of Forestry, Fisheries and Environment (DFFE);
- Tsantsabane Local Municipality, including the Municipal Ward councillor;
- ZF Mgcawu District Municipality;
- Eskom;
- SANRAL;
- Northern Cape Provincial Heritage Authority;
- SAHRA;
- Transnet;

- Bird Life South Africa; and
- DWS.

The I&AP Register is included in Annexure F3.

5.3 SITE NOTICES AND ADVERTISEMENT

Site Notices:

Regulation 41 (2) of the EIA Regulations 2014 (as amended), states the following requirements relating to the placement of site notices:

"(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-
(i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and
(ii) any alternative site."

Site notices were placed at the following locations:

i. Corner of the D3381 and Lesedi access road: 28°18'49"S, 23°21'19"E;
ii. Lesedi North solar gate: 28°18'54"S, 23°21'14"E;
iii. Lesedi South solar gate: 28°18'47"S, 23°21'37"E;
iv. Refentse Primary School (Groenwater Community) and
v. Postmasburg Library: 13 Springbok Street, Postmasburg

Newspaper Advert:

Regulation 41 (2) of the NEMA EIA Regulations 2014 (as amended) states the following requirements relating to the placement of advertisement:

(c) placing an advertisement in—
(i) one local newspaper; or
(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;
(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 district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);

In order to notify the stakeholders of the Part 2 EA Amendment Application process and the availability of the Draft EIR and OEMP for public review and public meeting, newspaper advertisements were placed accordingly:

i. Beeld newspaper on 25 May 2023;
ii. Noordkaap Bulletin on 25 May 2023; and
iii. Kathu Gazette newspaper on 19 May 2023.

Annexure F2 contains the site notice and adverts. Proof of placement will be included in the Final EIR in Annexure F5.

5.4 NOTIFICATION OF I&AP AND STAKEHOLDERS

Regulation 41 (2) of the NEMA EIA Regulations 2014 (as amended) states the following requirements relating to the notifications to stakeholders:

(b) giving written notice, in any of the manners provided for in section 47 D of the Act, to—

(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, and to any alternative site where the activity is to be undertaken;

(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;

(iii) 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;

(iv) the municipality which has jurisdiction in the area;

(v) any organ of state having jurisdiction in respect of any aspect of the activity; and

(vi) any other party as required by the competent authority;

The Draft EIR and OEMP were made available for review as required for the following period: 19 May 2023 to 28 June 2023. Letters of notification were emailed and/or WhatsApp'ed to the I&APs, notifying them of the commencement of the public review period, the availability of the Draft EIR (including a Dropbox link for download) and providing the contact details (telephone and email) of the EAP. ***Note: If no email address was available, the Draft EIR and OEMP was sent via WhatsApp. Upon request, a CD or hard copy of the report was also sent to I&APs via courier***.

Comment sheets were provided and collected at the end of the PPP for inclusion in the EIR. Further public participation correspondence was conducted via email (or fax and/or courier and/or WhatsApp and/or SMS if an email address was not available). SMS, WhatsApp and call back options were used throughout the PPP where necessary to accommodate I&APs with limited access to internet and computers.

Hardcopies of the Draft EIR, OEMP and supporting documentation were available for review at:

- Lesedi Solar Facility (Site)
- Postmasburg Library: 13 Springbok Street, Postmasburg

Electronic and/or hard copies of the Draft EIR, OEMP and supporting documentation were delivered to:

- DFFE
- DWS
- Tsantsabane Local Municipality
- An electronic copy of the report was uploaded onto the SAHRIS system for review by SAHRA and the Northern Cape Provincial Heritage Authority.

Proof of all notifications and deliveries is included in the EIR in Annexure F5.

5.5 PUBLIC MEETING

A public meeting was held at the Refentse Primary School (Groenwater Community) on 13 June 2023 (17:00-19:00). Minutes of the public meeting is attached in Annexure F5.

5.6 REGISTER AND ISSUES RAISED BY THE I&APS

Regulation 43 of the EIA Regulations 2014 (as amended) states the following requirements relating to registered I&APs entitlement to comment on reports:

(1) " A registered interested and affected party is entitled to comment, in writing, on all reports or plants submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest to which that party may have in the approval or refusal of the application.

(2) In order to give effect to Section 24O of the Act, any State department that administers a law relation to a matter affecting the environment must be requested to comment within 30 days".

All comments and responses received to date have been captured in the Comments and Responses Report as included as Appendix F5 of the EIR. As a result of comments raised by I&APs during the 1st round of Public Participation, amendments specifically relating to heritage aspects and the management thereof, have been made to the EIR, OEMP and Heritage Compliance Statement report. A 2nd round of Public Participation will be undertaken from **8 September 2023 to 10 October 2023**. I&APs have been notified of the availability of the report for download and comment. To this effect, hardcopies of the amended EIR, OEMP and supporting documentation will be available for review at: Lesedi Solar Facility (the Site) and the Postmasburg Library: 13 Springbok Street, Postmasburg from **8 September 2023**. Electronic copies of the report will be provided to registered I&APs via email or other means, as relevant. Please inform us should you require a copy of the report. The reports are also available for download using the following link: www.dropbox.com/sh/ey7b9gtcajyw6yi/AACbmW-VaquX0SlVFrk2-k6Wa?dl=0.

5.7 DECISION AND NOTIFICATION OF THE OUTCOME OF THE DECISION

The final EIR will be submitted to DFFE for decision making after the second 30-day public review period. This report will include all comments received. Registered I&AP's will be notified in writing of the outcome of the CA's decision within 14 days of the decision. The final EIR will be submitted within 140 days from submission of the EA amendment application form, to accommodate the additional public review period. EARTHnSKY Environmental did inform the CA of this in terms of a formal Regulation 32(b) notification letter on 31 July 2023 and this was acknowledged and confirmed by the CA on 31 July 2023 and 17 August 2023.

6. SPECIALIST ASSESSMENTS FINDINGS

The CA was consulted on the specialist input required as part of the Part 2 EA Amendment Application process. It was concluded during the Pre-Application meeting on 14 October 2022 held with the CA, that all specialist studies that were commissioned as part of the original NEMA EIA Application process for the approved EA (12/12/20/1903), are to be reviewed together with the proposed amendments and associated potential impacts as a result of the as-built infrastructure and operations.

The scope of work for the respective specialist input required included *inter alia* the following:

- Review of findings and impact assessment as per the initial specialist assessments undertaken as part of the original application and EA issued;
- Determine and assess the possible impacts of significance, specifically in relation to the various amendments to be applied for (particularly to the localities and sizes of specified infrastructures, property boundary etc.); and
- Review and update of any mitigation and management measures (if any) for inclusion into the Operational Environmental Management Programme (OEMP) (if required).

Table 10 below highlights the Specialists assessments and input undertaken respectively:

1) As part of the original NEMA EIA Application;
2) Subsequent assessments and investigations undertaken as required i.t.o. other legislative administrative processes; and
3) Current Part 2 EA Amendment Application.

Table 10: Specialist assessments summary

Specialist assessment	Date	Author	Authorisation / Licensing applicability (if any)	Status / Rationale / Requirement for assessment
1. Assessments undertaken as part of original NEMA EIA Application (EA ref: 12/12/20/1903)				
Ecological	17/01/2011	Prof. P.J. du Preez (Department of Ecology, University of Free State)	12/12/20/1903	Part of original NEMA EIA Application (2011). Attached in Annexure E6.
Visual	25/01/2011	B. Oberholzer (MLB Architects and Urban Designers)	12/12/20/1903	Part of original NEMA EIA Application (2011). Attached in Annexure E7.
Heritage	03/12/2010	L. Webley (University of Cape Town)	12/12/20/1903	Part of original NEMA EIA Application (2011).

				Attached in Annexure E8.
Paleontological	22/11/2010	D. Miller	12/12/20/1903	Part of original NEMA EIA Application (2011). Attached in Annexure E9.
2. Assessments undertaken as part of other legislative administrative processes				
Visual (Updated)	30/01/2015	B. Oberholzer (MLB Architects and Urban Designers)	12/12/20/1903/1AM3	EA Amendment Application (2017) not submitted. Attached in Annexure E10.
Aquatic and Floodline Delineation	01/06/2018	N. Neervoort (Knight Piesold Consulting)	12/12/20/1903/1AM3 and GA 27/2/2/C591/55/1	EA Amendment Application (2017) not submitted. 2018 WUL & GA Application submitted and authorisations received as per Annexure D1.
3. Assessments undertaken as part of current Part 2 EA Amendment Application – Refer to Section 6.1 – 6.5 for Specialist Findings and Section 7 for Impact Summaries				
Visual (Review and Statement)	30/01/2023	B. Oberholzer & Quintin Lawson (MLB Architects and Urban Designers)	Part 2 EA Amendment Application of EA (12/12/20/1903/1)	2023 Part 2 EA Amendment Application of EA as required. Attached in Annexure E1.
Paleontological (Review and Statement)	02/03/2023	G. Groenewald (Geo Consultants (Pty) Ltd.)	Part 2 EA Amendment Application of EA (12/12/20/1903/1)	2023 Part 2 EA Amendment Application of EA as required. Attached in Annexure E2.
Heritage (Review and Statement) (Updated and includes a Cultural Heritage Management Plan and Graves Register).	29/28/2023	A. Pelser (A Pelser Archaeological Consulting CC)	Part 2 EA Amendment Application of EA (12/12/20/1903/1)	2023 Part 2 EA Amendment Application of EA as required. Attached in Annexure E3.
Ecological (Review and Statement)	02/02/2023	B. Kasl (Fauna)	Part 2 EA Amendment Application of EA (12/12/20/1903/1)	2023 Part 2 EA Amendment Application of EA as required. Attached in Annexure E4.
	31/01/2023	A. Eyssell-Knox (Dimela Eco Consulting) (Vegetation)		2023 Part 2 EA Amendment Application of EA as required. Attached in Annexure E5.

6.1 VISUAL

The Visual Impact Review and Statement dated 30/01/2023 was completed by B. Oberholzer & Quintin Lawson (MLB Architects and Urban Designers). The Terms of Reference (ToR) for the assessment included the following:

- Update the layout and visual assessment of the solar PV project to reflect the as-built project;
- Update the Visual Impact Assessment (VIA) in terms of the as-built project, taking into consideration the current construction of the Redstone CSP;
- Update the Client / Application name;
- Update the site boundary / site assessment area; and
- Conclusions specifically addressing the various amendments on the project site.

The purpose was to determine if there would be any changes in the potential visual impacts, when compared to those of the authorised project description and layout, and the possible significance of the changes.

6.1.1 FINDINGS:

Size and location of the substation:
The substation was built further east (south of the authorised substation layout) and the size was increased, and comprises a control room, external 132 kV transformers, electric switchgear, capacitator banks and is fenced for security and safety. Seen from the various viewpoints, including the D3381 Road, **no major visual implications** have been identified, a visual buffer along the road having been maintained.

Operations and Maintenance (O&M) Facility:
The location of the O&M Facility consisting of an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility, is indicated in Figure 27. As in the case of the substation, seen from the various viewpoints, including the D3381 Road, **no major visual implications** have been identified, a visual buffer along the road having been maintained.

Aboveground 22 kV lines:
A 22 kV powerline between the northern solar field and the substation, across the railway line and D3381 road have been constructed as indicated in Figure 23. As the powerlines cross the railway line and D3381 road at right angles, the 200m **visual buffer from the D3381 secondary road and 50m visual buffer from the railway line can be relaxed** for the powerline crossing.

PV arrays:
The PV arrays of up to 1 km in length across the solar south field and up to 1,5 km length across the north solar field are indicated in Figure 22, and have been previously assessed with **no further visual implications**.

Development footprint:
The authorised development footprint has been aligned with the farm boundary to accommodate the overburden stockpile. A borrow pit on site was not needed during the construction phase, as excess overburden was used for filling.

Solar irradiation measuring panel:
This panel was in place during the feasibility stage to collect data on the solar resource, but was not permanent and was removed prior to the commencement of operations.

Weather stations:
Three autonomous weather stations approx. 4m in height for continuous monitoring during the operational phase, and three soiling stations approx. 4m^2 each to monitor operational efficiencies have been included in the solar fields. These **do not have significant visual implications** within the context of the overall solar power facility.

As-built drawings:
As-built drawings and layout plans for the entire operations, including access roads, are indicated in Figures 21 to 24.

6.1.2 CONCLUSIONS

- None of the amendments described above relating to the as-built project would have any significant visual implications when seen in the context of the overall Humansrus PV 1 (Lesedi) and PV 2 (Jasper) Solar Power Projects and the Redstone CSP project (under construction) to the north of the Lesedi north solar field;
- The overall visual impact significance for the project is therefore **not expected to change** from that of the authorised layout;
- Amendments to the related infrastructure, such as internal access roads and overhead powerlines, would result in **no change** in the overall visual impact significance ratings and would be low before and after mitigation; and
- Accordingly, the amendments to the as-built project will not result in an increased level or change in the nature of the visual impacts, and the final as-built layout **is acceptable from a visual perspective**.

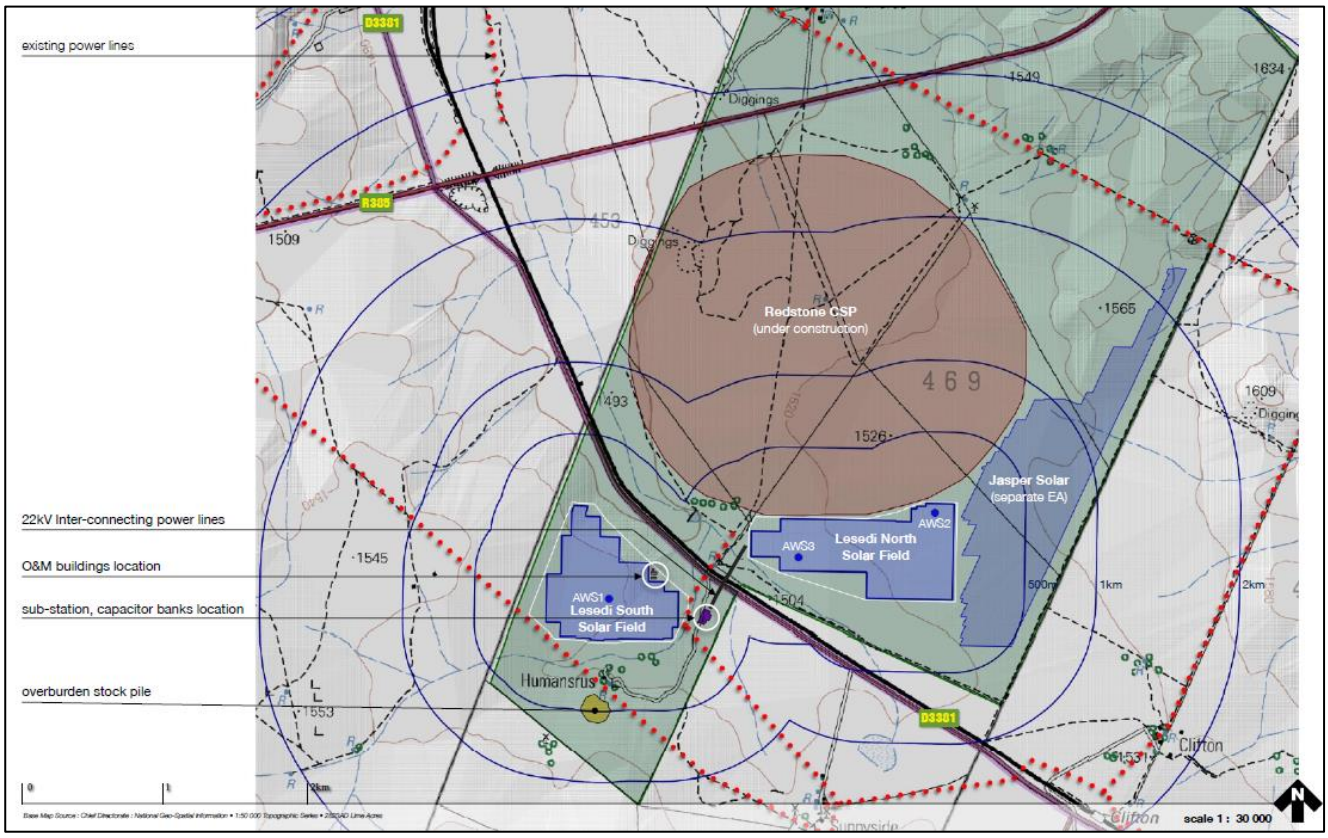


Figure 21: Lesedi Solar Power Facility layout (Visual Review, 2023)

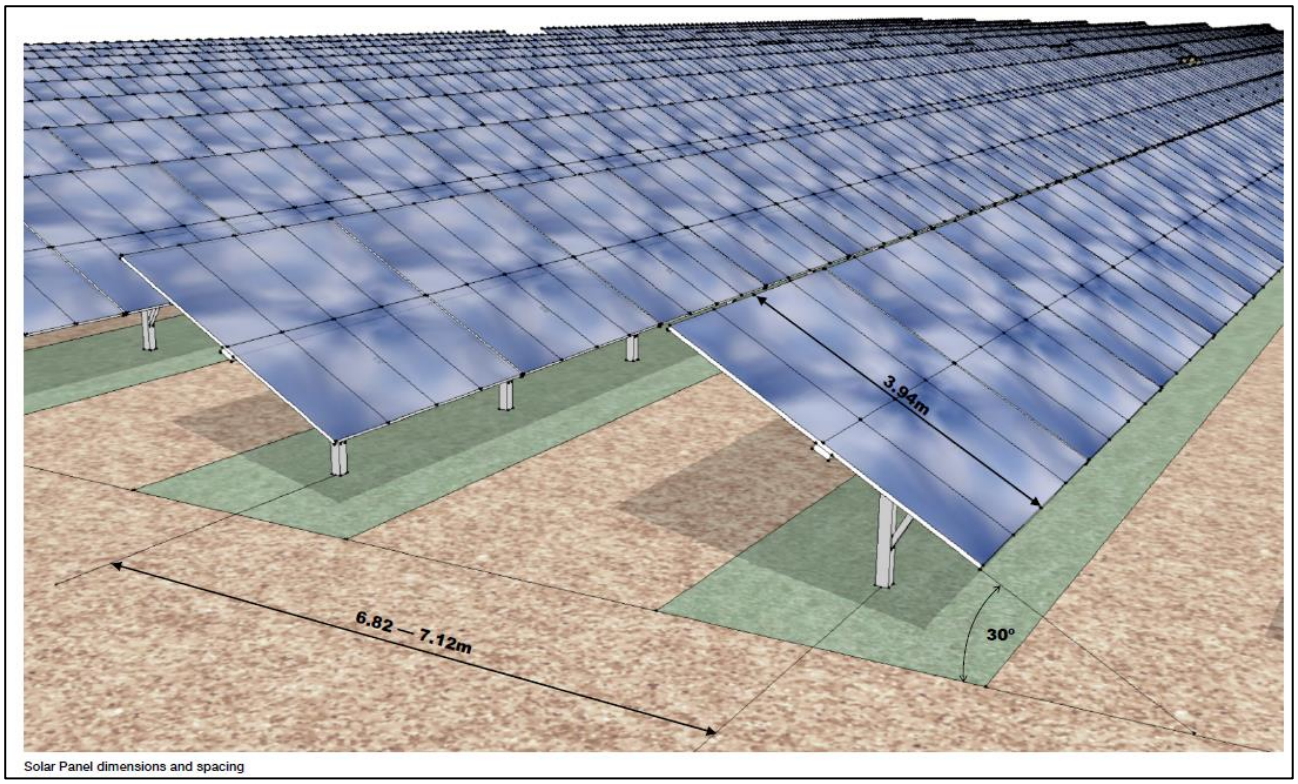


Figure 22: 3D Model solar panels dimensions and spacing (Visual Review, 2023)

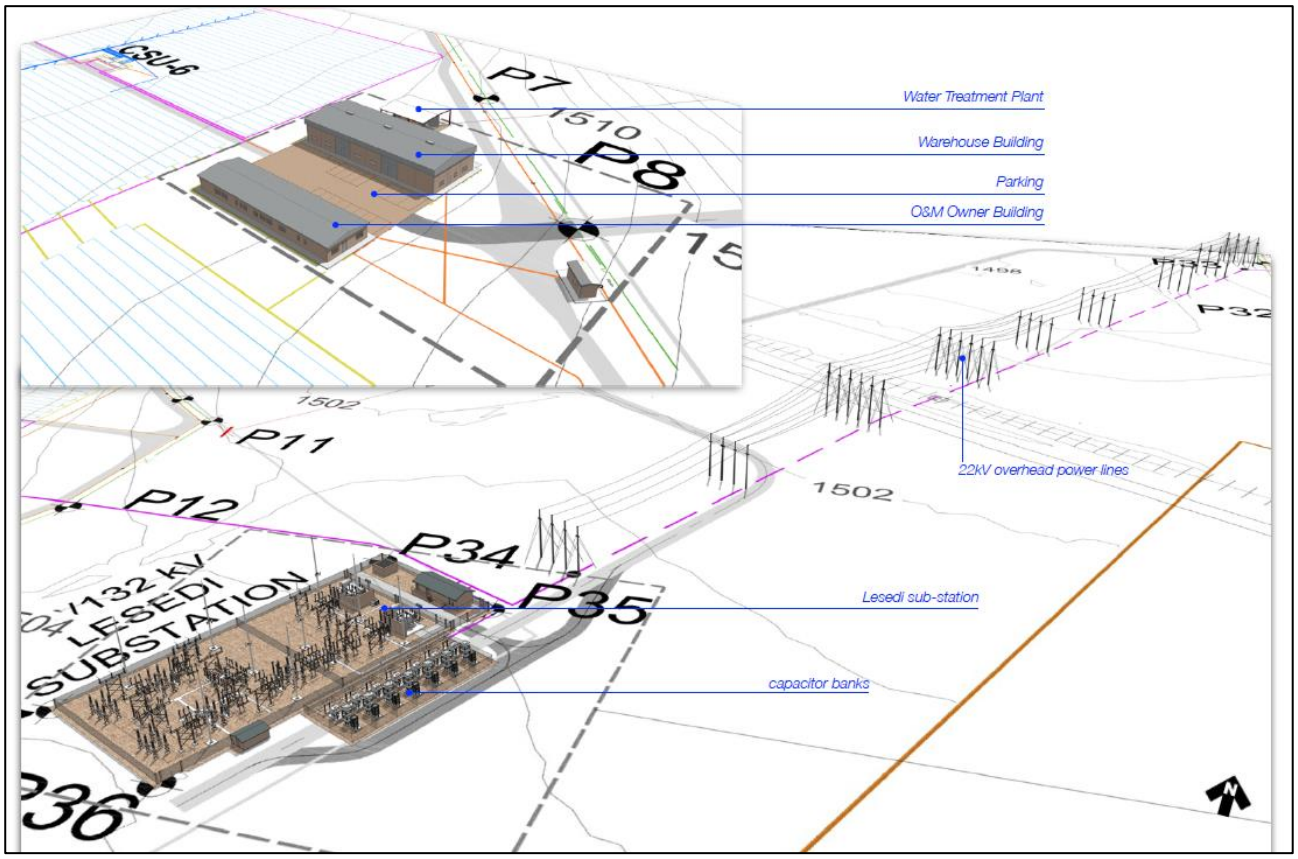


Figure 23: 3D Model of facilities (Visual Review, 2023)

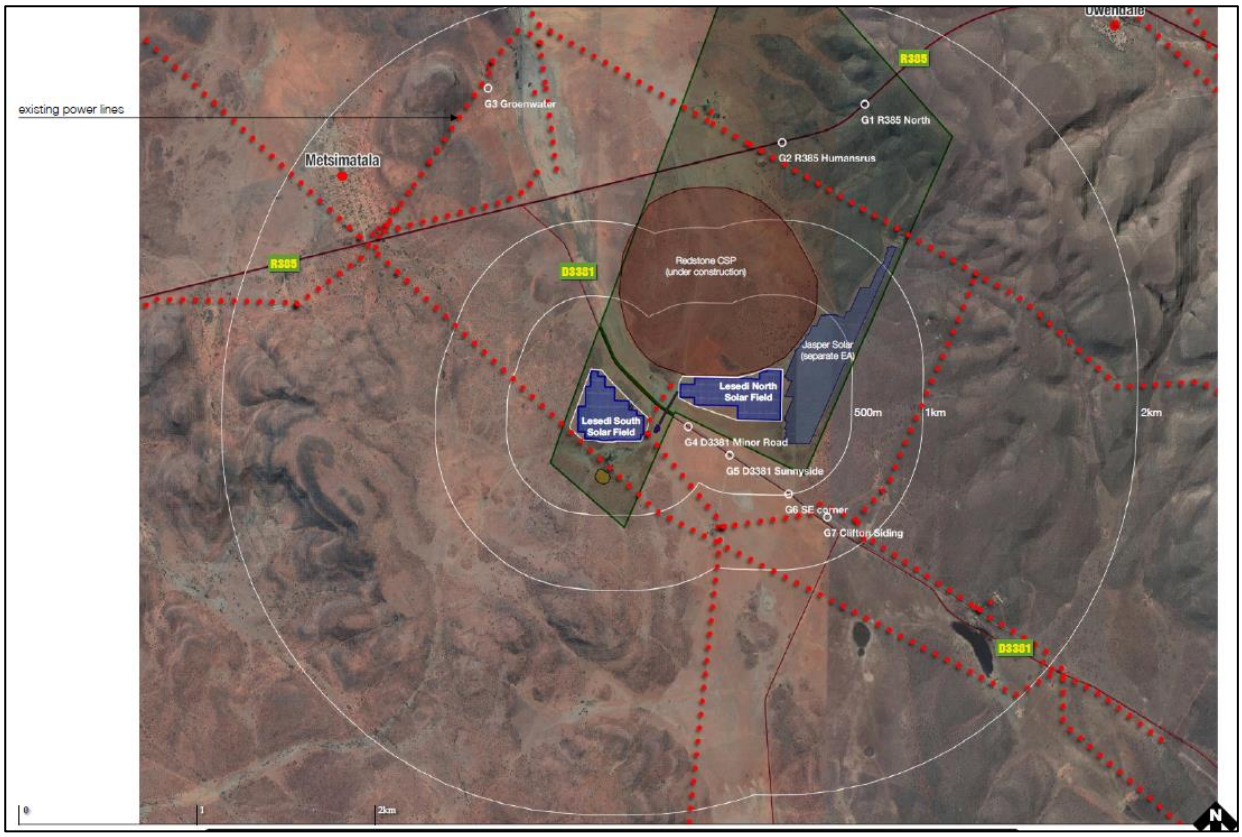


Figure 24: Lesedi Solar Power Facility viewpoints, distance radii (Visual Review, 2023)

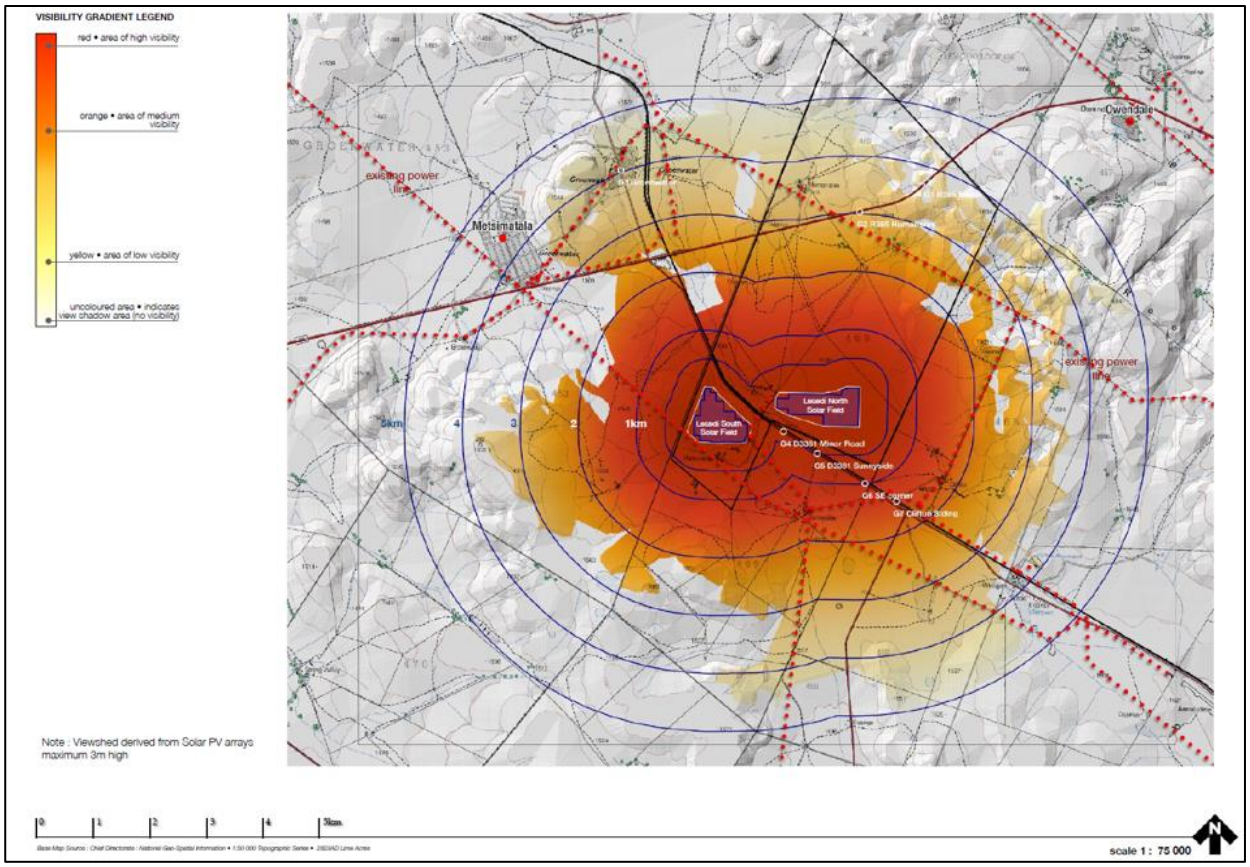


Figure 25: Lesedi Solar Power Facility viewshed and distance radii (Visual Review, 2023)

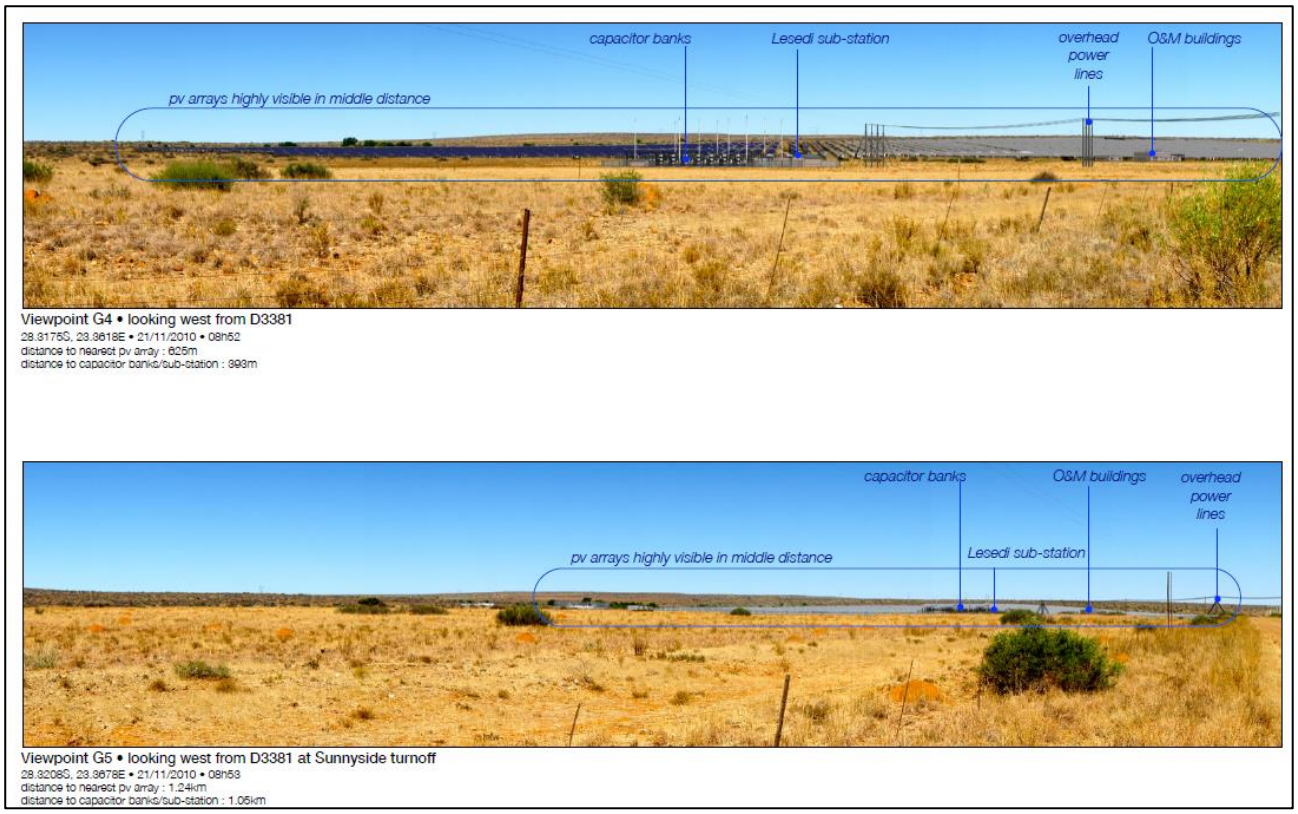


Figure 26: Viewpoints G4& G5 (Visual Review, 2023)

6.2 PALEONTOLOGICAL

The Paleontological Impact Review and Statement dated 02/03/2023 was completed by Dr. G. Groenewald (A Geo Consultants (Pty) Ltd.)

6.2.1 FINDINGS

- The geology underlying the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility comprises the Ghaap Group of the Transvaal Supergroup and sand of the Gordonia Formation;
- Rocks of the Ghaap Group are world renowned for significant finds of Palaeontological Heritage objects, including highly significant fossils of micro-bacteria called Stromatolites. The dolomites can contain significant deposits of cave breccia with human remains, but these do not underlie the study sites for the Lesedi Solar Power Facility;
- The paleontological sensitivity of the study area must be regarded as of global significance, as indicated in the Paleontological Impact Assessment under revision in this report. The impact rating will be very high negative if no mitigation is proposed, whereas mitigation (collecting and recording of significant fossils) will contribute significantly towards our understanding of the Vaalian aged as well as Quaternary ages events, resulting a very high positive impact rating;
- Following a detailed desktop survey of existing data, we confirm the fact that only areas in the north and east of the study area are underlain by very highly sensitive (red colour) geological formations (Figure 27). Areas underlain by deep soil cover (colluvial plains) are indicated as moderately sensitive (green colour) since deep excavation (>1,5m) can expose significant fossils.

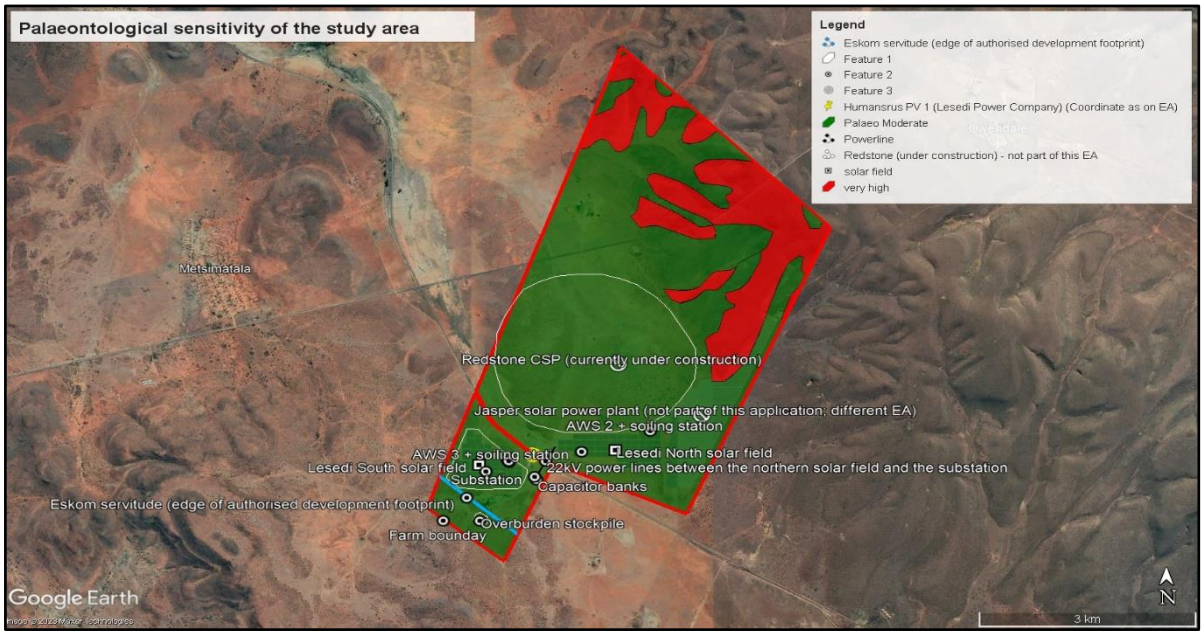


Figure 27: Very high paleontological sensitivity as indicated (Paleontological Review, 2023)

6.2.2 CONCLUSIONS

- Findings concur with the initial conclusions of the consultants who recommended limited precaution for paleontological heritage; and
- No further mitigation for paleontological heritage is required, specifically where most of the development is underlain by moderately sensitive rock units.

6.3 HERITAGE

The Heritage Impact Review and Statement dated 03/02/2023 was completed by A. Pelser (A. Pelser Archaeological Consulting cc). The comments raised by I&APs during the 1st round of Public Participation, specifically relating to heritage aspects and the management thereof, have been taken into account and as a result, an Updated Heritage Impact Review and Statement dated 29/08/2023 and CHMP and Graves Register has been developed and included in this report.

6.3.1 FINDINGS

It is evident from the previous work done in the study and application area, that there were a range of cultural heritage (archaeological and historical) sites, features and material present in the area that could be impacted on by the (then and current) development. These sites are spread across the study area landscape, and although there would have been some impacts on them, most of the sites (except the derelict Humansrus Homestead, family graveyard and stone cairns around the homestead) were assigned Low Heritage Significance, with no further mitigation required.

At the time of the 2010 assessment (for the planned Groenwater Solar Farm development) the sites were all still intact, with no development having commenced yet. From aerial images of the study & development/application area (Google Earth) dating to between 2006 and 2023 it is also clear that somewhere between the 2010 assessment and 2016, the Solar Farm development had been undertaken and completed.

In fact, the Construction Phase had commenced in November 2012. It was during this phase that a number of previously unknown graves (4 in total represented by 3 individual stone-packed features) were discovered by the contractor and reported to the EO. Work in the area of the graves was immediately stopped, photographs taken and the heritage specialist contacted to investigate. SAHRA was also informed, and they recommended that the site be fenced off with a 5m buffer zone. A further 15m buffer had to be adhered to before any PV arrays were constructed. The area was demarcated and fenced in adherence to this directive of SAHRA at the time.

At the close of the construction phase these graves were still intact. It is believed that these graves belong to a one family, with two parents (in one grave) buried next to two small children (refer to Figure 29.)

The additional development work that had already taken place under the EA Amendment Application, and had already been completed, did not impact on any of the known and recorded sites except the grave site located close to the Solar PV Arrays. However, the impact on these graves were mitigated as per SAHRA's directives at the time, with the required buffer zone adhered to and the Grave Site fenced-in appropriately (refer to Figure 29.)

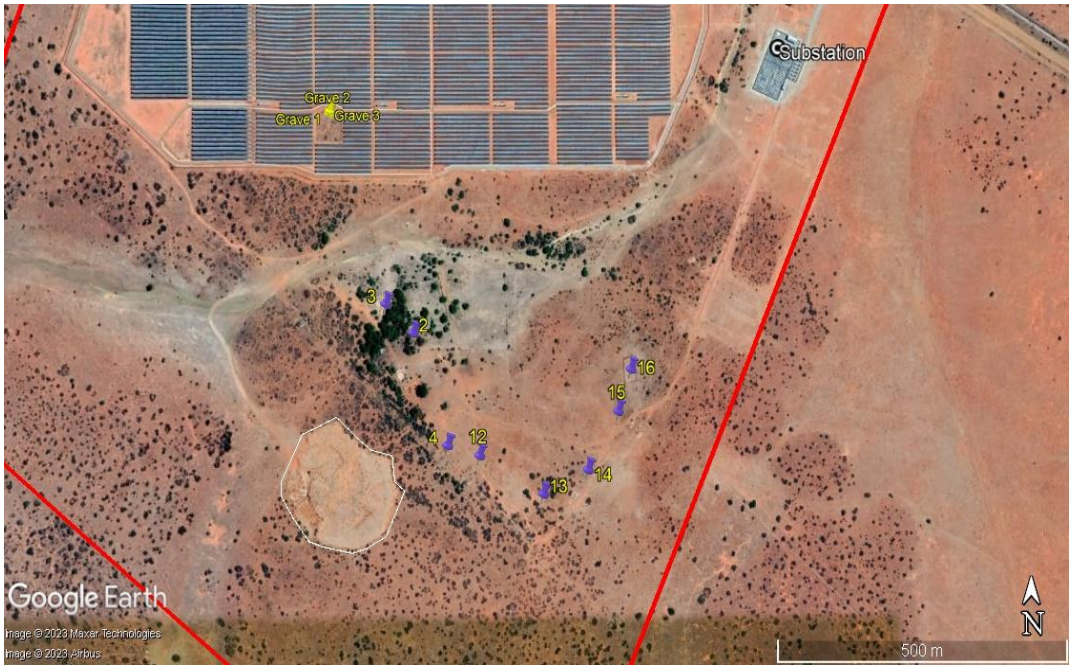


Figure 28: The location & distribution of the heritage sites of significance recorded in 2010 & 2012 (Google Earth 2023) (Updated Heritage Review, 2023).

Figure 29: View of the Grave Site with the site properly fenced-in and an access gate provided (photo courtesy Lesedi Power Company 2023) (Updated Heritage Review, 2023).

6.3.2 CONCLUSIONS

- The impact of the developments on the old farmstead, shed, kraal, loss or damage to graves outside of solar PV areas is considered as negligible;
- The impact of the developments on the graves inside the south solar PV area is considered as low;
- The Cultural Heritage Management Plan (CHMP) and Graves Register as developed and included in the OEMP, must be implemented for the grave sites inside the South Site Solar PV Array area (within Lesedi's Lease Agreement); and
- It is recommended that Exemption from undertaking any further Phase I Heritage Impact Assessments as part of this Part 2 EA Amendment Application for the proposed 75 MW Humansrus Photovoltaic (PV1) Solar Power Facility be granted to the Applicant.

6.4 ECOLOGICAL – FAUNA

The Fauna Impact Review and Statement dated 02/02/2023 was completed by B. Kasl. The scope of the assessment was limited to terrestrial fauna and did not include avifauna, as an avifauna specialist (S. Todd) was commissioned during the pre-construction phase to review the proposed alignment and detailed design of the pylons and powerlines. The Corporate Environmental Specialist from Eskom (R. Kruger) confirmed in January 2013 that the structural design of the overhead powerlines was considered safe, posed no significant risk to birds, and complied with the Eskom Biodiversity Standard (32-815). The scope of current assessment was undertaken in terms of the Assessment and Reporting of Environmental Themes (GN1150 & GN320 of 2020) (Table 1), published under the National Environment Management Act, 1998 (Act No. 107 of 1998) (NEMA). A site verification was completed on 24 January 2024.

6.4.1 FINDINGS

- According to Environmental Screening Tool Report, the following is relevant in terms of the site:
  - The site ranks as **low sensitivity** for animal species; and
  - The greater area ranks as very high sensitivity for aquatic and terrestrial biodiversity, largely due to aquatic features associated with Strategic Water Source Areas (SWSAs) and National Freshwater Ecosystem Priority Area (NFEPA) catchments, not within the terrestrial species scope but considered in terms of terrestrial fauna for habitat and water provision.
- The site findings **are in agreement** with the prior ecological report (du Preez, 2011) which stipulated that the vegetation was relatively homogeneous throughout the study area [that study area encompassed the development footprint of Lesedi and Jasper Power Project, as well as the Red Stone Concentrated Solar Power (CSP) Plant, currently under construction] and **no significant or sensitive features in terms of terrestrial fauna were noted**; further supported by the historical Google Earth imagery (Figure 30);
- The habitat on site is fairly homogeneous and can be considered as dry shrubby bushveld with limited small trees and open grasslands in the lower lying areas and along the ephemeral tributaries and streams. Substrates were either rocky (usually the higher lying areas) or sandy soils (into the lower lying areas). Denser and taller trees were limited to the area around the old farmstead, just north of the overburden stockpile (Figure 30);
- The activities on site are compact and tidy and active management was noted in terms of fauna (bird diversions on overhead powerlines at the stream-crossing, electrification of fences focussed toward infrastructure areas rather than outwards, fences established around discrete operational areas rather than across vast open spaces reducing edge effects and habitat fragmentation).

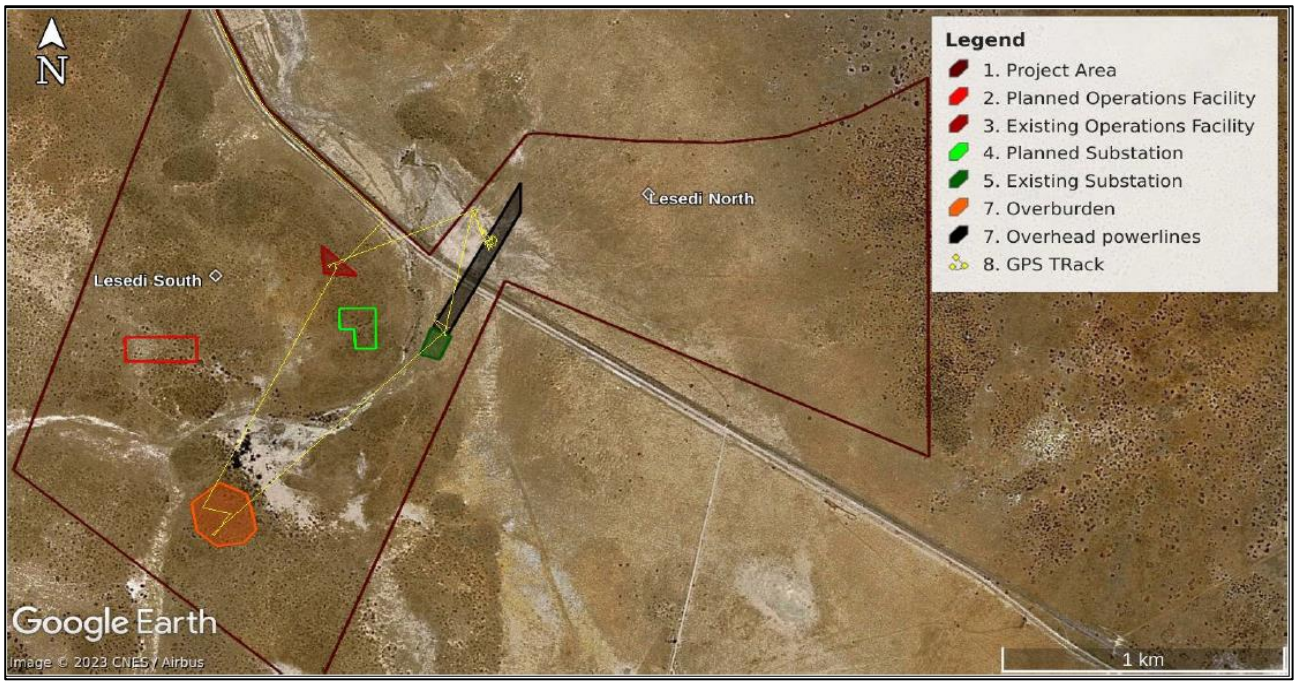


Figure 30: Google Earth (August 2005) of the project area indicating originally planned infrastructure and existing (as-built) infrastructure (Fauna Review, 2023)

6.4.2 CONCLUSIONS

- In terms of non-avian fauna species, the findings are in agreement that the site has **low sensitivity** for animal species;
- The site is also considered **limited in terms of unique biodiversity features** of relevance to non-avian terrestrial fauna, limited to ecological corridors associated with the Groenwaterspruit which have been marginally affected by stream crossings; and
- In terms of the terrestrial fauna, **no potential additional significant impacts** have been identified as a result of the existing layout and there should be no reason not to authorise and accept the existing layout of the development.

6.5 ECOLOGICAL – VEGETATION

The Vegetation Impact Review and Statement dated 31/01/2023 was completed by A. Eyssell-Knox (Dimela Eco Consulting). The specific ToR for this assessment were as follows:

- Supply background information on the site relating to conservation plans and threatened ecosystems;
- Review the historical vegetation report that was submitted as part of the Environmental Impact Assessment for which the Environmental Authorisation was granted on 23 February 2012 (du Preez, 2011);
- Short field survey to assess the state of the vegetation on and directly adjacent to the overburden, substation and along the powerline; and
- Report on any impacts that took place/ are taking place/ or could take place due to the activities and include recommendations to limit or negate such impacts.

6.5.1 FINDINGS

- *Landcover and land use:*
    - Figure 31 indicates that post construction**, the disturbances are contained**, and seemingly limited edge effects took place. The 2005 image shows that a tree-shrub layer is absent from the substation and powerline localities, prior to construction.

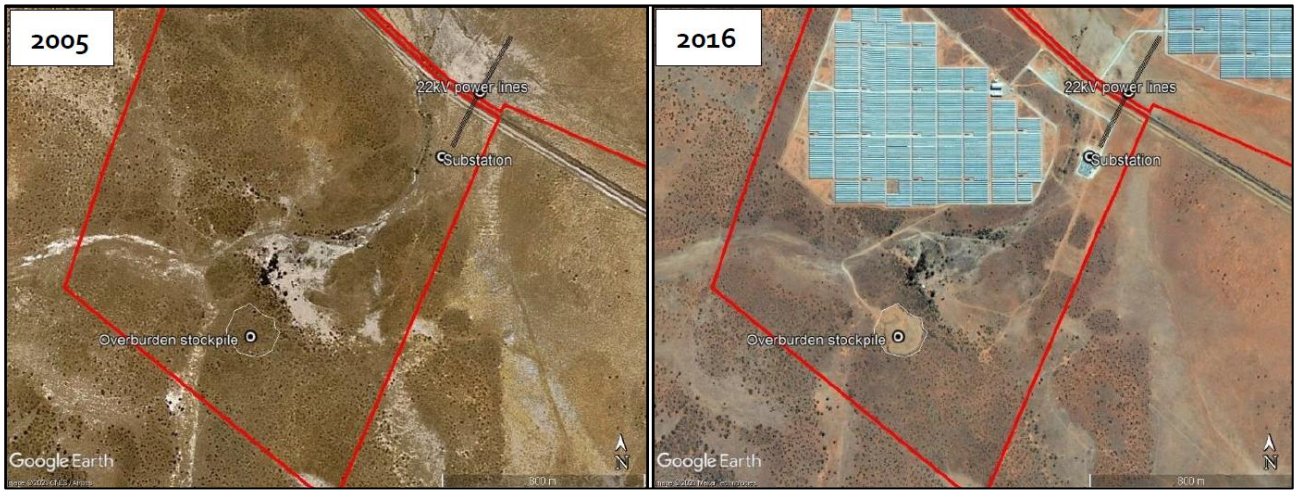


Figure 31: Historical Google Earth satellite images of the year 2005 prior to construction of the PV facility (left) and in the year 2016, after the construction (right) (Vegetation Review, 2023)

- *Vegetation Groups:*
  - Figure 32 indicates the vegetation observed on site within a 50m buffer around the substation, 22kV overhead powerline and overburden stockpile.

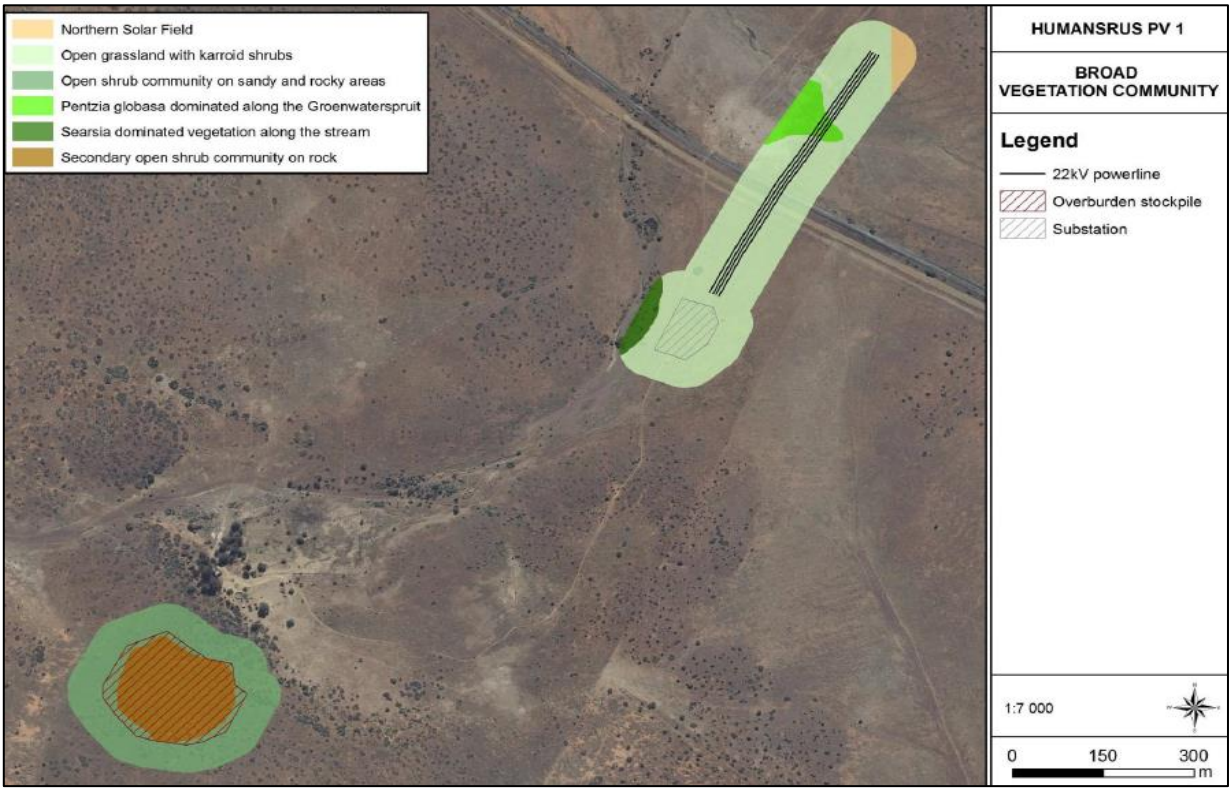


Figure 32: Vegetation groups on and around the infrastructure (Ecological Review, 2023)

- *Overburden stockpile:*
  - The overburden stockpile covers a circular area of about 2.55ha in extent. The overburden is about 1.5m to 2.0m high and comprises mainly of rock and gravelly soils that was removed to level the site for the solar panels (Figure 33). The stockpile was left to naturally revegetate. At the time of the site verification, cattle grazed on and around the stockpile area;
  - The vegetation on the stockpile consisted mainly of pioneer - and hardy indigenous species, naturally occurring in the area (refer to Specialist Report for species list). No bulbous species were recorded;

- The stockpile vegetation is stable and although some invasive species were recorded (i.e., *Argemone mexicana*, *Trichocereus spachianus* (torch cactus) and *Xanthium spinosum* (spiny cocklebur)), the vegetation is considered to be in a semi-natural state and in **a fair ecological condition** (ecological function is maintained even though composition and structure have been compromised);
- The vegetation around the stockpile also comprised open bushveld, although larger trees and a higher diversity of forbs, including geophytes, were recorded (Figure 34). Shallow rocky areas are present, as well as deeper sands and the vegetation seems to be an ecotone between the Shrub Community on Sandy Soils and the Shrub Community on Rocky Outcrops as discussed by du Preez in the 2011 ecological report (du Preez, 2011). The tree layer included *Searsia lancea, S tridactyla, Olea europea subsp africana* (wild olive), *Senegalia mellifera* subsp *detinens* (black thorn) and the shrubby *Tarchonathus camphoratus* (vaalbos). Shrubs and forbs included *Eriocephalus africanus, Barleria macrostegia, Geigeria filifolia* (vermeerbos), and the geophyte *Ledebouria leptophylla* (spotted squil);
- To the lower lying west of the stockpile, the tree layer became sparser, with *Searsia tridactyla* the dominant tree/shrub (Figure 35). Additional forb species recorded include a *Wahlenbergia* species, *Bulbine narcissifolia* (strap-leaved Bulbine), *Ipoemoa* cf *oenotheroides* species and *Thesium hystrix* (ystervarkbossie); and
- **No protected tree or other protected plant species were recorded** in the walked transects around or on the stockpile, which makes it unlikely that the stockpile impacted on such species. The surrounding vegetation served as a seedbank to vegetate the stockpile and although the diversity on the stockpile is lower, the vegetation can be considered similar to the surrounding vegetation.

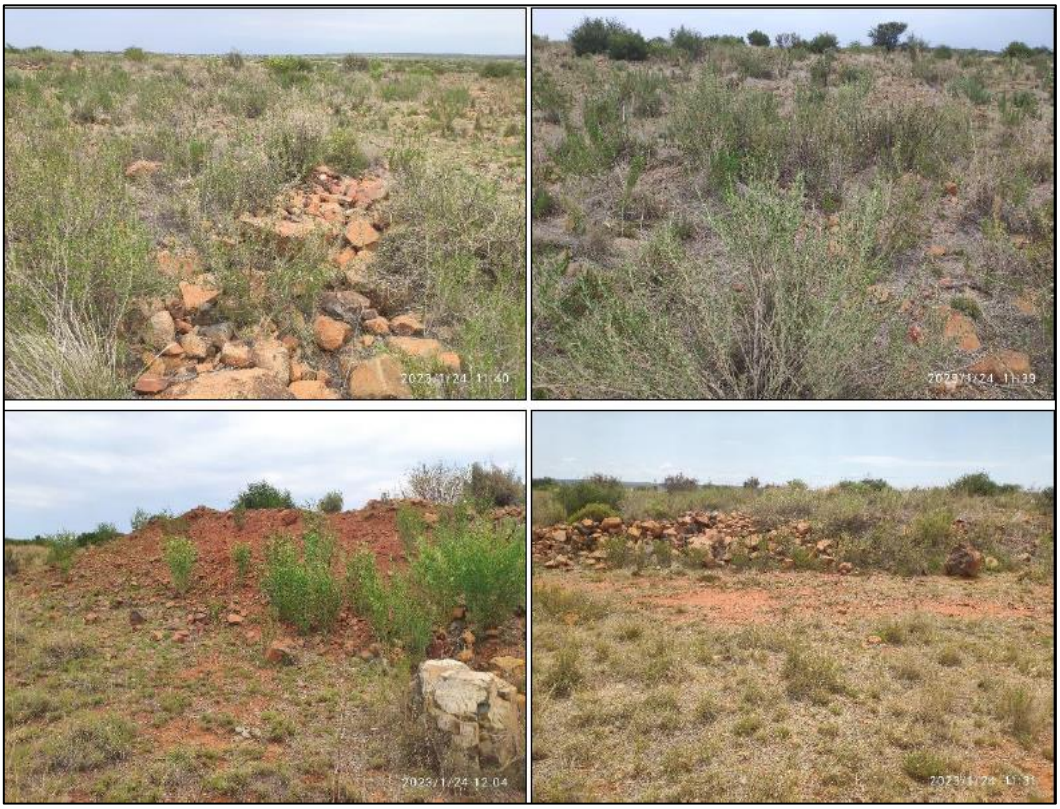


Figure 33: Vegetation on the stockpile (Vegetation Review, 2023)

Figure 34: Shrubland around the overburden stockpile (Vegetation Review, 2023)

Figure 35: Open shrubland to the west of the overburden stockpile (Vegetation Review, 2023)

- *Substation:*
    - The substation is situated on a relatively flat area and directly east of the non-perennial stream. No natural vegetation remains within about 3m adjacent to the substation (Figure 36) as the area is kept clear for fire risk;
    - The vegetation along the non-perennial stream west of the substation included a tree layer of *Searsia lancea, Olea europea subsp africana* (wild olive), *Ziziphus mucronata* (buffalo thorn), and the shrubs *Tarchonanthus camphoratus* and *Asparagus africanus species* (Figure 37). **The substation construction did not directly impact** on this vegetation. The original locality was wedged between the solar field in the west and this stream in the east and could have had an impact on the stream as it would have been closer to it;
    - The vegetation to the north, east and south of the substation comprised an open grassland, dominated by the grass *Themeda triandra* and small karroid shrubs and forbs such as *Lycium hirsutum, Eriocephalus africanus, Thesium cf hystrix, Melolobium candicans, Menodora africana (*balbossie*)*, the succulent species *Ruschia*, and an abundance of *Chrysochoma ciliate*;

- This vegetation is not quite comparable to any of the vegetation communities described by du Preez (2011), however, it was probably grouped into the Shrub Community on Sandy Soils. From the 2005 Google Earth satellite imagery in Figure 39, this vegetation was present at the substation site prior to construction. Edge effects from the substation construction had a limited impact on this vegetation. **No protected tree or other protected plant species were recorded** in the walked transects around the substation, which makes it unlikely that the construction of the substation impacted on such species.

Figure 36: View of the substation, looking northwards, in a grass dominated landscape (Vegetation Review, 2023)

Figure 37: Rocky streambank of the non-perennial steam (top) and a view of the substation from west of the non-perennial stream (bottom) (Vegetation Review, 2023)

Figure 38: Open grassy vegetation around the substation (Vegetation Review, 2023)

- *Powerlines:*
    - The vegetation along the southern extent of the powerlines (south of the railway) comprised open grassland (Figure 39). However, compaction along the line, particularly close the substation, has diminished the species diversity. The area is also grazed and includes a water point for cattle and horses. The vegetation was impacted and displays a lower species diversity than the surrounding vegetation; however, if the underground cable was trenched in, this vegetation would comprise a secondary state on disturbed soils. The vegetation is in a semi-natural and fair ecological condition;
    - This vegetation extends north of the railway line towards the northern solar field (Figure 40). The succulents *Bulbine narcisifolia* and a *Ruschia* species were noted, as well as the small *Nananthus cf aloides*. Other small shrubs and forbs included *Eriocephalus africanus (*kapokbos*), Selago densifolia*, and *Felicia muricata*. Overgrazed and compacted areas close to the cattle waterpoints included the spiny *Berkheya pinnatifida* and the invasive *Datura ferox* (thorn apple) (Figure 41); and
    - The northern extent of the powerline, within the northern solar field, traversed a portion of the Groenwaterspruit. It is likely that cattle congregate here and species such as *Pentzia globosa (*vaalkaroo*), Chrysochoma ciliata* and *Helichrysum cf cerastioides* proliferated in the moist areas, while the palatable grass layer was limited. The sedge *Scirpoides dioeca* was noted within the seasonally / temporary inundated areas.

Figure 39: Vegetation under the southern extent of the powerlines (Vegetation Review, 2023)

Figure 40: Grassy vegetation underneath and to the east of the powerline (Vegetation Review, 2023)

Figure 41: Compacted and grazed areas (Vegetation Review, 2023)

Figure 42: Vegetation along the Groenwaterspruit. *Pentzia* is prominent in overgrazed areas (Vegetation Review, 2023)

6.5.2 CONCLUSIONS

- **No Plant Species of Conservation Concern were recorded** in walked transects and therefore it is **unlikely** that species were impacted on by the amended infrastructure;

- One TOP (NEMBA Threatened or Protected Plant Species (TOPS)) listed species could be present in the area that the site is situated in, although it was not recorded in walked transects at the time of this assessment, nor the 2011 assessment (du Preez, 2011). This species, *Harpagophytum procumbens* subsp *procumbens* (devil's claw), is listed as a Protected medicinal plant species and may not be traded;
- **Protected listed trees: Shepherds & Camel Thorn were not recorded** in the areas assessed and were thus **unlikely to be impacted on**;
- Endemic Plant Species and Centre of Plant Endemism were not recorded in walked transects at the time of the site visit. However, *Lebeckia macrantha* was recorded in the Open Shrub Community on Rocks in the 2011 assessment (du Preez, 2011). This species is more likely to be present to the north of the infrastructure that was assessed;
- This assessment found that the amended infrastructure **did not have a significant negative impact** on surrounding vegetation;
- **Edge effects were limited**, and current impacts can be mitigated;
- The historic ecological report of 2011 also did not observe extensive areas of flora sensitivity and habitat diversity, species richness and uniqueness of the vegetation was classified as low. The 2011 report concluded that the proposed development would have a medium local impact on the plant communities on-site and was not regarded as a significant threat to the status and presence of these species as they occur abundantly in the general area; and
- This assessment, as well as the 2011 ecological assessment (du Preez, 2011), thus concurs with the screening tool report for the site in that the vegetation and **plant species sensitivity are low**. However, impacts to the surrounding vegetation must be limited and alien invasive plant species must be controlled for the duration of the operation phase.

7. IMPACT ASSESSMENT

7.1 THE PROCESS TO IDENTIFY, ASSESS AND RANK IMPACTS

According to the EIA Regulations, 2014 (as amended), the objective of the impact assessment process is to, through a consultative process-

a) determine the policy and legislative context within which the proposed activity is located and how the proposed activity complies with and responds to the policy and legislative context;
b) identify the alternatives considered, including the activity, location, and technology alternatives;
c) describe the need and desirability of the proposed alternatives;
d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine—

i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
ii. the degree to which these impacts—
(aa) can be reversed;
(bb) may cause irreplaceable loss of resources; and
(cc) can be avoided, managed or mitigated.
(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

(i) identify and motivate a preferred site, activity and technology alternative;
(ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
(iii) identify residual risks that need to be managed and monitored.

7.2 DESCRIPTION OF ENVIROMENTAL IMPACTS AND RISKS IDENTIFIED

Elements of this project that could have interacted with the environment are deemed to be environmental aspects. These have been identified during the Part 2 Amendment Application process, in terms of the proposed amendments to be applied for. Potential impacts as a result of the project's aspects have been identified by the EAP and specialists. The impacts, whether positive or negative, are

defined as any change to the environment resulting from the identified environmental aspects. All environmental issues and risks that were identified have been listed under Section 7.4 of this report.

7.3 IMPACT ASSESSMENT METHODOLOGY

Assessing the significance of the impacts as a result of the proposed amendments to be applied for, has been conducted using the parameters listed in the Table 11 below. Direct, indirect and cumulative impacts have been assessed (if present).

Table 11: Impact assessment methodology

Nature of the impact	This will include a qualitative description of what caused the impact and how it will affect the environment.
Extent of the impact	The size (physical/geographical) that will be affected by the impact: • Onsite impact: Weighting value **1**: The impact is confined to the project site/property • Local impact: Weighting value **2**: The impact is confined to the project site/property and a 10km radius around the project site/property • Regional impact: Weighting value **3**: The impact extends further than a 10km radius around the project site/property
Duration of the impact	The length of time over which the impact will persist: • Short term impact: Weighting value **1**: The impact will persist for up to one year • Medium term impact: Weighting value **2**: The impact will persist for longer than one year, but shorter than five years • Long term impact: Weighting value **3**: The impact will persist for longer than five years
Magnitude of the impact	The intensity of the impact on the environment: • Low impact: Weighting value **1**: Natural processes continue, albeit in an altered manner • Medium impact: Weighting value **2**: Natural processes cease temporarily • High impact: Weighting value **3**: Natural processes cease indefinitely
Probability of the Impact	How likely it is that the impact will happen: • Improbable: Weighting value **1**: It is unlikely that the impact will occur • Probable: Weighting value **2**: There is a chance that the impact will occur • Definite: Weighting value **3**: The impact will most certainly occur
Status of the impact	A qualitative description of the impact: • Whether the impact is **positive** or **negative** in nature • The degree to which the impact can be reversed • The degree to which the impact can be mitigated • The degree to which the impact may cause irreplaceable loss of resources
Significance of the impact	This will be calculated using the formula below: **Significance** = (Extent + Duration + Magnitude) x Probability The significance of each impact will be divided into the following ratings, according to the results of the Significance calculation given above: • **Low Impact: Significance value: 1-9** • **Medium Impact: Significance value: 10-18** • **High Impact: Significance value: 19-27**

7.4 IMPACT ASSESSMENT

The following aspects have been assessed as part of this Part 2 EA Amendment Application process:

- Visual;
- Paleontological resources;
- Heritage resources;
- Terrestrial flora/vegetation;
- Ecological – terrestrial fauna;
- Ecological – vegetation/flora;
- Avifauna;
- Waste; and
- Surface and groundwater.

Table 13 details the impacts and risks identified, including the nature, significance, consequences, extent, duration and probability of the impacts, the degree to which the impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

Table 12 summarises the aspects and impacts (of relevance to this application) as identified and assessed in the 2011 NEMA EIR.

Important Notes:

1. **Only operational phase impacts have been assessed as part of this Part 2 Amendment Application process;**
2. **The decommissioning of the Lesedi Solar Power Facility is not foreseen at this stage and no impacts have therefore been identified or rated. A NEMA Basic Assessment application will be undertaken for decommissioning activities as required;**
3. **No project (site, location, routing etc.) alternatives have been included or assessed, as the infrastructure has already been developed and the facility is fully operational. Alternatives were assessed in the original NEMA EIA Application;**
4. **The impact rating methodology of the original 2011 NEMA EIA Application does differ from the methodology used in this report.**

Table 12: Impact summary of relevance as per NEMA EIR (2011).

CONSTRUCTION PHASE			
Aspect	**Impact**	**Pre-mitigation significance**	**Post-mitigation significance**
Ecological – vegetation/flora	Loss of vegetation	Moderate-Minor (-VE)	Minor (-VE)
Ecological – habitat loss	Destruction and disturbance	Moderate-Minor (-VE)	Minor (-VE)
Fauna	Habitat loss: destruction, disturbance and displacement	Moderate (-VE)	Minor (-VE)
Surface and groundwater	Soil compaction, leaks and spills and increased sediment	Minor (-VE)	Minor (-VE)
Archaeology	Loss of stone tool scatters	Minor (-VE)	Minor (-VE)
Built environment and graves	Impact on old farmstead, shed, kraal, loss or damage to graves	Major-Moderate (-VE)	Moderate-Minor (-VE)
Palaeontology	Loss of paleontological resources	Minor (-VE)	Negligible (-VE)
OPERATIONAL PHASE			
Aspect	**Impact**	**Pre-mitigation significance**	**Post-mitigation significance**
Ecological – vegetation/flora	Loss of vegetation	Minor (-VE)	Minor (-VE)
Ecological – habitat loss	Destruction and disturbance	Moderate-Minor (-VE)	Minor (-VE)
Fauna	Habitat loss: destruction, disturbance and displacement	Moderate (-VE)	Minor (-VE)
Avifauna	Disturbance, collisions and electrocutions	Moderate (-VE)	Minor (-VE)

Surface and groundwater	Soil compaction, leaks and spills and increased sediment	Minor (-VE)	Minor (-VE)
Visual	Visual impact on rural landscape	Major (-VE)	Moderate (-VE)
Cultural landscape	Cultural heritage and sense of place	Minor (-VE)	Minor (-VE)
Waste and effluent		Minor (-VE)	Negligible (-VE)

Table 13: Impact assessment (operational phase)

ASPECT AND NATURE OF POTENTIAL IMPACTS	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION	STATUS OF THE IMPACT	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
VISUAL				
Visual impact on rural landscape (Substation, solar arrays and O&M buildings)	**High** *Rating as per specialist report (2023)	**Medium** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Low The degree to which the impact may cause irreplaceable loss of resources: Moderate	**Low**
Visual impact on rural landscape (Internal access roads and powerlines)	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Low The degree to which the impact may cause irreplaceable loss of resources: Moderate	**Low**
PALEONTOLOGICAL RESOURCES				
Loss of paleontological resources	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**

HERITAGE RESOURCES				
Impact on old farmstead, shed, kraal, loss or damage to graves	**Negligible** *Rating as per updated specialist report (2023)	**Negligible** *Rating as per updated specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Negligible	**Negligible**
Impact on Grave Site inside the South Field Solar PV Array Area	**Low** *Rating as per updated specialist report (2023)	**Low** *Rating as per updated specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
Loss of stone tool scatters & other archaeological resources	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
ECOLOGICAL - TERRESTRIAL FAUNA				
Habitat loss: destruction, disturbance and displacement (vertebrates)	**Negligible** *Rating as per specialist report (2023)	**Negligible** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High	**Low**

			The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	
Habitat loss: destruction, disturbance and displacement (invertebrates)	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
ECOLOGICAL - FLORA / VEGETATION				
Destruction, disturbance or loss of protected species	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
Alien species invasion	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High	**Low**

			The degree to which the impact may cause irreplaceable loss of resources: Low	
Soil compaction and disturbance of vegetation	**Low** *Rating as per specialist report (2023)	**Low** *Rating as per specialist report (2023)	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
AVIFAUNA				
Disturbance, collisions and electrocutions of birds	Extent of impact: 1 Duration of impact: 2 Magnitude of impact: 1 Probability of impact: 3 Significance of impact: **12 - Medium**	Extent of impact: 1 Duration of impact: 2 Magnitude of impact: 1 Probability of impact: 2 Significance of impact: **8 - Low**	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
WASTE				

Contamination of natural resources through incorrect storage, handling and disposal of hazardous waste	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 3 Significance of impact: **9 - Low**	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 2 Significance of impact: **6 - Low**	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
SURFACE AND GROUNDWATER				
Impact on surface water quality as a result of treated sewage effluent not in accordance with discharge standards	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 2 Significance of impact: **6 - Low**	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 1 Significance of impact: **3 - Low**	Nature of impact: Neg**ativ**e The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**
Impact of infrastructure on surface water resource quality, flow and geomorphology	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 3 Significance of impact: **9 - Low**	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 2 Significance of impact: **6 - Low**	Nature of impact: Neg**ativ**e The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	**Low**

There would be no negative environmental impacts if the amendments are not granted. However, the 'No-go' option would prevent the site from complying with the NERSAs requirement to install capacitor banks; preventing the evacuation of power to the National Grid, should the substation modifications not have been possible. The visual absence of overhead powerlines or the need for underground powerlines only, would have cost and maintenance implications for the project. Environmental impacts due to maintenance of underground powerlines would include disturbance to the soil and watercourse environments, while maintenance activities could impact public transport (roads and railway line) infrastructure and disrupt road and rail traffic when temporarily closed for maintenance of underground powerline.

Should the proposed amendments on waste module storage onsite not be authorised and not implemented, the main environmental impact would be a four-fold increase of carbon emissions due to more frequent transportation of waste panels off site to licensed facilities (i.e. every 3 months (90 days) versus once a year approximately), as well as the associated financial implications. A potential also exists for inefficient waste management program at the facility. This could affect the effective sorting of solid waste for recycling and where applicable, safe disposal at the Waste Disposal facility.

Positive environmental impacts:

- No impact to the soil or watercourse habitat (of the Groenwaterspruit) below the 5km 22kV overhead powerline from maintenance activities, as the powerline does not need to be dug up/excavated;
- No impact to road or rail infrastructure as an underground powerline does not need to be excavated, and no road or rail traffic disruptions occur;
- Less impact on the non-perennial tributary of the Groenwaterspruit, as the original locality of the substation was proposed to be wedged between the solar field in the west and this stream in the east and could have had an impact on the stream as it would have been closer to it. The substation is located outside of the 1:100 year floodline of the watercourse,
- Reduced road traffic impacts from waste removal vehicles due to waste PV module storage on site, as these need only be removed approximately once a year and not every 3-months;
- Reduced carbon footprint from less diesel use and emissions due to limiting removal of waste PV modules to once a year and not every 3-months;
- No additional environmental impacts from PV arrays of up to 1,5km in length across Lesedi north solar field, as the area covered by solar panels would still be approximately 75ha (in a more square layout than the current elongated rectangular layout) if the arrays were limited to 1km length;
- No further impacts from the outdoor storage of equipment as the area is within the development footprint and fenced to prevent sprawl; and
- Current ecological state of overburden stockpile – semi-natural state and in a fair ecological condition (ecological function is maintained). The vegetation surrounding the stockpile serves as a seedbank to vegetate the stockpile.

8. ADVANTAGES AND DISADVANTAGES OF PROPOSED CHANGE

Table 14 below summarises the Advantages and Disadvantages of the proposed amendments for the Lesedi Power - 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility, based on the assessments by the EAP and respective specialists as part of this Application.

Table 14: Advantages and disadvantages of proposed amendments applied for

ADVANTAGES		DISADVANTAGES	
1	The updated impact assessment, as per this EIR Amendment Report (and associated specialist assessments) means that the latest policies and guidelines have been considered and incorporated into the EA and OEMP.	1	N/A
2	Updating the EA holder details will ensure that the correct entity (Oakleaf Investments Holdings 79 (RF) (Pty) Ltd.) is responsible for implementing and adhering to the conditions specified in the EA and OEMP.	2	N/A
3	Updating of infrastructure (substation, capacitor Banks, overhead powerline, PV arrays, AWS & soiling stations) i.t.o. location and size will ensure appropriate management and monitoring of any associated impacts.	3	N/A
4	Update and inclusion of the O&M facility and associated infrastructure: an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility, will ensure that appropriate management and monitoring of any associated impacts with the infrastructure.	4	N/A
5	The application for the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 Norms and Standards for the Storage of Waste (NEM:WA 59 of 2008) will ensure compliance with relevant legislative requirements.	5	N/A
6	The alignment of the authorised development footprint with the farm boundary and approval of the as-built drawings as the approved Layout Plan will ensure compliance with the EA and appropriate management and monitoring of any associated impacts as required.	6	N/A
7	The application for removal of the 200m visual buffer from the D3381 secondary road and 50m buffer from the railway line for the aboveground 22kV Powerlines will ensure compliance with the EA.	7	N/A

9. RECOMMENDED MITIGATION MEASURES

Table 15 summarises recommended management and mitigation measures to be included in the updated OEMP (Annexure G).

Table 15: Recommended management and mitigation measures

ASPECT	ADDITIONAL MEASURES TO BE INCLUDED IN THE OEMP AS PER SPECIALIST ASSESSMENT/S
Visual	None
Paleontological	• During any excavation activities required for maintenance, the Change Find Protocol for Paleontological Heritage must be implemented for any paleontological resource. • Work is to be stopped and a Palaeontologist notified and appointed for assessment and Change Find Protocol development and implementation. • The area should be cordoned-off and access restricted, so that a systematic and professional investigation can be undertaken. • Once the material is removed/collect by the specialist, work can recommence in that area.

	• Final Change Find Protocol must be uploaded onto SAHRIS Website
Heritage	• The derelict Humansrus homestead, family graveyard and grave site within the south solar PV array area - no maintenance activities may take place within 20m of these areas. • The Cultural Heritage Management Plan (CHMP) (as attached in Annexure C of the OEMP) for the grave sites inside the South Site Solar PV Array area, must be implemented.
Ecological – Fauna (including avi-fauna)	• The overhead powerlines must be monitored for collision mortality of avi-fauna. Bird flapper infrastructure must be maintained at all times. • Electric fences must be monitored for animal mortalities. Mortalities must be photographed and recorded accordingly • Any mortalities of Threatened or Protected Species (TOPs) on site must be investigated and managed accordingly with new management measures such as additional barriers (as required).
Ecological - Vegetation	• Category 1b and 3 alien plants must be removed; • Refer to Section 4.5.3 for management and control measures of alien plants in close proximity to watercourses; • Manual or mechanical removal is preferred to chemical control; • Seeds and propagative matter from alien vegetation must be destroyed; • Vehicle traffic and other activities must be restricted to the bare minimum along the overhead powerline routes; • Natural vegetation surrounding the overburden stockpile must not be disturbed or impacted upon; • Listed threatened and protected species like the Shepherds tree (*Boscia albitrunca*), Camel Thorn tree (*Vachellia erioloba*) and African Olive Tree (*Olea europaea africana*) must be protected and may not be removed without a permit.
Waste	None

10. PROPOSED CHANGES TO THE OEMP

The OEMP has been updated accordingly. Refer to Annexure G, where the proposed changes are highlighted in yellow as relevant within the document. The following main management and mitigation sections in the OEMP have been updated as per inserts below.

Section 4.5.3 Water Resources

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
A. Effective management of water use resources (a) No additional infrastructure is established within 100m of a watercourse, without prior authorization from the authorities; (b) Compliance with directives from competent authorities (DWS, DFFE) and additional monitoring programme(s) as directed by DWS in writing, are implemented. (c) Financial provision in place to maintain the water use, as set out in GA.N.509, and proof of budgetary provisions provide to DWS as required. (d) Copies of all designs, method statements, Risk Matrix or risk assessments, rehabilitation plans, and any other reports are retained and made available to the responsible authority when requested. (e) The monitoring programme addresses the monitoring and reporting requirement of GA Notice 665 of 2013 and GA.509 of 2016. (f) Quarterly internal audits assess whether rehabilitation is stable, assesses impacts on water resource quality, ensure water use remains within the GA parameters, and results are stored. (g) Annual independent Water Use Audits determine compliance with GA conditions and assess whether rehabilitation is stable; failing which, remedial action must be taken to rectify any impacts.	Operator	Weekly / Monthly inspections	WUL/GA authorization(s), Plans and procedures, inspection sheets, photographs, Audit Reports Budget allocation	Engineer's walkabout, quarterly internal EA audits, annual WUL audit; Annual independent ECO and WUL audits External specialist

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
B. Awareness of instream development and impacts (a) Staff and contractors working at the authorized in-stream development sites (access roads and powerlines across watercourses) are made fully aware of the GA conditions and related management measures, prior to the carrying out of any works.	Operator	On entry to site and annual refresher	Induction training and annual refresher training.	Engineer's walkabout, quarterly internal EA audits, annual WUL audit; Annual independent ECO and WUL audits;
C. Construction and rehabilitation of instream development activities and watercourses (when applicable) (a) An independent SACNASP Professional is appointed to determine present day values for water resource quality before commencement of water uses in terms of NWA section 21(c) or (i), and a GA/WUL authorization is in place for any additional structure(s) across watercourses, prior to construction activities taking place; (b) All GA requirements for construction activities within 100m of a watercourse, as listed under condition 9(3) of GA Noitce509 of 2016 (recorded below this table), are adhered to.	Operator	Weekly / Monthly inspections Ad hoc repair work, as and when required	Plans and procedures, inspection sheets, photographs & video recordings Risk Matrix Rehabilitation closure report Audit Reports	Engineer's walkabout, quarterly internal EA audits, annual WUL audit; Annual independent ECO and WUL audits; External specialist
D. Operational control measures (a) No equipment, materials, chemicals or waste are stored within 100m of the edge of a water resource; (b) All works, including emergency alterations or the rectification of incidents, start upstream and proceed in a downstream direction, to ensure minimal impact on the water resource; (c) As the watercourses are generally dry in-stream water quality measurements are not feasible, however where aquatic life is present, measures must be implemented to – (i) prevent detrimental changes to breeding, nesting or feeding patterns, including for migratory species; (ii) allow for the free up and downstream movement of aquatic biota, including migratory species; and	Operator	Weekly / Monthly inspections Ad hoc repair work, as and when required	Plans and procedures, inspection sheets, photographs, Audit Reports	Engineer's walkabout, quarterly internal EA audits, annual WUL audit; Annual independent ECO and WUL audits; External specialist

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
(iii) prevent a decline in the composition and diversity of the indigenous and endemic aquatic biota. (d) Substance or material used on-site, that can potentially cause pollution, are managed with strict controls to ensure no impacts are caused to water resources; (e) Maintenance inspections determine structurally stability of infrastructure and hardened surfaces, and confirm areas are: (i) free of accumulated debris and other blockages; (ii) cleared of alien invasive vegetation; (iii) water courses are free-draining and stable (no signs of erosion, sedimentation or turbidity caused by site activities) and (iv) re-vegetated areas have indigenous vegetation, generic to the region. (f) Operational controls for wastewater discharge are included under section 4.5.6.C. (g) Control and management of alien invasive plant species (Category 2 and 3) along and in close proximity of watercourse.				
E. Water use and water conservation (i) No washing of vehicles on site, unless the designated wash area is approved by the Engineer and equipped with a suitable impermeable floor, an oil-water separator, and the residue managed appropriately. (ii) A Method Statement is required for all wash areas where hydrocarbon, hazardous materials, or pollutants are expected. This includes, but is not limited to cleaning of paint equipment, and cement batching areas. Wash areas must be located well away (50m) from any water course. No contaminated runoff shall enter any watercourse. (iii) Pollutants of any kind and in any form are kept, stored, and used in such a manner that any leaks or escape can be contained, and the water table not endangered. Water containing pollutants such as cements, concrete, lime, chemicals, paint, fuels and	Operator	Daily monitoring Weekly / Monthly inspections Monthly/ quarterly / biannual reporting Annual audit Two-yearly calibration of flow meter	Procedures, risk assessments, inspection sheets, photographs Training Records Inspection sheets, photographs, Monthly SHE Reports Biennial Reports to DWS (by 25 January and 27 July each year) Specialist reports (hydrology, wetland, etc.)	Engineer's walkabout, quarterly EA audits, annual WUL audit Annual independent ECO and WUL audits External specialist

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
hydrocarbons shall be contained and stored in an impermeable container for removal from site (for proper disposal or recycling). This particularly applies to water emanating from concrete batching plants and concrete swills, and to runoff from re-fuelling and washing areas. (iv) Continually investigate new and emerging technologies and put into practice water efficient devices, in an endeavour to conserve water at all times.			Audit Reports Calibration certificates	

Section 4.5.5 Vegetation Management

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
A. Effective Vegetation Management (i) Develop a vegetation management and alien plant control plan and have progress of its implementation assessed every two years by an external specialist. (ii) Review and update management plans biennially	Operator External Botanist	Biennial update	Plans and procedures, Botanist reports;	External specialist Engineer's biennial review, and Owner's acceptance
B. Effective Vegetation Control (i) Vegetation growth between the PV arrays is controlled to prevent shading of the panels and to limit the risk of fires. Limit the cutting and clearing of vegetation to a minimum to facilitate the ongoing operation of the solar farm. (ii) Minimize unnecessary damage to or loss of vegetation cover in all areas. Vegetation clearance is to be kept to a minimum, and if removed for fire risk safety, should take place after the growing season, once seeds have matured and a seedbank established for the following growing season.	Operator	Ongoing maintenance: pre-task risk assessment Operator's weekly/monthly inspections. Induction training	Procedures, risk assessments, Inspection sheets, photographs, Training Records; Botanist reports; Audit Reports; Tree removal permit (as required)	Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
(iii) Avoid disturbance or destruction of protected plant species found on site. (iv) Only indigenous species with natural distribution ranges in the region are used to rehabilitate disturbed areas and restore the natural ecology. (v) Vehicle traffic is limited to the internal road network, to prevent soil compaction and impacts to vegetation. (vi) Vehicle traffic and other activities must be restricted to the bare minimum along the overhead powerline routes; (vii) Activities must be limited along the non-perennial watercourse and riverine vegetation may not be impacted; (viii) Work areas are restricted to hard compacted areas and are clearly demarcated, to avoid unnecessary disturbance to natural vegetation. (ix) Natural vegetation surrounding the overburden stockpile must not be disturbed or impacted upon; (x) Collection of firewood, plants and lighting fires on the site is not allowed. (xi) Educate employees and visitors about the importance of threatened and protected species, and conservation of vegetation and vulnerable habitats. (xii) Listed threatened and protected species like the Shepherds tree (*Boscia albitrunca*), Camel Thorn tree (*Vachellia erioloba*) and African Olive Tree (*Olea europaea africana*) must be protected and may not be removed without a permit.		and annual refreshers		
C. Effective Control and Monitoring of Alien Vegetation (i) An alien plant control and monitoring programme is maintained during the operational phase: • Category 1b and 3 alien plants must be removed; • Refer to Section 4.5.3 for management and control measures of alien plants in close	Operator Registered PCO	On-going maintenance: pre-task risk assessment Operator's weekly/monthly	Plans and procedures, Inspection sheets, photographs, Chemicals Register and Safety Data Sheets PCO certificate of registration, and	External Botanist Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
proximity to watercourses; • Manual or mechanical removal is preferred to chemical control; • Seeds and propagative matter from alien vegetation must be destroyed; (ii) Undertake alien plant control and monitoring to ensure that the site is kept free of alien and invasive plants, and to prevent the spread onto neighbouring land. (iii) Limit pesticides and herbicides to a bare minimum; using properly calibrated equipment to apply the chemicals, strictly controlled by and under the supervision of a registered Pest Control Operator (PCO), limited to biodegradable and natural substances (where possible), (iv) Prior to appointment, the registered PCO must provide a notification of the herbicide(s) to be applied (registered name and number), the purpose of administration, precautions to be taken before, during and after such administrations, and the number of his/her valid registration certificate (along with a copy); (v) Do not apply herbicide prior to a rainfall event or within 5 days of a significant rain event. (vi) Provide appropriate training and PPE to employees applying herbicides and pesticides, under the strict supervision a registered PCO.		inspections. Induction training and annual refreshers	pre-administration notification Botanist report; Audit Reports	

Section 4.5.6 Maintenance of the Facility

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
A. Maintenance of vehicles and equipment (i) All vehicles and machinery are checked for leaks and provided with drip trays if required. Hydrocarbon contaminants to be dealt with in accordance with the waste management procedures.	Operator	Daily monitoring Monthly/quarterly reporting Annual audit	Maintenance Plan Procedures, risk assessments, inspection sheets, photographs, Monthly SHE Reports Audit Reports	Engineer's walkabout and quarterly audits ECO annual audits
B. Minimise impacts associated with washing PV modules and filters (i) Washing of filters from the inverter buildings, is undertaken within a dedicated area, approved by the Site Engineer. The residue is managed, used as erosion fill material or disposed of in accordance with the waste management procedure; (ii) Best available practice methods are used to keep PV modules clean and to reduce volumes of water consumption; (iii) The unGer WTP to be maintained in line with OEM and sound health and safety precautions taken when handling resin bags. Should loose resin be used, take due care when refilling the unit, to prevent spills;	Operator	*Ad hoc* (when required)	Maintenance Plan Procedures, risk assessments, inspection sheets, photographs, Monthly SHE Reports Audit Reports	Engineer's walkabout and quarterly audits ECO annual audits
C. Ablution facilities and sewage system (i) Washing, whether of the person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the ablution facilities provided. (ii) Only approved ablution facilities may be used for any washing and sanitation. No dirty water may be discharged onto paved areas or into the environment. (iii) Regular maintenance and annual inspection of sewage wastewater treatment plant to ensure optimal performance and to prevent odours. (iv) Cleaning detergents and other chemicals discharged into the sewer system are limited	Operator	Daily monitoring Weekly checks Monthly/quarterly reporting Annual audit	Maintenance Plan Procedures, risk assessments, inspection sheets, photographs, Monthly SHE Reports Audit Reports	Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
to those which the system can accommodate; in accordance with the OEM. (v) The volume (quality) of wastewater discharge is metered, recorded weekly and reported monthly. (vi) Where more than $10m^3$ is discharged on any given day, the water quality must be monitored once a month by taking a grab sample at the discharge point, and analysed for pH, Electrical Conductivity (mS/m), Faecal Coliforms (per 100 ml), and for any other substance which has been added to the water (e.g. chlorine, hydrocarbons, herbicide etc.). See requirements for water analysis by an accredited laboratory, under 'methods of sampling' (condition 2.11 of GA Notice 665 of 2013), as included under the table for 4.5.3 Water Resource. (vii) Submit monthly reports to DWS, showing the quantity of wastewater discharged, water quality results (where applicable), details of the monitoring programmes, details of failures and malfunctions in the discharge system and details of measures taken.				
D. Maintenance of infrastructure (i) The facility is maintained in a clean and hygienic manner so that rodents or vermin are not attracted into buildings. Small mammals and reptiles are removed from buildings as soon as possible, and those occurring on site are to be left undisturbed (unless the infrastructure or human well-being are impacted). No wildlife may be needlessly harmed or killed, without a permit from the provincial conservation authority. (ii) Birds are discouraged from building nests on solar infrastructure, early in the season, i.e. before nests are lined and eggs are laid; so that eggs and hatchlings need not be destroyed. Nesting material is removed daily, if needed, to encourage the birds to move back into the natural surroundings, so that that year's population recruitment can be raised successfully, and biodiversity impacts in the wider region are avoided. (iii) The overhead powerlines must be monitored for collision mortality of avi-fauna. Bird flapper infrastructure must be maintained at all times.	Operator	Daily monitoring Weekly checks Monthly/quarterly reporting Annual audit	Maintenance Plan Procedures, risk assessments, inspection sheets, photographs, Monthly SHE Reports Training Records, Audit Reports	Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
(iv) Electric fences must be monitored for animal mortalities. Mortalities must be photographed and recorded accordingly (v) Any mortalities of Threatened or Protected Species (TOPs) on site must be investigated and managed accordingly with new management measures such as additional barriers (as required).				
E. **Management of outdoor storage area** (i) Recyclable metal and spare parts are stored in the fenced off area, to prevent further spread of parts and equipment. (ii) The storage yard is kept neat and tidy.	Operator	Weekly visual inspection and monthly checks	Fenced area with controlled access Inspection sheets, photographs, Training Records, Audit Reports	Engineer's walk about and quarterly audits ECO annual audits

Section 4.5.9 No-Go Areas

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
A. Respect No-Go areas (i) No development activities may take place within 100m of any watercourse, or within 500m of a pan or wetland without authorization from DWS. (ii) No employees are permitted to make use of any natural water sources (e.g. springs, streams, and open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes. (iii) Prohibit the defacing, painting, damaging or marking of any natural features. (iv) No maintenance activities may take place within 20m of the derelict Humansrus	Operator	Throughout operation.	Visual monitoring and inspections	Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
homestead, family graveyard or grave site inside the South Site Solar PV Array area.				

Section 4.5.12 Archaeology and Palaeontology

Protection of National Estate:

- Humansrus homestead and family graveyard (sites outside of Lesedi's Lease Agreement): Graves and burial grounds on site as per SAHRA approval (9/2/074/0001 dated 24/03/11). The graveyard must be fenced off with a proper fence including entry gates to allow visits from relatives. The fence must be placed at least 5m away from the perimeter of the graves. No development is allowed within 15m of the fence line surrounding the graves. Also refer to EA condition 31: "The Humansrus homestead and family graveyard must be fenced off and a 20m buffer must be maintained."
- Grave site inside the South Site Solar PV Array area (sites within Lesedi's Lease Agreement): The graveyard must be fenced off with a proper fence including entry gates to allow visits from relatives.
- Implementation of the CHMP and Graves Register as per Annexure C of this OEMP for the Grave site inside the South Site Solar PV Array area.

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
A. Discovery of artefacts or human remains (i) If anything of an archaeological nature is found on site, work is to be stopped and an Archaeologist notified. Once the specialist confirms a genuine artefact has been found, the South African Heritage Resources Agency (SAHRA) is to be informed. (ii) The area should be cordoned-off and access restricted, so that a systematic and professional investigation can be undertaken. (iii) Once the material is remove/collect by the specialist, work can recommence in that area. (iv) The derelict Humansrus homestead, family graveyard and grave sites within South Site	Operator	Throughout operation.	Approval from SAHRA if required. Approved method statement and locality plan. Inspection sheets, photographs. Monthly reporting. Graves Register.	Engineer's walkabout and quarterly audits ECO annual audits

Impact Management Actions / Mitigation Measures	Implementation:		Evidence of compliance	Monitoring: Owner's oversight)
	Responsible Party	Frequency/ Time frame		
Solar PV Array area: no maintenance activities may take place within 20m of these areas. (v) Implementation of the Cultural Heritage Management Plan (CHMP) (as attached in Annexure C) for the grave sites inside the South Site Solar PV Array area.				
B. Discovery of paleontological heritage resources (extinct animals and plants and their fossilised remains) (i) During any excavation activities required for maintenance, the Change Find Protocol for Paleontological Heritage must be implemented for any paleontological resource. (ii) Work is to be stopped and a Palaeontologist notified and appointed for assessment and Change Find Protocol development and implementation. (iii) The area should be cordoned-off and access restricted, so that a systematic and professional investigation can be undertaken. (iv) Once the material is removed/collect by the specialist, work can recommence in that area. (v) Final Change Find Protocol must be uploaded onto SAHRIS Website.	Operator	Throughout operation.	Approval from SAHRA if required Change Find Protocol.	Engineer's walkabout and quarterly audits ECO annual audits
C. Sense of Place (i) Visual impacts (amongst others) are addressed during the operational phase to minimize impacts on 'sense of place' of the rural, agricultural setting.	Operator	Throughout operation.	Screening (if required) No informal housing on site	Engineer's walkabout and quarterly audits ECO annual audits

11. REASONED OPINION

Based on the findings of the independent specialist reviews, the impact assessment and taking into account the successful implementation of the EA (12/12/20/1903/1) and OEMP, it is reasoned by the EAP that the proposed Part 2 Amendment Application for the EA (12/12/20/1903/1) for the Lesedi Power - 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility should be granted. The amendments applied for do not cause any significant increase in the impacts associated with the current authorised development and there are no additional listed activities. The specialist recommendations must be included in the EA and OEMP as relevant and required.