ENGIE GRASPAN PV ADDITIONAL FOOTPRINT

Northern Cape Province

Scoping Report

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PROJECT DETAILS

Title	:	Environmental Impact Assessment Process: Scoping Report for the Engie Graspan PV Additional Footprint, Northern Cape Province
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Client	:	Engie Graspan Solar Project (Pty) Ltd
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PURPOSE OF THE SCOPING REPORT AND INVITATION TO COMMENT

ENGIE Graspan Solar Project (Pty) Ltd obtained an Environmental Authorisation (EA) for the proposed Graspan PV Facility and associated infrastructure located on remaining extent of Farm Graspan (No. 172) in the Siyancuma Local Municipality in the Northern Cape province in April 2013 (DFFE Reference No.: 14/12/16/3/3/276).

The project has been selected as a Preferred Bidder project under Round 5 of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

The proposed facility will have a contracted capacity of 90MW[1] and will include the following infrastructure:

- PV solar panels/modules (arranged in arrays);
- PV module mountings;
- DC-AC current inverters and transformers;
- An on-site 132kV Independent Power Producer (IPP) substation to facilitate the grid connection.
- Underground cabling/ overhead power lines;
- On-site buildings (including an operational control centre, office, ablutions, and a guard house);
- Access roads and internal road network; and
- Ancillary infrastructure.

A developmental footprint of 150 ha in extent is authorised for the facility and associated infrastructure however, in order to implement the project, an additional 50ha is required. This additional area is immediately adjacent to the authorised area and within F arm Graspan (No.172).

The initial authorization approved typical monofacial PV array technology with typical anodized aluminum frames. With this technology the footprint of PV arrays would have covered approximately 127 ha of the authorized 150 ha area.

The additional land area required for the construction of the solar PV facility is due to advancements in technology and spatial needs for the optimized operation of the facility. The developer (Engie Graspan Solar (Pty) Ltd) proposes bifacial PV modules, which enable energy generation from both sides of the PV modules thus requiring additional space between PV module rows, compared to traditional monofacial PV modules, for reflected solar irradiation (solar energy) to reach the underside of the bifacial modules.

ENGIE Graspan Solar Project (Pty) Ltd appointed Savannah Environmental as the independent environmental consultant to undertake the Environmental Impact Assessment (EIA) for the required 50-hectare additional footprint. The EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations, as amended, promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

This Scoping Report represents the findings of the Scoping Phase of the EIA process and contains the following chapters:

[1] An application to amend the authorised capacity to 94MW is being prepared and will be submitted to the DFFE for consideration.

- **Chapter 1** provides background to the Engie Graspan Solar project and the environmental impact assessment.
- **Chapter 2** provides a description of the additional footprint, the identified project alternatives, and the need and desirability for the additional footprint for the Engie Graspan Solar Project.
- **Chapter 3** outlines strategic regulatory and legal context for energy planning in South Africa and specifically relating to the project.
- **Chapter 4** outlines the approach to undertaking the Scoping/EIA process.
- **Chapter 5** describes the existing biophysical and social environment within and surrounding the study area.
- **Chapter 6** provides an identification and evaluation of the potential issues associated with the proposed solar PV facility and associated infrastructure on the additional footprint.
- **Chapter 7** presents the conclusions of the scoping evaluation for the additional footprint.
- **Chapter 8** escribes the Plan of Study (PoS) for the EIA phase.
- **Chapter 9** provides references used to compile the Scoping report.

The Scoping Report was made available for review from **21 January 2022 – 23 February 2022** at http://www.savannahsa.com/public-documents/energy-generation/. All comments received and recorded during the 30-day review and comment period have been included, considered, and addressed within this Scoping report for the consideration of the National Department of Environment, Forestry and Fisheries (DEFF).

EXECUTIVE SUMMARY

ENGIE Graspan Solar Project (Pty) Ltd received an Environmental Authorisation for the proposed Graspan PV Facility and associated infrastructure located on remaining extent of Farm Graspan (No. 172) in the Siyancuma Local Municipality in the Northern Cape province in April 2013 (DFFE Reference No.: 14/12/16/3/3/276).

The project has been selected as a Preferred Bidder project under Round 5 of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

As authorized in 2013, the proposed facility will have a contracted capacity of 90MW[2] and will include the following infrastructure:

- PV solar panels/modules (arranged in arrays);
- PV module mountings;
- DC-AC current inverters and transformers;
- An on-site 132kV Independent Power Producer (IPP) substation to facilitate the grid connection.
- Underground cabling/ overhead power lines;
- On-site buildings (including an operational control centre, office, ablutions, and a guard house);
- Access roads and internal road network; and
- Ancillary infrastructure.

A developmental footprint of 150 ha in extent is authorised for the facility and an output of 90MW of electricity generation. However, in order to implement the project, an additional 50ha is required. This additional area is immediately adjacent to the authorised area and within Farm Graspan (No.172).

The authorisation issued in April of 2013 approved typical monofacial PV Array technology with typical anodized aluminum frames. With this technology the development footprint of PV arrays and associated infrastructure would have been approximately 127 ha of the authorized area (150 ha).

The need for the additional footprint for the construction of the solar PV facility is due to the advancements in technology and spatial needs for the optimised operation of the facility. The developer (Engie Graspan Solar (Pty) Ltd) proposes bifacial PV modules, which enable energy generation from both sides of the PV modules thus requiring additional space between PV module rows, compared to traditional monofacial PV modules, for reflected solar irradiation (solar energy) to reach the underside of the bifacial modules.

ENGIE Graspan Solar Project (Pty) Ltd appointed Savannah Environmental as the independent environmental consultant to undertake the Environmental Impact Assessment (EIA) for the proposed 50-hectare additional footprint. The EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations, as amended, promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

[2] An application to amend the authorised capacity to 94MW is being prepared and will be submitted to the DFFE for consideration

Site-specific studies and assessments will delineate areas of potential sensitivity within the additional footprint. Once constraining factors have been confirmed, the layout of the solar panels can be planned to minimise social and environmental impacts.

From a regional perspective, the area is considered favourable for the development of a commercial solar energy facility by virtue of prevailing climatic conditions, relief, aspect, the extent of the affected property, the availability of a direct grid connection (i.e., a point of connection to the national grid) and the availability of land on which the development can take place. Furthermore, various other authorised solar facilities are located within the study area to the east, west, north, and south of the additional footprint.

With the aim of evacuating the generated power into the national grid the project will aid in the diversification and stabilisation of the country's electricity supply with Engie Graspan Solar Facility set to inject up to 90MWAC into the national grid.

1. Findings of the Scoping Study

The Scoping study included the identification of potential impacts associated with the additional footprint through a desktop study, specialist inputs and consultation with affected parties and key stakeholders. A preliminary evaluation of the extent and significance of potential impacts associated with the development on the additional footprint has been detailed in Chapter 6. Potentially significant impacts will be assessed in detail through the EIA Phase assessment, which will include independent specialist assessments.

The following paragraphs provide a summary of the most significant impacts outlined in Chapter 7 of this Scoping Report.

1.1. Potential Ecological impacts

The majority of potential impacts identified to be associated with the construction on the additional footprint are anticipated to be localised and restricted to the development footprint itself, while operation phase impacts/benefits range from local to regional.

The following potential impacts on the biodiversity were identified for the construction phase of the proposed development:

- Destruction, fragmentation and degradation of habitats and ecosystems;
- Spread and/or establishment of alien and/or invasive species;
- Direct mortality of fauna
- Reduced dispersal/migration of fauna;
- Environmental pollution due to water runoff, spills from vehicles and erosion;
- Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and light pollution; and
- Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals.
- Loss of vegetation (& habitat) within development footprint

A pan (or depression) was identified north of the project area, beyond the 500 m regulation area. No other wetlands were identified within the project area or within the 500 m regulation area. Due to the absence of wetlands, no further assessment was undertaken for the project.

1.2. Potential Impact on Soils and Agricultural Potential

It is the specialist's opinion that the baseline findings do not concur with the land capabilities identified by means of the DAFF (2017) desktop findings in regard to land capability sensitivities. Even though the land capability, in theory, is similar to that portrayed by (DEA, 2021), the climatic conditions have been deemed to be extremely poor. These poor climatic conditions have resulted in a land potential level characterised by "Low" sensitivity throughout the project area. No "High" land capability sensitivities were identified within proximity to any of the proposed activities. Potential impacts identified include:

Direct impacts:

» Erosion due to heavy trucks transporting PV structures

Indirect impacts:

» Water runoff
» Low penetration of rainwater
» Loss of arable land for grazing
» Desertification

Considering the lack of sensitivity and the measures put in place in regard to stormwater management and erosion control, it is the specialist's opinion that all activities will have an acceptable impact on agricultural productivity. Furthermore, no measures in regard to moving components in their micro-setting were required to avoid or minimise fragmentation and disturbances of agricultural activities. Impact significance will be confirmed in the EIA phase and recommendations will be made regarding appropriate management measures to include within the EMPr for the project.

1.3. Potential Impacts on Heritage Resources

Potential impacts on heritage sites could occur during the construction phase, and could include:

» Damage or destruction of fossil materials
» Damage or destruction of unmarked graves
» Direct impact to archaeological sites, historical sites, and burial sites

Four (4) sites of heritage significance were identified which were considered for the development of the additional footprint. The ACO study completed as part of the EIA for the authorised area recommended that no development take place within 100m of the railway line to ensure the stone structure and historical material relating to the railway line (and possibly the South African War), are not destroyed. Based on the information provided regarding the proposed additional footprint, the boundaries of the additional footprint are located within 65m of the railway line. It is therefore recommended that the boundary be moved to respect the recommended 100m buffer around the railway line.

The impact on palaeontological material is regarded as negligible (rated Low or negative) considering the rarity of fossil-bearing sediments and lack of appropriate exposure (i.e., steep-sided gulley's) on the additional footprint.

In conclusion, there is no objection to the proposed development for the Graspan PV Facilities on heritage grounds on condition that the recommendations outlined in the HIA are followed, and as such, no further assessment of impacts to heritage resources is recommended as part of the EIA phase.

1.4. Sensitivity Analysis for the Development Area

Potentially sensitive areas which have been identified through the environmental scoping study are illustrated in **Figure 1**. No areas of high sensitivity or no-go areas have been identified within the additional footprint area.

1.5. Overall Conclusion and Fatal Flaw Analysis

The findings of the desktop Scoping Study and specialist studies indicate that no environmental fatal flaws have been identified at this stage in the process to be associated with the development of the Engie Graspan PV facility on the additional footprint. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. No areas of high sensitivity have been identified. However, the HIA reiterated the requirement for a buffer to be placed around the railway line to protect sensitive heritage features associated with this infrastructure.

During the EIA phase, more detailed environmental studies will be conducted in line with the Plan of Study for EIA contained in **Chapter 8** of this Scoping Report. These studies will consider the detailed layouts produced by the applicant and make recommendations for the implementation of avoidance strategies and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA phase on the basis of these specialist studies, in order to provide an assessment of environmental acceptability of the final design of the facility.

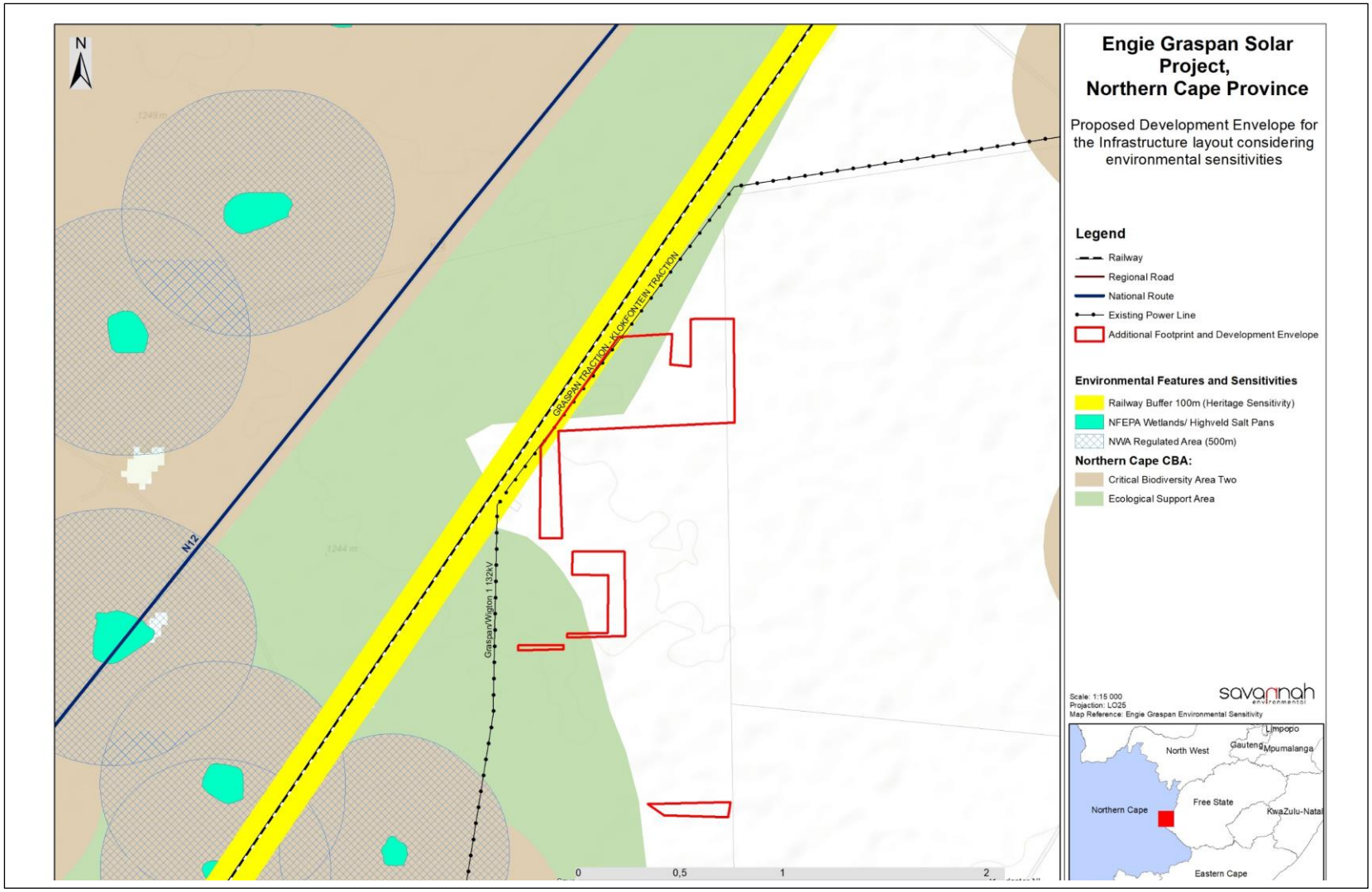

Figure 1: Environmental Sensitivity Map from the results of the scoping evaluation for additional footprint for the Engie Graspan Solar Project, indicating the recommended development envelope to be assessed within the EIA Phase

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CHAPTER 1: INTRODUCTION

ENGIE Graspan Solar Project (Pty) Ltd obtained an Environmental Authorisation for the proposed Graspan PV Facility and associated infrastructure, located on remaining extent of Farm Graspan (No. 172) (refer to Figure 1.1), situated in the Siyancuma Local Municipality in the Northern Cape province in April 2013 (DFFE Reference No.: 14/12/16/3/3/276). The project has been selected as a Preferred Bidder project under Round 5 of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

The authorised PV facility will have an installed capacity of 90MW and will include the following infrastructure:[3]

- PV solar panels/modules (arranged in arrays);
- PV module mountings;
- DC-AC current inverters and transformers;
- An on-site 132kV Independent Power Producer (IPP) substation to facilitate the grid connection.
- Underground cabling/ overhead power lines;
- On-site buildings (including an operational control centre, office, ablutions, and a guard house);
- Access roads and internal road network; and
- Ancillary infrastructure.

A developmental footprint of 150 ha in extent is authorised for the facility and associated infrastructure. In order to implement the preferred technology for the project, an additional 50ha is required. This additional area is located immediately adjacent to the authorised area. Although no additional electricity will be generated, the infrastructure for the authorised facility will be located within this area.

The need for the additional footprint is due to the advancements in technology and spatial needs for the optimised operation of the facility. The developer is proposing to install bifacial PV modules, which enable energy generation from both sides of the PV modules, thereby improving the efficiency of the facility. This technology requires additional space between PV module rows, compared to traditional monofacial PV modules as originally considered for the project, to enable reflected solar irradiation (solar energy) to reach the underside of the bifacial modules.

1.1. Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This Scoping Report has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act (Act No 107 of 1998). This chapter of the Scoping Report includes the following information required in terms of Appendix 2:

Requirement	Relevant Section
(a)(i) the details of the EAP who prepared the report and (ii) the expertise of the EAP to carry out scoping procedures; including a curriculum vitae	The details of the EAP who prepared the report is included in **Section 1.5**. The Curriculum vitae of the Savannah Environmental team has been included as **Appendix A**.

[3] An application to amend the authorised capacity to 94MW is being prepared and will be submitted to the DFFE for consideration

Requirement	Relevant Section
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is (i) a linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	A locality map illustrating the location of additional footprint for the Engie Graspan Solar Project has been included as **Figure 1.1** in this chapter.

This Scoping Report consists of nine chapters, which include:

- **Chapter 1** provides a background for the additional footprint for the Engie Graspan Solar Project and the environmental impact assessment.
- **Chapter 2** gives a description of the area where the additional footprint is located in relation to the authorised facility, the identified project alternatives, and the need and desirability for the additional footprint for the Engie Graspan Solar Project.
- **Chapter 3** outlines strategic regulatory and legal context for energy planning in South Africa and specifically relating to the project.
- **Chapter 4** outlines the approach to undertaking the Scoping/EIA process.
- **Chapter 5** describes the existing biophysical and social environment within and surrounding the study and development area.
- **Chapter 6** provides an identification and evaluation of the potential issues associated with the proposed solar PV facility and associated infrastructure.
- **Chapter 7** presents the conclusions of the scoping evaluation for the additional footprint.
- **Chapter 8** describes the Plan of Study (PoS) for the EIA phase.
- **Chapter 9** lists the references used to compile the Scoping report.

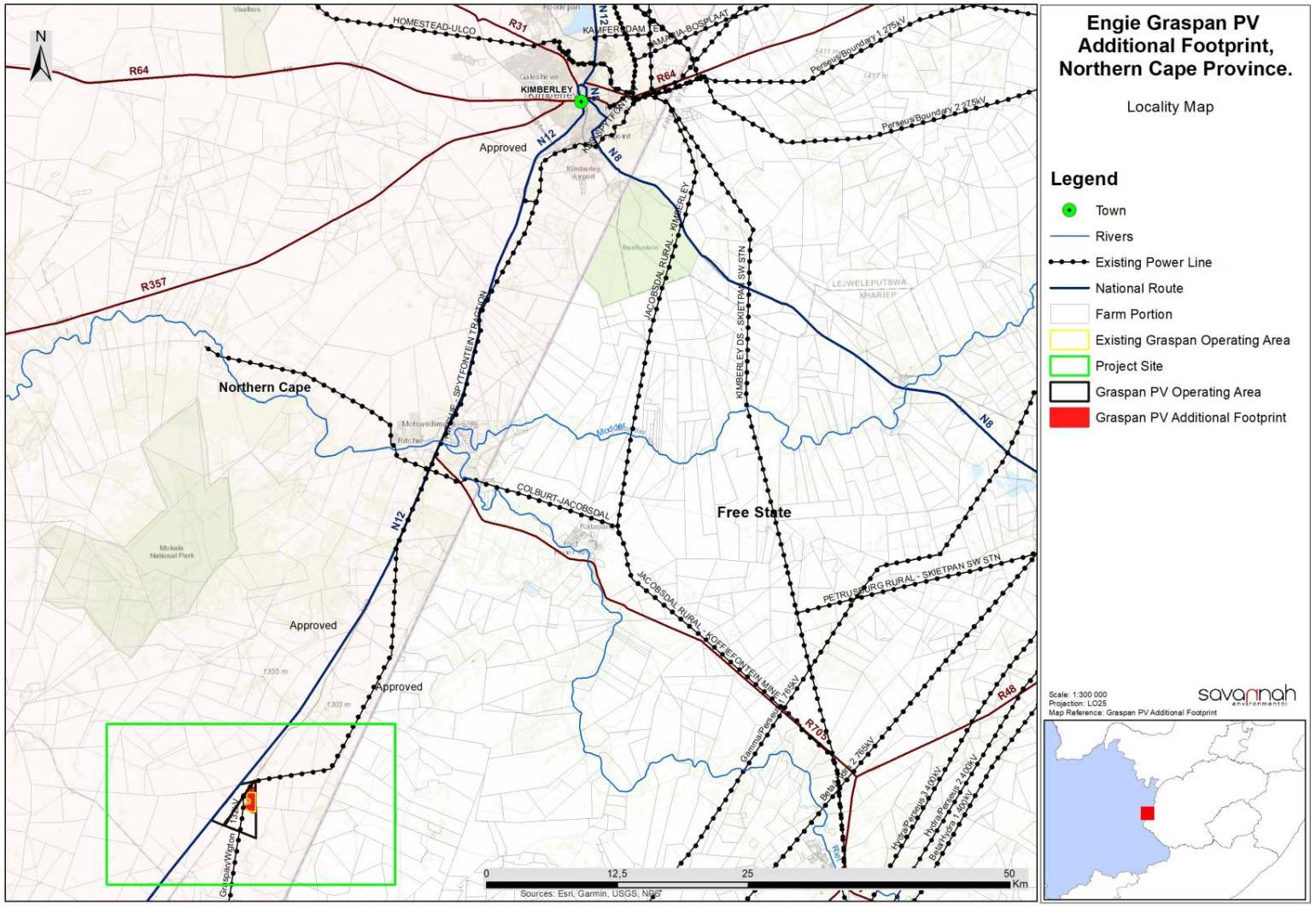

Figure 1.1: Locality map illustrating the location of the authorised Engie Graspan Solar facility as well as the proposed additional footprint for the on Farm Graspan (No.172) (refer to **Appendix D** for A3 map)

1.2. Requirement for an Environmental Impact Assessment Process

Section 24 of the National Environmental Management Act (No. 107 of 1998) (NEMA) pertains to Environmental Authorisations (EAs), and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the Competent Authority (CA). The 2014 Environmental Impact Assessment (EIA) Regulations, as amended (GNR 326) published under NEMA prescribe the process to be followed when applying for Environmental Authorisation (EA), while the Listing Notices (Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325), and Listing Notice 3 (GNR 324)) contain those activities which may not commence without EA from the CA.

In terms of NEMA, the 2014 EIA Regulations (GNR 326), and Listing Notices, the proposed development of the additional footprint for the authorised PV facility requires Environmental Authorisation (EA) from the National Department of Environment, Forestry and Fisheries (DEFF) subject to the completion of a full Scoping and Environmental Impact Assessment (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326).

The following will be undertaken as part of this process:

- The **Scoping Phase** includes the identification of potential issues associated with the project through a desktop study (considering existing information) and consultation with affected parties and key stakeholders. This phase considers the broader project site in order to identify and delineate any environmental fatal flaws, no-go and / or sensitive areas. Following a public review period of the Scoping report, this phase culminates in the submission of a final Scoping Report and Plan of Study for the EIA to the CA for consideration and acceptance.
- The **EIA Phase** involves a detailed assessment of the potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase includes detailed specialist investigations as well as public consultation. Following a public review period of the EIA Report, this phase culminates in the submission of a final EIA Report and an Environmental Management Programme (EMPr), including recommendations of practical and achievable mitigation and management measures, to the CA for final review and decision-making.

In terms of GNR 779 of 01 July 2016, the National DFFE has been determined as the CA for all projects which relate to the Integrated Resource Plan for Electricity (IRP) 2010 – 2030, and any updates thereto. As the additional footprint proposed is associated with an authorised PV facility (which is also a Preferred Bidder project), the DFFE is determined to be the CA for this application. Through the decision-making process, the DFFE will be supported by the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform as the commenting authority.

1.3 Details of the Environmental Assessment Practitioner and Expertise to conduct the EIA process

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326), the applicant has appointed Savannah Environmental (Pty) Ltd as the independent environmental consultants to undertake the Scoping and Environmental Impact Assessment (S&EIA) process, inclusive of comprehensive, independent specialist studies. Neither Savannah Environmental nor any of its specialists are subsidiaries of or are affiliated to the applicant. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed additional footprint.

Savannah Environmental is a specialist environmental consulting company providing a holistic environmental management service, including environmental assessment, and planning to ensure compliance and evaluate the risk of development, and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team have considerable experience in basic assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with electricity generation.

The Savannah Environmental team for this project includes:

» **Tamryn Lee Goddard** is the principle author of this report. She holds a bachelor's degree in Environmental Management, and postgraduate higher diplomas in Environmental Engineering, monitoring, and conservation ecology. She has 2 years of experience in the environmental management field. Her key focus is on undertaking environmental impact assessments, GIS mapping, public participation, environmental management plans and programmes. She is registered as a young professional with the International Association of Impact Assessors (IAIA).

» **Jo-Anne Thomas** is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is the registered EAP for this project. She has experience in providing technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Key focus on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation. She has the ability in undertaking of numerous environmental management studies has resulted in a good working knowledge of environmental legislation and policy requirements. Recent projects have been undertaken for both the public- and private-sector, including compliance advice and monitoring, electricity generation and transmission projects, various types of linear developments (such as National Road, local roads, and power lines), waste management projects (landfills), mining rights and permits, policy, strategy, and guideline development, as well as general environmental planning, development, and management

» **Lehlogonolo Mashego** is a Public Participation and Environmental Consultant at Savannah Environmental. She holds a MSc in Environmental Science as obtained from the University of Witwatersrand and is a Gauteng Branch Committee Member for IAIAsa facilitating the students and young professionals' division for the last three (3) years. Lehlogonolo has five (5) years of professional working experience in the public participation field; specializing in overall public facilitation, stakeholder engagement, public awareness, stakeholder liaison and project administration. She is responsible for project management of public involvement participation processes for a wide range of projects across South Africa in industries which include but not limited to mining, renewable energy, infrastructure,

agriculture and recreation. Through her role as an environmental practitioner, she has facilitated a range of Screening Assessments, Basic Assessments, Scoping and Environmental Impact Assessments, Environmental Auditing and Environmental Training.

Curricula Vitae (CVs) detailing the Savannah Environmental team's expertise and relevant experience are provided in **Appendix A**.

In order to adequately identify and assess potential environmental impacts associated with the proposed project, the following specialist consultants have provided input into this Scoping Report:

Specialist	Field of Study
CTS Heritage	
Jenna Lavin	Heritage Assessment
The Biodiversity Company	
Andrew Husted	Wetland and Biodiversity
Martinus Erasmus	Terrestrial ecology and botany
Ivan Baker	Wetland and ecosystem services, hydropedology and pedologic

CHAPTER 2: PROJECT DESCRIPTION

This chapter provides a description of the proposed additional footprint for the authorised Engie Graspan Solar Project and associated infrastructure, including details of the need and desirability and an overview of the various alternatives considered.

2.1. Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This section of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(b) the location of the activity, including (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	(b) the location of the activity, including (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or property is detailed in **section 2.1.**
(d)(ii) a description of the activities to be undertaken including associated structures and infrastructure	A description of the associated structures and infrastructure is included in **Section 2.5**. Activities to be undertaken during the various project development phases is included in **Section 2.6**.
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	The need and desirability of the additional footprint is included and discussed in **Section 2.3**.
(g)(i) details of all the alternatives considered	The details of the alternatives considered as part of the Engie Graspan additional footprint and as part of the Scoping Phase have been included in Section 3.2.
(g)(ix) the outcome of the site selection matrix	Refer to **Section 2.3** for a description of the selection of the proposed project site and development area.
(g)(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such	The details of the alternatives considered as part of the Engie Graspan additional footprint and as part of the Scoping Phase have been included in **Section 3.2.** Where no alternatives are being considered a motivation has been included

2.2. Project Overview

the proposed Graspan PV Facility and associated infrastructure, located on remaining extent of Farm Graspan (No. 172) was authorised in April 2013, with a split authorisation issued in November 2021 (DFFE Ref No.: 14/12/16/3/3/2/276/1). The project has been selected as a Preferred Bidder in Round 5 of the REIPPPP. The authorised project has an installed capacity of 90MW within an area of 150ha. PV technology is proposed to be utilised for the generation of electricity, and the Engie Graspan PV facility will have a contracted capacity of up to 75MW (90MW installed capacity). Infrastructure associated with the solar PV facility will include:

- PV solar panels/modules (arranged in arrays);
- PV module mountings;
- DC-AC current inverters and transformers;
- An on-site 132kV Independent Power Producer (IPP) substation to facilitate the grid connection.
- Underground cabling/ overhead power lines;
- On-site buildings (including an operational control centre, office, ablutions, and a guard house);
- Access roads and internal road network; and
- Ancillary infrastructure.

The EIA undertaken for the authorised facility considered monofacial PV Array technology with typical anodized aluminium frames. The developer (Engie Graspan Solar (Pty) Ltd) now proposes the use of bifacial PV modules, which enable energy generation from both sides of the PV modules thus requiring additional space between PV module rows, compared to traditional monofacial PV modules, for reflected solar irradiation (solar energy) to reach the underside of the bifacial modules. Bifacial solar panels are more efficient than monofacial, as they collect sunlight on either side. They also perform better in diffuse light because the extra surface area allows bifacial panels to capture more light. This means that the long-term costs are lower than monofacial panels. With the implementation of bifacial PV panels, an additional area of approximately 50 ha is needed for project implementation. Although no additional electricity will be generated, the infrastructure for the authorised facility will be located within this area.

From a regional perspective, the area within which the project site is located is considered favourable for the development of a commercial solar energy facility by virtue of prevailing climatic conditions, relief, aspect, the extent of the affected property, the availability of a direct grid connection (i.e., a point of connection to the national grid) and the availability of land on which the development can take place. Furthermore, other authorised solar facilities are located within the study area to the east, west, north, and south of the authorised area and additional footprint. Owing to its proximity to the authorised area, the additional footprint has been identified by the applicant as a technically feasible site which has the potential for the development of a solar PV facility. The additional footprint of approximately 50 ha was identified by the developer to accommodate a portion of the infrastructure (Solar PV Panels) for the Engie Graspan Solar PV Facility.

The full extent of the proposed additional footprint has been considered within this scoping report with the aim of determining the suitability from an environmental and social perspective and identifying areas that should be avoided in development planning.

Details of the project site are provided in Table 2.1 below. The location of the site is provided in Table 2.1.

Table 2.1: Detailed description of the project

Province	**Free State Province**
District Municipality	Pixley ka Seme District Municipality
Local Municipality	Siyancuma Local Municipality
Ward Number (s)	Ward 6
Nearest town(s)	Jacobsdal (~41km north-east) and Hopetown (47 km southwest)
Farm name(s) and number(s) of properties affected by the Solar Facility	Farm Graspan (No.172)

Portion number(s) of properties affected by the Solar Facility	Farm Graspan (No.172)
SG 21 Digit Code (s)	Farm Graspan (No.172) C032000000000172000000
Current zoning	Agricultural
Access	The site will be accessed from the N12 national road at the existing site entrance (29.020'42.59" S 24.024'51.66" E)
Site Coordinates (centre of affected property)	29°19'45.66"S 24°26'50.71"E

The exact placement of the solar array within the additional footprint for the Engie Graspan Solar facility is not defined at this stage but will be positioned based on sensitivities identified in the scoping phase and will be further assessed during the EIA Phase. Figure 2.2 provide details of infrastructure for the Engie Graspan Solar Project spanning the authorised area and additional footprint. A preliminary layout is provided in Figure 2.3.

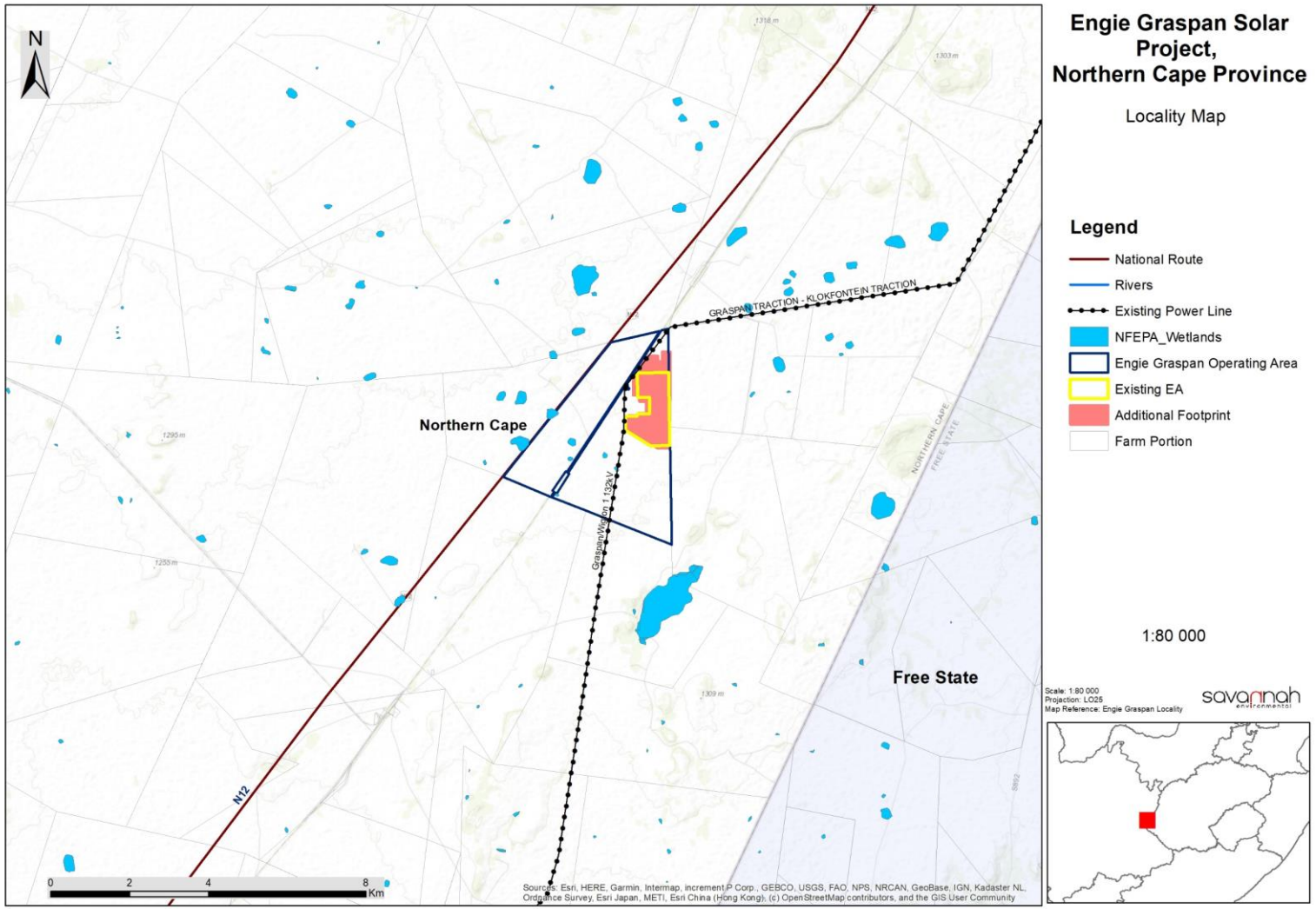

Figure 0.1: Map illustrating the additional footprint within the project site, and the authorised PV Area considered for the Engie Graspan Solar Project

PROJECT DETAILS	
Module Make	LONGI
Module Type & Rating	Bifacial/ LR5-72HBD 545M
Pitch	8.0 meter
No. Of Modules	172032
Modules per String	28
No. Of Strings	6144 nos.
Tracker Configuration	1V 84
Tracker Type	Single Axis Tracker
No. Of Trackers	2048 nos.
Inverter Make	Sungrow
Inverter Type & Rating	Central/ 3437 kW@40 deg
No. of Inverters	26 nos.
No. of ITS	13 nos.
No.of 3.5MVA Skid/ITS	2 no.
No. of 3.5 MVA Skid	26 nos.
Nominal AC Capacity (Inverter)	89.36 MW
AC Capacity (POC)	75MW
DC Capacity	93.757MWp
DC : AC Ratio at POC	1.25
Area	192 Ha
System Max. DC Voltage	1500V

Figure 2.2: Details of infrastructure for the Engie Graspan Solar Project spanning the authorised area and additional footprint

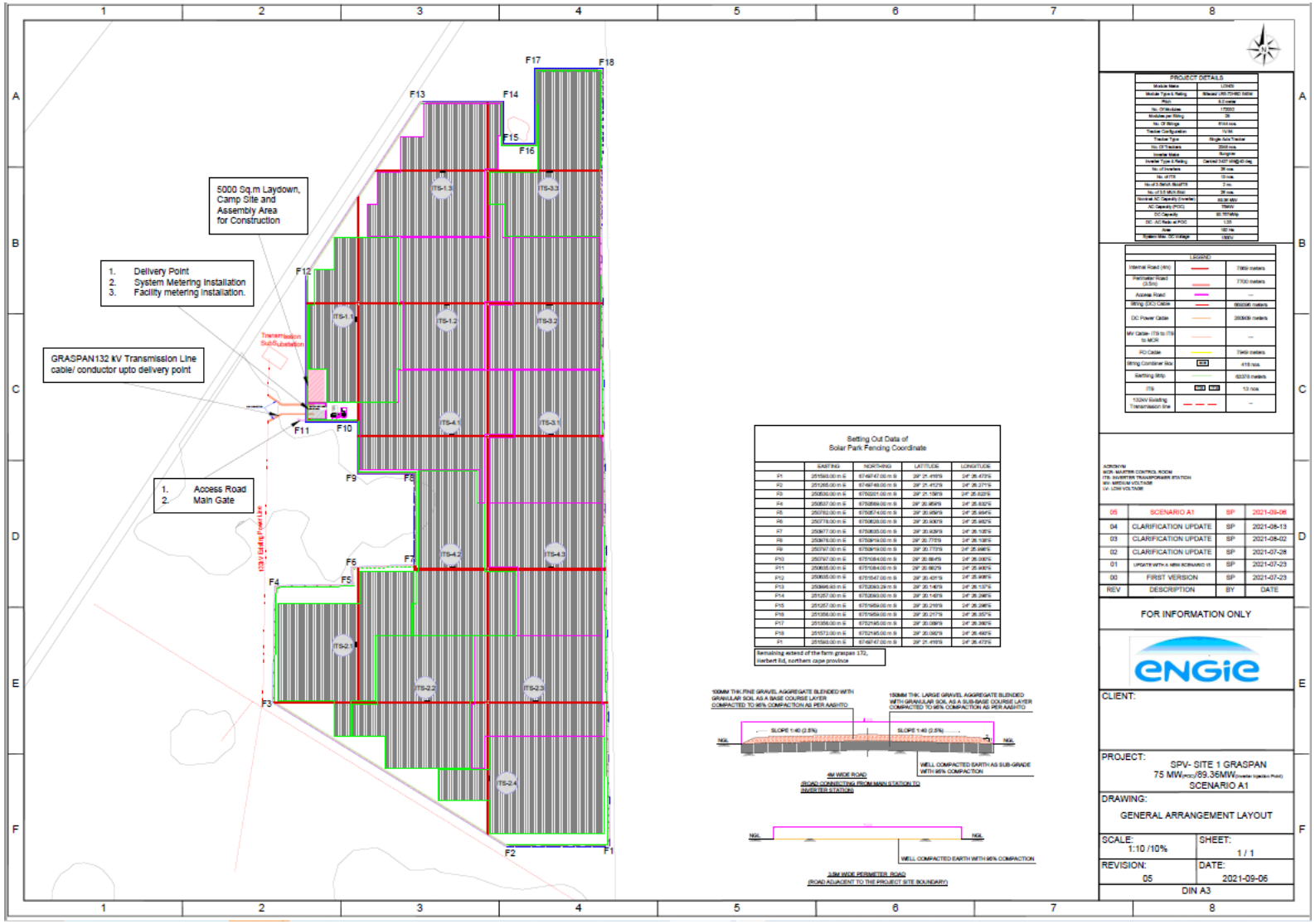

Figure 2.3: Provisional Layout of on the Engie Graspan Solar Facility

2.3. Need and Desirability

Appendix 2 of the 2014 EIA Regulations (GNR 326) requires that a Scoping Report include a motivation for the need and desirability of the proposed development, including the need and desirability of the activity in the context of the preferred location. The need and desirability of the development needs to consider whether it is the right time and the right place for locating the type of land-use/activity being proposed. The need and desirability of a proposed development is, therefore, associated with the wise use of land, and should be able to respond to the question such as, but not limited to, what the most sustainable use of the land may be.

As stated previously, the Engie Graspan PV Facility is an already authorised facility and has been selected as a Preferred Bidder Project in Round 5 of the REIPPPP. The need for the PV project in terms of its contribution to the energy mix of the country as determined by the Integrated Resource Plan (IRP) 2019 has therefore been confirmed and the project will be implemented provided it meets all requirements of Financial Close. The need for the additional footprint is directly related to that of the authorised facility, as well as to the technical and economic feasibility of the project in order to develop a cost-effective solution for implementation. The location of the additional footprint is directly related to the location of the authorised facility and is considered to be appropriate and desirable.

2.4. Technology considered for the Solar Energy Facility and the Generation of Electricity

As stated previously, Engie Graspan Solar PV Facility will have an installed capacity of 94MWp and will make use of bifacial PV technology on the authorised area and on the proposed additional footprint.

According to Solar Mag (2020), a bifacial solar panel is a double-sided energy factory that converts solar energy into electrical energy from both its top and bottom sides. They are different from monofacial solar panels which only use the top side for solar energy production. The word bifacial comes from the prefix "bi-" (meaning two), and "facial" (for face).

Bifacials are equipped with solar cells on both the top and the rear of the panel, which are usually the monocrystalline type, although polycrystalline can be used. Bifacial solar panels are assembled in multiple configurations such as framed, frameless and with double glass or a clear backsheet. Conventional monocrystalline solar panel systems differ such that they have opaque backsheets. The mounting structure used to mount a bifacial solar array is designed to minimize shading from the reflected solar irradiance onto the backside of the PV panels. This means there are only very narrow support rails and corner-only vertical supports.

The typically backside-placed junction box, which is the electronic interconnection for the PV panels, is smaller for bifacial PV systems than in traditional solar arrays. So, it takes up less space and casts less shade on the backside of the PV panels.

Figure 2.4: Image of a typical Bifacial Solar Array

The top solar cells of a bifacial solar panel system face the sun, so they capture incident solar energy directly, absorbing only certain wavelengths. The top solar cells function like those of a conventional solar panel array. The bottom solar cells absorb solar energy that is reflected off the ground. The reflectivity of the ground is based on the albedo value, which is higher for white or lighter surfaces. Painting a white or silver surface underneath the panels can provide this effect of increased reflectivity onto the backside of the panels. Studies show that a white surface, such as snow, reflects more than 80% of albedo light. (Grass, by comparison: 23%).

Since bifacial panels are able to generate electricity from both sides, the common preferred mounting strategy for installation is a single-axis tracking system, which follows the path of the sun. This is also typical for conventional modules; however, with bifacial system, the modules are ideally installed at a higher height above ground and larger spacing between module rows to increase the reflected energy onto the backside of the PV panels.

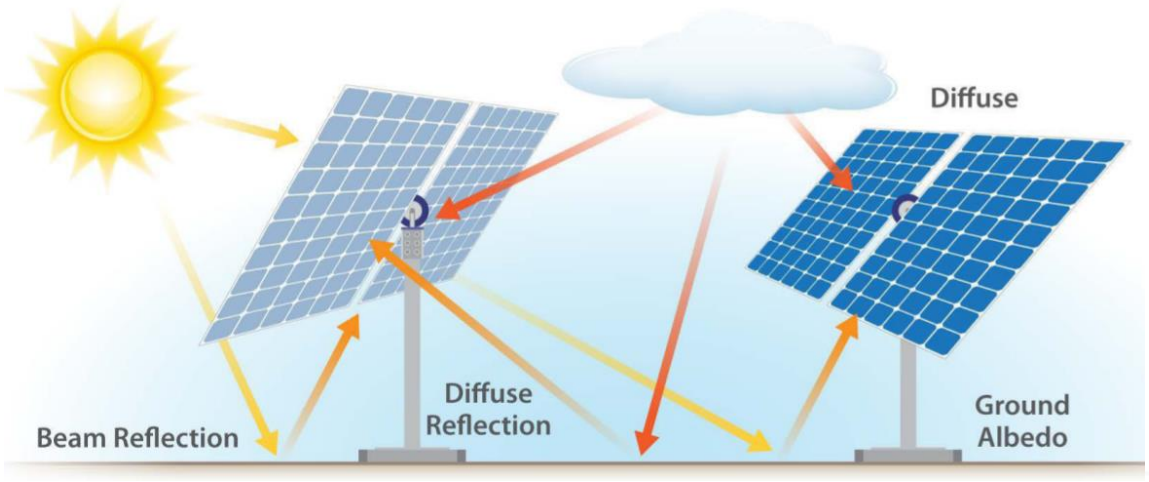

Figure 2.5: Diagram showing how bifacial solar PV panels work (Source: NREL, Bifacial PV System Performance – separating fact from fiction, https://www.nrel.gov/docs/fy19osti/74090.pdf)

Efficiency refers to how well a solar cell and panel converts the total amount of solar energy incident to its surface into electrical energy. A 2018 study by LONGi Solar showed that bifacials can increase efficiency by 11% compared to a conventional solar panel system. The bifacial solar cell efficiency increase can be as high as 27% by way of a solar tracking system that moves and rotates the panels based on the sun's trajectory across the sky.

As the bifacial solar panel price becomes competitive with that of monofacial panels, bifacial PV systems may provide a higher energy yield opportunity (better efficiency), especially in the case where there are land constraints and fewer panels can be accommodated. However, this is dependent on the albedo environment (ground reflectivity) and the site lighting conditions to inform the bifacial gain.

2.5. Consideration of Alternatives

In terms of Appendix 2 of the 2014 Environmental Impact Assessment (EIA) Regulations (GNR 326), reasonable and feasible alternatives including but not limited to site and technology alternatives, as well as the "do-nothing" alternative should be considered.

2.5.1. Site Alternatives

Site alternatives such as land suitability, solar resource, and landowner support were addressed in the EIA undertaken for the authorised PV facility. The study concluded that the development area located within the study area (i.e., Farm Graspan No.172) is highly preferred in terms of the development of a solar PV facility as a result of the various criteria listed above. Owing to its proximity to the authorised area, the additional footprint has been identified by the applicant as a technically feasible site which has the potential for the development of a solar PV facility. No alternative sites for the additional footprint have been identified for consideration within this EIA process.

2.5.2. Technology Alternatives

The EIA for the PV facility considered financial, technical, and environmental factors when choosing the type of solar power technology to be implemented, including the local solar resource and its likely generation output, the economics of the proposed facility and availability of government feed-in tariffs and energy production licenses, and the requirement for other development inputs such as water resource requirements. It was concluded that PV technology was considered to be the most environmentally sensitive technology for the preferred site, as large volumes of water are not needed for power generation purposes compared to the CSP option, which requires large volumes of water for cooling purposes. PV is also preferred when compared to CSP technology because of the lower visual profile.

The EIA considered the installation of fixed monofacial PV technology, being the most appropriate technology available at the time. Due to technology advancements since the initial assessment for the project, the developer (Engie Graspan Solar (Pty) Ltd) proposes bifacial PV modules for implementation of the project. As detailed in Section 2.3 above, this technology enables energy generation from both sides of the PV modules thus requiring additional space between PV module rows.

2.5.3. Design and Layout Alternatives

The affected property (i.e., farm Graspan (No.172)) is approximately 1350ha in extent, which is sufficient for the development of a solar PV facility with an installed capacity of up to 90MW, while allowing for the avoidance of environmental sensitivities. A development area of ~ 200 ha (150 ha authorised area and 50 ha proposed additional footprint) has been identified within the project site within which the solar PV facility will be sited.

Potential environmentally sensitive areas have been identified as part of the Scoping Phase (refer to Chapter 6) for further detailed consideration (through site-specific specialist studies) during the EIA Phase. The environmental sensitivity identification process will inform the layout design for the PV facility, avoiding sensitive areas as far as possible, and thereby ensuring that the layout plan taken forward for consideration during the EIA Phase is the most optimal from an environmental perspective.

2.5.4. The 'Do-Nothing' Alternative

The 'Do-Nothing' alternative is the option of not utilising the additional footprint for the Engie Graspan PV Facility. This means utilising only the authorised 150 ha area. Should this alternative be selected, there would be no environmental impacts on the additional footprint. In addition, the benefits as a result of the opportunity to utilise bifacial panels and install a more efficient solar PV facility on the site will be foregone. The 'do-nothing' alternative will be assessed within the EIA Phase of the process.

CHAPTER 3: POLICY AND LEGISLATIVE CONTEXT

This chapter provides an overview of the policy and legislative context within which the development of a solar facility is proposed. This context is considered to be relevant to the proposed additional footprint being considered in this Scoping Report as it is directly associated with the authorised Engie Graspan Solar facility. Environmental legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity are identified and described.

3.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Impact Assessment Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of Scoping Report:

Requirement	Relevant Section
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Chapter 3, as a whole, provides an overview of the policy and legislative context which is considered to be associated with the development of the solar energy facility on an additional footprint where an authorized area is adjacent to an additional footprint. The regulatory and planning context has been considered at national, provincial, and local levels. A description of the policy and legislative context within which the additional footprint for the Engie Graspan Solar PV facility is proposed is included in **sections** which **3.3, 3.4, 3.5** and **3.6.**

3.2. Strategic Electricity Planning in South Africa

The need to expand electricity generation capacity in South Africa is based on national policy and informed by on-going strategic planning undertaken by the Department of Mineral Resources and Energy (DMRE). The hierarchy of policy and planning documentation that support the development of renewable energy projects such as a solar energy facility is illustrated in **Figure 3.1**. These policies are discussed in more detail in the following sections, along with the provincial and local policies or plans that have relevance to the development of a solar facility such as the Engie Graspan Solar PV Facility, including the additional development area required.

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy generation project of this nature consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels. As solar energy developments are a multi-sectoral issue (encompassing economic, spatial, biophysical, and cultural dimensions) various statutory bodies are likely to be involved in the approval process of a solar energy project and the related statutory environmental assessment process.

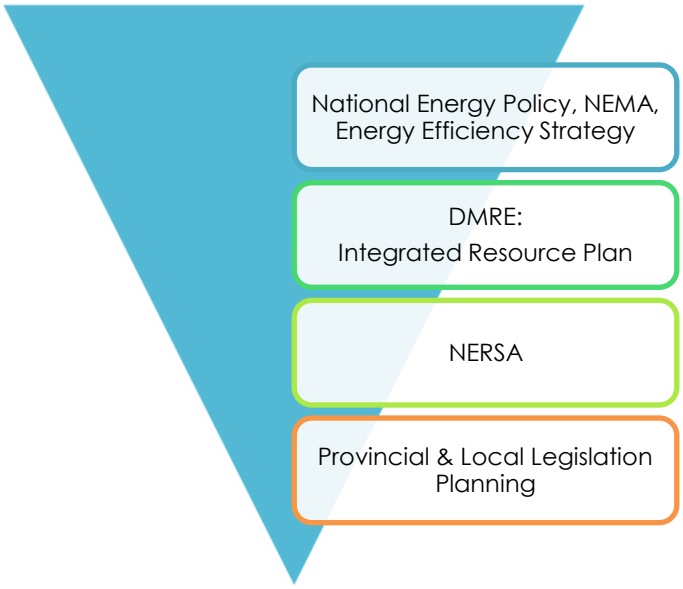

Figure 3.1: Hierarchy of electricity and planning documents

At **National Level**, the main regulatory agencies are:

- **Department of Mineral Resources and Energy (DMRE):** This Department is responsible for policy relating to all energy forms and for compiling and approving the Integrated Resource Plan (IRP) for electricity. Furthermore, the Department is also responsible for granting approvals for the use of land which is contrary to the objects of the Mineral and Petroleum Resource Development Act (Act No. 28 of 2002) (MPRDA) in terms of Section 53 of the Act. Therefore, in terms of the Act, approval from the Minister is required to ensure that proposed activities do not sterilise mineral resources that may occur within the project site and development area.
- **National Energy Regulator of South Africa (NERSA):** NERSA is responsible for regulating all aspects of the electricity sector and will ultimately issue licenses for IPP projects to generate electricity.
- **Department of Forestry, Fisheries and the Environment (DFFE):** This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations, 2014 (GN R326) as amended. DEA is the Competent Authority for this project (as per GN R779 of 01 July 2016), and is charged with granting the EA for the project under consideration.
- **The South African Heritage Resources Agency (SAHRA):** SAHRA is a statutory organisation established under the National Heritage Resources Act (No. 25 of 1999) (NHRA), as the national administrative body responsible for the protection of South Africa's cultural heritage.
- **South African National Roads Agency Limited (SANRAL):** This Agency is responsible for the regulation and maintenance of all national road routes.
- **Department of Water and Sanitation:** This Department is responsible for effective and efficient water resources management to ensure sustainable economic and social development. This Department is also responsible for evaluating and issuing licenses pertaining to water use (i.e. Water Use Licenses (WUL) and General Authorisation).
- **The Department of Agriculture, Rural Development and Land Reform:** This Department is the custodian of South Africa's agricultural resources and is primarily responsible for the formulation and implementation of policies governing the agriculture sector. Furthermore, the Department is also responsible for issuing permits for the disturbance or destruction of protected tree species listed under Section 15 (1) of the National Forest Act (No. 84 of 1998) (NFA).

At **Provincial Level**, the main regulatory agencies are:

» **Provincial Government of the Northern Cape – Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARD&LR):** This Department is the commenting authority for the EIA process for the project and is responsible for issuing of biodiversity and conservation-related permits.
» **Northern Cape Department of Transport, Safety, and liaison:** This Department provides effective co-ordination of crime prevention initiatives, provincial police oversight, traffic management and road safety towards a more secure environment.
» **Northern Cape Heritage Resources Authority (NCHRA):** This department is responsible for the identification and management of heritage resources in the Northern Cape, which, in a provincial context, have special significance. A heritage resource is a place or object of cultural significance.

At the **Local Level,** the local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Northern Cape Province, both the local and district municipalities play a role. The local municipality includes the Siyancuma Local Municipality which forms part of the greater Pixley Ke Seme District Municipality. In terms of the Municipal Systems Act (No. 32 of 2000), it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.

3.3. International Policy and Planning Context

A brief review of the most relevant international policies relevant to the establishment of Engie Graspan Solar PV project are provided below in **Table 3.1**. Engie Graspan Solar PV project is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

Table 3.1: International policies relevant to the Engie Graspan Solar Facility and the additional footprint

Relevant policy	Relevance to Engie Graspan Additional Footprint
United Nations Framework Convention on Climate Change (UNFCCC) and Conference of the Party (COP)	Following COP24 held in Katowice, Poland, and Chile's announcement that they could not host the next COP, nearly 27 000 delegates met in Madrid, Spain for COP25 with the intention to finalise the 'rulebook' of the Paris Agreement. The Conference also intended to communicate to the global community that the efforts of the United Nations (UN) to curb climate change remained relevant and that the UN recognised the yawning gap between current progress and global goals to limit global warming. The UNFCCC Secretariat announced[4] on 29 May 2020 that COP 26, originally scheduled for 9 – 19 November 2020 was postponed for 1 – 12 November 2021 and will be held in Glasgow, Scotland. In the previous COP, talks between the parties were unable to reach consensus in many areas, with a lot of issues being postponed to COP26 in 2021. Although COP26 has been postponed, the provision in the 2015 Climate Treaty that each Party must take a more ambitious commitment in 2020 to reduce greenhouse emissions has not been postponed. The UN at COP25 expressed their dissatisfaction with the results of the Conference and that the global community lost out on an opportunity to show

[4] https://cei.org/blog/cop-26-un-climate-conference-delayed%C2%A0until-november-2021

Relevant policy	Relevance to Engie Graspan Additional Footprint
	increased ambition on mitigation, adaptation, and finance to tackle the climate crisis [5]. The policy provides support for Engie Graspan Solar Project which will contribute to managing climate change impacts, supporting the emergency response capacity, as well as assist in reducing GHG emissions in a sustainable manner.
The Equator Principles III (June 2013)	The Equator Principles (EPs) III constitute a financial industry benchmark used for determining, assessing, and managing project's environmental and social risks. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. The EPs are applicable to large infrastructure projects (such as Engie Graspan Solar Project) and apply globally to all industry sectors. Such an assessment should propose measures to minimise, mitigate, and offset adverse impacts in a manner relevant and appropriate to the nature and scale of Engie Graspan Solar Project. In terms of the EPs, South Africa is a non-designated country, and as such the assessment process for projects located in South Africa evaluates compliance with the applicable IFC Performance Standards on Environmental and Social Sustainability, and Environmental Health and Safety (EHS) Guidelines. The additional area required for the implementation of the Engie Graspan Solar facility is currently being assessed in accordance with the requirements of the EIA Regulations, 2014 as amended (GN R326), published in terms of Section 24(5) of the National Environmental Management Act (No. 107 of 1998) (NEMA), which is South Africa's national legislation providing for the authorisation of certain controlled activities. Through this assessment, all potential social and environmental risks are identified and assessed, and appropriate mitigation measures proposed.
International Finance Corporation (IFC) Performance Standards and Environmental and Social Sustainability (January 2012)	The International Finance Corporation's (IFC) Performance Standards (PSs) on Environmental and Social Sustainability were developed by the IFC and were last updated on 1 January 2012. Performance Standard 1 requires that a process of environmental and social assessment be conducted, and an ESMS appropriate to the nature and scale of the project, and commensurate with the level of its environmental and social risks and impacts, be established and maintained. The above-mentioned standard is the overarching standard to which all the other standards relate. Performance Standard 2 through to 8 establish specific requirements to avoid, reduce, mitigate, or compensate for impacts on people and the environment, and to improve conditions where appropriate. While all relevant social and environmental risks and potential impacts should be considered as part of the assessment, the standards 2 and 8 describe potential social and environmental impacts that require particular attention specifically within emerging markets. Where social or environmental impacts are anticipated, the developer is required to manage them through its ESMS consistent with Performance Standard 1.

[5] https://www.carbonbrief.org/cop25-key-outcomes-agreed-at-the-un-climate-talks-in-madrid

Relevant policy	Relevance to Engie Graspan Additional Footprint
	Given the nature of Engie Graspan Solar Project, it is anticipated (at this stage of the process) that Performance Standards 1, 2, 3, 4, 6, and 8 may be applicable to the project.

3.4. National Policy

Further to the South African government's commitment in August 2011 to support the development of renewable energy capacity, the DMRE initiated the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) to procure renewable energy from the private sector in a series of rounds. To date, the Department has procured 6 422MW of renewable energy capacity from 102 independent power producers (IPPs), with 3 876MW operational and made available to the grid[6]. National policies have to be considered for the construction and operation of the solar PV facility to ensure that the development is in line with the planning of the country.

A brief review of the most relevant national policies is provided below in **Table 3.2**. The development of Engie Graspan Solar PV facility is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

Table 3.2: Relevant national legislation and policies for the Engie Graspan Solar Facility and the additional footprint

Relevant legislation or policy	Relevance to the Engie Graspan Additional Footprint
Constitution of the Republic of South Africa, 1996	Section 24 of the Constitution pertains specifically to the environment. It states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development, and use of natural resources while promoting justifiable economic and social development. The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts.
National Environmental Management Act (No. 107 of 1998) (NEMA)	This piece of legislation is South Africa's key piece of environmental legislation and sets the framework for environmental management in South Africa. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being as contained within the Bill of Rights. The national environmental management principles state that the social, economic, and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed, and evaluated, and decisions must be appropriate in the light of such consideration and assessment. The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA.

[6]https://www.cliffedekkerhofmeyr.com/en/news/publications/2019/Corporate/energy-alert-22-october-The-Integrated-Resource-Plan-2019-A-promising-future-roadmap-for-generation-capacity-in-South-Africa.html

Relevant legislation or policy	Relevance to the Engie Graspan Additional Footprint
White Paper on the Energy Policy of the Republic of South Africa (1998)	The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of RE and encouraging new entries into the generation market. The policy states that the advantages of RE include, minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include higher capital costs in some cases, lower energy densities, and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	The White Paper on Renewable Energy Policy Supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of RE and aims to create the necessary conditions for the development and commercial implementation of RE technologies. The White Paper on RE sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing RE in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive RE resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy of 2003 set a target of 10 000GWh to be generated from RE by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the RE summit of 2009. The policy supports the investment in RE facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing GHG emissions and the promotion of RE sources.
National Energy Act (No. 34 of 2008)	The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies (REs). The Act provides the legal framework which supports the development of RE facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place.
The Electricity Regulation Act (No. of 2006)	The Electricity Regulation Act of 2006, replaced the Electricity Act (No. 41 of 1987), as amended, with the exception of Section 5B, which provides funds for the energy regulator for the purpose of regulating the electricity industry. The Act establishes a national regulatory framework for the electricity supply industry and introduces the National Energy Regulator (NERSA) as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licences and registration as the manner in which the generation, transmission, distribution, trading, and import and export of electricity are regulated.
Integrated Energy Plan (IEP), 2016	The Integrated Energy Plan (IEP) (which was developed under the National Energy Act (No. 34 of 2008)), recognises that energy is essential to many human activities, and is

Relevant legislation or policy	Relevance to the Engie Graspan Additional Footprint
	critical to the social and economic development of a country. The purpose of the IEP is essentially to ensure the availability of energy resources, and access to energy services in an affordable and sustainable manner, while minimising associated adverse environmental impacts. Energy planning therefore needs to balance the need for continued economic growth with social needs, and the need to protect the natural environment. The development of the IEP is an ongoing continuous process. It is reviewed periodically to take into account changes in the macroeconomic environment, developments in new technologies and changes in national priorities and imperatives, amongst others.
Integrated Resource Plan for Electricity (IRP) 2010-2030 (2019)	The Integrated Resource Plan (IRP) for electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's National electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing, and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation. On 27 August 2018, the then Minister of Energy published a draft IRP which was issued for public comment. The lengthy public participation and consultation process has culminated in the issue of the overdue IRP 2019 which updates the energy forecast from the current period to the year 2030. Since the promulgated IRP 2010, the following capacity developments have taken place: » A total of 6 422MW has been procured thus far under the REIPPP Programme, with 3 876MW being currently operational and made available to the grid. » IPPs have commissioned 1005MW from two (2) Open Cycle Gas Turbines (OCGT) peaking plants; and » Under the Eskom Build Programme, 1 332MW has been procured from the Ingula Pumped Storage Project, 1 588MW and 800MW from the Medupi and Kusile power stations and 100MW from the Sere Wind Farm. Provision has been made for the following new capacity by 2030: » 1 500MW of coal; » 2 500MW of hydro; » 6 000MW of solar PV; » 14 400MW of wind; » 1 860MW of nuclear; » 2 088MW of storage; » 3 000MW of gas/diesel; and » 4 000MW from other distributed generation, co-generation, biomass and landfill technologies. Based on the IRP 2019 published in November 2019, 1 474MW has been installed for solar PV facilities, whereas, 814MW has already been procured. In addition, 1 000MW has been allocated for solar PV facilities from 2022 to 2030. This will bring the total installed capacity of solar PV facilities by 2030 to 8 288MW. Therefore, the development of the Engie Graspan Solar facility, as a Preferred Bidder project, is supported by the IRP 2019.
National Development Plan 2030 (2012)	The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030.

Relevant legislation or policy	Relevance to the Engie Graspan Additional Footprint
	In terms of the Energy Sectors role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes: » Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. » Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households. » Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The development of Engie Graspan Solar facility supports the NDP through the development of energy-generating infrastructure which will not lead to the generation of GHGs and will result in economic development and growth of the area surrounding the development area.
Strategic Integrated Projects (SIPs)	The Presidential Infrastructure Coordinating Commission (PICC) is integrating and phasing investment plans across 18 Strategic Integrated Projects (SIPs) which have 5 core functions, including to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services, and support the integration of African economies. SIP 8 of the energy SIPs supports the development of RE projects as follows: Green energy in support of the South African economy: Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities. The development of Engie Graspan Solar facility is aligned with SIP 8 as it constitutes a green energy initiative that would contribute clean energy in accordance with the IRP 2010 – 2030. As the project is a Preferred Bidder, the applicant is currently in consultation with the SIP office to register the project as a SIP.
National Climate Change Response Policy, 2011	The Conference of the Parties (COP) 21 was held in Paris from 30 November to 12 December 2015. From this conference, an agreement to tackle global warming was reached between 195 countries. This Agreement is open for signature and subject to ratification, acceptance or approval by States and regional economic integration organisations that are Parties to the Convention from 22 April 2016 to 21 April 2017. Thereafter, this Agreement shall be open for accession from the day following the date on which it is closed for signature. The agreement can only be sanctioned once it has been ratified by 55 countries, representing at least 55% of emissions. South Africa signed the Agreement in April 2016 and ratified the agreement on 01 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016. The Agreement was promulgated on 04 November 2016, thirty days after the date on which at least 55 Parties to the Convention, which account for at least 55% of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval, or accession with the Depositary.

Relevant legislation or policy	Relevance to the Engie Graspan Additional Footprint
	South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively. The policy provides support for Engie Graspan Solar facility, which will contribute to managing climate change impacts, supporting the emergency response capacity, as well as assist in reducing GHG emissions in a sustainable manner.
Climate Change Bill, 2018	On 08 June 2018, the Minister of Environmental Affairs published the Climate Change Bill ("the Bill") for public comment. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. Engie Graspan Solar facility consists of a renewable energy generation facility and would not result in the generation or release of emissions during its operation.

3.3. Provincial Planning and Context

A brief review of the most relevant provincial policies is provided below in **Table 3.3**. The proposed development is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

Table 3.3: Relevant provincial legislation and policies for the Engie Graspan Solar Facility and the additional footprint

Relevant policy	Relevance to the Engie Graspan Additional Footprint
Northern Cape Provincial Spatial Development Framework (PSDF) 2012	The Northern Cape Provincial Spatial Development Framework (PSDF) 2012 states that the overarching goal for the province is to enable sustainability through sustainable development. The province considers social and economic development as imperative in order to address the most significant challenge facing the Northern Cape, which is poverty. The PSDF identifies key sectoral strategies and plans which are considered to be the key components of the PSDF. Sectoral Strategy 19 refers to a provincial renewable energy strategy. Within the PSDF a policy has been included which states that renewable energy sources (including the utilisation of solar energy) are to comprise 25% of the province's energy generation capacity by 2020. The overall energy objective for the province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the province through appropriate financial and fiscal instruments.

Relevant policy	Relevance to the Engie Graspan Additional Footprint
	The development of the Engie Graspan Solar Facility supports the overall energy objective of the province to have 25% of its electricity from renewable energy sources.
Northern Cape Provincial Spatial Development Framework (PSDF) 2018 Review - Executive Summary	The review of the Northern Cape PSDF (2018) refers to infrastructure investment and that a balance must be maintained between investments aimed at meeting the social needs of communities and investment aimed at promoting economic development and job creation. The Spatial Development Strategy identified in the PSDF for basic infrastructure includes the achieving the provision of green infrastructure which includes renewable energy. As part of the Vision 2040 of the PSDF key opportunities are identified for the province. The strengthening of the development triangle that is formed by the linking of Kimberley, Vryburg, Upington and De Aar. The development triangle sustains a diverse economy with strong mining, agricultural and renewable energy sectors. It is stated in the PSDF that a sustainable and viable economic network must be driven within the development triangle to improve the return of public investment in the province. The development of the Engie Graspan solar facility will contribute to the economic network of the province specifically in terms of the renewable sector, albeit it does not fall within the development triangle.
The Northern Cape Climate Change Response Strategy	The key aspects of the Northern Cape Climate Change Response Strategy (NCCCRS) Report are summarised in the MEC's (NCPG: Environment and Nature Conservation) 2011 budget speech: "*The Provincial Climate Change Response Strategy will be underpinned by specific critical sector climate change adaptation and mitigation strategies that include the Water, Agriculture and Human Health sectors as the 3 key Adaptation Sectors, the Industry and Transport alongside the Energy sector as the 3 key Mitigation Sectors with the Disaster Management, Natural Resources and Human Society, livelihoods and Services sectors as 3 remaining key. Sectors to ensure proactive long-term responses to the frequency and intensity of extreme weather events such as flooding and wildfire, with heightened requirements for effective disaster management*". Key points from the MEC address include the NCPG's commitment to develop and implement policy in accordance with the National Green Paper for the National Climate Change Response Strategy (2010), and an acknowledgement of the Northern Cape Province's extreme vulnerability to climate-change driven desertification. The development and promotion of a provincial green economy, including green jobs, and environmental learnership is regarded as an important provincial intervention in addressing climate change. The renewable energy sector, including solar and wind energy (but also biofuels and energy from waste), is explicitly indicated as an important element of the Provincial Climate Change Response Strategy. The development of the Engie Graspan solar facility will assist in achieving (although only to a limited extent) the promotion of the provincial green economy of the Northern Cape.

3.4. Local Policy and Planning Context

The local tiers of government relevant to the Engie Graspan Solar PV project include the Siyancuma Local Municipality (SLM) which forms part of the greater Pixley Ke Seme District Municipality. Instruments and/or policies at both the district and local level contain objectives which align with the development of Engie

Graspan Solar PV project. These include, economic growth, job creation, community upliftment and poverty alleviation.

Table 3.4: Relevant district and local legislation and policies for the Engie Graspan Solar Facility and the additional footprint

Relevant policy	Relevance to Engie Graspan Additional Footprint
Pixley Ke Seme District Municipality (PKSDM) Integrated Development Plan (2021-2022)	The vision of the PKSDM is to economically enable the resource base in the Pixley ka Seme District Municipality to build a sustainable district for future generations. Pixley ka Seme District Municipality will achieve its vision with a primary focus on industrialisation and strengthen the local economy through diversification of various sectors for effective investment, enterprise and supplier development and job creation through the following economic enablers and sectors: Part of the objectives of Pixley ka Seme District Municipality Local Economic Development is to: » Create a conducive business environment; » Reduce unemployment; » Reduce inequality; » Alleviate poverty; » Enhance the effective implementation of the main drivers of the Northern Cape Provincial Growth and Development Plan vison 2040 which includes; * Economic Transformation, Growth and Development * Social Equity * Environmental Sustainability and; * Governance South Africa has embarked in a process of diversifying its energy-mix to enhance energy security while also lowering green-house gas emissions. The country is blessed with a climate that allows Renewable Energy (RE) technologies like solar photovoltaic (PV) and Wind generation to be installed almost anywhere in the country. As part of the municipality's strategic objectives and in line with National Development Plan outcomes (Chapter 5: Environmental sustainability and resilience), the PKSDM seeks to provide municipal health services to improve the quality of life of the citizens through environmental sustainability and resilience. The development of the Engie Graspan Solar Facility is in line with the objectives of the PKSDM's plan for environmental sustainability and resilience.
Siyancuma Local Municipality Integrated Development Plan (IDP) 2020/2021 (Draft, 2021/2022)	Siyancuma Local Municipality's five-year Integrated Development Plan (IDP) represents the overarching strategic framework within which the municipality aims to realize its vision for the area by building on the strategic objectives as set out by Council. These strategic objectives will inform all of the municipality's plans and policies, and this document is structured to offer a clear view of the objectives, strategies, and development priorities of Council. While this IDP is Siyancuma Local Municipality`s main planning document, it draws on, and is informed by a large number of other plans and strategic frameworks developed by the other spheres of government and the various municipal directorates and departments. Siyancuma Local Municipality is currently facing a big challenge in terms of electricity bulk supply due to the expansion of informal areas. Another challenge is the fact that electrical

Relevant policy	Relevance to Engie Graspan Additional Footprint
	infrastructure, e.g. transformers, are dilapidated and need to be repaired or replaced at very high costs. According to the Community Survey of 2016, most households (7381) are using in-house prepaid meters, followed by in-house conventional meters (1334). A new trend is taking root where people are installing solar home systems, and 357 such systems were already installed in 2016. Owing to the challenges faced in the energy sector, the municipality has sought to consider alternative energy supply opportunities in the form of renewable energy (solar or wind) as part of its strategic objectives. Therefore, the development of the Engie Graspan solar facility is desirable by the local municipality due to the alignment with the IDP.

CHAPTER 4: APPROACH TO UNDERTAKING THE SCOPING PHASE

In terms of the EIA Regulations of December 2014 (as amended) published in terms of the NEMA (Act No. 107 of 1998) as amended, development within the additional footprint proposed for the Engie Graspan Solar Project is a listed activity requiring Environmental Authorisation (EA). The application for EA is required to be supported by an Environmental Impact Assessment (EIA) process based on Activity 15 of Listing Notice 2 (GNR 325), namely the clearance of an area of 20 hectares or more of indigenous vegetation.

An EIA process refers to the process undertaken in accordance with the requirements of the relevant EIA Regulations (the 2014 EIA Regulations (GNR 326), as amended), which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project or activity. The EIA process comprises two main phases: i.e., the **Scoping** and the **EIA Phase**. The EIA process culminates in the submission of an EIA Report (including an Environmental Management Programme (EMPr)) to the competent authority for decision-making. The EIA process is illustrated below.

The EIA process is illustrated in **Figure 4.2**.

Figure 4.2: The Phases of an Environmental Impact Assessment (EIA) Process

4.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Impact Assessment Report

This chapter includes the following information required in terms of Appendix 2: Content of a Scoping report:

Requirement	Relevant Section
(d)(i) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for and (ii) a description of the activities to be undertaken, including associated structures and infrastructure.	All listed activities triggered and applied for are included in **Section 4.2**.
(g)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs.	The public participation process followed throughout the EIA process of the proposed additional footprint for the Engie Graspan Solar Project is included in **Section 4.5.2**

	and copies of the supporting documents and inputs are included in **Appendix C**.
(g)(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	The main issues raised through the undertaking of the public participation process, including consultation with I&APs, are included in the Comments and Responses Report in **Appendix C8**.
(g)(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives are included in **Section 4.5.3**.

4.2 Relevant legislative permitting requirements

The environmental permitting requirements applicable to the additional footprint for the Engie Graspan PV Facility, as identified at this stage in the process and considered within this EIA process, are described in more detail under the respective sub-headings below. Additional permitting requirements are detailed within **Section 4.6**.

4.2.1 National Environmental Management Act (No. 107 of 1998) (NEMA)

NEMA (No. 107 of 1998) is South Africa's key piece of national environmental legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with listed activities must be considered, investigated, assessed, and reported on to the Competent Authority (the decision-maker) charged by NEMA with granting of the relevant Environmental Authorisation (EA). Due to the fact that Engie Graspan Solar Project (Pty) Ltd is a power generation project (which is selected as a Preferred Bidder under the REIPPPP) and therefore relates to the IRP for Electricity 2010 – 2030, the National Department of Forestry, Fisheries, and the Environment (DFFE) has been determined as the Competent Authority (CA) in terms of GNR 779 of 01 July 2016. The Provincial Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARD & LR) is a Commenting Authority on the project.

The need to comply with the requirements of the EIA Regulations published under NEMA ensures that developers are provided the opportunity to consider the potential environmental impacts of their activities early in the project development process, and also allows for an assessment to be made as to whether environmental impacts can be avoided, minimised, or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations to provide the Competent Authority with sufficient information in order for an informed decision to be taken regarding the Application for EA.

The EIA process being conducted for the proposed additional footprint for the Engie Graspan Solar Project is undertaken in accordance with Section 24(5) of the NEMA, which defines the procedure to be followed in applying for EA, and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the competent authority. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the competent authority subject to the completion of an environmental assessment process (either a Basic Assessment (BA) or full Scoping and EIA).

Table 4.1 contains all the listed activities identified in terms of NEMA, the 2014 EIA Regulations (GNR 326), and Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325), and Listing Notice 3 (GNR 324) which may be triggered by the proposed development on the additional footprint, and for which EA has been applied:

Table 4.1: Listed activities identified in terms of the Listing Notices (GNR 327, 325 and 324).

Notice Number	Activity Number	Description of listed activity
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	28 (ii)	Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming, equestrian purposes, or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1ha. ***The total area of land to be developed for the additional area associated with the authorised solar PV facility is larger than 1 hectare. The site is currently used for agricultural purposes. The total extent of the additional footprint is 50ha.***
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20MW or more. ***The project comprises a renewable energy generation facility, which will utilise photovoltaic (PV) technology and will have an installed generation capacity of up to 90MW. The development is located outside of an urban area. Although no additional electricity from that already authorised will be generated, the infrastructure for the authorised facility will be located within this area.***
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	15	The clearance of an area of 20ha or more of indigenous vegetation[7]. ***The authorised facility and proposed additional footprint is located on agricultural land where the predominant land use is livestock grazing and is therefore likely to comprise indigenous vegetation. The project would therefore result in the clearance of an area of land greater than 20ha of indigenous vegetation.***
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	4(g)(ii)(ee)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. g. Northern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

[7] "Indigenous vegetation" as defined by the 2014 EIA Regulations (GNR 326) refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Notice Number	Activity Number	Description of listed activity
		Internal access roads wider than 4m may be associated with the development within the additional footprint associated with the authorised solar facility. The project area overlaps with an ONA and an ESA area identified by the Northern Cape Department of Environment and Nature Conservation.
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	12(g)(ii)	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. g. Northern Cape ii. Within critical biodiversity areas identified in bioregional plans ***An area of 50ha is required for the additional development footprint associated with the authorised solar facility. The project area overlaps with an ONA and an ESA area identified by the Northern Cape Department of Environment and Nature Conservation.***

4.2.2 National Water Act (No. 36 of 1998) (NWA)

In accordance with the provisions of the National Water Act (No. 36 of 1998) (NWA), all water uses must be licensed with the Competent Authority (i.e., the Regional Department of Water and Sanitation (DWS) or the relevant Catchment Management Agency (CMA)). Water use is defined broadly, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.

The development of the Engie Graspan Solar facility on the additional footprint does not trigger any listed activities resulting in the requirement for a Water Use Licence (WUL) or General Authorisation (GA) as no watercourses or wetlands were identified within the project area or within the 500 m regulated area.

4.2.3 National Heritage Resources Act (No. 25 of 1999) (NHRA)

The National Heritage Resources Act (No. 25 of 1999) (NHRA) provides an integrated system which allows for the management of national heritage resources, and to empower civil society to conserve heritage resources for future generations. Section 38 of NHRA provides a list of activities which potentially require the undertaking of a Heritage Impact Assessment.

<u>Section 38: Heritage Resources Management</u>

1). Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as –

a. the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

b. the construction of a bridge or similar structure exceeding 50m in length;

c. any development or other activity which will change the character of a site –

i). exceeding 5 000m² in extent; or

ii). involving three or more existing erven or subdivisions thereof; or

iii). involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv). the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

Must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development.

In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed development, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the South African Heritage Resources Agency (SAHRA) Permit Regulations (GNR 668).

4.3 Overview of the Scoping and EIA (S&EIA) Process being undertaken for the Additional Footprint for the Engie Graspan Solar Project

As stated previously, the development on the additional footprint requires an EA from DFFE subject to the completion of a full Scoping and Environmental Impact Assessment (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326). The need for a full S&EIA process to be conducted in support of the application for EA is based on listed activities triggered which are contained within Listing Notice 2 (GNR 325), as detailed in Section 4.2 above.

The S&EIA process is to be undertaken in two phases as follows:

» The **Scoping Phase** includes the identification and description of potential issues associated with the project through a desktop study and consultation with I&APs and key stakeholders through a Public Participation process. The entire development area and development envelope are considered within this process. Through this study, areas of sensitivity within the broader site are identified and delineated in order to identify any environmental fatal flaws, and environmentally sensitive, or no-go areas which need to be considered. In accordance with Regulation 21(1) of the 2014 EIA Regulations (GNR 326) the Scoping Report prepared for the project will be subject to a 30-day review and comment period during which any Interested and Affected Party (I&AP) or Authority will be invited to review and provide comment on the findings (refer to **Figure 4.2**). The final Scoping Report which incorporates all comments received during the 30-day public review and comment period, will be prepared and submitted to DFFE for its consideration. Following receipt of the Final Scoping Report DFFE has 43 days within which to either accept the Scoping Report and advise the applicant to proceed or continue with the tasks contemplated in the Plan of Study for EIA or refuse the Application for EA in the event that the proposed activity is in conflict with a prohibition contained in legislation, or the Scoping Report does not substantially comply with Appendix 2 of the 2014 EIA Regulations (GNR 326).

» The **EIA Phase** involves a detailed assessment of potentially significant positive and negative direct, indirect, and cumulative impacts identified during the Scoping Phase. This phase includes detailed specialist investigations and a Public Participation process, and results in the compilation of an EIA Report and Environmental Management Programme (EMPr). In accordance with Regulation 23(1)(a) of the 2014 EIA Regulations (GNR 326) the EIA Report and EMPr prepared for the project will also be subject to a 30-day public review and comment period during which members of the public, I&APs, and authorities will be invited to review and provide comment on the EIA Report and EMPr. Following the conclusion of this review period a Final EIA Report and EMPr which incorporates all comments received during the 30-day review and comments period, will be prepared, and submitted to DFFE for its consideration. Following receipt of the Final EIA Report and EMPr, DFFE has 107 days within which to either grant or refuse the EA[8].

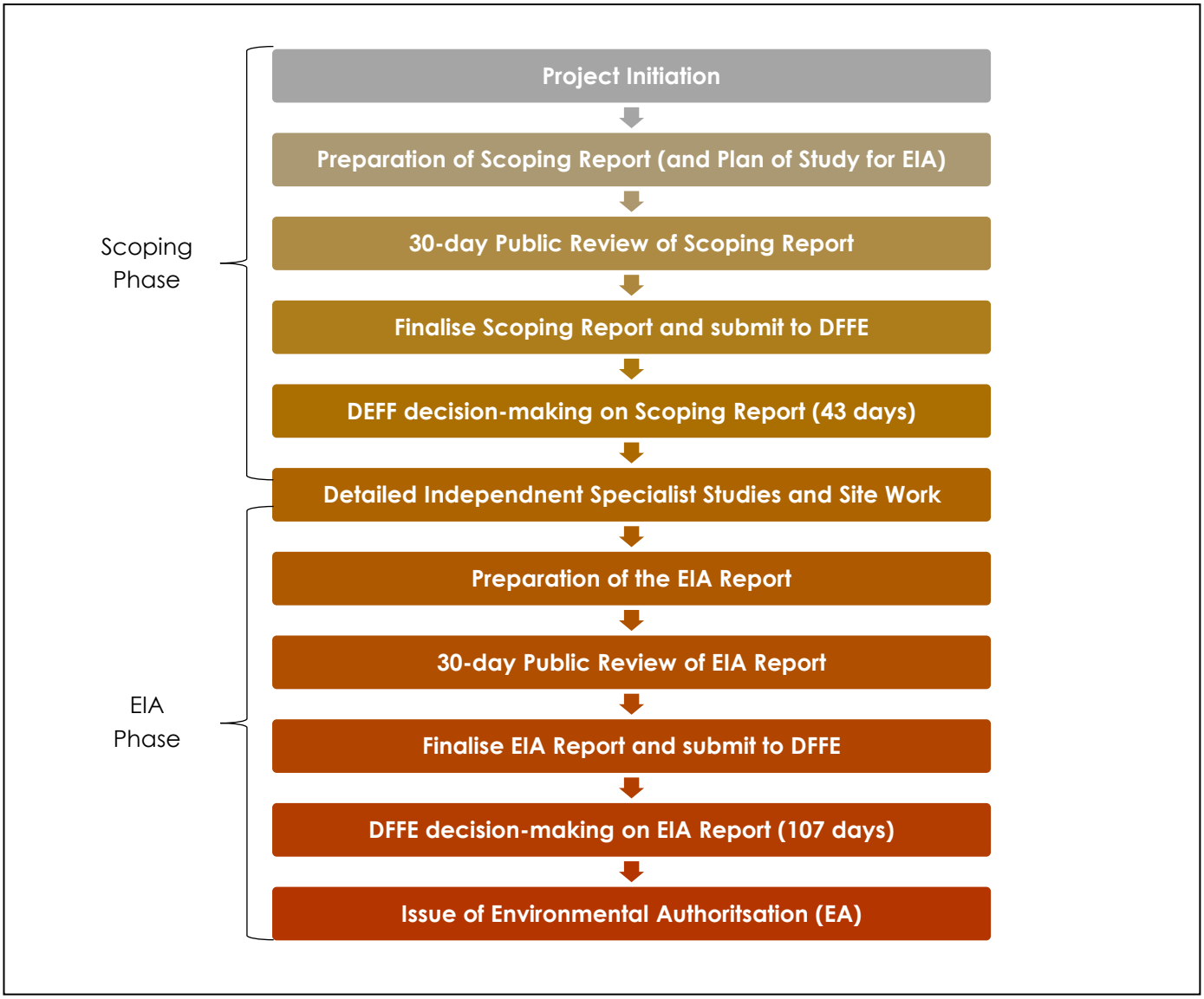

Figure 4.2: Scoping & EIA Process

[8] Note that should the project be registered as a SIP, the authority decision-making timeframe will be reduced to 57 days.

4.4 Objectives of the Scoping Phase

This Scoping Report documents the evaluation of potential environmental impacts of the infrastructure for the Engie Graspan Solar Facility proposed on the additional footprint and forms part of the EIA process being conducted in support of an Application for EA for the project. The Scoping Phase has been conducted in accordance with the requirements of the 2014 EIA Regulations (GNR 326), and therefore aims to:

- Identify and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the proposed development (including design, construction, operation, and decommissioning) within the broader project site and development area through a review of existing baseline data, including specialist studies which were undertaken within the project area.
- Identify potentially sensitive environmental features and areas within the broader project site and development area in order to inform the preliminary design process of the facility.
- Define the scope of studies to be undertaken during the EIA process.
- Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA Phase, as well as regarding the scope and extent of specialist studies that will be required to be undertaken.

The following objectives of the Scoping Phase (in accordance with Appendix 2 of the 2014 EIA Regulations (GNR 326)) have been met, through the undertaking of a consultative process.

- Relevant policies and legislation regarding the activities to be undertaken have been identified and considered within this Scoping Report.
- Activities to be undertaken for the development on the additional footprint have been identified and motivated in terms of the need and desirability for the activities to take place.
- Potential impacts associated with the undertaking of the identified activities and technology have been identified and described.
- Areas of high sensitivity to be avoided by the preferred development footprint have been identified.
- Key issues associated with the project to be addressed during the EIA Phase for further detailed study and ground-truthing have been identified and listed within this Scoping Report.
- The level of assessment, expertise, and the extent of further consultation to be undertaken in the EIA Phase of the process, with the aim of determining the extent of impacts associated with the activities through the life cycle of the project (i.e., construction, operation and decommissioning), have been identified and included within this Scoping Report.

4.5 Overview of the Scoping Phase

Key tasks undertaken within the Scoping Phase include:

- Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
- Submission of the completed Application for EA to the competent authority (DFFE) in terms of Regulations 5 and 16 of the 2014 EIA Regulations (GNR 326).
- Undertaking a public participation process (in accordance with the approved public participation plan submitted to DFFE) in accordance with Chapter 6 of GNR326, and the Department of Environmental Affairs (2017), Public Participation guidelines in terms of NEMA EIA Regulations, Department of

Environmental Affairs, Pretoria, South Africa (hereinafter referred to as "the Guidelines") in order to identify issues and concerns associated with the proposed project.
- Preparation of a Scoping Report and Plan of Study for EIA in accordance with the requirements of Appendix 2 of the 2014 EIA Regulations (GNR 326).
- Preparation of a Comments and Response (C&R) Report detailing all comments raised by I&APs and responses provided as part of the Scoping Phase.
- Submission of a Final Scoping Report, including a Plan of Study for the EIA, to DFFE for review and approval.

4.5.1 Authority Consultation and Application for Authorisation in terms of the 2014 EIA Regulations (as amended)

As stated previously, the DFFE has been identified and the CA in terms of GNR 779 of 1 July 2016,and the Northern Cape DAEARD & LR is the provincial commenting authority. Consultation with these authorities is being undertaken throughout the Scoping Phase. To date, this consultation has included the following:

- Requesting a Pre-Application Meeting and submission of a Public Participation Plan. The Public Participation Plan was approved via email on **02 December 2021.**
- Submission of the Application for Environmental Authorisation to the DFFE via the use of the DFFE Novell Filer System.
- Submission of the Scoping Report for review and comment by:
  - The competent and commenting authorities.
  - State departments that administer laws relating to a matter affecting the environment relevant to an Application for EA.
  - Organs of State which have jurisdiction in respect of the activity to which the application relates.

The submissions, as listed above, were undertaken electronically, as required by the DFFE (in line with the directions for new Applications for Environmental Authorisations provided for in GNR650 of 05 June 2020). A record of all authority correspondence undertaken during the Scoping Phase is included in **Appendix B** and **Appendix C**.

4.5.2 Public Participation Process

Public participation is an essential and regulatory requirement for an environmental authorisation process and is guided by Regulations 41 to 44 of the EIA Regulations 2014 (GN R326) (as amended). The purpose of public participation is clearly outlined in Regulation 40 of the EIA Regulations 2014 (GN R326) (as amended) and is being followed for this proposed project.

The Public Participation Process undertaken for the additional footprint considers the restrictions and limitations imposed by Government through section 27 (2) of the Disaster Management Act (Act No. 57 of 2002) of 2002 and the Directions issued by the Minister of Forestry, Fisheries and the Environment (DFFE) in terms of consultations with I&APs. A Public Participation Plan was prepared and submitted to DFFE for approval. Approval of the Plan was provided by the DFFE Case Officer via email on **02 December 2021** (**Appendix B**).

The alternative means of undertaking consultation have been designed and implemented by Savannah Environmental to ensure that I&APs are afforded sufficient opportunity to access project information and

raise comments on the project through an interactive web-based platform (i.e. online stakeholder engagement platform) readily available and accessible to any person registering their interest in the project, and ensures that the public participation process is undertaken in line with Regulations 41 to 44 of the EIA Regulations, 2014 as amended. The Public Participation Plan (**Appendix C9**) considers the limitations applied by the Disaster Management Act Regulations prohibiting the gathering of people, as well as limitations which certain I&APs may have in terms of access to computers and internet as well as access to public spaces currently not open for operation that inhibits access to hard copy documentation. The online stakeholder engagement platform implemented by Savannah Environmental for the project allows the EAP to visually present details regarding the project as well as consultation documentation, including project maps and plans, presentations, and posters. The platform also contains the Scoping Report available for review. The use of an online tool enables stakeholders and I&APs to explore the project-specific content in their own time, and still enables them to participate in a meaningful way in the consultation process.

The sharing of information forms the basis of the public participation process and offers the opportunity for I&APs to become actively involved in the EIA process from the outset. The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner. The public participation process affords I&APs opportunities to provide input into and receive information regarding the EIA process in the following ways:

- During the **Scoping Phase**:
  - provide an opportunity to submit comments regarding the project;
  - assist in identifying reasonable and feasible alternatives, where required;
  - identify issues of concern and suggestions for enhanced assessment;
  - contribute relevant local information and knowledge to the environmental assessment;
  - allow registered I&APs to verify that their comments have been recorded, considered, and addressed, where applicable, in the environmental investigations;
  - foster trust and co-operation;
  - generate a sense of joint responsibility and ownership of the environment;
  - comment on the findings of the Scoping Phase results; and
  - identify issues of concern and suggestions for enhanced benefits.

- During the **EIA Phase**:
  - contribute relevant local information and knowledge to the environmental assessment;
  - verify that issues have been considered in the environmental investigations as far as possible as identified within the Scoping Phase;
  - comment on the findings of the environmental assessments; and
  - attend a Focus Group Meeting to be conducted for the project.

- During the **decision-making phase**:
  - to advise I&APs of the outcome of the competent authority's decision, and how and by when the decision can be appealed.

The Public Participation process therefore aims to ensure that:

- Information containing all relevant facts in respect of the application is made available to potential stakeholders and I&APs for their review;

- The information presented during the public participation process is presented in such a manner, i.e. local language and technical issues, that it avoids the possible alienation of the public and prevents them from participating;
- Public participation is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the project;
- A variety of mechanisms are provided to I&APs to correspond and submit their comments i.e. fax, post, email, telephone, text message (SMS and WhatsApp); and
- An adequate review period is provided for I&APs to comment on the findings of the Scoping and EIA Reports.

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended, the following key public participation tasks are required to be undertaken:

- Fix a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application.
- Give written notice to:
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority.
- Place an advertisement in one local newspaper.
- Open and maintain a register of I&APs and Organs of State.
- Release of a Scoping Report for a review and comment period of at least 30-day.
- Prepare a Comments and Responses (C&R) report which documents the comments received on the EIA process and during the 30-day review and comment period of the Scoping Report and the responses provided by the project team.

In compliance with the requirements of Chapter 6: Public Participation of the EIA Regulations, 2014 (as amended), and the approved Public Participation Plan, the following summarises the key public participation activities implemented. The schematic below provides an overview of the tools that are available to I&APs and stakeholders to access project information and interact with the public participation team to obtain project information and resolve any queries that may arise, and to meet the requirements for public participation.

i. Stakeholder identification and register of I&APs	• Register as an I&AP on the online platfrom via completion of a form and provison of contact information, by responding to an advert, or sending a 'please call me' which will be responded to • State interest in the project • Receive all project related information via email
ii. Advertisments and notifications	• Advertisementsand site notices provide information and details on where to access project information • Notifications regarding the EIA proceses and availability of project reports for public review to be sent via email, post or SMS notifications
iii. Public Involvement and consultation	• Submission of comments or to the PP team via email or post • Availability of project information via the online platform • An opportunity for I&APs and stakeholders to request virtual meetings with the project team
iv. Comment on the Scoping and EIA Reports	• Availability of the project reports via the online platform for 30-day comment period • Submission of comments via email or post to the PP team • Comments recorded and responded to, as part of the process
v. Identification and recording of comments	• Comments and Responses Report, including all comments received, and included within the final Reports for decision-making

i. Stakeholder identification and Register of Interested and Affected Parties

42. A proponent or applicant must ensure the opening and maintenance of a register of I&APs 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.

I&APs have been identified through a process of networking and referral, obtaining information from Savannah Environmental's existing stakeholder database, liaison with potentially affected parties in the

greater surrounding area and a registration process involving the completion of a reply form. Key stakeholders and affected and surrounding landowners have been identified and registered on the project database. Other stakeholders are required to formally register their interest in the project through either directly contacting the Savannah Environmental Public Participation team via phone, text message (SMS and WhatsApp), email or fax, or registering their interest via the online stakeholder engagement platform. An initial list of key stakeholders identified and registered is listed in **Table 4.2**.

Table 4.2: Initial list of Stakeholders identified for the inclusion in the project database during the public participation process for the Engie Graspan Additional Footprint

Organs of State
National Government Departments
Department of Forestry Fisheries and the Environment (DFFE)
Department of Mineral Resources and Energy (DMRE)
Department of Agriculture, Land Reform and Rural Development (DALRRD)
Department of Water and Sanitation
Government Bodies and State-Owned Companies
Eskom Holdings SOC Limited
National Energy Regulator of South Africa (NERSA)
South African Civil Aviation Authority (CAA)
South African Heritage Resources Agency (SAHRA)
South African National Roads Agency Limited (SANRAL)
South African Radio Astronomy Observatory (SARAO)
Telkom SA SOC Limited
Transnet SA SOC Limited
Provincial Government Departments
Northern Cape Department of Agriculture
Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARD&LR)
Northern Cape Department of Roads and Public Works
Northern Cape Heritage Resources Authority (NCHRA)
Local Government Departments
Pixley ka Seme District Municipality
Siyancuma Local Municipality – including the Ward Councillor, ward committee members, community representative or local community forum members
Commenting Stakeholders
BirdLife South Africa
Endangered Wildlife Trust (EWT)
SENTECH
Landowners
Affected landowners, tenants, and occupiers
Neighbouring landowners, tenants, and occupiers

As per Regulation 42 of the EIA Regulations, 2014 (as amended), all relevant stakeholder and I&AP information has been recorded within a register of I&APs (refer to **Appendix C1** for a listing of the recorded

parties). In addition to the above-mentioned EIA Regulations, point 4.1 of the Public Participation Guidelines has also been followed. The register of I&APs contains the names[9] of:

- all persons who requested to be registered on the database through the use of the online stakeholder engagement platform or in writing and disclosed their interest in the project;
- all Organs of State which hold jurisdiction in respect of the activity to which the application relates; and
- all persons who submitted written comments or attended virtual meetings (or in-person consultation where sanitary conditions can be maintained) and viewed the presentations on the Savannah Environmental online platform during the public participation process.

I&APs have been encouraged to register their interest in the EIA process from the onset of the project, and the identification and registration of I&APs will be on-going for the duration of the EIA process. The database of I&APs will be updated throughout the EIA process and will act as a record of all I&APs involved in the public participation process.

ii. Advertisements and Notifications

40.(2)(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.
40.(2)(b)	Giving written notice, in any of the manners provided for in section 47Dof 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, the owner or person in control of the site where the activity is or 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.
40.(2)(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;
40.(2)(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); and
40.(2)(e)	Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to – (i) Illiteracy; (ii) Disability; or (iii) Any other disadvantage.

[9] Contact details and addresses have not been included in the I&AP database as this information is protected by the Protection of Personal Information Act (No 4 of 2013).

The EIA process was announced with an invitation to the Organs of State, potentially affected and neighbouring landowners, and general public to register as I&APs and to actively participate in the process. This was achieved via the following:

- Compilation of a process notification letter (refer to **Appendix C3**) providing technical and environmental details on the project and how to become involved in the EIA process. This notification letter was distributed via email on the **19 January 2022**. The evidence of the distribution is contained in **Appendix C** of this Scoping Report. Placement of site notices announcing the EIA process at visible points along the boundary of the development area (i.e., the boundaries of the affected property), in accordance with the requirements of the EIA Regulations on **07 December 2021**. Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C2** of this report.
- Placement of an advertisement in Express Bloemfomtein Newspaper on the **19January 2022** announcing the 30-day review and comment period (**Appendix C2**). This advert:
  - announced the project and the associated EIA process,
  - announced the availability of the Scoping report, the review period, and where it is accessible for review, and
  - invited comment on the Scoping Report.
- The Scoping Report has been made available for review by I&APs for a 30-day review and comment period from **19 January 2022** to **18 February 2022.** The full Scoping Report is available on the Savannah Environmental website. The evidence of distribution of the Scoping Report is included in **Appendix C** of the Scoping Report.

iii. Public Involvement and Consultation

In order to accommodate the varying needs of stakeholders and I&APs within the surrounding area, as well as capture their views, comments, issues and concerns regarding the project, various opportunities will be provided to I&APs to note their comments and issues. I&APs are being consulted through the following means:

Table 4.3: Public involvement for Engie Graspan Additional Footprint

Activity	Date
Distribution of process notification letters and stakeholder reply form announcing the EIA process and inviting I&APs to register on the project database.	08 December 2021
Placement of site notices.	08 December 2021
Advertising of the availability of the Scoping Report for a 30-day review and comment period in the Express Bloemfontein Newspaper, including details on how to access the Scoping Report via the online stakeholder engagement platform.	21 January 2022
Distribution of notification letters announcing the availability of the Scoping Report for a 30-day review and comment period. These letters were distributed to Organs of State, Government Departments, Ward Councillors, landowners within the surrounding area (including neighbouring landowners) and key stakeholder groups.	Throughout the scoping process
30-day review and comment period of the Scoping Report.	21 January 2022 – 23 February 2022

Activity	Date
Virtual meetings through the use of virtual platforms as determined through discussions with the relevant stakeholder group: » Landowners » Authorities and key stakeholders (including Organs of State, local municipality and official representatives of community-based organisations). » Where an I&AP does not have access to a computer and/or internet to participate in a virtual meeting telephonic discussions (including WhatsApp video call) will be set-up and minuted for inclusion. The preferred language of the I&AP has been considered when setting up these discussions. » Direct in-person consultation will only take place in limited numbers and where sanitary conditions can be always maintained.	Meetings to be held if required during the 30-day review period for the scoping report
On-going consultation (i.e., telephone liaison; e-mail communication) with all I&APs.	Throughout the EIA process

iv. Registered I&APs entitled to Comment on the Scoping Report

43.(1) A registered I&AP is entitled to comment, in writing, on all reports or plans 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 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 relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.

44.(1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.

(2) Where a person desires but is unable to access written comments as contemplated in sub regulation (1) due to –

(a) A lack of skills to read or write;
(b) Disability; or
(c) Any other disadvantage;

Reasonable alternative methods of recording comments must be provided for.

I&APs registered on the database have been notified by means of a notification letter of the release of the Scoping Report for a 30-day review and comment period, invited to provide comment on the Scoping Report, and informed of the manner in which, and timeframe within which such comment must be made. The report has been made available in soft copies to I&APs due to restrictions and limitations on public spaces and limitations in ensuring sanitary conditions of hard copy documents during the national state of disaster related to COVID-19. Hard copies of the report will be made available on request only where sanitary conditions can be maintained.

The Scoping Report has been made available on the Savannah Environmental website (i.e. online stakeholder engagement platform) (https://www.savannahsa.com/public-documents/). The notification was distributed prior to commencement of the 30-day review and comment period, on **19 January 2022.** Where I&APs are not able to provide written comments (including SMS and WhatsApp), other means of

consultation, such as telephonic discussions can be used to provide the I&APs with a platform to verbally raise their concerns and comments on the proposed development.

All comments raised as part of the discussions and written comments submitted during the 30-day review and comment period will be recorded and included in **Appendix C6** and **Appendix C7** of the final Scoping Report.

v. Identification and Recording of Comments

All written comments received from I&APs over the duration of the Scoping Phase will be synthesised into a Comments and Responses (C&R) Report which will be included in **Appendix C8** of the Final Scoping Report. The C&R Report will include detailed responses from members of the EIA project team and/or the project proponent to the issues and comments raised during the public participation process.

Notes of all telephonic discussions and virtual meetings conducted during the 30-day review and comment period of the Scoping Report will be included in **Appendix C7** of the Final Scoping Report.

4.6 Outcomes of the DFFE Web-Based Screening Tool

In terms of GN R960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the national web based environmental screening tool is compulsory for the submission of applications in terms of Regulations 19 and 21 of the EIA Regulations.

The requirement for the submission of a Screening Report (included as **Appendix F**) for the additional footprint associated with the Engie Graspan PV Facility is applicable as it triggers Regulation 19 of the EIA Regulations, 2014 (as amended). **Table 4.4** provides a summary of the specialist assessments identified in terms of the screening tool and responses to each assessment from the project team considering the development area under consideration.

Table 4.4: Sensitivity ratings from the DFFE's web-based online Screening Tool

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Agricultural Impact Assessment	Medium	The Soils, Land Use and Agriculture compliance statement will be included in this Scoping Report as **Appendix H.**
Landscape/Visual Impact Assessment	Very high	A visual impact assessment is not required as the additional footprint is adjacent to the authorised area which has already been assessed. The impact is therefore not expected to change.
Archaeological and Cultural Heritage Impact Assessment	Medium	A Heritage screening study (which covers both archaeological and cultural aspects of project site and development footprint) has been undertaken for the PV facility and is included in this Scoping Report as **Appendix G**. Based on the conclusions of this report, no impact assessment is required to be undertaken.

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Palaeontology Impact Assessment	The screening report does not indicate a rating for this theme.	Although the DFFE screening tool did not trigger any Palaeontology sensitivities, a Palaeontological assessment is included in the Heritage screening study undertaken for the PV facility and is included in this Scoping Report as **Appendix G**. Based on the conclusions of this report, no impact assessment is required to be undertaken.
Terrestrial Biodiversity Impact Assessment	Very high	An Ecological scoping Assessment (including flora, fauna, wetlands and avifauna) has been undertaken for the additional footprint and is included as **Appendix I** of the Scoping Report. A detailed assessment will be undertaken considering flora, fauna and avifauna in the EIA phase of the process.
Aquatic Biodiversity Impact Assessment	Low	An Ecological scoping Assessment (including flora, fauna, wetlands and avifauna) has been undertaken for the additional footprint and is included as **Appendix I** of the Scoping Report. Based on the conclusions of this report, no impact assessment is required to be undertaken. .
Civil Aviation Assessment	Low	The Civil Aviation Authority will be consulted throughout the EIA process to obtain input.
Defence Assessment	Low	The project site is located south-west of the Anglo Boer War block house and the Kimberley Army Support Base. The military base will be consulted for inputs as part of the EIA process.
RFI Assessment	Low	There are currently no known RFI stations near to the project site. The South African Radio Astronomy Observatory (SARAO) will however be consulted during the 30-day review and comment period of the EIA Report to provide written comment on the proposed development.
Socio-Economic Assessment	The screening report does not indicate a rating for this theme.	An ongoing public participation process will assess the impacts of development of the additional footprint throughout the Scoping and EIA phases.
Plant Species Assessment	Low	An Ecological scoping Assessment (including flora, fauna, wetlands and avifauna) has been undertaken for the additional footprint and is included as **Appendix I** of the Scoping Report. A detailed assessment will be undertaken considering flora, fauna and avifauna in the EIA phase of the process.
Animal Species Assessment	Medium	

4.7 Evaluation of Issues Identified through the Scoping Process

Direct, indirect, and cumulative environmental impacts associated with the project identified during the Scoping Phase have been evaluated through consideration of existing information available for the Engie Graspan Solar additional development area.

In order to evaluate issues and assign an order of priority, the following methodology was used to identify the characteristics of each potential issue/impact:

- The ***nature***, which includes a description of what causes the impact, what will be affected and how it will be affected.
- The ***extent***, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional or national.
- Identify ***sensitive receptors*** that may be impacted on by the proposed development and the types of impacts that are most likely to occur.
- The ***significance*** of potential impacts in terms of the requirements of the 2014 EIA Regulations (including (nature, significance, consequence, extent, duration and probability of the impacts, the degree to which these impacts:
  (a) Can be reversed;
  (b) May cause irreplaceable loss of resources; and
  (c) Can be avoided, managed or mitigated.
- Identify the potential impacts that will be considered further in the EIA Phase through detailed investigations.

The evaluation of the proposed project resulted in a description of the nature, significance, consequence, extent, duration, and probability of the identified issues, as well as recommendations regarding further studies required within the EIA Phase.

4.8 Assumptions and Limitations of the EIA Process

The following assumptions and limitations are applicable to the EIA process of the additional footprint for Engie Graspan Solar:

- All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- It is assumed that the development area for the solar PV facility identified by the developer represents a technically suitable site for the establishment of PV facility infrastructure which is based on the design undertaken by technical consultants for the project.
- The additional footprint will accommodate a portion of the solar array for the Engie Graspan Solar facility.
- The Scoping Phase evaluation of impacts has been largely based on desktop studies as well as the findings of studies which have been completed previously for this specific site. This information has been used to inform this Scoping report and will be verified by specialists in the EIA phase to assess the additional footprint for Engie Graspan Solar PV.

4.9 Legislation and Guidelines that have informed the preparation of this Scoping Report

The following legislation and guidelines have informed the scope and content of this Scoping Report:

- National Environmental Management Act (Act No. 107 of 1998);
- EIA Regulations of December 2014, published under Chapter 5 of NEMA (as amended);
- Department of Environmental Affairs (2017), Public Participation guidelines in terms of NEMA EIA Regulations;
- Department of Environmental Affairs (2017), Integrated Environmental Management Guideline: Guideline on Need and Desirability;

- Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation; and
- International guidelines – the Equator Principles, the IFC Performance Standards, the Sustainable Development Goals, World Bank Environmental and Social Framework, and the and World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines).

Several other Acts, standards or guidelines have also informed the project process and the scope of issues addressed and assessed in this Scoping Report. A review of legislative requirements applicable to the proposed project is provided in **Table 4.4**.

Table 4:4: Relevant legislative permitting requirements applicable to the additional footprint

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Legislation			
Constitution of the Republic of South Africa (No. 108 of 1996)	In terms of Section 24, the State has an obligation to give effect to the environmental right. The environmental right states that: "*Everyone has the right –* » *To an environment that is not harmful to their health or well-being, and* » *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:* ∗ *Prevent pollution and ecological degradation,* ∗ *Promote conservation, and* ∗ *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*."	Applicable to all authorities	There are no permitting requirements associated with this Act. The application of the Environmental Right however implies that environmental impacts associated with proposed developments are considered separately and cumulatively. It is also important to note that the "right to an environment clause" includes the notion that justifiable economic and social development should be promoted, through the use of natural resources and ecologically sustainable development.
National Environmental Management Act (No 107 of 1998) (NEMA)	The 2014 EIA Regulations have been promulgated in terms of Chapter 5 of NEMA. Listed activities which may not commence without EA are identified within the Listing Notices (GNR 327, GNR 325 and GNR 324) which form part of these Regulations (GNR 326). In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority	DFFE – Competent Authority Northern Cape DAEARD&LR – Commenting Authority	The listed activities triggered by the proposed project have been identified and are being assessed as part of the EIA process currently underway for the project.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	charged by NEMA with granting of the relevant environmental authorisation. Considering the capacity of the proposed Engie Graspan Solar Project (i.e. contracted capacity of 90MW) and the triggering of Activity 1 and 15 of Listing Notice 2 (GNR 325) a full Scoping and EIA process is required in support of the Application for EA.		
National Environmental Management Act (No 107 of 1998) (NEMA)	In terms of the "Duty of Care and Remediation of Environmental Damage" provision in Section 28(1) of NEMA every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. In terms of NEMA, it is the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.	DFFE Northern Cape DAEARD&LR	While no permitting or licensing requirements arise directly by virtue of the proposed project, this section finds application through the consideration of potential cumulative, direct, and indirect impacts. It will continue to apply throughout the life cycle of the project.
Environment Conservation Act (No. 73 of 1989) (ECA)	The Noise Control Regulations in terms of Section 25 of the ECA contain regulations applicable for the control of noise in the Provinces of Limpopo, Northwest, Mpumalanga, Northern Cape, Eastern Cape, and KwaZulu-Natal Provinces.	DFFE Northern Cape DAEARD&LR Siyancuma Local Municipality	Noise impacts are expected to be associated with the construction phase of the project. Considering the location of the development area in relation to residential areas and provided that appropriate mitigation measures are implemented, construction

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	The Noise Control Regulations cover the powers of a local authority, general prohibitions, prohibitions of disturbing noise, prohibitions of noise nuisance, use of measuring instruments, exemptions, attachments, and penalties. In terms of the Noise Control Regulations, no person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof (Regulation 04).		noise is unlikely to present a significant intrusion to the local community. There is therefore no requirement for a noise permit in terms of the legislation.
Minerals and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA)	In accordance with the provisions of the MPRDA a mining permit is required in accordance with Section 27(6) of the Act where a mineral in question is to be mined, including the mining of materials from a borrow pit.	Department of Mineral Resources and Energy (DMRE)	Any person who wishes to apply for a mining permit in accordance with Section 27(6) must simultaneously apply for an Environmental Authorisation in terms of NEMA. No borrow pits are expected to be required for the construction of the project, and as a result a mining permit or EA in this regard is not required to be obtained.
	Section 53 of the MPRDA states that any person who intends to use the surface of any land in any way which may be contrary to any object of the Act, or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner.		In terms of Section 53 of the MPRDA approval is required from the Minister of Mineral Resources and Energy to ensure that the proposed development does not sterilise a mineral resource that might occur on site.
National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM: AQA)	The National Dust Control Regulations (GNR 827) published under Section 32 of NEM: AQA prescribe the general measures for the control of dust in all areas and provide a standard for	Northern Cape DAEARD&LR / Pixley ka Seme District Municipality	In the event that the project results in the generation of excessive levels of dust the possibility could exist that a dust fall monitoring programme would be required for the project, in which case dust fall monitoring results from

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	acceptable dust fall rates for residential and non-residential areas. In accordance with the Regulations (GNR 827) any person who conducts any activity in such a way as to give rise to dust in quantities and concentrations that may exceed the dust fall standard set out in Regulation 03 must, upon receipt of a notice from the air quality officer, implement a dust fall monitoring programme. Any person who has exceeded the dust fall standard set out in Regulation 03 must, within three months after submission of the dust fall monitoring report, develop and submit a dust management plan to the air quality officer for approval.		the dust fall monitoring programme would need to be included in a dust monitoring report, and a dust management plan would need to be developed.
National Heritage Resources Act (No. 25 of 1999) (NHRA)	Section 07 of the NHRA stipulates assessment criteria and categories of heritage resources according to their significance. Section 35 of the NHRA provides for the protection of all archaeological and palaeontological sites, and meteorites. Section 36 of the NHRA provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority. Section 38 of the NHRA lists activities which require developers or any person who intends	South African Heritage Resources Agency (SAHRA) Ngwao Boswa Kapa Bokone (NBKB) – Northern Cape provincial heritage authority	A Heritage screening study has been undertaken (refer to Appendix F). This study concluded that no Heritage Impact Assessment is required to be undertaken as no impacts on heritage resources are anticipated. Should a heritage resource be impacted upon, a permit may be required from SAHRA or Ngwao Boswa Kapa Bokone (NBKB) in accordance with of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	to undertake a listed activity to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development. Section 44 of the NHRA requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction.		
National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)	Section 53 of NEM:BA provides for the MEC / Minister to identify any process or activity in such a listed ecosystem as a threatening process. Three government notices have been published in terms of Section 56(1) of NEM:BA as follows: » Commencement of TOPS Regulations, 2007 (GNR 150). » Lists of critically endangered, vulnerable and protected species (GNR 151). » TOPS Regulations (GNR 152). It provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting	DFFE Northern Cape DAEARD&LR	Under NEM:BA, a permit would be required for any activity that is of a nature that may negatively impact on the survival of a listed protected species. An Ecological Impact Assessment will be undertaken as part of the Phase to identify the presence of any listed protected species present on site which will require a permit.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (NEM:BA: National list of ecosystems that are threatened and in need of protection, (Government Gazette 37596, GNR 324), 29 April 2014).		
National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)	Chapter 5 of NEM:BA pertains to alien and invasive species, and states that a person may not carry out a restricted activity involving a specimen of an alien species without a permit issued in terms of Chapter 7 of NEM:BA, and that a permit may only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out. Applicable, and exempted alien and invasive species are contained within the Alien and Invasive Species List (GNR 864).	DFFE Northern Cape DAEAR&LR	An Ecological Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any alien and invasive species present on site.
Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)	Section 05 of CARA provides for the prohibition of the spreading of weeds. Regulation 15 of GN R1048 published under CARA provides for the classification of categories of weeds and invader plants, and restrictions in terms of where these species may occur. Regulation 15E of GN R1048 published under CARA provides requirement and methods to	Department of Agriculture, Land Reform and Rural Development (DALRD)	CARA will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies need to be developed and implemented. In addition, a weed control and management plan must be implemented. In terms of Regulation 15E (GN R1048) where Category 1, 2 or 3 plants occur a land user is required to control such plants by means of one or more of the following methods:

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	implement control measures for different categories of alien and invasive plant species.		» Uprooting, felling, cutting, or burning. » Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer. » Biological control carried out in accordance with the stipulations of the Agricultural Pests Act (No. 36 of 1983), the ECA and any other applicable legislation. » Any other method of treatment recognised by the executive officer that has as its object the control of plants concerned, subject to the provisions of sub-regulation 4. » A combination of one or more of the methods prescribed, save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.
National Forests Act (No. 84 of 1998) (NFA)	According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. Notice of the List of Protected Tree Species under the National Forests Act (No. 84 of 1998) was published in GNR 734. The prohibitions provide that "no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport,	Department of Agriculture, Land Reform and Rural Development (DALRD)	A licence is required for the removal of protected trees. It is therefore necessary to conduct a survey that will determine the number and relevant details pertaining to protected tree species present in the development footprint for the submission of relevant permits to authorities prior to the disturbance of these individuals.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister".		An Ecological Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any protected trees present on site which will require a permit.
National Veld and Forest Fire Act (No. 101 of 1998) (NVFFA)	Chapter 4 of the NVFFA places a duty on owners to prepare and maintain firebreaks, the procedure in this regard, and the role of adjoining owners and the fire protection association. Provision is also made for the making of firebreaks on the international boundary of the Republic of South Africa. The applicant must ensure that firebreaks are wide and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land, it does not cause soil erosion, and it is reasonably free of inflammable material capable of carrying a veldfire across it. Chapter 5 of the Act places a duty on all owners to acquire equipment and have available personnel to fight fires. Every owner on whose land a veldfire may start or burn or from whose land it may spread must have such equipment, protective clothing and trained personnel for extinguishing fires, and ensure that in his or her absence responsible persons are present on or near his or her land who, in the event of fire, will extinguish the fire or assist in doing so, and take all reasonable steps to alert the owners of adjoining land and the relevant fire protection association, if any.	DFFE	While no permitting or licensing requirements arise from this legislation, this Act will be applicable during the construction and operation of the Engie Graspan Solar facility on the additional footprint, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and trained personnel for firefighting purposes.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
Hazardous Substances Act (No. 15 of 1973) (HAS)	This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. » Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat, or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance » Group IV: any electronic product, and » Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.	Department of Health (DoH)	It is necessary to identify and list all Group I, II, III, and IV hazardous substances that may be on site and in what operational context they are used, stored, or handled. If applicable, a license would be required to be obtained from the DoH.
National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA)	The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.	DFFE – Hazardous Waste Northern Cape DAEARD&LR – General Waste	No waste listed activities are triggered by Engie Graspan Solar Project, and therefore, no Waste Management License is required to be obtained. General and hazardous waste handling, storage and disposal will be

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	The Minister may amend the list by – » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. In terms of the Regulations published in terms of NEM: WA (GNR 912), a BA or EIA is required to be undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in » Any other way rendered unlit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odour, visual impacts and breeding of vectors do not arise, and » Pollution of the environment and harm to health are prevented.		required during construction and operation. The National Norms and Standards for the Storage of Waste (GNR 926) published under Section 7(1)(c) of NEM: WA will need to be considered in this regard.
National Road Traffic Act (No. 93 of 1996) (NRTA)	The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public	South African National Roads Agency (SANRAL) – national roads	An abnormal load / vehicle permit may be required to transport the various components to site for construction. These include route clearances and permits required for vehicles

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.	Northern Cape Department of Transport, Safety and Liaison	carrying abnormally heavy or abnormally dimensioned loads and transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded, some of the on-site substation and BESS components may not meet specified dimensional limitations (height and width) which will require a permit.
Provincial Policies / Legislation			
Northern Cape Nature Conservation Act (Act No. 9 of 2009)	This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and	Northern Cape DAEARD&LR	A collection/destruction permit must be obtained from Northern Cape DAEARD&LR for the removal of any protected plant or animal species found on site. Should these species be confirmed within the development footprint during any phase of the project, permits will be required.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project: » Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property; » Aquatic habitats may not be destroyed or damaged; » The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species; The Act provides lists of protected species for the Province.		An Ecological Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any listed species present on site which will require a permit.

4.9.1 The IFC Environmental Health and Safety (EHS) Guidelines

The IFC EHS Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The following IFC EHS Guidelines have relevance to the proposed project:

- IFC EHS General Guidelines
- IFC EHS Guidelines for Electric Power Transmission and Distribution

The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, however no Industry Sector EHS Guidelines have been developed for PV solar power to date. The application of the General EHS Guidelines should be tailored to the hazards and risks associated with a project and should take into consideration site-specific variables which may be applicable, such as host country context, assimilative capacity of the environment, and other project factors. In instances where host country regulations differ from the standards presented in the EHS Guidelines, whichever is the more stringent of the two in this regard should be applied.

The General EHS Guidelines include consideration of the following:

- Environmental:
  - Air Emissions and Ambient Air Quality
  - Energy Conservation
  - Wastewater and Ambient Water Quality
  - Water Conservation
  - Hazardous Materials Management
  - Waste Management
  - Noise
  - Contaminated Land
- Occupational Health and Safety:
  - General Facility Design and Operation
  - Communication and Training
  - Physical Hazards
  - Chemical Hazards
  - Biological Hazards
  - Radiological Hazards
  - Personal Protective Equipment (PPE)
  - Special Hazard Environments
  - Monitoring
- Community Health and Safety:
  - Water Quality and Availability
  - Structural Safety of Project Infrastructure
  - Life and Fire Safety (L&FS)
  - Traffic Safety
  - Transport of Hazardous Materials
  - Disease Prevention
  - Emergency Preparedness and Response
- Construction and Decommissioning:

- Environment
- Occupational Health & Safety
- Community Health & Safety

4.9.2 IFC's Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (2015)

While no Industry Sector EHS Guidelines have been developed for PV Solar Power, the IFC has published a Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (IFC, 2015). Chapter 8 of the Project Developer's Guide pertains to Permits, Licensing and Environmental Considerations, and states that in order to deliver a project which will be acceptable to international lending institutions, environmental and social assessments should be carried out in accordance with the requirements of the key international standards and principles, namely the Equator Principles and IFC's Performance Standards (IFC PS).

Some of the key environmental considerations for solar PV power plants contained within the Project Developer's Guide include:

- Construction phase impacts (i.e. OHS, temporary air emissions from dust and vehicle emissions, noise related to excavation, construction and vehicle transit, solid waste generation and wastewater generation from temporary building sites and worker accommodation).
- Water usage (i.e. the cumulative water use requirements).
- Land matters (i.e. land acquisition procedures and the avoidance or proper mitigation of involuntary land acquisition / resettlement).
- Landscape and visual impacts (i.e. the visibility of the solar panels within the wider landscape and associated impacts on landscape designations, character types and surrounding communities).
- Ecology and natural resources (i.e. habitat loss / fragmentation, impacts on designated areas and disturbance or displacement of protected or vulnerable species).
- Cultural heritage (i.e. impacts on the setting of designated sites or direct impacts on below-ground archaeological deposits as a result of ground disturbance during construction).
- Transport and access (i.e. impacts of transportation of materials and personnel).
- Drainage / flooding (i.e. flood risk associated with the site).
- Consultation and disclosure (i.e. consultating with key authorities, statutory bodies, affected communities and other relevant stakeholders as early as possible).
- Environmental and Social Management Plan (ESMP) (i.e. compile an ESMP to ensure that mitigation measures for relevant impacts are identified and incorporated into project construction procedures and contracts).

CHAPTER 5: DESCRIPTION OF THE RECEIVING ENVIRONMENT

This chapter provides a description of the local environment. This information is provided in order to assist the reader in understanding the possible effects of the project on the environment within which it is proposed to be developed. Aspects of the biophysical, social, and economic environment that could be directly or indirectly affected by, or could affect, the Engie Graspan Solar Facility on the additional footprint have been described. This information has been sourced from both existing information available for the area as well as collected field data by specialist consultants and aims to provide the context within which this EIA process is being conducted.

5.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Impact Assessment Report

This chapter includes the following information required in terms of Appendix 2: Content of a Scoping report:

Requirement	Relevant Section
(g)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	The environmental attributes associated with the development on the additional footprint is included as a whole within this chapter. The environmental attributes that are assessed within this chapter includes the following: » The regional setting of the broader study area and the project site indicates the geographical aspects associated with Engie Graspan Solar PV. This is included in Section 5.2. » The climatic conditions for the Graspan area have been included in Section 5.3. » The biophysical characteristics of the project site and the surrounding areas are included in Section 5.4. The characteristics considered are topography and terrain, geology, soils and agricultural potential and the ecological profile which includes the vegetation patterns, listed plant species, critical biodiversity areas and broad-scale processes, freshwater resources, terrestrial fauna, and avifauna. » The heritage and cultural aspects (including archaeology and palaeontology) has been included in Section 5.5. » The social and socio-economic characteristics associated with the broader study area and the project site has been included in Section 5.6

5.2. Regional Setting

The project is located 23 km northeast of Witput and 38 km south of Modderrivier within the Siyancuma Local Municipality (SLM), which falls within the Pixley Ka Seme District Municipality in the Northern Cape. The project area is adjacent to the N12 road and surrounded by some open natural areas and in close proximity to the Driekopspan.

The administrative centre of the SLM is located in the town of Douglas. There are six Wards within the Municipality and the Graspan site is located in Ward 2. The Vaal and Orange Rivers run through the SLM and are important from an agricultural perspective. The N12 national road bisects the Municipality from north to south and links a number of the smaller towns to Kimberley, the capital of the Northern Cape.

The site is in a semi-arid region, and is designated for agricultural use, with current agricultural practices including sheep and cattle farming. Land use in the surrounding area includes further sheep and cattle farming, cultivation approximately 15 km to the east and 30 km to the northeast of the site, and various salt works within a 15 km radius of the site.

Although the site is remote, there are existing man-made features present in the immediate landscape. There is an existing railway line traversing the site in a northeast-southwest direction. An existing gravel road network exists on the site. The existing 132 kV Graspan Traction Substation is located within the northern section of the larger site, and an existing 132 kV overhead power line traverses the site from the Graspan Traction Substation in a north-south direction, exiting the southern boundary of the site. The total area of the broader site is 2 080.82 ha, 50 ha of which is considered for the additional footprint.

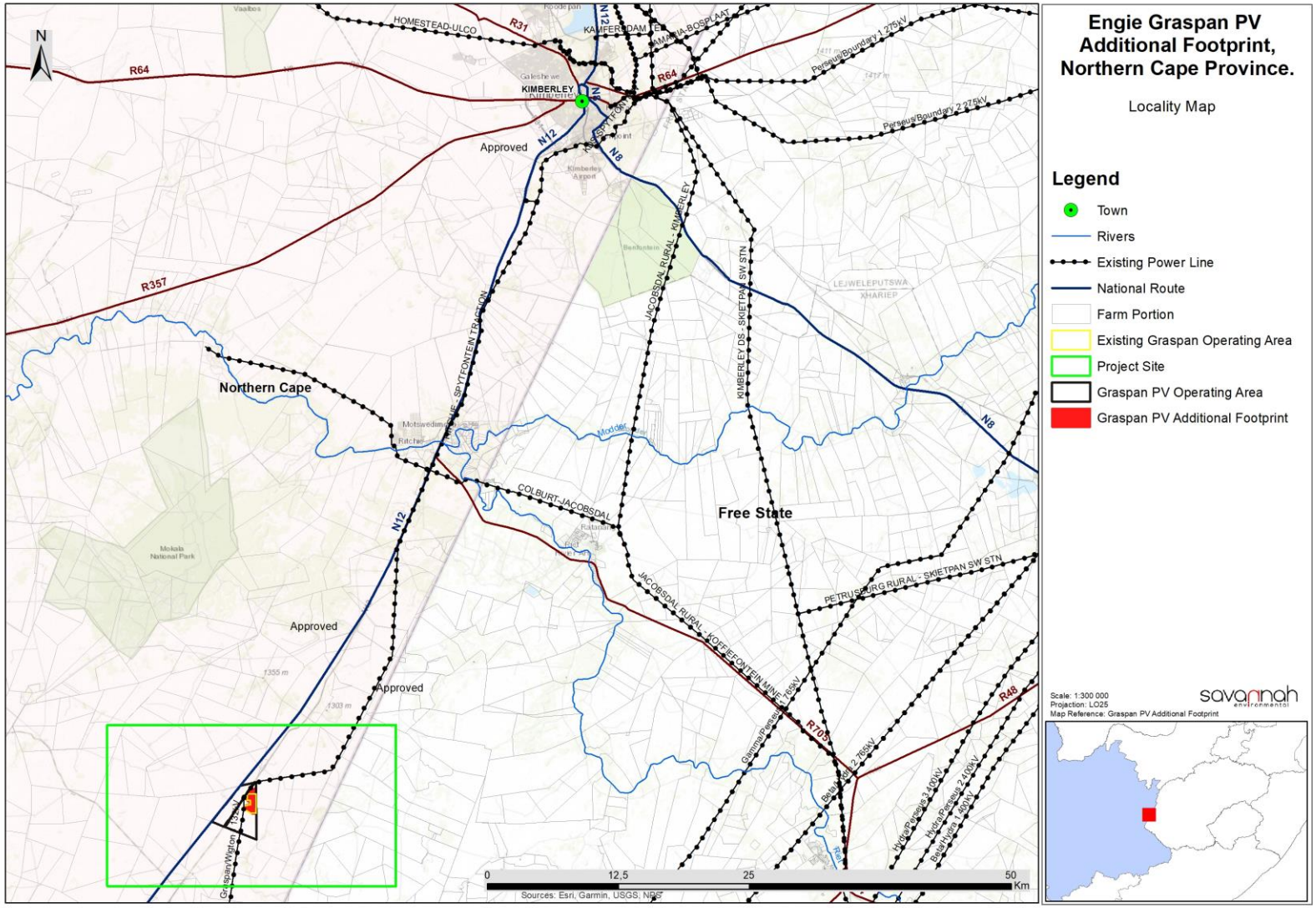

Figure 5.1: Regional map showing the location of the Engie Graspan PV additional footprint

5.3. Climatic Conditions

This region's rainfall peaks during autumn months, especially March. The Mean Annual Precipitation (MAP) ranges from 190 to 400 mm with the mean minimum and maximum monthly temperatures for Britstown being -3.6℃ and 37.9℃ for July and January respectively (also see **Figure** for more information).

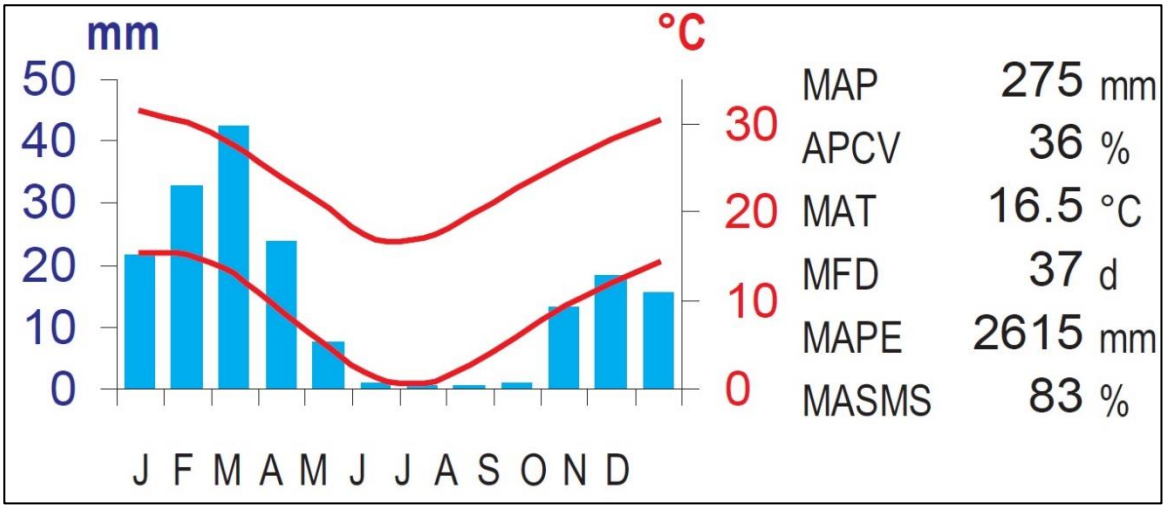

Figure 5.2: Climate for the region

5.4. Biophysical Characteristics of the Study Area and Development Area

5.4.1. Topographical profile

Slope, or terrain, is used to describe the lie of the land. Terrain influences climate and soil characteristics, thus playing an important role in determining whether land is suitable for agriculture. In most cases, sloping land is more difficult to cultivate and usually less productive than flatland, and is subject to higher rates of water runoff and soil erosion (FAO, 2007). The topography of the area and proposed PV site are characterised by a flat and gently sloping topography with an average gradient of less than 10 percent. The terrain slopes up towards dolerite koppies around Klein Kareelaagte to the southeast of the project site. The flat topography also makes the site suitable for the proposed development, as minimal earthworks will be required to prepare the site.

5.4.2. Geology, Soils and Agricultural Potential

The geology of this area is characterised by the Volksrust Formation shales as well as the Prince Albert Formation and the Dwyka Group diamictites (Mucina and Rutherford, 2006). The Jurassic Karoo Dolerite sills and sheets support the vegetation in this area soils varying from shallow to deep. Red and yellow-brown apedal soils are common in this region with the Ae, Fc and Ag land types prominently featuring.

i. Soils and agricultural capability

According to the land type database (Land Type Survey Staff, 1972 - 2006) the development falls within the Ag 146 land type. The Ag land type is characterised by freely drained Red or Yellow-Brown Apedal soils with red soils being dominant. These soils are characterised by a high base status and is likely to be less than 300 mm deep. The Ag 146 land type terrain units and expected soils are illustrated in Figure and Table 5.**1** respectively.

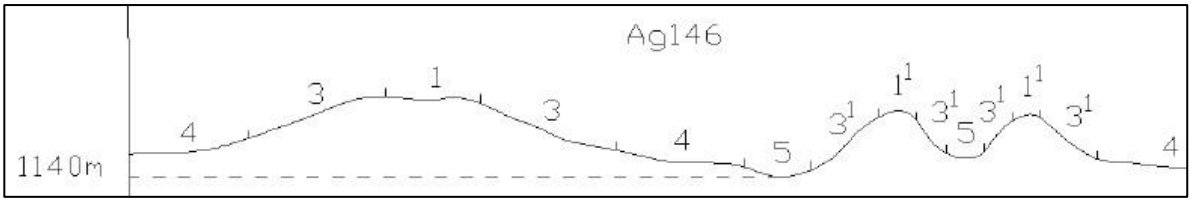

Figure 5.3 Illustration of the Ag 146 land type terrain units (Land Type Survey Staff, 1972 - 2006)

Table 5.1 Soils expected at the respective terrain units within the Ag 146 land type (Land Type Survey Staff, 1972 - 2006)

Terrain units							
1 (21%)		**3 (49%)**		**4 (25%)**		**5 (5%)**	
Bare Rock	65%	Bare Rock	50%	Hutton	65%	Oakleaf	30%
Hutton	20%	Hutton	25%	Glenrosa	10%	Valsrivier	25%
Glenrosa	10%	Glenrosa	20%	Oakleaf	10%	Streambeds	25%
Swartland	5%	Swartland	5%	Valsrivier	10%	Hutton	10%
				Swartland	5%	Glenrosa	5%
						Swartland	5%

The following land potential level has been determined;

- Land potential level 7 (this land potential level is characterised by a low potential. Severe limitations exist due to soil, slope, temperatures, or rainfall. This region is therefore regarded as being non-arable).

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which eight potential land capability classes are located within the proposed footprint area's assessment corridor, including;

- Land Capability 1 to 5 (Very Low to Low Sensitivity); and
- Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity).

The baseline findings and the sensitivities as per the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) national raster file concur with one another. It therefore is the specialist's opinion that the land capability and land potential of the resources in the regulated area is characterised by a maximum of "Moderate" sensitivities (see Figure 5.3), which conforms to the requirements of an agricultural compliance statement only.

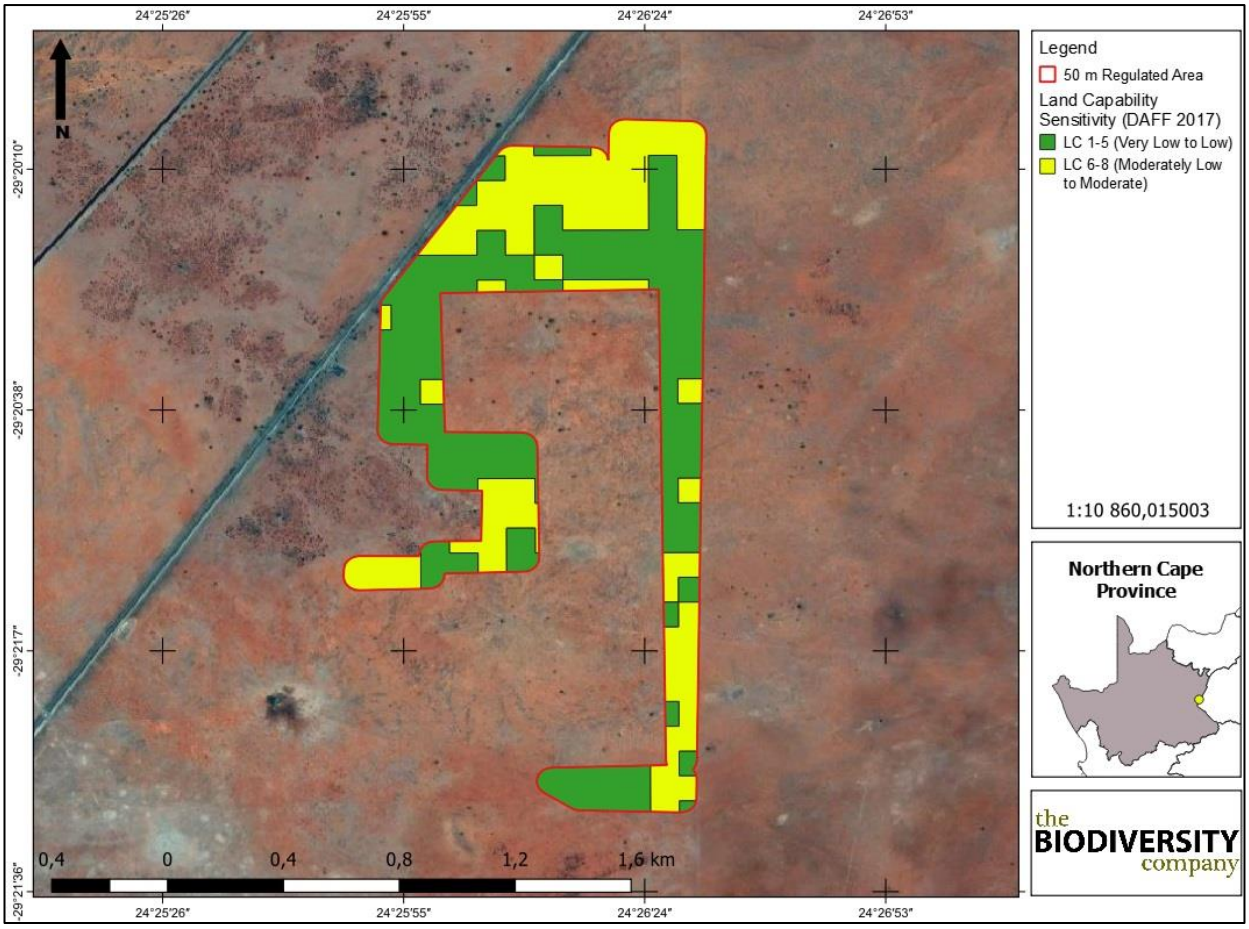

Figure 5.4 Land Capability Sensitivity (DAFF, 2017)

ii. Land use and carrying capacity

The farmer keeps cattle and sheep on the Graspan farm. The carrying capacity on the site is one small stock unit (SSU) per three hectares, and one large stock unit (LSU) per 15 ha.

5.4.3. Ecological Profile of the Study Area and the Development Area

i. Vegetation description and associated habitats

The project area falls within the Nama Karroo Biome. This biome is found in the central plateau of the western half of South Africa. The geology underlying the biome is varied, as the distribution of this biome is determined primarily by rainfall. The rain falls in summer and varies between 100mm and 520mm per year. This also determines the predominant soil type - over 80% of the area is covered by a lime-rich, weakly developed soil over rock. Although less than 5% of rain reaches the rivers, the high erodibility of soils poses a major problem where overgrazing occurs (SANBI, 2019).

The dominant vegetation is a grassy, dwarf shrubland. Grasses tend to be more common in depressions and on sandy soils, and less abundant on clayey soils. Grazing rapidly increases the relative abundance of shrubs. Most of the grasses are of the C4 type and, like the shrubs, are deciduous in response to rainfall events (SANBI, 2019).

On a fine-scale vegetation type, the project area overlaps with the Northern Upper Karoo.

Northern Upper Karoo
The Northern Upper Karoo is a shrubland dominated by dwarf karoo shrubs, grasses and *Acacia mellifera* subsp. *detinens* and some other low trees. It is found in the Northern Cape and the Free State Province at an altitude of 1 000- 1 500 m.

Important taxa:
Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type (Mucina & Rutherford, 2006).
The following species are important in the **Northern Upper Karoo vegetation** type (d= dominant species):

Small Trees: *Acacia mellifera* subsp. *detinens*, *Boscia albitrunca*.

Tall Shrubs: *Lycium cinereum* (d), *L. horridum*, *L. oxycarpum*, *L. schizocalyx*, *Rhigozum trichotomum*.

Low Shrubs: *Chrysocoma ciliata* (d), *Gnidia polycephala* (d), *Pentzia calcarea* (d), *P. globosa* (d), *P. incana* (d), *P. spinescens* (d), *Rosenia humilis* (d), *Amphiglossa triflora*, *Aptosimum marlothii*, *A. spinescens*, *Asparagus glaucus*, *Barleria rigida*, *Berkheya annectens*, *Eriocephalus ericoides* subsp. *ericoides*, *E. glandulosus*, *E. spinescens*, *Euryops asparagoides*. *Felicia muricata*, *Helichrysum lucilioides*, *Hermannia spinosa*, *Leucas capensis*, *Limeum aethiopicum*, *Melolobium candicans*, *Microloma armatum*, *Osteospermum leptolobum*, *O. spinescens*, *Pegolettia retrofracta*, *Pentzia lanata*, *Phyllanthus maderaspatensis*, *Plinthus karooicus*, *Pteronia glauca*, *P. sordida*, *Selago geniculata*, *S. saxatilis*, *Tetragonia arbuscula*, *Zygophyllum lichtensteinianum*.

Succulent Shrubs: *Hertia pallens*, *Salsola calluna*, *S. glabrescens*, *S. rabieana*, *S. tuberculata*, *Zygophyllum flexuosum*.

Semiparasitic Shrub: *Thesium hystrix* (d)
Herbs: *Chamaesyce inaequilatera*, *Convolvulus sagittatus*, *Dicoma capensis*, *Gazania krebsiana*, *Hermannia comosa*, *Indigofera alternans*, *Lessertia pauciflora*, *Radyera urens*, *Sesamum capense*, *Sutera pinnatifida*, *Tribulus terrestris*, *Vahlia capensis*.

Succulent Herb: *Psilocaulon coriarium*.

Geophytic Herb: *Moraea pallida.*

Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *A. diffusa* (d), *Enneapogon desvauxii* (d), *Eragrostis lehmanniana* (d), *E. obtusa* (d), *E. truncata* (d), *Sporobolus fimbriatus* (d), *Stipagrostis obtusa* (d), *Eragrostis bicolor*, *E. porosa*, *Fingerhuthia africana*, *Heteropogon contortus*, *Stipagrostis ciliata*, *Themeda triandra*, *Tragus berteronianus*, *T. koelerioides*, *T. racemosus*.

Biogeographically Important Taxa Herb (western distribution limit): *Convolvulus boedeckerianus*. Tall Shrub (southern limit of distribution): *Gymnosporia szyszylowiczii* subsp. *namibiensis*.

Endemic Taxa Succulent Shrubs: *Lithops hookeri*, *Stomatium pluridens*. Low Shrubs: *Atriplex spongiosa*, *Galenia exigua*. Herb: *Manulea deserticola*.

Conservation Status of the Vegetation Type

The national conservation target is 21% and the conservation status of this vegetation community was listed by Mucina and Rutherford (2006) as Least Threatened and is listed by SANBI (2019) as also LC.

Expected Flora Species

The POSA database indicates that 315 species of indigenous plants are expected to occur within the project area. Appendix A provides the list of species and their respective conservation status and endemism. One of the species expected is a species of conservation concern (SCC) (Table 5.2).

Table 5.2: Flora SCCs expected in the project area

Family	Taxon	Author	IUCN	Ecology
Aizoaceae	*Lithops aucampiae subsp. euniceae*	L.Bolus	VU	Indigenous; Endemic

ii. Fauna

Amphibians

Based on the IUCN Red List Spatial Data and AmphibianMap, 16 amphibian species are expected to occur within the area (Appendix B). None of the species are SCCs.

Reptiles

Based on the IUCN Red List Spatial Data and the ReptileMAP database, 46 reptile species are expected to occur within the area (Appendix C). One (1) is regarded as threatened (Table 5.3).

Table 5.3: Threatened reptile species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Psammobates tentorius verroxii	Tent Tortoise	NT	NT	High

Psammobates tentorius veroxii (Tent Tortoise) is categorised as NT both locally and internationally. This species can be found in low densities in the Karoo and semi-desert areas of South Africa and Namibia. It is threatened because of the pet trade and destruction of its habitat. The likelihood of occurrence in the project area is rated as high due to the presence of mesembryanthemums plant, which is suitable food sources for this species.

Mammals

The IUCN Red List Spatial Data lists 56 mammal species that could be expected to occur within the area (Appendix D). This list excludes large mammal species that are limited to protected areas. Ten (10) of these expected species are regarded as threatened (Table 5.4), five of these have a low likelihood of occurrence based on the lack of suitable habitat and food sources in the project area.

Table 5.4: Threatened mammal species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Eidolon helvum	African Straw-colored Fruit Bat	LC	NT	Low
Felis nigripes	Black-footed Cat	VU	VU	High
Hydrictis maculicollis	Spotted-necked Otter	VU	NT	Low
Leptailurus serval	Serval	NT	LC	Moderate
Panthera pardus	Leopard	VU	VU	Moderate
Parahyaena brunnea	Brown Hyaena	NT	NT	Moderate
Parotomys littledalei	Littledale's Whistling Rat	NT	LC	Moderate
Poecilogale albinucha	African Striped Weasel	NT	LC	Low
Redunca fulvorufula	Mountain Reedbuck	EN	LC	Low
Rhinolophus denti	Dent's Horseshoe Bat	NT	LC	Low

Felis nigripes (Black-footed cat) is endemic to the arid regions of southern Africa. This species is naturally rare, has cryptic colouring is small in size and is nocturnal. These factors have contributed to a lack of information on this species. Given that the highest densities of this species have been recorded in the more arid Karoo region of South Africa, the habitat in the project area can be considered to be optimal for the species and the likelihood of occurrence is rated as high.

Leptailurus serval (Serval) occurs widely through sub-Saharan Africa and is commonly recorded from most major national parks and reserves (IUCN, 2017). The Serval's status outside reserves is not certain, but they are inconspicuous and may be common in suitable habitat as they are tolerant of farming practices provided there is cover and food available. In sub-Saharan Africa, they are found in habitat with well-watered savanna long-grass environments and are particularly associated with reedbeds and other riparian vegetation types. Some areas of suitable habitat is present as such a moderate likelihood of occurrence were appointed to this species.

Panthera pardus (Leopard) has a wide distributional range across Africa and Asia, but populations have become reduced and isolated, and they are now extirpated from large portions of their historic range (IUCN, 2017). Impacts that have contributed to the decline in populations of this species include continued persecution by farmers, habitat fragmentation, increased illegal wildlife trade, excessive harvesting for ceremonial use of skins, prey base declines and poorly managed trophy hunting (IUCN, 2017). Although known to occur and persist outside of formally protected areas, the densities in these areas are considered to be low. The likelihood of occurrence in the project area is rated as moderate based on the secluded location and lack of development in the project area.

Parahyaena brunnea (Brown Hyaena) is endemic to southern Africa. This species occurs in dry areas, generally with annual rainfall less than 100 mm, particularly along the coast, semi-desert, open scrub and open woodland savanna. Given its known ability to persist outside of formally protected areas the likelihood of occurrence of this species in the project area is moderate to good. The presence of moderate to large herbivores on adjacent farms increases the likelihood of occurrence of this species.

Parotomys littledalei (Littledale's Whistling Rat) is listed as NT on a regional scale. This diurnal species occurs in shrubland and is dependent on ground cover. Littledale's Whistling Rat is herbivorous only, feeding on fresh plant material, including annuals, succulent perennials, non-succulent perennials, and grasses. The presence of ground cover increases their likelihood of occurrence in the project area. Suitable but not ideal habitat is found in the project area; therefore, the likelihood of occurrence was rated as moderate.

Avifauna

The SABAP2 Data lists 77 avifauna species that could be expected to occur within the area . Three of the species were SCCs (Table 5.5).

Table 5.5: Avifauna SCCs expected in the project area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Ciconia nigra	Stork, Black	VU	LC	Moderate
Grus paradisea	Crane, Blue	NT	VU	Moderate
Gyps africanus	Vulture, White-backed	CR	CR	High

Ciconia nigra (Black Stork) is native to South Africa, and inhabits old, undisturbed, open forests. They are known to forage in shallow streams, pools, marshes swampy patches, damp meadows, floodplains, pools in dry riverbeds and occasionally grasslands, especially where there are stands of reeds or long grass (IUCN, 2017). It is unlikely that this species would breed in the project area due to the lack of forested areas, however some suitable foraging habitat remains in the form of the nearby pan therefore this species has a moderate likelihood of occurrence.

Grus paradiseus (Blue Crane) is listed as NT on a regional scale and as VU on a global scale. This species has declined, largely owing to direct poisoning, power-line collisions and loss of its grassland breeding habitat owing to afforestation, mining, agriculture and development (IUCN, 2017). This species breeds in natural grass- and sedge-dominated habitats, preferring secluded grasslands at high elevations where the vegetation is thick and short. Foraging habitat can be found in and around the project area. This species has a moderate likelihood of occurrence.

Gyps africanus (White-backed Vulture) has a large range and only occurs throughout sub-Saharan Africa. Primarily a lowland species of open wooded savanna, particularly areas of *Acacia (Vachellia*). It requires tall trees for nesting. According to the IUCN (2017) this species faces similar threats to other African vultures, being susceptible to habitat conversion to agro-pastoral systems, loss of wild ungulates leading to a reduced availability of carrion, hunting for trade, persecution and poisoning. The likelihood of occurrence is rated as high as this species has been a breeding program in the nearby Mokala National Park.

iii. Freshwater Features

A review of river lines and water bodies for quarter degree squared (QDS) 2924 indicated no inland water sources or river lines can be found within the project area and 500m regulatory area (Figure 5.5).

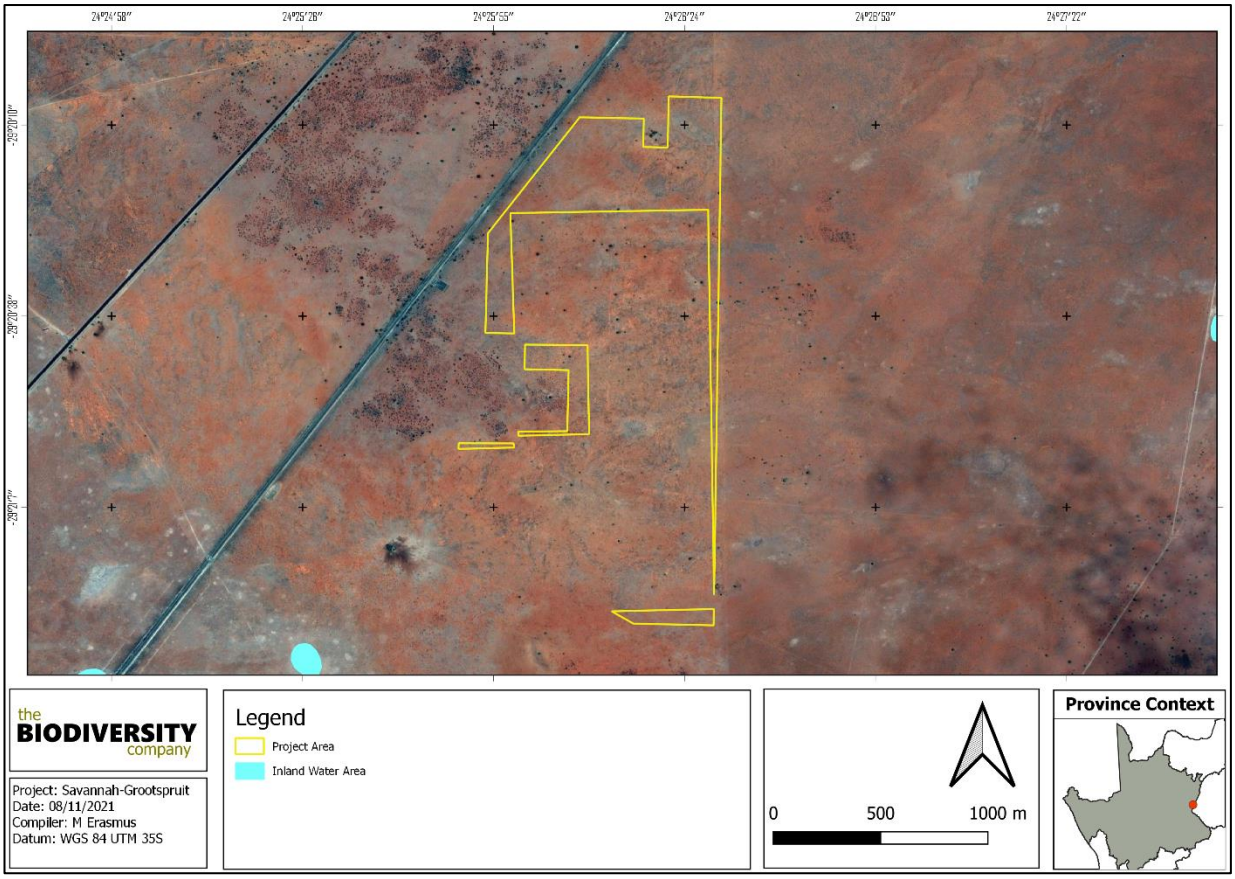

Figure 5.5: The inland water features associated with the project area

iv. Critical Biodiversity Areas and Ecological Support Areas

The Northern Cape Department of Environment and Nature Conservation has developed the Northern Cape CBA Map which identifies biodiversity priority areas for the province, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

The identification of Critical Biodiversity Areas for the Northern Cape was undertaken using a Systematic Conservation Planning approach. Available data on biodiversity features (incorporating both pattern and process, and covering terrestrial and inland aquatic realms), their condition, current Protected Areas and Conservation Areas, and opportunities and constraints for effective conservation were collated.

The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province. These include the:

- Namakwa District Biodiversity Sector Plan;
- Cape Fine-Scale Plan (only the extent of the areas in the Northern Cape i.e. Bokkeveld and Nieuwoudtville); and
- Richtersveld Municipality Biodiversity Assessment.

Figure 5.6 shows the project area superimposed on the Terrestrial CBA map. The project area overlaps with an ONA and an ESA area.

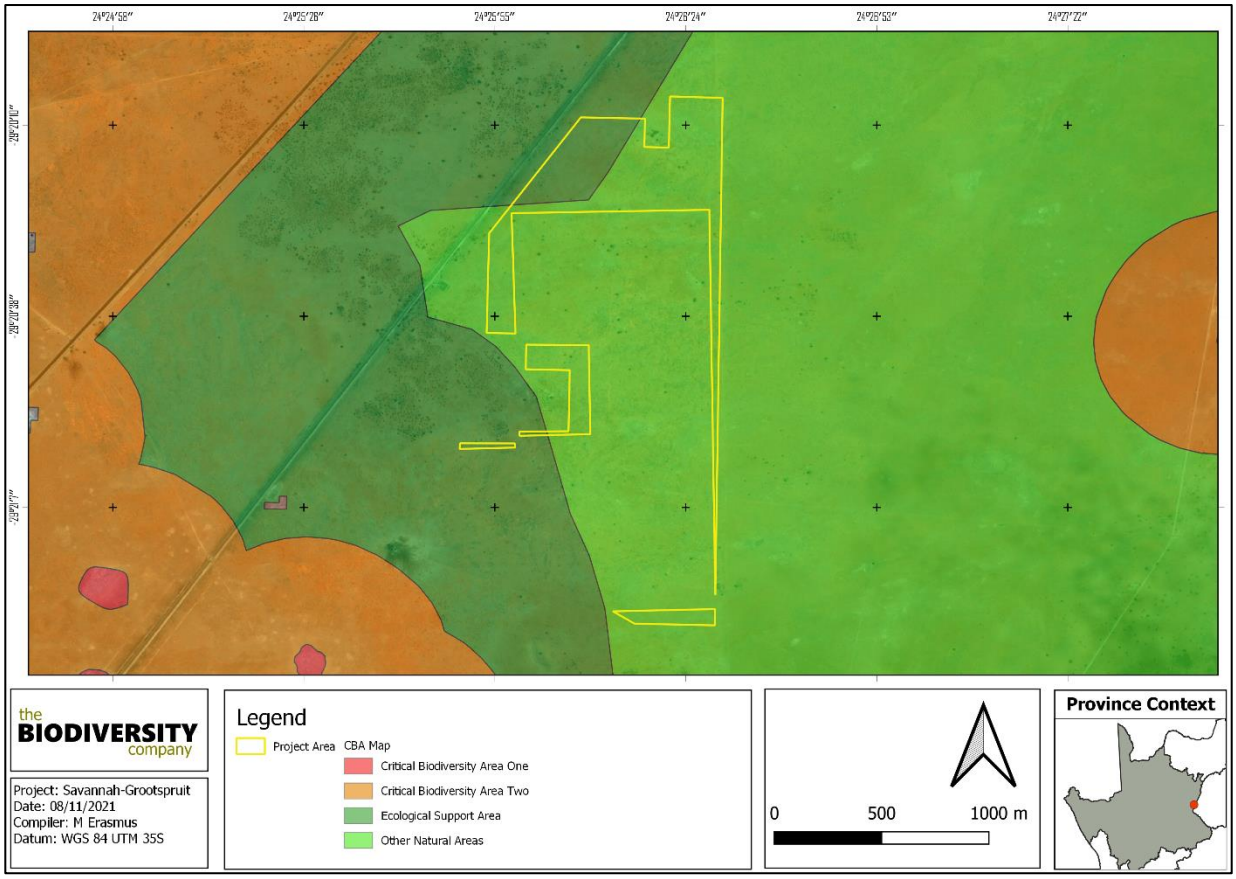

Figure 0.6. Map illustrating the locations of CBAs in relation to the project area

v. National Protected Area Expansion Strategy

National Protected Area Expansion Strategy 2010 (NPAES) were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for finescale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2010). The project area can be found 26 km from the closest NPAES.

5.5. Integrated Heritage including Archaeology, Palaeontology and the Cultural Landscape

5.5.1. Historical and Archaeological Background

The archaeology of the Northern Cape is rich and varied covering long spans of human history. Thousands of square kilometres of Bushmanland are covered by a low-density lithic scatter. Cultural Resources Management (CRM) surveys in the immediate vicinity provide some insight as to the occupation of the area and in the wider region provides a good basis for understanding the local archaeology. Collection of surface samples by other archaeologists means that stone artefacts north of the study area have been analysed and indicates the presence of humans in the area for the last two million years. The larger area also probably represented a rich source of rocks for knapping. Previous work therefore suggests that the

wider area could contain a widespread distribution of Early and Middle Stone Age material with perhaps a few Later Stone Age sites, depending on topography and proximity to water.

A broad summary of the archaeology of the area is included in the ACO Report (2012) and is not included here. It is sufficient to note that scattered throughout the Karoo is evidence of historic and prehistoric occupation in the form of Early, Middle and Later Stone Age lithics and other material remains. The descendants of the historic and prehistoric occupants of the region are found in the indigenous Khoe and San, as well as modern inhabitants of the area. In their field assessment, the ACO identified stone artefact scatters, dolerite boulders with grinding surfaces, a single incidence of historical graffiti on a dolerite boulder, a circular stone structure near the railway line, some calcrete cairns, and a distribution of late 19th/early 20th century historical dump material along the railway line. These sites are all mapped relative to the proposed expansion in Figure 3 and 3a.

According to the ACO report (2012), this area is of historical importance because of the Battle of Graspan (also known as Enslin or Rooilaagte) which took place over a large area, commencing some 2.5km to the north of the proposed facility. The battle was an important engagement of the Second Anglo-South African War of 1899-1902. The Battle of Graspan dates to the 25 November 1899. British troops advanced across the open countryside and stormed the Boer's hilltop positions. After taking the koppies, they gave chase to the Boers as they rode away across the veld. Most of the military action therefore seems to have taken place between Graspan station and the surrounding hills. The British casualties amounted to some 197 men, while the Boers are thought to have lost around 20 men. The dead were buried in graves near to the battlefield, but according to Morris were exhumed in 1963 and re-interred in the Garden of Remembrance, West End Cemetery, Kimberley. Since the exhumation was undertaken by an undertaker, it is possible not all human remains were recovered and that some might still be located at the original place of burial.

The Graspan PV facility development area has been thoroughly assessed by ACO Associates in their report dated May 2012. In this assessment, 4 sites of heritage significance were identified which need to be considered for the development of the expanded Graspan PV facility.

» ***GRAS001 (Grade IIIB)*** SAHRIS ID 86031

Two concentric stone circles, inner with diameter of 4m, outer with diameter of 1m. Made of substantial stone boulders. Next to the railway line. Late 19th century history tin and glass debris nearby, also a flat dolerite boulder with scratch marks. According to the ACO report (2012), "The circular stone structure may be the remnants of a fortification dating to the South African War, built expressly to protect the railway line. However, it is unlikely that it dates to the battles of Belmont and Graspan, as the military moved through this area fairly rapidly. Nevertheless, the dense distribution of historic dump material alongside the railway line is of interest. The material may have been dumped over a long period of time, from the construction of the line in 1885, and does not necessarily relate to the Battles of Belmont and Graspan of 1899."

» ***GRAS049 (Grade IIIC) SAHRIS ID 86109***

Clear bottle glass fragments, a broken wine bottle and several bits of barbed wire in the area.

» ***GRAS050 (Grade IIIC) SAHRIS ID 86110***

Grindstone/rubbed stone.

» ***GRAS052 (Grade IIIC) SAHRIS ID 86112***

2 tin cans, wire, 1 ceramic (railways), several wire fragments, cans, and barbed wire spindle: ISCOR, Barbed wire 100lbs, IOWA pattern 535 yds min.

In order to mitigate any impact to the historical material identified in proximity to the railway line and the circular stone structure, the ACO recommended that no development takes place within 100m of the railway line to ensure the stone structure and historical material relating to the railway line (and possibly the South African War), are not destroyed. Based on the information provided regarding the proposed expanded PV area, the boundaries of the expanded area are located within 65m of the railway line. It is therefore recommended that the boundary of the expanded area be moved to respect the recommended 100m buffer around the railway line (Figure 3b).

5.5.2. Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for the PV Facility is underlain by sediments of high and zero palaeontological sensitivity. According to the extract from the CGS 2924 Koffiefontein Map, the development area is underlain by Quaternary Sand sediments and Jurassic Dolerite. Botha-Brink (2012) completed a palaeontological field assessment of the development area.

In the report, it is noted that in the area proposed for development part of the Ecca Group "is overlain by Late Cenozoic superficial deposits, which are approximately 2.6 million years old (Quaternary) to Recent (Walker and Geissman, 2009). Those on Graspan contain Quaternary Calcrete. Although the flatter areas containing these deposits generally contain few fossils, numerous quaternary fossils have been found in river gulleys. These fossils are known as the Florisian Mammal Fauna. Most species of this time have modern counterparts, but there are some extinct animals such as the giant long-horned buffalo Pelorovis and the giant hartebeest, Megalotragus. The Florisian Mammal fauna includes mostly mammals such as lagomorphs, rodents, carnivores, perissodactyls, numerous artiodactyls and bovids. Amphibians, reptiles and birds are rarely found in Florisian deposits (Brink, 1987)."

The PIA report also notes that "The Ecca Group sediments on Graspan are intruded by non-fossiliferous Early Jurassic Karoo dolerite and cover a large portion of the development area. The Karoo Dolerite Suite comprises a network of igneous intrusions (dykes, sills) that intruded into older sediments of the Beaufort Group in the main Karoo Basin. These intrusions represent major eruptions of volcanic lava, which were triggered by the separation of Gondwana (an amalgamation of today's southern continents) approximately 183 million years ago."

Based on the information provided, the proposed expanded PV area is located in such a way that it will only impact areas that contain non-fossiliferous Jurassic dolerite (Figure 4a and 4b). However, it must be noted that Quaternary deposits and rocks of the Tierberg Formation, Ecca Group may also be impacted. According to Botha-Brink (2012), "Quaternary fossils are usually found in gulleys (dry river beds) and the low-lying relief and absence of potentially fossiliferous gulleys suggests that fossils of this geological age are absent here. Fossils from the Ecca Group are exceedingly rare, and only a small portion of the development will encroach into rocks of this age.

Thus, considering the rarity of fossil-bearing sediments and lack of appropriate exposure (i.e. steep-sided gulleys) at the proposed site, the impact on palaeontological material is negligible (rated Low or negative)."

Botha-Brink (2012) recommends that "The ECO responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he/she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains; In the case of any significant fossils (e.g. vertebrate teeth, bones, burrows, petrified wood) being found during construction, they must be safeguarded and the relevant heritage management authority (SAHRA) be informed so that a professional palaeontologist should be consulted in order to facilitate the necessary rescue operations."

5.6 Social Context

The proposed additional footprint is in the Northern Cape Province, the largest province in South Africa, measuring 361 830 km^2. The primary metropolitan areas within the Northern Cape, include Kimberley and Upington. Smaller district towns include Douglas, De Aar, Prieska, Victoria West, Hopetown and Colesburg.

The Pixley Ka Seme District Municipality (PKDM) is one of five District Municipalities in the Northern Cape. It is located in the south-eastern portion of the Northern Cape and is bordered by the Free State, Eastern Cape and Western Cape. The district is approximately 102 272 km^2 in size. There are eight Local Municipalities (LM) within the District Municipality, namely, Emthajeni LM, Kareeberg LM, Renosterberg LM, Siancuma LM, Siyathemba LM, Thembelihle LM, Ubuntu LM, and Umsobomvu LM.

The PKDM is largely rural, with small to medium-sized urban centres, such as Douglas, De Aar, Prieska, Victoria West, Hopetown and Colesburg. The District Municipality faces high poverty rates, with an estimated 63.5% of the population living in poverty, significantly higher than the Provincial rate of 48.5%. As with the Provincial trend, the poverty rate is more prevalent amongst the African and Coloured population groups.

The proposed Graspan Site is located within a rural setting along the N12 and is approximately 75 km south of the town of Kimberley and 45 km northwest of Hopetown and Steynville (adjacent to Hopetown). The Site is situated on farm Graspan 172, the farm is 1 346 Ha in extent. It must be noted that while the site falls within the Siyancuma Local Municipality (SLM), the town of Hopetown (where local labour is likely to be sourced) is in the neighbouring Thembelihle Local Municipality (TLM).

5.6.1 Demographic Profile of Siyancuma Local Municipality

Pixley ka Seme District Municipality has the third largest population in the Northern Cape and shows a slight increase of 9244 from 2011 to 2016. It represents 28,41 % of the Northern Cape population.

The SLM is approximately 9 885 km^2 in extent. The administrative centre of the SLM is in the town of Douglas. There are six Wards within the Municipality and the Graspan site is in Ward 2. The Vaal and Orange Rivers run through the SLM and are important from an agricultural perspective. The N12 national road bisects the Municipality from north to south and links several the smaller towns to Kimberley, the Capital of the Northern Cape. From 2001 to 2011, the total population for Siyancuma Local Municipality showed a negative growth rate of -5.6% with the population decreasing from 39 275 to 37 076 (StatsSA 2011). A further negative growth rate of -3.1% was experienced from 2011 to 2016 when the population decreased from 37 076 to 35 938 (Community Survey 2016).

Witput, Belmont and Graspan are small railway towns where most of the land and water services infrastructure are owned by Spoornet, the rail parastatal. Spoornet stopped the provision of water services since alienation of the smaller railway stations some years ago. The remaining households in Belmont, Witput,

Graspan and a portion in Salt Lake presently depend on private landowners in the area to obtain water supplies.

The Siyancuma Municipality's total population of 35 938 (2016) can be broken down as follows:

» Coloured – 67,80 %
» African – 25,30 %
» White – 6,69 %
» Asian – 0,21 %

There are 9 578 households in the municipality, with an average household size of 3,8 persons per household. Of the households, 35% have access to piped water either in their dwelling or in the yard, while 82,2% of households have access to electricity for lighting.

5.6.3 Settlement and infrastructure

The main farm dwelling and labourer's cottages are located on the western portion of the site and are not part of the development area. There are a number of farm dams located on site. There is an existing 132kV overhead transmission line that traverses the site and links into an existing substation on the site. There is a railway line that traverses the site in a north-south direction. The fencing and gates on site are well maintained.

The site is located off the N12 National Road. Long sections of the N12 are currently being upgraded and re-surfaced, as a result the N12 is in good condition. The main road through Hopetown is a paved tar road, but has many potholes, particularly around the entrance to the town. The roads in Steynville are gravel and appear to be in fair condition

Table 5.6 provides a baseline summary of the socio-economic profile of the Siyancuma LM within which the additional footprint is proposed. The data presented in this section have been derived from the 2011 Census, the Local Government Handbook South Africa 2019, the Northern Cape Provincial Spatial Development Framework (PSDF), and the Integrated Development Plans of the Pixley ke Seme DM and Siyancuma LM[10].

Table 5.6: Baseline description of the socio-economic characteristics of the area proposed for the Engie Graspan PV facility

Location characteristics
» The project is proposed within the Northern Cape Province, which is South Africa's largest, but least populated Province. » The project is proposed within the Siyancuma LM and Pixley ke Seme DM » The Siyancuma LM covers an area of land 16 753km² in extent.
Population characteristics
» The Siyancuma LM has a total population of 37 076 with a growth rate of -0.58% between 2001 and 2011. » In terms of the age structure 31,8% of the population is between the ages of 0 and 14 years, 62,2% of the population is between the ages of 15 and 64 and 6% of the population is older than 65 years.

[10] While information was derived from the Local Government Handbook South Africa 2019, Northern Cape PSDF, Pixley ke Seme DM and Siyancuma LM IDP, these sources largely make use of statistical information derived from the Census 2011. The information presented in this Chapter may therefore be somewhat outdated but is considered sufficient for the purposes of this assessment (i.e., to provide an overview of the socio-economic characteristics against which impacts can be identified and their significance assessed).

- The majority of the population in the municipality are coloured at 57,5%,33,3% are black African,7,5% are White, 0,7% are Indian/Asian, with the other population groups making up the remaining 1,4%. Within the Siyancuma LM 83.4% of the population is coloured, 11% is white, 4.9% is Black African and 0.6% is Asian.
- The dominant language spoken in the Siyancuma LM is Afrikaans 88,9%, English1,3%, IsiNdebele0,2%, IsiXhosa 0,7%, IsiZulu 0,2%, Sepedi 0,1%, Sesotho 0,4%, Setswana 5,1%, Sign Language 0,4%, SiSwati 0%, Tshivenda 0,1%, Xitsonga 0,1%
- The Siyancuma LM, Pixley ke Seme DM, and Northern Cape provincial, and South African national population age structures are all youth dominated. A considerable proportion of the respective populations therefore comprise individuals within the economically active population between the ages of 15 and 64 years of age.

Economic, education and household characteristics

- The Siyancuma LM has a dependency ratio of 60.8. The Northern Cape Province is 35.8, and South Africa is 34.5.
- Of those aged 20 years and older,7,2% have completed primary school, 30,3% have some secondary education, 16,9% have completed matric and 5,4%have some form of higher education. Of the mentioned age group, 16,8% have no form of schooling.
- There are 11 064 people that are economically active (employed or unemployed but looking for work), and of these,28,2% are unemployed. Of the 5 800 economically active youth (15–34 years) in the area, 35,2% are unemployed.
- In 2011, the unemployment rate was highest across the Northern Cape at 27.4% and lowest across the Siyancuma LM at 28.2%.
- There are 9 578 households in the municipality, with an average household size of 3,8 persons per household. Of the households, 35% have access to piped water either in their dwelling or in the yard,while 82,2% of households have access to electricity for lighting.
- The primary economic sectors within the Siyancuma LM include agriculture and mining.

Services

- The provincial health system consists of a hierarchy of facilities, which include 126 fixed primary health care clinics and 33 community health centres, 11 district hospitals, 1 specialised hospital, 1 regional hospital and 1 tertiary hospital. 8 of 11 district hospitals provide 24-hour operating theatre access.
- The majority of households within the Siyancuma LM are well serviced with regards to flush toilets connected to sewage, refuse removal, piped water and electricity.

CHAPTER 6: SCOPING OF POTENTIAL ISSUES

This Chapter provides an overview of the potential impacts and risks associated with the establishment of Solar PV infrastructure on the additional footprint identified at this stage of the process through a desktop review of available existing information and specialist ecology and heritage studies conducted in December 2021. This chapter serves to describe and evaluate the identified potential environmental impacts relevant and specific with the construction and operation phases of the Engie Graspan Solar facility infrastructure on the additional footprint and to make recommendations for further studies required to be undertaken in the EIA phase.

The project site considered for the proposed additional footprint comprises of an area of 50ha in extent located directly adjacent to the authorised Engie Graspan PV Facility (which is a Preferred Bidder project in terms of the REIPPPP). The full extent of the 50ha footprint has been investigated during this scoping phase to determine the environmental suitability of the site. This will provide an indication of the areas of sensitivity that the developer would need to take into consideration in the planning of the location of the facility infrastructure within the additional footprint.

The majority of the environmental impacts are expected to occur during the construction phase. Environmental issues associated with construction and decommissioning activities of the PV facility and associated infrastructure are similar and include, among others:

» Impact on ecology, including flora and fauna and habitats.
» Impacts on freshwater features.
» Impact on soils and agricultural potential.
» Impact on heritage resources (including archaeology and palaeontology).
» Potential cumulative impacts

Environmental issues specific to the operation of the PV facility and associated infrastructure could include, among others:

» Long-term loss of protected species (flora, fauna, avifauna) or conservation-worthy habitats.
» Change in land-use for the footprint of the facility.

The development of infrastructure within the additional footprint is not expected to alter the social or visual impacts associated with the authorised PV facility.

Section 6.3 provides a summary of the findings of the desktop scoping study undertaken for ecology during the construction, operation, and decommissioning phases of the Engie Graspan Solar infrastructure on the additional footprint. Those impacts associated with construction can also be expected to be associated with the decommissioning phase (however, to a lesser extent as the project site would have previously undergone transformation and disturbance during construction). Potential impacts associated with the project are evaluated, and recommendations are made regarding further studies required within the EIA phase.

Section 6.4 outlines the impacts on freshwater features in the area conducted in accordance with the DWS risk-based water use authorisation approach and delegation guidelines.

Section 6.5 details the findings from the desktop scoping for the potential impacts on soils and agricultural potential.

Section 6.6 details the findings of the impacts on heritage resources in the area. As no significant heritage resources were identified, this section also provides recommendations for the mitigation and management.

A summary of the potential cumulative impacts that may be associated with the project as identified at this stage in the process is provided in **Section 6.7**. These impacts are associated with the scale of the project when considered together with other similar developments within the region and will be confirmed and assessed within the EIA phase of the project.

The evaluations in section 6 are based on desktop data as well as the findings of specialist studies for this specific site and provide the basis of what is required to be assessed in further detail during the EIA phase.

6.1. Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This chapter serves to identify the potential environmental impacts associated with the development of PV infrastructure on the additional footprint. This chapter includes the following information required in terms of the EIA Regulations, 2014 - Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(g)(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration, and probability of such identified impacts, including 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.	The impacts and risks identified to be associated with the construction and operation phase of the Engie Graspan Solar facility infrastructure on the additional footprint have been included in **Section 6.3. Section 6.4, Section 6.5 and Section 6.6.** Impact tables have been included for each field of study which considers the nature, significance, consequence, extent, duration, and probability of the impacts, as well the reversibility of the impacts, the loss of resources and avoidance, management, or mitigation.
(g)(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	The positive and negative impacts associated with the development of infrastructure for the Engie Graspan solar facility on the additional footprint have been included in **Section 6.3.**
(g)(viii) the possible mitigation measures that could be applied and level of residual risk	Possible mitigation (specifically relating to the avoidance of sensitive areas) has been included in **Section 6.3.**

6.2. Evaluation of Potential Impacts associated with the development on the additional footprint

The section below and associated tables serve to indicate and summarise the significance of perceived impacts on the terrestrial ecology of the additional footprint. More detail is provided in the specialist report included in Appendix G.

6.3. Biodiversity Risk Assessment

6.3.1. Terrestrial Impact Assessment

Potential impacts were evaluated against the data captured during the desktop assessment to identify relevance to the project area. No decommissioning phase was considered based on the nature of the development.

Anthropogenic activities drive habitat destruction causing displacement of fauna and flora and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area.

6.3.2. Alternatives considered

No alternatives were provided for the development.

6.3.3. Loss of Irreplaceable Resources

- An Ecological Support Area (ESA) and Other natural Area (ONA) will be lost; and
- Species of Critical Concern (SCCs) will also be lost.

6.3.4. Identified Sensitivities

The biodiversity theme sensitivity, as indicated in the DFFE screening report, was derived to be High, mainly due to the project area being with an ESA (refer to **Figure 6.1**).

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Ecological support area
Very High	Protected Areas Expansion Strategy

Figure 6.1: Biodiversity theme sensitivity, as indicated in the DFFE screening report

6.3.5. Anticipated Impacts

The impacts anticipated for the proposed activities are considered in order to predict and quantify these impacts as well as evaluate the magnitude on the identified terrestrial biodiversity (**Table 0**). These are evaluated in **Table 6.2**. The impacts are expected for the project and will be assessed for the impact phase of the process.

Table 0.1: Anticipated impacts for the proposed activities on terrestrial biodiversity

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
1. Destruction, fragmentation and degradation of habitats and ecosystems	Physical removal of vegetation, including protected species.	Displacement/loss of flora & fauna (including possible SCC)
	Soil dust precipitation	Habitat fragmentation
	Dumping of waste products	Increased potential for establishment of alien & invasive vegetation
	Random events such as fire (cooking fires or cigarettes)	Erosion
2. Spread and/or establishment of alien and/or invasive species	Vegetation removal	Habitat loss for native flora & fauna (including SCC)
	Vehicles potentially spreading seed	Spreading of potentially dangerous diseases due to invasive and pest species
	Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents	Alteration of fauna assemblages due to habitat modification
	Creation of infrastructure suitable for breeding activities of alien and/or invasive birds	
3. Direct mortality of fauna	Clearing of vegetation	Loss of habitat
		Loss of ecosystem services
	Roadkill due to vehicle collision	Increase in rodent populations and associated disease risk
	Pollution of water resources due to dust effects, chemical spills, etc.	
	Intentional killing of fauna for food (hunting)	
4. Reduced dispersal/migration of fauna	Loss of landscape used as corridor	Reduced dispersal/migration of fauna
		Loss of ecosystem services
	Compacted roads	Reduced plant seed dispersal
	Removal of vegetation	
5. Environmental pollution due to water runoff, spills from vehicles and erosion	Chemical (organic/inorganic) spills	Pollution in watercourses and the surrounding environment
	Erosion	Faunal mortality (direct and indirectly)

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
		Groundwater pollution
		Loss of ecosystem services
6.Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and light pollution.	Operation of machinery (Large earth moving machinery, vehicles)	Disruption/alteration of ecological life cycles due to noise
		Loss of ecosystem services
	Project activities that can cause disruption/alteration of ecological life cycles due to dust	Secondary impacts associated with disruption/alteration of ecological life cycles due to dust
	Vehicles	Loss of ecosystem services
7. Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	All unregulated/supervised activities outdoors	Loss of SCCs

Table 0.2: Scoping evaluation table summarising the impacts identified to biodiversity

Impact			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Loss of vegetation (& habitat) within development footprint	Direct impacts: » Disturbance / degradation / loss to vegetation » Destruction of protected plant species Indirect impacts: » Loss of ecosystem services » Introduction of alien species, especially plants » Displacement of faunal community due to habitat loss, direct mortalities, and disturbance	Regional	None identified at this stage
Description of expected significance of impact The following potential main impacts on the biodiversity were considered for the construction phase of the proposed development. This phase refers to the period during construction when the proposed features are constructed; and is considered to have the largest direct impact on biodiversity. The following potential impacts to terrestrial biodiversity were considered: » Destruction, further loss and fragmentation of the of habitats, ecosystems and vegetation community; » Introduction of alien species, especially plants; » Destruction of protected plant species; and » Displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching).			
Gaps in knowledge & recommendations for further study » This is completed at a desktop level only. » Identification, delineation and characterisation of vegetation communities. » Undertake a sensitivity assessment of systems where applicable. » Determine a suitable buffer width for the resources. **Recommendations with regards to general field surveys** » Field surveys to prioritise the development areas, but also consider the Area of Influence. » Beneficial to undertake fieldwork during the wet season period.			

6.4. Wetland Risk Assessment

The project area is not located within a 500 m regulated area. Based on this a Water Use Authorisation is not likely to be required for the project and no further assessment of impacts to wetland resources is recommended.

6.5. Impacts on Soils and Agricultural Potential

Potential impacts are expected to include:

- Erosion during the construction phase
- Loss of land capability
- Overland flow dynamics are expected to be affected during the operation phase, although only slightly, due to access and maintenance routes. Impacts on this phase are expected to be of low significance.

Table 6.3 provides an overview of the agricultural compliance statement provided by the specialist for the scoping phase for the Engie Graspan PV additional footprint. This statement will further inform the impact assessment during the EIA phase (Appendix G).

Table 0.3: Scoping evaluation table summarising the impacts identified to soil and agricultural potential

Impact			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Loss of land capability within development footprint	Direct impacts: » Erosion due to heavy trucks transporting PV structures Indirect impacts: » Water runoff » Low penetration of rainwater » Desertification » Loss of arable farming land for grazing	Regional	None identified at this stage
Description of expected significance of impact It is the specialist's opinion that the baseline findings do not concur with the land capabilities identified by means of the DAFF (2017) desktop findings in regard to land capability sensitivities. Even though the land capability, in theory, is similar to that portrayed by (DEA, 2021), the climatic conditions have been deemed to be extremely poor. These poor climatic conditions have resulted in a land potential level characterised by "Low" sensitivity throughout the project area. No "High" land capability sensitivities were identified within proximity to any of the proposed activities. Impacts during construction are expected to be of potential moderate significance. The main mitigation objective would be to limit the area to be impacted upon by means of not using concrete pylons but rather installing pylons directly into the soil surface. In the event that this recommendation be adhered to, lower impacts are foreseen which ultimately results in a post-mitigation significance rating of "Low". Impacts during operation are expected to be of low significance.			
Gaps in knowledge & recommendations for further study The following limitations were identified by the specialist and relevant to the agricultural compliance statement; » It has been assumed that the extent of the properties to be assessed together with the locations of the proposed components are correct and final; and			

- The handheld GPS used potentially could have inaccuracies up to 5 m. Any and all delineations therefore could be inaccurate within 5 m.

An agricultural compliance statement will be provided in the EIA phase of the process. This will include detail from the field assessment undertaken for the site as well as recommendations for mitigation measures to be included in the project EMPr.

6.6. Impacts on heritage resources (including archaeology and palaeontology)

Archaeology and Built Environment Heritage

The findings of the HIA were discussed in **Chapter 4** of this report. Graspan PV facility development area has also been thoroughly assessed by ACO Associates in their report dated May 2012. In this assessment, 4 sites of heritage significance were identified which were considered for the development of the additional footprint.

The ACO recommended that no development take place within 100m of the railway line to ensure the stone structure and historical material relating to the railway line (and possibly the South African War), are not destroyed. Based on the information provided regarding the proposed additional footprint, the boundaries of the additional footprint are located within 65m of the railway line. It is therefore recommended that the boundary be moved to respect the recommended 100m buffer around the railway line.

Palaeontology

Based on the information provided, the proposed expanded PV area is located in such a way that it will only impact areas that contain non-fossiliferous Jurassic dolerite. However, it must be noted that Quaternary deposits and rocks of the Tierberg Formation, Ecca Group may also be impacted. According to Botha-Brink (2012), "Quaternary fossils are usually found in gulleys (dry riverbeds) and the low-lying relief and absence of potentially fossiliferous gulleys suggests that fossils of this geological age are absent here. Fossils from the Ecca Group are exceedingly rare, and only a small portion of the development will encroach into rocks of this age. Thus, considering the rarity of fossil-bearing sediments and lack of appropriate exposure (i.e., steep-sided gulleys) at the proposed site, the impact on palaeontological material is negligible (rated Low or negative)."

Botha-Brink (2012) recommends that "The EO responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he/she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains; In the case of any significant fossils (e.g., vertebrate teeth, bones, burrows, petrified wood) being found during construction, they must be safeguarded and the relevant heritage management authority (SAHRA) be informed so that a professional palaeontologist should be consulted in order to facilitate the necessary rescue operations."

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Direct impact to archaeological sites, historical sites and burial sites	The construction phase could directly impact on surface and subsurface archaeological sites.	Local	Re-establishment of the boundary line to ensure a 100m buffer from the railway line
Damage or destruction of unmarked graves	Damage or destruction of unmarked graves during the construction of project infrastructure.	Local	None identified at this stage
Damage or destruction of fossil materials	Damage or destruction of fossil materials during the construction of project infrastructure to a maximum depth of those excavations.	Local	None identified at this stage
Description of expected significance of impact			

No highly significant impacts to archaeological or palaeontological materials/resources are expected as a result of the development. It is however possible that artefacts will be revealed during construction activities. Due to the generally low cultural significance of the archaeological materials, the intensity of impacts is not expected to be high, and the resulting significance would likely be low. No further assessment of impacts to heritage resources is recommended.

Gaps in knowledge & recommendations for further study

There is no objection to the proposed expansion for the Graspan PV Facilities on heritage grounds on condition that the recommendations outlined in the HIA (Appendix G), and repeated below, are followed, and as such, no further assessment of impacts to heritage resources is recommended.

It is unlikely that the proposed expansion will impact significant heritage resources on condition that:

- The Environmental Control Officer (ECO) responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he/she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains. If any fossils are found during construction, SAHRA should be notified immediately;
- No construction should be allowed on the kopje to the north and south of the proposed facility. This includes access roads, underground cabling or power lines;
- No development takes place within 100m of the railway line to ensure the stone structure and historical material relating to the railway line and possibly the South African War, are not destroyed;
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to SAHRA so that systematic and professional investigation/ excavation can be undertaken.

6.7. Evaluation of Potential Cumulative Impacts Associated with the project

Impacts of a cumulative nature place the direct and indirect impacts of the proposed project into a regional and national context, particularly in view of similar or resultant developments and activities in the region. Potential cumulative impacts associated with the Engie Graspan Solar Project were addressed during the EIA conducted in 2013. However, a significant amount of development in the renewable energy sector has occurred since this original EIA was undertaken and it is therefore considered prudent to include consideration of cumulative impacts regarding the proposed additional footprint. The cumulative impacts for the additional footprint are described below and will be assessed in detail as part of the EIA phase to be conducted for the project.

Impact

Cumulative impacts, in relation to an activity, refer to the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited to effects that can be evaluated meaningfully (DEAT, 2004). It is important to explore the potential for cumulative impacts as this will lead to a better understanding of these impacts and the potential for mitigation that may be required. The scale at which the cumulative impacts are assessed is important. For example, the significance of the cumulative impact on the regional or national economy will be influenced by solar PV facility developments throughout South Africa, while the significance of the cumulative impact on the visual amenity may only be influenced by solar PV facility developments that are in closer proximity to each other. For practical purposes a sub-regional scale of 30km is considered for the evaluation of cumulative impact of PV facilities.

The cumulative impacts associated with the additional footprint have been viewed from two perspectives within this Scoping Report:

- Cumulative impacts associated with the scale of the project; and
- Cumulative impacts associated with other relevant planned, approved, or existing solar developments within a 30km radius of the project site (multiple PV facilities in the proximity of the site).

The site for the proposed development (farm Graspan (No. 172) is located directly opposite one authorised PV facility and within 30km from one existing and several other authorised solar PV facilities. These projects include the following:

Project Name	Distance from the proposed site	Project Status
Carodex (Pty) Ltd, Northern Cape. Carodex Solar Park on Portion 1 of the Farm Klein Kareelaagte 168, Herbert RD: Process: Scoping and EIR (DEA reference number 4/12/16/3/3/2/748)	Located directly opposite the project site and additional footprint on Farm Klein Kareelaagte 168	Environmental Authorisation issued

Brakfontein Solar Power Plant (Pty) Ltd, Northern Cape. Process: Amendment (DEA 14/12/16/3/3/2/731/AM1)	6 km northeast	Environmental Authorisation issued
Solar Capital De Aar (Pty) Ltd, construction of the Ramphele 2 PV energy facility near Ritchie, Northern Cape Province. Process: Scoping & EIA (DEA reference number: 12/12/20/2051/2/AM2)	14 km north	Environmental Authorisation issued

These projects were identified using the Department of Environmental Affairs latest release of the South African Renewable Energy EIA Application Database (REEA_OR_2021_Q2, 31 August 2020)[11]. A map showing other relevant solar projects in the study area is shown in **Figure 6.1**.

The cumulative impacts that have the potential to be compounded through the development of the solar PV facility and its associated infrastructure in proximity to other similar developments include impacts such as those listed above. The role of the cumulative assessment is to test if such impacts are relevant to Engie Graspan Solar infrastructure within the additional footprint being considered for the development:

» Unacceptable loss of threatened or protected vegetation types, habitat, or species through clearing, resulting in an impact on the conservation status of such flora, fauna or ecological functioning;

The heritage scoping study included in **Appendix D** has concluded that no additional impacts are expected as a result of the additional footprint and therefore no further studies are recommended.

Summary of the nature, significance, consequence, extent, duration, and probability of the impacts

» The above-mentioned impacts are considered to be probable, although it is anticipated that the extent, duration, and magnitude of these impacts can be minimised to levels where this impact can be regarded as having low significance through the implementation of appropriate mitigation measures.
» The operational lifespan of the project and other PV facilities within the surrounding areas is expected to be long-term (i.e., a minimum of 20 years) and subsequently the impact is also expected to be long-term.
» The impact associated with the proposed development is expected to be local, affecting mainly the immediate environment and surrounding areas, as well as other renewable energy facilities within the vicinity.

Gaps in knowledge & recommendations for further study:

» Each specialist study will consider and assess the cumulative impacts of proposed, approved and authorised renewable projects in the area.
» Cumulative impacts will be fully assessed and considered in the EIA phase.

[11] Source: The DEA's Environment Geographic Information Systems (EGIS) website (https://egis.environment.gov.za/).

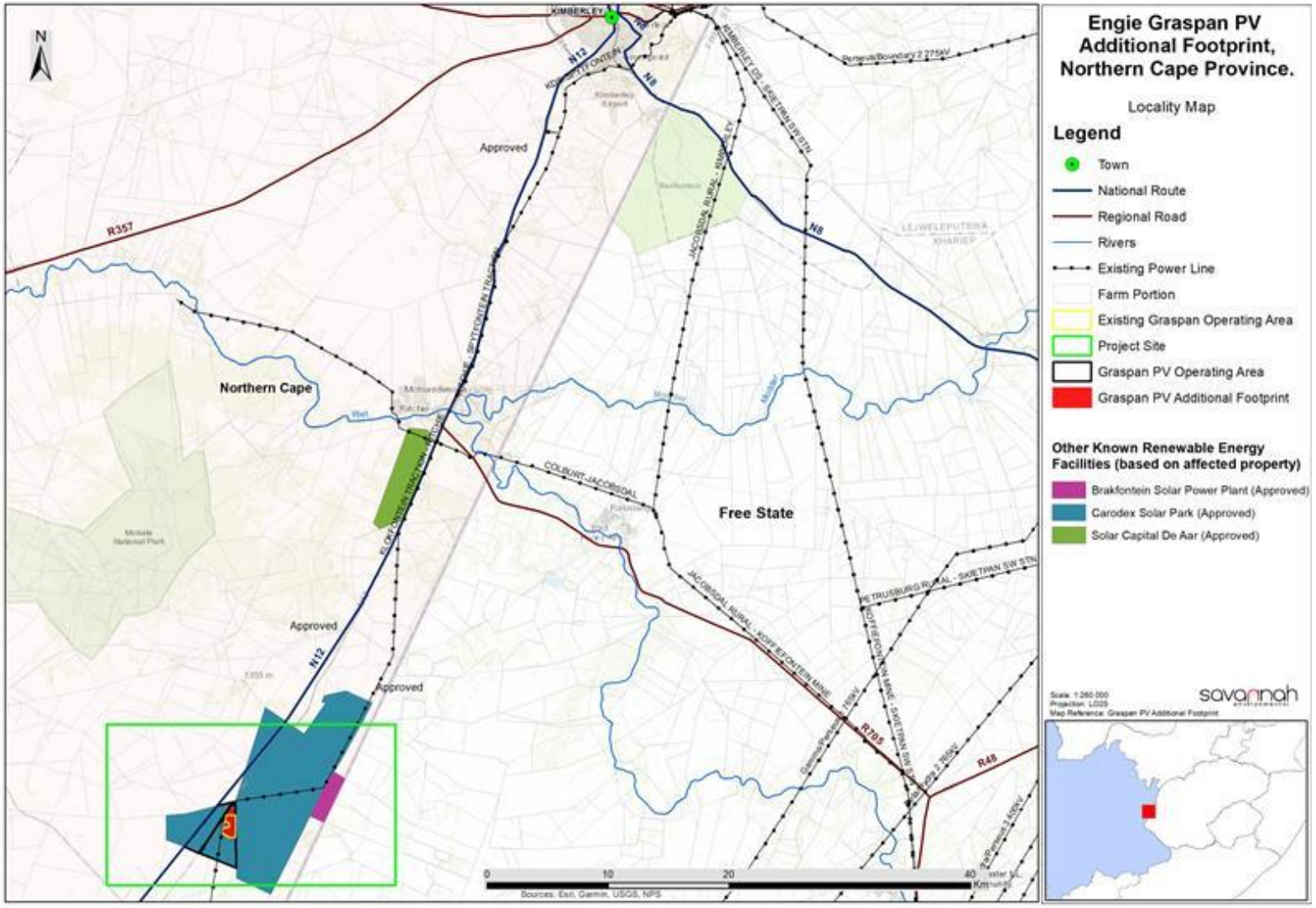

Figure 6.2: Cumulative map illustrating other approved and/or constructed PV facilities located within the vicinity of the additional footprint (**Appendix D**)

CHAPTER 7: CONCLUSION

This Scoping Report is aimed at detailing the nature and extent of the proposed development by identifying, and describing potential issues associated with developing solar infrastructure associated with the Engie Solar Graspan Solar PV Facility on the additional footprint. This is done by identifying potential environmental fatal flaws and/or areas of sensitivity and defining the extent of studies required to be undertaken as part of the detailed EIA phase. This Scoping Report has been compiled in terms of the 2014 EIA Regulations (GNR 326) published in terms of Section 24(5) of NEMA.

A summary of the conclusions of the evaluation of the potential impacts identified to be associated with the project is provided in **Section 7.2**. Recommendations regarding investigations required to be undertaken within the detailed EIA phase are provided within the Plan of Study for EIA (**Chapter 8**).

7.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(g)(xi) a concluding statement indicating the preferred alternatives, including the preferred location of the activity.	An overall conclusion and fatal flaw analysis regarding the additional footprint is included within **Section 7.4**.

7.2 Conclusions drawn from the Evaluation of the PV Facility Development

ENGIE Graspan Solar Project (Pty) Ltd received an Environmental Authorisation for the Graspan PV Facility and associated infrastructure located on remaining extent of Farm Graspan (No. 172) in the Siyancuma Local Municipality in the Northern Cape province in April 2013 (DFFE Reference No.: 14/12/16/3/3/276). The project has been selected as a Preferred Bidder project under Round 5 of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

A developmental footprint of 150 ha in extent is authorised for the facility and an output of 90MW of electricity generation however, in order to implement the project, an additional 50ha is required. This additional area is immediately adjacent to the authorised area and within Farm Graspan (No.172).

The need for the additional footprint for the construction of the solar PV facility is due to the advancements in technology and spatial needs for the optimised operation of the facility. The developer (Engie Graspan Solar (Pty) Ltd) proposes to install bifacial PV modules, which enable energy generation from both sides of the PV modules thus requiring additional space between PV module rows, compared to traditional monofacial PV modules, for reflected solar irradiation (solar energy) to reach the underside of the bifacial modules. This will improve the technical and economic feasibility of the project, ultimately reducing the cost of the electricity.

The Scoping study included the identification of potential impacts associated with the additional footprint through a desktop study, specialist inputs and consultation with affected parties and key stakeholders. A preliminary evaluation of the extent and significance of potential impacts associated with the development

on the additional footprint has been detailed in Chapter 6. Potentially significant impacts will be assessed in detail through the EIA Phase assessment, which will include independent specialist assessments.

The following paragraphs provide a summary of the most significant impacts outlined in Chapter 7 of this Scoping Report.

7.2.1. Potential Ecological impacts

The majority of potential impacts identified to be associated with the construction on the additional footprint are anticipated to be localised and restricted to the development footprint itself, while operation phase impacts/benefits range from local to regional.

The following potential impacts on the biodiversity were identified for the construction phase of the proposed development:

- Destruction, fragmentation and degradation of habitats and ecosystems;
- Spread and/or establishment of alien and/or invasive species;
- Direct mortality of fauna
- Reduced dispersal/migration of fauna;
- Environmental pollution due to water runoff, spills from vehicles and erosion;
- Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and light pollution; and
- Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals.
- Loss of vegetation (& habitat) within development footprint

A pan (or depression) was identified north of the project area, beyond the 500 m regulation area. No other wetlands were identified within the project area or within the 500 m regulation area. Due to the absence of wetlands, no further assessment was undertaken for the project (refer to **Figure 7.2**).

7.2.2. Potential Impact on Soils and Agricultural Potential

It is the specialist's opinion that the baseline findings do not concur with the land capabilities identified by means of the DAFF (2017) desktop findings in regard to land capability sensitivities. Even though the land capability, in theory, is similar to that portrayed by (DEA, 2021), the climatic conditions have been deemed to be extremely poor. These poor climatic conditions have resulted in a land potential level characterised by "Low" sensitivity throughout the project area. No "High" land capability sensitivities were identified within proximity to any of the proposed activities. Potential impacts identified include:

<u>Direct impacts:</u>

- Erosion due to heavy trucks transporting PV structures

<u>Indirect impacts:</u>

- Water runoff
- Low penetration of rainwater
- Loss of arable land for grazing

» Desertification

Considering the lack of sensitivity and the measures put in place in regard to stormwater management and erosion control, it is the specialist's opinion that all activities will have an acceptable impact on agricultural productivity. Furthermore, no measures in regard to moving components in their micro-setting were required to avoid or minimise fragmentation and disturbances of agricultural activities. Impact significance will be confirmed in the EIA phase and recommendations will be made regarding appropriate management measures to include within the EMPr for the project.

7.2.3. Potential Impacts on Heritage Resources

Potential impacts on heritage sites could occur during the construction phase, and could include:

» Damage or destruction of fossil materials
» Damage or destruction of unmarked graves
» Direct impact to archaeological sites, historical sites, and burial sites

Four (4) sites of heritage significance were identified which were considered for the development of the additional footprint. The ACO study completed as part of the EIA for the authorised area recommended that no development take place within 100m of the railway line to ensure the stone structure and historical material relating to the railway line (and possibly the South African War), are not destroyed. Based on the information provided regarding the proposed additional footprint, the boundaries of the additional footprint are located within 65m of the railway line. It is therefore recommended that the boundary be moved to respect the recommended 100m buffer around the railway line (refer to **Figure 7.2**).

The impact on palaeontological material is regarded as negligible (rated Low or negative) considering the rarity of fossil-bearing sediments and lack of appropriate exposure (i.e., steep-sided gulley's) on the additional footprint.

In conclusion, there is no objection to the proposed development for the Graspan PV Facilities on heritage grounds on condition that the recommendations outlined in the HIA are followed, and as such, no further assessment of impacts to heritage resources is recommended as part of the EIA phase.

7.3 Sensitivity Analysis for the Development Area

Potentially sensitive areas which have been identified through the environmental scoping study are illustrated in **Figure 7.2**. No areas of high sensitivity or no-go areas have been identified within the additional footprint area.

7.4 Overall Conclusion and Fatal Flaw Analysis

The findings of the desktop Scoping Study and specialist studies indicate that no environmental fatal flaws have been identified at this stage in the process to be associated with the development of the Engie Graspan PV facility on the additional footprint. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. No areas of high sensitivity have been identified.

However, the HIA reiterated the requirement for a buffer to be placed around the railway line to protect sensitive heritage features associated with this infrastructure.

During the EIA phase, more detailed environmental studies will be conducted in line with the Plan of Study for EIA contained in **Chapter 8** of this Scoping Report. These studies will consider the detailed layouts produced by the applicant and make recommendations for the implementation of avoidance strategies and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA phase on the basis of these specialist studies, in order to provide an assessment of environmental acceptability of the final design of the facility.

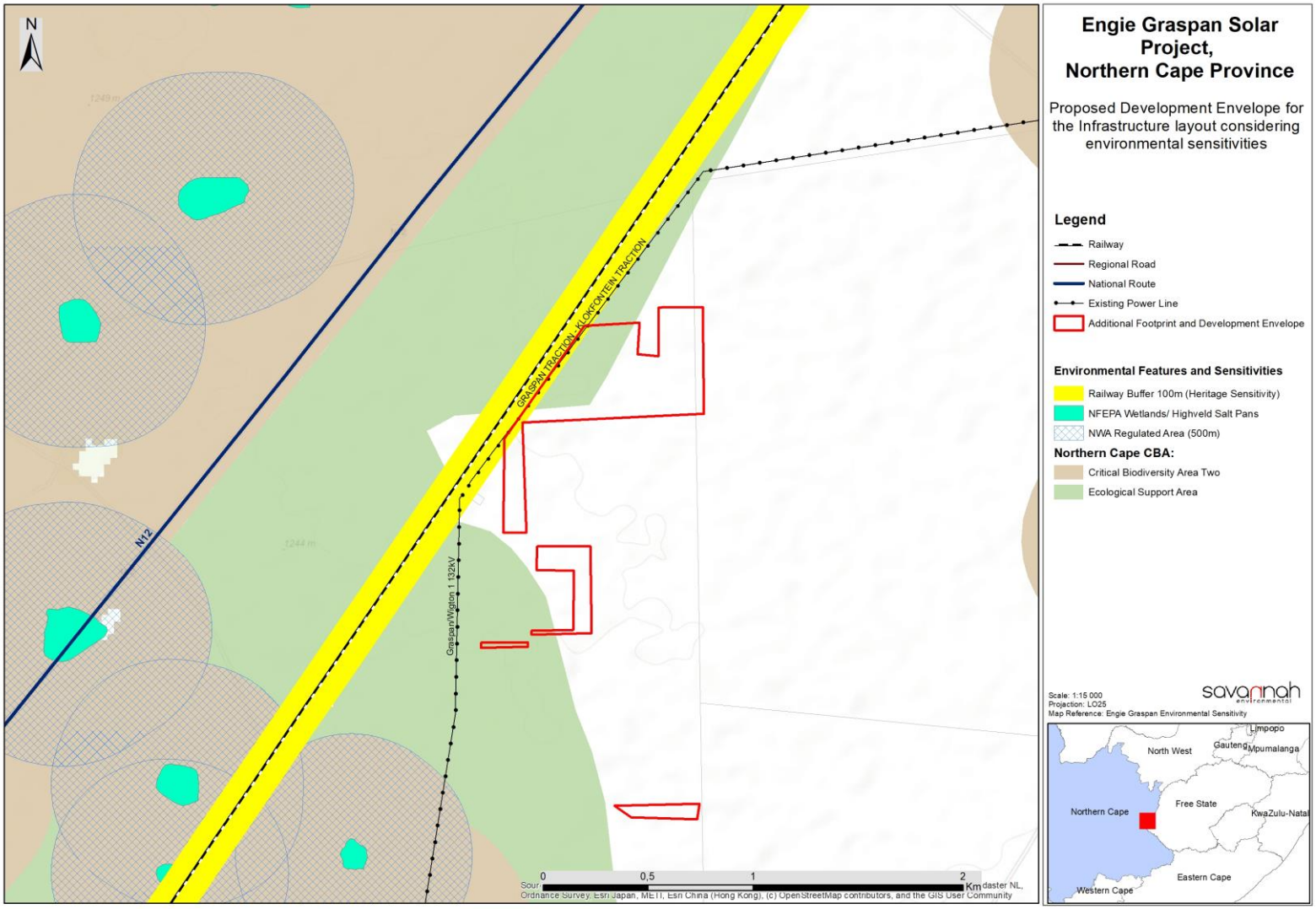

Figure 7.1: Environmental Sensitivity Map from the results of the scoping evaluation for the additional footprint for the Graspan Solar Project, indicating the recommended development envelope (area excludes any areas of significant biodiversity and do not contain any areas considered to be no-go areas)

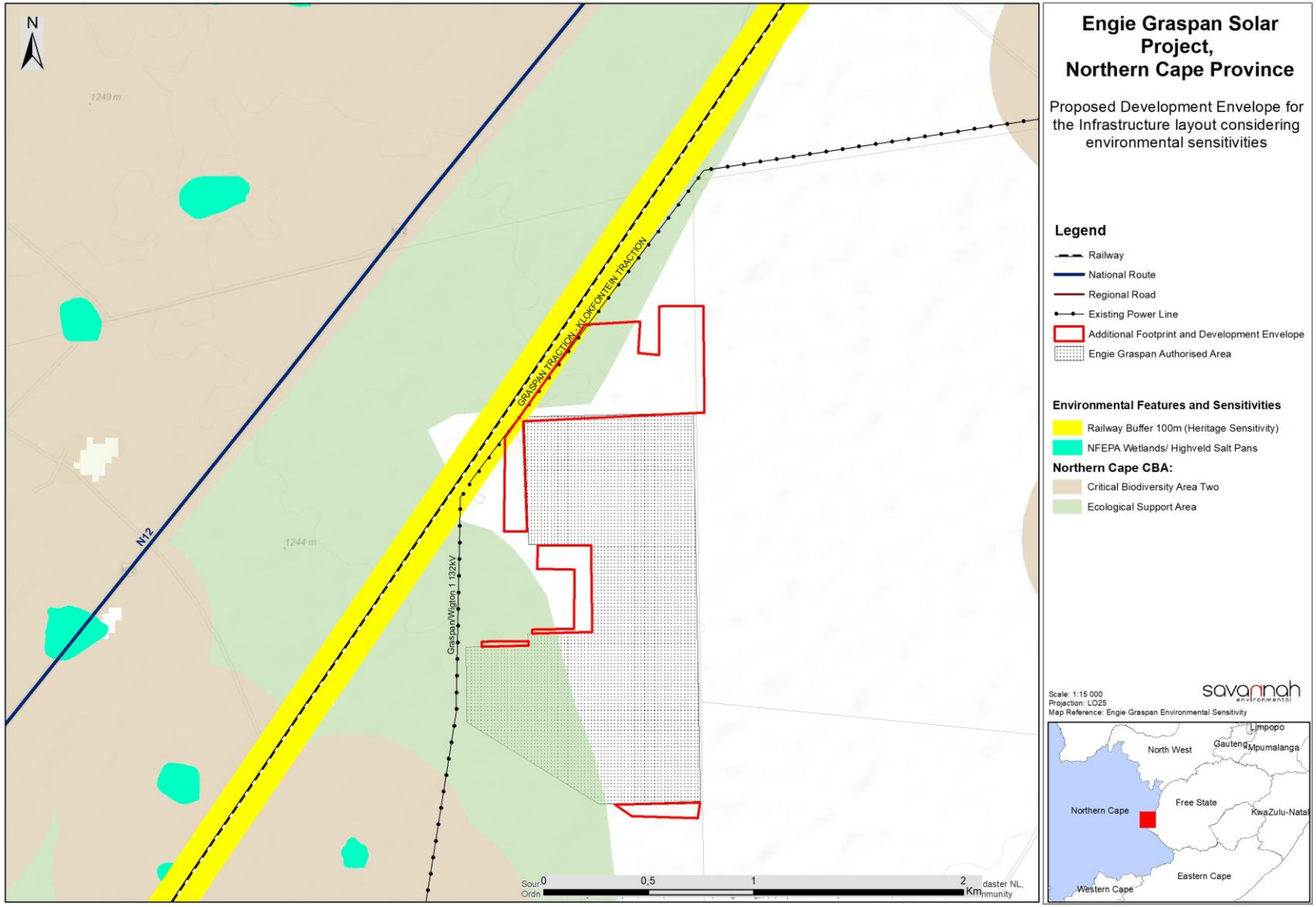

Figure 7.2: Development area to be assessed in detail as part of the EIA Phase and within which the project development footprint/layout will be designed

CHAPTER 8: PLAN OF STUDY FOR THE EIA

One of the key objectives of the Scoping phase is to determine the level of assessment to be undertaken within the EIA Phase of the process. This will include the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken. This is to determine the impacts and risks a particular activity will impose on a preferred site through the life of the activity (including the nature, significance, consequence, extent, duration, and probability of the impacts) and to inform the location of the development footprint within the preferred site.

This Chapter contains the Plan of Study for the additional footprint associated with the Engie Graspan PV facility which describes how the EIA Phase will proceed and includes details of the independent specialist studies required to be undertaken to assess the significance of those impacts identified within the Scoping Study to be of potential significance.

8.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including - (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance: (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	A plan of study for the undertaking of the EIA Phase for additional footprint associated with the Engie Graspan PV facility is included within this chapter.

8.2. Objectives of the EIA Phase

The EIA will assess the potential direct, indirect, and cumulative environmental impacts and benefits associated with the proposed project. The EIA will aim to provide the CA with sufficient information to make an informed decision regarding the proposed development. The site layout being proposed on the additional footprint will be assessed through detailed independent specialist studies. Furthermore, as required in terms of the 2014 EIA Regulations (GNR 326), the assessment will also include an assessment of the "do nothing" (i.e., no-go) alternative.

The EIA Phase will aim to achieve the following:

- Provide an overall assessment of the social and biophysical environment affected by the development on the additional footprint.
- Assess potentially significant impacts (direct, indirect, and cumulative, where required) associated with additional footprint.
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.
- Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded.

8.3. Authority Consultation

Consultation with the regulating authorities (i.e., DFFE and Northern Cape DAEARD&LR) will continue to be undertaken throughout the EIA process. On-going consultation will include the following:

- Submission of a Final Scoping Report following the 30-day public review period (and consideration of comments received).
- Submission of an EIA Report for review and comment.
- Submission of a Final EIA Report following a 30-day public review period (and consideration of comments received).
- Consultation and a site visit with the DFFE and Northern Cape DAEARD&LR (if required) in order to discuss the findings and conclusions of the EIA Report.

8.4. Consideration of Alternatives

The following project alternatives will be investigated in the EIA Phase:

- **Design and Layout Alternatives:** PV Array infrastructure for the Engie Graspan Solar PV facility is to be located within the best possible position within the authorised footprint of 150ha as well as within the additional footprint of 50ha (refer to Figure 8.1). The specialist recommendations from the scoping phase concluded that mitigation measures can be implemented to reduce the significance of the risk but there is still a possibility of impacts considering that the area that has been identified as being of significance for biodiversity maintenance and ecological processes (ESAs). The full 50ha extent of the additional area will be assessed in the EIA phase of the process.
- Owing to its proximity to the authorised area, the additional footprint has been identified by the applicant as a technically feasible site which has the potential for the development of a solar PV facility. No alternative sites for the additional footprint have been identified for consideration within this

EIA process. The environmental sensitivity identification process will inform the layout design for the solar facility, avoiding sensitive areas as far as possible, thereby ensuring that the layout plan taken forward for consideration during the EIA Phase is the most optimal from an environmental perspective.

» **The 'Do-Nothing' Alternative:** The 'do-nothing' alternative is the option of not constructing on the additional footprint. Should this alternative be selected, there would be no environmental impacts as a result of construction and operation activities associated with a solar PV facility. This alternative will be assessed within the EIA Phase of the process.

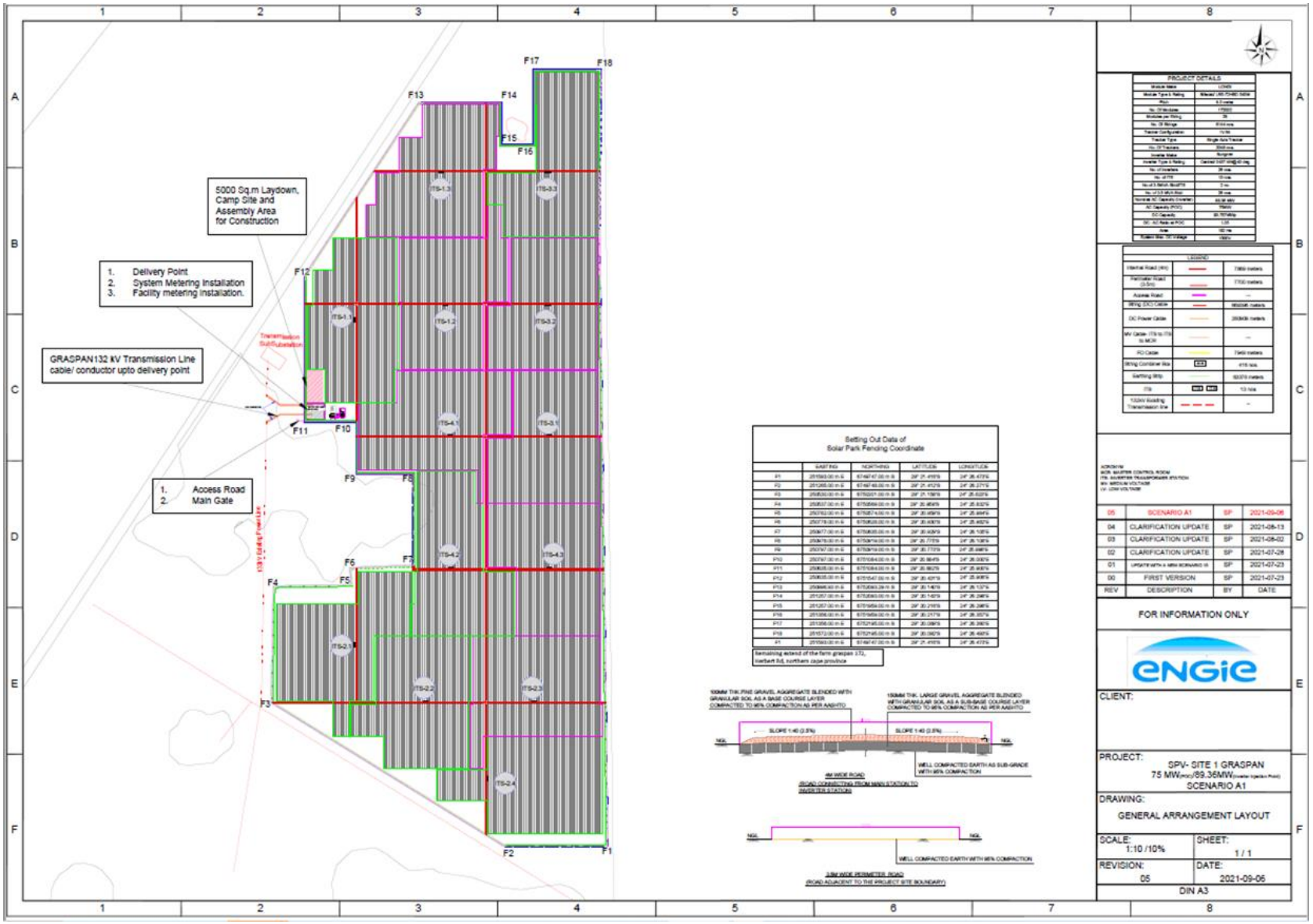

Figure 8.1: Provisional Layout provided by the client for the placement of infrastructure within the authorised area and the additional footprint to be assessed during the EIA phase

8.5. Specialist Assessments to be undertaken during the EIA Phase

A summary of those issues identified during Scoping which require further investigation during the EIA Phase, as well as the proposed activities to be undertaken in order to assess the significance of these potential impacts, is provided in **Table 8.1.** As part of the EIA Phase, these specialist studies will consider the development footprint proposed for the additional footprint and associated infrastructure (excluding the grid connection, which has been authorised under a separate process), as well as feasible and reasonable alternatives identified for the project.

It must be noted that the independent specialist studies will consider and comply (where relevant and applicable) with the requirements of the minimum criteria for reporting on identified environmental theses, as gazetted on 20 March 2020 (GNR 320).

As the additional footprint is located directly adjacent to the authorised footprint, it is not expected that there would be a change in the social and visual impacts assessed for the PV facility. Therefore, no specialist studies in this regard are included in the scope of the EIA phase assessment.

Based on the findings of the heritage screening study, impacts on heritage resources are expected to be of low significance. Therefore, no further assessment is recommended. Mitigation measures to limit impacts on heritage resources have been recommended and will be included in the project EMPr.

Table 8.1: Impacts requiring further investigation during the EIA Phase as defined in **Chapter 6**, and activities to be undertaken in order to assess the significance of these potential impacts relevant to the development of PV infrastructure on the additional footprint

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist conducting further assessments
Ecology (Flora, Fauna, and avifauna)	***Biodiversity Fieldwork and Sensitivity Analysis*** The biodiversity assessment will include the following: » Flora survey. The focus of the fieldwork is therefore to maximise coverage and navigate to each target site in the field, to perform a rapid vegetation and ecological assessment at each sample site. Emphasis will be placed on sensitive habitats, especially those overlapping with the proposed project area. » Faunal survey. The faunal field survey will comprise of the following techniques: * Visual and auditory searches - This typically comprised of meandering and using binoculars to view species from a distance without them being disturbed; and listening to species calls; * Active hand-searches - are used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.); and * Utilisation of local knowledge. » Determination of Terrestrial Site Ecological Importance. Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts). » Sensitivity mapping ***Assessment of Impacts for the EIA*** The methodology described above assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts associated with an activity. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral, or positive). The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures. ***Environmental Management Programme*** For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the project EMPr.	The Biodiversity Company

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist conducting further assessments
Soils, Land Use, Land Capability and Agricultural Potential	***Sensitivity Analysis and EIA assessment*** Due to the low agricultural potential and land capability present within the site a Soils Compliance Statement will be provided which confirms the current conditions of the site, identifies, and assesses the associated impacts and provides mitigation measures for the management of the identified impacts. ***Assessment of Impacts for the EIA*** The methodology described above assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive). The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures. ***Environmental Management Programme*** For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the project EMPr.	The Biodiversity Company

8.6. Assessment of Potential Impacts Associated with the Project

Direct, indirect, and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
  - Local extending only as far as the development site area – assigned a score of 1.
  - Limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2.
  - Will have an impact on the region – assigned a score of 3.
  - Will have an impact on a national scale – assigned a score of 4.
  - Will have an impact across international borders – assigned a score of 5.
- The **duration**, wherein it will be indicated whether:
  - The lifetime of the impact will be of a very short duration (0 – 1 years) – assigned a score of 1.
  - The lifetime of the impact will be of a short duration (2 – 5 years) - assigned a score of 2.
  - Medium-term (5 – 15 years) – assigned a score of 3.
  - Long term (> 15 years) - assigned a score of 4.
  - Permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0 – 10, where a score is assigned:
  - 0 is small and will have no effect on the environment.
  - 2 is minor and will not result in an impact on processes.
  - 4 is low and will cause a slight impact on processes.
  - 6 is moderate and will result in processes continuing but in a modified way.
  - 8 is high (processes are altered to the extent that they temporarily cease).
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
  - Assigned a score of 1 – 5, where 1 is very improbable (probably will not happen).
  - Assigned a score of 2 is improbable (some possibility, but low likelihood).
  - Assigned a score of 3 is probable (distinct possibility).
  - Assigned a score of 4 is highly probable (most likely).
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which will be described as either positive, negative or neutral.
- The degree to which the impact can be **reversed**.
- The degree to which the impact may cause **irreplaceable loss of resources**.
- The degree to which the impact can be **mitigated**.

The **significance** is determined by combining the criteria in the following formula:

S= (E+D+M) P; where

S = Significance weighting

E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

» < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area).
» 30 – 60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated).
» > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

The project applicant has the responsibility to avoid and / or minimise impacts as well as plan for their management (in terms of the 2014 EIA Regulations (GNR 326)), the mitigation of significant impacts will be discussed. Assessment of mitigated impacts will demonstrate the effectiveness of the proposed mitigation measures.

The results of the impact assessment studies, and other available information will be integrated by the Savannah Environmental project team. The EIA Report will be compiled in terms of the requirements of the 2014 EIA Regulations (GNR 326) and will include:

» The details and expertise of the **EAP** who prepared the report.
» The **location** of the activity and a locality map illustrating the location of the proposed activity.
» A **description** of the scope of the proposed activity including all listed activities triggered and a description of associated structures and infrastructure.
» The **policy and legislative** context within which the development is located and an explanation of how the development complies and responds to the legislation and policy context.
» The **need and desirability** of the proposed development of the activity in the context of the preferred location.
» A motivation for the **preferred development footprint** within the approved site.
» A description of the **process** followed to reach the proposed development footprint within the approved site, including:
  * Details of the development footprint considered.
  * Details of the public participation process undertaken in terms of Regulation 41 of the 2014 EIA Regulations, including copies of supporting documents.
  * A summary of issues raised by interested and affected parties and the manner in which the issues were incorporated.
  * The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.
  * The impacts and risks identified including the nature, significance, consequence extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated.
  * The methodology used for determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks.

- Positive and negative impacts that the activity and alternatives will have on the environment and the community.
- Possible mitigation measures to be applied and the level of residual risk.
- A motivation for not considering alternative development locations.
- A concluding statement indicating the preferred alternative development location.
- A full description of the process followed to identify, assess and rank impacts of the activity and associated infrastructure on the preferred location including all environmental issues and risks that have been identified and an assessment of the significance of each issue and risk and the extent to which the issue/risk can be avoided or mitigated.

» An **assessment** of the identified potentially significant impacts and risks.
» A summary of the **findings and recommendations** of any specialist report and an indication as to how these findings and recommendations have been included.
» An **environmental impact assessment** containing a summary of key findings, an environmental sensitivity map, and a summary of the positive and negative impacts and risks of the proposed activity.
» **Recommendations** from specialist, the recording of proposed impact management **objectives** and the impact management **outcomes** for inclusion in the **EMPr** as well as inclusion as conditions of authorisation.
» The final **alternatives** which respond to the impact management measures, avoidance and mitigation measures identified.
» Any aspects which were **conditional** to the findings of the assessment.
» A description of the assumptions, uncertainties and gaps in knowledge relating to the assessment and mitigation measures proposed.
» An **opinion** as to whether the proposed activity should or should not be authorised and the conditions thereof.
» An undertaking or **affirmation** by the EAP in relation to the correctness of the information, the inclusion of comments and inputs from stakeholders and interested and affected parties, the inclusion of inputs and recommendations from the specialists, and any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.

The EIA Report will be released to the public and relevant stakeholders, Organs of State and Authorities for a 30-day review period. Comments received from I&APs will be captured within a Comments and Response Report, which will be included within the Final EIA Report, for submission to DEA for decision-making.

8.7. Public Participation Process

A public participation process will be undertaken by Savannah Environmental during the EIA phase. The Public Participation will be undertaken in line with the approved Public Participation Plan as per the correspondence from DFFE (**Appendix B** and **Appendix C4**). Consultation with key stakeholders and I&APs will be on-going throughout the EIA Phase. Through this consultation process, stakeholders and I&APs will be encouraged to verify that their issues were recorded in the Scoping Phase, and to identify additional issues of concern or highlight positive aspects of the proposed project, and to comment on the findings of the EIA Phase. In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their inputs, various opportunities will be provided for stakeholders and I&APs to be involved in the EIA Phase of the process, as follows:

» Focus group meetings (where requested) via the use of virtual platforms (Zoom or MS Teams).

- One-on-one consultation meetings (for example with directly affected and surrounding landowners) via telephone or virtual platforms.
- Telephonic consultation sessions (consultation with various parties from the EIA project team, including the public participation consultant, lead EIA consultant, as well as specialist consultants).
- Written, faxed or e-mail correspondence.

The EIA Report will be made available for a 30-day review period prior to finalisation and submission to the DFFE for decision-making. All comments received during the public review period will be included within the final report to be submitted to the DFFE for review and decision-making.

8.8. Key Milestones of the Programme for the EIA

The envisaged key milestones of the programme for the EIA Phase are outlined in the following table:

Key Milestone Activities	Proposed timeframe[12]
Make Scoping Report available to the public, stakeholders, and authorities (30 days)	21 January 2022 – 23 February 2022
Finalisation of Scoping Report, and submission of the Final Scoping Report to DEA	March 2022
Authority acceptance of the Final Scoping Report and Plan of Study to undertake the EIA (44 days)	Within 44 days of receipt of the Final Scoping Report (expected mid-April 2022)
Make EIA Report and EMPr available to the public, stakeholders, and authorities (30 days)	end-April 2022
Finalisation of EIA Report, and submission of the Final EIA Report to DFFE	June 2022
Authority review period and decision-making (107 days)	Within 107 days of submission of the Final EIA Report to the DFFE[13]

[12] Indicative dates.

[13] Should the project be registered as a Strategic Infrastructure Project based on its Preferred Bidder status, the decision-making period would be reduced to 57 days.

CHAPTER 9: REFERENCES

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