FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

PROPOSED PAARDEVLEI SOLAR PV & BATTERY ENERGY STORAGE SYSTEM PROJECT

DEA&DP REF: 16/3/3/2/A3/54/2018/24

NOVEMBER 2024

Prepared by:

JG AFRIKA (Pty) Ltd.

With technical & financial assistance from:

Integration Environment Energy GmbH & GIZ/C40 CFF

Prepared For:

City of Cape Town

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TITLE: PAARDEVLEI SOLAR PV & BATTERY ENERGY STORAGE SYSTEM PROJECT		
JGA REF. NO. 5980	**DATE:** 29/11/2024	**REPORT STATUS** Final EIA Report for Decision

CARRIED OUT BY:	**COMMISSIONED BY:**
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SYNOPSIS

Application for Environmental Authorisation for the proposed Paardevlei Solar PV & Battery Energy Storage System (BESS) Project, Somerset West, Cape Town

KEY WORDS:

Scoping and Environmental Impact Assessment; Specialist Studies; NEMA; Legislative Requirements; Listed Activities; Water Use; Paardevlei Solar PV & BESS Project

QUALITY VERIFICATION

This report has been prepared under the controls established by a quality management system that meets the requirements of ISO 9001: 2015 which has been independently certified by DEKRA Certification.

Verification	Capacity	Name	Date
By Author:	Senior Environmental Scientist	Ryan Emslie Jonas [redacted]	29 November 2024
Checked by:	Senior Environmental Scientist	Sonja van der Merwe [redacted]	29 November 2024
Authorised by:	Executive Associate	Michael Manson-Kullin [redacted]	29 November 2024
Filename:	[redacted]		

	[redacted]

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REVIEW OF THE FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The Final Environmental Impact Assessment (EIA) Report will be submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for review and Decision.

In addition, this report will be placed on the JG Afrika (Pty) Ltd website https://www.jgafrika.com/public-participation/proposed-paardevlei-solar-pv-battery-energy-storage-system-project/ for registered I&APs to view.

This Final EIA Report was compiled by:

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ABBREVIATIONS

BRP	Bioregional Plan
CA	Competent Authority
CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs & Development Planning
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EI	Ecological Importance
EIA	Environmental Impact Assessment

EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ES	Ecological Sensitivity
ESA	Ecological Support Area
FSR	Final Scoping Report
GG	Government Gazette
GN	General Notice
GN R	Government Notice Regulation
Ha	Hectare
IAP	Interested and Affected Party
IDP	Integrated Development Plan
MSDF	Municipal Spatial Development Framework
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management Biodiversity Act (Act 10 of 2004)
NEMWA	National Environmental Management Waste Act (Act 59 of 2008)
NWA	National Water Act (Act 36 of 1998)
PA	Protected Area
PES	Present Ecological State
PPP	Public Participation Process
RA	Risk Assessment
SDF	Spatial Development Framework
SPLUMA	Spatial Planning and Land Use Management Act (Act 16 of 2013)
WUL	Water Use Licence
WULA	Water Use Licence Application

GLOSSARY OF TERMS

Alternatives **–** in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

(i) The property on which or location where it is proposed to undertake the activity.

(ii) The type of activity to be undertaken.

(iii) The design or layout of the activity.

(iv) The technology to be used in the activity; and

(v) The operational aspects of the activity.

Applicant **–** means a person who has applied for an environmental authorisation to the competent authority and has paid the prescribed fee.

Bioregional plan **–** means the bioregional plan contemplated in Chapter 3 of the National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004).

Competent Authority – in respect of a listed activity or specified activity, means the organ of state charged in terms of the NEMA with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity.

Development – means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

Development footprint – means any evidence of physical alteration because of the undertaking of any activity.

Ecosystem – means a dynamic system of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit.

Environment – The surroundings within which humans exist and that are made up of –

(i) The land, water, and atmosphere of the earth.

(ii) Micro-organisms, plant, and animal life.

(iii) Any part or combination of (i) and (ii) and the interrelationships between them; and

(iv) The physical, chemical. Aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Authorisation – the authorisation by a competent authority of a listed activity.

Environmental Assessment Practitioner – the person responsible for planning, management and co-ordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instrument introduced through regulations.

Environmental Impact – an environmental change caused by some human act.

Environmental Impact Assessment – means a systematic process of identifying, assessing, and reporting environmental impacts associated with an activity and includes Basic Assessment and Scoping and EIA.

Indigenous vegetation – 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.

Interested and Affected Party – includes any person, group of persons or organisation interested in or affected by an operation or activity, and any organ of state that may have jurisdiction over any aspect of the operation or activity.

Mitigation – means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

NEMA EIA Regulations – The EIA Regulations means the regulations made under the National Environmental Management Act (Act 107 of 1998) (Government Notice No. R 324, R 325, R 326 and R 326 in the Government Gazette of 7 April 2017 refer).

No go alternative – the option of not proceeding with the activity, implying a continuation of the current situation / status quo.

Plan of Study for EIA - means a study which forms part of a Scoping Report and sets out how an Environmental Impact Assessment will be conducted.

Public Participation Process – in relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application.

Registered IAP – in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application.

Scoping process – a procedure for determining the extent of and approach to an EIA, used to focus the EIA to ensure that only the significant issues and reasonable alternatives are examined in detail.

Sustainable Development – means the integration of social, economic, and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations.

Urban areas – means areas situated within the urban edge (as defined or adopted by the competent authority), or in instance where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.

Watercourse – means

(a) A river or spring.

(b) A natural channel in which water flows regularly or intermittently.

(c) A wetland, pan, lake or dam into which, or from which water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act 36 of 1998); and a reference to a watercourse includes, where relevant, its bed and banks.

Wetland – means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water,

and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

REQUIRED CONTENT OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT AS PER THE 2014 NEMA EIA REGULATIONS, AS AMENDED

Appendix 3 of Government Notice 326 of the National Environmental Management Act No. 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations (2014), as amended, states the requirement for the content of the Final Environmental Impact Assessment Report to be as follows.

Table 1: EIA Report requirements as per Appendix 3 of NEMA, EIA Regulations, 2014 (as amended)

Required Content for a Scoping Report	
Clause	Section in the Report
3(1) (a) Details of – i. The EAP who prepared the report; and ii. The expertise of the EAP, including a Curriculum Vitae	**Section 1.2**
3(1)(b) The Location of the activity, including – i. The 21-digit Surveyor General code for each cadastral land parcel; ii. Where available, the physical address and farm name; iii. Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties	**Section 2.1**
3(1) (c) A plan which locates the proposed activity or activities applied for at an appropriate scale.	**Section 4.1 & 4.2**
3 (1) (d) A description of the scope of the proposed activity, including – i. All listed and specified activities triggered; and ii. A description of the activities to be undertaken, including associated structures and infrastructure	**Section 5 and Section 2**
3 (1) (e) A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context	**Section 5 and Section 0**
3 (1) (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 development footprint within the approved site as contemplated in the accepted scoping report	**Section 3**

3 (1) (g) A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report	**Sections 3 and 4**
3 (1) (h) A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including – i. Details of the development footprint alternatives considered; ii. Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; 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; iv. The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; v. the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the 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. vi. The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; 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; viii. The possible mitigation measures that could be applied and level of residual risk; ix. if no alternative development footprints for the activity were investigated, the motivation for not considering such; and x. a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report.	**Sections 4, 8, 9, 11 and 12**
3 (1) (i) A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including-– i. A description of all environmental issues and risks that were identified during the environmental impact assessment process; and;	**Section 11**

ii. An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	
3 (1) (j) An assessment of each identified potentially significant impact and risk, including- i. cumulative impacts; ii. the nature, significance and consequences of the impact and risk; iii. the extent and duration of the impact and risk; iv. the probability of the impact and risk occurring; v. the degree to which the impact and risk can be reversed; vi. the degree to which the impact and risk may cause irreplaceable loss of resources; and vii. the degree to which the impact and risk can be mitigated.	**Section 11**
3 (1) (k) Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.	**Section 10**
3 (1) (l) An environmental impact statement which contains- i. A summary of the key findings of the environmental impact assessment; ii. A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and iii. A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	**Section 12**
3 (1) (m) Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.	**Section 14**
3 (1) (n) The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment.	**Section 4**

3 (1) (o) Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	**Section 14**
3 (1) (p) A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	**Section 11**
3 (1) (q) A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	**Section 13**
3 (1) (r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	**Section 14**
3 (1) (s) An undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) 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.	**Appendix C**
3 (1) (t) where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts	**N/A – Not proposed to decommission this solar development.**
3 (1) (u) an indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation	**N/A – No deviation from scoping report and plan of study.**
3 (1) (v) any specific information that may be required by the competent authority.	**N/A.**

3 (1) w) any other matter requires in terms of section 24(4) (a) and (b) of the Act.	**N/A.**

OBJECTIVE OF AN ENVIRONMENTAL IMPACT ASSESSMENT

The objective of the environmental impact assessment process is to, through a consultative process-

a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context.

b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location.

c) Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.

d) Determine the –

- Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform the identified preferred alternatives; and

e) Degree to which these impacts-

(a) Can be reversed.

(b) May cause irreplaceable loss of resources; and

(c) Can be avoided, managed or mitigated.

f) Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment.

g) Identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity.

h) Identify suitable measures to manage, avoid or mitigate identified impacts; and

i) Identify residual risks that need to be managed and monitored.

ASSUMPTIONS AND LIMITATIONS

Assumptions and limitations as addressed in this EIA report for the proposed Paardevlei Solar PV & BESS Project are as follows:

- All information provided by the Project Applicant to the Environmental Assessment Practitioner (EAP) was taken to be correct and valid at the time it was provided.
- The EAP does not accept any responsibility if additional information comes to light at a later stage of this process from the Project Applicant.
- The scope of work is limited to assessing the potential environmental impacts associated with the proposed Paardevlei Solar PV & BESS Project, as indicated in the completed Specialist Reports and Design Layouts.
- Descriptions of the natural and social environments are largely based the information within the completed specialist studies, complimented by available literature.

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EXECUTIVE SUMMARY

Project Background

The City of Cape Town is currently proposing the development of a Solar Photovoltaic (PV) Facility & Battery Energy Storage System (BESS) on City-owned vacant land within Somerset West, known as Paardevlei.

The preparation of the Paardevlei Solar PV Facility & BESS project falls under the framework of support where, C40 Cities Finance Facility (CFF)[1], engages primary and secondary cities worldwide to mobilise financial resources for transformative actions, which significantly reduce their Green House Gas emissions and build climate resilience.

For this technical assignment, the purpose is to conduct feasibility studies (technical, financial, economic and an Environmental Impact Assessment) for this solar PV project.

Project Motivation

The project will assist with the ongoing electricity crisis present in South Africa, and in Cape Town in particular. Load-shedding, due to lack of generation capacity, is a daily occurrence in South Africa and has a negative impact on households and businesses. This is the main factor contributing to the electricity crisis is supply not being able to meet demand which impacts the everyday life of South Africans. The occurrence has forced many businesses to function at reduced capacity, leading to a decline in productivity and impacting South Africa's economy.

Project Technology

Solar PV is one of the most cost competitive Renewable Energy technologies with reduced greenhouse gas emission benefits and will contribute to mitigate the South African electricity crisis, increasing the existing generation capacity whilst providing a clean renewable energy source for the city of Cape Town, and improving energy autonomy and security.

Environmental requirements

The establishment of such a development, in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations, 2014 (as amended), requires Environmental Authorisation (EA) from the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), subject to the undertaking of a Scoping and Environmental Impact Assessment (EIA) process.

1 https://c40cff.org/about

1 DETAILS OF THE APPLICANT & ENVIRONMENTAL ASSESSMENT PRACTITIONER

1.1 Details of the Project Applicant

The contact details for the Project Applicant are provided in **Table 3** below.

Table 2: Project Applicant Information

APPLICANT	City of Cape Town: Sustainable Energy Markets				
CONTACT PERSON	Leila Mahomed Weideman				
PHYSICAL ADDRESS	[redacted]				
POSTAL ADDRESS	[redacted]				
EMAIL	[redacted]	Fax	N/A	Tel	[redacted]

1.2 Details of the Environmental Assessment Practitioner

JG Afrika (Pty) Ltd. is an engineering and environmental consulting firm with a complement of some 200 staff, comprising of engineers, environmental scientists, specialist professionals and administrative staff, all working together with the common goal of providing the highest quality of consulting engineering and environmental services, for the benefit of the community and the environment.

The firm is headquartered in Johannesburg and has offices in most major South African cities, including Pretoria, Pietermaritzburg, Durban, Cape Town and Gqeberha (Port Elizabeth). JG Afrika (Pty) Ltd also has offices outside South Africa, in Mozambique, Lesotho and Botswana.

The company was founded in 1922, as Jeffares and Green (Pty) Ltd, and rebranded in 2016 to JG Afrika (Pty) Ltd, on the back of an internal restructuring process which saw JG Afrika (Pty) Ltd achieve 51 % black ownership and B-BBEE level 1. The JG Afrika Group holds a full (ISO 9001:2015) certification and was the first South African consulting practice to attain this certification for its full range of services, including construction administration.

JG Afrika (Pty) Ltd. has been appointed by Integration Environment & Energy GmbH, on behalf of the City of Cape Town, to apply for Environmental Authorisation (EA) for the proposed Paardevlei Solar PV & BESS Project within Somerset West, Cape Town. A Scoping and EIA process is required in accordance with the 2014 Environmental Impact Assessment (EIA) Regulations (as amended) promulgated under the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA).

Table 3: Details of the Environmental Assessment Practitioner

COMPANY / ENTITY NAME	JG Afrika (Pty) Ltd.
PHYSICAL ADDRESS	[redacted]
POSTAL ADDRESS	[redacted]
CONTACT NUMBER	[redacted]
ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	Ryan Emslie Jonas
EMAIL ADDRESS	[redacted]
QUALIFICATIONS	MSc (Environmental Science)
PROFESSSIONAL REGISTRATIONS AND AFFILIATIONS	• Pr.Sci.Nat (No. 400159/15). • EAPASA Registered (No. 2019/1674). • Member of IAIAsa.
EXPERTISE	Ryan has completed numerous environmental impact assessments for infrastructure-related developments, renewable energy and various mining and industrial sites. His project management experience includes client liaison, business development, project scheduling, professional services contract management, progress reporting, managing sub-consultants (specialists) and junior staff, invoicing and ensuring the quality of deliverables to a Client. Also proficient in tender, expression of interest and proposal writing for local as well as IFC / World Bank projects. Ryan has gained an excellent working knowledge of African (i.e. South Africa, Zambia, Kenya, Lesotho, Mauritius, Namibia) and International Finance Corporation / World Bank environmental legislative requirements for major infrastructure, renewable energy and mining developments.

1.3 Environmental Specialists Studies undertaken.

To quantify how and where a project may impact on the environment, site-specific specialist studies are required to inform the Scoping and EIA process which includes the provision of specialist findings and recommendations. The following specialist studies have been undertaken for the EIA process:

- Wetland Impact Assessment.
- Groundwater Impact Assessment.
- Visual Impact Assessment (including Glint & Glare assessment).
- Ecological (terrestrial Fauna & Flora) Impact Assessment.
- Avifaunal Impact Assessment.
- Social Impact Assessment.
- Heritage Impact Assessment.
- Land contamination (due to previous industrial activities) Impact Assessment.
- Climate Change Impact Assessment.

Please note that following the recent public consultation completed on the Draft EIA Report dated August 2024, the Project Applicant, City of Cape Town: Sustainable Energy Markets Department has decided to amend the previous Site Development Plan to exclude Area 2 (80 ha), as this Area 2 is reserved for the City of Cape Town: Human Settlements Department. The amended SDP, dated October 2024, is included in this Final EIA (and attached as **Appendix A3**) for the Department's review and Decision.

The above listed Specialists have provided signed verification letters (dated October 2024) confirming that the nature and level of their impacts assessed, and proposed mitigation measures listed in their previous respective specialist assessments for the proposed development Area 1 & Area 3 will remain unchanged and therefore still applicable to the amended Site Development Plan (dated October 2024). These letters are attached to the individual specialist studies under **Appendix B** of the Revised EIA Report.

1.4 Details of Specialists

Details of the specialist consultants that that have been appointed to undertake the specialist assessments and prepare the specialist reports are provided in **Table 4** below:

Table 4: Summary of appointed Environmental Specialists

Specialist Study / Assessment	Details of appointed Specialists

Wetland (& River) Impact Assessment	**Liz Day Consulting** Liz Day PhD & SACNASP [redacted]
Groundwater Impact Assessment	**JG Afrika (Pty) Ltd.** Regan Rose SACNASP [redacted]
Visual Impact Assessment	**Nuleaf Planning and Environmental (Pty) Ltd.** Tosca de Villiers PrLarch (SACLAP) & Reg. EAP (EAPASA) [redacted]
Ecological (terrestrial Fauna & Flora) Impact Assessment	**MORA Ecological Services (Pty) Ltd.** Mokgatla J. Molepo SACNASP, British Ecological Society, Member of Birds and Renewable Energy Specialist Group, [redacted]
Avifaunal Impact Assessment	**Biodiversity Africa** Amber Jackson SACNASP [redacted]
Socio-Economic Impact Assessment	**Tony Barbour Environmental Consulting** Tony Barbour MSc (Environmental Science) [redacted]
Glint and Glare Assessment	**Future Impact (Pty) Ltd.** Dr Brett Williams [redacted]
Heritage Impact Assessment	**REACH Archaeology Consulting (Pty) Ltd.** Mantshebi Matabane Bachelor of Art (Archaeology) [redacted]

	[redacted]
Land contamination Impact Assessment	**SRK Consulting (South Africa) (Pty) Ltd.** Richard O'Brien SACNASP [redacted]
Climate Change Impact Assessment	**Climate Scale** Parc Barcelona Activa [redacted]

2 ACTIVITY INFORMATION

2.1 Project site-specific details

The proposed Paardevlei Solar PV Facility & BESS project will be an approximately 54-69 MWac facility on City owned land portions, namely on proposed development Area 1 (38 ha) and Area 3 (34 ha) (with a total extent of **72 ha**) connected directly to the existing Paardevlei 132 kV substation located near to the site (refer to **Figure 1**) and owned by the City of Cape Town. Construction is planned to start in the 1st quarter of 2026. The proposed development may result in the removal of secondary indigenous vegetation.

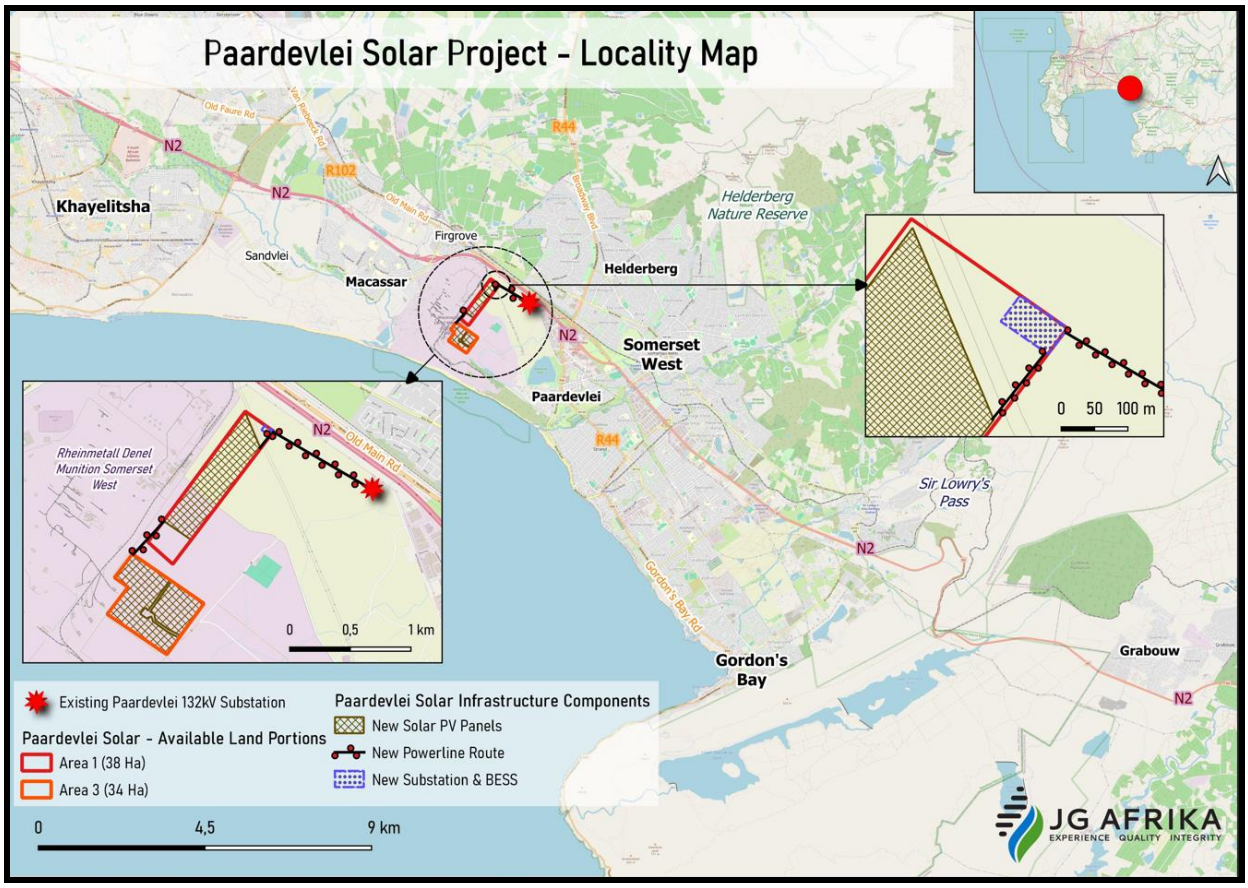


Figure 1: Locality map for Paardevlei Solar PV & BESS project (with amended SDP)

As per Figure 1 above:

- **The preferred land portions to be developed by the Project Applicant is Area 1 and Area 3.**

All of these land portions are owned by the City of Cape Town and are available for the proposed Solar PV & BESS project.

The new Site Development Plan (SDP) has been amended to only include Area 1 (38 ha) and Area 3 (34 ha) and is presented in **Figures 2-3.** This amended SDP is also attached as **Appendix A3** to this Revised EIA Report.

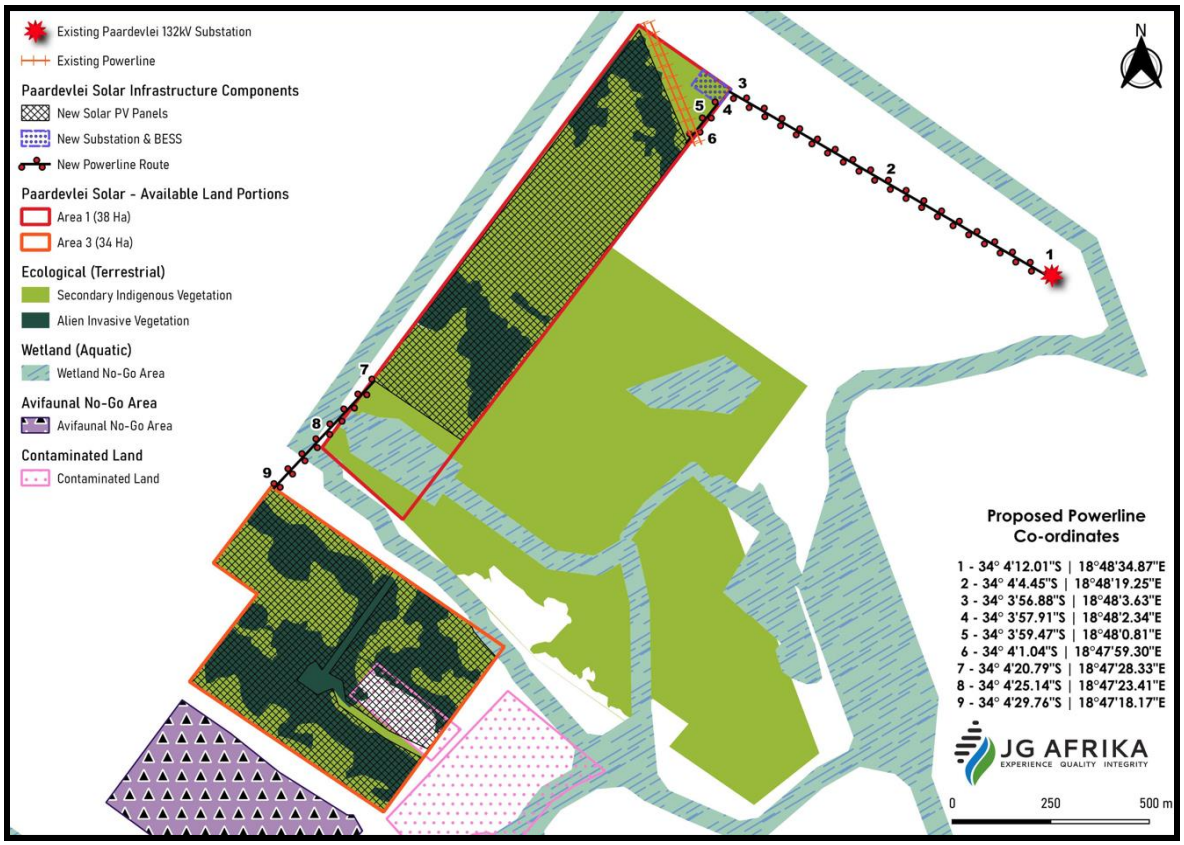


Figure 2: Amended Site Development Plan for the proposed Solar PV & BESS project (including new powerline co-ordinates)

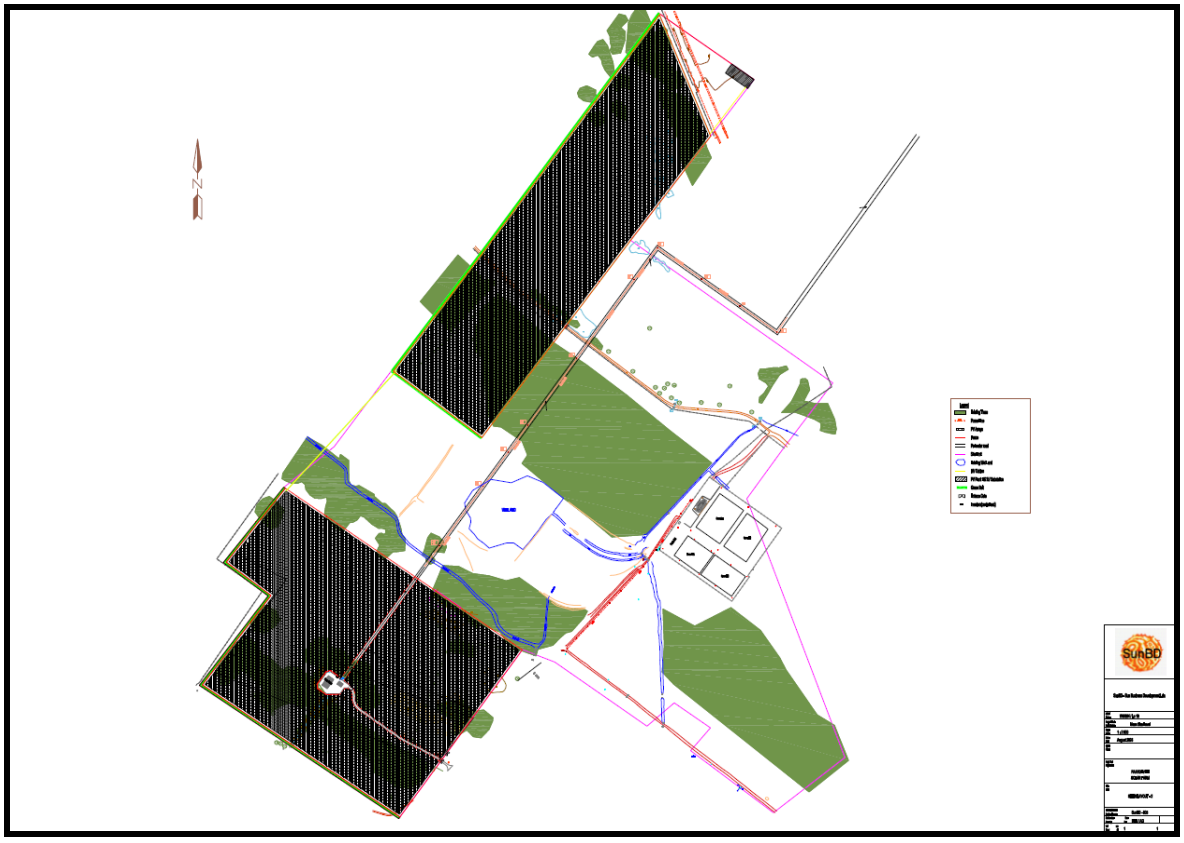


Figure 3: Amended Site Development Plan for the proposed Solar PV & BESS project

The **overall Environmental Sensitivity map** has also been updated to accommodate the amended SDP (dated October 2024) – refer to **Figure 4.**

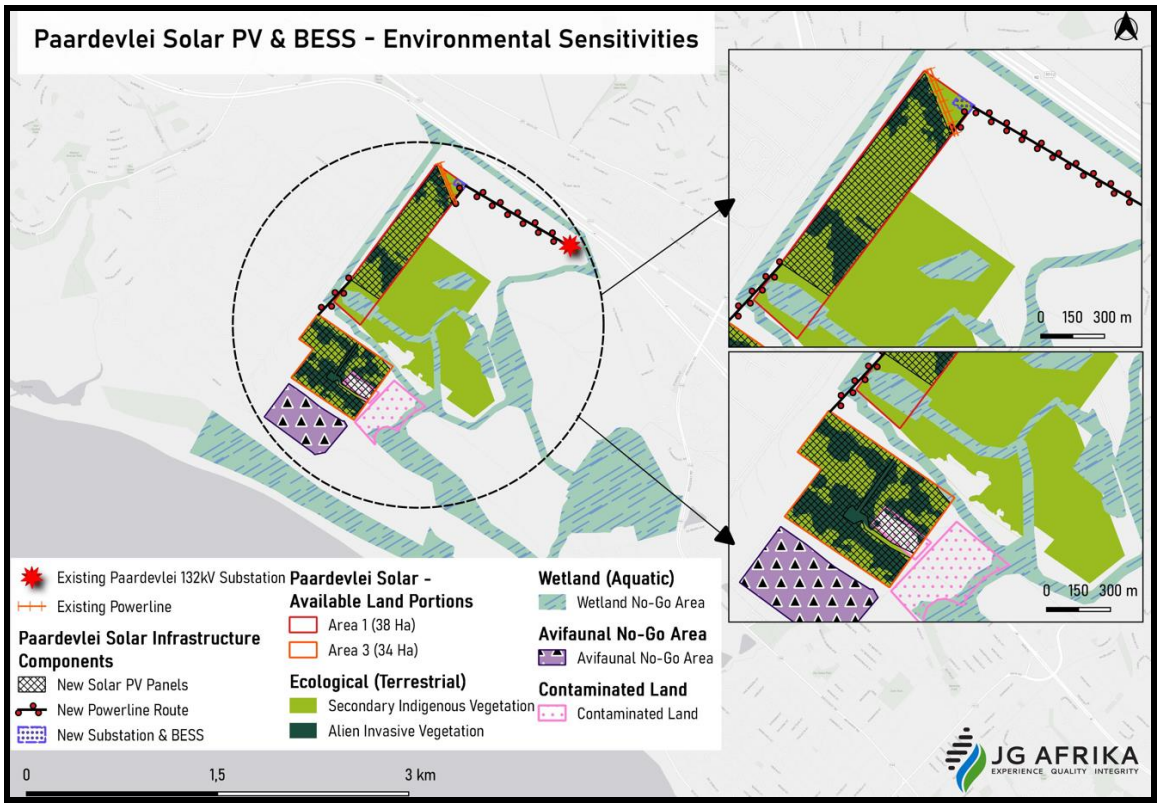


Figure 4: Consolidated Environmental Sensitivity map (with amended Site Development Plan)

The properties affected by the proposed solar PV site development plan are presented in **Table 5.**

Table 5: Affected properties description (in terms of amended Site Development Plan)

Surveyor General 21G code	Property Description	Registered Owner
C06700000000078700011	Portion 11 HELDERBERG SLEEPER PLANTATION 787	CITY OF CAPE TOWN
C06700000000078700010	Portion 10 HELDERBERG SLEEPER PLANTATION 787	CITY OF CAPE TOWN
C06700000000079200000	Portion 0 (REMAINING EXTENT) of FARM 792	CITY OF CAPE TOWN

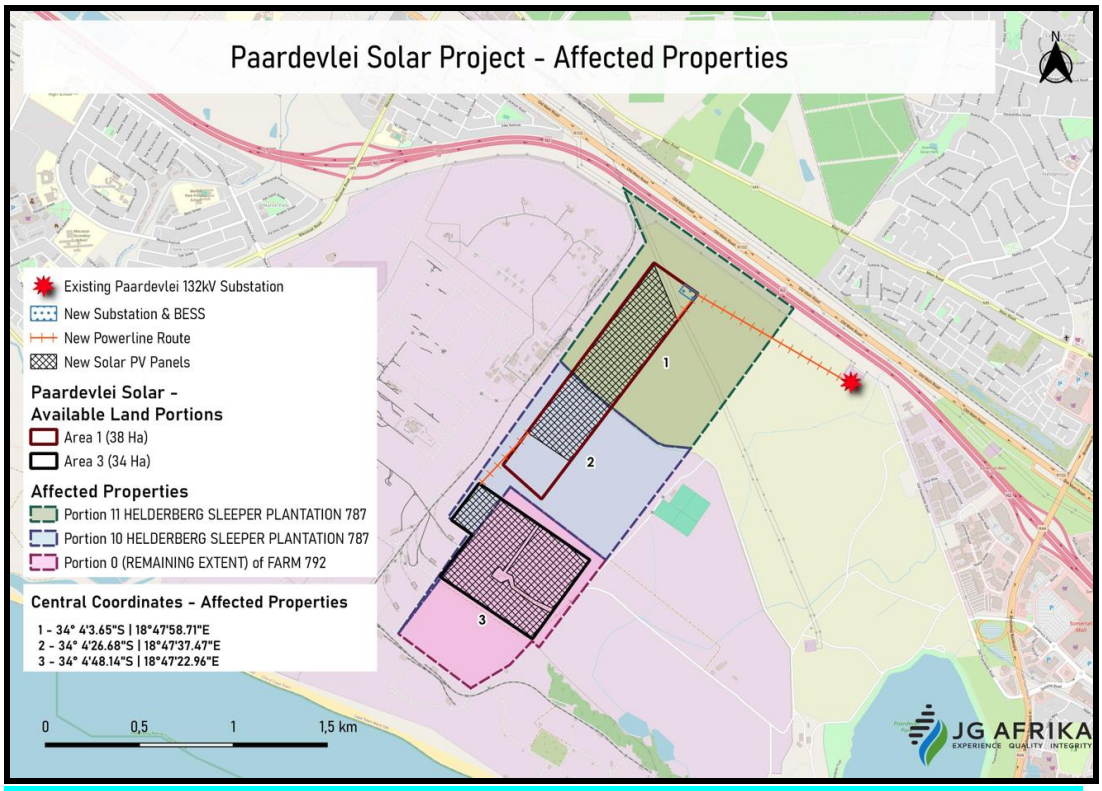


Figure 5: Affected properties map (in terms of the amended Site Development Plan)

The zonation of the proposed development Areas 1 & 3 is currently "**Risk Industry**" and presented in **Figure 6.**

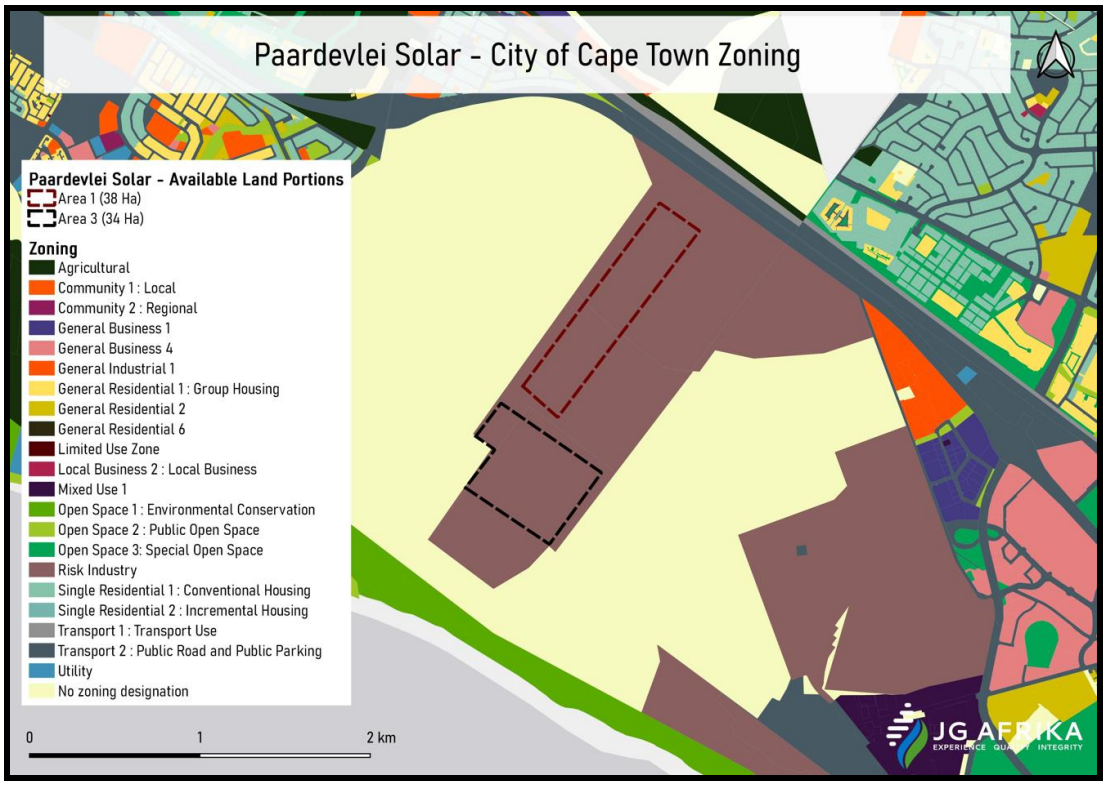


Figure 6: Current zoning (in terms of the amended Site Development Plan dated October 2024)

2.2 Site Photographs

This section presents photographs based on the site visit conducted in May 2023.

Figure 7: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 8: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 9: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 10: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 11: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 12: Photo of the proposed Paardevlei Solar PV & BESS site

Figure 13: Photo of the proposed Paardevlei Solar PV & BESS site

3 NEED AND DESIRABILITY

Load-shedding (due to lack of generation capacity) is a daily occurrence in South Africa and has a negative impact on households and businesses. This is the main factor contributing to the electricity crisis, with supply not being able to meet demand, impacting the everyday life of South Africans. The occurrence has forced many businesses to function at reduced capacity, leading to a decline in productivity and impacting South Africa's economy.

The Paardevlei solar project aims to fulfil the following objectives:

- Current loadshedding mitigation.
- Climate change mitigation.
- Increase the City of Cape Town's self-sufficiency and resilience regarding energy (electricity) supply.

Solar PV is considered as one of the most cost competitive Renewable Energy (RE) technology, with reduced greenhouse gas (GHG) emission benefits. Solar PV can also contribute in mitigating the South African electricity crisis, increase the existing generation capacity, whilst providing a clean renewable energy source for the City of Cape Town.

4 FEASIBLE AND REASONABLE ALTERNATIVES

"Alternatives", in relation to a proposed activity, includes the following —

(a) the property on which or location where it is proposed to undertake the activity.
(b) the type of activity to be undertaken.
(c) the design or layout of the activity.
(d) the technology to be used in the activity.
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Alternatives must include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes, etc.) or both is appropriate, needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if realistic alternatives have not been considered to a reasonable extent.

Please note that the assessment of alternatives should, where possible, be done in a way that feeds back into the planning or design of the activity, thereby optimising the positive aspects and minimizing the negative aspects that are highlighted during the scoping process. The scoping process should also be interactive where necessary to reflect the optimal formulation of alternatives. In instances where such an interactive and iterative process has been followed in the development of a preferred alternative, it may be appropriate to terminate the assessment of other alternatives, excluding the 'no-go' alternative. To justify the termination of the assessment, or limit the number of possible alternatives, or further assessment of any alternative, it is, however, important to document the interactions and iterations properly.

Please note that only reasonable and feasible alternatives have been considered during this assessment process.

4.1 Development Footprint

An alternative viable site location was not identified and evaluated for the Paardevlei solar & BESS project. The proposed location of the site was chosen due to the following:

- City of Cape Town owned land.

- Is currently vacant and undeveloped.
- A large enough section of land to build a suitable sized solar PV project.
- The section of available land is also located in close proximity to a suitable existing substation, for the proposed solar project to tie in / integrate into.

The Project Applicant, namely City of Cape Town (Sustainable Energy Markets) initially considered a larger Solar & BESS site development footprint consisting of 3 development areas, namely development Areas 1 & 2 and 3 (as presented in the figure below).

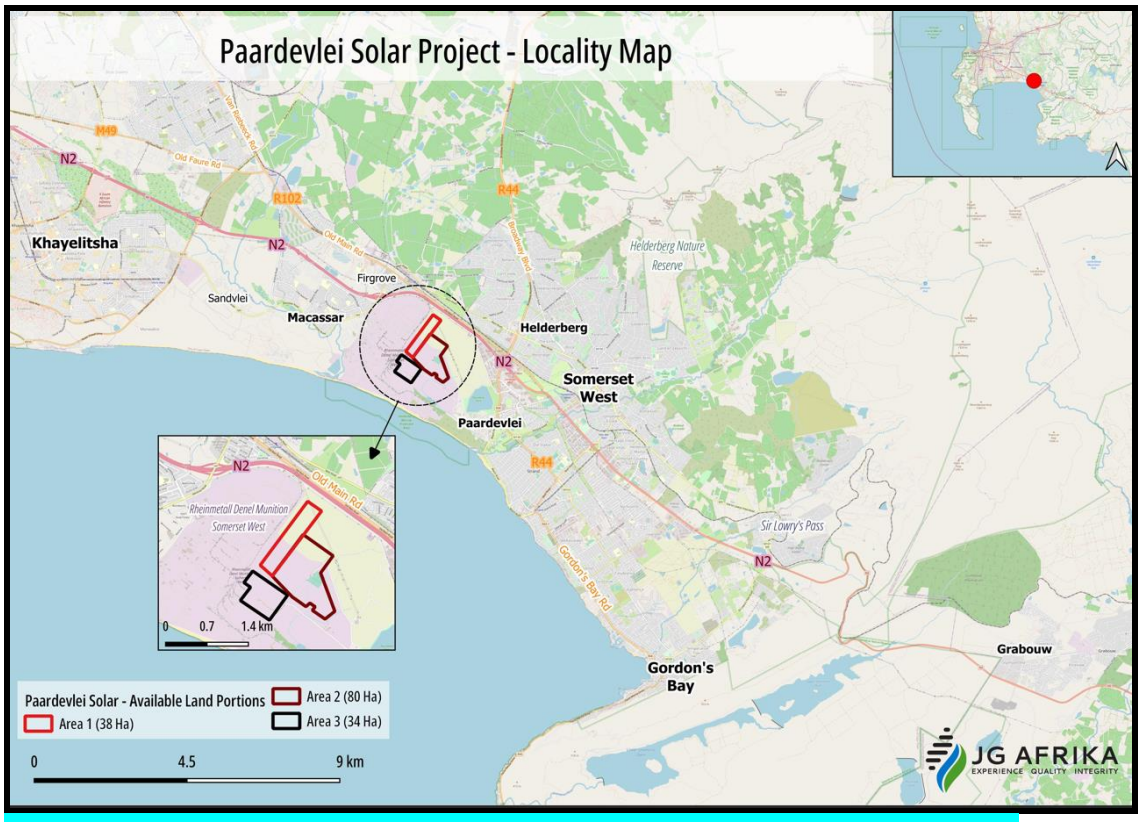


Figure 14: Original Paardevlei Solar & BESS project layout (dated August 2024)

After the recent public consultation process (conducted during August – September 2024), the City of Cape Town's Human Settlements & Urban Planning and Design Departments, indicated that they did not support the proposed Solar & BESS development within development Area 2 (80 ha) as this has been reserved for another development. The Project Applicant subsequently has decided to amend the proposed Site Development Plan to exclude Area 2 and only develop the Solar & BESS project within development Area 1 (38 ha) & Area 3 (34 ha) (see **Figure 15**).

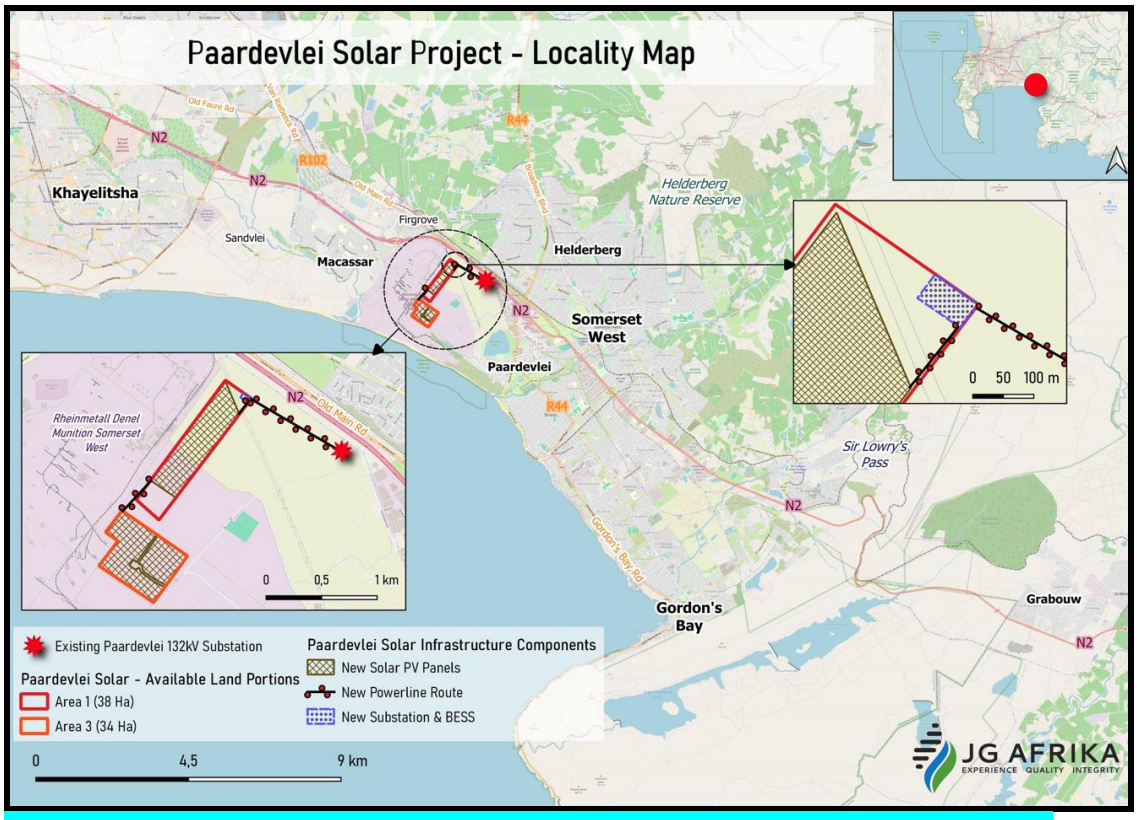


Figure 15: Amended Paardevlei Solar & BESS project layout (dated October 2024)

4.2 Design layout

PV Layout alternatives

The following examples of PV layout alternatives are proposed (based on the studied PV configurations):

1) **PV layout 1**: **Fixed tilt panels** (refer to **Figure 16**).

Fixed tilt layout:

- Ideal for maximizing solar exposure in a fixed position.
- Environmental restrictions considered to determine the optimal placement.

*Figure 16: Paardevlei Solar PV Facility & BESS project - PV Layout 1 (**Fixed tilt panels**)*

2) **PV layout 2: Single Axis tracker panels** (refer to **Figure 17**).
Single Axis tracker:

- Incorporates a dynamic tracking mechanism for increased efficiency.
- Balancing energy gains with environmental constraints.

*Figure 17: Paardevlei Solar PV Facility & BESS project - PV Layout 2 (**Single Axis tracker panels**)*

3) **PV layout 3: East West Sheds** (refer to **Figure 18**).
East West Sheds:

- Designed for enhanced energy capture during different times of the day.
- Aligning with environmental considerations while optimizing energy production.

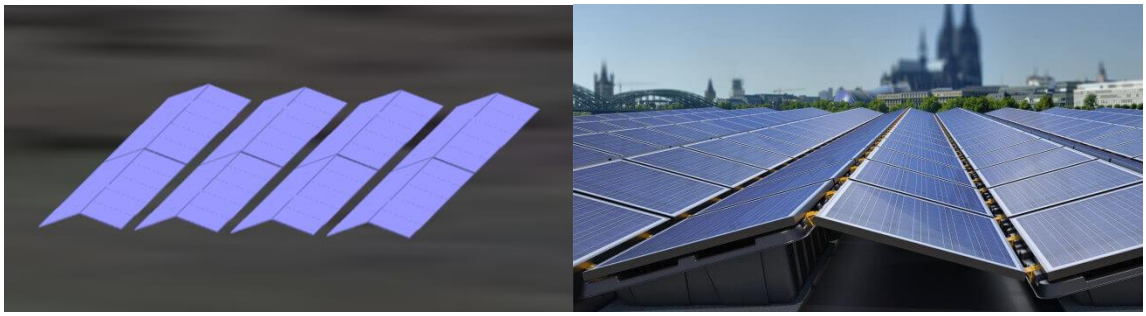


*Figure 18: Paardevlei Solar PV Facility & BESS project - PV Layout 3 (**East West Sheds panels**)*

The Project Applicant, namely City of Cape Town (Sustainable Energy Markets) has indicated that the type of PV Layouts (as mentioned in the section above) can only be determined and confirmed during the detailed design phase and not during the current (EIA) feasibility phase of the project.

Associated Infrastructure

The following additional infrastructure is proposed in support of the proposed Paardevlei Solar PV Facility & BESS project.

- **Access roads**: It is proposed to use existing roads to access the PV facility and to add internal roads to access the PV Arrays. However, the construction new or upgrade of existing roads may be required.

- **Underground cabling (between and from the PV modules)** to tie into inverters and then to switchgears and transformers as well as a connection with the proposed new PV plant substation & BESS.
- **Overhead powerline or underground cables** to connect from the new PV substation & BESS to the existing Paardevlei 132 kV substation.
- **Operational & Maintenance building** (to be located at the new PV substation & BESS location).
- **MV / HV transformers / Inverter stations**.

The location of above listed associated infrastructure can be viewed in **Figure 19** below.

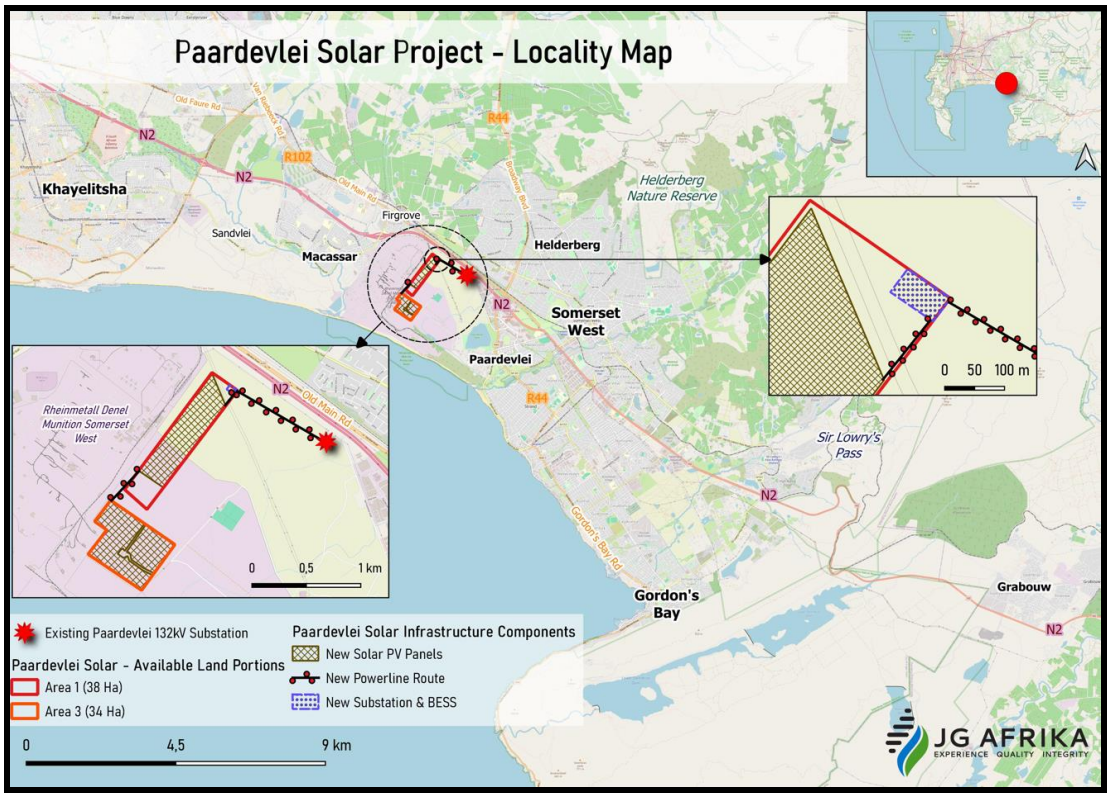


Figure 19: Paardevlei Solar PV Facility & BESS project (with Associated Infrastructure)

4.3 Technology

Various solar modules technologies and configurations are currently being assessed. The PV panels will be mounted on metallic structures, most likely rammed into the ground or with some cement-based foundations (fixed tilt or single axis tracker type) – refer to **Figure 20.**

Figure 20: Ground-mounted Solar PV facility

Battery Energy Storage System

The Battery Energy Storage System (BESS) will consist of a pre-assembled containerized solution in a temperature-controlled environment which is monitored and contains an automatic fire extinguishing mechanism-refer to **Figure 21**. The BESS will be certified according to the safety standards for electrical batteries.

Figure 21: Example of a BESS in storage containers

The Project Applicant has indicated that the batteries (BESS) will be first assembled off-site (pre-assembled) and then transported in a closed container to the Paardevlei site. This will significantly reduce the risk / impact of any hazardous substances leaking and leeching into the receiving environment on site.

The following battery technology alternatives for the proposed BESS have been assessed:

1. Lead-Acid Battery

This type of batteries are widely used since they are one of the most inexpensive solutions and have relatively low energy density, being also the 1st rechargeable batteries invented. They have relatively short-cycle lifespans (normally below 500 deep cycles). The VRLA or Valve regulated Lead Acid Batteries have the electrolyte immobilized and the battery is sealed under normal operating conditions. Under excessive overcharge, the normally sealed vents open under gas pressure.

Figure 22: Examples of a Lead-Acid Battery

Gel and AGM (Absorptive Glass Matting) types are the dominant configuration for PV applications.

Suitability for the Paardevlei Solar PV & BESS project

This BESS technology is not recommended for the project, since a large and heavy BESS area will be needed and there is limited area available on-site for this purpose.

2. Lithium-ion Battery

Li-ion batteries have a number of different chemistries. Common examples include lithium cobalt oxide (LiCoO2), lithium-nickel oxide (LiNiO2) and lithium-iron phosphate (LiFePO4).

Figure 23: Li-ion battery system scheme and example of a Tesla Li-ion BESS system in utility-scale solar PV plant

Although there are some performance and lifetime differences among these technologies, at a high level they provide excellent weight-to-energy and weight-to-power ratios and slow self-discharge loss when not in use. If overcharged or overheated, Li-ion batteries can rupture and, in some cases, explode. Both protective circuitry and fail-safe mechanical protections are typically included with a modern Li-ion system and have minimized these safety risks. Regardless, the ambient temperature where the battery will be used should be

considered when using Li-ion storage. Exposure to high temperatures can also shorten a Li-ion battery's expected lifetime. This is the reason why Li-ion batteries are supplied within temperature-controlled containers.

Suitability for the Paardevlei Solar PV farm

The Li-ion is suitable for the project, given its high level of weight-to-energy and weight-to-power ratio which allows to reduce transportation costs and install a large capacity in the project site without occupying a large area, with the system being stored in a pre-assembled containerized solution.

3. Hydrogen and flow batteries (fuel cells)

The hydrogen production unit from water electrolysis normally consists of modularized skids pre-assembled. The hydrogen production skid includes power transformation, rectification, water demineralization, electrolysis module and hydrogen purification. They are flexible units; it is possible to combine several modules in order to increase the production capacity of hydrogen. To use the energy stored in the hydrogen for electricity, the use of fuel cells is required.

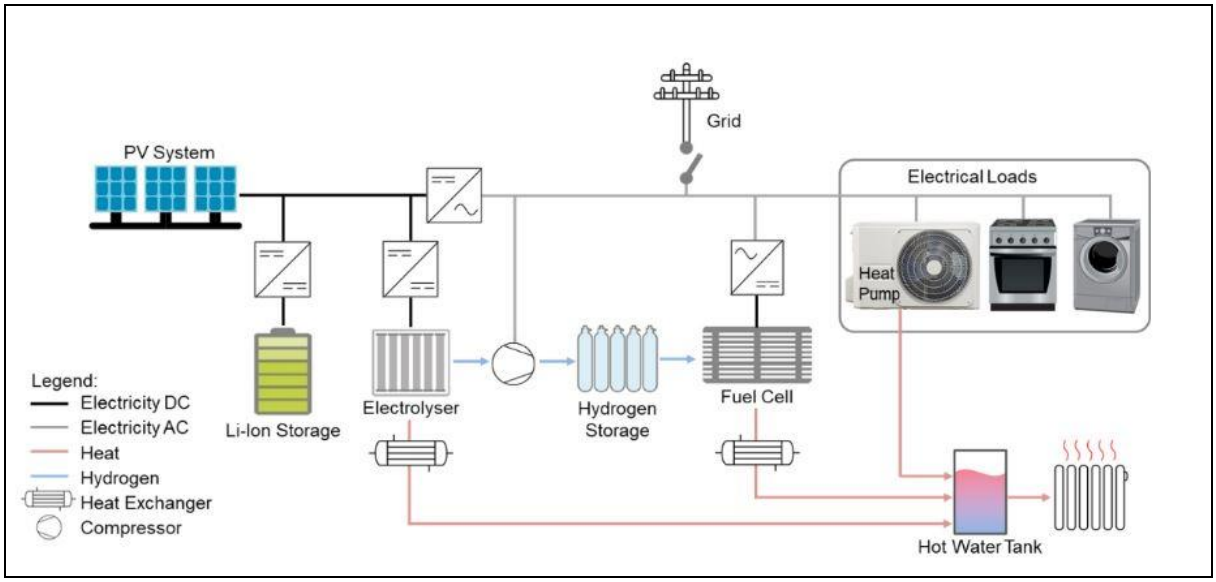


Figure 24: General scheme of hydrogen production / fuel cells coupled with a solar PV system

Flow batteries (fuel cells) - Made popular by hydrogen fuel cells, flow batteries decouple the electrolyte from the battery and allow the electrolyte to be supplied externally to sustain the charge and discharge of the battery from the anode to the cathode and vice-versa. The size of the electrolyte tanks dictates the energy capacity of the battery, and the rating is determined by the area available of the cell stack. Redox flow batteries (RFB), for example, refer to chemical reduction and oxidation reactions used to store energy in liquid electrolyte solutions which flow through a battery of electrochemical cells during charge and discharge. Vanadium redox (VRB) has become a popular electrolyte component as it is reliable for thousands of cycles. Zinc-bromine, another option is also available. Moderate cycle life

combined with relatively high energy density, deep discharges and negligible self-discharge are the main system characteristics. Flow batteries promise to be better than Li-ion for long storage applications, but so far, the market uptake has been low.

Suitability for the Paardevlei Solar PV farm

The size of the project is too small for the implementation of a H2 production plant along with fuel cell equipment. The high costs, restricted availability of space and the loss of efficiency during the several processes, namely the production of electricity from the solar PV which will be used to produce H2 through electrolysis which will then be storage to consequently be transmitted to a fuel cell to generate electricity, makes this technology an unviable storage solution for the solar PV plant in Paardevlei site.

4. Molten-Salt Battery

These types of batteries are also known as liquid metal batteries and use molten salt as an electrolyte, which allows for a high energy density and power density. It normally employs solid metal electrodes.

There are two main types:

i. Non-rechargeable thermal battery – these are the so-called thermal batteries and are normally used in CSP plants, Concentrated Solar Power and for military applications. They use an electrolyte that is solid, made of phase change material (PCM) and is inactive at ambient temperatures.
ii. Rechargeable liquid-metal battery – It uses sodium (Na) for the negative electrodes, since it has a high reduction potential, low weight and can be found in most parts of the globe.

It is normally in the liquid form for the construction of the BESS, having the following main configurations:

i. Sodium-sulphur, which uses liquid sulfur for the (+) side and a ceramic tube of beta alumina solid electrolyte (BASE).

ii. Sodium-nickel chloride (Zebra) battery, which is a lower temperature variant of molten-salt batteries.

iii. Liquid metal batteries where the electrode and the electrolyte layers are heated until they are melted and self-segregate, which makes them last longer, being more resilient to the degradation of charge-discharge cycle.

These are normally utilized in industrial power back-up, some EV´s and for grid energy storage.

Suitability for the Paardevlei Solar PV farm

This type of BESS technology is not suitable for the project given that thermal energy is stored in the battery, and thus for example steam generation and a steam turbine would be required to convert the thermal energy back to electricity. The high costs and added stages of this form of storage in relation to others has been deemed not feasible for the project, unless thermal energy can be utilized for a specific purpose.

In summary, the Project Applicant has indicated that the suitability of the above presented BESS technologies can only be determined during the project's detailed design phase.

4.4 Operational Aspects

The preferred and only operational aspect of the activity involves the ongoing maintenance of the Solar PV facility & BESS (and additional infrastructure).

No alternatives to the operation aspect of the proposed development have been considered.

4.5 'No-Go' Alternative

The no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The no-go alternative assumes that the proposed project will not go ahead i.e., the proposed development will not occur and therefore the site will remain as.

5 LISTED ACTIVITIES TRIGGERED BY THE PROPOSED DEVELOPMENT

5.1 Applicable Listed Activities (EIA Regulations in terms of NEMA, 1998)

The proposed Paardevlei Solar PV & BESS Project triggers listed activities in terms of the Environmental Impact Assessment (EIA) Regulations (2014) (as amended), Government Regulations (GNR) 324, 326 and 327 of 07 April 2017 in Government Gazette Number 38282 read in conjunction with GN R. 982 and 983 of 04 December 2014 promulgated under the National Environmental Management Act (NEMA) (Act no 107 of 1998). **Table 6** provides a summary of the Listed Activities in terms of the EIA Regulations 2014 (as amended) that are triggered by the proposed development.

Table 6: Summary of Listed Activities triggered by the proposed Paardevlei Solar PV & BESS Project.

ACTIVITY AND GOVERNMENT NOTICE NUMBER	ACTIVITY DESCRIPTION	DISCUSSION IN TERMS OF APPLICABILITY
Activity 12 **Listing Notice 1** of GNR. 983, 2014 as amended	The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;- excluding- (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line	**The installation of infrastructure associated with the proposed Solar PV & BESS development will exceed 100m².** **From the wetland specialist assessment, a number of wetlands are located within the project area, and that these resources may be impacted upon by the solar project development.**

	reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of the development and where indigenous vegetation will not be cleared. [Activity 12 amended by GN 517/2021]	
Activity 14 **Listing Notice 1** of GNR. 983, 2014 as amended	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	**The potential storage of dangerous goods (fuels, diesel, lubricants, oil) in on-site containers during the construction phase of the project.**
Activity 19 **Listing Notice 1** of GNR. 983, 2014 as amended	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to	**From the specialist assessment completed, a number of wetlands are located within the project area, and that these resources may be impacted upon by the proposed solar project development.**

	the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	
Activity 28 **Listing Notice 1** of GNR. 983, 2014 as amended	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: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	**The installation of infrastructure associated with the proposed Solar PV & BESS project site will exceed 1 hectare and will occur outside an urban area.**
Activity 56 **Listing Notice 1** of GNR. 983, 2014 as amended	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre- (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.	**This activity may be applicable to the Solar PV & BESS project for the upgrading of an existing road to the proposed Solar & BESS site.**
Activity 1 **Listing Notice 2** of GNR. 984, 2014 (as amended)	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs- (a) within an urban area; or	**The proposed Paardevlei Solar PV & BESS project will have an expected output of between 54-69 megawatts**.

	(b) on existing infrastructure.	
Activity 9 **Listing Notice 2 of GNR. 984, 2014 (as amended)**	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is- (a) temporarily required to allow for maintenance of existing infrastructure; (b) 2 kilometres or shorter in length; (c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development.	**New powerline routes are proposed for connecting the PV Panels and then "tieing" into the existing Paardevlei 132Kv Substation**
Activity 15 **Listing Notice 2** GNR. 984, 2014 (as amended)	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	**The site footprint area allocated to the proposed Solar PV & BESS project is approximately 72 ha and may entail the clearance of 20 hectares or more of indigenous vegetation.** **The Ecological Specialist has indicated that although the site has high alien infestation, there are still remaining patches of secondary indigenous vegetation that would constitute more than 20 hectares.**

Activity 4 **Listing Notice 3** GNR. 985, 2014 (as amended)	The development of a road wider than 4 metres with a reserve less than 13,5 metres. **i. Western Cape** i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.	**This activity may be applicable as the Solar PV & BESS project may require the establishment of a formal access road to the proposed Solar & BESS site.**
Activity 12 **Listing Notice 3** GNR. 985, 2014 (as amended)	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. **i. Western Cape** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004. ii. Within critical biodiversity areas identified in bioregional plans. iii. Within the littoral active zone or 100 metres inland from high water mark of the	**The installation of infrastructure associated with the proposed Solar PV & BESS project site will exceed 300 m² and may result in the clearance of secondary indigenous vegetation.**

	sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	

The above evaluation of the NEMA: EIA Regulations (2014, as amended) reveals that the proposed Paardevlei Solar PV & BESS project development triggers Listed Activities from Listing Notices 1, 2 and 3, thus requiring **Environmental Authorisation from the DEA&DP subject to a full Scoping and Environmental Impact Assessment (S&EIA) process.**

5.2 Section 21 Water Uses (National Water Act, 1998)

Section 21 of the National Water Act (Act No. 36 of 1998) (NWA) provides the list of water use activities that will require an authorisation or registration in accordance with the Act. The proposed development likely constitutes five water uses as defined in the National Water Act. These include Section 21 (a), (c), (e) (g) and (i). A description of these uses is provided in **Table 7** below.

Table 7: Summary of Section 21 water uses applicable to the proposed Paardevlei Solar Project & BESS Development

SECTION 21 WATER USE ACTIVITY	DESCRIPTION	DISCUSSION
21 (c)	Impeding or diverting the flow of water in a watercourse	Given that wetlands are located within the site footprint, the proposed development will require a water use authorisation in terms of Section 21 (c).
21 (i)	Altering the bed, banks, course, or characteristics of a watercourse	Given that wetlands are located within the site footprint, the proposed development

		will require a water use authorisation in terms of Section 21 (c).

An application (reference no: WU34264) has been lodged with the DWS by the Specialist Consultant, Doug Jeffery Environmental Consultants. Proof of this WULA application is attached as Appendix F to the Final EIA Report.

6 RELEVANT ENVIRONMENTAL LEGISLATION AND GUIDELINES TO BE CONSIDERED

6.1 Constitution of the Republic of South Africa (Act 108 of 1996)

Section 24 of the Constitution of South Africa provides the main national legislative obligation towards sustainable environmental management and development. This section forms the foundation of all other subsequent environmental legislation and governance in South Africa. Section 24 states the following:

"Every person shall have the right -

(a) to an environment that is not harmful to their health nor well-being; and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that -

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The following sections provide an overview of the environmental legislation, policies, plans and guidelines relevant to the proposed project, and which have been considered in the preparation of this Scoping Report.

6.2 National Documents

6.2.1 National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)

The NEMA is the principle/framework legislation governing EIA and subsequent EA processes under the authority of the Department of Environmental Affairs.

NEMA makes provision for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment; institutions that will

promote co-operative governance; procedures for co-ordinating environmental functions exercised by Organs of State and to provide for matters connected therewith.

Section 2 of the Act establishes a set of principles which apply to the activities of all Organs of State that may significantly affect the environment. These include the following:

- Development must be sustainable.
- Pollution must be avoided or minimised and remedied.
- Waste must be avoided or minimised, reused or recycled.
- Negative impacts must be minimised, and positive impacts enhanced; and
- Responsibility for the environmental health and safety consequences of a policy, project, product, or service exists throughout its entire life cycle.

These principles are taken into consideration when a Governmental Department needs to exercise its powers for example, during the processes of granting permits or Environmental Authorisations or the enforcement of existing legislation or conditions of approval.

Section 23 of NEMA furthermore provides for general objectives of Integrated Environmental Management (IEM). In alignment with these objectives, the potential impacts of proposed development activities on the biophysical and socio-economic environments are identified and evaluated. These potential environmental impacts have been assessed during the Scoping Report phase and mitigation measures are provided where relevant.

The subsequent Environmental Impact Assessment Regulations, 2014 (as amended) (published in Government Notices R 327, R 325, and R 324 of 7 April 2017), which are also referred to as Listing Notices 1, 2 and 3 respectively, list development activities which will trigger the necessity to conduct either a Basic Assessment or a full Scoping and EIA process prior to EA being obtained for a proposed project. Listing notices 1 and 3 activities require only a Basic Assessment to be conducted while Listing Notice 2 activities trigger the requirement for a full Scoping and EIA process to be conducted.

Considering the nature and scale of the development activities triggered by this proposed project, it was required that a full Scoping and EIA process be conducted to provide sufficient information to the Competent authority for them to make an informed decision regarding the approval or rejection of the EA applied for.

Only once the EA is granted and the required supporting permits have been issued, may the Applicant lawfully commence with the proposed project. The Scoping and EIA process is therefore a critical component in the feasibility and planning stage of any proposed project.

6.2.2 National Energy Act

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and it's sources. In this regard, the preamble makes direct reference to renewable resources, including solar and wind:

"*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, taking into account environmental management requirements and to provide for increased generation and consumption of renewable energies*".

6.2.3 White Paper on Energy Policy of the Republic of South Africa

Investment in renewable energy initiatives, such as the proposed solar project, is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard, the document notes:

"*Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential*".

"*Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future*".

The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly *solar* and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account. Government policy on renewable energy is aimed at meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.
- Addressing constraints on the development of the renewable industry.

6.2.4 White Paper on Renewable Energy

The White Paper on Renewable Energy (November 2003) (further referred to as the White Paper) supplements the *White Paper on Energy Policy*, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out

Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes that while South Africa is well endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol[2], Government is determined to make good the country's commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord, South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply. Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels.

6.2.5 Integrated Resource Plan (2023)

South Africa's National Development Plan (NDP) 2030 offers a long-term plan for the country. It defines a desired destination where inequality and unemployment are reduced, and poverty is eliminated so that all South Africans can attain a decent standard of living. Electricity is one of the core elements of a decent standard of living. In formulating it's vision for the energy sector, the NDP took as a point of departure the 2023 Integrated Resource Plan (IRP) promulgated on 4 January 2024. The IRP is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into

[2] The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (Wikipedia).

account security of supply and the environment (minimize negative emissions and water usage).

The IRP notes that South Africa is a signatory to the Paris Agreement on Climate Change and has ratified the agreement. The energy sector contributes close to 80% towards the country's total Green House Gas (GHG) emissions of which 50% are from electricity generation and liquid fuel production alone. A transmission from a fossil fuel-based energy sources is therefore critical to reducing GHG emissions. In September 2021 South Africa released its latest emission targets, indicating that it intended to limit Green House Gas (GHG) emissions to 398-510 MrCo2e by 2025, and 350-420 MrCo2e by 2030. These emissions are significantly lower than 2016 emission targets and will see South Africa's emissions decline in absolute terms from 2025, a decade earlier than planned (World Resource Institute, 2021). The IRP notes that 39 730 MW of new generation capacity must be developed. Of the 39 730 MW determined, about 18 000 MW has been committed to date. This new capacity is made up of 6 422 MW under the REIPPP with a total of 3 876 MW operational on the grid. Under the Eskom build programme, the following capacity has been commissioned: 1 332MW of Ingula pumped storage, 4800MW of Medupi, 4800MW of Kusile and 100MW of Sere Wind Farm. In addition, IPPs have commissioned 1 005MW from two Open Cycle Gas Turbine (OCGT) peaking plants. 1 005 MW from OCGT for peaking has also been commissioned. In terms of IRP provision has been made for the following new additional 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 for storage.
- 3 000MW of gas/diesel.
- 4 000MW from other distributed generation, co-generation, biomass and landfill technologies.

Figure 25 provides a summary of the allocations and commitments between the various energy sectors.

	Coal	Coal (Decommis-sioning)	Nuclear	Hydro	Storage	PV	Wind	CSP	Gas & Diesel	Other (Distributed Generation, CoGen, Biomass, Landfill)
Current Base	37,149		1 860	2,100	2 912	1 474	1 980	300	3 830	499
2019	2,155	-2,373					244	300		Allocation to the extent of the short term capacity and energy gap.
2020	1,433	-557				114	300			
2021	1,433	-1403				300	818			
2022	711	-844			513	400 1,000	1,600			
2023	750	-555				1000	1,600			500
2024			1,860				1,600		1000	500
2025						1000	1,600			500
2026		-1,219					1,600			500
2027	750	-847					1,600		2000	500
2028		-475				1000	1,600			500
2029		-1,694			1575	1000	1,600			500
2030		-1,050		2,500		1000	1,600			500
TOTAL INSTALLED CAPACITY by 2030 (MW)	33,364		1,860	4,600	5,000	8,288	17,742	600	6,380	
% Total Installed Capacity (% of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1	
% Annual Energy Contribution (% of MWh)	58.8		4.5	8.4	1.2*	6.3	17.8	0.6	1.3	

Installed Capacity
Committed/Already Contracted Capacity
Capacity Decommissioned
New Additional Capacity
Extension of Koeberg Plant Design Life
Includes Distributed Generation Capacity for own use

- 2030 Coal Installed Capacity is less capacity decommissioned between years 2020 and 2030.
- Koeberg power station rated/installed capacity will revert to 1,926MW (original design capacity) following design life extension work.
- Other/ Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility.
- Short term capacity gap is estimated at 2,000MW.

Figure 25: Summary of energy allocations and commitments based on IRP

6.2.6 National Development Plan

The National Development Plan (NDP) contains a plan aimed at eliminating poverty and reducing inequality by 2030. The NDP identifies 9 key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the 9 key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.

6.2.7 The New Growth Path Framework

The aim of the "New Economic Growth Path Framework" is to enhance growth, employment creation and equity. Central to the New Growth Path Framework is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard, the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.

The New Growth Path also identifies five other priority areas as part of the programme, through a series of partnerships between the State and the private sector. The Green Economy as one of the five priority areas to create jobs, including expansions in construction and the production of technologies for solar, wind and biofuels. In this regard,

clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

Operation Vulindlela

Operation Vulindlela is a joint initiative of the Presidency and National Treasury to accelerate the implementation of structural reforms and support economic recovery. One of the reforms is within the electricity sector, for the stabilisation of South Africa's energy supply and the reduction of the risk of load shedding and the acceleration of the transition to renewable energy sources (i.e. establishment of Solar PV facilities).

6.2.8 National Infrastructure Plan

Government adopted a National Infrastructure Plan (NIP) in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The aim of the NIP is to support investments to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools, and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and included three energy SIPs, namely SIP 8, 9 and 10.

- SIP 8: Green energy in support of the South African economy.
- SIP 9: Electricity generation to support socio-economic development.
- SIP 10: Electricity transmission and distribution for all.

The NIP 2050 was gazetted for public comment on 10 August 2021[3]. The first phase of the NIP 2050 focuses on four critical network sectors that provide a platform, namely, energy, freight transport, water, and digital infrastructure. In line with the NDP, the vision for the energy sector is to promote:

- Economic growth and development through adequate investment in energy infrastructure" (generation, transmission, and distribution) and reliable and efficient energy service at competitive rates, while supporting economic growth through job creation by stimulating supply chains.

[3] Gazette No. 44951

- 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, reduce water usage and mitigate the effects of climate change.

The NIP 2050 notes that by 2030, the NDP set a target that more than 90% of the population should enjoy access to grid connected or off-grid electricity by 2030. To realise this vision, South Africa's energy system will be supported by effective policies, institutions, governance systems, regulation and, where appropriate, competitive markets. In terms of energy mix, NIP 2050 notes that coal will contribute significantly less to primary-energy needs in the future, while gas will have an important enabling role, energy supply will be increasingly dominated by renewable energy resources– especially wind and solar which are least cost and where South Africa has a comparative advantage.

NIP 2050 also notes that South Africa is signatory of the Paris Agreement which aims to achieve Net Zero greenhouse gas emissions by 2050. To achieve this will require a shift to a least cost energy path that is increasingly reliant on renewables. For South Africa this is imperative for the following reasons:

- SA cannot afford to overspend while dramatically expanding capacity.
- Renewables can be built quickly and in modular form thereby avoiding many of the challenges associated with mega projects.
- Trade partners are expected to increasingly impose border carbon taxes harming SA exports.
- SA will need to commit to emission reductions as a global citizen.

6.2.9 National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA)

The NEMBA aims to provide for the management and conservation of the country's rich biodiversity within the framework of NEMA. It aids in the protection of species and ecosystems which warrant national protection and provides for the sustainable usage of the country's indigenous biological resources.

NEMBA and its Regulations were therefore utilised for determining the ecological/biodiversity significance, value and subsequently the adequate management of the proposed project area with regards to ecosystems, habitats, and individual species.

The Department of Environmental Affairs is responsible for the implementation and overseeing of this legislation along with the South African National Biodiversity Institute (SANBI).

6.2.10 National Water Act, 1998 (Act 36 of 1998) (NWA)

The NWA aims to ensure sustainable use of water through the protection of the quality of water resources for the benefit of all water users. Its principal focus is the rectification and equitable allocation and use of the scarce and disproportionately distributed water resources of South Africa.

Section 21 of NWA defines the types of water uses which require a Water Use Authorisation to be applied for. The Act stipulates that an application for water use authorisation must be submitted if a development takes place within 100 m of the edge of a natural watercourse, or within a 500-m radius of the edge of a natural wetland.

The proposed Paardevlei Solar PV & BESS Project likely constitutes water uses as defined in the National Water Act. These include Section 21 (c) and (i).

The Department of Water and Sanitation (DWS) is responsible for the implementation and overseeing of this legislation and is also the Responsible Authority for the issuing of authorisations for water use.

A WULA application (reference no: WU34264) has been lodged with the DWS on the 30 July 2024 by the Specialist Consultant, Doug Jeffery Environmental Consultants.

6.2.11 National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA)

The NHRA aims to provide for the integrated and interactive management and conservation of the national heritage resources in South Africa so that they may be bequeathed for future generations.

In terms of Section 38 of the Heritage Resources Act (Act 25, 1999), a Heritage Impact Assessment must be undertaken for the following developments:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length.
- The construction of a bridge or similar structure exceeding 50 m in length.
- Any development or other activity which will change the character of a site -

- Exceeding 5 000 m² in extent; or
- Involving three or more existing erven or subdivisions thereof; or
- Involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resource authority.

- The re-zoning of a site exceeding 10 000 m² in extent; or
- Any other category of development provided for in 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.

The proposed Paardevlei Solar PV & BESS Project will be a development exceeding 5 000 m² in extent and therefore required heritage approval from Heritage Western Cape.

The Heritage Specialist (Mr. Elijah Katsetse) submitted the Heritage Impact Assessment to Heritage Western Cape (Ms. Stephanie Barnardt) on 19/09/2024. Formal comment from Heritage Western Cape (HWC) is still pending. Ms. Stephanie Barnardt (HWC) was then contacted on 22/11/2024 and has indicated that the heritage application will be discussed at the next scheduled HOMs meeting, and that a formal comment will be issued shortly thereafter. The EAP will send this HWC comment directly to the Department, once received.

6.3 Provincial documents

6.3.1 Western Cape Spatial Development Framework (WCSDF) (March 2014)

Energy insecurity, high levels of carbon emissions and understanding the spatial implications of known risks such as climate change are identified as some of the escalating risks, within the Western Cape province, that the WCSDF responds to.

The key Provincial climate change challenge identified in the WCSDF is to devise and introduce effective adaptation and mitigation responses, especially to vulnerable municipalities. The focus areas for mitigation are energy efficiency, demand management and renewable energy. In order to mitigate climate change and in order for the Western Cape to transition to a low carbon, and sustainable energy future the pursuit of energy efficiency and diversification is deemed important by the PSDF.

The PSDF is based on a set of 5 guiding principles, namely:

- Spatial justice.

- Sustainability and resilience.
- Spatial efficiency.
- Accessibility.
- Quality and Livability.

Key spatial challenges are outlined in Chapter 2 of the PSDF. Energy security and climate change response are identified as key high-level future risk factors. With regard to energy use, the PSDF notes that the Cape Metro (albeit the province's most efficient user) and West Coast regions are the WCP's main energy users. It further notes that the WCP's electricity is primarily drawn from the national grid, which is dominated by coal-based power stations, and that the WCP currently has a small emergent renewable energy sector in the form of wind and solar generation facilities located in its more rural, sparsely populated areas. With regard to renewable energy, the following policy provisions are of relevance:

- Policy R.4.6: Pursue energy diversification and energy efficiency in order for the Western Cape to transition to a low carbon, sustainable energy future, and delink economic growth from energy use.

- Policy R.4.7: Support emergent Independent Power Producers (IPPs) and sustainable energy producers (wind, solar, biomass and waste conversion initiatives) in suitable rural locations (as per recommendations of the Strategic Environmental Assessments for wind energy (DEA&DP) and renewable energy (DEA)[4].

The proposed Paardevlei Solar PV & BESS project would provide 30 -60 MW of solar generated electricity to the local grid and is therefore aligned with the WCSDF.

6.3.2 One Cape 2040 Strategy

The One Cape 2040 (2012) vision was developed by the Western Cape Government, the City of Cape Town and the Western Cape Economic Development Partnership. The 2040 Strategy does not replace existing statutory plans. Rather, it is intended as a basic reference point and guide for all stakeholders planning for long-term economic resilience and inclusive growth.

Six key transitions are identified which to define the necessary infrastructure-related shifts in the WCP. One of these 6 key transitions is an Ecological transition ('Green Cape') from an unsustainable, carbon-intensive, resource use economy, to a sustainable, low carbon-footprint one. The development of renewable energy projects and natural gas are expected to significantly decrease the WCP's carbon footprint.

[4] See notes under Regional Methodology Review below.

6.3.3 Western Cape Infrastructure Plan

The objective of the Western Cape Infrastructure Framework (WCIF)(2013) is to align the planning, delivery, and management of infrastructure to the strategic agenda and vision for the province, as outlined in the 2009-2014 Draft Provincial Strategic Plan. The One Cape 2040 and 2013 Green is Smart strategy were other key informants. The WCIF addresses new infrastructure development under five major 'systems' (themes), and outlines priorities for each. Energy is one of the 'systems' identified. The document notes that a provincial demand increase of 3% per year is anticipated for the period 2012-2040. Key priorities are in matching energy generation/ sourcing with the demand needed for WCP economic growth. Additionally, the energy focus should be on lowering the provincial carbon footprint, with an emphasis on renewable and locally generated energy. Three key transitions are identified for the WCP Energy 'system' infrastructure, namely:

- Shifting transport patterns to reduce reliance on liquid fuels.
- Promoting natural gas as a transition fuel by introducing gas processing and transport infrastructure.
- Promoting the development of renewable energy plants in the province and associated manufacturing capacity.

6.3.4 Western Cape Green Economy Strategy Framework

The Western Cape Green Economy Strategy (2013) – 'Green is Smart' - is a framework for shifting the Western Cape economy from its current carbon intensive and resource-wasteful path within a context of high levels of poverty to one which is smarter, greener, more competitive, and more equitable and inclusive. The core objective of the Strategy is to position the Western Cape Province (WCP) as the lowest carbon footprint province in South Africa, and a leading green economy hub on the African continent.

The Strategy identifies 'high level priorities for green growth', of which two are relevant to the project, namely:

- Natural Gas and Renewables: Off-shore natural gas, potential gas baseload power plants and renewable energy IPP programme, together with a greenfield gas infrastructure, will be the game-changer for the Western Cape to be the lowest carbon province in South Africa, and achieve significant manufacturing investment.

- Green Jobs: A green growth path without job growth is unsustainable. There must be early pursuit of priorities with a high rate of job growth potential – notably rehabilitation of natural assets, responsible tourism, and the waste sector.

6.4 Local Municipality

6.4.1 City of Cape Town Integrated Development Plan (2022-27)

The City of Cape Town Integrated Development Plan (IDP) (2022-27) represents the overarching strategic framework through which the CCT aims to realise the developmental vision for the city. the longer-term strategic vision, priorities and narrative, and an Implementation Plan, which focuses only on key strategic programmes, projects and initiatives that support the achievement of the priorities during the five-year period. The vision for the City of Cape Town as set out in the IDP is Cape Town to be a City of Hope for all – a prosperous, inclusive, and healthy city where people can see their hopes of a better future for themselves, their children and their community become a reality. The vision is underpinned by three key foundations, namely:

- A resilient city.
- A more spatially integrated and inclusive city.
- A capable and collaborative city government.

The first two bullets are relevant to the project. The 3 foundations support 3 secondary and 3 top tier priorities, of which economic growth (top tier priority) and basic services (top tier priority) and are relevant to the project (**Figure 26**).

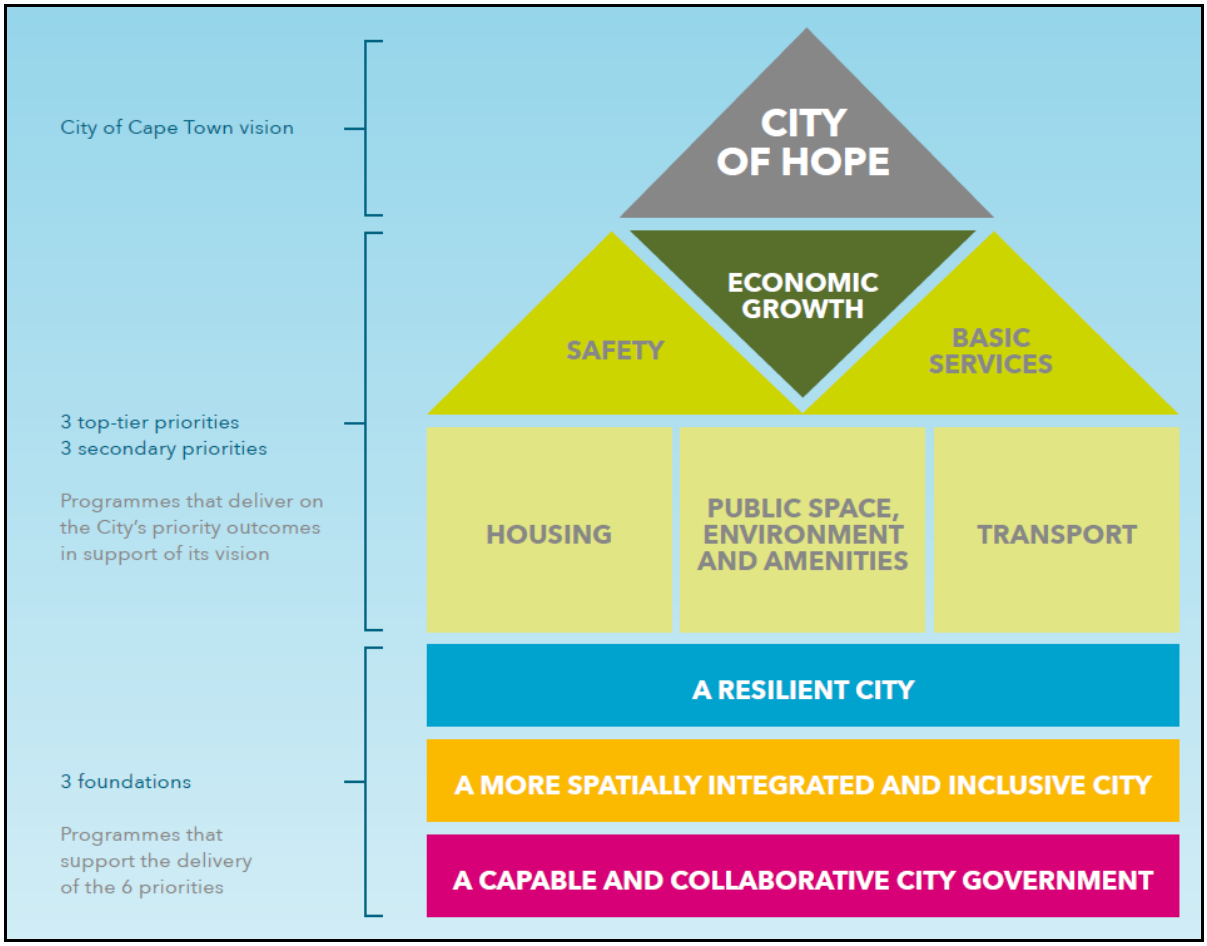


Figure 26: City of Cape Town Integrated Development Plan

The City's five-year implementation plan is informed by 16 objectives which describe what is required to realise the vision of a City of Hope. The programmes and initiatives/ projects under each of these objectives are the ways in which the City intends to contribute towards these objectives. **Figure 27** illustrates the structure of the implementation plan, and how it is aligned for implementation.

The 16 objectives are aligned with the United Nations' Sustainable Development Goals (SDGs). Critical the IDP highlights the risks that climate change poses to Cape Town, its environment, communities, and the economy. Addressing climate change will enable the City to reduce vulnerability to future climate disasters and presents an opportunity to lead in transitioning to clean energy and a water-sensitive city. Of relevance, the IDP notes that the City recognises that reducing reliance on power from Eskom, which is almost exclusively coal-based, is the single greatest way of reducing the carbon footprint of Cape Town and its residents.

Section 3.2, Service Delivery and Infrastructure, provides an overview of services, including access to energy supply. basic services of access to water and sanitation, waste removal, and access to energy supply. Of interest the IDP notes that access to basic services since 2014 has generally increased, except for energy supply. In terms of current energy supply,

Cape Town's electricity supply comes almost entirely from Eskom. As a result, the city has been impacted by load-shedding over the past 15 years due to Eskom on-going struggle to supply power. The IDP identifies load-shedding as a key risk to both the local and national economy. The impacts are also linked to disruptions in service delivery.

Current generation assets consist of the Steenbras pumped storage scheme and two small gas turbines, which are usually run in emergencies only. The IDP notes that the City has successfully used the Steenbras hydro pump storage facility to reduce the impact of load-shedding. The large generating assets in the Western Cape, namely the Koeberg nuclear power station and the Ankerlig and Gourikwa gas turbines, are Eskom-owned.

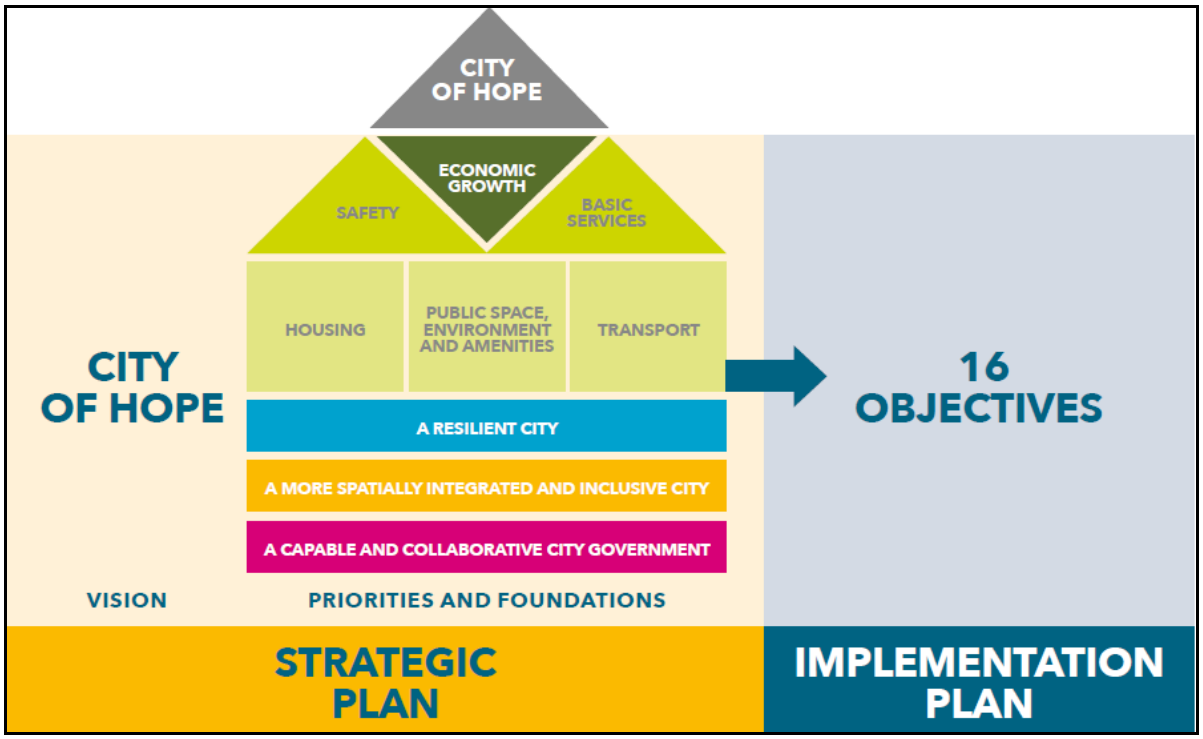


Figure 27: City of Cape Town IDP-Link between Strategic Pan and Implementation Plan

The relevant objectives include Objective 1 (linked to economic growth) and Objective 3 and 4 (linked to basic services).

Objective 1: Increased jobs and investment in the Cape Town economy

The IDP notes that the City is committed to increasing jobs and investment in the Cape Town economy by simplifying regulations and processes so that it is easy for businesses to start and grow. Collaboration between government and the private sector in Cape Town is essential to innovate and implement solutions to critical problems that are standing in the way of job creation, such as load-shedding. In this regard the IDP states that the City will invest in ending load-shedding in Cape Town over time by diversifying supply away from coal-intensive Eskom towards independent power producers (IPPs) and renewables, and enabling small-scale embedded generation.

Objective 3: End load-shedding in Cape Town over time

The IDP lists a number of energy related programmes aimed at ending loadshedding, including:

- 3.1 Diversified energy supply programme
- 3.2 Energy demand response programme

3.1 Diversified energy supply programme

In terms of the diversified energy supply programme, the IDP notes that the City will drive and facilitate private- and public-sector investment into City grid-connected energy generation, focusing on both renewable and dispatchable technologies. The development of energy storage capacity and demand-side management will be a priority. Bringing new energy generation capacity online will contribute to ending load-shedding, helping to secure our economy and support economic growth. The diversified energy supply programme includes three associated initiatives. namely:

- 3.1.A. Expanded IPP initiative
- 3.1.B. City-initiated generation initiative:
- 3.1.C. Small-Scale Energy Generation growth initiative:

The first two are of specific relevance to the project.

3.1.A. Expanded IPP initiative

The IDP notes that the City will implement IPP initiatives to improve the supply of affordable, reliable and clean energy. This includes both large-scale IPPs located outside municipal boundaries, and embedded IPPs directly connected to the municipal distribution grid. To further mitigate load-shedding, the City will also investigate opportunities for dispatchable energy provision from IPPs using a range of technologies, including energy storage.

3.1.B. City-initiated generation initiative

The IDP notes that recognising the urgent need to diversify Cape Town's energy supply away from reliance on Eskom, the City will prepare sites for renewable-energy power generation directly connected to the energy grid, to be operated by the City or the private sector, subject to further investigation. These power plants will include both ground-mounted and rooftop solar photovoltaic systems, while the feasibility of other technologies will also be explored.

3.2 Energy demand response Programme

In addition to diversifying its energy supply options, the IDP also notes that the City will expand initiatives to improve energy efficiency and reduce energy demand in order to mitigate the impacts of load-shedding. Reduced energy demand will offer a cost-effective solution to the short-term impact of load-shedding in Cape Town while longer-term measures, such as increasing energy supply, are implemented.

Objective 4: Well-managed and modernised infrastructure to support economic growth

The provision of well-managed, modern energy infrastructure is identified as a key requirement to support economic growth.

The proposed Paardevlei Solar PV & BESS project is therefore in line with, and supports the CCT IDP, as it is a renewable energy project and will provide economic growth opportunities within the CCT.

6.4.2 City of Cape Town Spatial Development Framework (SDF) (2023)

The vision for the City of Cape Town set out in the Spatial Development Framework is a "City of Hope for All". The spatial vision includes addressing spatial injustice and inequality and avoiding the creation of new structural imbalances in the delivery of services or the availability of economic and residential opportunities. The SDF is underpinned by three spatial strategies - drawn from the IDP, and associated sectoral and spatial policy guidelines, namely:

- Strategy 1: Plan for economic growth and improve access to economic opportunities.
- Strategy 2: Manage urban growth, and create a balance between urban development, food security and environmental protection.
- Strategy 3: Building an inclusive, integrated, vibrant and healthy city.

Strategy 1 and 2 are relevant to the development.

Strategy 1: Plan for economic growth, and improve access to economic opportunities

The SDF notes that Cape Town's current and future spatial form and function will support or inhibit the city's immediate and longer-term economic prospects. The extent to which the City realises its spatial development goals is directly linked to its ability to sustain employment-generating economic growth in the medium term and to reduce accessibility costs for the urban poor. The SDF identifies a number of imperatives for supporting Strategy 1 including creating and attracting investment that will ensure integrated, sustainable communities by providing new infrastructure and maintaining that which already exists.

Strategy 2: Manage urban growth, and create a balance between urban development, food security and environmental protection

The SDF notes that urban resilience is regarded as a core factor in achieving its strategic goals and objectives. It recognises urban resilience as the capacity of individuals, communities, institutions, businesses, and systems to survive, overcome, adapt and grow, no matter what stresses and acute shocks they experience. To this end, the City actively pursues an urban form with higher densities and mixed land use patterns within an urban inner core, supported by an extensive and efficient public transport system. Through this form, it seeks to achieve a number of developmental outcomes, including sustainable use of land and natural resources; lower carbon emissions; more efficient use of infrastructure; and effective and efficient public transport systems and social amenities.

The relevant imperatives identified for Strategy 2 include:

- More efficient use of non-renewable resources, such as land, water and biodiversity, including protecting and maintaining existing surface- and groundwater resources and sustainably managing existing and future water supplies.

- Achieving carbon neutrality by 2050, by introducing new technologies to clean up the fuels and activities that cause greenhouse gas emissions, while enhancing social, economic, and environmental goals.

The SDF lists a number of sub-strategies and policies that are relevant to the project, including:

- Sub-strategy 2.2: Facilitate land development to enhance the city's energy independence and efficiency by investing in renewable energy.

- Sub-strategy 2.2: Facilitate land development to enhance the city's energy independence and efficiency by investing in renewable energy.

- Policy 15**:** Enable resource-efficient land development by leveraging the protection of renewable resources to improve cohesion between natural environmental resources and inclusive economic growth. P15.1 Encourage land development within the existing built fabric that promotes energy efficiency including retrofitting, urban design principles that consider heating, cooling, and lighting and, where possible, explore the opportunity to use renewable energy.

The SDF highlights the importance climate change and notes that Cape Town, along with other cities in South Africa and worldwide, has committed to achieving carbon neutrality and climate resilience by 2050. Importantly, reducing the greenhouse gas emissions that

cause climate change is key to limiting global temperature increases to a best-case scenario of 1.5°C. This target can only be reached through significant transitions in urban form, energy sources, transportation and resource efficiency. Key elements include building an effective public transport system, cleaning up our sources of electricity, and making the built environment more efficient.

As part of its commitment the City of Cape Town is embarking on a diverse and wide-ranging renewable energy program, driven by:

- international and local commitments towards mitigating the effects of climate change through the utilisation of sustainable energy sources.

- The need for increased energy security in the face of diminishing Eskom technical performance.

- The need to improve financial sustainability by reducing electricity purchases from Eskom, thereby protecting citizens against the impact of further Eskom tariff increases.

Section 6.5, Infrastructure capacity, renewal, and provision priorities from sector plans (p108) covers the different sectors including Electricity. With regard the electricity the SDF notes that the City is intent on addressing the socio-economic disruptions associated with load shedding. To achieve this the City is embarking on a diversified energy supply programme as well as an energy demand response programme. The aims of these programmes are to:

The section nots that current generation assets comprise Steenbras pump storage scheme and two small gas turbines, which are usually only run in emergencies. The continued operation of the Steenbras Hydro Pump Storage (SHPS) Scheme, along with the two City-owned gas turbines, has helped to limit the impact of the national energy crisis on Cape Town residents by reducing the severity of load shedding by up to one stage. In so doing, it has helped to maintain Cape Town's attractiveness as an investment destination.

The City is also intent on addressing the socio-economic disruptions associated with load shedding. To this end, it is embarking on a diversified energy supply programme as well as an energy demand response programme. The aims of these programmes are to:

- increase energy security in the face of diminishing Eskom technical performance.
- improve financial sustainability by reducing electricity purchases from Eskom, thereby protecting citizens against the impact of further Eskom tariff increases; and mitigate the effects of climate change through the utilisation of sustainable energy sources.

The SDF refers to City-Initiated Generation Initiatives noting the urgent need to diversify Cape Town's energy supply away from reliance on Eskom. These initiatives include identifying and preparing sites for renewable-energy power generation directly connected to the energy grid, to be operated by the City or the private sector, subject to further investigation. These power plants will include both ground-mounted and rooftop solar photovoltaic systems, while the feasibility of other technologies will also be explored.

The SDF makes specific reference to the renewable energy generation project in Paardevlei, Somerset West, noting that the Paardevlei renewable energy generation project will be developed and implemented on vacant, City-owned land outside Somerset West. The energy generation project proposed to design, build, operate and maintain a renewable energy generation plant, most likely ground-mounted Solar PV, with a battery storage facility and connection to the City's existing electrical grid.

The redevelopment of the Athlone Power Station as a site for renewable, low-carbon or sustainable energy technologies is also identified, including the potential to leverage public sector investment to catalyse investment by the private sector in the development of green energy hub.

The proposed Paardevlei Solar PV & BESS project is therefore in line with the CCT SDF, as it is a renewable energy project and aims to improve energy efficiency within the CCT.

6.4.3 City of Cape Town (2006) Energy and Climate Change Strategy

The core role of energy within cities, in terms of socio-economic development and environmental sustainability, is being increasingly recognised by local authorities. Energy plays a key role in providing basic services and meeting basic human needs, such as jobs, food, running water, sanitation, education and health services. Addressing these issues, inevitably involves an increase in the level of energy service. In South Africa, the production of energy is largely fossil fuel based. This type of energy production is the key factor in what is seen as the most serious environmental threat facing the world today – global warming and related climate change. The earth's atmosphere is now warming at the fastest rate in recorded history, a trend that is projected to cause extensive damage to forests, marine ecosystems, biodiversity and agriculture. Human settlements are also threatened by climate change as sea levels rise, storms become more intense, and episodes of drought and flooding increase. The City of Cape Town therefore recognises the need for planning more sustainable approaches to their energy production and use, to promote economic development and meet social needs while reducing local and global environmental impacts. In parallel with these mitigation efforts, a need has been identified to minimise the harmful and negative impacts of climate change on vulnerable communities and ecosystems.

Cape Town is the first city in Africa to develop a comprehensive Energy and Climate Change Strategy. This strategy forms part of the City's overarching Integrated Metropolitan Environmental Policy (IMEP).

6.4.4 Helderberg District Plan (2023)

The Helderberg District forms one of 8 Planning Districts (PD) that make up the City of Cape Town (CoCT) – refer to **Figure 28**. District Plans (DP) informed by the city-wide Cape Town Spatial Development Framework (CTSDF) have been prepared for each PD. Each PD has turn been divided into sub-districts. The DP consists of two components, namely a Spatial Development Plan (SDP) and Environmental Management Framework (EMF).

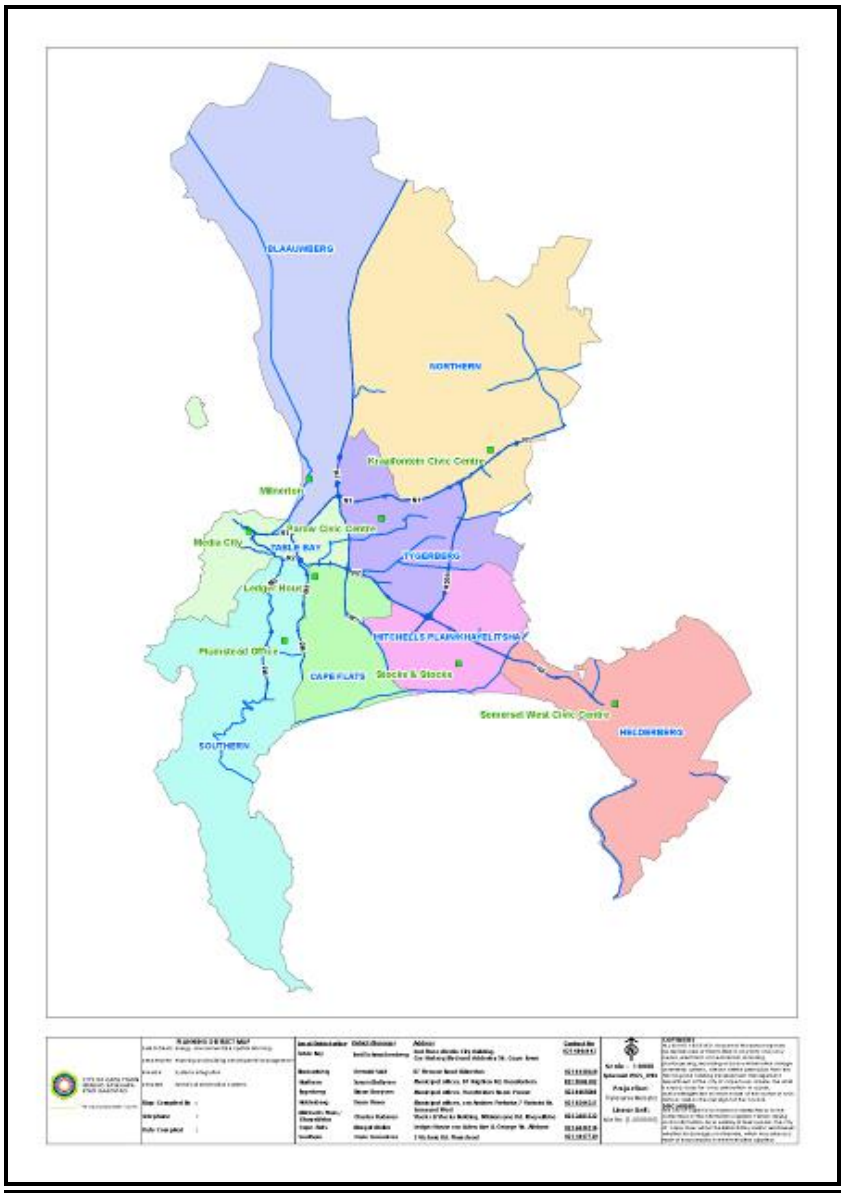


Figure 28: City of Cape Town Planning Districts (project falls within the Helderberg District)

The DP is a medium-term plan (developed on a +/- 10-year planning frame) to guide spatial development processes within the district. In doing so the plan pursues several strategic actions including:

- Aligning with and facilitating the implementation of the Provincial Spatial Development Framework (PSDF), Cape Town's integrated Development Plan (IDP) and Cape Town Spatial Development Framework within the district.
- Performing part of a package of decision support tools to assist in land use and environmental decision-making processes.
- Delineating fixes and sensitivities which will provide an informant to such statutory decision-making processes.
- Clearly giving direction to the form and direction of areas for new urban development in the district in a manner that is in line with the principles and policies of higher-level planning frameworks.
- Providing a basis for land use change within the existing footprint at well as strategic public and private investment initiatives which will assist in achieving the principles and policies of higher-level planning frameworks.
- Informing the development of priorities for more detailed local area planning exercises and frameworks that should provide detailed guidance to land use management and public and private investment.

The DP notes that in terms of the hierarchy of plans and consistency principle the information contained in the DP must be consistent with higher order spatial plans and policies, specifically the City of Cape Town Spatial Development Framework (CTSDF) and Provincial SDF. Should the provisions of plans of a lower order in the hierarchy (including local scale structure plans) be deemed to be inconsistent with the CTSDF, the CTSDF will take precedence.

The DP gives effect to the key spatial strategies proposed by the Cape Town Spatial Development Framework at a district scale. The SDP lists three key strategies, namely:

- Strategy 1: Plan for employment and improve access to economic opportunities.
- Strategy 2: Manage urban growth and create a balance between urban development and environmental protection.
- Strategy 3: Build an inclusive, integrated, and vibrant city.

The vision statement for the Helderberg District is:

"A district that is defined by its pristine natural assets and a spectrum of social, economic and cultural opportunities. A district that encourages appropriate land use intensification within core areas, such as the Paardevlei precinct, in order to accelerate economic growth,

create vibrant hubs and moreover, sustain the livelihoods of its inhabitants. A district that maximises connectivity for all by minimising the distance between places of residence, work, leisure and public facilities. A district that offers a range of high-standard healthcare facilities and also one which serves as a great place for leisure pursuits. The raw beauty of the district is displayed through its stretch of coastal land, array of mountainous regions and its greenbelt network. These natural components are managed efficiently and, where appropriate, enhanced in order to catalyse the tourism sector, enable the establishment of new businesses and promote job employment."

Key spatial elements and interventions identified in the Helderberg DP that are relevant to the project area include:

- Encourage appropriate mixed land uses and medium- to higher-density development along high-accessibility and local activity streets such as Main Road, N2 and Broadway Boulevard.
- Firgrove: Allow greater intensification of land use, including mixed-use development, along highly accessible but underperforming sections of Main Road. Paardevlei precinct: Support land use intensification within the precinct at the commercial node. Encourage the multifunctional use of social facilities, recreational spaces, and public institutions.
- Somchem industrial area: Support redevelopment for mixed-use development due to low performance of the area.

The Helderberg District comprises six subdistricts of which the following are relevant to the proposed development (**Figure 29**):

- Subdistrict 1: Macassar/Vergenoegd.
- Subdistrict 2: Paardevlei.

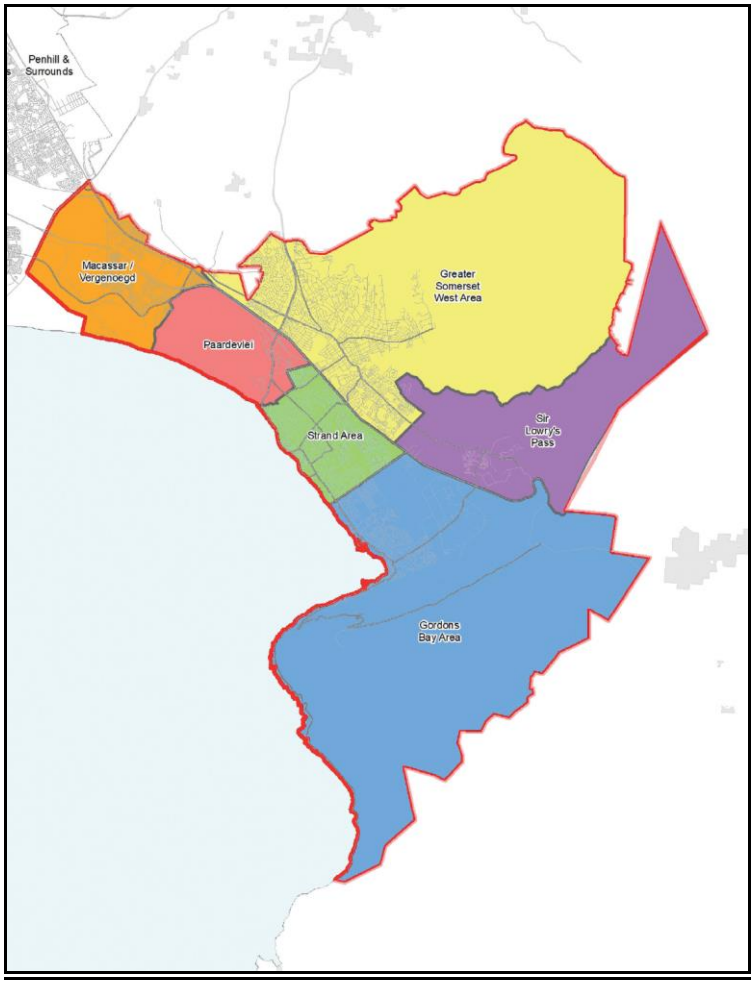


Figure 29: Sub-district 1 and 2- Macassar/Vergenoegd and Paardevlei

Subdistrict 1: Macassar/Vergenoegd

Subdistrict 1 includes the areas of Vergenoegd farm, Faure, Croydon, Firgrove, Macassar and Macassar/ Sandvlei smallholdings, and is bounded by Baden Powell Drive to the west, the municipal boundary to the north, the Somchem cadastral boundary to the east and the coastline and Macassar Dunes conservation area to the south. Vergenoegd farm is located in a key position, at the transition between the metro southeast and the more rural Helderberg and Stellenbosch areas. As a result of the recent developments, the character of the area is changing from a semi-rural character to a more urban mixed-use character.

The spatial development objectives for Subdistrict 1 includes:

- Retain the residential character of Faure residential Promote opportunities for mixed-use intensification in the local node in Macassar to strengthen its character as a vibrant node.
- Promote intensification of available industrial land in Macassar.
- Ensure the development of sustainable communities with access to appropriately located economic activities.
- Protect and conserve heritage significant areas found in Macassar.

- Promote the preservation of the Macassar (Sandvlei) smallholdings area.

The guidelines recommended for meeting these objectives includes:

- Densification can be further encouraged in the residential area of Faure, where appropriate.
- Promote mixed-use intensification in the form of commercial/business, medical practices and light industrial opportunities in proximity to local civic precinct in Macassar.
- Identify opportunities for the establishment of SMMEs at appropriate locations displaying local business energy along activity streets and restructuring routes in Macassar.
- Reinforce industrial development in the unutilised industrial land in Macassar located at the corner of Albatros Street and Macassar Road.

With regard to the Firgrove area, which also falls within Subdistrict 1, the DP notes that the area has shown a positive growth in terms of medium- to high-density developments due to its great location and access to public transport. Therefore, there has been a recent demand for development in the area. However, the DP notes that there is a shortage of community facilities in the area. As such there is a need to provide adequate community facilities for any future development.

The Subdistrict Plan identifies a number of New Development Areas (NDAs), including areas located to the south of the N2. The focus of development in these areas is largely medium to high density residential development and mixed use to create employment opportunities. **Figure 30** illustrates the spatial development framework for Subdistrict 1.

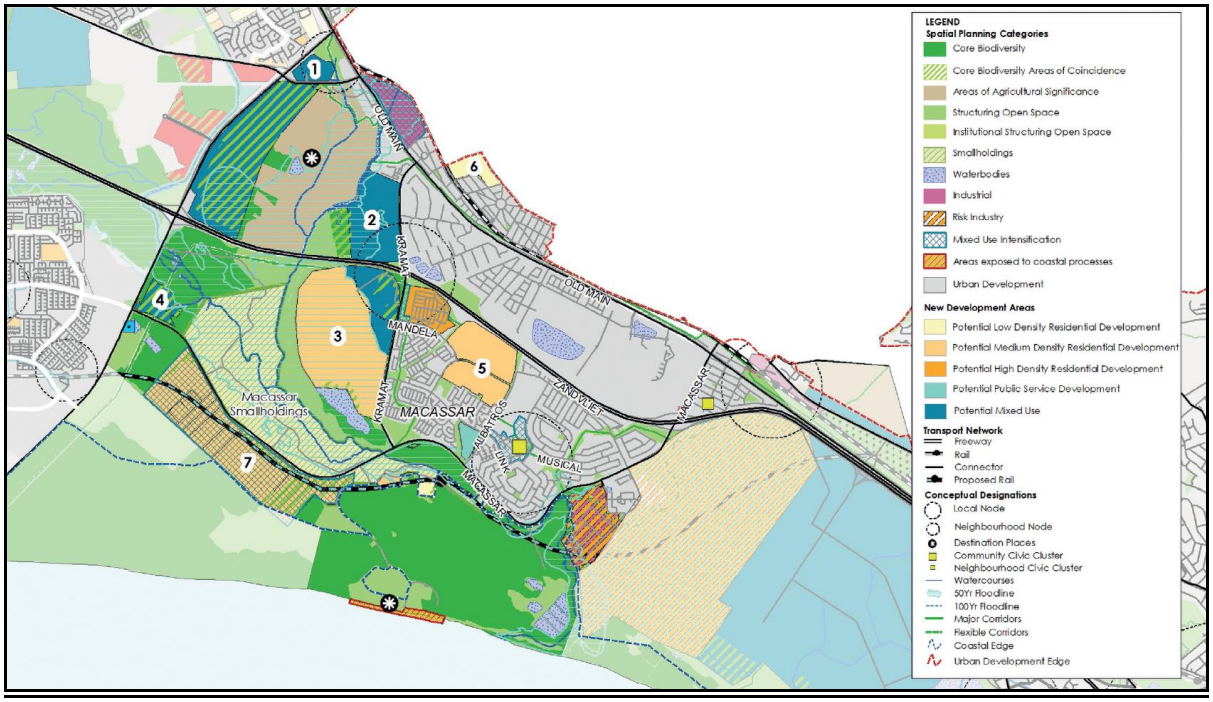


Figure 30: Subdistrict 1: Macassar/Vergenoegd

Subdistrict 2: Paardevlei

The DP notes that the Paardevlei area is located on the seaward side of the N2 freeway and is approximately 700 ha in extent. The site location and scale are strategically important given its proximity to the southern confluence of the Blue Downs and metro southeast integration zones. The major economic opportunity zone for Helderberg District is located within this subdistrict and consists of the Somerset West triangle and the Paardevlei-Heartland site. This area corresponds to New Development Area 1 in **Figure 31.**

The Heartland site forms a natural extension of the development of the built environment of Somerset West and the Strand towards the existing development of Macassar. The site has been identified as a strategic site for large-scaled, new mixed- use urban development offering integrated and sustainable development opportunities. The development of the site has a significant impact on the economy and service provision in the district. It will also provide for significant employment opportunities, both short and longer term. The development is envisaged to be phased over a longer period. It is proposed that the site be redeveloped to accommodate medium- to high-density residential development and mixed-use development.

The Subdistrict Plan identifies a number of New Development Areas (NDAs) for Subdistrict 2, with the Paardevlei site being the most significant (Area 1 in Figure 24, Blue area). Of relevance to the project the DP notes that the focus of development in these areas is largely medium to high density residential development and mixed use to create employment opportunities. This is in potential conflict with the proposed Paardevlei PV SEF on the site. However, as indicated above in terms of the hierarchy of plans and consistency principle the

information contained in the DP must be consistent with higher order spatial plans and policies, specifically the City of Cape Town Spatial Development Framework (CTSDF) and Provincial SDF. Should the provisions of plans of a lower order in the hierarchy (including local scale structure plans) be deemed to be inconsistent with the CTSDF, the CTSDF will take precedence. In this regard the CTSDF refers to the establishment of the proposed PV SEF on the Paardevlei site.

The Somchem area to the west of the Paardevlei PV SEF site (Orange hatched area). The DP notes that the area should be reserved for noxious trade and risk activities. Where the risk industry is surrounded by a residential area, consideration has to be given to the social, health and safety impacts of the proposed industries. The is also a need to establish an appropriate buffer to protect urban development from sprawling towards the risk industrial area.

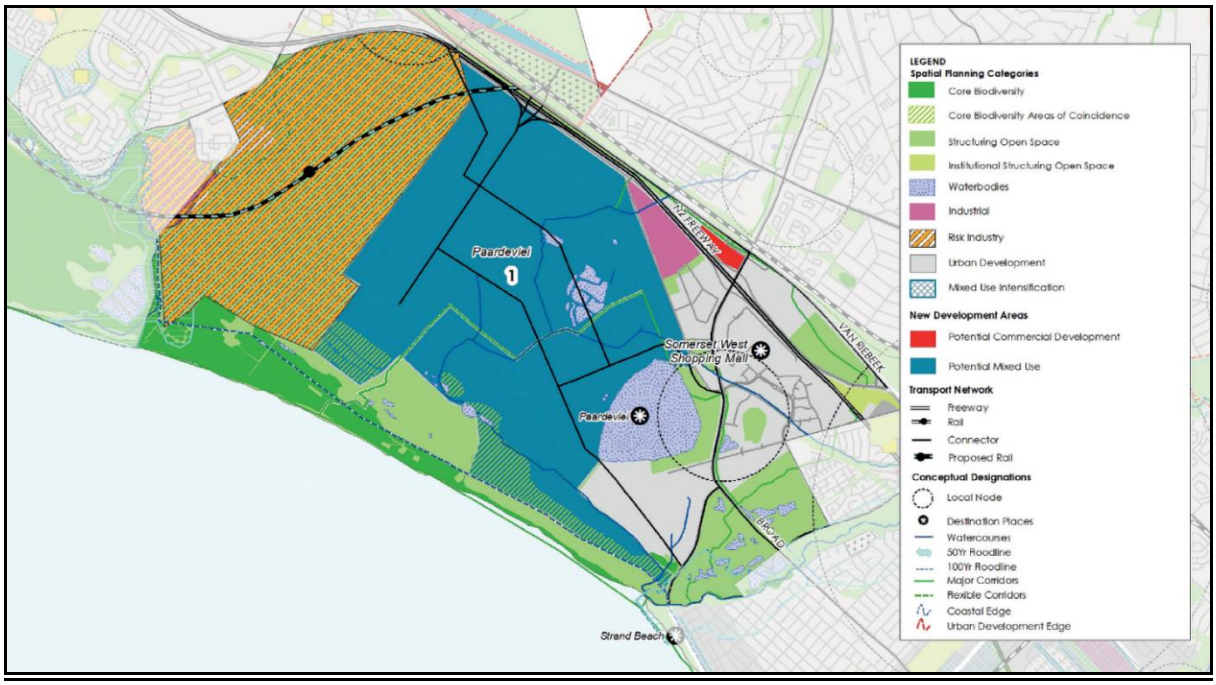


Figure 31: Paardevlei

7 APPROACH AND METHODOLOGY

7.1 Brief Overview of the Scoping and EIA Reporting Process

The Scoping and EIA Report process is a comprehensive, independent assessment of all identified and potential environmental impacts to a site of a proposed development.

The aim of the Scoping and EIA Report process is to ensure that the establishment of the proposed development occurs in an environmentally sound manner and to formulate ways

for reducing or mitigating any negative impacts of the project, whilst enhancing its potential benefits.

The findings and mitigation measures will be recorded in the EMPr which becomes legally binding documentation on approval. The EMPr will be undertaken at a later phase of the project, known as the EIA phase.

Potential impacts of the project will be determined through a PPP, guidance from government authorities, rigorous field assessments by the EAP and specialist consultants and impact modelling, drawing on experience with similar projects.

A flow diagram which details the Scoping and EIA Report process that will be followed for this development is attached in **Figure 32** below.

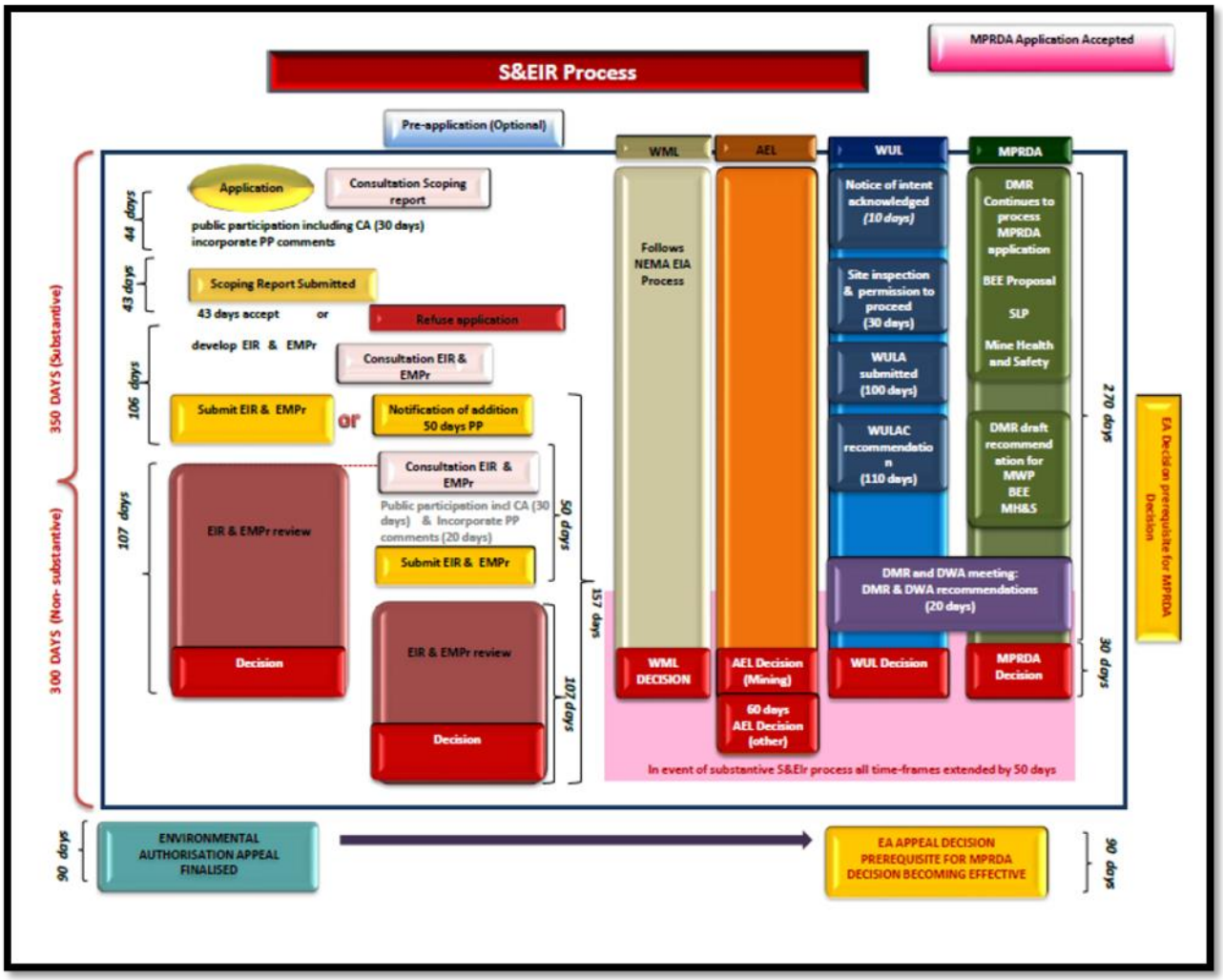


Figure 32: Scoping and EIA Process

7.2 The Scoping Report Process

The general scoping processes applicable to this project (in no particular order), are listed, below.

- Field survey and inspection by the EAP and relevant specialists for the identification of sensitive environmental, cultural, and historical features situated within the footprint of the proposed PV Solar & BESS development site, and in the surrounding area.

- The EAP and relevant specialists will complete desktop level GIS mapping for all identified sensitive environmental, cultural, and historical features identified within the footprint of the proposed PV Solar & BESS development site, and in the general vicinity.

- Pre-consultation meeting with the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) to ensure that there is consensus between the department and the project team on the following issues, inter alia:
    - Environmental impact assessment process to be undertaken for the project.
    - Confirmation of the public participation process to be followed.
    - Confirmation of specialist studies required in support of the EIA Process.

- The following Public Participation Process will be undertaken as part of the Scoping process:
    - Compiling and regularly updating an Interested and Affected Party database (I&AP Register).
    - Placement of newspaper adverts in a local and provincial newspaper to notify the public of the proposed PV Solar & BESS development and the availability of documentation for review and comment at selected venues (Somerset West public library and JG Afrika website).
    - Circulation of Background Information Document (BID) to all key stakeholders, Government Departments and directly affected residences and businesses to facilitate preliminary comments on the proposed development, allowing the EAP to address the issues (with the assistance of specialist input), during the EIA phase.
    - Site notices placed at visible locations surrounding the proposed development site (Paardevlei, Somerset West).
    - Compilation of Comments and Responses Report by EAP. The document will be continuously updated as official comments on the proposed development are received from key stakeholders, Government Departments, NGOs, and members of the general public.

- Compilation of draft Scoping report, plan of study for the EIA, additional mapping and other supporting documentation and distribution thereof (30-day commenting period) to key stakeholders, government departments, NGOs and registered I&APs.
- Compilation of final Scoping report, plan of study for the EIA, additional mapping and other supporting documentation and distribution thereof to key stakeholders, government departments, NGOs and registered I&APs.

7.3 The EIA Report Process

The general EIA Report processes applicable to this project (in no particular order), are listed, below:

- The EAP will undertake a detailed assessment of the proposed PV Solar & BESS development site and associated activities through the integration of site-based specialist findings and further stakeholder consultation with the findings of the scoping phase report. This additional assessment should address all identified issues related to the proposed development.

- The EAP and relevant specialists will complete site-level GIS mapping for all identified sensitive environmental, cultural, and historical features identified within the footprint of the proposed development, and in the general vicinity.

- Further consultation and public participation will also be undertaken with the competent authority and all I&APs which will include:
  - Placement of updated newspaper adverts in a local newspaper.
  - Placement of the draft EIA report at prescribed public venues.
  - Consideration of additional comments from competent authorities and I&APs.
  - Updating of the Comments and Responses Report by EAP.

- Compilation of draft EIR report, Environmental Management Programme (EMPr), additional mapping and other supporting documentation and distribution thereof (30-day commenting period) to key stakeholders, government departments, NGOs and registered I&APs.

- Compilation of final EIA report, Environmental Management Programme (EMPr), additional mapping and other supporting documentation and distribution thereof to key stakeholders, government departments, NGOs and registered I&APs.

The final EIA report will be submitted to the DEA&DP within 156 days of acceptance of the final Scoping report (therefore before or on Monday 02 December 2024). According to the NEMA EIA Regulations (2014), the DEA&DP must either grant or refuse the application for Environmental Authorisation within 56 days of receiving the final EIA and EMPr reports.

SECTION C: PUBLIC PARTICIPATION PROCESS

8 PUBLIC PARTICIPATION PROCESS

The purpose of the PPP for the proposed development site is outlined below:

- Provide Interested and Affected Parties (I&APs) with an opportunity to obtain information with regard to the project.
- Allowing I&APs to express their views, issues, and concerns with regard to the proposed project.
- Granting I&APs and opportunity to recommend measures to avoid or decrease negative impacts and enhance positive impacts that are associated with the proposed project.
- Granting I&APs and opportunity to contribute any pertinent, locally known, information; and
- Lastly, to enable the project team to incorporate the needs, concerns and recommendation that are made by the I&APs about the proposed project, where feasible.

The PPP that was followed for the proposed project is governed by NEMA and GNR No. 326 of the 2014 EIA Regulations, and the Public Participation guideline developed and issued by the Department of Forestry, Fisheries and Environmental Affairs, Pretoria, South Africa.

8.1 Interested and Affected Parties Register

The compilation of a comprehensive **Interested and Affected Party database** (I&AP Register) is underway for the project. The latest contact details of the relevant key stakeholders, government departments, NGOs, ward councillors, community leaders and directly affected residences and businesses will be captured in the register. The register will be updated with the contact details of I&APs that respond to newspaper adverts, circulation of the BID, distribution of notification letters, the erection of site notices and other documentation made available to the public to view at local public venues (libraries, community halls, municipality offices etc.) during the Scoping and EIA phase.

8.2 Commenting authorities

The following have been identified as key commenting authorities for the proposed Paardevlei Solar & BESS project (as stipulated by the EIA Regulations):

- Department of Environmental Affairs and Development Planning (DEA&DP).

- Cape Nature.
- City of Cape Town (Ward Councillors & internal Departments).
- Heritage Western Cape (HWC).
- Department of Water and Sanitation (DWS).
- Eskom.
- SA Civil Aviation Authority (SACAA).

8.3 Site Notices (EIA Phase)

Site notices were placed in close proximity to the proposed Solar & BESS development site as part of the Public Participation Process. Refer to **Appendix D1** of this report for proof of PPP during the EIA Phase.

8.4 Newspaper Advertisements

An initial English and Afrikaans advert was placed in the local ("The District Mail /Pos") and a regional newspaper ("Die Burger") to present the project (during the previous Scoping Phase).

8.5 Circulation of the Revised EIA Report

Written notifications (emails) were sent to registered I&APs to notify them of the availability of the Revised EIA report for the 30-day commenting period (namely from 22 October – 22 November 2024).

A hard copy of the Revised EIA report (and supporting documentation) was also placed at the following public venue, provided in **Table 8** below.

Table 8: Details of Public Venue

Venue	Address	Times
Somerset West Public Library	10 Victoria St, Audas Estate, Cape Town, 7130	Tuesday: 08h15 – 14h00 Wednesday: 09h00 – 17h00 Thursday: 08h15 – 14h00 Friday: 08h15 – 14h00 Sunday: 09h00 – 11h00, 18h30 – 20h30

Refer to **Appendix D1** of this report for **proof of PPP during the EIA Phase**.

The Revised EIA report was also placed on the JG Afrika (Pty) Ltd website for public viewing: https://www.jgafrika.com/public-participation/proposed-paardevlei-solar-pv-battery-energy-storage-system-project/

8.6 Comments received (Revised EIA Report)

A copy of the comments received from registered I&APs on the Revised EIA Report are presented in **Appendix D2** of this report.

8.7 Comments and Response Report (Revised EIA Report)

A Comments & Response Report (for the comments received from registered I&APs on the Revised EIA Report) is attached as **Appendix D3** to this report.

8.8 Stakeholder Meetings (EIA Phase)

The following meetings with **directly affected stakeholders** were conducted by the Project Applicant, City of Cape Town: Sustainability Energy Markets Department, as follows:

- **De Beers Athletic Football Club** – Meeting held on 06.09.2024 (see proof of meeting attached as **Appendix D4**).
- **City of Cape Town: Human Settlements Department** - Meeting held on 16.09.2024 (see proof of meeting minutes attached as **Appendix D5**).
- **Rheinmetall Denelmunition (RDM)** - Meeting held on 19.09.2024 (see proof of meeting attached as **Appendix D6**).

In addition to the above meetings, the Project Applicant and EAP also directly engaged (via email, telephone, Skype and Teams) with the remaining registered I&APs (especially with the various departments from the City of Cape Town) regarding their comments received on the Draft EIA Report.

SECTION 9: ENVIRONMENTAL BASELINE INFORMATION

9 DESCRIPTION OF THE RECEIVING ENVIRONMENT

9.1 Climate

The study area falls within the Western Cape Mediterranean climatic zone and as such experiences warm, dry summers and cool, wet winters. The highest temperatures have been recorded during January and February, while lowest temperatures occurred in July.

The sea exerts a considerable moderating effect on temperatures experienced along the coastline, while night-time temperatures on the inland floodplains and flats may be noticeably lower although frost does not occur.

Rainfall occurs mainly in the winter months between May and August, with highest rainfall in June. December and February are the driest months. The average annual rainfall for the area is 628 mm. The relatively high rainfall levels are likely due to the close proximity of the Helderberg and Kogelberg mountains.

Wind roses from Cape Town International Airport for January and July indicate that, in summer, the predominant wind is from the south, while in winter it is mainly north to northwest. The southerly summer winds are often reinforced by the sea breeze over False Bay, thereby accounting for maximum wind speeds during the early afternoon. The winter winds from the north are often rain bearing. As wind contributes towards sand transport, windblown sand is a common phenomenon where unvegetated dunes and bare sands occur.

9.2 Topography

According to HHO (2018), the site lies between 3 and 25 masl and the topography is in general moderate, with slopes varying from 1:12 to 1:10 and flatter, with the dominant gradient in a southerly and south-westerly direction. The main topographical features are longitudinal dunes along the coast. Outside the site boundary to the north-east, steep slopes rise towards the Helderberg Mountain, a key recharge source to the site area.

The relative flatness of the site poses challenges for stormwater management. Stormwater on the entire site is, therefore, proposed to be managed in line with an Integrated Stormwater and Ecological Management System.

9.3 Geology

According to the 1:250 000 scaled Geological Map Series (No.3318) of Cape Town, the study area is underlain by unconsolidated soils of Springfontyn Formation and Witzand Formation. The Springfontyn Formation is represented by brackish calcareous soil (Qb). The Witzand Formation is represented by partly calcified dune sand with calcrete lenses (Qw) and light grey to pale red coloured sandy soil (Qg).

During the investigation, non-engineered fill, colluvium, aeolian, residual shale horizon, calcrete and shale bedrock conditions were intersected. During a review of the relevant maps and field investigation, no structural lineaments in the form of faults were identified.

The study area is characterised by a climatic N-value that ranges from 2 to 5, implying that chemical decomposition and mechanical disintegration will occur.

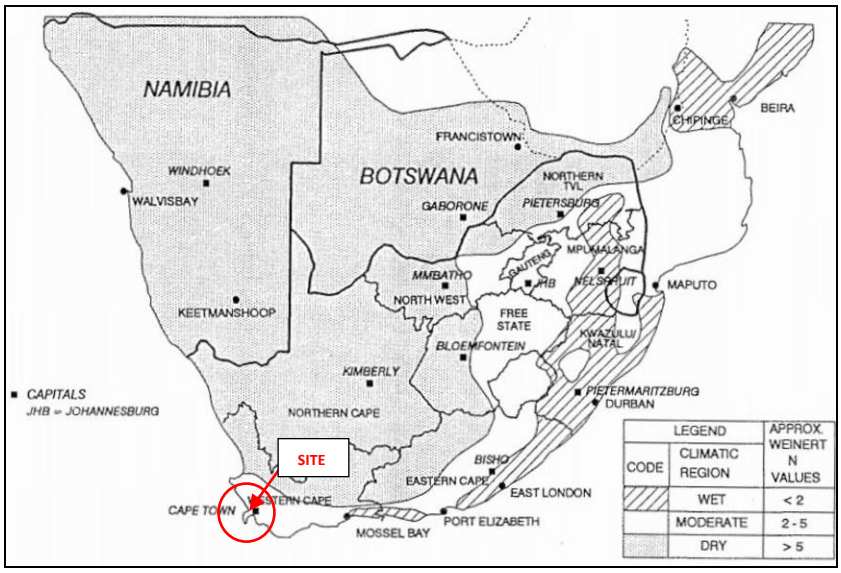


Figure 33: Micro-climate region of South Africa (TRH 14, 1996 adapted from Weinert, 1980)

The geotechnical investigation completed by JG Afrika (2024) presents the following findings and recommendations for the Paardevlei Solar PV Farm:

- The development area is overlain by non-engineered fill, aeolian, and residual shale horizon which is generally underlain by calcrete and shale bedrock conditions.
- Hardpan calcrete conditions were generally intersected in the south-west portion of the site over a depth of 0.20 m to 2.80 m below NGL.
- Shale bedrock conditions were generally intersected in the north-east portion of the site over a depth range of 0.30 m to 2.30m below NGL.
- Groundwater seepage was only intersected in trial pit TP29 at a depth of 2.20 m below NGL.

- "Soft" excavation conditions can be anticipated in the non-engineered, colluvium, aeolian and residual shale horizon and soft bedrock conditions (calcrete and shale) over a depth range of 0.00 to 3.00 m below NGL.
- "Intermediate" excavation conditions can be anticipated in the medium rock strength bedrock (calcrete and shale) over a depth range of 0.70 m to depths greater than 3.00m.
- "Hard" excavation and "Boulder" excavation conditions are not anticipated on site for depths up to 3.00 m below NGL.
- The colluvium horizon generally grades as having a major sand component with a minor silt component.
- The residual shale horizon generally grades as having a major sand component with a minor clay and silt component in some samples, and grades as having a major silt and clay component and a minor sand component in some samples.
- The sampled calcrete material classifies as a G8 quality material and is not suitable for use in construction but can be utilised for general fills and landscaping.
- The residual shale displays "low" to "medium" potential expansivity and is compressible.
- The colluvium, aeolian horizon, and hardpan calcrete displays "low" potential expansivity.
- Test results generally indicates that at lower moisture contents, relatively higher thermal resistivity values were obtained, and at higher moisture contents, lower thermal resistivity values were obtained.
- An average thermal resistivity value of 6.21 K.m/W and an average thermal conductivity value of 0.16228 W/ K.m were attained at a moisture content of 2.0%.
- The Basson Index laboratory test indicates "Non-Corrosive" to "Corrosive" subsurface conditions.
- It is recommended that a combination of driven piles and bored piles be considered for the PV plant structures.
- It is recommended that the new substation structure be founded on reinforcement strip footing at depth of 1.00 m below NGL.

9.4 Vegetation (Ecological) sensitivity

The proposed Paardevlei Solar PV & BESS site development footprint falls within the Fynbos Biome (**Figure 34**).

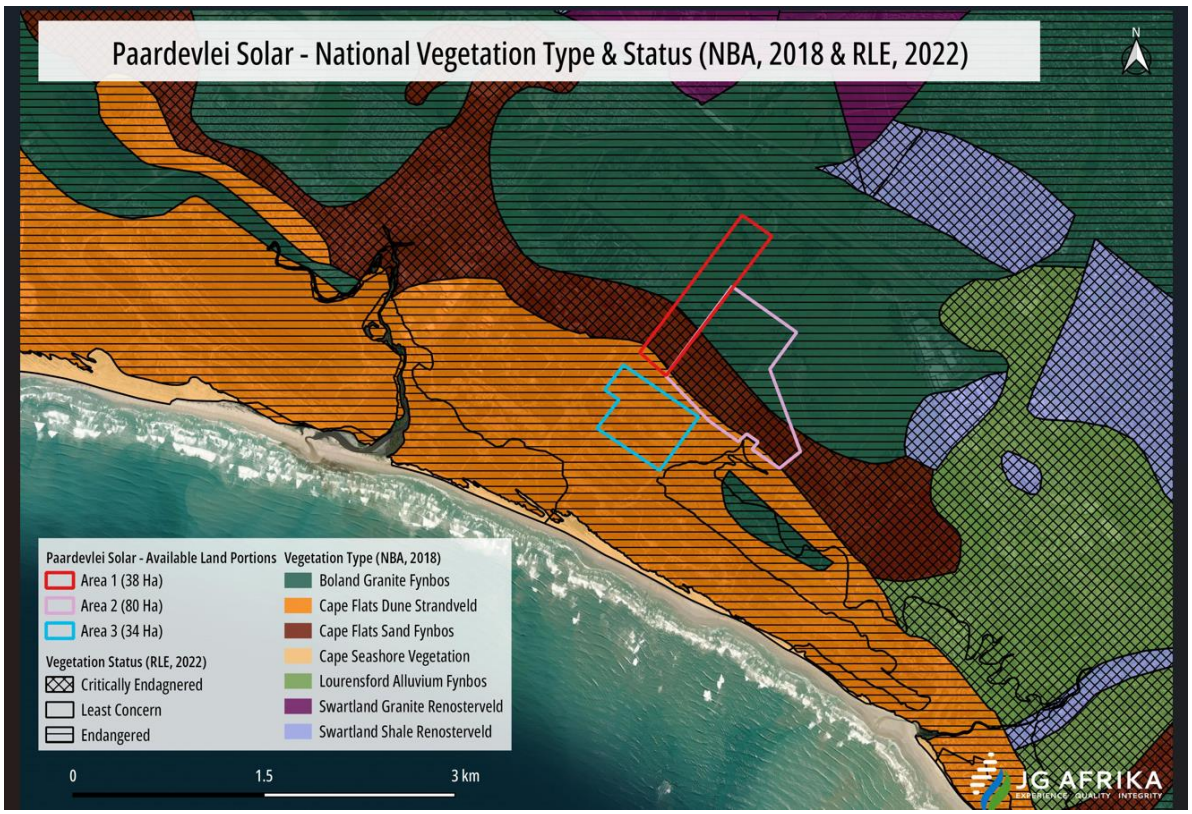


Figure 34: Updated vegetation map (NBA, 2018 & RLE, 2022) of the proposed Paardevlei Solar PV & BESS project site, as per Cape Nature's request

The Fynbos Biome is South Africa's plant biodiversity hotspot and is home to a total of six endemic avifauna species. The Fynbos Biome is relatively 85 000 kilometres square in size and is dominated by small leaved and evergreen shrubs that have the ability to regenerate through fire.

Within the Fynbos biome, the proposed development footprint falls mainly on the following bioregions:

- Boland Granite Fynbos.
- Cape Flats Dune Strandveld.
- Cape Flats Sand Fynbos

9.5 Surface Water Features

The study area lies within the Department of Water and Sanitation (DWS)'s quaternary catchment G22J. This quaternary catchment forms part of the DWS's Berg-Olifants Water Management Area. Like all catchments within Cape Town's boundaries, the G22J quaternary is included in the DWS's Berg River Catchment Classification. Resource Quality Objectives (RQOs) have been gazetted for rivers, estuaries, dams and groundwater resources in this area (Government Notice (GN) 1179 of 2020). However, no RQOs have been formulated to date for wetlands in this area. The current site includes only wetlands, and no estuaries or dams. At a topographical catchment level, CCT data shown in **Figure 35** suggest that the site in fact straddles two catchments – the Lourens River catchment to the east and the Eerste / Kuils catchment to the west. However, in fact the site is very flat and low-lying, and its drainage has been manipulated historically by the creation of a network of drainage channels, which drain surface water towards the Lourens River estuary, via the so-called "Main Drain" (an artificial west-east flowing drainage channel through the Paardevlei site, south of the present site. Thus, in practice, the site forms part of the Lourens River catchment only. In a full development context, as planned for in Bau-afrika (2014) and encapsulated in the Paardevlei site WULA, the site would drain both towards the Lourens River estuary and would also discharge into the sea further west via an artificially constructed outfall, not yet in place (see Bau-afrika 2014 and Day 2014).

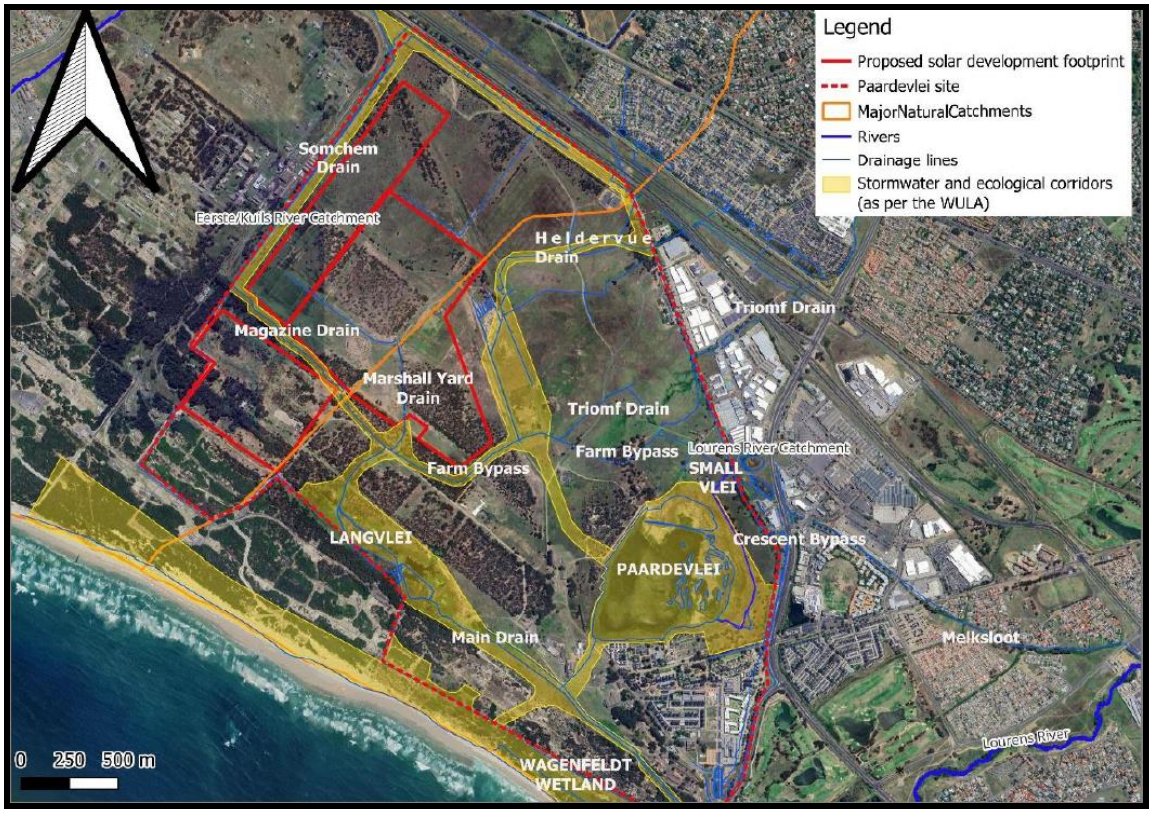


Figure 35: Catchment context of the proposed solar facility site, showing the greater Paardevlei site and locations of major wetlands, rivers and stormwater channels

Site overview and history of development

The site lies within the greater Paardevlei site. This area covers some 729 ha of natural, disturbed and partly developed land, including extensive areas that have been identified as wetlands (*Snaddon 2007, City of Cape Town 2013, Day 2012, 2014 and (updated) 2018*).

The Paardevlei site has a long history of disturbance. In the 1800s, the land was used for farming, but was acquired in 1899 by De Beers Consolidated Mines (Ltd) for the purpose of establishing a munitions factory, later being owned and operated by AECI (Brown and Magoba 2009). During this time, large areas (including the Paardevlei wetland itself) were contaminated by chemicals associated with the plant, and stands of eucalyptus trees were grown, as noise screens and buffers against shock waves generated during explosives testing.

In 1996, the munitions works ceased and parts of the property were sold for development, while remediation work to address areas of contamination commenced. The present study area was included in remediation activities, with contaminated soils being stripped off the surface in places. These works had only recently been completed at the time of the original wetland baseline study of the overall site (Day 2012), which noted that large areas of alluvial wetland occurred on the site, but that these had been almost completely transformed and, with a few exceptions, did not warrant conservation. Aquatic and biodiversity corridors were instead designed to provide ecological connectivity across the site and nodes of terrestrial and aquatic habitat diversity within the site.

In 2015, the City of Cape Town (CCT) purchased the overall site, and in 2018, the aquatic ecosystems baseline report was revisited (see Day 2018). This report noted that the site as a whole had undergone concentrated localized development since Day (2012)'s assessment, including the development of a sports club and soccer fields towards the western site boundary (i.e. in the present proposed solar site) and the installation of an east-west aligned sewer to the Macassar Waste Water Treatment Works (WWTW) (including through the present site), from west of Paardevlei, on an alignment just north of the Langvlei.

In addition, areas that were only recently remediated in 2011/2012, including large areas in the present study area from which volumes of contaminated surface soils had been stripped, had since stabilized to a new ecological (and hydrological) regime, including extensive wetland areas. Day (2014) predicted that these areas had high capacity to form perched wetlands that might detract from their future developmental potential.

9.6 Groundwater

Regional Geohydrology

The regional geohydrology of the study area comprises of a two layered aquifer system. A primary intergranular aquifer which is characterised by undifferentiated coastal deposits and a secondary, fractured aquifer belonging to the deeper seated Tygerberg Formation (refer to **Figure 36**).

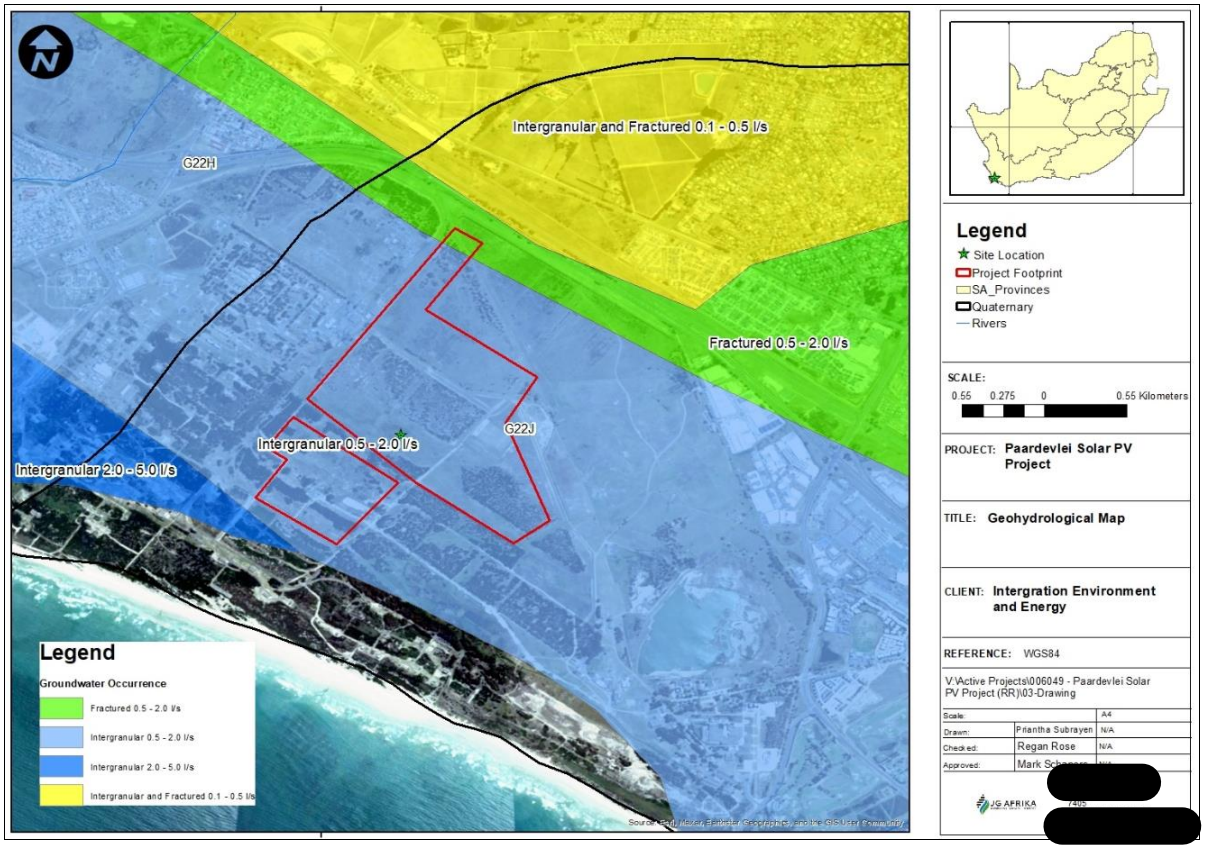


Figure 36: Regional Geohydrology

Median borehole yields in the range of 0.5l/s to 2.0l/s can be expected for both the primary and secondary aquifers which are considered to be moderate to high yielding aquifers in terms of the South African Aquifer Classification System.

Electrical Conductivity as indicated in the 1: 5000 Hydrogeological Map of Cape Town indicates ranges from 70 mS/m to 300 mS/m.

The site is located within the G22J quaternary catchment. Based on WR90 data (WRC; Surface Water Resources of South Africa 1990 Study) the Mean Annual Precipitation (MAP) and recharge for this catchment is 1002mm/annum and 102.2mm/annum. The project area comprises a single aquifer class unit which is characterised as Major in terms of the South African Aquifer Classification System.

Evidence of groundwater seepage is prevalent across the site. Observations made during a previous study indicate the presence of a vlei or marshy area to the south-east of the

development footprint and three additional water bodies, one within the north-eastern boundary of site, one to the south-east and one to the south-west. The latter two water bodies are likely as a result of rainfall and stormwater ingress into the old AECI Slimes and Return Water Dams.

Based on inferred data the groundwater flow direction across the site is in a south westerly direction, towards False Bay.

Hydrocensus

The National Groundwater Archive (NGA) and Water Use Authorization and Registration Management System (WARMS) of the Department of Water & Sanitation were interrogated to establish the existence of any groundwater resources and groundwater use in proximity to the site. The NGA reported twenty-two (22 No.) resources within 5 km of the site, while the WARMS reported seven (7 No.) resources. The resources are summarised in **Table 10**.

The measured depth to groundwater was recorded to range between 0.0mbgl to 8.2mbgl at boreholes near the site (**Figure 37**).

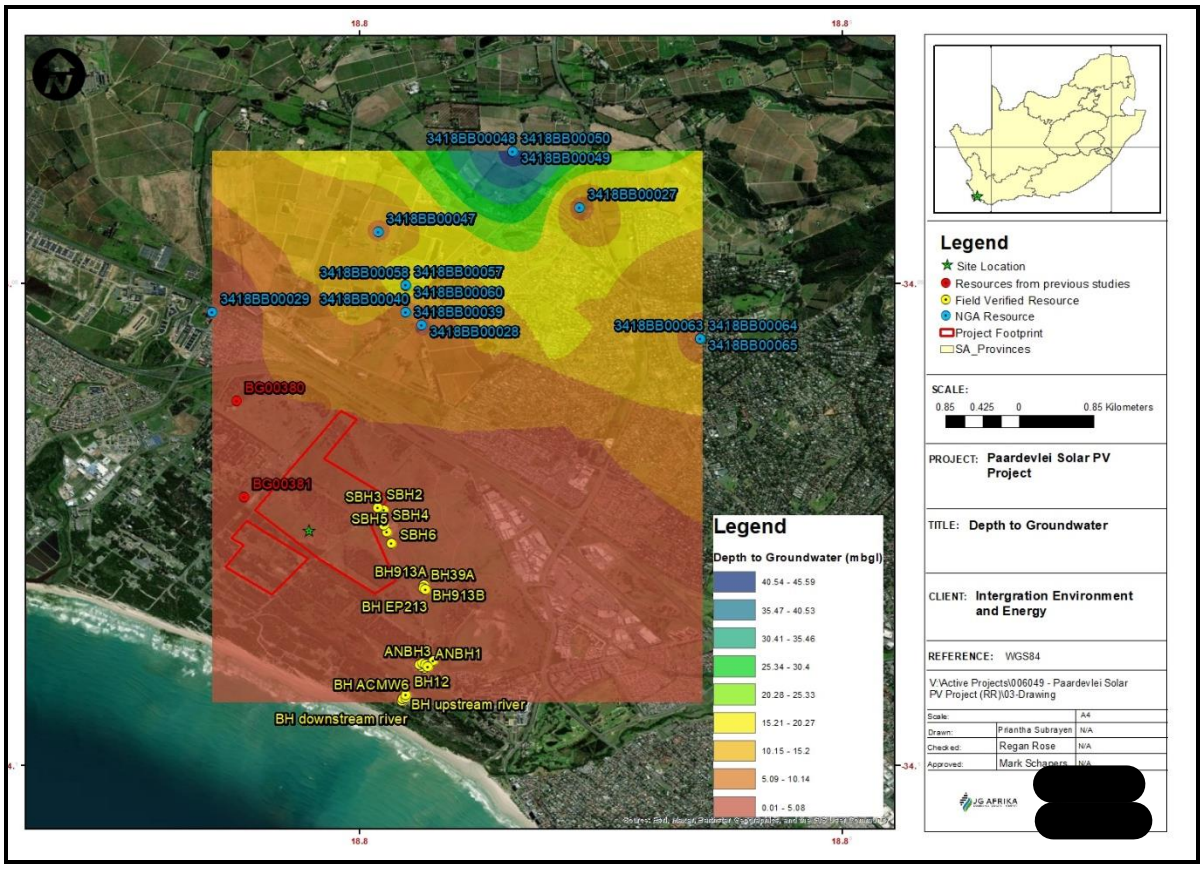


Figure 37: Depth to Groundwater

The inferred groundwater flow direction is from north-east to south-west towards the Atlantic Ocean and is presented in **Figure 38**.

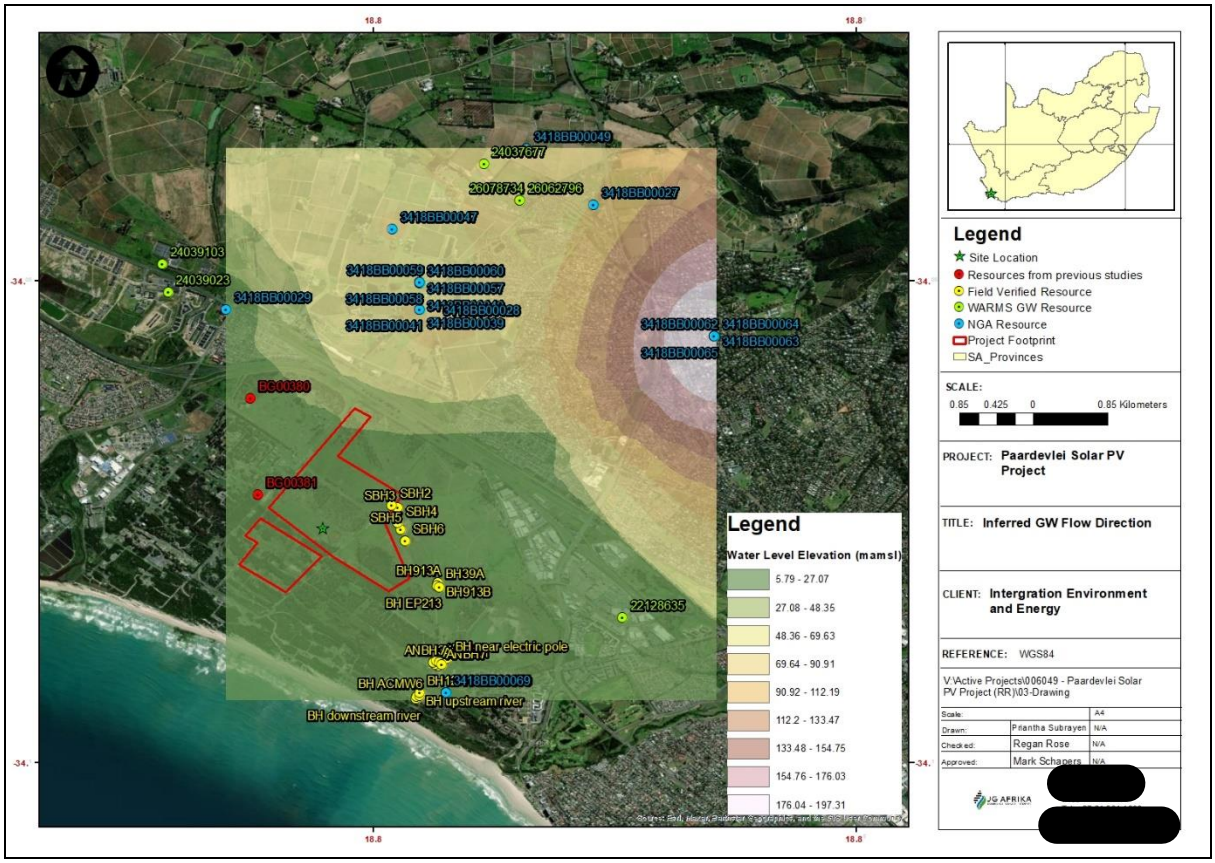


Figure 38: Groundwater contours indicating flow direction

Based on the field observations and previous studies conducted at the site the groundwater quality across the development area is considered to be poor with elevated concentrations of certain hydrochemical parameters of concern reported in the majority of the boreholes sampled.

Hydrochemical data obtained from five (5 No.) boreholes during the field investigation and laboratory analysis conducted on groundwater samples retrieved from three (3 No.) boreholes reiterate the presence of poor quality, high salinity groundwater across the site.

Table 9: Hydrocensus Field Data

Source	ID	Latitude	Longitude	Distance to Site (m)	Status	Depth (m)	Water Level (m)	Discharge (l/s)	Comment (Equipment, condition, observed use, etc.)	Field Data					Laboratory Analysis				
										pH	EC (mS/m)	DO (mg/l)	Osat. (%)	Temp (°C)	EC (mS/m)	Cl (mg/l)	K (mg/l)	Na (mg/l)	T. Alkalinity (mg/l)
NGA	3418BB00069	-34.09270	18.80762	>2000	Unknown	69.19	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00068	-34.09269	18.80762	>2000	Unknown	57.91	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00070	-34.09269	18.80763	>2000	Unknown	63.40	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00065	-34.05577	18.83540	>2000	Unknown	46.94	23.47	0.82	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00063	-34.05576	18.83540	>2000	Unknown	14.94	4.27	0.05	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00062	-34.05575	18.83540	>2000	Unknown	51.82	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00064	-34.05575	18.83541	>2000	Unknown	22.86	1.83	0.11	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00028	-34.05436	18.80651	>2000	Unknown	13.34	3.34	2.22	Domestic	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00041	-34.05298	18.80485	>2000	Unknown	42.37	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00029	-34.05297	18.78484	>2000	Unknown	30.00	0.76	-	Irrigation	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00039	-34.05297	18.80485	>2000	Unknown	35.66	9.14	1.51	Domestic	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00040	-34.05297	18.80486	>2000	Unknown	49.07	3.05	0.30	Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00060	-34.05021	18.80485	>2000	Unknown	35.66	19.51	0.05	Domestic	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00058	-34.05020	18.80485	>2000	Unknown	32.31	10.36	1.26	Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00057	-34.05019	18.80485	>2000	Unknown	59.13	25.91	0.10	Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00059	-34.05019	18.80486	>2000	Unknown	49.07	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00061	-34.05019	18.80487	>2000	Unknown	18.90	-	-	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00047	-34.04463	18.80207	>2000	Unknown	47.85	9.14	0.76	Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00027	-34.04213	18.82290	>2000	Unknown	30.00	8.40		Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00049	-34.03631	18.81596	>2000	Unknown	103.63	60.96	0.04	Agriculture	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00048	-34.03630	18.81596	>2000	Unknown	92.96	2.44	1.36	-	-	-	-	-	-	-	-	-	-	-
NGA	3418BB00050	-34.03630	18.81597	>2000	Unknown	103.63	60.96	0.04	-	-	-	-	-	-	-	-	-	-	-
WARMS	22028431	-34.0015	18.3783	>2000	Unknown	-	-	-	Agriculture	-	-	-	-	-	-	-	-	-	-
WARMS	24039103	-34.04825	18.77823	>2000	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WARMS	24039023	-34.05115	18.77883	>2000	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WARMS	24037677	-34.03790	18.81152	>2000	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WARMS	26078734	-34.04167	18.81528	>2000	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WARMS	26062796	-34.04167	18.81528	>2000	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WARMS	22128635	-34.08490	18.82590	>2000	Unknown	-	-	-	Industrial	-	-	-	-	-	-	-	-	-	-
FIELD	SBH6	-34.076954	18.803354	133	Unknown	3.80	1.13	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	SBH5	-34.07581	18.802893	136	Unknown	2.29	1.16	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	SBH4	-34.075099	18.802591	126	Unknown	2.78	0.90	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	SBH3	-34.073532	18.802622	47	Unknown	3.14	1.19	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	SBH2	-34.073312	18.801986	Within site	Unknown	2.75	1.23	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	BH913B	-34.081328	18.806778	288	Unknown	4.44	0.76	-	-	7.56	2320.0	2.76	36.90	19.60	1743.50	7406.00	20.10	3973.00	807.50
FIELD	BH913A	-34.081313	18.806769	289	Unknown	16.50	0.59	-	-	7.31	2770	1.10	15.40	21.50	1819.10	8867.00	19.72	4415.00	805.00
FIELD	BH39A	-34.081642	18.806672	286	Unknown	35.65	0.75	-	In accessible	-	-	-	-	-	-	-	-	-	-
FIELD	BH EP213	-34.081785	18.806881	310	Unknown	5.54	0.94	-	In accessible	-	-	-	-	-	-	-	-	-	-
FIELD	BH near electric pole	-34.089158	18.807667	970	Unknown	6.21	0.95	-	-	7.35	90.50	2.43	36.20	25.20	70.60	30.34	3.46	31.55	270.00
FIELD	ANBH7	-34.089954	18.806811	>2000	Unknown	4.88	1.20	-	-	-	-	-	-	-	-	-	-	-	-

Source	ID	Latitude	Longitude	Distance to Site (m)	Status	Depth (m)	Water Level (m)	Discharge (l/s)	Comment (Equipment, condition, observed use, etc.)	Field Data					Laboratory Analysis				
										pH	EC (mS/m)	DO (mg/l)	Osat. (%)	Temp (°C)	EC (mS/m)	Cl (mg/l)	K (mg/l)	Na (mg/l)	T. Alkalinity (mg/l)
FIELD	ANBH6	-34.089789	18.806478	988	Unknown	5.22	1.18	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	ANBH5	-34.089575	18.80627	960	Unknown	6.21	1.03	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	ANBH4	-34.089394	18.806608	936	Unknown	6.76	1.07	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	ANBH3	-34.089544	18.806908	936	Unknown	5.60	1.43	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	ANBH1	-34.089758	18.807111	>2000	Unknown	7.62	1.14	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	BH downstream river	-34.093369	18.804444	>2000	Dry	3.11	0.00	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	BH upstream river	-34.093085	18.804587	>2000	Dry	5.37	0.00	-	-	-	-	-	-	-	-	-	-	-	-
FIELD	BH ACMW6	-34.093003	18.804875	>2000	Unknown	11.70	7.37	-	-	6.97	1788	1.62	18.7	21.7	-	-	-	-	-
FIELD	BH12	-34.092675	18.804847	>2000	Unknown	9.30	7.03	-	-	6.78	1681	1.84	19.2	19.7	-	-	-	-	-

9.7 Land contamination

Historical context

Following a decision by the AECI board in 1995 to cease operational at the Somerset West Factory, a process was initiated to assess the historical impacts arising from the past operations and to remediate the site. The remediation process followed for the entire AECI Somerset West site was based on the USEPA, Risk Assessment Guidance for Superfund, Volume 1 (EPA/540/1-89/002).

The initial characterisation of the greater AECI site entailed a historical review, site walkovers, installation of monitoring wells and soil and groundwater sampling. Following the initial assessments, the greater AECI Somerset West site was subdivided into smaller areas based on past production activities, which were then characterised individually. The former operational areas, which form part of the proposed solar project study area, are shown in **Figure 39**.

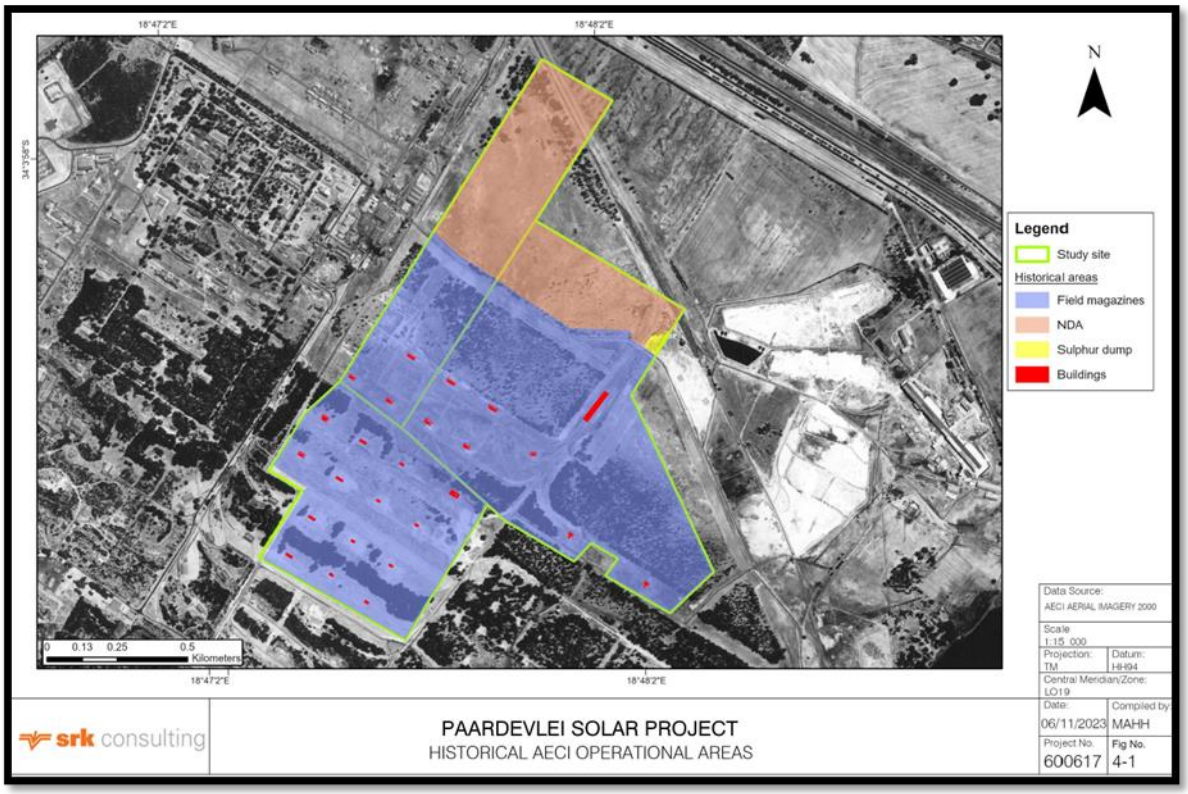


Figure 39: AECI former operational areas on the Paardevlei Site Development Footprint

This historical review is based on the historical reports compiled by a number of organisations and by AECI in-house, which document the site characterisation, decommissioning and remediation actions between 1995 and 2008, when the CoCT purchased the land holding from AECI Limited.

9.8 Archaeological and Cultural Heritage

Historical overview

Central to the history of the area, is the farm Paardevlei (see **Figure 40**), which lies just east of the river Vergelegen, which was also previously owned by Francois van der Stel, brother of Willem Adriaan Van der Stel. Together, the Van der Stel brothers owned virtually the entire length of the Lourens River between Vergelegen and False Bay.

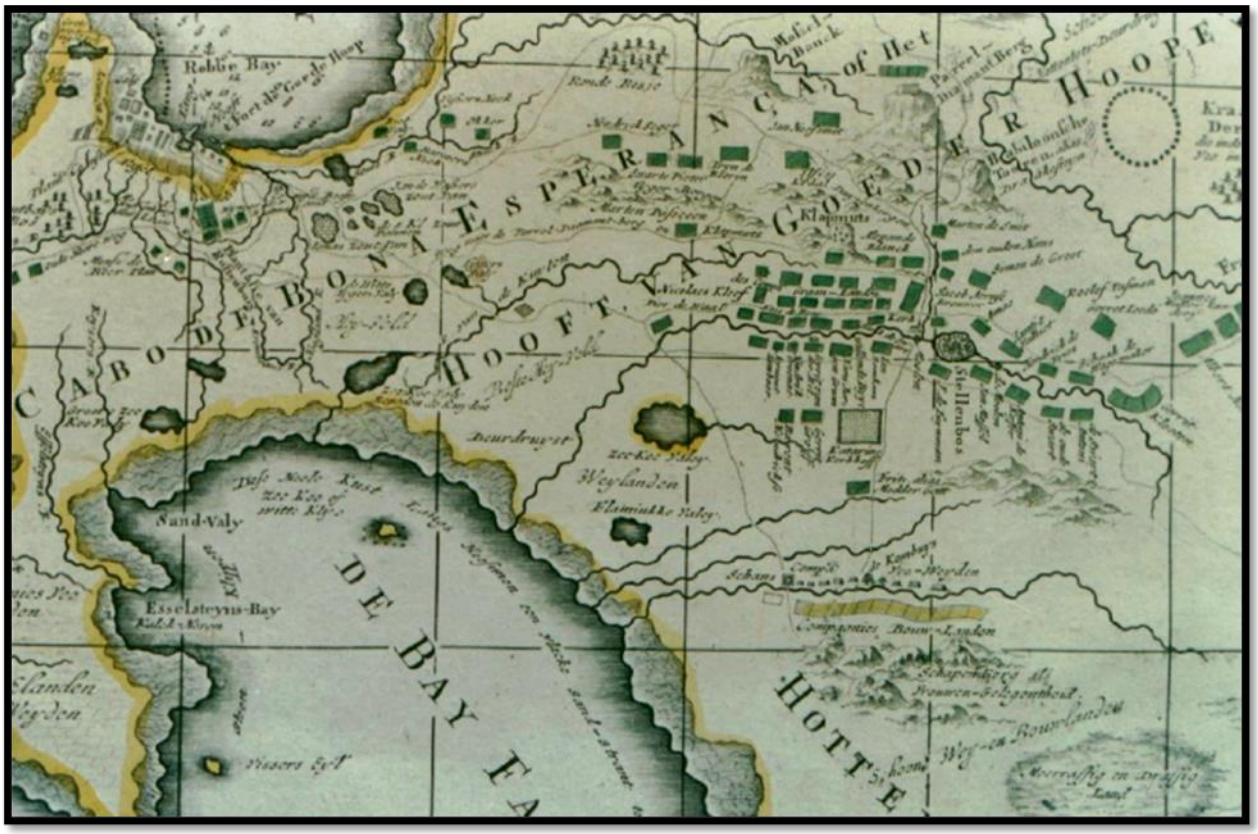


Figure 40: Locality Map of Paardevlei previously labelled "Flaminke Valey" on a 17th Century Map

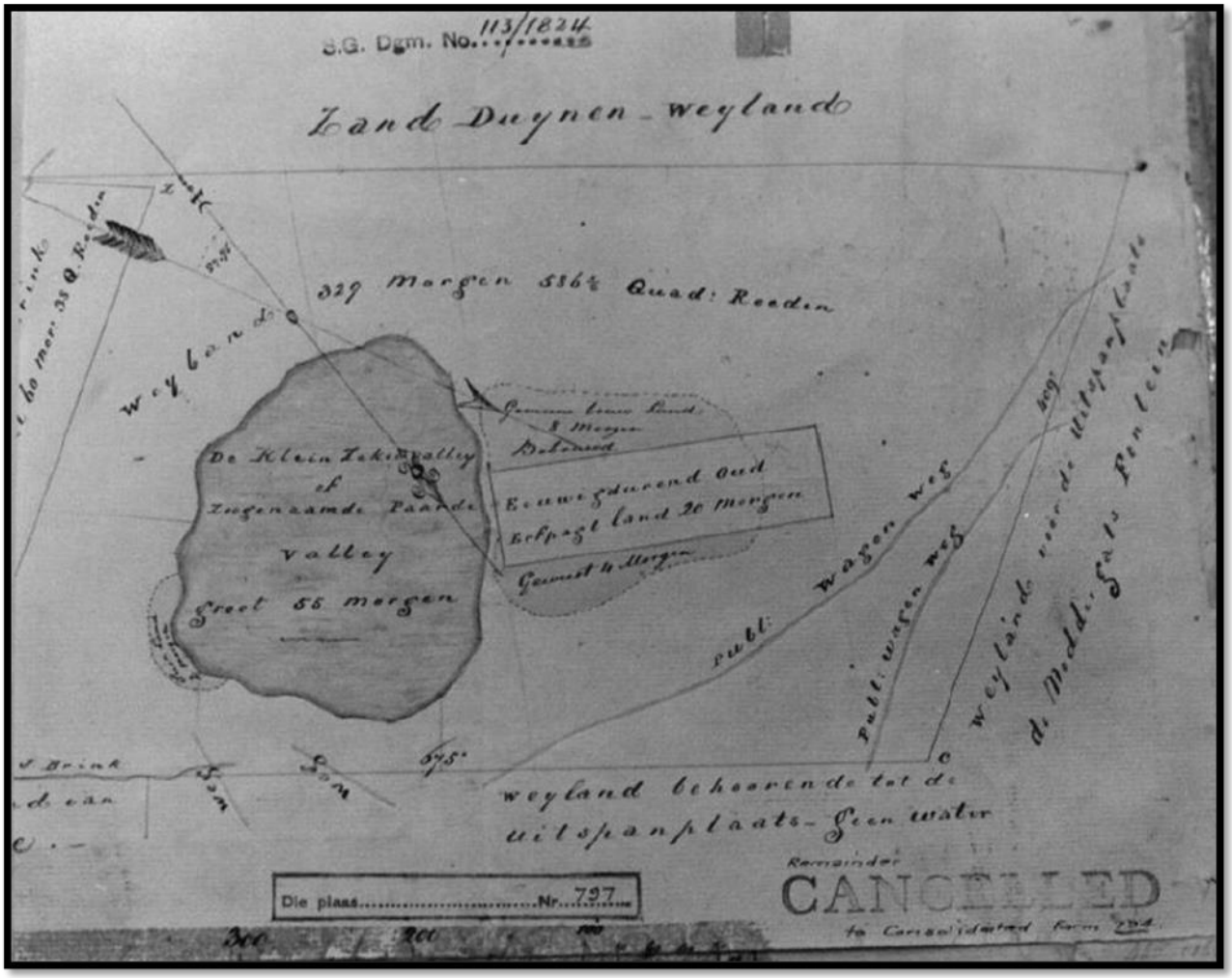


Figure 41: Historical Locality Map of Groot Paardevlei

Prior to Simon van der Stel, who became commander of the Cape on 12 October 1679 and was promoted to governor in 1691, was succeeded by his eldest son, Willem Adriaan van der Stel. Adriaan planted vineyards and was also an enthusiastic sheep-farmer.

A later landowner was Martin Melck who held Elsenburg as well as several properties in Cape Town.
The edge of the Paardevlei, Melck's sloot (1760) and other drainage ditches and the way they meet are notable features. The old furrow was dug by Martin Melck of Groot Paardevlei to supplement water in the wetland with water from the Lourens River leading to the large water body known as "Paardevlei".

Originally a farming area, De Beers Consolidated Mines bought the farm Groot Paardevlei from Martin Melck and a licence for the erection of an explosives factory was first granted in 1900. Building immediately commenced and was completed in 1901.

Paardevlei factory was just one of many, and conveniently located at the Paardevlei site at Somerset West in Cape of Good Hope (AECI, 2011). With typical efficiency and attention to detail, the company used these surplus areas as a dairy farm.

Also, of interest are isolated buildings, the farms silo, a row of labourer's cottages, and manager's houses. African Explosives and Industries (AE&I) registered as a company on 21 March 1924. Formed by a merger between the South African interests of Nobel Industries (UK) and the manufacturing arm of De Beers Consolidated Mines of Kimberley, their primary purpose was to provide blasting explosives and detonators to the gold and diamond mines. In 1944, they changed their name to African Explosives and Chemical Industries (AECI) and continued to manufacture and produce explosives at the Paardevlei site until the early 1990s.

During those decades and pollution of the soil and ground water occurred due to frequent dumping, spilling, storage and generally the handling of explosives and chemicals on the site. The area was cleaned up and decontaminated by AECI during the 1990s and early 200s in order to make it safe and habitable for human resettling. "Heartland Properties" started developing pockets of land selling it off to developers. One such pocket is the De Beers Precinct, to the south of the Paardevlei.

In summary, as extracted from the HIA findings, that the only buildings / structures of heritage significance within the solar development footprint is a **metal railway track** and the **De Beers Football Club**. The mention of over 40 structures older than 60 years that exist on the property refers to the overall Paardevlei site area, and not specific to the proposed solar development footprint.

9.9 Avifauna

Study area overview

The project area is a mosaic of grassland interspersed with woodlots and a number of wetland areas. It has a good dirt road network with occasional building structures present, most notably the De Beers Sports Stadium.

Grassland area is relatively uniform and areas in the southwest of the site appears to be undergoing alien invasive clearing (Port Jackson). Of interest is the very south-western portion of the project area, which has recovered and currently representative of Cape Flats Dune Strandveld, although this is outside of the proposed PV site development footprint area. The area just to the north of this, which is within the PV site development footprint area, appears also be Cape Flats Dune Strandveld (with invasive plantation species present).

The habitat types identified within the project area therefore include (see **Figure 42**):

1. Grassland.
2. Plantation (alien).
3. Aquatic (Wetlands & drainage lines).
4. Cape Flats Dune Strandveld – Secondary.
5. Manmade Structures (building, roads, powerlines).

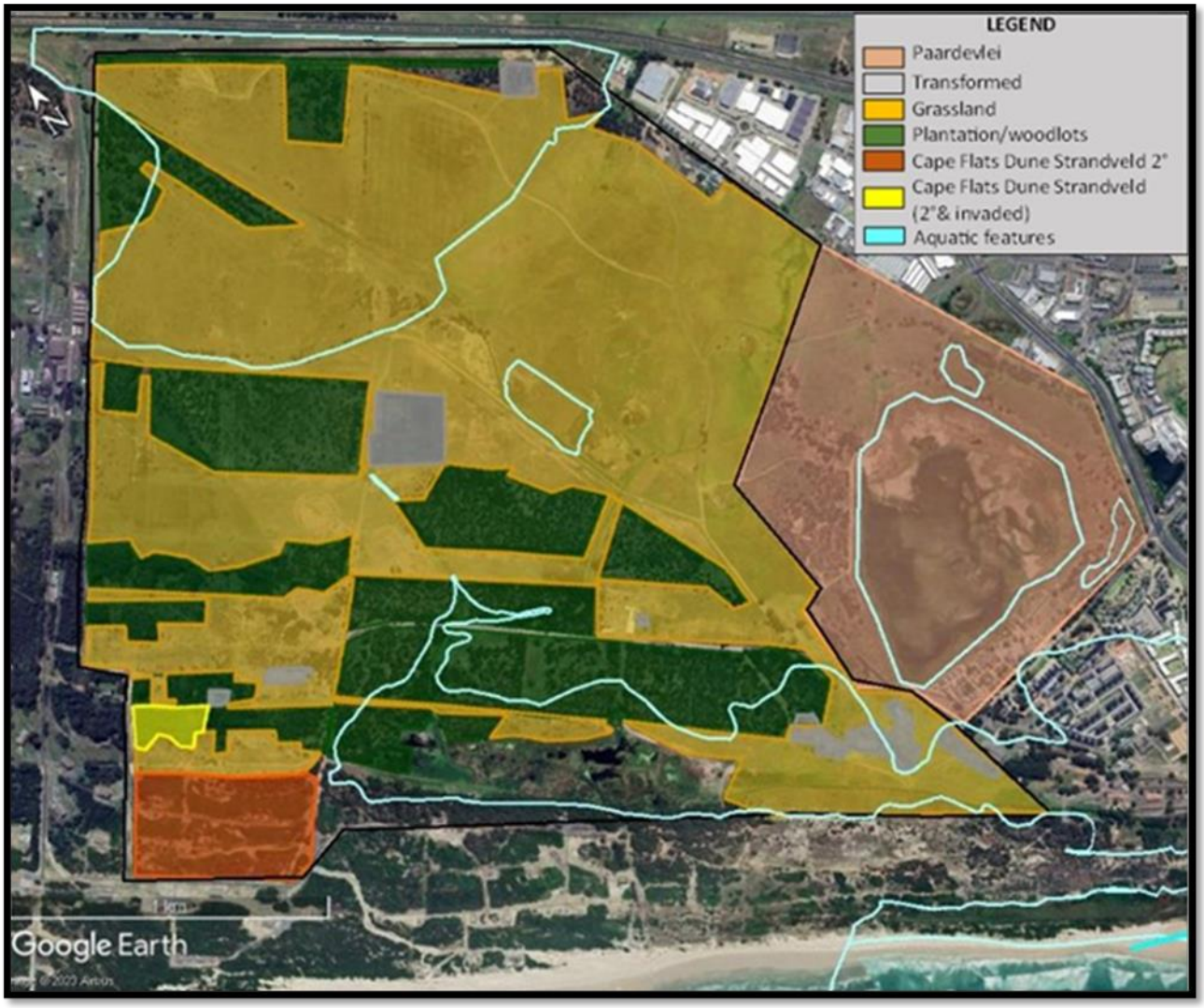


Figure 42: Habitats available to avifaunal species within and surrounding the project area.

9.10 Socio – Economic Environment

The Paardevlei PV Solar site is located the Helderberg Planning District (PD), which is one of 8 planning districts that make up the City of Cape Town. At a ward level the site located in Ward 15 which includes a number of middle to high income residential suburbs of Somerset West that are located to the north of the N2 and the area referred to a Firgrove Rural to the south of the N2 where the site is located (**Figure 43**).

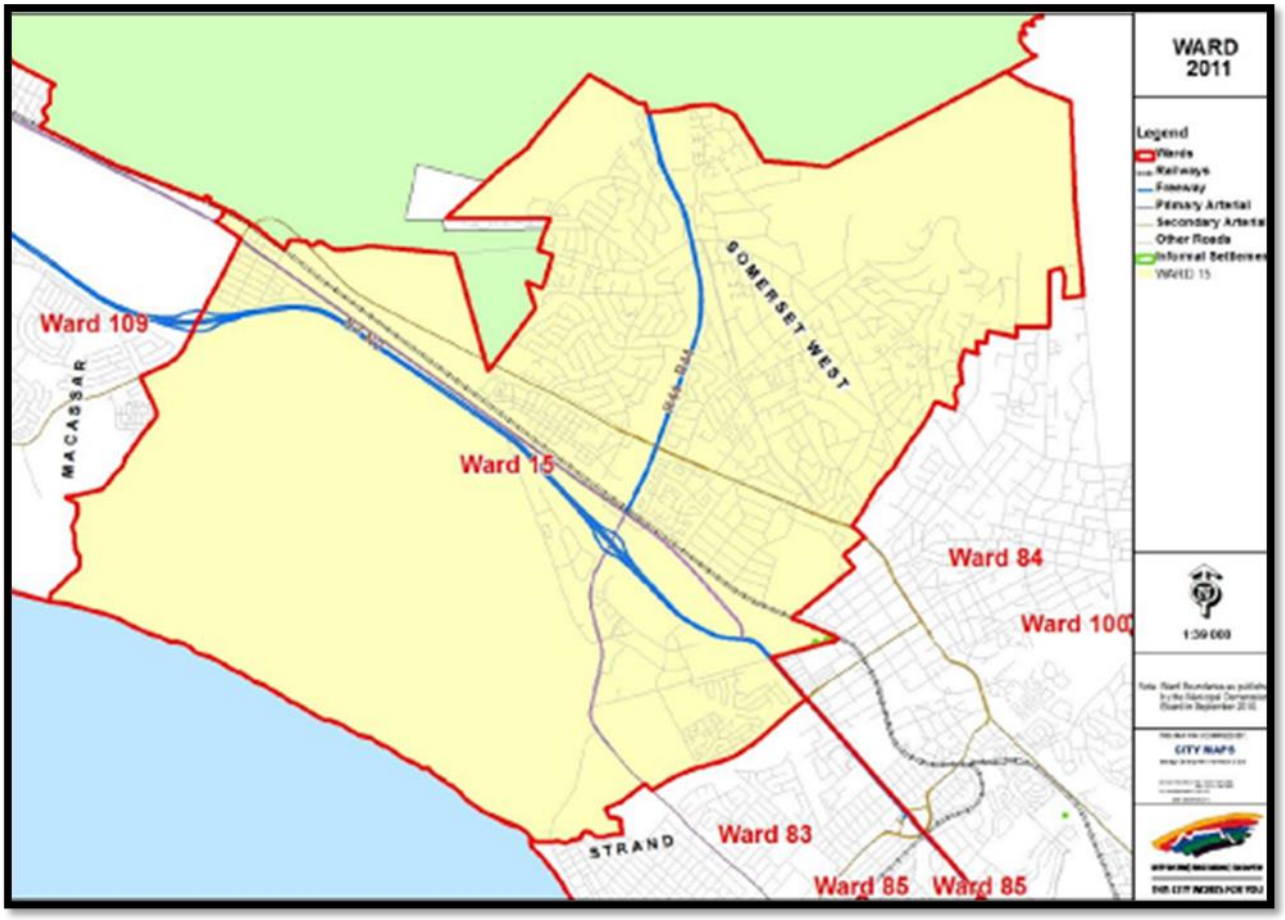


Figure 43: Location of Ward 15

Ward 109 (**Figure 44**) and Ward 83 (**Figure 45**) are located to the west and east of Ward 15 and the site respectively. The section below provides a high-level socio-economic overview of the City of Cape Town and Ward 15, 109, and 83. The information for each ward is based on the City of Cape Town Ward Profiles which are based on the 2011 Census. This information is therefore dated. No ward level information was collected as part of the 2016 Community Household Survey and ward level data from the 2022 Census was not available at the time of preparing the report.

Figure 44: Location of Ward 109

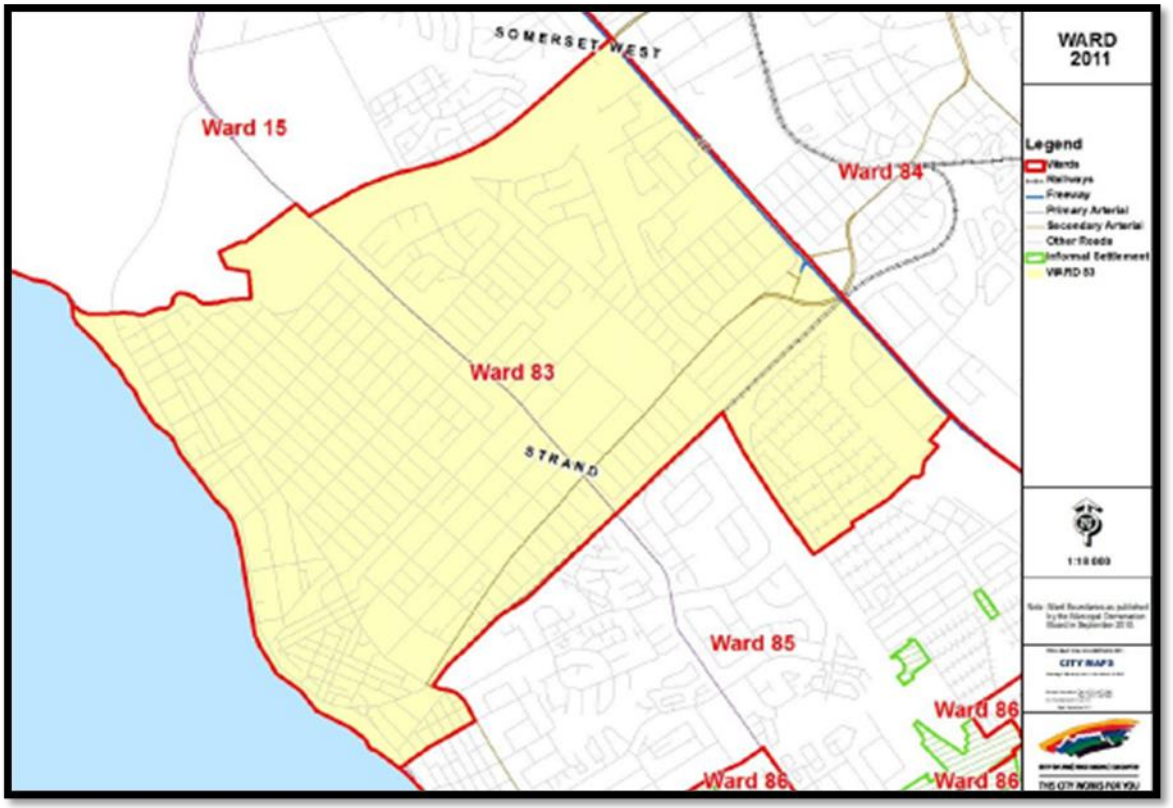


Figure 45: Location of Ward 83

Socio-economic overview of Ward 15

The section below provides a broad overview of some of the key socio-economic indicators for Ward 15, which includes the areas of Bell Aire, Braeview, Briza, Die Wingerd, Dorhill, Fraaigelegen, Goede Hoop, Griselda, Helderberg Estate, Heldervue, Helderzicht, Helena Heights, Highveld, La Sandra, Lonkers Hoogte, Lynn's View, Montchere, Monte Sereno, Nutwood, Parel Vallei, Pearl Marina, Pearl Rise, Schonenberg, Somerset Ridge, Somerset West, Spanish Farm, The Links and Westridge. The information is based on the City of Cape Town Ward Profile for Ward 15.

Population

In 2011 the population of Ward 15 was 22 606, an increase of 24% since 2001, and the number of households was 8 164, an increase of 28% since 2001. The average household size has declined slightly from 2.85 to 2.77 in the 10 years. The increase in the population of Ward 15 between 2001 and 2011 reflects popularity of Somerset West as a residential area. This trend is likely to have continued between 2011 and 2022 (the latest Census).

Table 10 indicates that Whites (70.5%) made up the largest population group in Ward 15 in 2011, followed by Coloureds (17.6%) and Black Africans (9%). Based on the 2011 Census data Ward 15 can be described as an area that has not seen significant transformation. In terms of age structure, 17.6% were between 0 and 14 years of age, 66.1% fell within the 15 – 64 age group (economically active group), while the remaining 16.3% were older than 65 years of age (**Table 11**). Based on this information the dependency ratio was 51.3%, which is higher than the ratio for the City of Cape Town (43.6%) and Western Cape (45%) (2011). The relatively high percentage over the age of 65 reflects the popularity Somerset West as a retirement destination.

Table 10: Population for Ward 15

Population	Male		Female		Total	
	Total	%	Total	%	Total	%
Black African	979	4.3%	1 057	4.7%	2 036	9.0%
Coloured	1 878	8.3%	2 109	9.3%	3 987	17.6%
Asian	111	0.5%	123	0.5%	234	1.0%
White	7 619	33.7%	8 328	36.8%	15 947	70.5%
Other	204	0.9%	199	0.9%	403	1.8%
Total	10 791	47.7%	11 816	52.3%	22 607	100.0%

Source: Census 2011

Table 11: Age profile for Ward 15

Ward 015 Age	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
0 to 4 years	148	7.3%	283	7.1%	19	8.2%	782	4.9%	31	7.7%	1 263	5.6%
5 to 14 years	253	12.4%	575	14.4%	31	13.4%	1 806	11.3%	51	12.6%	2 716	12.0%
15 to 24 years	405	19.9%	654	16.4%	62	26.7%	1 771	11.1%	45	11.1%	2 937	13.0%
25 to 64 years	1 015	49.9%	2 182	54.7%	108	46.6%	8 469	53.1%	234	57.9%	12 008	53.1%
65 years and older	214	10.5%	297	7.4%	12	5.2%	3 118	19.6%	43	10.6%	3 684	16.3%
Total	2 035	100.0%	3 991	100.0%	232	100.0%	15 946	100.0%	404	100.0%	22 608	100.0%

Source: Census 2011

Employment

The official unemployment rate in Ward 15 in 2011 was 6.10%. The highest unemployment level was amongst Coloureds (11.49%) and Black Africans (11.19%) (**Table 12**). The unemployment rate for Ward 15 was significantly lower than the rate for the Western Cape (21.6%) and City of Cape Town (25.9%). This is reflected the low dependency ratio and high household income and education levels for Ward 15. However, the unemployment figures are likely to have been affected by the Covid-19 pandemic.

Table 12: Employment Ward 15

Labour Force Indicators	Black African	Coloured	Asian	White	Other	Total
Population aged 15 to 64 years	**1 420**	**2 834**	**170**	**10 240**	**278**	**14 942**
Labour Force	**858**	**1 940**	**88**	**7 340**	**178**	**10 404**
Employed	762	1 717	78	7 051	161	9 769
Unemployed	96	223	10	289	17	635
Not Economically Active	**562**	**894**	**82**	**2 900**	**100**	**4 538**
Discouraged Work-seekers	22	46	1	63	14	146
Other not economically active	540	848	81	2 837	86	4 392
Rates %						
Unemployment rate	11.19%	11.49%	11.36%	3.94%	9.55%	6.10%
Labour absorption rate	53.66%	60.59%	45.88%	68.86%	57.91%	65.38%
Labour Force participation rate	60.42%	68.45%	51.76%	71.68%	64.03%	69.63%

Source: Census 2011

Household Income

In terms of household income, the 2011 Census indicated that 12.7% of the population of Ward 15 had no formal income, 2.9% earned between 1 and R1 600, and 3.4% earn between R 1 601 and R 3 200 per month (**Table 13**). Based on the poverty gap indicator produced by the World Bank Development Research Group, which measures poverty using information from household per capita income/consumption, households that earn R 3 200 per month or less are regarded a

falling below the poverty line5. Based on this measurement 19% of households in Ward 15 therefore fall below and or are close to the poverty line.

Most of the vulnerable households in Ward 15 were Black African and Coloured households. According to the 2011 Census, an estimated 47% of the CoCT's households had a formal income of less than R3 200 per month. The figure for Ward 15 is therefore significantly lower than the figure for the City of Cape and reflects the higher education levels.

Table 13: Monthly household income Ward 15

Monthly Household Income	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No income	125	20.4%	138	13.8%	14	24.1%	748	11.7%	14	13.5%	1 039	12.7%
R 1 - R 1 600	45	7.3%	82	8.2%	1	1.7%	102	1.6%	4	3.8%	234	2.9%
R 1 601 - R 3 200	49	8.0%	89	8.9%	0	0.0%	132	2.1%	5	4.8%	275	3.4%
R 3 201 - R 6 400	63	10.3%	120	12.0%	2	3.4%	289	4.5%	5	4.8%	479	5.9%
R 6 401 - R 12 800	69	11.2%	151	15.1%	12	20.7%	784	12.3%	11	10.6%	1 027	12.6%
R 12 801 - R 25 600	98	16.0%	219	21.9%	9	15.5%	1 452	22.7%	24	23.1%	1 802	22.1%
R 25 601 - R 51 200	88	14.3%	151	15.1%	11	19.0%	1 603	25.1%	24	23.1%	1 877	23.0%
R 51 201 - R 102 400	53	8.6%	38	3.8%	5	8.6%	888	13.9%	12	11.5%	996	12.2%
R 102 401 or more	24	3.9%	13	1.3%	4	6.9%	387	6.1%	5	4.8%	433	5.3%
Unspecified	0	0.0%	1	0.1%	0	0.0%	2	0.0%	0	0.0%	3	0.0%
Total	614	100.0%	1 002	100.0%	58	100.0 %	6 387	100.0%	104	100.0%	8 165	100.0%

Source: Census 2011

Education

In terms of education levels 0.4 % of the population over 20 years of age in Ward 15 has no schooling, while 30.3% of the population over 20 years of age had completed Grade 12 and 53.2% had a higher qualification (**Table 14**). A high percentage of the population over the age of 20 therefore have studied beyond school and achieved a higher education. The population of Ward 15 is therefore well educated, which is reflected in the higher household income levels.

Table 14: Adult Education Ward 15

Adult Education (for all aged 20+)	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No schooling	8	0.6%	35	1.3%	1	0.7%	24	0.2%	2	0.7%	70	0.4%
Some primary	55	4.2%	217	7.8%	15	10.4%	76	0.6%	4	1.4%	367	2.2%
Completed primary	18	1.4%	108	3.9%	1	0.7%	24	0.2%	6	2.1%	157	0.9%

[5] This figure roughly corresponds to the defined (2011) upper-band poverty line value used in the National Development Plan.

Some secondary	215	16.3%	771	27.6%	13	9.0%	897	7.2%	36	12.5%	1 932	11.4%
Grade 12	413	31.2%	1 048	37.6%	43	29.9%	3 523	28.4%	97	33.6%	5 124	30.3%
Higher	596	45.1%	598	21.4%	70	48.6%	7 602	61.4%	136	47.1%	9 002	53.2%
Other	17	1.3%	12	0.4%	1	0.7%	240	1.9%	8	2.8%	278	1.6%
Total	1 322	100.0%	2 789	100.0%	144	100.0%	12 386	100.0 %	289	100.0%	16 930	100.0%

Source: Census 2011

Socio-economic overview of Ward 109

The section below provides a broad overview of some of the key socio-economic indicators for Ward 109, which includes the areas of Faure, Croydon, Kelderhof, Kramat, Macassar, Makhasa, Umrhabulo Triangle and Sandvlei. The information is based on the City of Cape Town Ward Profile for Ward 109.

Population

In 2011 the population of Ward 109 was 40 332, an increase of 29% since 2001, and the number of households was 9 468, an increase of 38% since 2001. The average household size has declined slightly from 4.56 to 4.26 in the 10 years. The increase in the population of Ward 109 between 2001 and 2011 reflects strategic location of the area in terms of proximity to Somerset West and the N2. This trend is likely to have continued between 2011 and 2022 (the latest Census).

Table 15 indicates that Coloureds (72.7%) made up the largest population group in Ward 109 in 2011, followed by Black Africans (24.8%). The census data reflects Macassar's historic designation as a Coloured area in terms of Apartheid legislation. In terms of age structure, 29.2% were between 0 and 14 years of age, 66.8% fell within the 15 – 64 age group (economically active group), while only 4% were older than 65 years of age (**Table 16**).

Based on this information the dependency ratio was 49.7%, which is higher than the ratio for the City of Cape Town (43.6%) and Western Cape (45%) (2011). The age data reflects a relatively young population, which will create challenges in terms of employment. This challenge is reflected in South Africa's high youth unemployment rate, which was 60.70% in the second quarter of 2023, the highest recorded youth unemployment rate in the world.

Table 15: Population Ward 109

Population	**Male**		**Female**		**Total**	
	Total	**%**	**Total**	**%**	**Total**	**%**
Black African	4 929	12.2%	5 090	12.6%	10 019	24.8%
Coloured	14 177	35.2%	15 163	37.6%	29 340	72.7%
Asian	77	0.2%	78	0.2%	155	0.4%
White	204	0.5%	216	0.5%	420	1.0%

Other	254	0.6%	143	0.4%	397	1.0%
Total	19 641	48.7%	20 690	51.3%	40 331	100.0%

Source: Census 2011

Ward 109 Age	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
0 to 4 years	1 226	12.2%	3 322	11.3%	15	9.7%	43	10.2%	35	8.8%	4 641	11.5%
5 to 14 years	1 696	16.9%	5 302	18.1%	25	16.1%	57	13.5%	44	11.1%	7 124	17.7%
15 to 24 years	2 171	21.7%	5 520	18.8%	30	19.4%	34	8.1%	84	21.2%	7 839	19.4%
25 to 64 years	4 717	47.1%	13 882	47.3%	75	48.4%	244	57.8%	213	53.7%	19 131	47.4%
65 years and older	208	2.1%	1 314	4.5%	10	6.5%	44	10.4%	21	5.3%	1 597	4.0%
Total	10 018	100.0%	29 340	100.0%	155	100.0%	422	100.0%	397	100.0%	40 332	100.0%

Table 16: Age profile Ward 109

Source: Census 2011

Employment

The official unemployment rate in Ward 109 in 2011 was 26.35% (Compared to 6.10% for Ward 15). The highest unemployment level was amongst Black Africans (37.85%) and Coloureds (22.44%) (**Table 17**). The unemployment rate for Ward 109 was higher than the rate for the Western Cape (21.6%), but lower than the City of Cape Town (25.9%). The high unemployment levels are reflected in the high dependency ratio and lower household income and education levels for Ward 109. The unemployment figures are likely to be higher following the Covid-19 pandemic. In addition, as indicated above, South Africa youth unemployment rate, which was 60.70% in the second quarter of 2023, is the highest recorded youth unemployment rate in the world.

Table 17: Employment Ward 109

Labour Force Indicators	Black African	Coloured	Asian	White	Other	Total
Population aged 15 to 64 years	**6 888**	**19 402**	**106**	**277**	**297**	**26 970**
Labour Force	**4 637**	**12 467**	**65**	**213**	**206**	**17 588**
Employed	2 882	9 669	53	183	166	12 953
Unemployed	1 755	2 798	12	30	40	4 635
Not Economically Active	**2 251**	**6 935**	**41**	**64**	**91**	**9 382**
Discouraged Work-seekers	112	668	0	0	0	780
Other not economically active	2 139	6 267	41	64	91	8 602
Rates %						
Unemployment rate	37.85%	22.44%	18.46%	14.08%	19.42%	**26.35%**
Labour absorption rate	41.84%	49.84%	50.00%	66.06%	55.89%	48.03%
Labour Force participation rate	67.32%	64.26%	61.32%	76.90%	69.36%	65.21%

Source: Census 2011

Household Income

In terms of household income, the 2011 Census indicated that 13.4% of the population of Ward 109 had no formal income, 19.1% earned between 1 and R1 600, and 21.4% earn between R 1 601 and R 3 200 per month (**Table 18**). Based on the poverty gap indicator produced by the World Bank Development Research Group, which measures poverty using information from household per capita income/consumption, households that earn R 3 200 per month or less are regarded a falling below the poverty line[6]. Based on this measurement 53.9% of households in Ward 109 therefore fall below and or are close to the poverty line, compared to 19% in Ward 15. The poverty levels in Ward 109 are therefore almost three times higher than Ward 15.

Most of the vulnerable households in Ward 109 were Black African and Coloured households. According to the 2011 Census, an estimated 47% of the CoCT's households had a formal income of less than R3 200 per month. The figure for Ward 109 is therefore higher than the figure for the City of Cape and reflects the lower education levels and limited employment opportunities in the area.

Table 18: Monthly household income Ward 109

Monthly Household Income	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No income	499	17.8%	748	11.7%	2	7.1%	7	4.9%	12	12.5%	1 268	13.4%
R 1 - R 1 600	775	27.6%	1 007	15.7%	2	7.1%	10	7.0%	16	16.7%	1 810	19.1%
R 1 601 - R 3 200	688	24.5%	1 293	20.2%	7	25.0%	6	4.2%	31	32.3%	2 025	21.4%
R 3 201 - R 6 400	501	17.8%	1 507	23.6%	7	25.0%	17	11.9%	19	19.8%	2 051	21.7%
R 6 401 - R 12 800	229	8.2%	1 066	16.7%	6	21.4%	16	11.2%	9	9.4%	1 326	14.0%
R 12 801 - R 25 600	80	2.9%	540	8.4%	2	7.1%	32	22.4%	4	4.2%	658	6.9%
R 25 601 - R 51 200	28	1.0%	202	3.2%	2	7.1%	26	18.2%	5	5.2%	263	2.8%
R 51 201 - R 102 400	2	0.1%	22	0.3%	0	0.0%	19	13.3%	0	0.0%	43	0.5%
R 102 401 or more	5	0.2%	11	0.2%	0	0.0%	10	7.0%	0	0.0%	26	0.3%
Unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	2 807	100.0%	6 396	100.0 %	28	100.0 %	143	100.0%	96	100.0%	9 470	100.0%

Source: Census 2011

Education

In terms of education levels 2.2 % of the population over 20 years of age in Ward 109 has no schooling, while 24% of the population over 20 years of age had completed Grade 12. Only 4.5% of had a higher qualification compared to 53.2% for Ward 15 (**Table 19**). The population of Ward 109 is therefore poorly educated compared to Ward 15, which is reflected in the lower household income levels.

[6] This figure roughly corresponds to the defined (2011) upper-band poverty line value used in the National Development Plan.

Table 19: Adult Education Ward 109

Adult Education (for all aged 20+)	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No schooling	128	2.1%	365	2.0%	1	1.1%	8	2.9%	29	10.4%	531	2.2%
Some primary	722	11.9%	2 657	14.8%	9	9.7%	14	5.1%	19	6.8%	3 421	13.9%
Completed primary	306	5.0%	1 456	8.1%	7	7.5%	5	1.8%	14	5.0%	1 788	7.3%
Some secondary	2 982	49.1%	8 627	48.1%	36	38.7%	49	17.9%	106	38.0%	11 800	47.9%
Grade 12	1 601	26.4%	4 152	23.1%	31	33.3%	54	19.8%	71	25.4%	5 909	24.0%
Higher	305	5.0%	626	3.5%	8	8.6%	137	50.2%	29	10.4%	1 105	4.5%
Other	26	0.4%	53	0.3%	1	1.1%	6	2.2%	11	3.9%	97	0.4%
Total	6 070	100.0 %	17 936	100.0 %	93	100.0%	273	100.0 %	279	100.0 %	24 651	100.0%

Source: Census 2011

Type of dwelling and tenure status

In terms of dwelling type, 81.2% of dwellings in Ward 109 were formal dwellings, 10.2% were recorded as informal shacks (in backyards) and 7% as informal, not in backyard shacks. 17% of dwellings were therefore informal.

In terms of tenure status, 52.4% of properties/ dwellings were owned and fully paid off, while a further 14.3% were owned, but in the process of being paid off. 24.2% were rented, while 7.1% of dwellings were occupied rent-free. The relatively high percentage of properties that are paid off and or in the process of being paid off reflects a stable, well established residential suburb.

Municipal Services

In terms of municipal services, 73.4% of households in Ward 109 had access to piped water in their dwelling, compared to 98% for Ward 15, while 91.8% of households had access to a flush toilet connected to the public sewer system, and 96.8% of households had their refuse removed at least once a week. This information indicates that Ward 109 is a largely formal, well serviced area. The lower percentage of households that have piped water in their dwelling reflects the higher number of informal households in Ward 109 compared to Ward 15.

Socio-economic overview of Ward 83

The section below provides a broad overview of some of the key socio-economic indicators for Ward 83, which includes the areas of Asanda, Goedehoop, Strand and Strandvale. The information is based on the City of Cape Town Ward Profile for Ward 83.

Population

In 2011 the population of Ward 83 was 24 842, an increase of 110% since 2001, and the number of households was 8 862, an increase of 85% since 2001. The average household size has

increased from 2.47 to 2.8 in the 10 years. The increase in the population of Ward 83 between 2001 and 2011 reflects strategic location of the area in terms of proximity to Somerset West and the coast. This trend is likely to have continued between 2011 and 2022 (the latest Census).

Table 20 indicates that Black Africans (49.1%) made up the largest population group in Ward 83 in 2011, followed by Whites (43.2%). The demographic data reflects the transformation of the area since 1994 and the establishment of new, higher density residential developments, such as Asanda towards the N2. In terms of age structure, 20.8% were between 0 and 14 years of age, 68.9% fell within the 15 – 64 age group (economically active group), while 10.3% were older than 65 years of age (**Table 21**).

Based on this information the dependency ratio was 59%, which is higher than the ratio for the City of Cape Town (43.6%) and Western Cape (45%) (2011). The age data indicates a relatively high percentage of people over the age of 65 which reflects the attraction of the area as a retirement destination.

Table 20: Population Ward 83

Population	Male		Female		Total	
	Total	%	Total	%	Total	%
Black African	6 576	26.5%	5 629	22.7%	12 205	49.1%
Coloured	435	1.8%	562	2.3%	997	4.0%
Asian	39	0.2%	37	0.1%	76	0.3%
White	5 032	20.3%	5 705	23.0%	10 737	43.2%
Other	515	2.1%	312	1.3%	827	3.3%
Total	12 597	50.7%	12 245	49.3%	24 842	100.0%

Source: Census 2011

Ward 083 Age	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
0 to 4 years	1 673	13.7%	106	10.7%	5	6.6%	469	4.4%	86	10.4%	2 339	9.4%
5 to 14 years	1 752	14.4%	136	13.7%	9	11.8%	888	8.3%	37	4.5%	2 822	11.4%
15 to 24 years	2 353	19.3%	153	15.4%	8	10.5%	1 327	12.4%	170	20.5%	4 011	16.1%
25 to 64 years	6 266	51.3%	553	55.6%	47	61.8%	5 739	53.5%	510	61.6%	13 115	52.8%
65 years and older	162	1.3%	47	4.7%	7	9.2%	2 314	21.6%	25	3.0%	2 555	10.3%
Total	12 206	100.0%	995	100.0%	76	100.0%	10 737	100.0%	828	100.0%	24 842	100.0%

Table 21: Age profile for Ward 83

Source: Census 2011

Employment

The official unemployment rate in Ward 83 in 2011 was 19.72% (Compared to 6.10% for Ward 15 and 26.35% of Ward 109). The highest unemployment level was amongst Black Africans (29.95%) and Coloureds (22.31%) and (**Table 22**). The unemployment rate for Ward 83 was lower than the rate for the Western Cape (21.6%) and the City of Cape Town (25.9%). The lower unemployment levels are reflected in the relatively lower dependency ratio and higher education levels for Ward 83. The unemployment figures are likely to be higher following the Covid-19 pandemic. In addition, as indicated above, South Africa youth unemployment rate, which was 60.70% in the second quarter of 2023, is the highest recorded youth unemployment rate in the world.

Table 22: Employment Ward 83

Labour Force Indicators	Black African	Coloured	Asian	White	Other	Total
Population aged 15 to 64 years	**8 618**	**706**	**55**	**7 066**	**680**	**17 125**
Labour Force	**6 111**	**484**	**35**	**4 954**	**577**	**12 161**
Employed	4 281	376	28	4 613	465	9 763
Unemployed	1 830	108	7	341	112	2 398
Not Economically Active	**2 507**	**222**	**20**	**2 112**	**103**	**4 964**
Discouraged Work-seekers	519	20	0	59	23	621
Other not economically active	1 988	202	20	2 053	80	4 343
Rates %						
Unemployment rate	29.95%	22.31%	20.00%	6.88%	19.41%	19.72%
Labour absorption rate	49.68%	53.26%	50.91%	65.28%	68.38%	57.01%
Labour Force participation rate	70.91%	68.56%	63.64%	70.11%	84.85%	71.01%

Source: Census 2011

Household Income

In terms of household income, the 2011 Census indicated that 15.5% of the population of Ward 83 had no formal income, 18.5% earned between 1 and R1 600, and 16.5% earn between R 1 601 and R 3 200 per month (**Table 23**). Based on the poverty gap indicator produced by the World Bank Development Research Group, which measures poverty using information from household per capita income/consumption, households that earn R 3 200 per month or less are regarded a falling below the poverty line[7]. Based on this measurement 50.5% of households in Ward 83 therefore fall below and or are close to the poverty line, compared to 19% in Ward 15. The poverty levels in Ward 83 are therefore more than two times higher than Ward 15.

Most of the vulnerable households in Ward 109 were Black African and Coloured households. According to the 2011 Census, an estimated 47% of the CoCT's households had a formal income of less than R3 200 per month. The figure for Ward 83 is therefore higher than the figure for the City of Cape and reflects the lower education levels and limited employment opportunities in the area.

[7] This figure roughly corresponds to the defined (2011) upper-band poverty line value used in the National Development Plan.

Table 23: Monthly household income Ward 83

Monthly Household Income	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No income	901	20.4%	40	16.0%	2	8.3%	385	9.9%	50	18.1%	1 378	15.5%
R 1 - R 1 600	1 385	31.4%	44	17.6%	2	8.3%	147	3.8%	59	21.3%	1 637	18.5%
R 1 601 - R 3 200	1 172	26.6%	48	19.2%	1	4.2%	171	4.4%	73	26.4%	1 465	16.5%
R 3 201 - R 6 400	579	13.1%	31	12.4%	0	0.0%	461	11.8%	51	18.4%	1 122	12.7%
R 6 401 - R 12 800	232	5.3%	34	13.6%	6	25.0%	820	21.0%	27	9.7%	1 119	12.6%
R 12 801 - R 25 600	100	2.3%	27	10.8%	8	33.3%	925	23.7%	8	2.9%	1 068	12.1%
R 25 601 - R 51 200	22	0.5%	17	6.8%	2	8.3%	709	18.2%	8	2.9%	758	8.6%
R 51 201 - R 102 400	10	0.2%	8	3.2%	3	12.5%	217	5.6%	1	0.4%	239	2.7%
R 102 401 or more	6	0.1%	1	0.4%	0	0.0%	69	1.8%	0	0.0%	76	0.9%
Unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	4 407	100.0%	250	100.0 %	24	100.0 %	3 904	100.0%	277	100.0%	8 862	100.0%

Source: Census 2011

Education

In terms of education levels 1.2 % of the population over 20 years of age in Ward 83 has no schooling, while 33.7% of the population over 20 years of age had completed Grade 12. 24.2 % had a higher qualification compared to of 4.5% and 53.2% for Ward 109 and 15 respectively (**Table 24**). While a significantly higher percentage of the population in Ward 83 have attained a higher qualification than matric, the majority of these are Asians, Whites and Coloured. The education levels of Black Africans are significantly lower in this regard.

Table 24: Adult Education Ward 83

Adult Education (for all aged 20+)	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No schooling	167	2.1%	13	2.1%	0	0.0%	10	0.1%	15	2.2%	205	1.2%
Some primary	817	10.5%	54	8.6%	0	0.0%	67	0.8%	24	3.5%	962	5.5%
Completed primary	345	4.4%	34	5.4%	1	2.0%	29	0.3%	17	2.5%	426	2.4%
Some secondary	3 778	48.6%	230	36.6%	8	16.3%	1 323	15.9%	299	43.5%	5 638	32.3%
Grade 12	2 107	27.1%	175	27.8%	18	36.7%	3 328	40.0%	255	37.1%	5 883	33.7%
Higher	537	6.9%	117	18.6%	22	44.9%	3 475	41.8%	74	10.8%	4 225	24.2%
Other	24	0.3%	6	1.0%	0	0.0%	84	1.0%	3	0.4%	117	0.7%
Total	7 775	100.0 %	629	100.0 %	49	100.0%	8 316	100.0 %	687	100.0 %	17 456	100.0%

Source: Census 2011

Type of dwelling and tenure status

In terms of dwelling type, 83.2% of dwellings in Ward 83 were formal dwellings and 14.9% were recorded as informal shacks (in backyards).

In terms of tenure status, 28.4% of properties/ dwellings were owned and fully paid off, while a further 14.2% were owned, but in the process of being paid off. 45.5% were rented, while 10.3% of dwellings were occupied rent-free. The percentage of properties that are rented is significantly higher than that for Ward 15 (23.2%) and Ward 109 (24.2%).

Municipal Services

In terms of municipal services, 80.8% of households in Ward 83 had access to piped water in their dwelling, compared to 98% for Ward 15, while 98.8% of households had access to a flush toilet connected to the public sewer system, and 99.5% of households had their refuse removed at least once a week. This information indicates that Ward 83 is a well serviced area. The lower percentage of households that have piped water in their dwelling reflects the higher number of informal households in Ward 83 compared to Ward 15.

Socio-economic conditions summary

Based on ward level socio-economic data, it is evident that Ward 15 is made up of higher income households, with higher education levels and lower unemployment levels. The majority of the population in Ward 15 were Whites (70.5%), followed by Coloureds (17.6%) and Black Africans (9%). Based on the 2011 Census data there has been limited transformation of the racial profile of the area.

The majority of the population in Ward 109 were Coloureds (72.7%), followed by Black Africans (24.8%). The census data reflects Macassar's historic designation as a Coloured area in terms of Apartheid legislation. The figures for Ward 83 indicate that Black Africans (49.1%) made up the largest population group in 2011, followed by Whites (43.2%). This reflects the transformation of the area since 1994 and the establishment of new, higher density residential developments, such as Asanda towards the N2.

In terms of unemployment, Ward 15 had the lowest figures, 6.1% in 2011, compared to 26.35% for Ward 109 and 19.72% for Ward 83. The higher unemployment rates in Ward 109 and 83 correspond to higher poverty levels in these two wards. Based on the annual household income figures, 19% of households in Ward 15 fell below and or were close to the poverty line, compared to 53.9% in Ward 109 and 50.5% in Ward 83. The poverty levels for Wards 109 and 83 were therefore significantly higher than those in Ward 15. They were also higher than the average for the City of Cape Town, 47%.

The higher unemployment and poverty rates correspond to the lower education levels in Ward 109 and 83. Only 4.5% and 24% of adults in Wards 109 and 83 respectively had a higher qualification compared to 53.2% for Ward 15. The majority of the 24% in Ward 83 with higher education qualifications were Asians and Whites. **The residents of Ward 109 and Ward 83 can therefore be regarded as more vulnerable compared to the residents of Ward 15.**

10 SPECIALIST STUDIES

10.1 DFFE Screening Tool Report

A Screening Tool Report was generated for the proposed Paardevlei Solar PV & BESS Project using the national web-based Environmental Screening Tool, as required by the NEMA: EIA Regulations 2014 (as amended).

Table 25 indicates the level of sensitivity of each of the environmental themes identified within the National Web-based Screening Tool Report.

Table 25: Summary of the Screening Tool Report outcome

ASPECT	SENSITIVITY			
	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture				
Animal species				
Aquatic Biodiversity				
Archaeological and Cultural Heritage				
Avian Theme				
Civil Aviation (Solar PV) Theme				
Defence Theme				
Landscape (Solar) Theme				
Palaeontology Theme				
Plant Species Theme				
RFI Theme				
Terrestrial Biodiversity Theme				

10.1.1 Response and motivation in terms of identified site environmental sensitivities

10.1.1.1 Agriculture

The Agricultural theme (as presented in Table 25) within the project area is highlighted as being **High Sensitivity**. The site has been completely transformed by previous developments / industries and there is little evidence of existing agricultural activities (with the exception of some scattered livestock grazing the land) undertaken on the site.

It is the opinion of the Environment Assessment Practitioner (EAP) that an agricultural assessment is not required.

10.1.1.2 Animal Species

The Animal Species theme (as presented in Table 25) within the project area is highlighted as **High Sensitivity.**

It is the opinion of the Environment Assessment Practitioner (EAP) that an ecological assessment (which includes an assessment of fauna / animals and flora) is required.

10.1.1.3 Archaeological and Cultural Heritage

The Archaeological and Cultural Heritage theme (as presented in Table 25) within the project area is highlighted in the DFFE Screening Tool as **Very High Sensitivity.**

It is the opinion of the Environment Assessment Practitioner (EAP) that a **heritage assessment** (which includes archaeological, palaeontological and cultural aspects) is required.

10.1.1.4 Aquatic Sensitivity

The Aquatic Biodiversity Theme (as presented in Table 25) within the project area is highlighted in the DFFE Screening Tool as being of **Very High Sensitivity.**
As indicated in **Figure 46**, a **number of wetlands** are located within the proposed site development footprint.

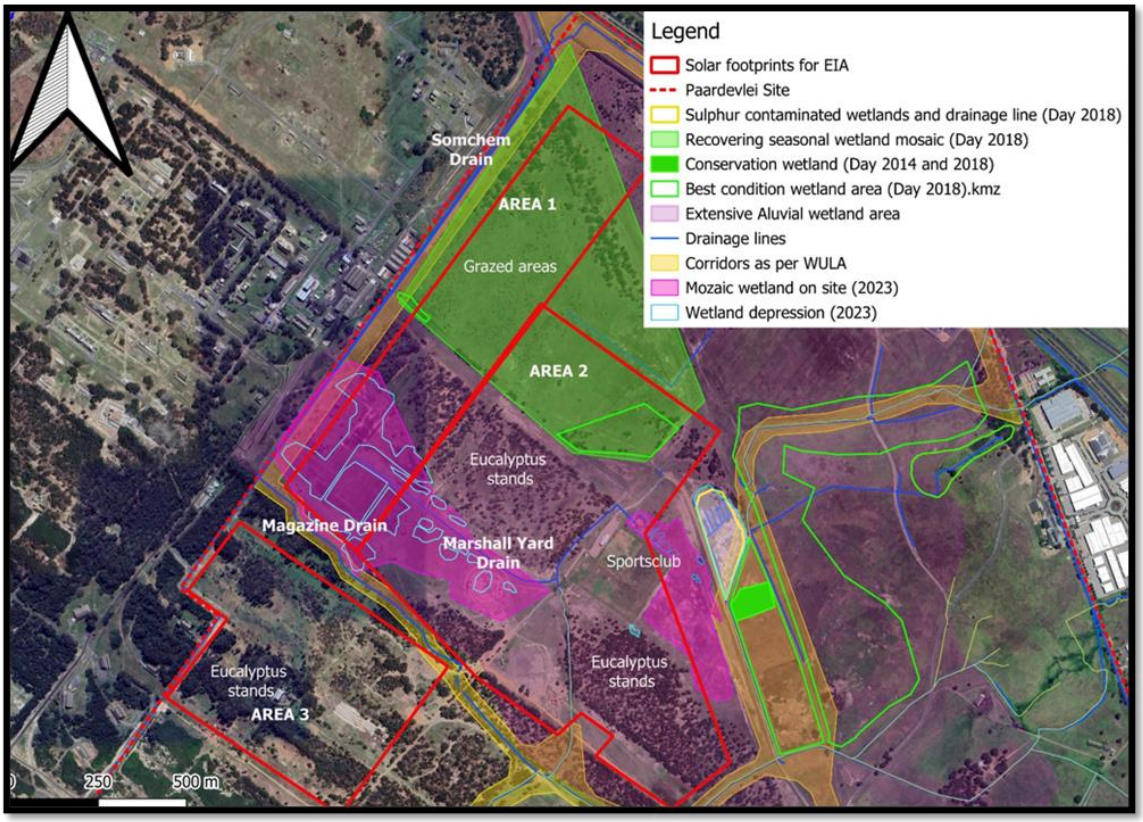


Figure 46: Wetland Map in relation to the proposed Paardevlei Solar PV & BESS project

It is the opinion of the Environment Assessment Practitioner (EAP) that an **aquatic biodiversity (wetland) assessment** is required.

10.1.1.5 Avian Species

The Avian Species Theme within the project area is highlighted in the DFFE Screening Tool as **Low Sensitivity.**

During the site investigation, the EAP noted a number of water birds associated with the wetlands systems, it is therefore the opinion of the Environment Assessment Practitioner (EAP) that an **ecological assessment (which includes avifauna)** will be required.

10.1.1.6 Civil Aviation (Solar PV) Theme

The Civil aviation Theme (as presented in Table 25) is highlighted as **Low Sensitivity**.

However, in terms of the South African Civil Aviation Authority requirements, the EAP is of the opinion that a **glint and glare assessment** will be required.

10.1.1.7 Defence Theme

The Defence Theme (as presented in Table 25) is highlighted as **Low Sensitivity**. The EAP is of the opinion that **no further assessment** will be required.

10.1.1.8 Landscape (Solar) Theme

The Landscape (Solar) Theme (as presented in Table 25) is highlighted as **Very High Sensitivity**. The EAP is therefore of the opinion that a **visual impact assessment** will be required.

10.1.1.9 Palaeontology

The Palaeontology Theme (as presented in Table 25) within the project area is highlighted as **Very High Sensitivity.** The EAP is therefore of the opinion that a **heritage assessment** (which includes palaeontological aspects) will be required.

10.1.1.10 Plant species

The Plant Species Theme (as presented in Table 25) within the project area is highlighted as **Medium Sensitivity.** The EAP is of the opinion that an **ecological assessment** (which includes an assessment of flora/plant species) will be required.

10.1.1.11 Radio Frequency Interference (RFI) Theme

The RFI Theme (as presented in Table 25) within the project area is highlighted as **Medium Sensitivity.** The EAP is of the opinion that **no further assessment** will be required.

10.1.1.12 Terrestrial Biodiversity

The Terrestrial Biodiversity Theme (as presented in Table 25) within the project area is highlighted in the DFFE Screening Tool as being of **Very High sensitivity.**

Critical Biodiversity Areas and Ecological Support Areas

As indicated in **Figure 47**, no critical biodiversity areas are located within the site development footprint area.

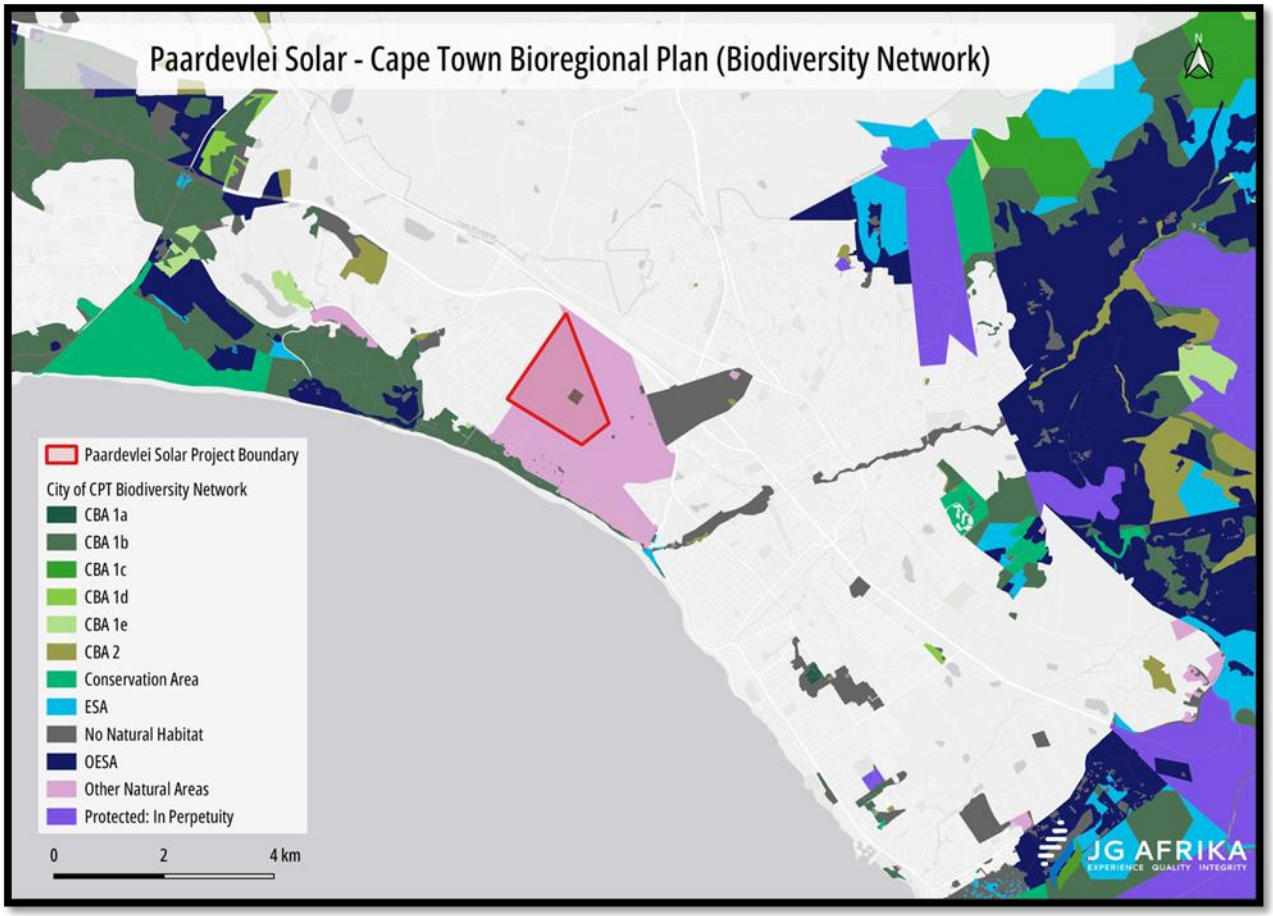


Figure 47: Biodiversity Status in relation to the proposed Paardevlei Solar PV & BESS project.

Protected Areas

As shown in **Figure 48**, there are no protected areas located within the site footprint. The closest protected area, namely the Helderberg Marine Protected Area is situated approximately 1 km south of the proposed development site.

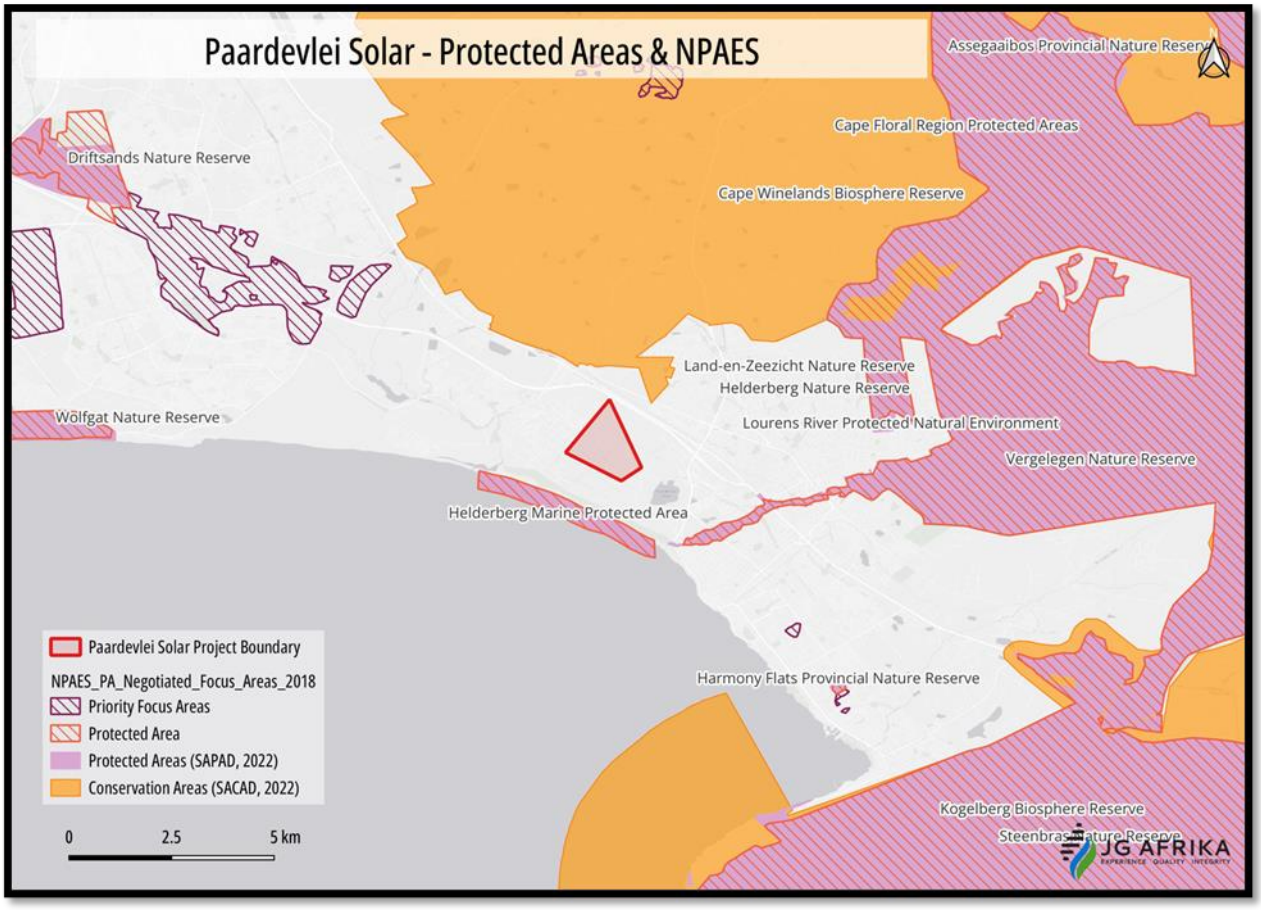


Figure 48: Protected Areas Map in relation to the proposed Paardevlei Solar PV & BESS project

Vegetation

As illustrated in **Figure 49**, the site falls within the Boland Granite Fynbos (Endangered), Cape Flats Sand Fynbos (Critically Endangered) and the Cape Flats Dune Strandveld (Endangered).

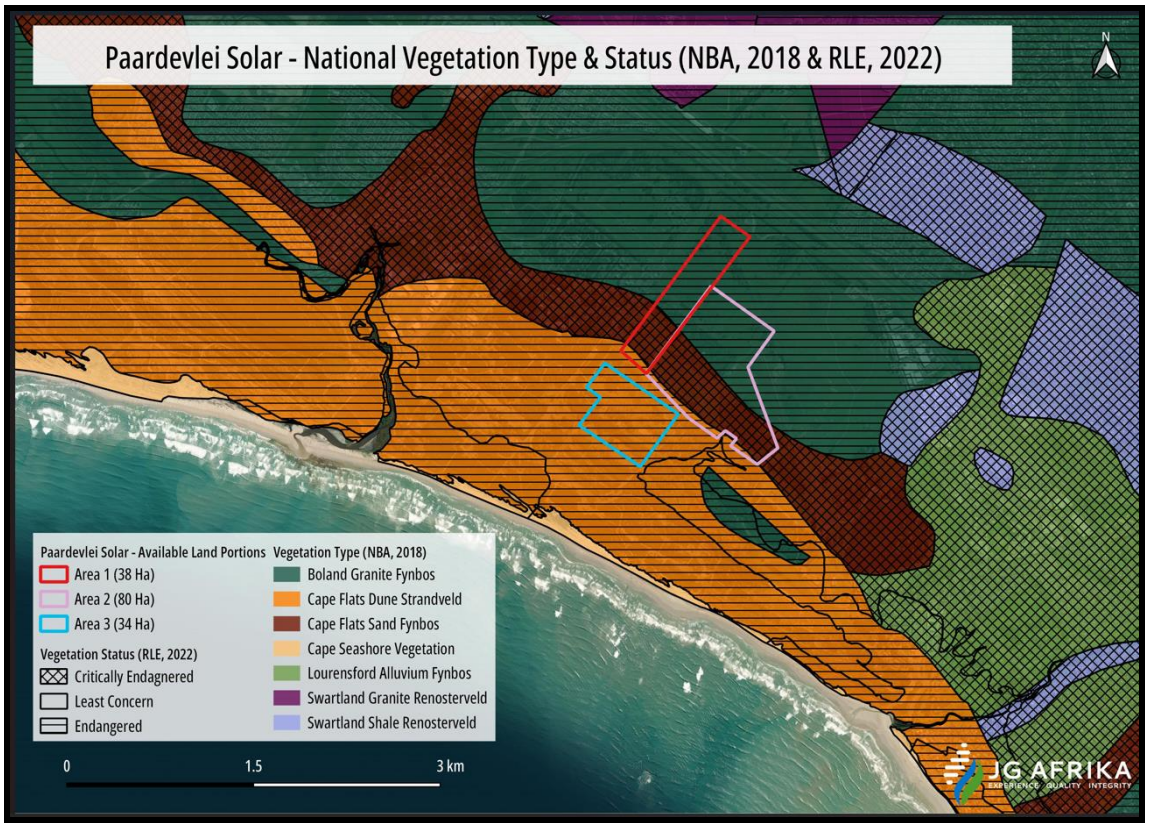


Figure 49: Updated vegetation map in relation to the proposed Paardevlei Solar PV & BESS project (as per Cape Nature's request)

Considering the above information, the EAP is of the opinion that an **ecological assessment**, which includes an assessment of terrestrial biodiversity, fauna (animal species) and flora (vegetation) will be required.

10.2 Summary of Specialist Studies undertaken

In line with the DFFE Screening Tool Report and Site Verification Assessment, the following Specialist Studies were undertaken:

- Visual Impact Assessment.
- Ecological (Fauna & Flora) Impact Assessment.
- Avifaunal Impact Assessment.
- Heritage Impact Assessment.
- Land contamination Assessment.
- Social Impact Assessment.
- Glint and Glare Assessment.
- Wetland Impact Assessment.
- Groundwater Impact Assessment.
- Climate Change Impact Assessment.

10.2.1 Visual Impact Assessment

Nuleaf Planning and Environmental (Pty) Ltd (Nuleaf) was appointed to conduct the Visual Impact Assessment for the proposed Paardevlei Solar PV and BESS project.

10.2.2 Scope of Works

The following SoW was proposed for the Visual Impact Assessment:

- Site visit.
- Visual Impact Assessment (VIA) of the site, and a Visual Impact Assessment Report to form part of the Scoping & EIA Assessment Process.
- The VIA should include the following: o The VIA must be compiled in terms of Appendix 6 of the Environmental Impact Assessment Regulations, as amended, promulgated under section 24(5) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
- Include the assessment of the No-go alternative. The No-go alternative is the option of not ful-filling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and eco-nomic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the re-port.
- Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in report). The significance of cumulative impacts must be assessed prior to and post mitigation.
- Provide mitigation measures to reduce any negative visual impacts associated with the pro-posed development.
- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.3 Study Findings

The result of the viewshed analyses for the proposed Paardevlei Solar PV & BESS are shown on **Figure 50**. The visibility analyses (or viewsheds) for the proposed development was calculated from each structure area as outlined in the layout. A height of 3m was used to illustrate the anticipated worst-case visual exposure of the structures (i.e. the maximum height). Receptor height was set at eye level.

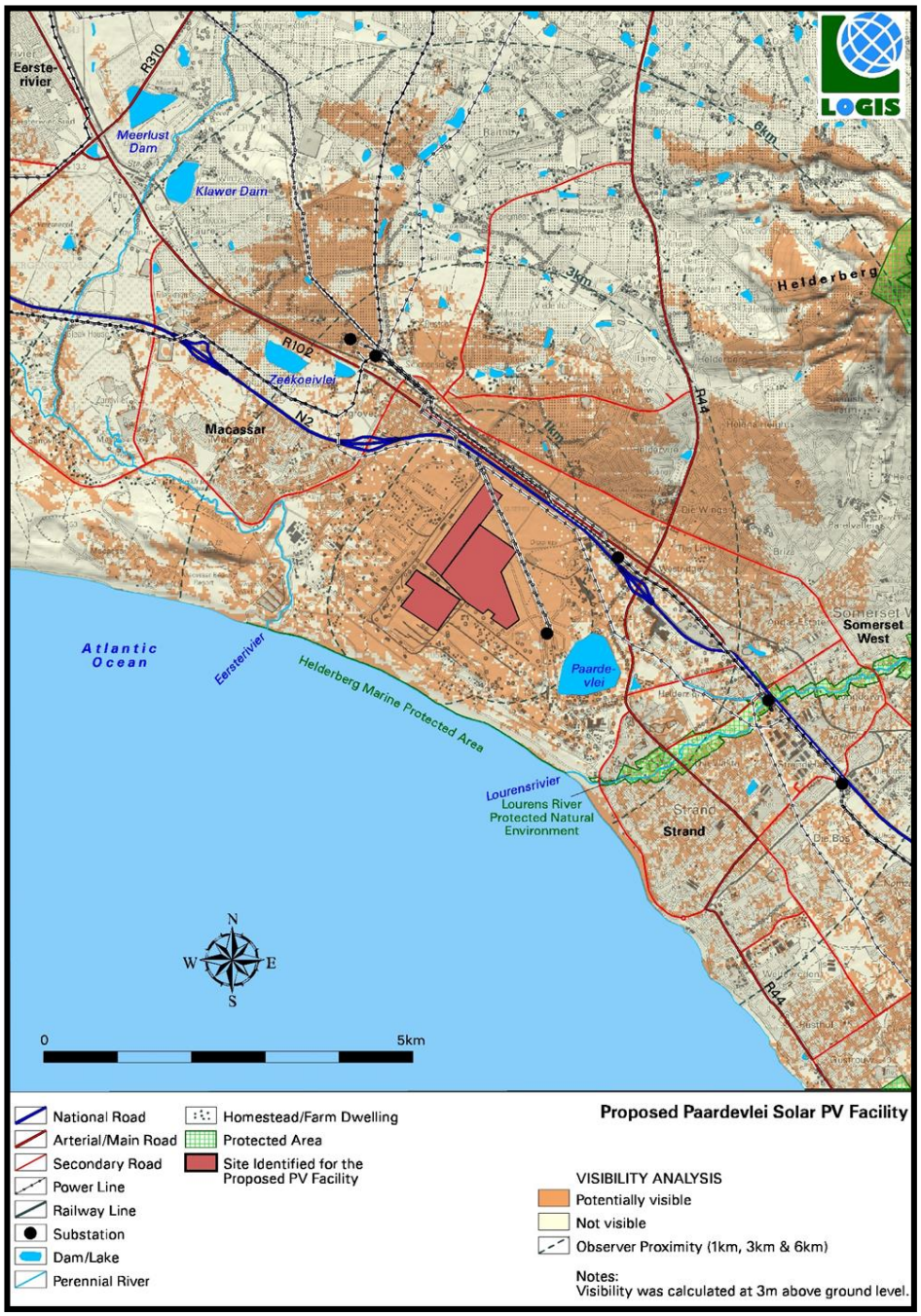


Figure 50: Potential visual exposure (viewshed analysis) of the proposed Paardevlei Solar PV & BESS

Figure 50 indicates areas from which the proposed PV Facility could potentially be visible, as well as proximity offsets (1km, 3km and 6km) from the proposed development area. Typically, structures of this height (i.e. 3m) may be visible from up to 6km away. In this respect, the anticipated Zone of Visual Influence for this facility as calculated from the development footprint (i.e. determined from the edge of the proposed development areas) has been indicated at 6km. The extent of visual exposure within this zone is expected to be very high. The viewshed analysis includes the effect of vegetation cover and existing structures on the exposure of the proposed infrastructure.

The Paardevlei Solar PV & BESS facility is expected to have a relatively constrained area of visual exposure owing to the shielding effect of lower lying elevation and the slightly undulating topography surrounding the site. Visually exposed areas are predominately located in and around the proposed site itself, on the Cape Flats to the west and extending slightly northwards into the Cape Winelands.

The identification of these homesteads or farm dwellings are based on their locations as per the SA 1: 50 000 topographical maps2. Should a homestead / residence / institution not be listed in terms of the SA 1: 50 000 topographical maps, then it is assumed that the impacts will be similar to the other identified residences within the same proximity radii. It should also be noted that this section of the report focusses only on the potential visual exposure at varying distances and it does not yet refer to visual impact significance or any correlation thereto.

The following is an overview of the findings of the viewshed of Paardevlei Solar PV & BESS, based on the layout illustrated on the Map provided:

0 - 1km - Short distance

It is expected that the facility would be highly visible within this zone with small pockets of visually screened areas lying to the southern portion of this zone. No residential suburbs and very limited farm dwellings are expected to be located within this zone, as such the sensitive receptors likely to be visually exposed to the PV facility infrastructure are limited to a small portion of observers travelling along the N2 and R102, visitors to the outskirts of the western portions of Paardevlei, as well as a portion of the Helderberg MPA.

1 - 3km - Medium distance

Visual exposure within this zone becomes slightly more scattered with visually screened areas lying to the far portions of the north, east and west of this zone. Visual exposure is concentrated to the inner portions of this zone, on the Somerset West suburbs of Lynn's View, Heldervue, Die Wingerd and The Links of Blue Downs to the north, scattered along the suburb of Macassar to the west, as well as the commercial and housing estates located to the east of the Paardevlei. Numerous residences/ farm dwellings are scattered throughout this zone including Eendrag, Waterkloof, Skoongesig and Rusthof to name a few. Portions of the N2, R102, R44 and other secondary roads fall within the visual exposure. Observers travelling along these roads are expected to be exposed to the PV facility infrastructure. Additionally, scattered areas of exposure are expected in and around Paardevlei and within the Lourens River Protected Natural Environment.

3 - 6km- Medium to long distance

Within a 3 – 6km radius, the visual exposure is greatly reduced and interrupted due to the undulating nature of the topography. Large visually screened areas are found to the north, east,

and west. Visual exposure is predominately concentrated to the north-west and the higher lying areas towards the Helderberg in the north-east, with scattered areas of exposure to the south-east. Numerous residential suburbs and farm dwellings are scattered throughout this zone inclusive of Stand, portions of Somerset West, and Ridgemoore. Portions of the N2, the R102 and R44 may be exposed to the PV Facility. It should also be noted that the southernmost portion of the Hottentots Holland Nature Reserve falls inside the visually exposed areas to the north-east.

> 6km – Long distance

At distances exceeding 6km the intensity of visual exposure is expected to be very low and highly unlikely due to the distance between the object (development) and the observer.

In general terms it is envisaged that the structures, where visible from shorter distances (e.g. less than 1km and potentially up to 3km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a visual impact. This may include residents of residential suburbs and farm dwellings mentioned above, as well as observers travelling along roads.

10.2.3.1 Impact Identification

The following visual impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Visual impact of construction activities on residents of towns and homesteads within 1km of the proposed PV facility.
- Visual impact of construction activities on observers travelling along the various roads within 1km to the proposed PV facility.
- Visual impact on sensitive receptors within a 1 – 3km radius of the PV facility.
- Visual impact on observers travelling along the roads and residents at homesteads within a 3 – 6km radius of the facility.
- Visual impact of lighting at night on sensitive visual receptors.
- Visual impact of solar glint and glare as a visual distraction and possible road travel hazard.
- Visual impact of solar glint and glare on residents of homesteads within 1km of the PV facility.
- Visual impact of the ancillary infrastructure on observers in close proximity to the structures.
- The potential impact on the sense of place of the region.

- Visual impact of the proposed development on tourist destinations / protected areas within 1km of the proposed infrastructure.

- Visual impact of the proposed development on tourist destinations / protected areas within 1-3km of the proposed infrastructure.

- Visual impact of the proposed development on tourist destinations / protected areas within 3-6km of the proposed infrastructure.

- The potential cumulative visual impact of the proposed facility together with the other existing built structures on sensitive visual receptors within the region.

The above impacts are further assessed in **Section 11** of this report.

10.2.3.2 Study Conclusions

The construction and operation of the proposed Paardevlei Solar PV & BESS may have a visual impact on the study area, especially within a 1km radius (and potentially up to a radius of 3km) of the proposed facility. The visual impact will differ amongst places, depending on the distance from the facility. Overall, the post mitigation significance of the visual impacts are expected to range from moderate to low.

The REEA database indicates that there are no proposed PV Facilities within 30km of the proposed facility. Additionally, the highly urbanised and industrialised nature of the study area makes it impractical to realistically assess the cumulative impacts of PV facilities located within a sea of other infrastructure of equal or higher visual prominence. Considering the above the potential cumulative visual impact is considered to be low and within acceptable limits. According to the Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for Involving Visual and Aesthetic Specialists in the EIA Process (Oberholzer, 2005), the criteria that determine whether or not a visual impact constitutes a potential fatal flaw are categorised as follows:

- Non-compliance with Acts, Ordinances, By-laws and adopted policies relating to visual pollution, scenic routes, special areas or proclaimed heritage sites.
- Non-compliance with conditions of existing Records of Decision.
- Impacts that may be evaluated to be of high significance and that are considered by the majority of the stakeholders and decision-makers to be unacceptable.

In terms of the above and to the knowledge of the author the proposed development is compliant with all Acts, Ordinances, By-laws and adopted policies relating to visual pollution, scenic routes, special areas or proclaimed heritage sites, as well as conditions of existing Records of Decisions (if any in place).

Since no objections have been reported from stakeholders or decision-makers within the region to the knowledge of the author, this assessment has adopted a risk averse approach by assuming that the perception of most (if not all) of the sensitive visual receptors, would be predominantly negative towards the development.

Therefore, with the information available to the specialist at the time of writing this report, it cannot be empirically determined that the statistical majority of objecting stakeholders were exceeded. If evidence to the contrary surfaces during the progression of the development application, the specialist reserves the right to revise the statement below.

A number of mitigation measures have been proposed. Regardless of whether or not mitigation measures will reduce the significance of the anticipated visual impacts, they are considered to be good practice and should all be implemented and maintained throughout the construction, operation, and decommissioning phases of the proposed facility.

If mitigation is undertaken as recommended, it is concluded that the significance of most of the anticipated visual impacts will remain at or be managed to acceptable levels. **As such, the Paardevlei Solar PV & BESS would be considered to be acceptable from a visual impact perspective.**

10.2.4 Ecological Impact Assessment

MORA Ecological Services (Pty) Ltd. (MORA) were appointed to conduct an Ecological Impact Assessment for the proposed Paardevlei Solar PV and BESS project.

10.2.4.1 Scope of Works

The following SoW are proposed:

- Site visit.
- Ecological Impact Assessment of the site, and an Ecological Impact Assessment Report to form part of the Scoping & EIA Report.
- The Ecological Impact Assessment should include the following:
    - The Ecological Impact Assessment must be compiled in terms of Government Notice 320[8] of 20 March 2020, as promulgated under section 24(5)(a) and (h) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
    - As per Government Notice 320 of 20 March, the assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.

[8] Procedures for the assessment and minimum criteria for reporting identified environmental themes when applying for environmental authorization.

- Comply with the Fynbos Forum's Ecosystem Guidelines for Environmental Assessment in the Western Cape (De Villiers et al. 2005) and Cape Nature's standard requirements.
- Provide a description of the site, vegetation of the site and areas of sensitivity in terms of vegetation.
- Identify and describe ecological diversity patterns at community and ecosystem level (main vegetation type, plant communities in vicinity and threatened/ vulnerable ecosystems species), at species level (species of conservation concern, presence of alien species) and in terms of significant landscape features.
- Comment on how ecological biodiversity processes would be affected by the proposed project.
- Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
- Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in report). The significance of cumulative impacts must be assessed prior to and post mitigation.
- Provide mitigation measures to reduce any negative ecological impacts associated with the proposed development.

- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.4.2 Study Findings

Two broad vegetation units were identified during the field survey. Both are based on floristic differences of different topographical positions and natural habitat types, namely:

- Vegetation Unit 1: Wetland vegetation (plant community) – Refer to **Figure 51.**

Figure 51: Vegetation Unit 1: Wetland vegetation (plant community)

Vegetation Unit 1 is internally draining, therefore, creating a pond that influences the development of wetland vegetation.

- Vegetation Unit 2: Natural grassland vegetation (Fynbos) - Refer to **Figure 52.**

Figure 52: Vegetation Unit 2: Natural grassland vegetation (Fynbos)

The natural grassland vegetation occupies the broader area of the development site and is on a lower slope, observed to be grazing land for cattle.

Invasive Alien Plants

The development layout footprint is dominated by woody invasive alien plants, i.e., the *Eucalyptus* sp. and the Acacia saligna. Therefore, it should be well ensured that invasive alien plants are controlled prior to reaching the construction phase of the development. This will assist in reducing the propagation of these problematic species across the footprint area.

From the survey conducted, the majority of the habitats within the project footprint have been highly transformed. However, there are aquatic microhabitats that have resulted from this land transformation.

Sensitive areas

The area delineated as a **polygon in yellow (4.31 Ha)** within the proposed development footprint is, from an ecological perspective, **a No-go area** (refer to **Figure 53**). **This is a drainage line that supports aquatic life and is critical to plant root health.**

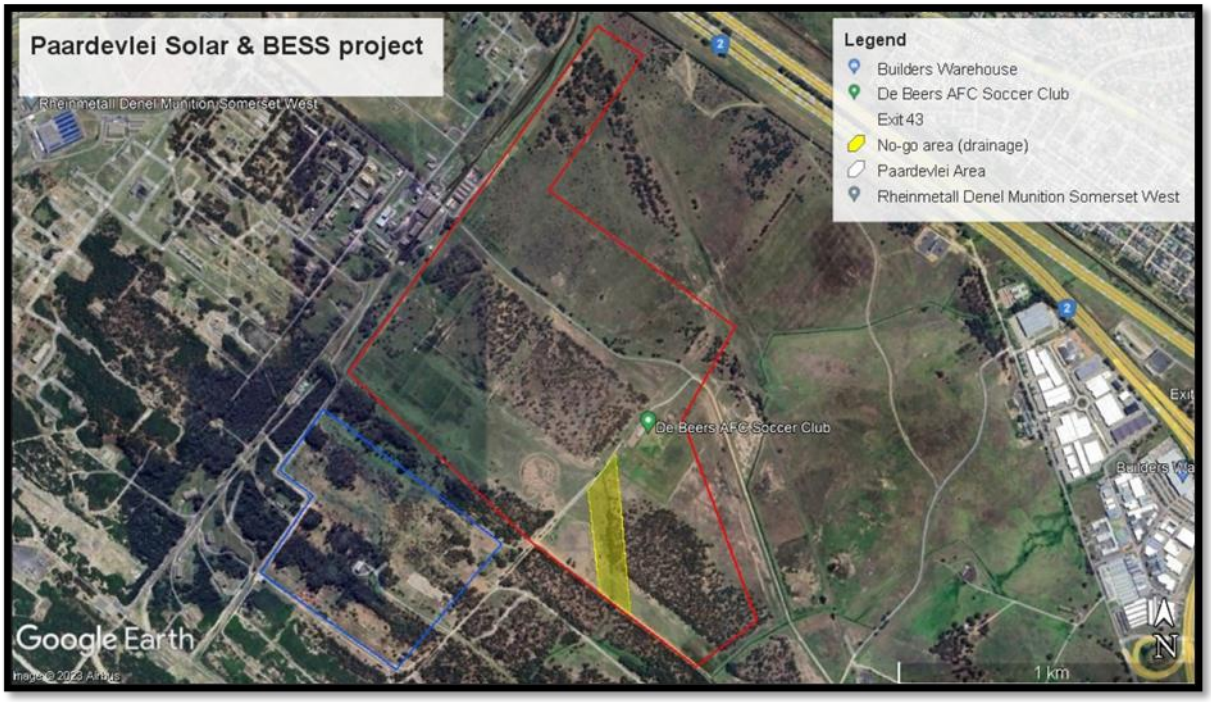


Figure 53: Delineation of no-go area as per Ecological specialist recommendation

10.2.4.3 Impact Identification

The following ecological impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Loss of priority flora and fauna species from important habitats.
- Loss of resident flora and fauna through increased disturbance.
- Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats for all animal and vegetation groups.
- Displacement of resident fauna species through increased disturbance.
- Cumulative displacement of resident fauna species
- Spreading of invasive alien plants within disturbed/transformed areas.

The above impacts are further assessed in **Section 11** of this report.

10.2.4.4 Study Conclusions

From the survey conducted, the majority of the habitats within the project footprint have been highly transformed. However, there are aquatic microhabitats that have resulted from this land transformation. These habitats may provide refuge for residential faunal species. The proposed infrastructure should not extend over the delineated drainage line in Figure 53. The structures should be aligned in such a way that the drainage line remains in its natural state.

Important recommendations for the conservation of the current vegetation structure

- The proponent must be committed to a conservation approach of practice and the actual footprint of disturbance must be kept to a minimum.
- As much of the natural environment must be conserved, there should be minimal vegetation clearing.
- Relocation of important species, identification and demarcation of specimens and sub habitats not
- Disturbed, will have to be done beforehand by a specialist.
- Important species (flora) that will be threatened by the development must be relocated to safer habitats by suitable specialists.
- Preventative erosion control measures to be put in place.
- Conduct alien invasive species monitoring on an annual basis.

Important recommendations for conservation of fauna species

- The proponent must be committed to a conservation approach of practice and the actual footprint of disturbance must be kept to a minimum.
- Relocation of important species, identification and demarcation of specimens and sub habitats not to be disturbed will have to be done beforehand by a specialist.
- Important species (fauna) that will be threatened by the development must be relocated to safer habitats by suitable specialists.
- Preventative erosion control measures to be put in place.

10.2.5 Avifaunal Impact Assessment

Biodiversity Africa was appointed to undertake the Avifaunal Impact Assessment for proposed Paardevlei Solar PV and BESS project.

10.2.5.1 Scope of Works

- Site visit.
- The next step is determined by the outcome of the site inspection, as follows:
    - If Species of Conservation Concern (SCC) are not found on site or the presence of the species is confirmed to be unlikely, an avifaunal compliance statement is required.

- If SCC, or likely presence of SCC is confirmed, a full avifaunal specialist assessment must be undertaken.
- The Avifaunal Assessment must be compiled in terms of Government Notice 3209 of 20 March 2020, as promulgated under section 24(5)(a) and (h) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
- As per Government Notice 320 of 20 March, the assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP).
- Provide a description of the site, and areas of sensitivity in terms of avifauna.
- Comment on how avifauna would be affected by the proposed project.
- Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
- Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in report). The significance of cumulative impacts must be assessed prior to and post mitigation.
- Provide mitigation measures to reduce any negative ecological impacts associated with the proposed development.

- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.5.2 Study Findings

The field survey recorded 50 bird species within the project area through all sampling methods. At the time of the field survey bird species diversity and abundance were moderate to low across the entire project site.

Grassland and Wetland habitat

A total of 35 bird species were recorded by walked transects during the site visit period (**Table 26**). The most abundant species was the African Sacred Ibis followed by the Western Cattle Egret,

[9] Procedures for the assessment and minimum criteria for reporting identified environmental themes when applying for environmental authorization.

Common Starling and Egyptian Goose. The bird species diversity is considered low reflecting the transformed and uniform nature of the habitat on site.

Table 26: Recorded bird species within the Grassland and Wetland habitats (Paardevlei site)

#	Common name	Scientific name	# Birds	# Records
1	African Sacred Ibis	*Threskiornis aethiopicus*	89	4
2	Western Cattle Egret	*Bubulcus ibis*	76	5
3	Common Starling	Sturnus vulgaris	20	1
4	Egyptian Goose	*Alopochen aegyptiaca*	18	8
5	Plain-backed Pipit	*Anthus leucophrys*	13	8
6	Cape Canary	*Serinus canicollis*	11	4
7	Cape Crow	*Corvus capensis*	8	2
8	Greater Striped Swallow	Cecropis cucullata	8	1
9	Hadada Ibis	*Bostrychia hagedash*	8	4
10	White-throated Swallow	*Hirundo albigularis*	8	7
11	Cape Spurfowl	*Pternistis capensis*	5	2
12	Fiscal Flycatcher	*Melaenornis silens*	5	4
13	Pearl-breasted Swallow	Hirundo dimidiata	5	1
14	Black Heron	*Egretta ardesiaca*	4	1
15	Blue Crane	*Grus paradisea*	4	1
16	Common House Martin	*Delichon urbicum*	4	1
17	Glossy Ibis	*Plegadis falcinellus*	4	1
18	Jackal Buzzard	*Buteo rufofuscus*	4	3
19	Red-eyed Dove	*Streptopelia semitorquata*	4	3
20	White-breasted Cormorant	*Phalacrocorax lucidus*	4	3
21	Fork-tailed Drongo	*Dicrurus adsimilis*	3	1
22	Karoo Prinia	*Prinia maculosa*	3	3
23	Mourning Collared Dove	*Streptopelia decipiens*	3	4
24	African Hoopoe	*Upupa africana*	2	2
25	African Pygmy Goose	*Nettapus auritus*	2	1
26	Cape Wagtail	*Motacilla capensis*	2	1
27	Kelp Gull	*Larus dominicanus*	2	1
28	Lanner Falcon	*Falco biarmicus*	2	2
29	Ring-necked Dove	*Streptopelia capicola*	2	1
30	Speckled Mousebird	Colius striatus	2	1
31	Black-headed Heron	Ardea melanocephala	1	1
32	Brown-throated Martin	Riparia paludicola	1	1
33	Klaas's Cuckoo	*Chrysococcyx klaas*	1	1
34	Rufous-naped Lark	*Mirafra africana*	1	1
35	Spur-winged Goose	*Plectropterus gambensis*	1	1

Plantation Habitat

A total of 13 bird species were recorded by the point count survey in the plantation/woodlot habitat. Four species were recorded in all plantations surveyed, the Cape Canary, Yellow Canary,

Fiscal Flycatcher and Cape White-eye.

The plantation block to the south-west of the project area recorded all 13 species listed in **Table 27** below. The greater diversity of species in this patch is likely due to the presence of Secondary Cape Flats Dune Strandveld as an understory. Of note is the presence of two raptor species the Jackal Buzzard and the Lanner Falcon.

Table 27: Bird species recorded within the plantation habitat (Paardevlei site)

#	Common name	Scientific name	# Birds	# PC stations
1	Cape Canary	*Serinus canicollis*	4	2
2	Fork-tailed Drongo	*Dicrurus adsimilis*	3	1
3	Cape Robin-Chat	*Cossypha caffra*	2	1
4	Karoo Prinia	*Prinia maculosa*	2	1
5	Cape Bulbul	*Pycnonotus capensis*	2	1
6	Jackal Buzzard	*Buteo rufofuscus*	1	1
7	Klaas's Cuckoo	*Chrysococcyx klaas*	1	1
8	Yellow Canary	*Crithagra flaviventris*	1	2
9	Lanner Falcon	*Falco biarmicus*	1	1
10	Fiscal Flycatcher	*Melaenornis silens*	1	3
11	Cape Sparrow	*Passer melanurus*	1	1
12	Ring-necked Dove	*Streptopelia capicola*	1	1
13	Cape White-eye	*Zosterops virens*	1	2

10.2.5.3 Impact Identification

The following avifaunal impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Loss of avifaunal habitat.
- Disturbance to avifaunal species due to project related activities.
- Bird mortality at PV Facility.
- Impact on priority avifaunal species.
- Altered runoff patterns and chemical pollution from cleaning products.
- Use of infrastructure as habitat by avifauna.

The above impacts are further assessed in **Section 11** of this report.

10.2.5.4 Study Conclusions

The majority of the project area is a mosaic of grassland interspersed with woodlots (alien plantations) and a number of wetland areas and it has a good dirt road network and the occasional structure. The very southwestern portion of the project area (outside of the proposed

PV footprint) is currently representative of Cape Flats Dune Strandveld and the area just to the north of this which is within the PV layout footprint appears to be recovering Secondary Cape Flats Dune Strandveld with invasive plantation species present. The Paardevlei is located on the adjacent property to the east of the project area. Five avifaunal habitats were identified within the project area, namely, Grassland, Plantation (alien), Aquatic (Wetlands & drainage lines), Secondary Cape Flats Dune Strandveld and Manmade Structures (building, roads, powerlines).

The field survey conducted in October 2023 recorded 50 bird species within the project area and at the time of the field survey bird species diversity and abundance was considered low to moderate across the entire project site.

A total of 35 bird species were recorded in Grassland and Wetland habitat, with the most abundant species being the African Sacred Ibis followed by the Western Cattle Egret, Common Starling and Egyptian Goose. The bird species diversity is considered low reflecting the transformed and uniform nature of this habitat. Of note is the presence of a pair of Blue Cranes listed as near -threatened recorded in this habitat.

A total of 13 bird species were recorded in the Plantation habitat with four species common across all plantation blocks, the Cape Canary, Yellow Canary, Fiscal Flycatcher and Cape White-eye. The plantation block to the southwest of the project area recorded all 13 species. The greater species diversity in this patch is likely due to the presence of Secondary Cape Flats Dune Strandveld habitat as an understory. Of note is the presence of two raptor species the Jackal Buzzard and the Lanner Falcon (VU) recorded within this habitat.

Priority species include species of conservation concern (SCC) which are listed as threatened, near-threatened and/or endemic and includes species susceptible to impacts from solar energy projects. Fifteen of the 263 species recorded in the broader study area are considered nationally threatened, ten are listed as endangered and five as vulnerable and a further ten species are listed as near-threatened. The majority of these species are unlikely to occur in the proposed project area. **Two SCC were recorded during the field survey, the Lanner Falcon (VU) and a pair of Blue Cranes (NT).**

The Coordinated Waterbird Counts (CWAC) programme recorded 65 bird species at Paardevlei, six of which are bird SCC including the Cape Cormorant (EN), Striped Flufftail (VU), Great White Pelican (VU), Maccoa Duck (NT), Greater Flamingo (NT) and Lesser Flamingo (NT). Of the SCC recorded two may use the Vlei for breeding, the Striped Flufftail (VU) and Maccoa Duck (NT). The proposed project is not expected to directly impact on the Paardevlei and given the general level of disturbance the vlei experiences from the surrounding urban environment the development is unlikely to significantly disturb these species.

The Site Ecological Importance (SEI) of each habitat type to avifaunal species was assessed:

- The Grassland habitat and Wetland habitat was found to have a low SEI to avifaunal species, this habitat is relatively transformed and primarily hosts a low species diversity.
- The Plantation habitat was found to have a medium SEI to raptor species as it provides ample roosting sites.
- Secondary Cape Flats Dune Strandveld was found to have a medium SEI to avifaunal species as this habitat likely hosts specialist avifaunal species.
- Paardevlei was included in the assessment as it may form part of the Project Area of Influence. The Paardevlei was found to have a medium SEI to avifaunal species that utilise the habitat.

10.2.6 Heritage Impact Assessment

Reach Archaeology Consulting were appointed to conduct a Heritage Impact Assessment for the proposed Paardevlei Solar PV and BESS project.

10.2.6.1 Scope of Works

- Site visit.
- Compilation of a Notice of Intent to Develop and submission to Heritage Western Cape.
- Compile a Heritage Impact Assessment.
- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.6.2 Study Findings

It is unlikely that the proposed Solar PV& BESS development will have a significant negative impact on any archaeological, paleontological, cultural heritage landscapes, objects, materials and/ or resources associated with the Paardevlei site.

Significant impacts are not expected at any phase of the proposed development, that will adversely impact the existing furrow systems on the site.

In terms of palaeontology, the proposed development site is underlain by sediments of low palaeontological sensitivity (SAHRIS Palaeosensitivity Map). According to the extract from the Council of GeoScience Map, the proposed development site is underlain by Quaternary Sand sediments. As the palaeontological sensitivity of this area is low, it is unlikely that the proposed development will impact on significant palaeontological heritage (Lavin, 2021).

In general, the expected impacts will have on heritage resources is mainly of moderate significance.

It should also be noted that the subterranean presence of archaeological and/or historical sites, features or artefacts are always a distinct possibility. Therefore, care should be taken during any development activities so that if any of these are accidentally discovered, a qualified archaeologist is to be called in to investigate. This would include the discovery of previously unknown graves, fossil material, archaeological artefacts and/or other heritage sub-surface features and objects.

From a heritage and archaeological perspective, there is no opposition towards the site development and project subject to mitigatory measures included in the Heritage Impact Assessment. As well as subject to the relevant heritage resource agency, namely Heritage Western Cape's approval.

10.2.6.3 Impact Identification and Assessment

The following heritage impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Unearthing grave or human remains within the site development footprint.
- Unearthing archaeological artefacts / objects of heritage significance within the site development footprint.

The above impacts are further assessed in **Section 11** of this report.

10.2.6.4 Study Conclusions

In general, the expected impacts will have on heritage resources is mainly of moderate significance. It should also be noted that the subterranean presence of archaeological and/or historical sites, features or artefacts are always a distinct possibility.

Therefore, care should be taken during any development activities so that if any of these are accidentally discovered, a qualified archaeologist is to be called in to investigate. This would include the discovery of previously unknown graves, fossil material, archaeological artefacts and/or other heritage sub-surface features and objects.

From a heritage and archaeological perspective, there is no opposition towards the site development and project subject to mitigatory measures included in this report. As well as subject to relevant heritage resource agency (HWC) approval.

10.2.7 Land contamination Assessment

A land contamination impact assessment was be completed by **SRK Consulting (South Africa) (Pty) Ltd.** for the proposed Paardevlei Solar PV and BESS project.

10.2.7.1 Scope of Works

- Site visit.
- Land Contamination Assessment of the site, and a Land Contamination Assessment Report to form part of the Scoping & EIA Assessment Process.
- The study should include the following:
    - The Land Contamination Assessment must be compiled in terms of Appendix 6 of the Environmental Impact Assessment Regulations, as amended, promulgated under section 24(5) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
    - Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
    - Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in report). The significance of cumulative impacts must be assessed prior to and post mitigation.
    - Provide mitigation measures to reduce any negative impacts associated with the proposed development.
- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.7.2 Study Findings

The proposed solar project footprint comprises portions of the following former AECI operational areas:

- Field magazines
- Sulfur Stockpile; and
- Northern Development Area (NDA).

Field magazines

In the Field Magazine Area, the buildings were used to store materials packaged in cartons or drums and no manufacturing occurred. The magazines were linked with a railway line to the production areas and the platform from where products were loaded for transport by rail off-site.

As no manufacturing was conducted in this area, the site assessment was undertaken with a primary focus to ensure that these areas were free of explosive residues. This involved the decontamination of the buildings with respect to explosive material residues. The procedure followed involved the washing down of the building with an alcoholic potassium hydroxide solution, following which the structures were burnt. However, the remediation of these areas did not investigate the potential for asbestos contamination. The safety mounds surrounding the building were then demolished, crushed on-site and sold as aggregate.

During the demolition of the former AECI operations, a crusher plant was commissioned within the
field Magazine area to crush demolished buildings. Demolished buildings were crushed and sold as
aggregate. There are several stockpiles of crushed material of various sources within the Field Magazine area located around the former crusher plant.

Sportfield Assessment

The area to the north of the field magazines was vacant land, although still located within the explosives area. A review of aerial photographs (dated 1938, 1955, 1973, 1977 and 2000) was conducted to supplement the historical review prior to the development of the De Beers Football Club.

The assessment focused on areas with scarred or disturbed vegetation, buildings and structures which could indicate historical activities. All areas identified during this assessment were subsequently inspected during the site walkover and fieldwork phases of the investigation. The investigation findings were used for locating appropriate test pits for the intrusive site investigations. The historical aerial photographs of the site indicated that the area that was used as a loading area for explosives. No production activities were visible on the aerial photographs reviewed.

No production or storage of explosives is recorded to have taken place within the sportsfield boundaries. The area was used as a staging/loading area for explosives trains. The physical infrastructure associated with these activities included a single building, a railway siding and a road. A storm water drain ran adjacent to the building and a fire break extended from the drain to the nearby eucalyptus tree plantation. An open field grading to another eucalyptus tree plantation was located to the south of the building. These eucalyptus trees have been dying over

the past few years and the area is commonly referred to as the "Dead Tree Area". Although the "Dead Tree Area" has been investigated in the past, (S. Doel, 1998), the cause of the die back was not established.

The soil and groundwater in the area was found to be saline. No effluent was generated in the area and no specific Contaminants of Potential Concern (CoPC) were identified during the historic review.

Sulfur Stockpile

The Sulfur Stockpile Area is the footprint of a former strategic sulfur stockpile established in 1967.

Following a fire in 1995, the bulk of the sulfur was removed, and the residual soil treated with lime in 1999. In 2010, the area was covered with *c.*300 mm of calcareous dune sand to facilitate the establishment of vegetation.

Several trials have been undertaken to assess the efficacy of remedial technologies. The ex-situ mixing of the soil with lime to neutralise any remaining acidity and incorporate sufficient lime to neutralise potential acidity was trialled in the Sulfur Windrow area (in the field magazine area). This trial yielded poor results and was not considered a viable remediation technique. The windrows are still present and are generally devoid of any vegetation.

Although the actual footprint of the Sulfur Stockpile is not within the boundary of the study area, there is an area immediately adjacent to the sulfur stockpile that falls within the study area and is potentially impacted by the historical sulfur stockpiles and the sulfur windrow area is located within the study area.

The sulfur impacted soil is not considered a human health risk. The soil is, however, considered to present a potential geotechnical risk to the integrity of concrete foundations due to the low pH (<4) and elevated sulfate concentration. Furthermore, the soil pH is too acidic for the establishment of vegetation, as evidenced by the absence of vegetation on the majority of the sulfur windrow area.

Northern Development Area (Farm Lands)

The northern portion of the study area (NDA) was bounded by the former Kynoch fertiliser plant to the east, explosive field magazines to the south, RDM to the west and vacant land / residential areas to the north. This portion of the study area was not part of the former AECI operational areas and was vacant / farm land for the duration of the AECI operations.

A site assessment was conducted of this portion of the AECI site in 2002 (SRK, 2002), as part of an

EIA for the potential development of the site. This report concluded that the site was not contaminated.

Contaminants of Potential Concern

Based on a review of the available information regarding historical operations in the study area, the following CoPC were identified.

- pH (acidic or low pH soil) and soluble sulfate (SO4) in the sulfur stockpile area and treatment
- windrows.
- Soluble fluoride (F) from the adjacent phosphate fertiliser operations.
- Nitrate from the explosive residues.
- Chloride (Cl) and EC as general indicators of soil quality.
- Asbestos in the area adjacent to the former Blasting Explosives area where asbestos lagging was used to insulate steam pipes.

10.2.7.3 Impact Identification and Assessment

The following land contamination aspects associated with the proposed Paardevlei Solar & BESS project are as follows:

- Human Health impact due to exposure to contaminants (i.e. asbestos) during excavation activities.
- Soil contamination and impact to soil quality (due to construction activities).
- Contamination from hazardous substances (for example, hydrocarbon spills and cleaning wash down water).
- Pollution from construction waste materials / litter.
- Change in soil chemistry due to cleaning and maintenance of site infrastructure.

The above impacts are further assessed in **Section 11** of this report.

10.2.7.4 Study Conclusions

Two areas have been identified as being contaminated by previous operations at the site:

- The Sulfur Windrows: these windrows of sulfur contaminated soils do not present an unacceptable human health impact per-se but are acidic soil which may present geotechnical risks to structures and inhibit revegetation of their footprint.

- The area represented by sample C2 is contaminated with asbestos fibre bundles. The extent and severity of the asbestos contamination is undefined.

There is no evidence of any pervasive soil contamination arising from past industrial operations in the remaining area of the site, which is considered suitable for the proposed redevelopment with respect to soil quality.

Based on the above it is recommended that the extent of the asbestos area be delineated and remediated prior to this area being included in the proposed development. Alternatively, the impacted area must be delineated and excluded from the proposed development with the EMPR including access restrictions to the area to protect workers from fugitive dusts containing asbestos fibres.

10.2.8 Social Impact Assessment

Tony Barbour Consulting was appointed to undertake a Social Impact Assessment (SIA) for the proposed Paardevlei Solar PV and BESS project.

10.2.8.1 Scope of Works

- Site visit.
- Social Impact Assessment of the site, and a Social Impact Assessment Report to form part of the Scoping & EIA Process.
- The Social Impact Assessment should include the following:
  - The Social Impact Assessment must be compiled in terms of Government Notice 320[10] of 20 March 2020, as promulgated under section 24(5)(a) and (h) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
  - Provide a description of the site, socio-economic features of the site and areas of sensitivity in terms of social issues.
  - Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in positive and negative social impacts on the surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
  - Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in

[10] Procedures for the assessment and minimum criteria for reporting identified environmental themes when applying for environmental authorization.

report). The significance of cumulative impacts must be assessed prior to and post mitigation.
    - Provide mitigation measures to reduce any negative social impacts associated with the proposed development.
- Provide input into the Environmental Management Programme process.
- Provide input on comments received from Interested and Affected Parties, during the Scoping & EIA Process.

10.2.8.2 Study Findings

The development of renewable energy (i.e. Paardevlei Solar & BESS project) is strongly supported at a national, provincial, and local level. At a national level development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to and support renewable energy. At a local level the development of renewable energy is supported by the City of Cape Town IDP and SDF.

10.2.8.3 Impact Identification

The following social impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Creation of employment and business opportunities.
- Presence of construction workers and potential impacts on family structures and social networks.
- Influx of jobseekers.
- Nuisance related impact linked to construction activities.
- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.

The above impacts are further assessed in **Section 11** of this report.

10.2.8.4 Study Conclusions

The findings of the SIA indicate that the development of the proposed Paardevlei PV SEF and associated infrastructure will create employment and business opportunities in the City of Cape Town metropolitan area during both the construction and operational phase of the project. The findings of the SIA also indicate that all the potential negative impacts can be effectively mitigated.

The proposed development also enables the City of Cape Town to improve energy security, reduce the impact of loadshedding on the local economy and communities, and supplement its current energy needs with clean, renewable energy. Given the economic and social impacts of loadshedding and the negative environmental and socio-economic impacts associated with a coal-based energy economy, this represents a significant positive social benefit for society as a whole.

10.2.9 Glint and Glare Assessment

A Glint and Glare Assessment was conducted by **Future Impact (Pty) Ltd.** for the proposed Paardevlei Solar PV and BESS project.

10.2.9.1 Scope of Works

The Scope of Work for this assessment is outlined as follows:

- A desktop review pertaining to glint and glare impacts on aviation receptors as a result of light reflecting off of the Paardevlei Solar PV panels.
- Identify all receptors for potential adverse impacts relating to glare and glint from the solar PV project (including the nearby aviation related receptors);
- Map the receptors and the project in the FAA Solar Glare and Hazard Analysis Tool (using the “Forge Solar Glaregauge” analysis Tool).
- Compile a comprehensive report that includes the solar glare hazard analysis, comparison to the US FAA and South African aviation requirements.

10.2.9.2 Study Findings

The assessment was conducted with the objective of determining how ‘glint’ and ‘glare’ will affect aviation receptors such as pilots on final approach to the airports, as well as the Air Traffic Control Tower (ATCT) operations. Cape Town International Airport (ICAO: FACT) and Stellenbosch Airport (ICAO: FASH) were identified as facilities that may be exposed to glint and glare impacts. Four 2-mile flight paths and one ATCT were identified as receptors for the Cape Town International Airport. Two 2-mile flight paths were identified for the Stellenbosch Airport. There is no ATCT at the Stellenbosch Airport due to its small size and low aircraft traffic.

The modelling results indicated that the receptors at the airports will be exposed to green glint and glare if Site Layout Plan 01 (Fixed Tilt at 34˚) or Site Layout Plan 02 is implemented. If a 20˚ Fixed Tilt angle is considered for Site Plan 01, no glint and glare exposure will occur. Additionally, Site Layout Plan 03 will also cause no glint and glare exposure to the receptors.

It should be noted that although green glare could be experienced by the Air Traffic Controllers at the FACT Control Tower, the intensity of the glare will be mitigated by the distance from the

project to the Control Tower, the short duration thereof as well as the window tinting that is already in place, and that the project is not on the extended centre line of the main runway (FACT Runway 01/19), but 19km to the South-East of the field.

10.2.9.3 Impact Identification

- Glint and glare impacts on aviation receptors as a result of light reflecting off of the Paardevlei Solar PV panels.

The above impacts are further assessed in **Section 11** of this report.

10.2.9.4 Study Conclusions

The aim of this study was to determine the impact that solar glint and glare would have on various aviation receptors. The FAA model considered the 2-mile receptors on the approach to the various runways. The Air Traffic Control Towers were also considered.

The modelling results indicate that the receptors at the airports will be exposed to green glint and glare if Site Layout Plan 01 or Site Layout Plan 02 is implemented. Site Plan 3 will cause no glint and glare exposure to the receptors.

It should be noted that although green glare could be experienced by the Air Traffic Controllers at the FACT Control Tower, the intensity of the glare will be mitigated by the distance from the project to the Control Tower, the short duration thereof as well as the window tinting that is already in place, and that the project is not on the extended centre line of the main runway (FACT Runway 01/19), but 19km to the South-East of the field.

It is therefore recommended that the project receive approval from the Civil Aviation Authority from a glint and glare perspective.

10.2.10 Wetland Impact Assessment

Liz Day Consulting was appointed to undertake a Wetland Impact Assessment for the proposed Paardevlei Solar PV and BESS project.

10.2.10.1 Scope of Works

- Site visit and ground truthing of the wetlands.
- Freshwater Impact Assessment of the site, and a Freshwater Impact Assessment Report to form part of the Scoping & EIA Process.
- The Freshwater Impact Assessment should include the following:

- The Freshwater Impact Assessment must be compiled in terms of Government Notice 320[11] of 20 March 2020, as promulgated under section 24(5)(a) and (h) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
- Provide a description of the site, aquatic features of the site and areas of sensitivity in terms of aquatic features.
- Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
- Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in report). The significance of cumulative impacts must be assessed prior to and post mitigation.
- Provide mitigation measures to reduce any negative freshwater impacts associated with the proposed development.

- A Risk Assessment to guide the Water Use process, in the event that the development triggers a General Authorisation / Water Use Authorisation (WUA) application as required by the Department of Water & Sanitation.
- WUA application and associated documentation.
- Provide input into the Environmental Management Programme and WUA application process.
- Provide input on comments received from Interested and Affected Parties, during the Scoping & EIA Process.

10.2.10.2 Study Findings

Figure 54 presents a detailed view of the current site, based on ground-truthing in 2023 to supplement the 2018 mapping data. The figure indicates the following:

- Extensive alluvial wetland (*or wetland flats as per Ollis et al 2013's classification*) characterise much of the site, forming a mosaic of disturbed terrestrial areas interspersed with low lying pans and shallow depressions. These are variously vegetated with grasses and indigenous vegetation typical of seasonal wetland conditions, namely stands of

[11] Procedures for the assessment and minimum criteria for reporting identified environmental themes when applying for environmental authorization.

Juncus kraussii sedge, *Pennisetum macrourum* grass, and (in wetter areas), *Bolboschoenus maritimus* and *Eleocharis limosa*. These areas have not been highlighted for blanket conservation within the site (*see Day 2014; Day 2018*) but do contain areas where the wetlands are in better condition, usually as a result of recovery from disturbance or because of remediation interventions that have contributed to their formation. These wetlands are considered watercourses in terms of the definitions included in the NWA and NEMA.

- A mosaic of seasonally saturated-to-shallowly-inundated wetland pans (*still classified as wetland flats in terms of Ollis et al 2013),* which were mapped out where they occurred within or immediately abutting the study area (i.e. east and north of the soccer fields). These pans were characterized by *Sarcocornia cf. perenne*, a plant commonly associated with salt marsh conditions, and indicative here of high rates of evapoconcentration, resulting in saline to brackish conditions on the surface during the dry season. These wetlands are considered watercourses in terms of the definitions included in the NWA and NEMA.

- Wetland depressions within the open area south-west of the sports club grounds, edged to the north and south by dense stands of eucalyptus forest. These depressions are vegetated by dense stands of *Eleocharis limosa* and separated from each other by low berms. The depressions are clearly an artefact of past disturbance, probably linked to the excavation and disposal of contaminated soils. They form an expansive zone of wetland depressions across the site and are likely to provide wet season breeding habitat to frogs, aquatic insects and wading or swimming birds. That said, the extent to which their water quality still reflects past contamination is not known. Thus, while they provide seemingly good quality physical habitat in the form of shallow, standing water pans in the wet season, the extent to which this is compromised by water quality impacts is not known. The pans were dry at the time of the site assessment. For the purposes of this study, it is assumed that they are not compromised by poor water quality, although a recommendation is that this aspect should be investigated. The depressions are drained by a network of channels and trenches that convey flow during high water periods, to the Marshall Yard Drain. These wetlands are considered watercourses in terms of the definitions included in the NWA and NEMA.

- A network of trenches and channels across the site, of which the main one comprises the Marshall Yard Drain, which runs west-east across the northern edge of the wetland depressions described above, then swings south, near the south-western corner of the sports club grounds. It is joined here by a channel conveying runoff from the wetland flats immediately north of the sports club boundary fence (mapped as mosaic wetland in Figure 30). The combined flows are also joined in this area by channels / trenches draining the wetland depression mosaic area to the west, and then pass under an internal

gravel access road. The channel, densely invaded in places with bulrush (*Typha capensis*), passes south along the edge of another dense eucalyptus forest, to join the Magazine Drain – a channel that runs between the proposed Development Areas 1 and 2, and Development Area 3, in the south. The Somchem Drain runs along the western site boundary and passes into Langvlei and then the Main Drain along with the other main drainage channels. These are all artificial drainage systems, constructed to convey water out of the flat, low-lying wetland-dominated areas. During summer, the channels are usually dry. At the time of the site visit, the Marshall Yard Drain was flowing, from immediately downstream of the road crossing south of the sports club's south-western boundary fence. The trickle flows were found to derive from an overflowing sewer manhole near the culvert, which had clearly been flowing for some time, since the only channel where dense *Typha capensis* was established was the section downstream of the manhole. *Typha capensis* requires permanent saturation to inundation and thrives in nutrient-enriched, fresh (i.e. not brackish) environments (*Hall 1990*). The trenches described above are all artificial systems and unlike the wetlands, do not meet the legal criteria for watercourses (as defined in the NWA and NEMA.

- A few small wetlands (*classified as wetland depressions*) were noted in places along the margins of the eucalyptus forests, where channeled runoff from surrounding wetter areas passes into the forest areas. Eucalyptus trees have a high-water uptake however, and deeper within the forest areas, there were no signs of significant wetlands although in places, indigenous terrestrial fynbos vegetation (e.g. *Metalasia cf. muricata*) still occurred as a sparse under-story. In the event that the eucalyptus forests were felled, much wetter conditions would be likely to prevail in these and other linked areas. <u>These wetlands are considered watercourses in terms of the definitions included in the NWA and NEMA.</u>

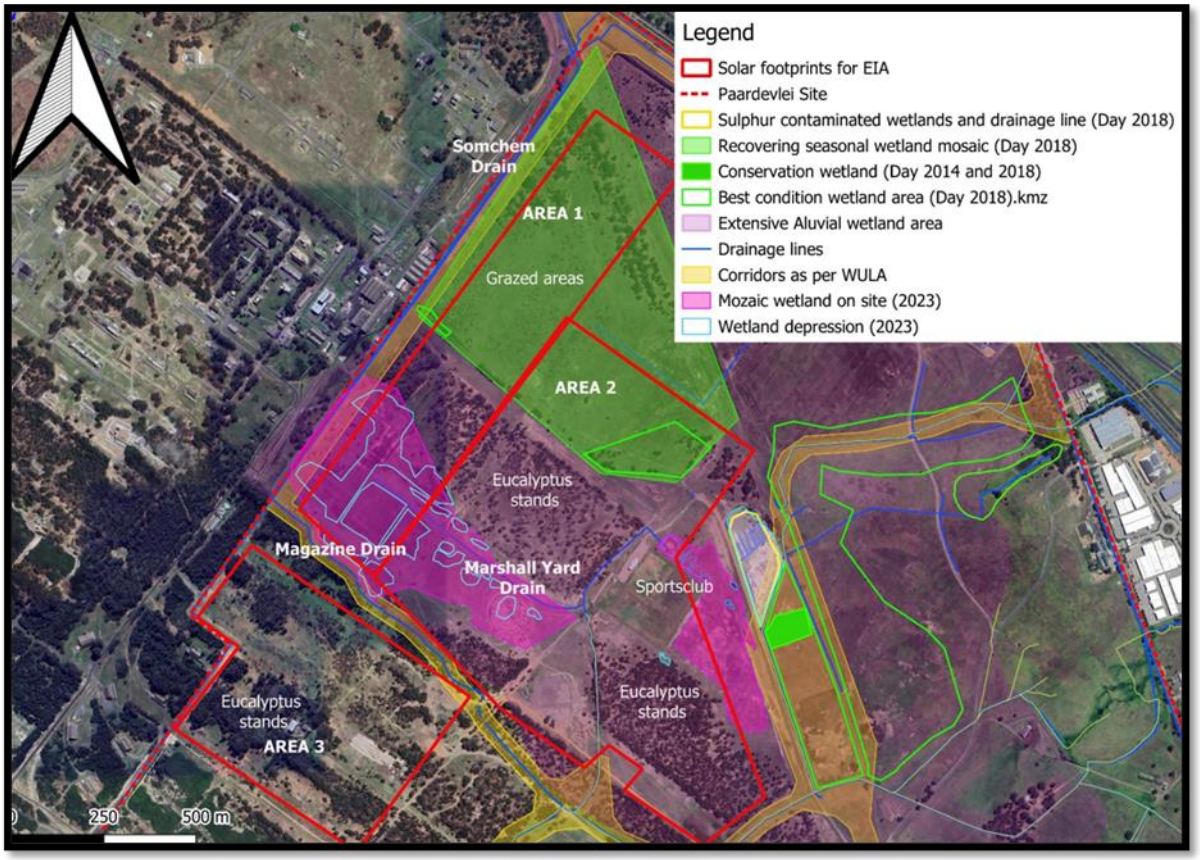


Figure 54: Proposed Paardevlei Solar & BESS development footprint showing present extent of on-site wetlands (2018 data & 2023 survey)

In Figure 55 below, the developable areas versus no-go wetland areas are presented, as recommended in the final Wetland Assessment dated October 2024 – attached as Appendix B to this Final EIA Report.

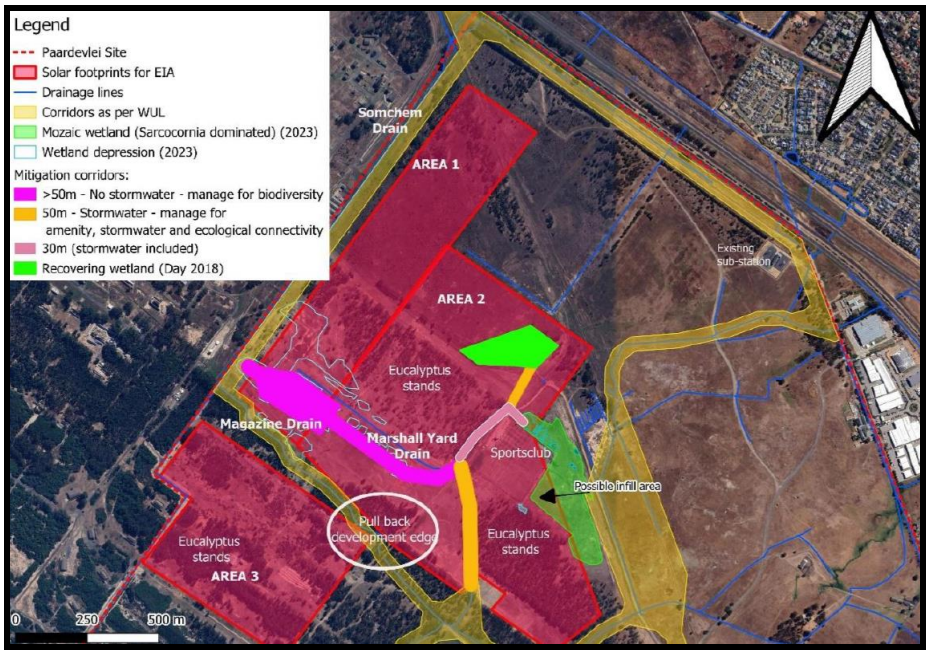


Figure 55: Layout showing the recommended new wetland corridors and areas where the proposed Solar & BESS development should be pulled back

10.2.10.3 Impact Identification

The following wetland impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Loss of wetland habitat.
- Interruption of required ecological connectivity in a full site development context.
- Wetland degradation as a result of eucalyptus clearing.
- Physical disturbance to remnant wetlands.
- Pollution of wetlands and channels.
- Wetland and channel degradation as a result of changes in hydrology and water quality (from increased stormwater velocities and receipt of solar panel wash-off).
- Physical disturbance to remnant wetlands as a result of maintenance / repairs.

The above impacts are further assessed in **Section 11** of this report.

10.2.10.4 Study Conclusions

This report has considered the likely impacts to aquatic ecosystems that would accrue from the proposed development of a solar PV facility at the Paardevlei site in Somerset West, Cape Town.

The site currently comprises extensive wetland areas that have developed largely as a result of pollution remediation activities associated with its past use as a munitions factory and testing area. The area in which they have developed was however likely to have included extensive floodplain wetland flats under natural conditions. Past connection to the floodplain of the Lourens River has however long been lost. Nevertheless, wetland quality on the site is on an improving trajectory, although local wetland water quality is untested and may still be problematic from an aquatic ecosystem perspective.

If the proposed project were authorised, it would require development over large portions of wetland flats, most of which have developed in areas where soil remediation activities have required skimming of contaminated surface soils. Nevertheless, these wetlands are considered locally important representatives of seasonally inundated wetland habitat, and assuming that water quality has not been permanently impacted by past contamination, they have ecological value in a fast-developing landscape. At the same time, the stormwater masterplan for the greater Paardevlei site assumed development of this area and allowed for substantial hydrological-ecological corridors through the site, to prevent ecological fragmentation and ensure sustainable stormwater management. In this context, mitigation measures recommended in this assessment have focused on measures to:

- Allow for conservation and rehabilitation of the depression wetlands in the best condition on the site, and their inclusion in corridors that link to those required, in terms of the stormwater master plan for the greater Paardevlei site.

- Address potential impacts to water quality and water quantity as a result of increased hardened surface areas on the site and possible sources of contaminated runoff.

- Reduce impacts to wetland areas that would underlie developed spaces.

The report has also flagged the potential for clearing of eucalyptus forests to result in unintended consequences such as a raised but contaminated water table that impacts on downstream aquatic ecosystems. This issue requires input from geohydrological specialists.
Assuming that the above issues can be addressed / informed, the proposed development is considered acceptable from a freshwater ecosystem perspective. It would however require a water use license, in terms of the NWA.

10.2.11 Groundwater Impact Assessment

JG Afrika was appointed to undertake a Groundwater / Geohydrological Impact Assessment as part of NEMA EIA for the proposed Paardevlei Solar PV and BESS project.

10.2.11.1 Scope of Works

- Site visit.
- Groundwater / Geohydrological Assessment of the site, and a Geohydrological Assessment Report to form part of the Scoping & EIA Assessment Process.
- The study should include the following:
    - The Geohydrological Assessment must be compiled in terms of Appendix 6 of the Environmental Impact Assessment Regulations, as amended, promulgated under section 24(5) and 44 of the National Environmental Management Act (No, 107 of 1998), as amended.
    - Include the assessment of the No-go alternative. The No-go alternative is the option of not fulfilling the proposed project. This alternative would result in no negative environmental impacts from the proposed project on the site or surrounding local area. The No-go alternative would prevent the development from positively contributing to the environmental, social and economic benefits associated with the development of the renewables sector. It provides the baseline against which other alternatives are compared and shall be considered throughout the report.
    - Impacts during the construction, operational and decommissioning phase to be assessed using an impact rating methodology (methodology to be included in

report). The significance of cumulative impacts must be assessed prior to and post mitigation.
    - Provide mitigation measures to reduce any negative impacts associated with the proposed development.
- Provide Input into the Environmental Management Programme.
- Provide Input on comments received from Interested and Affected Parties, if required.

10.2.11.2 Study Findings

In accordance with SRK (2018) the groundwater quality across the development area is considered to be poor with elevated concentrations of certain hydrochemical parameters of concern reported in the majority of the boreholes sampled. Hydrochemical data obtained during the field investigation (by JG Afrika) and laboratory analysis in November 2023 reiterates the presence of poor-quality groundwater across the site.

10.2.11.3 Impact Identification

The following groundwater impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Impact on underlying aquifer systems due to project related activities (during the construction phase).
- Impact on groundwater levels due to project related activities (during the construction phase).
- Impact on groundwater quality due to project related activities (during the construction phase).

10.2.11.4 Study Conclusions

The aim of the assessment was to characterise the geohydrological setting, and to determine the risk of potential impacts by the infrastructure on the receiving groundwater environment.

The project area is underlain by a two layered aquifer system comprising a primary intergranular aquifer which is underlain by a fractured aquifer. Both aquifers are considered to be moderate to high yielding and can be classified as Minor.

The average observed depth to groundwater was recorded at < 10mbgl. The aquifer vulnerability is medium to high. The Parsons Groundwater Quality Management System gives the site a Medium Level of Protection index for the second variable vulnerability. The strategic value is Low to Medium. The Parsons Groundwater Quality Management System gives the site a Low Level of Protection index for the second variable strategic value.

10.2.12 Climate Change Impact Assessment

Climate Scale was appointed to undertake a Climate Change Risk & Impact Assessment for the proposed Paardevlei Solar PV and BESS project.

10.2.12.1 Scope of Works

- Complete a high-level desktop Climate Change Risk & Impact Assessment for the project site.
- Identification of the climate drivers of impacts on energy infrastructure and PV solar technology.
- Identification of the localised observed and projected climate within the project area.
- Identification of the risks and opportunities projected for the site, considering general energy infrastructure such as transmission lines and substations, as well as specific risks affecting PV solar.
- Identification of potential impacts during construction, operation and decommissioning and disposal of the PV solar plant and it's components.
- Develop recommendations for high level mitigation / adaptation options.

10.2.12.2 Study Findings

A potential for climatic change exists and can have both positive and negative impacts on a specific project and in this case, solar PV production. While it is not expected to significantly affect solar insolation, increases in temperature due to anthropogenic climate change can decrease solar power output by reducing PV panel efficiency. Changes in cloud formation can also affect global solar irradiation and therefore affect solar production locally.

10.2.12.3 Impact Identification

The following climate change impacts associated with the proposed Paardevlei Solar & BESS project are as follows:

- Long term exposure to higher temperatures causes faster ageing of sensitive material used in PV panels.
- Material damage to PV equipment due to extreme high temperatures.
- Material damage to PV equipment due to wildfires.
- Damage to PV infrastructure due to extreme precipitation, storms and hailstorm.
- Damage to PV infrastructure due to surface water flooding.
- Impacts on water availability for cleaning PV equipment due to meteorological drought.
- Material damage to PV infrastructure due to extreme winds.
- Increases in dust and sandstorms might impact optimal functioning of PV equipment.

10.2.12.4 Study Conclusions

According to the City of Cape Town Climate Change strategy (City of Cape Town, 2021), the potential climatic changes that the City faces include significant decrease in annual rainfall, increases in mean temperature and more frequent and intense heat waves, increase in mean sea level and coastal erosion which can all impact the proposed Paardevlei Solar PV and BESS project.

11 IMPACT ASSESSMENT AND MITIGATION

11.1 Impact Assessment Methodology

The impact assessment that is carried out for each environmental impact that may arise from the proposed project, forms the basis to determine which management measures that will be required to prevent or minimise these impacts. It is also a means in which the mitigation measures that are determine in the impact assessment which are then translated to action items. These actions items are required to prevent or to keep those impacts that cannot be prevented within acceptable levels.

To establish best management practices and prescribe mitigation measures, the following project-related information needs to be adequately understood:

- Activities that are associated with the proposed project.
- Environmental aspects that are associated with the project activities.
- Environmental impacts resulting from the environmental aspects; and
- The nature of the surrounding receiving environment.

Information provided by specialists was used to calculate an overall impact score by multiplying the product of the nature, magnitude, and the significance of the impact by the sum of the extent, duration and probability based on the following equation. Impact severity qualified with spatial, temporal and probability.

$$\text{Impact Significance} = (N \times M \times M\,P) \times (E + D + P)$$

Where:
N=Nature
E=Extent
M=Magnitude
D=Duration
P=Probability
MP=Mitigation Potential

Table 28: Impact Methodology Table

Nature			
Negative Impact	Neutral Impact	Positive Impact	
-1	0	+1	
Extent			
Local	Regional	National	International
1	2	3	4
Magnitude			
Low	Medium	High	
1	2	3	
Duration			
Short Term (0-2 years)	Medium Term (2-5years)	Long Term (5-10)	Permanent
1	2	3	4
Probability			
Rare/Remote	Unlikely	Moderate	Likely	Almost Certain
1-20%	20-40%	40-60%	60-90%	90%+
Mitigation Potential			
No Impact / None	No Impact After Mitigation / Low	Residual Impact After Mitigation / Medium	Impact Cannot be Mitigated / High
0	1	2	3

The following definitions apply:

For the methodology for the impact assessment, the analysis is conducted on a qualitative basis with regards to the nature, extent, magnitude, duration, probability, and mitigation potential of the impacts.

The following scoring system applies:

Table 29: Scoring System

Nature / Status	• Positive impact on the environment. • Negative impact on the environment. • Neutral impact on the environment.
Extent	• Local – extends to the site and its immediate surroundings. • Regional – impact on the region but within the province. • National – impact on an interprovincial scale. • International – impact outside of South Africa.
Magnitude	• Low – natural and social functions and processes are not affected or minimally affected. • Medium – affected environment is notably altered; the natural and social

	functions and processes continue albeit in a modified way
Duration	• Short term – 0-2 years. • Medium term – 2 – 5 years. • Long term – 5-10 years • Permanent – mitigation is either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient
Probability	• Almost certain – 90% +. • Likely – 60-90% • Moderate – 40-60% • Unlikely – 20-40%. • Rare / Remote – 1-20%.
Mitigation Potential	Provides an overall impression of an impact's importance, and the degree to which the impact can be mitigated. The range for significance ratings are as follows: 0 – Impact will not affect the environment; therefore, no mitigation is necessary. 1 – No impact after mitigation. 2 – Residual impact after mitigation. 3 – Impact cannot be mitigated

Impact Scores will be ranked in the following way as listed in the table below:

Table 30: Ranking of overall impact score

Impact Rating	Low / Acceptable Impact	Medium	High	Very High
Significance	0 to 30	31 to 60	61 to 90	91 to 117

The below list of impacts has been assembled following baseline research, field observations by specialists and past project experience on similar projects.

Most impacts are negative, but if appropriate mitigation is undertaken then positive impacts may be possible. However, since there is no guarantee that appropriate mitigation measures will be implemented, or the mitigation measures applied will have the desired effect, the EAP must assume that the mitigation might not happen, and the base impact is negative.

11.2 Potential environmental impacts associated with the proposed solar development

The following environmental aspects and potential impacts (**Table 31**) associated with the proposed Paardevlei PV Solar & BESS project have been identified and further assessed in this report.

Table 31: Potential Environmental Impacts associated with the proposed Paardevlei PV Solar & BESS project

Impact Type	Potential Impacts
Ecological	• Loss of priority flora and fauna species from important habitats. • Loss of resident flora and fauna through increased disturbance. • Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats for all animal and vegetation groups. • Displacement of resident fauna species through increased disturbance. • Cumulative displacement of resident fauna species • Spreading of invasive alien plants within disturbed/transformed areas.
Visual	• Visual impact of construction activities on residents of towns and homesteads within 1km of the proposed PV facility. • Visual impact of construction activities on observers travelling along the various roads within 1km to the proposed PV facility. • Visual impact on sensitive receptors within a 1 – 3km radius of the PV facility. • Visual impact on observers travelling along the roads and residents at homesteads within a 3 – 6km radius of the facility. • Visual impact of lighting at night on sensitive visual receptors. • Visual impact of solar glint and glare as a visual distraction and possible road travel hazard. • Visual impact of solar glint and glare on residents of homesteads within 1km of the PV facility. • Visual impact of the ancillary infrastructure on observers in close proximity to the structures.

	• The potential impact on the sense of place of the region. • Visual impact of the proposed development on tourist destinations / protected areas within 1km of the proposed infrastructure. • Visual impact of the proposed development on tourist destinations / protected areas within 1-3km of the proposed infrastructure. • Visual impact of the proposed development on tourist destinations / protected areas within 3-6km of the proposed infrastructure. • The potential cumulative visual impact of the proposed facility together with the other existing built structures on sensitive visual receptors within the region.
Wetlands	• Loss of wetland habitat. • Interruption of required ecological connectivity in a full site development context. • Wetland degradation as a result of eucalyptus clearing. • Physical disturbance to remnant wetlands. • Pollution of wetlands and channels. • Wetland and channel degradation as a result of changes in hydrology and water quality (from increased stormwater velocities and receipt of solar panel wash-off). • Physical disturbance to remnant wetlands as a result of maintenance / repairs.
Groundwater	• Impact on underlying aquifer systems due to project related activities (during the construction phase). • Impact on groundwater levels due to project related activities (during the construction phase). • Impact on groundwater quality due to project related activities (during the construction phase).
Avifauna	• Loss of avifaunal habitat. • Disturbance to avifaunal species due to project related activities. • Bird mortality at PV Facility. • Impact on priority avifaunal species. • Altered runoff patterns and chemical pollution from cleaning products. • Use of infrastructure as habitat by avifauna.

Heritage	• Unearthing grave or human remains within the site development footprint. • Unearthing archaeological artefacts / objects of heritage significance within the site development footprint.
Land contamination	• Human Health impact due to exposure to contaminants (i.e. asbestos) during excavation activities. • Soil contamination and impact to soil quality (due to construction activities). • Contamination from hazardous substances (for example, hydrocarbon spills and cleaning wash down water) • Pollution from construction waste materials / litter. • Change in soil chemistry due to cleaning and maintenance of site infrastructure.
Social	• Creation of employment and business opportunities. • Presence of construction workers and potential impacts on family structures and social networks. • Influx of jobseekers. • Nuisance related impact linked to construction activities. • The establishment of infrastructure to improve energy security and support renewable sector. • Creation of employment opportunities.
Climate Change	• Long term exposure to higher temperatures causes faster ageing of sensitive material used in PV panels. • Material damage to PV equipment due to extreme high temperatures. • Material damage to PV equipment due to wildfires. • Damage to PV infrastructure due to extreme precipitation, storms and hailstorm. • Damage to PV infrastructure due to surface water flooding. • Impacts on water availability for cleaning PV equipment due to meteorological drought. • Material damage to PV infrastructure due to extreme winds. • Increases in dust and sandstorms might impact optimal functioning of PV equipment.

11.3 Significance of impacts prior and after mitigation

11.3.1 Construction phase impacts (as per amended Site Development Plan, dated October 2024)

11.3.1.1 Permanent loss of indigenous vegetation (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Permanent loss of indigenous vegetation (priority flora species)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint and along powerline routes.	No Impact, as no clearing would occur.
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be partly mitigated	N/A
Proposed mitigation:	• Minimise the development footprint and reserve indigenous vegetation wherever possible.	N/A

	• All vegetation not required to be removed should be protected against damage. • **Sensitive areas such as wetlands and drainage lines must be avoided where possible.** • Existing roads must be used where possible during construction of the project. • The project should be executed in a short timeframe, if possible, and pollution control should be implemented. • Rehabilitate area with indigenous flora. • Have a biodiversity protocol and rehabilitation plan that will be implemented following the construction phase. • Invasive plant material should be disposed by incineration, or alternatively, composting to break down seeds. If seedbank persists, invasive alien plant management and eradication measures should be implemented.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.2 Loss of faunal habitat (of priority species) due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes

Loss of faunal habitat (of priority fauna species)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Activity will result in the loss of habitat for faunal species	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Local; Permanent	N/A
Probability of occurrence	Definite	N/A

Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be partly mitigated	N/A
Proposed mitigation:	• Minimise the development footprint and reserve indigenous vegetation wherever possible. • All vegetation not required to be removed should be protected against damage. • Sensitive areas such as wetlands and drainage lines must be avoided where possible. • Existing roads must be used where possible during construction of the project. • The project should be executed in a short timeframe, if possible, and pollution control should be implemented. • Rehabilitate area with indigenous flora. • Have a biodiversity protocol and rehabilitation plan that will be implemented following the construction phase.	N/A
Cumulative impact post mitigation	High	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.3 Loss of avifauna habitat (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Loss of avifauna habitat		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Any transformation of vegetation leads to habitat loss for avian species utilising that vegetation, causing displacement into areas which are potentially less suitable or already occupied by competing individuals or species.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site, Long Term	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.	N/A
Cumulative impact prior to mitigation	Low	N/A
Significance rating of impact prior to mitigation	Low	N/A
Degree to which the impact can be mitigated	Medium	N/A
Proposed mitigation:	• All construction and construction related activities (including parking of vehicles and machinery) must remain within the approved project footprint and must not encroach into areas outside the project footprint. To facilitate this the boundaries of the development footprint areas must be clearly demarcated.	N/A

	• The Secondary Cape Flats Dune Strandveld to the southwestern portion of the project area outside of the proposed footprint must be declared a No-Go area. • All project related activities must avoid the Paardevlei, including access roads. • Lay down areas must be located within previously disturbed areas. • Laydown areas must be rehabilitated, and only indigenous species must be used. • Employees must be prohibited from disturbing birds, their young, nests and/or eggs. • An alien invasive management plan for the project area must be created. • Only existing access roads must be used and upgraded where necessary.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Low	N/A

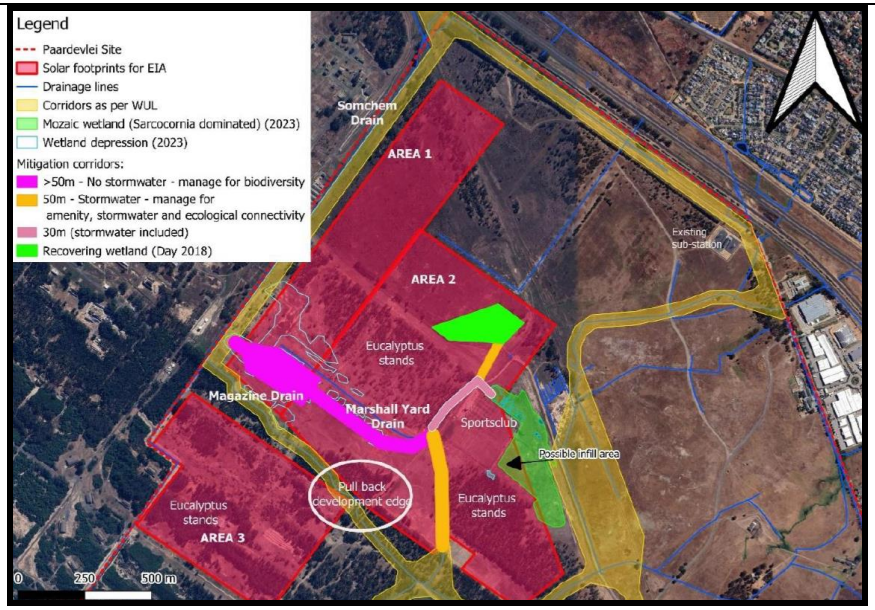
11.3.1.4 Disturbance to avifauna (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Disturbance to avifauna		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Construction activities (e.g., earthworks, night lighting, etc.) that creates noise, dust and vibrations are likely to impact avifauna for the duration of the construction phase. Operational maintenance is expected to cause some disturbance but significantly less than construction. The	No Impact

	avifauna and their livelihood activities in the area are likely to be disturbed to some extent. These activities may cause individuals to move away from the immediate area into surrounding areas, increasing competition for food and shelter in those areas, and may even disrupt their current breeding cycle causing them to skip a season. This mitigation of this impact is achievable and as such the impact will be of low significance after mitigation.	
Nature of impact	Negative	N/A
Extent and duration of impact	Local; Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.	N/A
Cumulative impact prior to mitigation	Low	N/A
Significance rating of impact prior to mitigation	Low	N/A
Degree to which the impact can be mitigated	High	N/A
Proposed mitigation:		N/A
Cumulative impact post mitigation	High	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.5 Permanent loss of wetlands (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Permanent loss of wetlands		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Loss of the mosaic of wetland depressions and pans within the broader wetland flats due to construction activities	No Impact, as no development would occur
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Permanent loss of Wetlands	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Can be partly mitigated	N/A
Proposed mitigation:	• The development edge must be pulled back so as to respect the 50m corridor along the Magazine Drain, as per the requirements of the stormwater master plan. • **An additional aquatic corridor must be created through the site, which allows conservation of a portion of the seasonal pools mapped within the central portion of development Areas 1 and 2. Figure 55 (and the image below) provides an indicative routing of this aquatic corridor**. It's exact position should be determined during the detailed design phase for of the project.	N/A



- An additional corridor of 30m width should be provided along the minor north-south running drainage channel to the Marshall Yard Drain.

- A 30 m wide corridor connecting to the recovering wetland shown in Area 2 should also be included (exact alignment of the corridor is flexible provided that it links to at least one other corridor through the site).

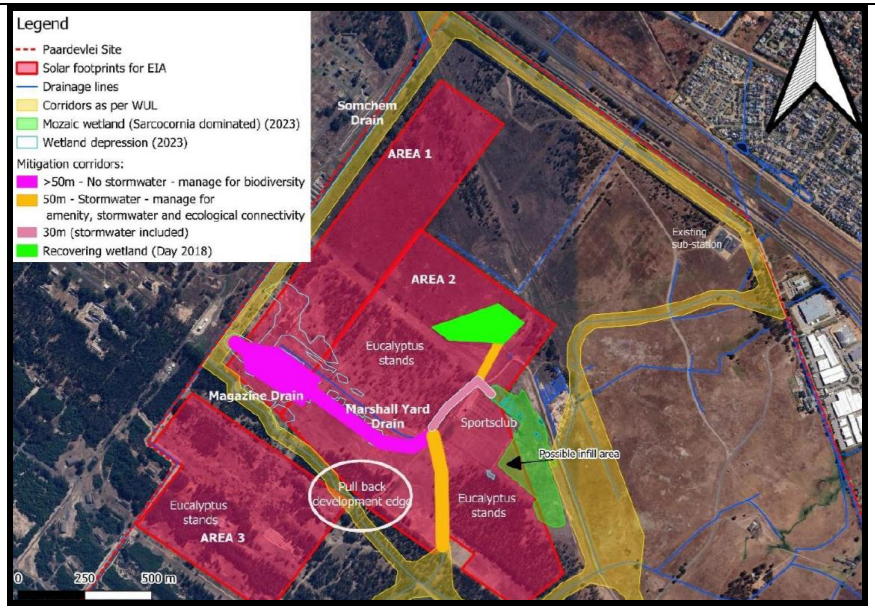
- The channelised Marshall Yard Drain, downstream of the bridge crossing, should be maintained in a 50m wide corridor, with seasonal *Sarcocornia* and / or depression wetlands created along the channel margins. The channel itself could be used for stormwater conveyance, and the corridor would lend itself to amenity uses such as walking, cycling, provided that these

	activities did not require hardening of the corridor, other than for limited pathways or bridges. • All Buildings (e.g. new Substation & BESS) should be located outside of the wetland mosaic areas and preferably on existing built platforms • Existing roads should be used as far as possible.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Medium - Low	N/A

11.3.1.6 Interruption of required ecological and hydrological connectivity (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Interruption of required ecological & hydrological connectivity		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	A requirement of the Water Use License for the Paardevlei Stormwater Masterplan is the establishment of broad (50 – 75m) ecological and hydrological corridors through the site. However, a portion of the Development Area 3 encroaches into the Magazine Drain corridor, interrupting this and effectively negating its role as an important connecting space in a development context. Given the strategic importance of these corridors in the stormwater masterplan, this impact has been rated as of high significance.	No Impact, as no development would occur
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A

Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Permanent loss of Wetlands	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Can be partly mitigated.	N/A
Proposed mitigation:	• The development edge must be pulled back so as to respect the 50m corridor along the Magazine Drain, as per the requirements of the stormwater master plan. • An additional aquatic corridor must be created through the site, which allows conservation of a portion of the seasonal pools mapped within the central portion of development Areas 1 and 2. **Figure 55 (and the image below) provides an indicative routing of this aquatic corridor. It's exact position should be determined during the detailed design phase for of the project.**	N/A



- An additional corridor of 30m width should be provided along the minor north-south running drainage channel to the Marshall Yard Drain.

- A 30 m wide corridor connecting to the recovering wetland shown in Area 2 should also be included (exact alignment of the corridor is flexible provided that it links to at least one other corridor through the site).

- The channelised Marshall Yard Drain, downstream of the bridge crossing, should be maintained in a 50m wide corridor, with seasonal *Sarcocornia* and / or depression wetlands created along the channel margins. The channel itself could be used for stormwater conveyance, and the corridor would lend itself to amenity uses such as walking, cycling, provided that these

	activities did not require hardening of the corridor, other than for limited pathways or bridges. • All Buildings (e.g. new Substation & BESS) should be located outside of the wetland mosaic areas and preferably on existing built platforms. • Existing roads should be used as far as possible.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.1.7 Wetland degradation as a result of eucalyptus clearing (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Wetland degradation as a result of eucalyptus clearing		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Clearing of extensive areas currently occupied by eucalyptus stands is assumed, based on the current development layout. From a water resource conservation perspective, such measures are supported. However, where the site is being developed and not restored, their removal is likely to result in more water at the surface over the wet season, as well as a local increase in rainfall intensity, as the stands of trees dampen the intensity of rainfall passing through the canopy. If these changes are managed by conveyance off site into the existing or new drainage channels, there would potentially be a	No Impact, as no development would occur

	net increase in flow velocity and volume, particularly over the wet season, with potential for erosion and flooding in downstream areas where the stormwater system included in the masterplan has not yet been fully implemented.	
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Permanent loss of Wetlands	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be partly mitigated.	N/A
Proposed mitigation:	• The development edge must be pulled back so as to respect the 50m corridor along the Magazine Drain, as per the requirements of the stormwater master plan. • An additional aquatic corridor must be created through the site, which allows conservation of a portion of the seasonal pools mapped within the central portion of Site Development Areas 1 and 2. • An additional corridor of 30m width should be provided along the minor north-south running drainage channel to the Marshall Yard Drain.	N/A

	• The channelised Marshall Yard Drain, downstream of the bridge crossing, should be maintained in a 50m wide corridor, with seasonal *Sarcocornia* and /or depression wetlands created along the channel margins. • Buildings (e.g. New Substation & BESS) should be located outside of the wetland mosaic areas. • Existing roads should be used as far as possible.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.8 Physical disturbance to remnant wetlands (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Physical disturbance to remnant wetlands		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	During construction, both wetlands in the proposed corridors through the site and those that have not been ear-marked for conservation, would potentially be further disturbed by the passage of vehicles over them; their use as lay-down areas; damage during tree felling and haulage; and excavation for cabling and electrical infrastructure installations. Such disturbance would be exacerbated if undertaken in the wet season, when much of the site is saturated and /or inundated. Unmanaged construction could furthermore also impact on adjacent wetlands outside of the site (e.g. north and east of the	No Impact, as no development would occur

	sports club). While it is recognized that wetlands on the site that are not included in the conservation areas would inevitably be disturbed by the proposed development, further physical degradation of the corridor wetlands and those outside of the site has been assessed as of medium to high significance and could have long-term impacts on their capacity to recover.	
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Permanent loss of Wetlands	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Can be partly mitigated.	N/A
Proposed mitigation:	• The recommended corridors should be pegged out on site, and temporary mesh fencing installed at least 5 m beyond the pegged edge, before construction commences. These areas should be managed as no-go areas throughout construction, unless specifically targeted for rehabilitation mitigation. • Existing wetland mosaic areas north of the site should	N/A

	also be managed as no-go areas during construction and should not be used for laydown; site camps; storage areas. • Rehabilitation interventions in the wetland corridors should: ❖ Take place before construction within 100m of the corridors commences, because they would be difficult to access once construction / installations have commenced in the surrounding area. ❖ Be overseen by a wetland ecologist. ❖ Be carried out outside of periods of inundation / saturation in these zones. • Damage (e.g. excavation, flattening, infilling) of existing wetland mosaic areas outside of the conservation corridors should be minimized, so that these areas retain a level of function and provision of ecosystem services. • Where cables are excavated through wetland or wetland mosaic areas, care must be taken to re-shape the surface after they have been excavated, so as to achieve previous ground levels or better, rather than leaving a mound of infill. • Trucks and other vehicles passing through the site should, as far as possible, keep to existing or created roads.	

	• All construction waste generated during construction must be removed from the site before the end of construction and disposed of at an appropriate legal waste disposal site. • Litter should be cleared regularly from the site and disposed of appropriately. • The above measures should be incorporated into a Construction Phase Environmental Management Plan.	
Cumulative impact post mitigation	Medium	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.1.9 Groundwater impact as a result of eucalyptus clearing (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Groundwater impact as a result of eucalyptus clearing		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Following the removal of stands of deep-rooted eucalyptus trees, groundwater levels may rise in parts of the development site. JG Afrika (2023) notes that groundwater quality across the development area is considered to be poor with elevated concentrations of certain hydrochemical parameters of concern reported by SRK (2018) in the majority of the boreholes sampled. While most of the wetlands described in this report are perched rather than groundwater linked wetlands, if a raised water table intersects surface water areas (e.g. downstream in the Langvlei), then polluted water could enter	No impact, as no development would occur.

	these already impacted ecosystems, compromising their capacity for ecological recovery.	
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Contamination of surface water.	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Can be partly mitigated.	N/A
Proposed mitigation:	• Specialist (geohydrological) input should inform decision-making around the risk of groundwater level and quality on the Paardevlei site. • Monitoring of water quality in downstream stormwater channels and the Langvlei should be re-introduced before the potential tree felling commences, and the contaminants of concern should be included in the monitoring programme, so that there is at least an understanding of water quality change and/or risk.	N/A
Cumulative impact post mitigation	Medium	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.1.10 Pollution of wetlands and channels (due to construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Pollution of wetlands and channels		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The passage of sediments, fuel, oil, or other waste into wetlands or stormwater channels would impact on aquatic habitat quality both on site and potentially in the downstream receiving aquatic environments. The nature of the proposed development means that sediment (mainly fine clays) is considered the greatest threat, particularly during the wet season. This impact has been rated as of low intensity and low significance.	No Impact, as no development would occur
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Permanent	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Permanent loss of Wetlands	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be partly mitigated.	N/A
Proposed mitigation:	• Refuelling areas should be lined and bunded and be located at least 50m outside of any mapped wetland or	N/A

	wetland mosaic area. • The construction site should be equipped with portable toilets located outside of any wetland mosaic area. • Where disturbed surfaces result in a flow of visibly sediment-enriched (turbid) water into any wetland or stormwater channel, measures must be put in place to retain such runoff in temporary sediment settlement ponds or to treat with other appropriate management devices, such that there is no significant change in the sediment load into downstream aquatic ecosystems (i.e. no more than a 5% increase). • The above measures should also be incorporated into a Construction Phase Environmental Management Plan.	
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.11 Erosion as a result of the construction of Solar PV panels, new Substation & BESS and new Powerline Routes

Erosion as a result of construction related disturbances		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity	No Impact, as no vegetation clearing or soil disturbance
Nature of impact	Negative	No Impact

Extent and duration of impact	Site Specific; Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated	N/A
Proposed mitigation:	• Suitable measures must be implemented in areas that may be susceptible to erosion, including but not limited to gabions and runoff diversion berms (if necessary). • Areas must be rehabilitated, and a suitable cover planted once specific phases of construction is completed. • If site development does not occur soon after preparation of the site, a suitable cover to be established as a temporary measure. • Development of an Environmental Management Plan (EMP) to control construction impacts.	N/A
Cumulative impact post mitigation	Low	N/A
Significance rating of impact after	Low	N/A

mitigation		

11.3.1.12 Contamination & Pollution Impact (associated with the construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Contamination & Pollution Impact (associated with Construction Activities)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Construction activities will generate waste. In addition, fuel, oil, lubricants and other pollutants may leak from vehicles/ machinery and contaminate the soil. Pollution and soil contamination could also occur from chemical toilets, cement mixing directly on the soil and stormwater runoff may flow over the site camp area and carry contaminants off-site.	No Impact.
Nature of impact	Negative	No Impact
Extent and duration of impact	Local, Medium term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated	N/A
Proposed mitigation:	The appointed Environmental Control Officer (ECO) must undertake at least one site inspection per month, for the	N/A

	duration of the construction phase, and produce a monthly ECO monitoring audit report, auditing on the compliance of the development with the conditions of the Environmental Authorisation and the approved EMP. <u>General Pollution Management</u>**<u>:</u>** • No pollution of surface water (wetlands) or ground water resources may occur due to any activity on the site. • No storm water runoff from any premises containing waste, or water containing waste emanating from construction activities may be discharged into the environment. Polluted stormwater must be contained on the site. • Cement batching / mixing may not take place directly on the soil surface, it must be done on an impervious lining that will prevent cement particles from contaminating the soil. <u>General Waste Management:</u> • Dedicated waste bins or skips must be provided on site and kept in a demarcated area on an impermeable surface. • Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. • Waste must be placed in the appropriate waste	

	bins/skips/ stockpiles. • Hazardous waste bins must be kept on an impermeable bunded surface capable of holding at least 110% of the volume of the bins. • Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. • Waste bins/skips must be regularly emptied and must not be allowed to overflow. • Construction workers must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. • The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. • Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). • Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • All waste, hazardous as well as general, which result from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF).	

	<u>Pollution Management – hydrocarbons (oil, fuel etc.)</u> • Vehicles and machinery must be in good working order and must be regularly inspected for leaks. • If a vehicle or machinery is leaking pollutants it must, as soon as possible, be taken to an appropriate location for repair. The ECO has the authority to request that any vehicle or piece of equipment that is contaminating the environment be removed from the site until it has been satisfactorily repaired. • Repairs to vehicles/ machinery may take place on site, within a designated maintenance area at the site camp. Drip trays, tarpaulin or other impermeable layer must be laid down prior to undertaking repairs. • Refuelling of vehicles/ machinery may only take place at the site camp or vehicle maintenance yard. Where refuelling must occur, drip trays should be utilised to catch potential spills/ drips. • Drip trays must be utilised during decanting of hazardous substances and when refilling chemical/ fuel storage tanks. • Drip trays must be placed under generators (if used on site) water pumps and any other machinery on site that utilises fuel/ lubricant, or where there is risk of leakage/spillage. • Where feasible, fuel tanks should be elevated so that leaks are easily detected. • A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be	

	educated on how to utilise the spill kit. • Soil contaminated by hazardous substances must be excavated and disposed of as hazardous waste. <u>Pollution Management – Ablution facilities</u> • Chemical toilets should be kept at the site camp, on a level surface and secured from blowing over. • Toilets must be located well outside of any wetlands and storm water drainage lines and may not be linked to the storm water drainage system in any way. • Chemical toilets must be regularly emptied, and the waste disposed of at an appropriate wastewater disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. <u>Pollution Management – Hazardous Substances</u> • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases. • Hazardous chemicals and fuels should be stored on	

	bunded, impermeable surfaces with sufficient capacity to hold at least 110% of the capacity of the storage tanks. <u>Cement Batching</u> • Cement batching must take place on an impermeable surface large enough to retain any slurry or cement water run-off. If necessary, plastic/ bidem lined detention ponds (or similar) should be constructed to catch the run-off from batching areas. Once the water content of the cement water/ slurry has evaporated the dried cement should be scraped out of the detention pond and disposed of at an appropriate disposal facility authorised to deal with such waste • Cement batching should take place on already transformed areas within the footprint of the facility. • Unused cement bags must be stored in such a way that they will be protected from rain. Empty cement bags must not be left lying on the ground and must be disposed of in the appropriate waste bin. • Washing of excess cement/concrete into the ground is not allowed. All excess concrete/ cement must be removed from site and disposed of at an appropriate location.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.13 Dust & noise impact (associated with the construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Dust and noise impact (associated with construction activities)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Dust impacts may result due to construction activities and excavation activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents.	No Impact
Nature of impact	Negative	No Impact
Extent and duration of impact	Site, Short Term	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Completely Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated	N/A
Proposed mitigation:	<u>Dust Mitigation</u> • Land clearing and earthmoving activities should not be undertaken during strong winds, where possible.	N/A

	• Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. • Stockpiles of topsoil, spoil material and other material that may generate dust, must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures). Note that topsoil should not be covered with tarpaulin as this may kill the seedbank. • The location of stockpiles must take into account the prevailing wind direction and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. • Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. • The speed limit should be set at 20-40km/h. • Dust must be suppressed on access roads and the construction site during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off. • Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days. • The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary. • If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be	

	necessary or the erecting of shade netting above the fenced off area may need to be explored. • All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m2/day, measured using reference method ASTM D1739. • A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received. <u>Noise Mitigation:</u> • Noise complaints register will be opened. • Excavations and earth-moving activities must be restricted to normal construction working hours (08:00 – 17:00) as far as possible. • Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. • Vehicles and equipment must be kept in good working condition. • Machinery and equipment should be fitted with mufflers/ exhaust silencers. • No unnecessary disturbances should be allowed to	

	emanate from the construction site. • Due to the proximity of the proposed development site to residents, noise levels must be kept to a minimum at all times. If excessive noise is expected on the boundary of the residential erven bordering the site, they must be informed in advance of when the high noise levels will occur and for how long they will occur. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to. The appointed Environmental Control Officer (ECO) must undertake a site inspection once a month, for the duration of the construction phase, and to produce a monthly ECO monitoring audit report, auditing on the compliance of the development with the conditions of the Environmental Authorisation and the approved EMP. These reports should be distributed to the Environmental Liaison Committee consisting of community representatives, local organisations, relevant authorities and municipal representatives must be established	

Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.14 Contamination of area through petrochemical spillages (associated with the construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Contamination of the area by petrochemical spillages (associated with construction activities)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The presence of plant and equipment, as well as possible petrochemical stores on the construction site that make use of petrochemical substances, is a risk of contamination to the possible surface water (wetlands) and groundwater that may occur under the site.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site, Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated	N/A

Proposed mitigation:	• All plant and equipment that make use of petrochemical substances, must be checked for leakages on a daily basis before operations commence. • All plant and equipment that are found to be leaking must be removed from the site and only returned once the leakages have been addressed. • If any petrochemical substances are stored on the site, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. • All refuelling of plant and equipment must be conducted over a drip-tray. • If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction site camp area. • If any spillages from plant or equipment occur, the spill must be contained immediately, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.15 Loss of heritage resources (associated with construction of Solar PV panels, new Substation & BESS and new Powerline Routes)

Loss of heritage resources (associated with construction activities)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The loss of heritage resources, including archaeological and paleontological resources, due to land clearing and excavations on the site.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site Specific; Permanent	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Management of this impact requires a higher level of expertise and resources to maintain impacts within acceptable levels.	N/A
Proposed mitigation:	• The Construction Manager and the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage / grave sites and cultural material they may encounter, and the procedures to follow when they find potential	N/A

	heritage sites. • If heritage, archaeological material and human remains (including graves and burial sites) are uncovered during construction of the proposed development, all work must cease immediately and be reported to the Heritage Western Cape.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.16 Socio-economic impact –influx of jobseekers (during construction phase of Solar & BESS facility including associated infrastructure)

Socio-economic impact –influx of jobseekers		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The development may attract the influx of skilled and semi-skilled jobseekers into the local area. this may result in the following: • Conflict between locals and outsiders, especially when the outsider labour force receives preferential treatment. • Cultural diversity conflicts.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Local, Long Term	N/A
Probability of occurrence	Highly Probable	N/A

Degree to which the impact can be reversed	Partially Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost.	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated.	N/A
Proposed mitigation:	• Conduct an audit of the affected communities in terms of employment capacity. • Identify potential workers from the affected and surrounding communities. • Identify possible conflicts in and between communities. • Set up a central labour desk where all workers register and only workers registered on the database should be considered for employment. • Recommend support programmes that would assist with conflict minimisation and resolution. • Contractually oblige sub-contractors to only employ workers through the labour force desk. • Review public procurement rules.	N/A
Cumulative impact post mitigation:	Medium	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.17 Socio-economic impact– employment opportunities (due to construction of Solar & BESS facility including associated infrastructure)

Socio-economic impact– employment opportunities (construction phase)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The construction phase will result in the availability of temporary employment opportunities for skilled, semi-skilled and unskilled labour force.	No Impact
Nature of impact	Positive	N/A
Extent and duration of impact	Regional, Medium Term	N/A
Probability of occurrence	Definite	N/A
Degree to which the impact can be reversed	N/A.	N/A
Degree to which the impact may cause irreplaceable loss of resources	N/A.	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	N/A.	N/A
Proposed mitigation:	• Where reasonable and practical, preference must be given to local SMMEs, especially for the low skills levels. • Equal job opportunities for women and men must be promoted. • Culture and tradition must be considered when planning the division of labour for construction. • Employment must be managed by a Project Steering	N/A

	Committee that uses a selection system a fair recruitment of semi and unskilled workers from all local impacted communities in accordance with government policies related to local procurement. This must ensure a fair and equitable recruitment process. • Review public procurement rules.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.18 Skills development and capacity building of workers and local SMMEs (during construction phase of Solar & BESS facility including associated infrastructure)

Skills development and capacity building of workers and local SMMEs (construction phase)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The construction phase of the development may be an opportunity for skills transfer and capacity building by skilled and experienced workers for the unskilled and upcoming workers.	No Impact
Nature of impact	Positive	N/A
Extent and duration of impact	Regional, Medium Term	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Completely Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	N/A.	N/A
Cumulative impact prior to	Medium	N/A

mitigation		
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	N/A.	N/A
Proposed mitigation:	• The developer must include a contractual obligation for larger contractors to work with small SMMEs to train and transfer skills. • The developer must implement on-the-job training for unskilled labourers. • The developer should look into developing a skills development programme, which may include training in business, management, monitoring and evaluation. • Review public procurement rules.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.19 Disruption in daily living and movement patterns for affected communities (during construction phase of Solar & BESS facility including associated infrastructure)

Disruption in daily living and movement patterns for affected communities (construction phase)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The construction phase of the development may result in the	No Impact

	disruption of the daily living and movement patterns of surrounding communities, due to traffic and other intrusions caused by construction activities.	
Nature of impact	Negative	N/A
Extent and duration of impact	Local, Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	N/A.	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Can be mitigated	N/A
Proposed mitigation:	• Construction activities must be limited to the construction site only. • Proper and timeous notification must be given to residents when an activity will affect their movement (such as road closure). • Surrounding communities must have access to a grievance reporting mechanism, e.g. through a project steering committee. • The developer should at all times avoid using busy roads and roads within densely populated areas.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.20 Health and safety risks for workers and surrounding community (during construction phase of Solar & BESS facility including associated infrastructure)

Health and safety risks for workers and surrounding community (construction phase)		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Inadequate management of general construction activities could result in health and safety risks, such as construction related accidents, respiratory infections from dust generation and air pollution, unsafe potable water, increased prevalence of communicable diseases, etc. This is associated with the following: • Uncontrolled access into the construction site resulting in the safety and security issues and vandalism. • Threat to surrounding properties.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Local, Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	Medium	N/A

Degree to which the impact can be mitigated	Can be mitigated	N/A
Proposed mitigation:	• Measures to suppress dust must be implemented at all times. Construction workers must wear all relevant protective clothing. • Dangerous equipment must be used under strict supervision. • Waste must be safely disposed at the nearest licensed waste disposal facility. • Provide safe and clean drinking water on site. • Provide sufficient ablution facilities for the site staff.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.21 Safety and security risk (during construction phase of Solar & BESS facility including associated infrastructure)

Safety and security risk for the surrounding communities (construction phase)		
	Preferred Site Layout	**NO-GO Alternative**
Description of Impact	Safety and security issues for the surrounding communities may be introduced due to an influx of jobseekers. Valuable construction equipment and material could also attract criminals.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site, Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be	Partly Reversible	N/A

reversed		
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all mitigation measures are implemented	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Management of this impact requires resources to maintain impacts within acceptable levels.	N/A
Proposed mitigation:	• The construction site must be fenced off and safe guarded at all times, to prevent trespassing. • Construction workers must be provided with identity tags and access to site by unauthorised people must be prohibited. • Jobseekers should not be allowed to gather around the construction site. • The local Paardevlei security must be allowed entry to site anytime, to monitor security and safety.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.22 Disruption and changes to the quality of living environment (during construction phase of Solar & BESS facility including associated infrastructure)

Disruption and changes to the quality of living environment		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**

Description of Impact	Intrusion impacts such as noise and visual intrusion, and aesthetic impacts, resulting from emissions, movement of construction vehicles, earthworks, etc., may cause a decrease in the quality of the physical environment for the surrounding communities.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Local, Short Term	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	The resource will not be lost or destroyed provided mitigation and rehabilitation measures are implemented.	N/A
Cumulative impact prior to mitigation	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Management of this impact requires resources to maintain impacts within acceptable levels.	N/A
Proposed mitigation:	• The surrounding residents must be advised of construction commencement, and guided on how they could lodge complaints when necessary. • All dust suppressing techniques must be applied. • All construction vehicles and equipment must be regularly serviced, to prevent the emission of air pollutants and noise generation.	N/A

Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A

11.3.1.23 Movement of construction vehicles (during construction phase of Solar & BESS facility including associated infrastructure)

Movement of construction vehicles		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The movement of construction vehicles, machinery and personnel on site shall result in a visual impact on surrounding users.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site Specific, Short Term (Construction Period)	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	The movement of construction vehicles, machinery and personnel on site shall result in a visual impact on surrounding users.	N/A
Cumulative impact prior to mitigation	High	N/A
Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Management of this impact requires resources to maintain impacts within acceptable levels.	N/A
Proposed mitigation:	• Schedule the movement of construction vehicles and machinery so that they do not interfere with the	N/A

	normal working operations of the town (outside peak hours). • Only work during daylight time (08h00 to 17h00) and Monday to Friday. No movement of construction vehicles permitted on weekends or public holidays.	
Cumulative impact post mitigation:	Medium	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.1.24 Excavations and construction of infrastructure (during construction phase of Solar & BESS facility including associated infrastructure)

Excavation and construction of Infrastructure		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**
Description of Impact	The excavation and construction of infrastructure may result in disturbance and an unsightly character.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site Specific, Short Term (Construction Period)	N/A
Probability of occurrence	Highly Probable	N/A
Degree to which the impact can be reversed	Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	The excavation and construction of infrastructure shall result in disturbance and an unsightly character.	N/A
Cumulative impact prior to mitigation	High	N/A

Significance rating of impact prior to mitigation	High	N/A
Degree to which the impact can be mitigated	Management of this impact requires resources to maintain impacts within acceptable levels.	N/A
Proposed mitigation:	• Prohibit excessive signage outside the construction area. • Keep construction camp lighting to a minimum and prevent the use of flood type lighting as far as possible. • Ensure that the site is kept neat and clean. Collect and dispose of litter appropriately to prevent any potential wind-blown litter on or off the site. • Limit site clearing to within the minimum footprint required for construction. • Retain existing trees along the boundaries of the property where possible. • Rehabilitate areas as soon as possible following construction. • Ensure working occur during daylight hours (08h00-17h00) and on weekdays only.	N/A
Cumulative impact post mitigation:	Medium	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.2 Operational Phase Impacts

11.3.2.1 Avifauna mortality at solar facility

Avifauna mortality at solar facility		
	Preferred Alternative: Preferred Site Layout	**NO-GO Alternative**

Description of Impact	Bird fatalities could occur due to collision with solar PV panels and entanglement in perimeter fencing. The bird species diversity in the project area is considered as significant.	No Impact
Nature of impact	Negative	N/A
Extent and duration of impact	Site, Long Term	N/A
Probability of occurrence	Probable	N/A
Degree to which the impact can be reversed	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.	N/A
Cumulative impact prior to mitigation	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated	Medium	N/A
Proposed mitigation:	All incidents of collision with project panels should be recorded (e.g., name of species, date, location, suspected cause of death).	N/A
Cumulative impact post mitigation	Medium	N/A
Significance rating of impact after mitigation	Medium	N/A

11.3.2.2 Socio-economic impact – employment opportunities (for infrastructure maintenance)

Socio-economic impact – employment opportunities (for infrastructure maintenance)	
	Preferred Alternative: Preferred Site Layout
Description of Impact	The maintenance and cleaning of PV panels will result in employment opportunities, albeit fewer that the construction phase
Nature of impact	Positive
Extent and duration of impact	Regional, Permanent
Probability of occurrence	Definite
Degree to which the impact can be reversed	The impact can be completely reversed with the implementation of correct mitigation and rehabilitation measures
Degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost.
Cumulative impact prior to mitigation	Medium
Significance rating of impact prior to mitigation	Medium
Degree to which the impact can be mitigated	The nature of the impact is understood and may be mitigated through the implementation of a management plan.
Proposed mitigation:	Local labour force must receive primary priority.
Cumulative impact post mitigation	Medium
Significance rating of impact after mitigation	Medium

11.3.2.3 Visual intrusion of solar facility to observers (within a 1 km radius)

Visual intrusion of solar facility to observers (within a 1 km radius)	
	Preferred Alternative: Preferred Site Layout
Description of Impact	The proposed Solar Facility may cause a visual intrusion to observers within a 1 km radius from the proposed development.
Nature of impact	Negative
Extent and duration of impact	Site Specific, Permanent
Probability of occurrence	Definite
Degree to which the impact can be reversed	Irreversible
Degree to which the impact may cause irreplaceable loss of resources	Visual intrusion to observers within a 1 km radius
Cumulative impact prior to mitigation	High
Significance rating of impact prior to mitigation	High
Degree to which the impact can be mitigated	The impact may be mitigated through the implementation of a management plan
Proposed mitigation:	<u>Planning:</u> • Retain and maintain natural vegetation and trees in all areas outside of the development footprint. • Consult adjacent communities in order to inform them of the development and to identify any (valid) visual impact concerns. <u>Operation:</u> • Maintain the general appearance of the solar facility as a whole. • Retain / re-establish and maintain natural vegetation immediately adjacent to the development footprint, where possible. • Investigate the potential to screen affected receptor sites with planted vegetation cover.
Cumulative impact post mitigation	Medium
Significance rating of impact after mitigation	Medium

11.3.2.4 Visual intrusion of solar facility to observers (within a 1-3 km radius)

Visual Intrusion of Solar Facility to Observers within a 1 -3 km radius	
	Preferred Alternative: Preferred Site Layout
Description of Impact	The proposed Solar Facility may cause a visual intrusion to observers within a 1-3 km radius from the proposed solar development.
Nature of impact	Negative
Extent and duration of impact	Site Specific, Permanent
Probability of occurrence	Definite
Degree to which the impact can be reversed	Irreversible
Degree to which the impact may cause irreplaceable loss of resources	Visual intrusion to observers within a 1-3 km radius
Cumulative impact prior to mitigation	Medium
Significance rating of impact prior to mitigation	Medium
Degree to which the impact can be mitigated	The impact may be mitigated through the implementation of a management plan.
Proposed mitigation:	<u>Planning:</u> • Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. <u>Operations:</u> • Maintain the general appearance of the facility as a whole. • Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint, where possible. • Investigate the potential to screen affected receptor sites with planted vegetation cover.
Cumulative impact post mitigation	Low

Significance rating of impact after mitigation	Low

11.3.2.5 Visual intrusion of solar facility to observers (within a 3 -6 km radius)

Visual intrusion of solar facility to observers (within a 3 -6 km radius)	
	Preferred Alternative: Preferred Site Layout
Description of Impact	The proposed Solar Facility may cause a visual intrusion to observers within a 3-6 km radius.
Nature of impact	Negative
Extent and duration of impact	Site Specific, Permanent
Probability of occurrence	Definite
Degree to which the impact can be reversed	Irreversible
Degree to which the impact may cause irreplaceable loss of resources	Visual intrusion to observers within a 3-6 km radius
Cumulative impact prior to mitigation	Low
Significance rating of impact prior to mitigation	Low
Degree to which the impact can be mitigated	The impact may be mitigated through the implementation of a management plan.
Proposed mitigation:	<u>Planning:</u> • Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. <u>Operations:</u> • Maintain the general appearance of the facility as a whole. • Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint, where possible. • Investigate the potential to screen affected receptor sites with planted vegetation cover.
Cumulative impact post mitigation	Low
Significance rating of impact after mitigation	Low

11.3.3 Decommissioning Phase Impacts – Not Applicable

It is not envisaged that the Paardevlei Solar & BESS project (once implemented into the CCT electrical grid) will be decommissioned. However, the general lifespan of a solar facility is approximately 25 years and therefore this section (i.e. potential decommissioning phase impacts) may need to be revisited.

12 ENVIRONMENTAL IMPACT STATEMENT

12.1 Summary of construction & operational phase impacts (before and after mitigation)

The table below is a summary of the potential impacts that could take place during the construction and operational phases of the proposed Paardevlei solar development. These results have been informed by the specialist impact assessments undertaken in support of this EIA.

Table 32: Summary of potential construction and operational phase impacts (before and after mitigation)

Construction Phase Impacts			
Potential Impact	**Preferred Alternative: Preferred Site Layout**		**No-Go Alternative**
	Impact Significance (before mitigation)	**Impact Significance (after mitigation)**	
Permanent loss of indigenous vegetation	Medium	Low	N/A
Loss of Fauna Habitat (of priority species)	Medium	Low	N/A
Loss of Avifauna Habitat (of priority species)	Medium	Low	N/A
Disturbance to Avifauna	Medium	Low	N/A
Permanent loss of Wetlands	High	Medium	N/A
Interruption of required ecological and hydrological connectivity	High	Medium	N/A
Wetland degradation as a result of eucalyptus clearing	Medium	Low	N/A
Physical disturbance to remnant wetlands	High	Low	N/A
Groundwater impact as a result of eucalyptus clearing	High	Low	N/A
Pollution of wetlands and channels	Medium	Low	N/A
Erosion as a result of construction related disturbances	Medium	Low	N/A
Contamination & pollution impact (associated with construction activities)	Medium	Low	N/A
Dust & Noise Impact (associated with construction activities)	Medium	Low	N/A
Contamination of the area by petrochemical spillages (Construction Phase)	Medium	Low	N/A
Loss of Heritage Resources	Medium	Low	N/A
Socio-Economic Impact –Influx of Jobseekers	Medium	Low	N/A
Skills development and capacity building of workers and local SMMEs	Medium	Low	N/A

Disruption in daily living and movement patterns	Medium	Low	N/A
Health and Safety Risks for Workers and Surrounding Community	Medium	Low	N/A
Safety and Security Risk	High	Low	N/A
Disruption and changes to the quality of living environment	Medium	Low	N/A
Movement of Construction Vehicles	High	Medium	N/A
Excavation and Construction of Infrastructure	High	Medium	
Operational Phase			
Avifauna mortality at Solar PV Facility	Medium	Medium	
Socio-economic impact – Employment Opportunities	Low	Medium	
Visual Intrusion of Solar Facility to Observers within a 1 km radius	High	Medium	
Visual Intrusion of Solar Facility to Observers within a 1 -3 km radius	Medium	Low	
Visual Intrusion of Solar Facility to Observers within a 3 -6 km radius	Low	Low	
Decommissioning Phase Impacts			
It is not envisaged that the Paardevlei Solar & BESS project (once implemented into the CCT electrical grid) will be decommissioned. However, the general lifespan of a solar facility is approximately 25 years and therefore this section (i.e. potential decommissioning phase impacts) may need to be revisited.			

13 EAPS OPINION

To date, **no environmental fatal flaws** related to the proposed Paardevlei Solar PV & BESS development have been identified by the EAP or any of the Specialists (during the EIA phase of this project).

Provided that all the no-go areas and mitigation measures as detailed in the final Specialist Assessments and the EMPr are implemented during the construction and operational phases of the project, the development may commence.

14 RECOMMENDATIONS FOR CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION

- **All of the mitigation measures listed in the final Specialist reports (attached as Appendix B of this report) must be implemented during pre-construction, construction and the operational phases.**

- **All of the mitigation measures listed in the EMPr (attached as Appendix E) must be implemented during pre-construction, construction and the operational phases.**

- **An ECO must be appointed in the pre-construction and construction phases of the solar project, to monitor that the Developer's compliance with all of the requirements of the EMPr and the EA.**

- **A detailed Ecological Assessment & Flora and Faunal Seach and Rescue (S&R) of the approved Solar & BESS development site footprint (after the detailed design phase is completed) must be completed by a qualified specialist, prior to the commencement of any activity on the site.**

- **A herpetological survey and Seach and Rescue (S&R) of species of conservation importance of the approved development site (after the detailed design phase is completed) must be completed by a qualified specialist, prior to the commencement of any activity on the site.**

- **In order to ensure that no avifauna (bird) species of conservation concern (SCC) are breeding within the approved Solar & BESS development site (after the detailed design phase is completed), a walkthrough of the site must be conducted by an Avifaunal Specialist before the commencement of any activities.**

- Should any avifauna SCC be found breeding within the approved Solar & BESS development footprint at any point during construction, all works within 250 m of the breeding site must be halted, and the avian species specialist must be contacted for further instruction.

- Disturbance surrounding the development footprint must be kept to a minimum, during the construction and operational phases.

- **It is requested that the validity period of the Environmental Authorisation (if issued) be for a period of no less than 10 years.**

15 LIST OF APPENDICES

Appendix A – Maps & Layouts

Appendix A1 – Locality map (Amended SDP).

Appendix A2a – Environmental Sensitivity mapping (Amended SDP).

Appendix A2b – Vegetation Map (Amended SDP).

Appendix A2c – Zonation Map (Amended SDP).

Appendix A2d - Affected Properties Map (Amended SDP)

Appendix A3 – Amended Solar PV & BESS layout

Appendix A4 – Updated DFFE Screening Tool

Appendix B – Specialist Studies

Appendix B1a - Ecological Specialist letter (Amended SDP)

Appendix B1b - Ecological Impact Assessment (Final version)

Appendix B1c - Ecological Specialist Declaration (November 2024)

Appendix B2a - Wetland Specialist letter (Amended SDP)

Appendix B2b - Wetland Impact Assessment (Final version)

Appendix B2c - Wetland Specialist Declaration (November 2024)

Appendix B3a Heritage Specialist letter (Amended SDP)

Appendix B3b Heritage Impact Assessment (Final version)

Appendix B3c - Heritage Specialist Declaration (November 2024)

Appendix B4a -Social Specialist letter (Amended SDP)

Appendix B4b - Social Impact Assessment (Final version)

Appendix B4c - Social Specialist Declaration (November 2024)

Appendix B5a -Visual Specialist letter (Amended SDP)

Appendix B5b - Visual Impact Assessment (Final version)

Appendix B5c - Visual Specialist Declaration (November 2024)

Appendix B5d - Visual Specialist CV

Appendix B6a -Land Contamination Specialist letter (Amended SDP)

Appendix B6b - Land Contamination Impact Assessment (Final version)

Appendix B6c - Land Contamination Specialist Declaration (November 2024)

Appendix B7a - Glint & Glare Specialist letter (Amended SDP)

Appendix B7b - Glint & Glare Impact Assessment (Final version)

Appendix B7c - Glint & Glare Specialist Declaration (November 2024)

Appendix B7d - Glint Specialist CV

Appendix B8a - Climate Specialist letter (Amended SDP)

Appendix B8b - Climate Change Impact Assessment (Final version)

Appendix B8c - Climate Specialist Declaration (November 2024)

Appendix B8d - Climate Specialist CV

Appendix B9a -Groundwater Specialist letter (Amended SDP)

Appendix B9b - Groundwater Impact Assessment (Final version)

Appendix B9c - Groundwater Specialist Declaration (November 2024)

Appendix B10a - Avifauna Specialist letter (Amended SDP)

Appendix B10b - Avifaunal Assessment (Final version)

Appendix B10c - Avifaunal Specialist Declaration (November 2024)

Appendix B11a -Geotechnical Specialist letter (Amended SDP)

Appendix B11b – Geotechnical Assessment (Final version)

Appendix B11c - Geotechnical Specialist Declaration (November 2024)

Appendix B12a -Traffic Specialist letter (Amended SDP)

Appendix B12b – Traffic Assessment (Final version)

Appendix B12c -Traffic Specialist Declaration (November 2024)

Appendix B13 – Integrated Stormwater Master Plan (for Paardevlei site).

Appendix C – Undertaking under oath by the Environmental Assessment Practitioner & CV

Appendix D1 - Proof of PPP during EIA Phase (Draft & Revised EIA Reports)

Appendix D2 – Comments received (Revised EIA Report)

Appendix D3 – Comments & Response Report (Revised EIA Report)

Appendix D4 – Meeting Minutes (De Beers AFC)

Appendix D5 – Meeting Minutes (CCT-Human Settlements Department)

Appendix D6 – Meeting Attendance Register (RDM)

Appendix E – Environmental Management Programme (Amended SDP)

Appendix F – Proof of WULA