SOCIAL IMPACT ASSESSMENT REPORT

FINAL

PAARDEVLEI PV SOLAR PROJECT CITY OF CAPE TOWN

SEPTEMBER 2024

By

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[redacted]

EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

JG Africa was appointed to manage the Environmental Impact Assessment (EIA) process for the Paardevlei Solar PV Farm Project located on land owned by the City of Cape Town to the southwest of Somerset West in the Helderberg Planning District. The Paardevlei Solar PV Farm will have a capacity of 40-60 MW and may include a Battery Energy Storage System (BESS). Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process.

SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- Decommissioning phase impacts.
- No-development option.

POLICY AND PLANNING ISSUES

The development of renewable energy 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.

CONSTRUCTION PHASE

Potential positive impacts

- Creation of employment and business opportunities.

The construction phase will extend over a period of approximately 12 months and create in the region of 100-150 direct construction related employment opportunities. Members from the local communities in the area, specifically Somerset West, Macassar and Firgrove would be in a position to qualify for most of the low skilled and semi-skilled employment opportunities. Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members of the community. The total wage bill will be in the region of R 45 million (2023 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the area.

Given relatively high local unemployment levels in the area, this will represent a significant, if localised, social benefit. The benefits for low communities can be enhanced by implementing local labour content targets. The capital expenditure associated with the construction phase will be approximately R 1.2 billion (2023 Rand

value). Given the well-developed local economy, the potential for local companies will be high. The majority of benefits will therefore accrue to contractors and engineering companies based in the City of Cape Town metropolitan area.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Creation of employment and business opportunities	Low (Positive)	Medium (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Influx of jobseekers	Low (Negative)	Low (Negative)
Nuisance related impact linked to construction activities	Medium (Negative)	Low (Negative)

OPERATIONAL PHASE

Potential positive impacts

- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.

The proposed project will supplement the City of Cape Town's energy supply and assist to improve energy security. In addition, it will also reduce the country's reliance on coal as an energy source. This represents a positive social benefit.

Potential negative impacts

- Visual impacts and associated impacts on sense of place.
- Impact on property values.
- Loss of land for development of housing.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts

can therefore be effectively mitigated. The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Establishment of infrastructure to improve energy security and support renewable sector	Medium (Positive)	Medium (Positive)
Creation of employment and business opportunities	Low (Positive)	Medium (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Impact on property values	Low (Negative)	Low (Negative)
Loss of land for housing	Low (Neutral)	Low (Neutral)

CUMULATIVE IMPACTS

Cumulative impact on sense of place
The significance is rated as **Low Negative.**

DECOMMISSIONING

Given the relatively small number of people employed during the operational phase (~ 15-20), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**.

NO-GO DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for 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 South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost. The No-Development option is not supported by the findings of the SIA.

CONCLUSIONS AND RECOMMENDATIONS

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.

Statement and reasoned opinion

The establishment of the proposed Paardevlei PV SEF and associated infrastructure including a battery energy storage system (BESS) is supported by the findings of the SIA.

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CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a *curriculum vitae*;	Section 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, Annexure B
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3,
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Interviews in 2021 (Annexure A)
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4, Section 5,
(g) an identification of any areas to be avoided, including buffers;	Section 4
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	N/A
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4,
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 4, Section 5
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 5.3
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A, lists key stakeholders interviewed
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A, lists key stakeholders interviewed
(q) any other information requested by the competent authority	N/A
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a	Comply with the Assessment Protocols that were

specialist report, the requirements as indicated in such notice will apply.	published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.

ACRONYMS

CoCT	City of Cape Town
DEA&DP	Department of Environmental Affairs and Development Planning
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
HD	Historically Disadvantaged
HPD	Helderberg Planning District
IDP	Integrated Development Plan
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
SDP	Spatial Development Plan
SIA	Social Impact Assessment
WCP	Western Cape Province

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

JG Africa was appointed to manage the Environmental Impact Assessment (EIA) process for the Paardevlei Solar PV Farm Project located on land owned by the City of Cape Town to the southwest of Somerset West in the Helderberg Planning District (Figure 1.1). The Paardevlei Solar PV Farm will have a capacity of 40-60 MW and may include a Battery Energy Storage System (BESS). Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process.

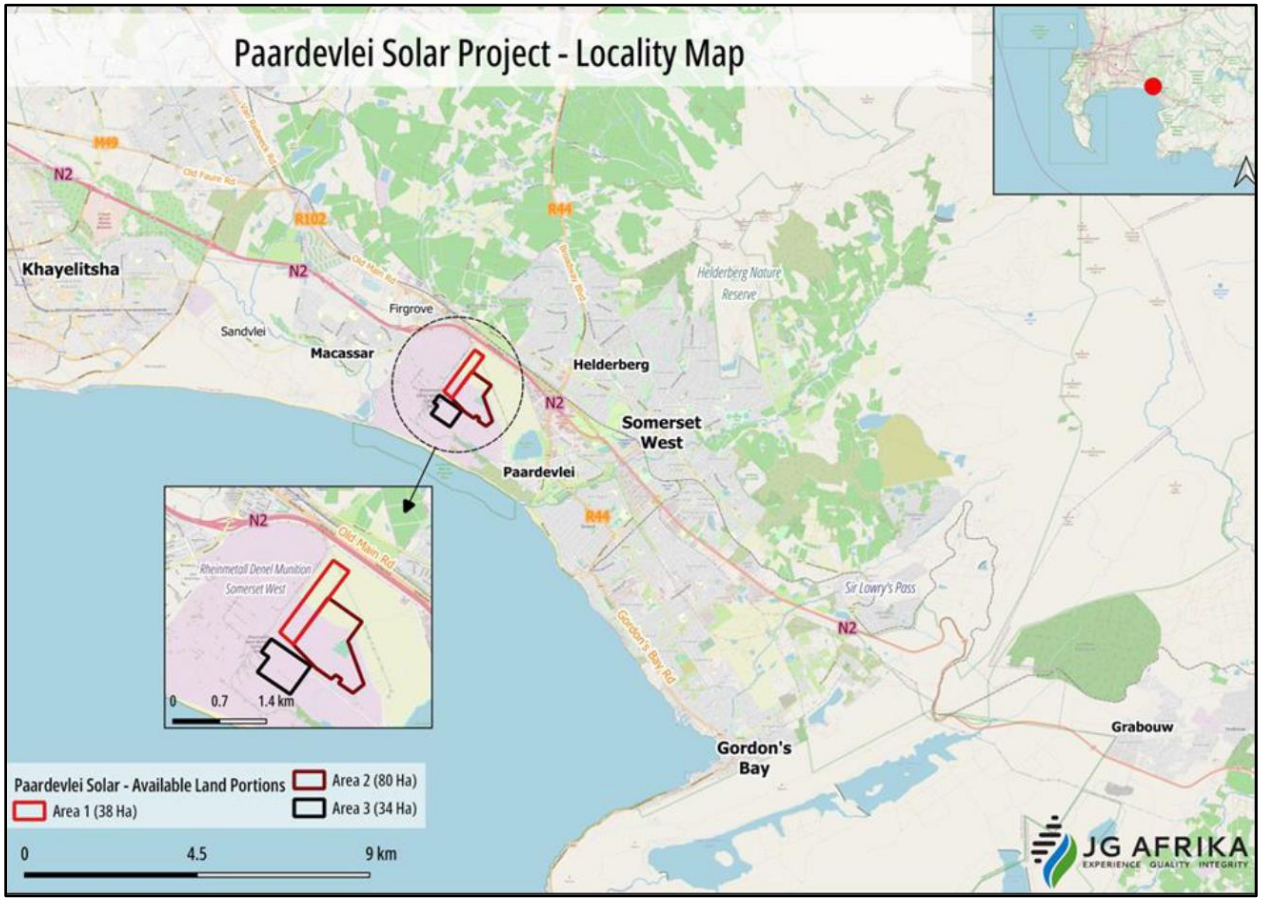


Figure 1.1: Location of the Paardevlei Solar PV Farm Project on the site

1.2 TERMS OF REFERENCE AND APPROACH

The terms reference and approach to the SIA is based on the Guidelines for SIA endorsed by Western Cape Provincial Environmental Authorities (DEA&DP)[1] in 2007 and IAIA Guidance for Assessing and Managing Social Impacts (2015).

[1] These guidelines are used throughout South Africa.

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying alternatives and mitigation measures.

In this regard the study involved:

- Review of socio-economic data for the study area.
- Review of relevant planning and policy frameworks for the area.
- Site visit and interviews with key stakeholders.
- Identifying the key potential social issues associated with the proposed project.
- Assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

Annexure A contains a list of the secondary information reviewed. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

1.3 BACKGROUND TO PAARDEVLEI PROJECT

Eskom is the main supplier of electricity to the City of Cape Town, around 9,759 GWh per year, representing 4% of the national demand. Currently, the City has three electricity generation assets, namely the Steenbras Hydro Pumped Storage facility (180 MW), and two small gas turbines located at Athlone (36 MW) and Roggerbaai (40 MW). The Steenbras facility has enabled the City to avoid up to 2 stages of load-shedding. The gas turbines are used only for peak-demand emergencies.

The City is currently investigating various strategies to reduce the impact of load-shedding and improve its energy security. In order to meet its green goals, the City is also focusing on generation from renewable sources. This includes procuring electricity from Independent Power Producers (such as private wind and solar farms), as well as increasing the City's its own generation capacity. Parallel strategies include generation from rooftop-mounted PV on City-owned buildings and buying renewable energy from customer-initiated embedded generation.

In terms of generating its own energy, the City is looking at developing two Solar PV facilities, namely at Paardevlei and Atlantis. The energy from these facilities will feed into the City's electricity distribution network and help reduce the reliance on Eskom. The facilities are relatively modest in scale, and by themselves will not make the City immune to future load shedding. However, together with other initiatives, they will contribute towards increasing the City's ability to reduce the impact of load shedding on its residents. The projects will also reduce the City's reliance on Eskom for its electricity needs.

1.4 PROJECT DESCRIPTION

The Paardevlei PV SEF will generate between 30 MW and 60 MW. Photograph 1 illustrates a typical PV Solar facility. Various solar panel technologies and configurations are currently being assessed. The panels will be mounted on concrete foundations (fixed tilt or tracker-

type) and stand up to 3m tall (Photograph 1.1). The development may also include a 27-43 MWh Battery Energy Storage System (BESS) (Photograph 1.2). The final layout will be informed by the findings of the EIA process. The Paardevlei PV facility will feed into the City's electricity network via the existing COCT Paardevlei 132 kV switching station located on the site.

Construction is planned to start in the first quarter of 2026 and take approximately 12 months. The construction related activities would include site clearance and preparation, establishment of internal roads, trenching for power lines, establishing on-site storm water management infrastructure, laying foundations for PV panel mounting structures, establishment of PV panels, construction of on-site substation and other project buildings, and fencing.

Based on similar-sized projects, direct construction related employment opportunities on the site during the construction phase would be in the region of 100-150. Approximately 60% of the employment opportunities would be for lower skills levels. Other employment opportunities would be created for security, transport, and maintenance services etc. The operational phase would create approximately 15-20 full-time employment positions (various skills levels). Procurement of goods and services during the construction and operational phases will be subject to tender processes and the City's procurement policies regarding promoting BBEE and SSMEs.

Access to the site during the construction and operational phases is proposed from the north, via a planned connector road from the N2 that will serve the Paardevlei urban development area (Paardevlei Precinct). The Solar PV facility will be accessed directly off the envisaged Paardevlei Precinct Road network.

Photograph 1.1: Typical PV SEF facility

Photograph 1.2: Example of BESS located in storage containers

Three PV layout alternatives are proposed based on the studied PV configurations:

- 12m pitch (Figure 1.2).
- 1 panel in portrait (East and west) and 90 panels long(N-S) –5m pitch -(Figure 1.3).
- 1 panel portrait –90 panels long on 1 tracker axis (N_S) –5.25m -(refer to Figure 1.4).

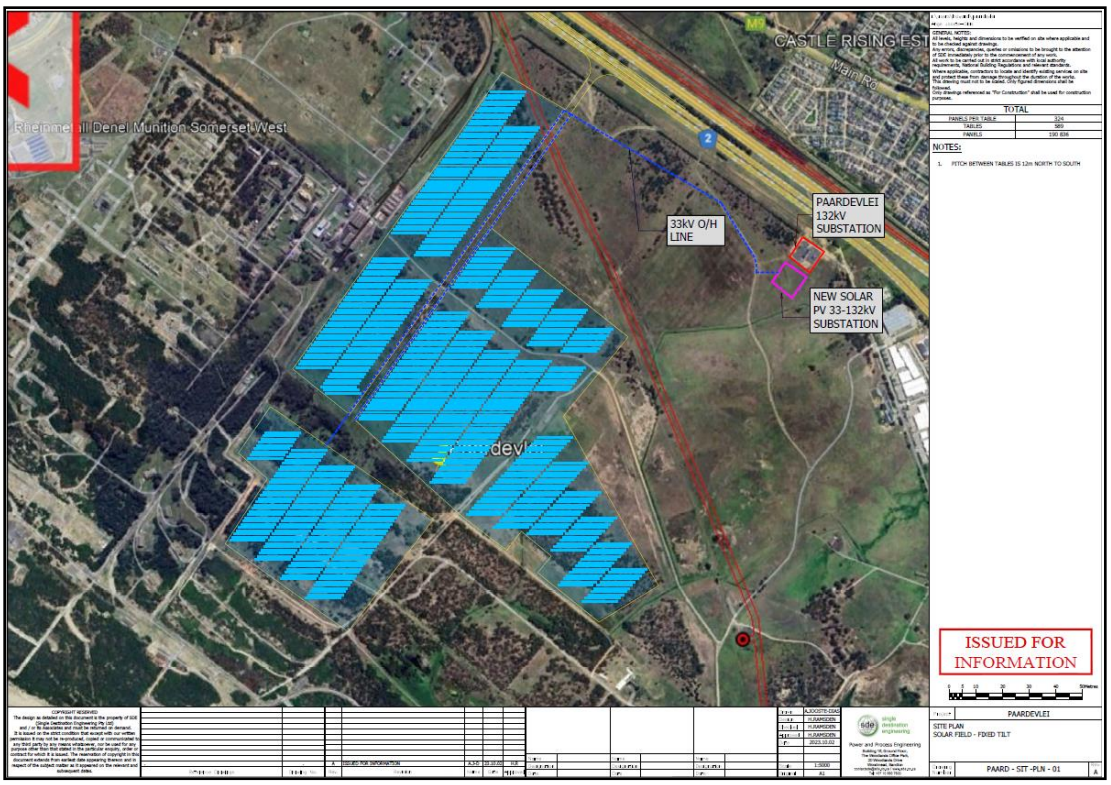


Figure 1.2: Paardevlei Solar PV Facility & BESS project -PV Layout 1 (12 m pitch)

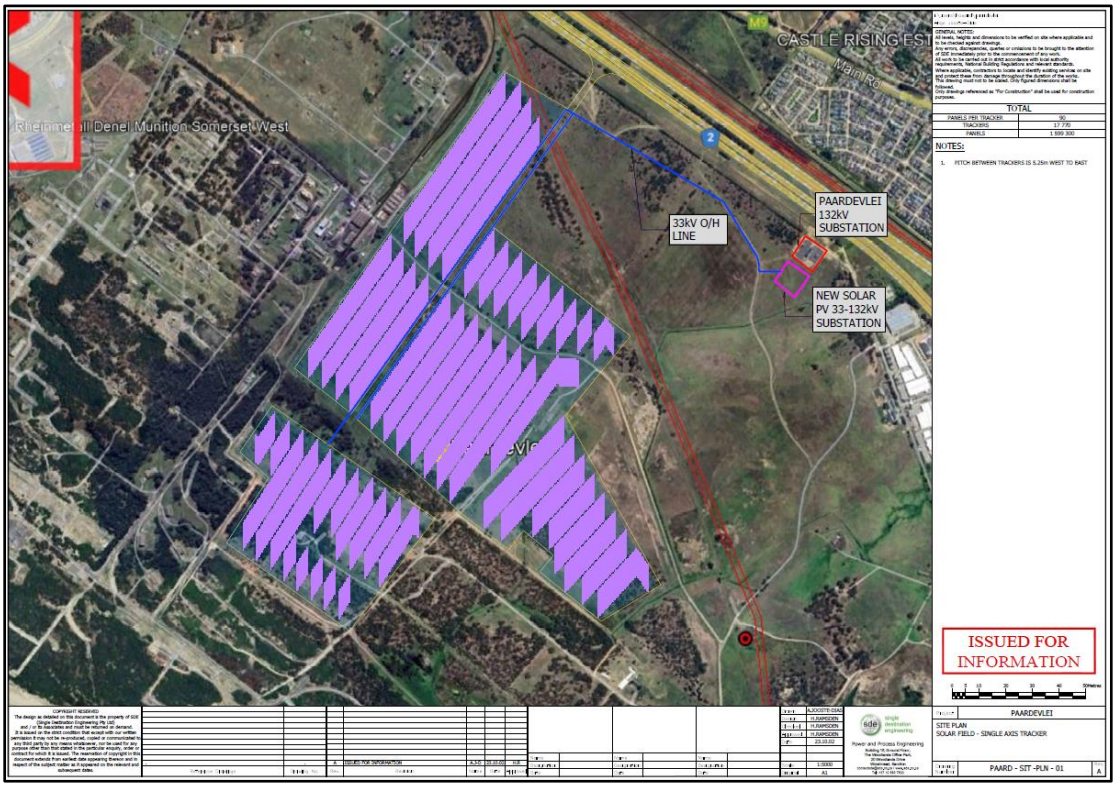


Figure 1.3: Paardevlei Solar PV Facility & BESS project -PV Layout 1 (5.25 m pitch)

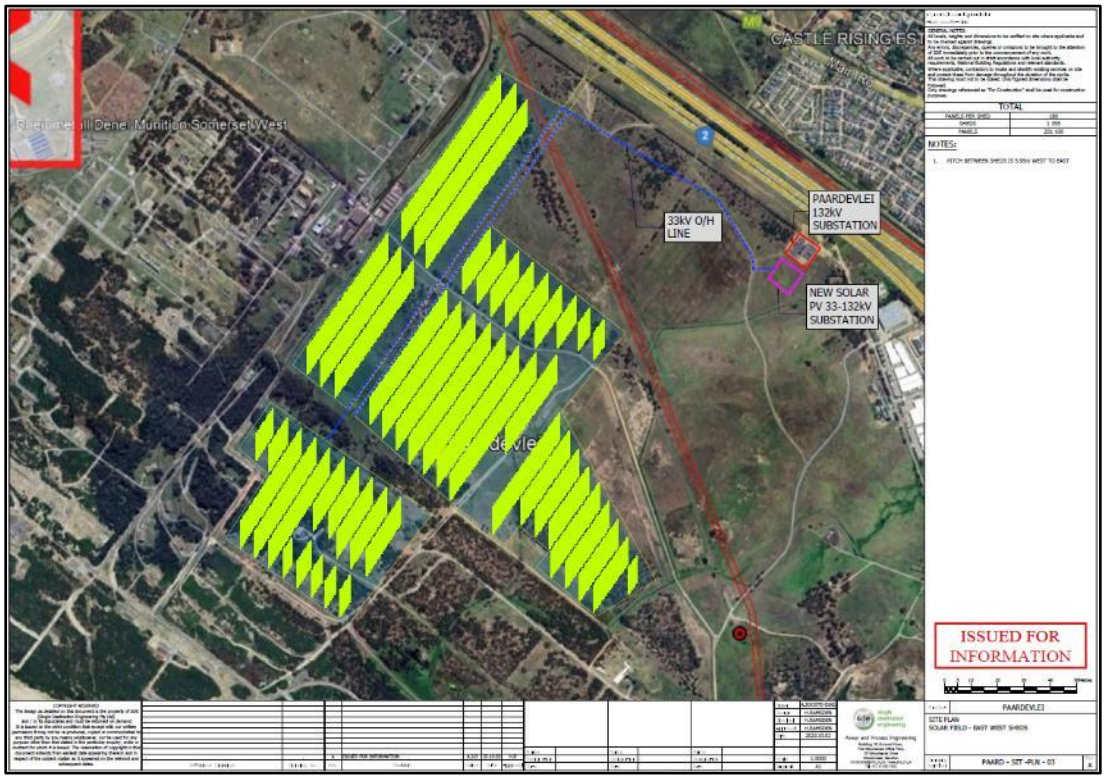


Figure 1.3: Paardevlei Solar PV Facility & BESS project -PV Layout 1 (5.95 m pitch)

1.5 ASSUMPTIONS AND LIMITATIONS

1.5.1 Assumptions

Technical suitability
It is assumed that the development site represents a technically suitable site for the establishment of the proposed Paardevlei Solar PV Farm and associated infrastructure.

Strategic importance of the project
The strategic importance of promoting renewable and other forms of energy is supported by the national and provincial energy policies.

Fit with planning and policy requirements
Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard, a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

1.5.2 Limitations

Demographic data
Ward level data from the 2022 Census was not available at the time of preparing the report. In addition, some of the information contained in some key policy and land use planning documents, such as IDPs etc., is based on the 2011 Census. These limitations do not have a material bearing on the findings of the Socio-Economic Assessment. In addition, information from the 2016 Community Survey has been added where it is available.

1.6 SPECIALIST DETAILS

Tony Barbour, the lead author of this report, is an independent specialist with 30 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 300 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Annexure C contains a copy of Tony Barbour's CV.

Schalk van der Merwe, the co-author of this report, has an MPhil in Environmental Management from the University of Cape Town and has worked closely with Tony Barbour over the last eighteen years.

1.7 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour and Schalk van der Merwe, the specialist consultants responsible for undertaking the study and preparing the SIA Report, are independent and do not have any vested or financial interests in the proposed power line being either approved or rejected. Annexure D contains a signed declaration of independence.

1.8 REPORT STUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key issues.
- Section 5: Key Findings and recommendations.

SECTION 2: POLICY AND PLANNING ENVIRONMENT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the "policy and planning fit[2]" of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of "planning fit" conforms to international best practice for conducting SIAs. Furthermore, it also constitutes a key reporting requirement in terms of the applicable Western Cape Department of Environmental Affairs and Development Planning's *Guidelines for Social Impact Assessment* (2007).

Section 2 provides an overview of the policy and planning environment affecting the proposed project. For the purposes of meeting the objectives of the SIA the following policy and planning documents were reviewed:

- National Environmental Management Act (107 of 1998).
- National Energy Act (2008).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- National Development Plan (2011).
- New Growth Path Framework.
- National Infrastructure Plan.
- Western Cape Provincial Spatial Development Framework (2014).
- Western Cape Infrastructure Framework (2013).
- Western Cape Green Economy Strategy (2013).
- One Cape 2040 (2012)
- City of Cape Town Spatial Development Framework (2022).
- City of Cape Town Integrated Development Plan (IDP) (2022-2027).
- Helderberg District Plan (2023).

2.2 NATIONAL POLICY ENVIRONMENT

2.2.1 National Environmental Management Act

The preamble to NEMA and the principles contained therein have a significant bearing on the need to identify and assess social impacts. In this regard the preamble refers to a number of the basic rights set out in Chapter 2 (Bill of Rights) of the Constitution. These include reference to the right of all persons to an environment that is not harmful to his or her health or well-being, the need for the State to respect, protect, promote and fulfil the social, economic and

[2] Planning fit" can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities, and the promotion of sustainable development that requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations. The following NEMA principles have a bearing on the proposed development:

- Environmental management must place people and their needs at the centre of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably.
- Development must be socially, environmentally, and economically sustainable.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
- Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
- Equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.
- The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills, and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.
- Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.
- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- The social, economic, and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed, and evaluated, and decisions must be appropriate in light of such consideration and assessment.
- Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
- The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the peoples' common heritage; and,
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

2.2.2 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 its 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 (…); to provide for (…) increased generation and consumption of renewable energies…"(Preamble).

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

Investment in renewable energy initiatives, such as the proposed SEF, 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.

2.2.4 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[3], 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

[3] 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).

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.

2.2.5 Integrated Resource Plan (2019)

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 its vision for the energy sector, the NDP took as a point of departure the Integrated Resource Plan (IRP) 2010–2030 promulgated in March 2011. The IRP is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment (minimize negative emissions and water usage).

On 27 August 2018, the then Minister of Energy published a draft IRP which was issued for public comment (Draft IRP). Following a lengthy public participation and consultation process the Integrated Resource Plan 2019 (IRP 2019) was gazetted by the Minister of Mineral Resources and Energy, Gwede Mantashe, on 18 October 2019, updating the energy forecast for South Africa from the current period to the year 2030. The IRP is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost.

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 (2019) 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 (IRP 2019, page 14). In terms of IRP (2019) 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 2.1 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 2.1: Summary of energy allocations and commitments based on 2019 IRP

2.2.6 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.

2.2.7 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 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.

2.2.8 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[4]. 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.
- 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

[4] Gazette No. 44951

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.

2.3 PROVINCIAL AND LOCAL POLICY ENVIRONMENT

2.3.1 Western Cape Provicial Spatial Development Framework

The 2014 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*.
- 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)*[5].

[5] See notes under Regional Methodology Review below.

Climate change
Water scarcity is identified as probably the key risk associated with climate change. Policy provisions are made with regard to climate change adaptation and mitigation. Concerning renewable energy, the following is of relevance:

- R.4.16: *Encourage and support renewable energy generation at scale*.

2.3.2 One Cape 2040 Strategy

The One Cape 2040 (2012) vision was developed by the Western Cape Government, the City of Cape Town (CoCT) 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.

2.3.3 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.*

2.3.4 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.

2.4 CITY OF CAPE TOWN INTEGRATED DEVELOPMENT PLAN

The City of Cape Town Integrated Development Plan (IDP) (2022-2027) 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 2.2)

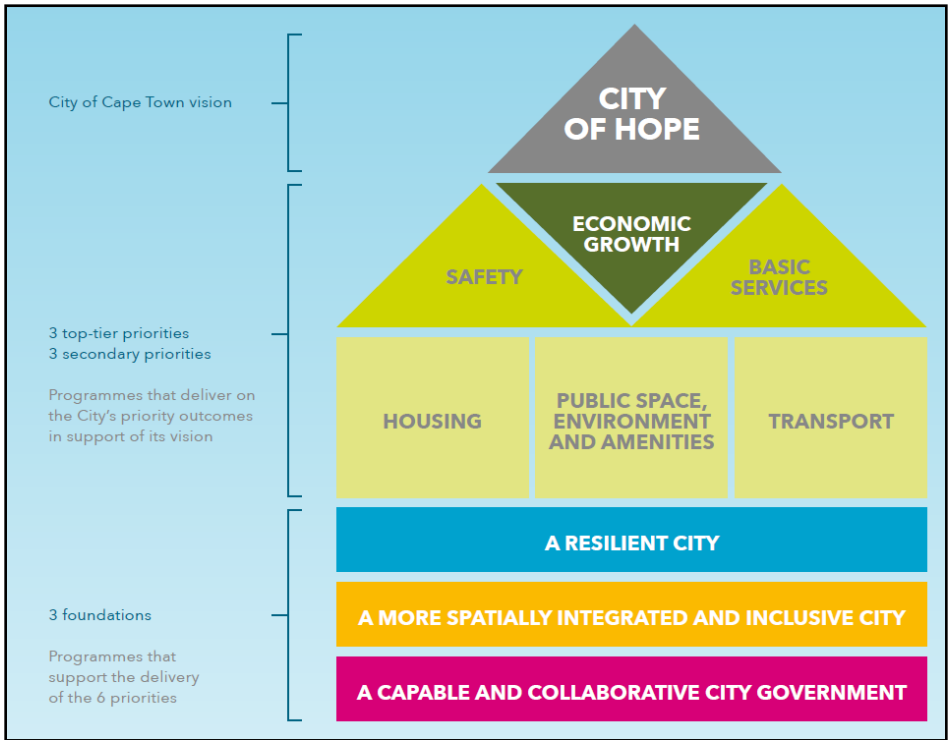


Figure 2.2: City of Cape Town IDP

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 2.3 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 curren5t 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.

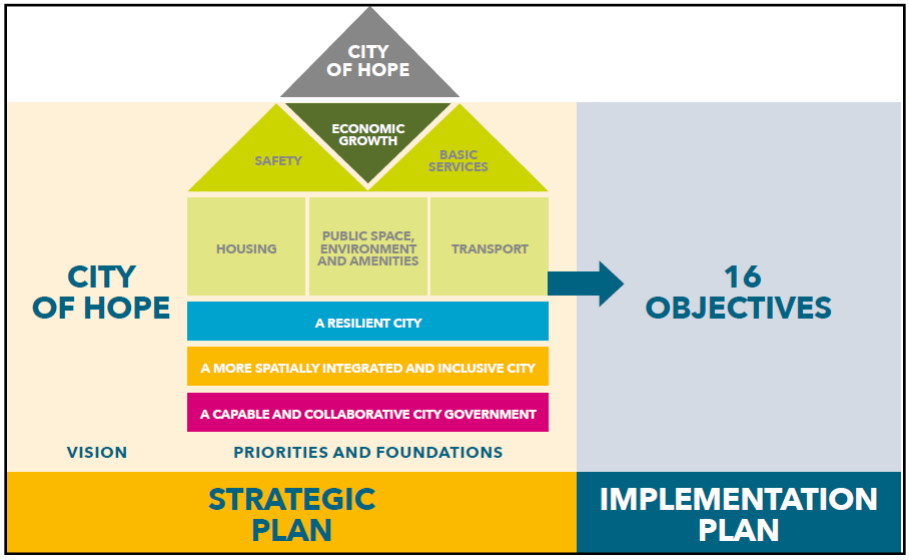


Figure 2.3: City of Cape Town IDP-Link between Strategic Pan and Implementation Plan

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.

2.5 CITY OF CAPE TOWN SPATIAL DEVELOPMENT FRAMEWORK

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.

2.6 HELDERBERG DISTRICT PLAN (2023)

The Helderberg District forms one of 8 Planning Districts (PD) that make up the City of Cape Town (CoCT) (Figure 2.4). 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).

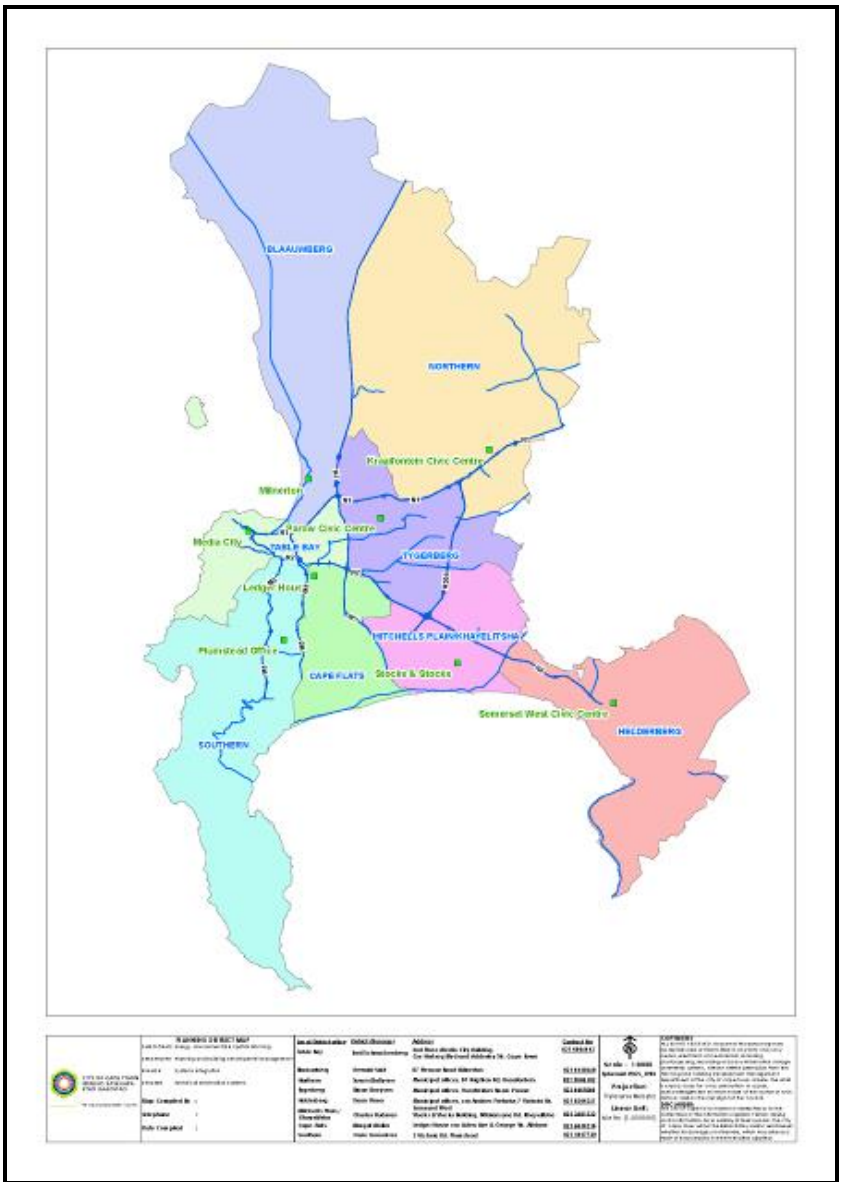


Figure 2.4: City of Cape Town Planning Districts. The project falls within the Helderberg District

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 2.5):

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

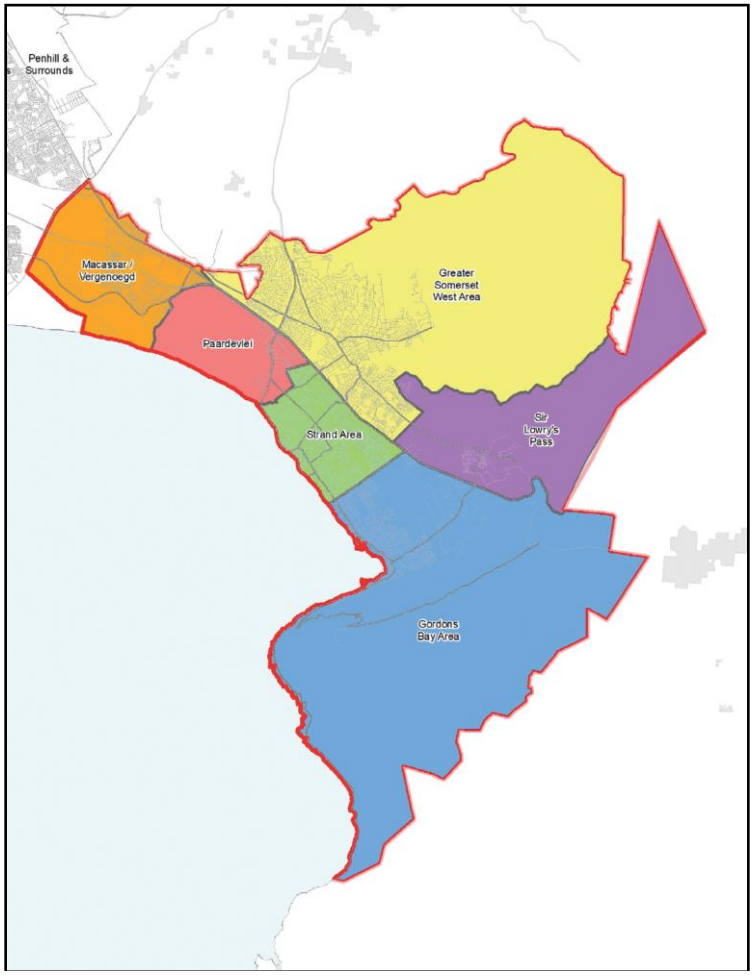


Figure 2.5: Sub-district 1 and 2- Macassar/Vergenoegd and Paardevlei

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 include:

- 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 include:

- 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 2.6 illustrates the spatial development framework for Subdistrict 1.

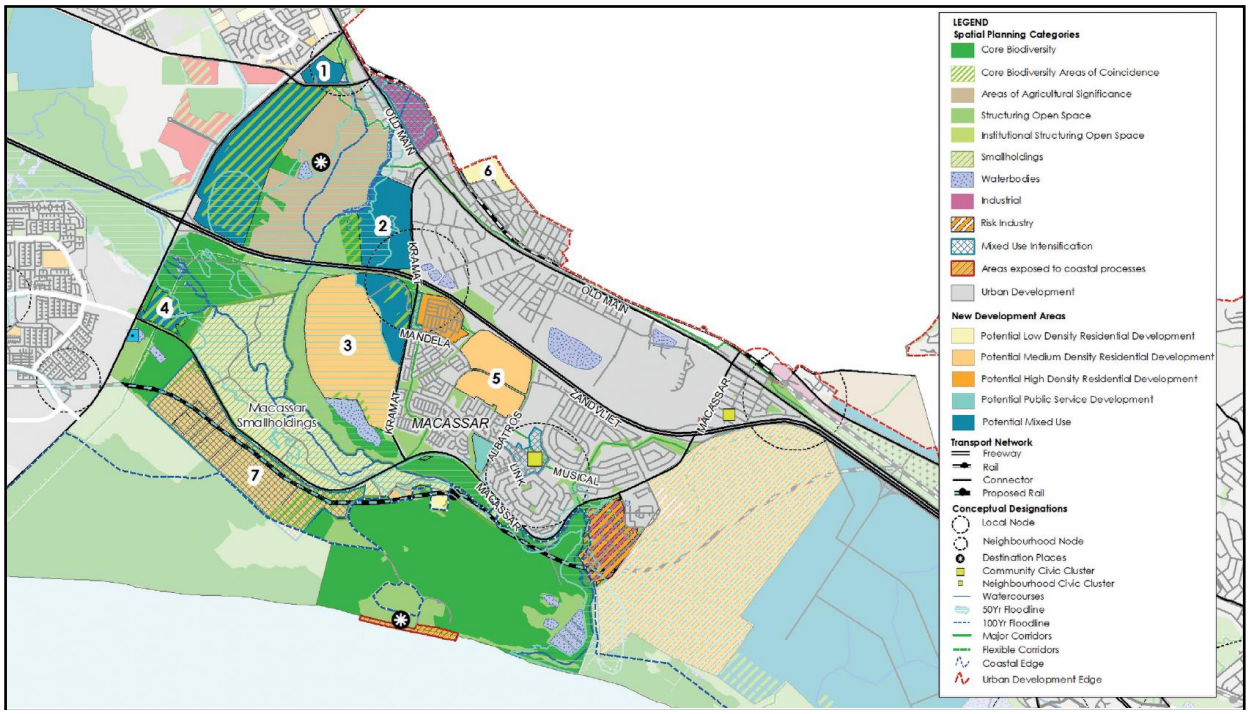


Figure 2.6: Subdistrict 1: Macassar/Vergenoegd

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 2.7.

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 2.7, 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.

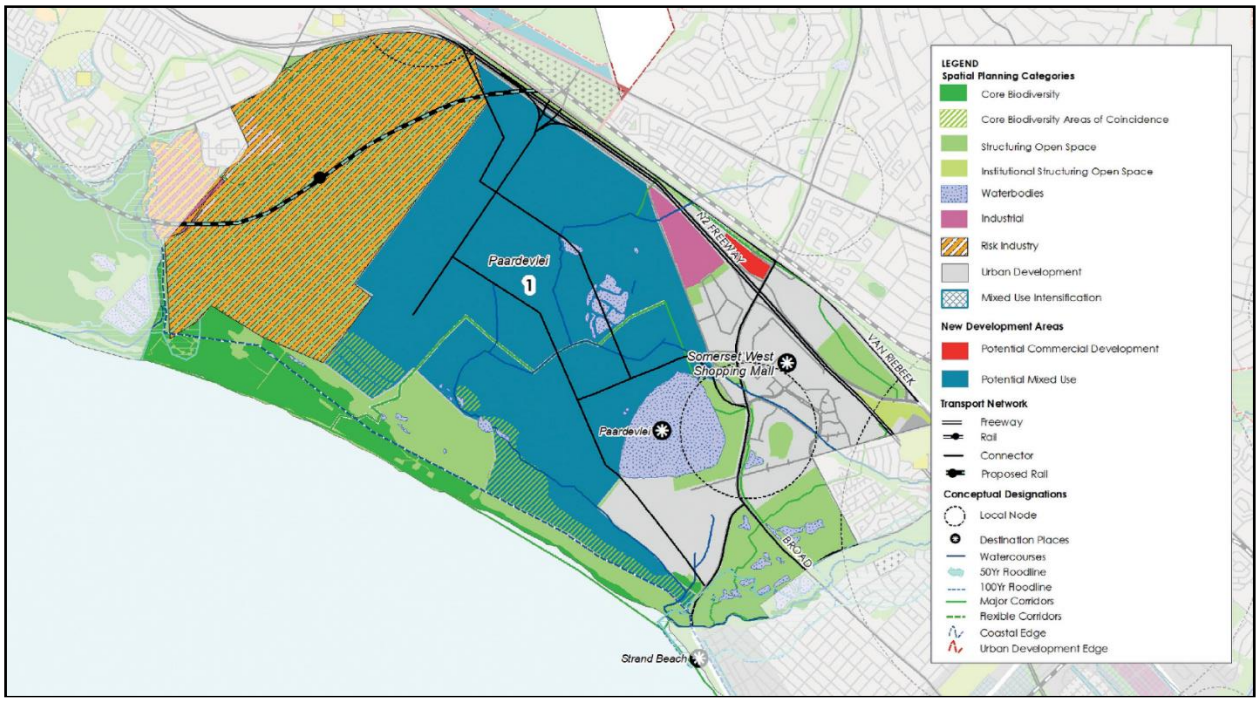


Figure 2.7: Subdistrict 2: Paardevlei

SECTION 3: OVERVIEW OF STUDY AREA

3.1 INTRODUCTION

Section 3 provides an overview of the baseline socio-economic conditions and a description of the site and the surrounding land uses. The Paardevlei PV SEF 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 3.1). Ward 109 and Ward 83 are located to the west and east of Ward 15 and the site respectively (Figure 3.2 and 3.3). 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[6]. 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[7].

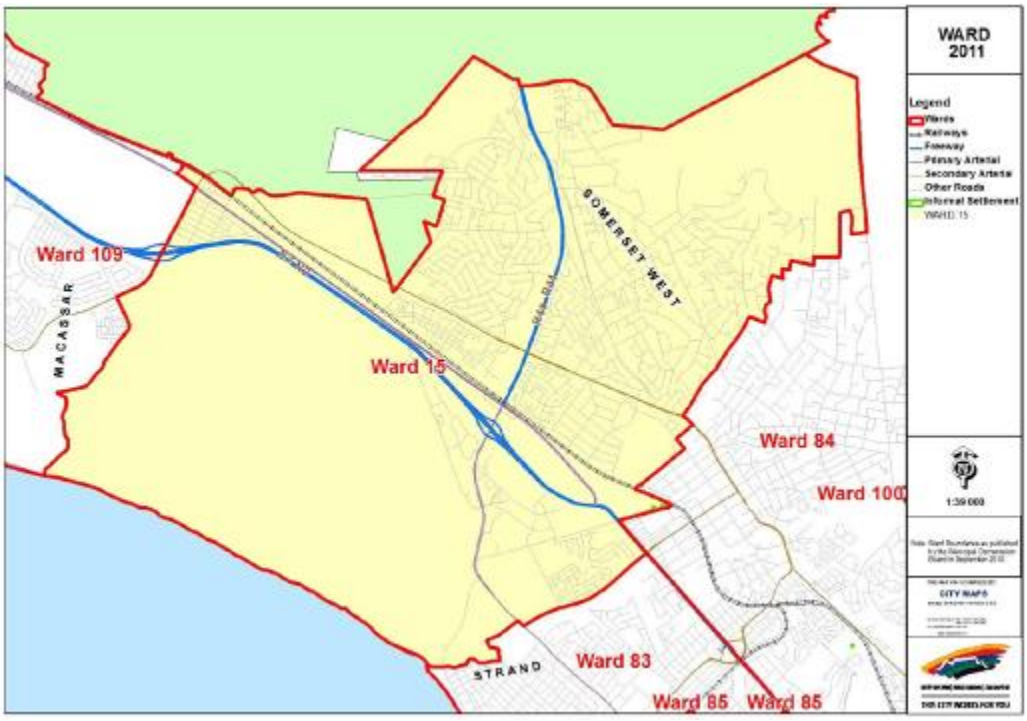


Figure 3.1: Location of Ward 15

[6] While the ward level information is dated, it does provide an indication of the demographic characteristics of the area. In this regard whilst the population would have increased since 2011, the characteristics, such as age race groups, age, language, income, and education levels, etc, are unlikely to have changed significantly.

[7] The Helderberg District Plan (2023) also largely refers to 2011 Census data.

Figure 3.2: Location of Ward 109

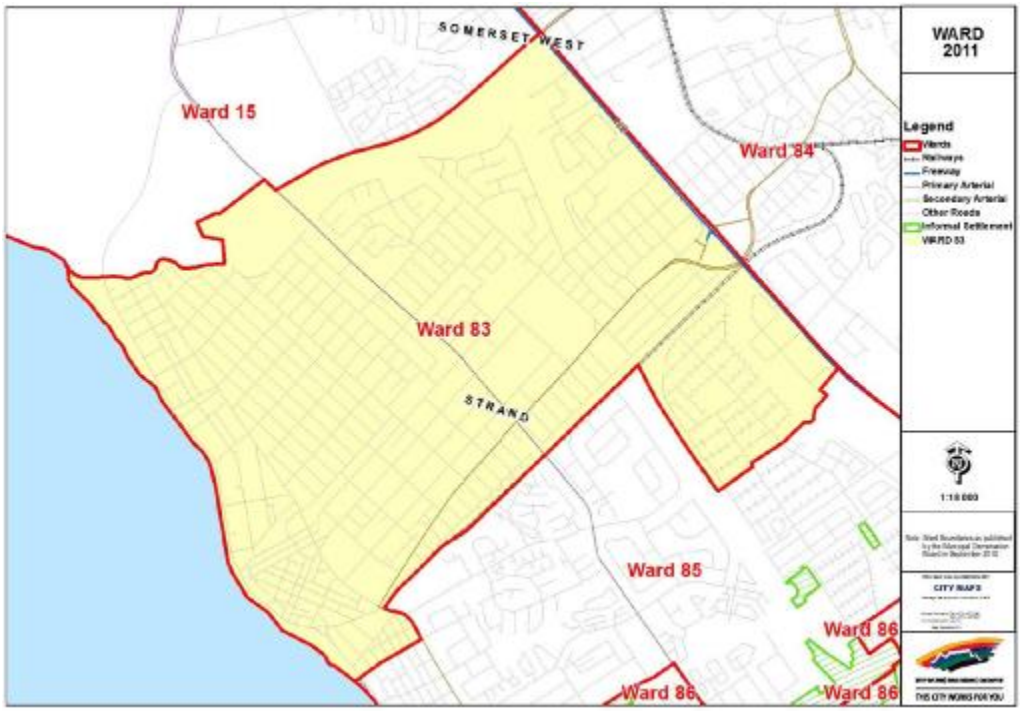


Figure 3.3: Location of Ward 83

3.2 SOCIO-ECONOMIC OVERVIEW OF CAPE TOWN

Based on Census 2022 the population was 4 772 846, made up of 1 452 845 households. Of the total population, 45.7% were Black African, 35.1% Coloured, 16.2% White and 1.6% Asian. 51.7% were female and 48.3% male. The 2021 Socio-Economic Profile (SEP) for the City of Cape Town, Cape Town notes that the population of is expected to grow to 4 967 799 by 2024, which equates to an average annual growth rate of 1.9%. The City's growth rate is slightly higher than the Western Cape's average annual rate of 1.8% for the same period.

In terms of age, 22.4% of the population in 2020 fell within the 0-14 age group, 70.9% fell within the economically active age group of 15-64 and the remaining 6.7% were 65 and older. The dependency ratio was 41%, compared to 43.9% in 2021. As higher dependency ratios imply greater strain on the working age to support their economic dependents (children and aged), which in turn places strain on the ability of the City of Cape Town to provide and maintain services and could also have far reaching social, economic, and labour market implications. A reduction in the dependency ratio is therefore a positive social development.

In terms of municipal services, 96.7% of households had access to electricity, 85.4% had access to water, 93.4% had access to flush toilets connected to sewage and 90.2% had access to regular refuse removal services. In terms of housing, 87.5% of the households were formal dwellings, while 11.7% were recorded as informal (shacks), and 0.8% as other.

The 2021 SEP notes that unemployment rate was 23.1%, the highest unemployment rate in the Western Cape. The SEP notes that the high unemployment rate, which worsened considerably between 2018 and 2019, is particularly concerning given that this estimate is based on the narrow definition of unemployment i.e. the percentage of people that are able to work, but unable to find employment. In turn, the broad definition generally refers to people that are able to work, but not actively seeking employment. The current unemployment rates are likely to be significantly higher given the impact of Covid-19. The national unemployment rate in the second quarter of 2023 was 32.60%. As indicated nelow, the youth unemployment rate was 60.70% in the second quarter of 2023, the highest recorded youth unemployment rate in the world.

In terms of economic activity, the value of Cape Town's economy was R423.2 billion in 2018 and created employment for 1 622 989 people. Historical trends between 2014 and 2018 indicate that the municipal area realised an average annual growth rate of 1.3% which can mostly be attributed to the primary and tertiary sector which registered a positive annual growth rate of 1.5 and 1.6% respectively. In terms of economic sectors, the Finance, insurance, real estate and business services was the largest sector (27.4%), followed by wholesale and retail trade, catering and accommodation (17.1%) and manufacturing (15%).

The 2021 SEP does not provide information on household income levels. However, based on the 2016 SEP the annual income for households living within the City of Cape Town is divided into three categories, namely low-, middle- and high-income brackets. Poor income households fall within the low-income bracket, which ranges from no income to just over R50 000 annually (R4 166 per month). As indicated in Figure 3.4, 45.1% of the households in the Helderberg PD fall within the low-income bracket. A number of these households reside in Ward 15, 109 and 83 (see below). The Helderberg PD has the third highest percentage of households that fall within the low-income category. Khayelitsha and Mitchell's Plain (63%) and Cape Flats (51%) PDs are the poorest areas.

Amount (2016)	Tygerberg	Blaauwberg	Northern	Khayelitsha Mitchells Plain	Helderberg	Cape Flats	Table Bay	Southern	
No income	11.5	13.1	12.1	16.5	13.8	13.8	12.2	12.3	Low income
R1 – R6 327	2.1	2.3	1.8	4.4	2.0	2.8	1.8	1.3	
R6 328 – R12 653	3.3	3.1	2.5	6.3	3.4	3.9	2.3	1.8	
R12 654 – R25 306	9.6	7.6	6.3	14.2	10.1	13.1	7.4	5.8	
R25 307 – R50 613	15.1	13.2	9.7	21.6	15.8	17.5	10.9	9.3	
R50 614 – R101 225	16.8	12.9	9.5	16.2	14.4	15.5	12.5	10.2	Middle Income
R101 226 – R202 450	16.0	13.0	12.8	10.9	13.6	12.8	14.9	13.2	
R202 451 – R404 901	13.3	14.1	17.7	6.6	12.6	10.7	16.1	16.6	
R404 902 – R809 802	8.8	12.8	17.2	2.7	9.0	6.8	13.0	16.0	High income
R809 803 – R1 619 604	2.8	5.9	7.9	0.4	3.7	2.3	16.1	9.3	
R1 619 605 – R3 239 208	0.5	1.4	1.8	0.1	1.0	0.5	1.8	3.0	
R3 239 209 or more	0.3	0.7	0.8	0.1	0.6	0.3	1.0	1.3	

Figure 3.4: Annual Household Income City of Cape Town (2016)

3.3 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 3.1 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 3.2). 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 3.1: Population 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 3.2: Age profile 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 3.3). 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 3.3: 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

Definitions:

- *Unemployment rate is the proportion of the labour force that is unemployed.*
- *The labour absorption rate is the proportion of working age (15 to 64 years) population that is employed.*
- *The labour force participation rate is the proportion of the working age population that is either employed or unemployed.*

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 3.4). 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[8]. 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 3.4: 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 3.5). 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.

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

Table 3.5: 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%
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

Type of dwelling and tenure status

In terms of dwelling type, essentially all (98.8%) of the dwellings in Ward 15 were formal dwellings, with only 0.5% recorded as informal shacks (in backyards) and 0.2% as informal, not in backyard shacks.

In terms of tenure status, 43.8% of properties/ dwellings were owned and fully paid off, while a further 29.8% were owned, but in the process of being paid off. 23.2% were rented, while 2.1% of dwellings were occupied rent-free. The high percentage of properties that are paid off and or in the process of being paid off reflects a stable, well established residential suburb. The relatively high percentage of rentals also indicates that Ward 15 is an attractive residential suburb.

Municipal Services

In terms of municipal services, 98% of households in Ward 15 had access to piped water in their dwelling, 98.4% of households had access to a flush toilet connected to the public sewer system, 98.5% of households had their refuse removed at least once a week. This information indicates that Ward 15 is a formal, well serviced area.

3.4 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 3.6 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 3.7). 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 3.6: 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

Table 3.7: Age profile Ward 109

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%

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 Coloureds (37.85%) and Black Africans (22.44%) (Table 3.8). 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 3.8: 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

Definitions:

- *Unemployment rate is the proportion of the labour force that is unemployed.*
- *The labour absorption rate is the proportion of working age (15 to 64 years) population that is employed.*
- *The labour force participation rate is the proportion of the working age population that is either employed or unemployed.*

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 3.9). 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[9]. 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.

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

Table 3.9: 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 3.10). The population of Ward 109 is therefore poorly educated compared to Ward 15, which is reflected in the lower household income levels.

Table 3.10: 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.

3.5 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 3.11 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 3.12). 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 3.11: 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

Table 3.12: Age profile Ward 83

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%

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 3.13). 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 3.13: 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

Definitions:

- *Unemployment rate is the proportion of the labour force that is unemployed.*
- *The labour absorption rate is the proportion of working age (15 to 64 years) population that is employed.*
- *The labour force participation rate is the proportion of the working age population that is either employed or unemployed.*

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 3.14). 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[10]. 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.

Table 3.14: 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 24% of the population over 20 years of age had completed Grade 12. 24% had a higher qualification compared to of 4.5% and 53.2% for Ward 109 and 15 respectively

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

(Table 3.15). 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 3.15: 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.

3.6 SUMMARY OF SOCIO-ECONOMIC CONDITIONS

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.

3.7 OVERVIEW OF THE SITE AND SURROUNDS

The Paardevlei PV SEF site is located on land owned by the City of Cape Town between False Bay to the south and the N2 to the north (Figure 3.4). The site was purchased from AECI in 2015. The land uses to the west of the site include the Denel facilities and Firgrove Industrial (Yellow Arrow, Figure 2.4) and Macassar residential area (Blue Arrow, Figure 2.4). The Firgrove residential area is located to the north of the N2 and northwest of the site. The Macassar and Firgrove residential areas are located 1.6 and 1 km from the western boundary of the PV SEF site. At its closest point, the N2 is located ~ 200-300 m from the northern section of the PV SEF site.

Figure 3.4: Location of Paardevlei PV SEF site (light purple shaded area)

The area to the north of the PV SEF site and N2 consists of agricultural farmland between Firgrove to the west and the current urban boundary of Somerset West formed by the residential areas of Schonenberg (Red Arrow, Figure 3.4) immediately to the north of the N2 and Heldervue located to the north the M9 (Main Road) (Photograph 3.1). Both areas are middle to higher income residential areas. The closest houses in Schonenberg are located between 700 and 900 m from the northern border of the PV SEF site. They are however, separated from the site by the N2. The closest houses in Heldervue are located ~ 1-1.3 km north of the site. The Waterstone Shopping Centre and Lord Charles Hotel are located ~ 2 and 2.3 km northeast of the site. Both sites are screened from the PV SEF site by an industrial area located between the site and the N2.

The land uses to the south of the N2 and north and east of the site consists of the industrial area located along to the south of the N2 that borders onto the R44 to the east (Light Green Arrow, Figure 3.4), and the larger Somerset Mall precinct, located to the east of the R44 (Orange Arrow, Figure 2.4) (Photograph 3.2). The new Paardevlei residential area is located ~ 1.3 km east of the site and to the west of the R44 (Light Blue Arrow, Figure 2.4). The De Velde and Victoria residential areas are located to the east of the R44, ~ 2 and 2.7km east of the site respectively (areas to the east of the Orange and Light Blue Arrow, Figure 3.4). The Strand Golf Club is located ~ 2.2 km east of the site and is traversed by the R44.

A newly developed business and light industrial area is located between the N2 and R102. The business includes car dealerships and building suppliers. The De Beers Football Club is the only formal land use located on the site (Photograph 3.1). The Paardevlei site itself consists largely of open, flat land that has been invaded by alien plant species (Photograph 3.3 and 3.4). There are also a number of old buildings on the site that are linked to the site's history as an explosive factory.

Photograph 3.1: View over PV SEF looking north towards Somerset West with De Beers Football Club in foreground

Photograph 3.2: View looking north towards industrial area adjacent to site

Photograph 3.3: View over PV SEF looking west

Photograph 3.4: View over PV SEF looking east

SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information.
- Review of key policy and planning documents.
- Site visit and interviews with key stakeholders.
- Experience with similar projects.

The assessment section is divided into the following sections:

- Assessment of compatibility with relevant policy and planning context ("planning fit").
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operation phase.
- Assessment of the "no development" alternative.
- Assessment of cumulative impacts.

4.2 POLICY AND PLANNING FIT

The development of renewable energy 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.

4.3 SOCIAL IMPACTS ASSOCIATED WITH THE CONSTRUCTION PHASE

Potential positive impacts

- Creation of employment and business opportunities.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.

4.3.1 Creation of local employment, training, and business opportunities

The construction phase will extend over a period of approximately 128 months and create in the region of 100-150 direct construction related employment opportunities. Based on similar project approximately 55% of the jobs will benefit low-skilled workers, 30% semi-skilled and 15% high skilled. Members from the local communities in the area, specifically Somerset West, Macassar and Firgrove would be in a position to qualify for most of the low skilled and

semi-skilled employment opportunities. Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members of the community. The total wage bill will be in the region of R 45 million (2023 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the area.

Given relatively high local unemployment levels in the area, this will represent a significant, if localised, social benefit. The benefits for low communities can be enhanced by implementing local labour content targets.

The capital expenditure associated with the construction phase will be approximately R 1.2 billion (2023 Rand value). Given the well-developed local economy, the potential for local companies will be high. The majority of benefits will therefore accrue to contractors and engineering companies based in the City of Cape Town metropolitan area. Implementing the measures listed below can further enhance the opportunities for local companies.

The local service sector will also benefit from the construction phase. The potential opportunities would be linked to transport, security, waste management, etc. associated with the construction phase of the project.

The potential benefits for local communities are confirmed by the findings of the Overview of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) undertaken by the Department of Energy, National Treasury and DBSA (December 2021). The study found that to date, a total of 63 291 job years[11] have been created for South African citizens, of which 48 110 job years were in construction and 15 182 in operations. By the end of December 2021, 85 projects had successfully completed construction and moved into operation. These projects created 44 172 job years of employment, compared to the anticipated 30 488. This was 45% more than planned.

In terms of benefits for local communities, the development of renewable energy projects in South Africa has created significantly more employment opportunities for local communities during construction than was initially planned. For active projects, the expectation for local community participation was 13 284 job years. To date 25 272 job years have been realised (i.e. 90% more than initially planned), with 23 projects still in, or entering, construction. The number of black SA citizens employed during construction also exceeded the planned numbers by 74%.

Black South African citizens, youths and rural or local communities have been the major beneficiaries during the construction phases, as they respectively represent 81%, 44% and 48% of total job opportunities created by IPPs to date. However, woman and disabled people could still be significantly empowered as they represent a mere 10% and 0.4% of total jobs created to date, respectively. Nonetheless, the fact that the REIPPPP has raised employment opportunities for black South African citizens and local communities beyond planned targets, indicates the importance of the programme to employment equity and the drive towards more equal societies.

The share of black citizens employed during construction (81%) and the early stages of operations (85%) has significantly exceeded the 50% target and the 30% minimum threshold. Likewise, the share of skilled black citizens (as a percentage of skilled employees) for both construction (71%) and operations (82%) has also exceeded the 30% target and minimum

[11] The equivalent of a full-time employment opportunity for one person for one year.

threshold of 18%. The share of local community members as a share of SA-based employees was 48% and 70% for construction and operations respectively – exceeding the minimum threshold of 12% and the target of 20%.

Table 4.1: Impact assessment of employment and business creation opportunities during the construction phase

Nature: Creation of employment and business opportunities during the construction phase		
	Without Enhancement	**With Enhancement**
Extent	Local – Regional (2)	Local – Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (40)	Medium (44)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	

Enhancement Measures:
In order to enhance local employment and business opportunities associated with the construction phase, the following measures should be implemented:

Employment
- City of Cape Town should prepare and implement a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- City of Cape Town should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.
- City of Cape Town should appoint local contractors and service providers that that meet City of Cape Town's Broad Based Black Economic Empowerment (BBBEE) procurement requirements.
- City of Cape Town should inform local community representatives, and organisations on the interested and affected party database of the final decision regarding the project and the potential job opportunities for locals and employment procedures for the construction phase of the project.
- City of Cape Town should ensure that the recruitment selection process should seek to promote gender equality and the employment of women and vulnerable members of the community wherever possible.

Business
- City of Cape Town should appoint local contractors and service providers that that meet City of Cape Town's Broad Based Black Economic Empowerment (BBBEE) procurement requirements.

Assessment of No-Go option
There is no impact, as the current status quo will be maintained.

4.3.2 Impact of construction workers on local communities

The presence of construction workers can pose a potential risk to family structures and social networks in the vicinity of the project area. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impacts are associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly by male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unplanned pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

The potential risks posed by construction workers to local communities are typically associated with large-scale projects located in small towns and or rural areas and where construction workers from outside the area are employed and are accommodated in the local town. The Paardevlei PV SEF is located within the City of Cape Town metropolitan area and the majority, if not all the construction workers, will be locally based and will return home on a daily basis. The potential risks to local communities posed by construction workers will therefore be negligible.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Minor (2)	Small (0)
Probability	Improbable (2)	Improbable (2)
Significance	Low (12)	Low (6)
Status	Negative	Negative
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	

Recommended mitigation measures:

- City of Cape Town should preparate and implement a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- City of Cape Town should preparate and implement a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- City of Cape Town should appoint local contractors and service providers that meet City of Cape Town's Broad Based Black Economic Empowerment (BBBEE) procurement requirements.
- City of Cape Town should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by City of Cape Town and contractors before the contractors move onto site. The CoC should form part of the CHSSP.
- City of Cape Town and contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.
- Where required, the contractor should provide transport for workers to and from the site daily. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.
- No construction workers, except for security personnel, should be permitted to stay over-night on the site.

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

4.3.3 Influx of job seekers

Large construction projects can attract people to the area in the hope that they will secure a job, even if it is a temporary job. These job seekers can in turn become "economically stranded" in the area or decide to stay on irrespective of finding a job or not. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the way in which they conduct themselves can impact on the local community. The main areas of concern associated with the influx of job seekers include:

- Impacts on existing social networks and community structures.
- Competition for housing, specifically low-cost housing.
- Competition for scarce jobs.
- Increase in incidences of crime.

These issues are similar to the concerns associated with the presence of construction workers and are discussed in Section 4.3.2. The findings of the SIA indicate that the potential for economically motivated in-migration and subsequent labour stranding is likely to be negligible. This is due to the relatively small scale of the project, short duration of the construction phase and the location of the Paardevlei PV SEF within the City of Cape Town metropolitan area. The potential for the project to result in the influx of job seekers is therefore highly unlikely.

Table 4.3: Assessment of impact of job seekers on local communities

Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Small (0)	Small (0)
Probability	Very Improbable (1)	Very Improbable (1)
Significance	Low (5)	Low (5)
Status	Negative	Negative
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	
Can impact be mitigated?	No mitigation measures are required given that the impact will be negligible	
Recommended mitigation measures: No mitigation measures are required given that the impact will be negligible.		

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

4.3.4 Nuisance impacts associated with construction related activities

Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and local access damage roads. The impacts will be largely local and can be effectively mitigated. The number of potentially sensitive social receptors, such as residential areas, will be limited due to the location of the Paardevlei PV SEF site.

As indicated in Section 3.7, the Macassar and Firgrove residential areas are located 1.6 and 1 km from the western boundary of the PV SEF site. Macassar and Firgrove are shielded from the site by an industrial area and the N2 respectively. The closest houses in Schonenberg are located between 700 and 900 m from the northern border of the PV SEF site. The closest houses in Heldervue are located ~ 1-1.3 km north of the site. Both areas are separated from the site by the N2 and, in the case of Heldervue, the M9 (Main Road). The Waterstone Shopping Centre and Lord Charles Hotel are located ~ 2 and 2.3 km northeast of the site. Both sites are screened from the PV SEF site by an industrial area located between the site and the N2.

The land uses immediately adjacent to northern boundary of the site consist of a light industrial area located along to the south of the N2 that borders onto the R44 to the east and the larger Somerset Mall precinct, located to the east of the R44. The new Paardevlei residential area is located ~ 1.3 km east of the site and to the west of the R44. The De Velde

and Victoria residential areas are located to the east of the R44, ~ 2 and 2.7km east of the site respectively. The Strand Golf Club is located ~ 2.2 km east of the site and is traversed by the R44. A newly developed business and light industrial area is located between the N2 and R102. The business includes car dealerships and building suppliers.

There are therefore no sensitive land uses located within close proximity of the site that would be significantly impacted by noise and dust impacts associated with the construction phase. The movement of construction related traffic may impact along Old Paardevlei Road may however impact on businesses that gain access of the road and other road users. These impacts can be effectively mitigated.

Table 4.4: **Assessment of the impacts associated with construction related activities**

Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Medium (6)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (15)
Status	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Recommended mitigation measures • The movement of construction vehicles on the site should be confined to agreed access road/s. • The movement of heavy vehicles along Old Paardevlei Road during the construction phase should be timed to avoid times of the day when the volume of traffic will be higher, including AM and PM peaks. • Local business owners that gain access of Old Paardevlei Road should be informed in advance (a week prior) of the dates and times when abnormal loads and or increased volumes of construction traffic will be expected. • Grievance Mechanism should be established that provides business owners that gain access of Old Paardevlei Road with an effective and efficient mechanism to report issues related to construction related impacts, including congestion, noise, dust etc. • Dust suppression measures should be implemented, such as wetting of internal gravel access roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. • All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4 SOCIAL IMPACTS ASSOCIATED WITH OPERATIONAL PHASE

Potential positive impacts
- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.

Potential negative impacts
- Visual impacts and associated impacts on sense of place.
- Impact on property values.
- Loss of land for development of housing.

4.4.1 Improve energy security and support the renewable energy sector

The primary goal of the Paardevlei PV SEF is to improve energy security in the City of Cape Town and reduce the city's vulnerability to loadshedding. The project also reduces the city's carbon footprint associated with energy generation.

South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. Load shedding in the first six months of 2015 was estimated to have cost South African businesses R13.72 billion in lost revenue with an additional R716 million was spent by businesses on backup generators[12].

Energy expert, Chris Yelland, has estimated the cost of Stage 1 load shedding resulting in 10 hours of blackouts per day for 20 days a month results in losses of R20 billion per month. Based on this Stage 2 load shedding costs the economy R40 billion per month and Stage 3 is estimated to cost the South African economy R80 billion per month[13]. A survey of 3 984 small business owners found that 44% said that they had been severely affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more or revenue during due to load shedding period[14].

[12] Goldberg, Ariel (9 November 2015). "The economic impact of load shedding: The case of South African retailers" (PDF). Gordon Institute of Business Science. p. 109
[13] The economic consequences of load shedding in South Africa and - Generator King (genking.co.za)
[14] "How does load shedding affect small business in SA?"*. The Yoco Small Business Pulse (3: Q1 2019).*

Table 4.5: Improve energy security and support renewable sector

Nature: Development of infrastructure to improve energy security and support renewable sector		
	Without Enhancement	**With Enhancement**
Extent	Local, Regional and National (2)	Local, Regional and National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Medium (48)	Medium (52)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	Reduced CO_2 emissions and impact on climate change
Can impact be enhanced?	Yes	
Enhancement: • City of Cape Town should implement skills development and training programme aimed at maximizing employment opportunities for local community members. • City of Cape Town should maximise opportunities for local content and procurement.		

Assessment of No-Go option
The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy.

4.4.2 Create employment opportunities

The proposed development will create approximately 20-30 full-time, direct employment opportunities during the operational phase. Based on similar projects the annual operating budget will be in the region of R 15 million (2023 Rand values), including wages.

Table 4.6: Assessment of employment and business creation opportunities

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Enhancement	**With Enhancement**
Extent	Local and Regional (1)	Local and Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Low (28)	Medium (40)
Status	Positive	Positive
Reversibility	N/A	

Irreplaceable loss of resources?	No	
Can impact be enhanced?	Yes	
Enhancement Measures: **Employment** • City of Cape Town should implement a 'locals first' policy for all low-skilled job categories. • City of Cape Town should implement a training and skills development programmes for locals should be initiated prior to the initiation of the operational phase. • City of Cape Town should ensure that the recruitment selection process should seek to promote gender equality and the employment of women and vulnerable members of the community wherever possible. **Business** • City of Cape Town should appoint local service providers that meet City of Cape Town's Broad Based Black Economic Empowerment (BBBEE) procurement requirements.		

4.4.3 Visual impact and impact on sense of place

The proposed PV SEF has the potential to impact on the area's existing sense of place. However, given the location of the project the potential impact is likely to be limited. As indicated in Section 3.7, the Macassar and Firgrove residential areas are located 1.6 and 1 km from the western boundary of the PV SEF site and are visually shielded from the site by an industrial area and the N2 respectively. The closest houses in Schonenberg are located between 700 and 900 m from the northern border of the PV SEF site. The closest houses in Heldervue are located ~ 1-1.3 km north of the site. Both areas are separated from the site by the N2 and, in the case of Heldervue, the M9 (Main Road). The Waterstone Shopping Centre and Lord Charles Hotel are located ~ 2 and 2.3 km northeast of the site. Both sites are screened from the PV SEF site by an industrial area located between the site and the N2.

The land uses immediately adjacent to northern boundary of the site consist of a light industrial area located along to the south of the N2 that borders onto the R44 to the east and the larger Somerset Mall precinct, located to the east of the R44. The new Paardevlei residential area is located ~ 1.3 km east of the site and to the west of the R44. The De Velde and Victoria residential areas are located to the east of the R44, ~ 2 and 2.7km east of the site respectively. The Strand Golf Club is located ~ 2.2 km east of the site and is traversed by the R44. The site is visually screened from the areas located to the east of the site.

The areas that will be visually exposed to the site will be largely confined to the light industrial area immediately to the north of the site and elevated sections of the residential area in Heldervue located to the north of the site and the N2. Due to the nature of the activities impact on the light industrial area is likely to be low. The impact on Heldervue will be limited to those properties that face south and have views over the site towards False Bay. While the site is currently undeveloped, it is earmarked for development in terms of the Helderberg District Plan and City of Cape Town SDF. The views over the site will therefore change over time. The significance of the impacts will be informed by the findings of the Visual Impact Assessment.

Table 4.7: Visual impact and impact on sense of place

Nature: Visual impact associated with the PV SEF and associated infrastructure and the potential impact on adjacent land uses.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (24)
Status	Negative	Negative
Reversibility	Yes, SEF components and other infrastructure can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: The recommendations contained in the VIA should be implemented. These may include establishment of screening (trees) along the northern border of the site.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4.4 Impact on property values

The potential visual impacts associated with the proposed PV SEF may have the potential to impact on property values. However, as indicated above, the areas that will be visually exposed to the site are likely to the confined to the light industrial area immediately to the north of the site and certain elevated areas in Heldervue. The property values in the light industrial area immediately to the north of the site are largely dependent upon location and access as opposed to the visual character of the area. The potential impact of the Paardevlei PV SEF on property values in the industrial area will therefore be negligible.

The potential impact on property values in certain elevated areas in Heldervue are also likely to be negligible given the distance between the Paardevlei PV SEF and the affected areas (greater than 1km), and the fact that the views towards the site are affected by the existing Schonenberg residential area, the M9 (Main Road), N2 and the industrial area located along the north borer of the site and to the south of the N2.

Table 4.8: Impact on property values

Nature: Potential impact of PV SEF on property values		
	Without Mitigation	**With Enhancement / Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (21)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation The recommendations contained in the VIA should be implemented. These may include establishment of screening (trees) along the northern border of the site.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4.5 Loss of land for housing

The Paardevlei Solar PV project will be located on a parcel of land known as Paardevlei Heartlands in the Firgrove Rural area of Ward 83. The property, which covers an area of 684ha, was purchased by the City of Cape Town from AECI Ltd (chemicals manufacturer) in 2015 with the intention of using the area for residential development. However, subsequent studies indicated that sections of the site were prone to waterlogging and contaminated by chemical residues from the historic manufacturing of explosives. These areas would require extensive civil engineering work and decontamination before they could be developed for housing.

Based on this a 152ha section of the site in the western portion of the Paardevlei property, adjacent to the Somchem Industrial Area was identified for the establishment of the Paardevlei Solar PV facility. This constitutes ~ 22% of the 684ha site. The development of a PV SEF on the site is reflected in the City of Cape Town Spatial Development Framework (2023). The Paardevlei PV SEF is therefore located in an area on the site that is not suitable for the development of housing, including low-income housing. The development of the Paardevlie PV SEF will therefore not result in the loss of land for housing. The significance of the impact is therefore neutral.

Table 4.9: Loss of land for housing

Nature: Loss of land that could potentially be used for housing		
	Without Mitigation	**With Enhancement / Mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (21)
Status	Neutral	Neutral
Reversibility	Yes, SEF components and other infrastructure can be removed, and area can be engineered at cost to make it suitable for housing.	Yes
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	N/A	
Mitigation Significance is Neutral therefore no mitigation required.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

Cumulative impacts on sense of place are viewed within the context of other renewable energy projects. The potential cumulative impacts on sense of place are largely linked to potential visual impacts. In this regard the Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues are also relevant to solar facilities and associated infrastructure. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more solar farms will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more solar farms along a single journey, e.g. road or walking trail).
- The visual compatibility of different solar farms in the same vicinity.
- Perceived or actual change in land use across a character type or region.
- Loss of a characteristic element (e.g. viewing type or feature) across a character type caused by developments across that character type.

The guidelines also note that cumulative impacts need to be considered in relation to dynamic as well as static viewpoints. The experience of driving along a tourist road, for example, needs to be considered as a dynamic sequence of views and visual impacts, not just as the cumulative impact of several developments on one location. The viewer may only see one renewable energy facility and the associated infrastructure at a time, but if each successive stretch of the road is dominated by views of renewable energy facilities, then that can be

argued to be a cumulative visual impact (National Wind Farm Development Guidelines, DRAFT - July 2010).

As indicated above, the potential impact of the proposed Paardevlei PV SEF and associated infrastructure on the areas sense of place will be negligible. In addition, there are no renewable energy projects located within close proximity of the site. The potential for cumulative impacts is therefore negligible.

Table 4.10: Cumulative impacts on sense of place

Nature: Visual impacts associated with the establishment of the PV SEF and associated infrastructure and the potential impact on the area's sense of place.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Reversibility	Probable (3)	Probable (3)
Probability	Low (24)	Low (24)
Significance	Negative	Negative
Status	Negative	Negative
Can impacts be mitigated?	Yes	
Mitigation: The recommendations contained in the VIA should be implemented. These may include establishment of screening (trees) along the northern border of the site.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION

The primary goal of the Paardevlei PV SEF is to improve energy security in the City of Cape Town and reduce the city's vulnerability to loadshedding. The project also reduces the city's carbon footprint associated with energy generation. As indicated above, energy supply constraints and the associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer of carbon emissions.

The No-Development option would represent a lost opportunity for the City of Cape Town to improve energy security and supplement is current energy needs with clean, renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost.

Table 4.11: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for the City of Cape Town to improve energy security and assist to support with the development of clean, renewable energy		
	Without Mitigation[15]	**With Mitigation[16]**
Extent	Local-International (3)	Local-International (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (52)	Moderate (52)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	
Can impact be mitigated?	Yes	
Enhancement: The proposed Paardevlei PV SEF should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.		

4.7 ASSESSMENT OF DECOMMISSIONING PHASE

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of the proposed facility the decommissioning phase is likely to involve the disassembly and replacement of the existing components with more modern technology. This is likely to take place in the 20 - 25 years of post-commissioning. The decommissioning phase is therefore likely to create additional construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

Given the relatively moderate number of people employed during the operational phase (~ 15-20) the social impacts associated with the decommissioning phase can be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative). Decommissioning will also create temporary employment opportunities, which would represent a positive temporary impact. The significance would be Low (positive) with enhancement due to limited opportunities and short duration.

[15] Assumes project is not developed.
[16] Assumes project is developed.

Table 4.12: Social impacts associated with decommissioning

Nature Social impacts associated with retrenchment include loss of jobs, and source of income. Decommissioning will also create temporary employment opportunities, which would represent a temporary positive impact.		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)
Status	Negative	Negative
Reversibility	N/A	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: • The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned. • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning.		

Assessment on No-Go option
There is no impact as it maintains the current status quo.

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

Section 5 lists the key findings of the study and recommendations. These findings are based on:

- Review of project related information.
- Review of key policy and planning documents.
- Site visits to the study area.
- Interviews with key stakeholders.
- Experience with similar projects.

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- No-development option.
- Decommissioning.

5.2.1 Policy and planning

The development of renewable energy 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.

5.2.2 Construction phase impacts

Potential positive impacts

- Creation of employment and business opportunities.

The construction phase will extend over a period of approximately 12 months and create in the region of 100-150 direct construction related employment opportunities. Members from the local communities in the area, specifically Somerset West, Macassar and Firgrove would be in a position to qualify for most of the low skilled and semi-skilled employment opportunities. Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members of the community. The total wage bill will be in the region of R 45 million (2023 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the area.

Given relatively high local unemployment levels in the area, this will represent a significant, if localised, social benefit. The benefits for low communities can be enhanced by implementing

local labour content targets. The capital expenditure associated with the construction phase will be approximately R 1.2 billion (2023 Rand value). Given the well-developed local economy, the potential for local companies will be high. The majority of benefits will therefore accrue to contractors and engineering companies based in the City of Cape Town metropolitan area.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Creation of employment and business opportunities	Low (Positive)	Medium (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Influx of jobseekers	Low (Negative)	Low (Negative)
Nuisance related impact linked to construction activities	Medium (Negative)	Low (Negative)

5.2.3 Operational phase impacts

Potential positive impacts

- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.

The proposed project will supplement the City of Cape Town's energy supply and assist to improve energy security. In addition, it will also reduce the country's reliance on coal as an energy source. This represents a positive social benefit.

Potential negative impacts

- Visual impacts and associated impacts on sense of place.
- Impact on property values.
- Loss of land for development of housing.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts can therefore be effectively mitigated. The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Establishment of infrastructure to improve energy security and support renewable sector	Medium (Positive)	Medium (Positive)
Creation of employment and business opportunities	Low (Positive)	Medium (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Impact on property values	Low (Negative)	Low (Negative)
Loss of land for housing	Low (Neutral)	Low (Neutral)

5.2.4 Cumulative impacts

Cumulative impact on sense of place
The significance is rated as **Low Negative.**

5.2.5 Decommissioning phase

Given the relatively small number of people employed during the operational phase (~ 10), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**.

5.2.6 No-development option

The No-Development option would represent a lost opportunity for 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 South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost. The No-Development option is not supported by the findings of the SIA.

5.3 CONCLUSION AND RECOMMENDATIONS

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.

Statement and reasoned opinion
The establishment of the proposed Paardevlei PV SEF and associated infrastructure including a battery energy storage system (BESS) is supported by the findings of the SIA.

ANNEXURE A

REFERENCES

- National Environmental Management Act (107 of 1998).
- National Energy Act (2008).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- National Development Plan (2011).
- New Growth Path Framework.
- National Infrastructure Plan.
- Western Cape Provincial Spatial Development Framework (2014).
- Western Cape Infrastructure Framework (2013).
- Western Cape Green Economy Strategy (2013).
- One Cape 2040 (2012)
- City of Cape Town Spatial Development Framework (2022).
- City of Cape Town Integrated Development Plan (IDP) (2022-2027).
- Helderberg District Plan (2023).
- Paardevlei PV SEF Inception Report. C40 and Integration (June 2023).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

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

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

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

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

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

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

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

ANNEXURE C

Tony Barbour
ENVIRONMENTAL CONSULTING

[redacted]

Tony Barbour's has 30 years' experience in the field of environmental consulting and management. His experience includes working for ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984).
- B Economics (Honours) Rhodes (1985).
- MSc (Environmental Science), University of Cape Town (1992).

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current.
- University of Cape Town: August 1996-October 2004**:** Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher.
- Private sector: 1991-August 2000: 1991-1996**:** Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004).
- University of Cape Town: Social Impact Assessment (2004-current).
- Cape Technikon: Resource Economics and Waste Management (1994-1998).
    - Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIAs for infrastructure projects, dams, pipelines, and roads. All the SIAs include interacting with and liaising with affected communities. In addition, he is the author of the Guidelines for undertaking SIAs as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Senegal, Nigeria, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Sudan, Rwanda, and Armenia.

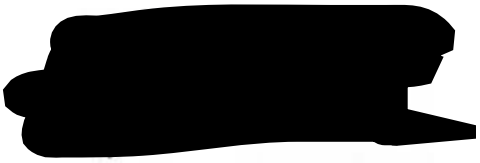
ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour, declare that -- General

declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

30 November 2023

Date: