# SOCIAL IMPACT ASSESSMENT

# SUNVELD SOLAR PV AND BESS FACILITY

# WESTERN CAPE PROVINCE

**MARCH 2024**

**Prepared**

**By**

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# EXECUTIVE SUMMARY

## INTRODUCTION AND LOCATION

CapeEAPrac was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed up to 600 MW Sunveld PV Solar Energy Facility (SEF) located ~ 7.5 km east of the town of Velddrif in the Western Cape Province. The project site is situated within the Berg River Municipality (BRM) Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process.

## SUMMARY OF KEY FINDINGS

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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. The 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. The provincial and local policies also support the development of renewable energy. The development of the proposed PV SEF is therefore supported by key policy and planning documents.

## CONSTRUCTION PHASE

### Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase is expected to extend over a period of ~24 months and create approximately 300-350 employment opportunities. The total wage bill for the construction phase is estimated to be in the region of R 80 million (2023 Rand value). A percentage of the wage bill will be spent in the local economy which will create opportunities for local businesses in the BRM and Saldanha Bay Municipality (SBM).

Some of the employment opportunities, specifically the low and semi-skilled opportunities, will be available to residents in the area, specifically residents from local towns in the study area, including Velddrif, Vredenburg and Saldanha Bay. Most of beneficiaries are likely to be historically disadvantaged (HD) members from the community. This would represent a significant positive social benefit in an area with

limited employment opportunities. However, in the absence of specific commitments from the developer to employ local contractors the potential for meaningful skills to local employment targets the benefits for members from the local communities may be limited. In addition, the low education and skills levels in the area are likely to hamper potential opportunities for local communities.

The potential benefits for local communities are confirmed by the findings of the Overview of the IPPPP undertaken by the Department of Energy, National Treasury and DBSA (December 2021). The review found that by the end of December 2021 the construction phase of the 85 renewable energy projects that had been successfully completed had created 44 172 job years[1] of employment, compared to the anticipated 30 488. This was 45% more than planned. The study also found that significantly more people from local communities were employed during construction than was initially planned.

The capital expenditure associated with the construction phase of the PV SEF and BESS will be in the region of R 6 billion (2023 Rand value). The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

**Potential negative impacts**

- Impacts associated with the presence of construction workers on local communities.
- Increased risks safety, livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- 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.

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

**Table 1: Summary of social impacts during construction phase**

| Impact | Significance No Mitigation/Enhancement | Significance With Mitigation/Enhancement |
|---|---|---|
| **Creation of employment and business opportunities** | Medium (Positive) | Medium (Positive) |
| **Presence of construction workers and potential impacts on family structures and social networks** | Medium (Negative) | Low (Negative) |
| **Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers** | Medium (Negative) | Low (Negative) |
| **Nuisance impacts 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.
- Benefits for local landowners.
- Benefits associated with socio-economic contributions to community development.

The proposed project will supplement South Africa's energy 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.
- Potential impact on property values.
- Potential impact on tourism.

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** | High (Positive) | High (Positive) |
| **Creation of employment and business opportunities during maintenance** | Low (Positive) | Medium (Positive) |
| **Benefits associated with socio-economic contributions to community development** | Medium (Positive) | High (Positive) |
| **Benefits for landowners** | Low (Positive) | Medium (Positive) |
| **Visual impact and impact on sense of place** | Medium (Negative) | Low (Negative) |
| **Impact on property values** | Low (Negative) | Low (Negative) |
| **Impact on tourism** | Low (Negative) | Low (Negative) |

**CUMULATIVE IMPACTS**

***Cumulative impact on sense of place***
There are several proposed renewable energy projects in the area. The potential for cumulative impact on the areas sense of place therefore exists. The significance is rated as **Moderate Negative** depending on how many facilities are established in the area.

***Cumulative impact on local services and accommodation***
The significance of this impact with mitigation was rated as **Low Negative**.

***Cumulative impact on local economy***
The significance of this impact with enhancement was rated as **High Positive**.

**DECOMMISSIONING**

Given the relatively small number of people employed during the operational phase (~ 20-30), 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 South Africa to improve energy security 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 Sunveld PV SEF and associated infrastructure will create employment and business opportunities in the BRM and SBM during both the construction and operational phase of the project. The potential negative impacts, with the exception of the visual impact on sense of place, can also be effectively mitigated.

The project will also create opportunities for contributions to socio-economic development in the local community. The enhancement measures listed in the report should be implemented in order to maximise the potential benefits. The significance of this impact is rated as **High Positive**. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to direct foreign investment, local employment and procurement and investment in local community initiatives.

### Statement and reasoned opinion

The establishment of the proposed Sunveld 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 1.6, Annexure C |
| (b) a declaration that the specialist is independent in a form as may be specified by the competent authority; | Section 1.7, Annexure D |
| (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; | N/A for SIA |
| (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; | N/A |
| (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; | Section 3 |
| (i) a description of any assumptions made and any uncertainties or gaps in knowledge; | Section 1.5 |
| (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—<br>i. as to whether the proposed activity, activities or portions thereof should be authorised;<br>iA. Regarding the acceptability of the proposed activity or activities; and<br>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 summary and copies of any comments received during any consultation process and where applicable all responses thereto; and | To be undertaken during Assessment Phase |
| (p) 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 specialist report, the requirements as indicated in such notice will apply. | |

## ACRONYMS

| | |
|---|---|
| BRM | Berg River Municipality |
| DEA | Department of Environmental Affairs |
| DEA&DP | Department of Environmental Affairs and Development Planning |
| DM | District Municipality |
| HD | Historically Disadvantaged |
| EIA | Environmental Impact Assessment |
| IDP | Integrated Development Plan |
| IPP | Independent Power Producer |
| kV | Kilovolts |
| LED | Local Economic Development |
| LM | Local Municipality |
| MW | Megawatt |
| SBM | Saldanha Bay Municipality |
| SDF | Spatial Development Framework |
| SEF | Solar Energy Facility |
| SIA | Social Impact Assessment |
| WCDM | West Coast District Municipality |
| WCP | Western Cape Province |

# SECTION 1: INTRODUCTION

## 1.1 INTRODUCTION

CapeEAPrac was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed 600 MW Sunveld PV Solar Energy Facility (SEF) located ~ 7.5 km east of the town of Velddrif in the Western Cape Province (Figure 1.1). The project site is situated within the Berg River Municipality (BRM) Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process.


**Figure 1.1: Location of Sunveld PV Solar Energy Facility**

## 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) in 2007 and IAIA Guidance for Assessing and Managing Social Impacts (2015).

The terms of reference for the SIA require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility.
- A description and assessment of the potential social issues associated with the proposed facility.
- Identification of enhancement and mitigation aimed at maximising opportunities and avoiding and or reducing negative impacts.

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.
- Review of information from similar studies, including the SIAs undertaken for other renewable energy projects.
- 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 PROJECT DESCRIPTION

Sunveld Energy (Pty) Ltd is a Special Purpose Vehicle (SPV) incorporated for the sole purpose of developing, constructing, and operating an up to 600 MW solar PV facility including a Battery Energy Storage System (BESS) facility located approximately 7.5 km East Velddrif within the Bergrivier Local Municipality in the Western Cape Province in the Western Cape Province. The project site comprises the following farm portion:

- Remaining Extent of the farm Kruispad 120.
- Remaining Extent of the farm Doornfontein 118.

A project site of approximately 2360 ha and a preferred development area within an extent of approximately 723ha has been identified for the development of the Sunveld Solar PV Energy Facility. The Sunveld PV Solar Energy Facility project site will be made up of the following components:

- PV panels with a maximum height of ± 3m above the ground (Photograph 1.1). Preferred technology - single axis track used in portrait orientation with strings of 1x ±30 panels. Mounting using hammered in uprights (as a worst case there will be 400mm diameter holes and some may need lateral support using pegged out cables, depending on soil type/profile). Alternatives technologies: fixed-tilt: north-facing at a defined angle of tilt, single or double axis tracking: mounted in a north-south orientation, tracking from east to west.
- Laydown areas. Approximately 6 ha of temporary laydown areas will be required. A permanent laydown area of a maximum of 2 ha will remain for operations. Total 8ha
- Access roads to site. During construction 4 access points from the R399 may be used. These will be 5m wide and utilise existing roads and tracks. Only the central access points and roads north and south totalling 1km will be permanent.
- Internal road network. A network of approximately57km of gravel internal access roads, each with a width of up to ± 4 m, will be constructed to provide access to the various components of each facility.
- Auxiliary buildings (33kV switch room, gatehouse and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.).
- Facility (IPP) substation.
- Inverter-station, transformers, and internal electrical reticulation (underground cabling).
- Rainwater Tanks.

- Perimeter fencing and security infrastructure.
- Battery Energy Storage System (BESS) with a capacity of up 2400 MWh. 2 sites have been identified each ± 14 ha, near the On-Site Substations. The height of containerised structures will be 5-6m (Photograph 1.2)
- Two On-Site Substation Complexes each 300 MVA. Substations each with a 75x75m base, within a 200m x200m fenced area. These are collector/switching substations with 33kV input from the Mini-substations and transforming to 132kV to be routed via overhead powerlines to the MTS.

**Photograph 1.1: Typical PV SEF facility**

**Photograph 1.2: Example of BESS located in storage containers**

## 1.4 ASSUMPTIONS AND LIMITATIONS

### 1.4.1 Assumptions

**Technical suitability**
It is assumed that the development site represents a technically suitable site for the establishment of the proposed PV SEF 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.

***Engagement with stakeholders***
Detailed engagement with landowners and local stakeholders was undertaken as part of the SIA process of the Doornfontein and Kruispad PV SEFs in 2017 and 2019 respectively. No concerns were raised regarding the proposed PV SEFs that now form the Sunveld PV SEF. The information from these engagements has been used to inform the SIA.

### 1.4.2 Limitations

**Demographic data**
The data from the 2021 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.

## 1.5 SPECIALIST DETAILS

Tony Barbour is an independent specialist with 26 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 CV for Tony Barbour.

## 1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour, the specialist consultant responsible for undertaking the study and preparing the SIA Report, is independent and does not have a vested or

financial interest in the proposed development being either approved or rejected. Annexure D contains a copy of signed declaration of independence.

## 1.7 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.

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 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 Energy Plan (2016).
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- 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 Provincial Strategic Plan (2014).
- Western Cape Green Economy Strategy (2013).
- One Cape 2040 (2012)
- West Coast District Municipality Spatial Development Framework (2020).
- Berg River Municipality Integrated Development Plan (IDP) (2022-2027).
- Berg River Municipality Spatial Development Framework (2019-2029).

The section also provides a review of the renewable energy sector in South Africa.

## 2.2 NATIONAL POLICY ENVIRONMENT

### 2.2.1 National Energy Act (Act No 34 of 2008)

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 (…);

[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.

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

### 2.2.2 White Paper on the 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 thus concerned with 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.

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive, and many appropriate applications exist.

### 2.2.3 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],

[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).

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 (COP 15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual. In this regard, the IRP 2010 aims to allocate 43% of new energy generation facilities in South Africa to renewables.

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 (in this regard, also refer to the objectives of the National Energy Act).

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.

### 2.2.4 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 the 2019 IRP**

As indicated above, the changes from the Draft IRP capacity allocations see an increase in solar PV and wind, and a significant decrease in gas and diesel; and new inclusions include nuclear and storage.

In terms of renewable energy five bidding rounds have been completed for renewable energy projects under the RE IPP Procurement Programme. The most dominant technology in the IRP2019 is renewable energy from wind and solar PV technologies, with wind being identified as the stronger of the two technologies. There is a consistent annual allocation of 1 600MW for wind technology commencing in the year 2022 up to 2030. The solar PV allocation of 1 000MWs per year is incremental over the period 2022 to 2030, with no allocation in the years 2024 (being the year the Koeberg nuclear extension is expected to be commissioned) and the years 2026 and 2027 (presumably since 2 000MW of gas is expected in the year 2027). The IRP 2019 states that although there are annual build limits, in the long run such limits will be reviewed to take into account demand and supply requirements.

### 2.2.5 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.

### 2.2.6 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.

### 2.2.7 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 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.

## 2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

### 2.3.1 Western Cape Infrastructure Plan

The Western Cape Infrastructure Framework (WCIF)(2013) was developed by the WCP Provincial Department of Transport and Public Works in terms of the Provincial Government's mandate to coordinate provincial planning under Schedule 5A of the Constitution. The objective of the WCIF 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 document notes that given the status quo of infrastructure in the province, and the changing and uncertain world facing the Western Cape over the 2-3 decades a new

[4] Gazette No. 44951

approach to infrastructure is needed. Namely one that satisfies current needs and backlogs, maintains the existing infrastructure, and plans proactively for a desired future outcome. The 2040 vision requires a number of transitions to shift fundamentally the way in which infrastructure is provided and the type of infrastructure provided in WCP.

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.

### 2.3.2 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 Strategy is closely aligned with provincial development goals and the 2014 WCCCRS.

The Strategy's point of departure is that while the WCP faces significant challenges in terms of climate change and economic development. Two of the WCP's key economic sectors - both of national importance - agriculture and tourism, are vulnerable to climate change. At the same time, these challenges hold significant potential for opportunities linked to attracting investment, economic development, employment creation, and more resilient infrastructure and patterns of consumption. These opportunities are partly linked to the WCP's existing leadership in some fields of green technology, including knowledge services.

The core objective of the Strategy is to position the WCP as the lowest carbon footprint province in South Africa, and a leading green economy hub on the African continent.

The Strategy framework is made up of 5 drivers of the green economy which are market focused and principally private sector driven and supported by 5 enablers which are either public sector driven, or the product of a collaborative effort.

The five drivers are: smart mobility, smart living and working, smart ecosystems, smart agri-processing and smart enterprise. The relevant cross-cutting enablers are: finance, rules and regulations, knowledge management, capabilities, and infrastructure.

The framework also identifies priorities that would position the WCP as a pioneer and early adopter of green economic activity. These priorities have been identified in terms of the WCP being firstly, a front-runner or pioneer and secondly, an early adopter of innovations and technologies which already exist but are not widely adopted in South Africa. Some priorities are considered game-changers and are singled out as 'high level priorities for green growth'.

Three such 'high level priorities for green growth' are identified, two of which are of relevance here:

- 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.

'Under the section dealing with drivers, renewable energy is discussed under 'Smart Enterprise'. The WCP's objective in terms of this driver is to establish the WCP as a globally recognized centre of green living, working, creativity, business, and investment, and thereby attract investment, business and employment opportunities. Based on existing comparative advantages, three key opportunities are identified, one of which is of relevance here, namely, to establish the WCP as Africa's new energy servicing hub.

In this regard, the Strategy document notes that WCP is well placed to be the most important research and servicing hub for the renewable and natural gas energy sectors in South Africa and on the African continent. The Strategy also notes that there are important initial opportunities in the construction of new energy infrastructure. However, the real long-term benefits lie in the servicing of operational infrastructure. In this regard, it is estimated that the annual servicing and maintenance costs of WEFs for instance amount to approximately 10% of the initial capital investment.

Public and market sector procurement are identified as some of the key enablers. The creation of a streamlined regulatory system – the reduction of 'red tape' – is identified as a key prerequisite for creating an enabling environment.

Under the section dealing with enablers necessary to unlock development potential, renewable energy is discussed under "Smart Infrastructure". The Strategy document notes that existing infrastructure systems, particularly those relating to energy and transport, are carbon intensive, with high costs to the environment. Opportunities for the WCP are linked to tapping into infrastructural development funding by leveraging existing advantages.

With regard to the energy sector, the Strategy proposes that the WCP becomes an early adopter of natural gas processing and transport infrastructure and become the hub of Concentrated Solar manufacture and servicing. Natural gas is identified as the key potential 'game changer' of the WCP economy, and at present the best way to transition the economy to a more fully integrated renewables sector as major part of the WCP fuel mix in the long term. In this regard, the relative ease with which gas-fired stations could be activated make them an ideal supplement to less predictable wind and solar sources.

Surprisingly, WEF and Solar PV manufacture and servicing receive no specific mention, while Concentrated Solar (CSP) does. The Strategy document justly notes that while the Northern Cape Province is the best suited for CSP facilities, the WCP has strong existing research capabilities in CSP at the University of Stellenbosch (US), and the WCP's existing manufacturing sector already has the capacity to manufacture many CSP components.

Potential opportunities of commercialisation of CSP technology for local (RSA, Africa) conditions based on US research could be substantial. This subsector is identified as an

important area of collaboration between the two provinces to realise the potential benefits (p 41). The key action at this stage to initiate a WCP manufacturing and servicing centre is to lobby for support for a pilot of South African designed CSP technologies, adapted to SA conditions (p. 43).

### 2.3.3 Western Cape Climate Change Response Strategy

The Western Cape Climate Change Response Strategy (WCCCRS) was adopted in February 2014. The strategy is an update of the 2008 Western Cape Climate Change Response Strategy and Action Plan. The key difference with the 2008 Strategy is a greater emphasis on mitigation, including strategically suitable renewable energy development.

The 2014 WCCCRS was updated in accordance with the National Climate Change Response Policy (2013) and is strongly aligned with the overarching provincial objectives contained in the Western Cape Draft Strategic Plan 2009-2014 (2010), and the WCP 'Green is Smart' Strategy (2013). In line with the National Climate Change Response Policy, the Strategy takes a two-pronged approach to addressing climate change:

- **Mitigation:** Contribute to national and global efforts to significantly reduce Green House Gas (GHG) emissions and build a sustainable low carbon economy, which simultaneously addresses the need for economic growth, job creation and improving socio-economic conditions.
- **Adaptation:** Reduce climate vulnerability and develop the adaptive capacity of the Western Cape's economy, its people, its ecosystems and its critical infrastructure in a manner that simultaneously addresses the province's socio-economic and environmental goals (WCCCRS, 2014: 21).

The Strategy will be executed through an implementation framework which will include an institutional framework for both internal and external stakeholders, with a strong emphasis on partnerships. The framework still has to be prepared. A monitoring and evaluation system is further envisaged in order to track the transition to a low carbon and climate resilient WCP. Policy aspects dealing with mitigation are of specific relevance to renewable energy generation.

***Energy and emissions baseline***
Based on comprehensive 2009 data for all WCP energy use sectors, the following key findings pertain to overall WCP energy use and emissions:

- Electricity is the key fuel used in the WCP, accounting for 25% of total consumption.
- Approximately 95% of base load electricity is generated from low-grade coal and the remainder by nuclear. The vast bulk of WCP electricity is generated in the north of the country.
- In terms of emissions by sector, electricity is responsible for 55% of total WCP emissions. According to the Strategy, this supports the case for a shift towards renewables and clean energy types.
- Transport (55%) was the greatest energy user, followed by industry (33%). Although domestic consumption accounted for only 8%, it accounted for 18% of emissions, again underscoring the emission-intensive nature of electricity generation.

***Mitigation potential***
According to the Strategy, the main opportunities for mitigation include energy efficiency, demand-side management, and moving towards a less-emission intensive energy mix.

In the short to medium term, four areas with mitigation potential are identified, including promoting renewable energy in the form of both small-scale embedded generation as well as large scale renewable energy facilities. Together with other mitigation interventions, renewable energy generation is anticipated to result in the following socio-economic benefits:

- Reducing fuel costs to households and business.
- Improving the competitiveness of businesses.
- Job creation opportunities with the development of new economic sectors.
- Local business development.
- Improved air quality (with positive health impacts).
- Reducing the negative impact of large carbon footprints, particularly for export products.
- Reducing stress on energy needs of the province and thereby increasing energy security.

***Renewable energy as strategic focus area***
Initial implementation of the Strategy will focus on select focus areas aligned with the National Climate Change Response Policy Flagship Programmes and the Western Cape Green Economy Strategy Framework. These focus areas will be reviewed every five years – i.e., the next revision is due in 2019. Renewable area is identified as one of nine focus areas. The Strategy document notes that renewable energy is a key area of focus for the Western Cape and forms a fundamental component of the drive towards the Western Cape becoming the green economy hub for Africa.

The role of provincial government is identified as 'supporting the development of the renewable energy industry through promoting the placement of renewable energy facilities in strategic areas of the Western Cape as well as through supporting renewable energy industries.

The document further notes that waste-to-energy opportunities are being investigated in order to facilitate large-scale rollout. Current investigation includes understanding the most appropriate technologies for waste-to-energy projects as well as developing decision support tools for municipalities to implement waste-to-energy programmes).

***Priority areas identified for renewable energy development****:*
- Development of the Renewable Energy economy in the WCP, in terms of both the appropriate placement of renewable energy as well as manufacturing opportunities.
- Development of waste-to-energy opportunities for both municipal and private sector (commercial and industrial) waste systems.
- Development of opportunities around small-scale renewable energy embedded generation activities.

### 2.3.4 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. It was adopted as policy by CoCT Council in 2012. It is aimed at stimulating a transition towards a more inclusive and resilient WCP economy. It seeks to set a common direction to guide planning and action and to promote a common commitment and accountability to sustained long-term progress.

The 2040 Strategy does not replace any 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.

### 2.3.5 West Coast District Municipality Spatial Development Framework

The West Coast District Municipality (WCDM) covers approximately 31 100 km² and consists of five local municipalities (Figure 2.2):

- Saldanha Bay Municipality.
- Swartland Municipality.
- Bergrivier Municipality.
- Cederberg Municipality.
- Matzikama Municipality.

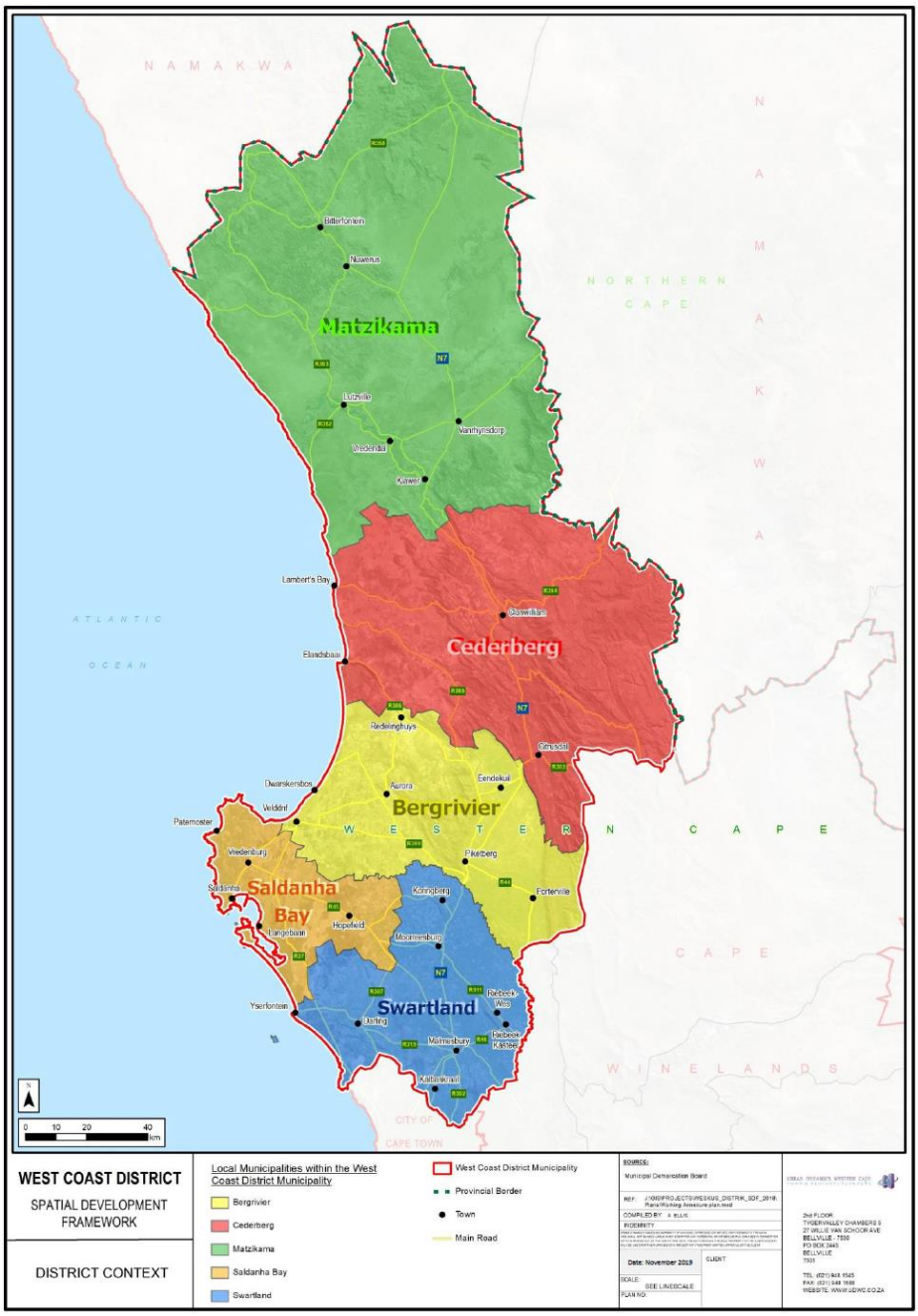
The Spatial Strategy and Vision of the WCDM is underpinned by three goals, namely:

***Goal 1***
Enhance the capacity and quality of infrastructure in the areas with the highest economic growth potential, while ensuring continued provision of sustainable basic services to all residents in the district, promoting spatial transformation and equal access to opportunities.

***Goal 2***
To facilitate and create an enabling environment for employment, economic growth and tourism development, while promoting access to public amenities, such as education and health facilities – generally improving community wellness and safety of all people.

***Goal 3***
Promote conservation of Critical Biodiversity Areas by strategically implementing sustainable agricultural activities and urban development where the impact on biodiversity will be the lowest, while also mitigating the potential impact of nature (climate change) on the residents of the district.

The spatial vision identified in the SDF needs to be consistent with the overall vision of the IDP for the WCDM. The vision of the West Coast District IDP (2017-2022) is *"A quality destination of choice through an open opportunity society".*




Source: WCD SDF 2020

**Figure 2.2: Location of West Coast District Municipality**

The SDF notes that the settlement pattern in the West Coast District is primarily determined by:

***Coastline***
Small coastal towns are spread along the west coast of the district, while the Saldanha Bay harbour is a key landmark and attraction for economic activity and therefore the growth potential of the immediately surrounding towns are high.

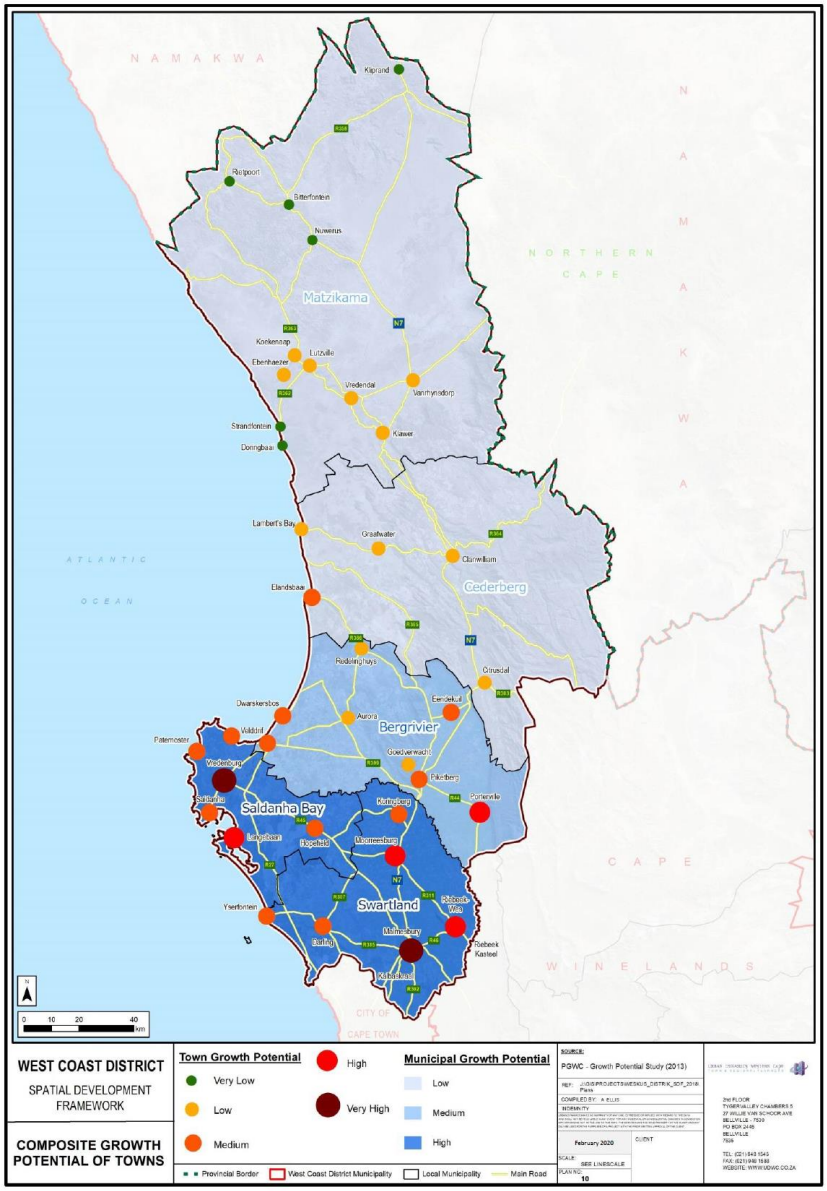
***Agricultural hinterlands***
Towns like Malmesbury, Porterville and Piketburg are located within agricultural environments, functioning as the primary service centre in these areas. However, various small towns in the West Coast District are also considered as agricultural service centre, such as Aurora, Nuwerus, etc.

***River corridors***
The main corridors are the Olifanstriver and the Bergriver. Towns like Velddrif, Citrusdal, Clanwilliam, Klawer, Vredendal and Lutzville are located along river corridors, which create economic opportunities, agricultural growth as well as recreational opportunities.

In terms of settlements, the primary towns in each of the five local municipalities are:

- Bergrivier Municipality – Piketberg.
- Cederberg Municipality – Clanwilliam.
- Matzikama Municipality – Vredendal.
- Saldanha Bay Municipality – Vredenburg.
- Swartland Municipality – Malmesbury.

The towns all serve as service centres for the relevant municipalities. Velddrif and Elandsbaai are classified as small towns or settlements. A study of the growth potential of towns was undertaken by the CSIR in 2014. The primary objective of the study was to determine the growth potential of settlements in terms of future economic, population and physical growth. As indicated in Figure 2.3, the towns of Velddrif, Dwarskersbos and Elands Bay were assessed to have a medium growth potential.




Source: WCD SDF 2020

**Figure 2.3: Composite Growth Potential of Towns (GPS, 2014)**

Based on the assessment of the WCDM the SDF identified a number of key spatial Implications, namely:

- The settlement pattern of the West Coast District is primarily determined by two main elements, being firstly, the coastline and the Saldanha Bay harbour, and secondly the main access route along the N7 road towards Namibia.
- The Saldanha Bay – Vredenburg area is the nucleus of development and activity in the District and the Saldanha Bay Port can be considered as the most prominent spatial feature in the district, attracting economic activity and enhancing the growth potential of the adjacent towns and nodes.
- Malmesbury is located within the influence sphere of the Cape Metropolitan Area and along the N7 road, which contributes to an enhanced growth potential and the classification of this town as a major regional node in the study area.

- Agriculture is considered as the primary economic growth sector in the majority of towns in the West Coast District, followed by fishing and tourism, which are also considered as important functions in the study area.

As indicated below, climate change poses a risk to both agriculture and tourism.

Section, 2.3.5.3 Electricity (p48), includes a subsection on alternative energy. The section notes that given the current and growing challenges in generating sufficient and sustainable electricity supply to the whole of South Africa, the demand for renewable / alternative energy sources has grown and will continue to increase as infrastructure development and the growing population require more electricity in future. Of relevance to the project the SDF notes that renewable energy can be an essential first step to move the West Coast District Municipality and the Western Cape Province to a more sustainable path of energy consumption and production.

The SDF notes that the renewable energy resources within the West Coast District Municipality include solar and wind resources.

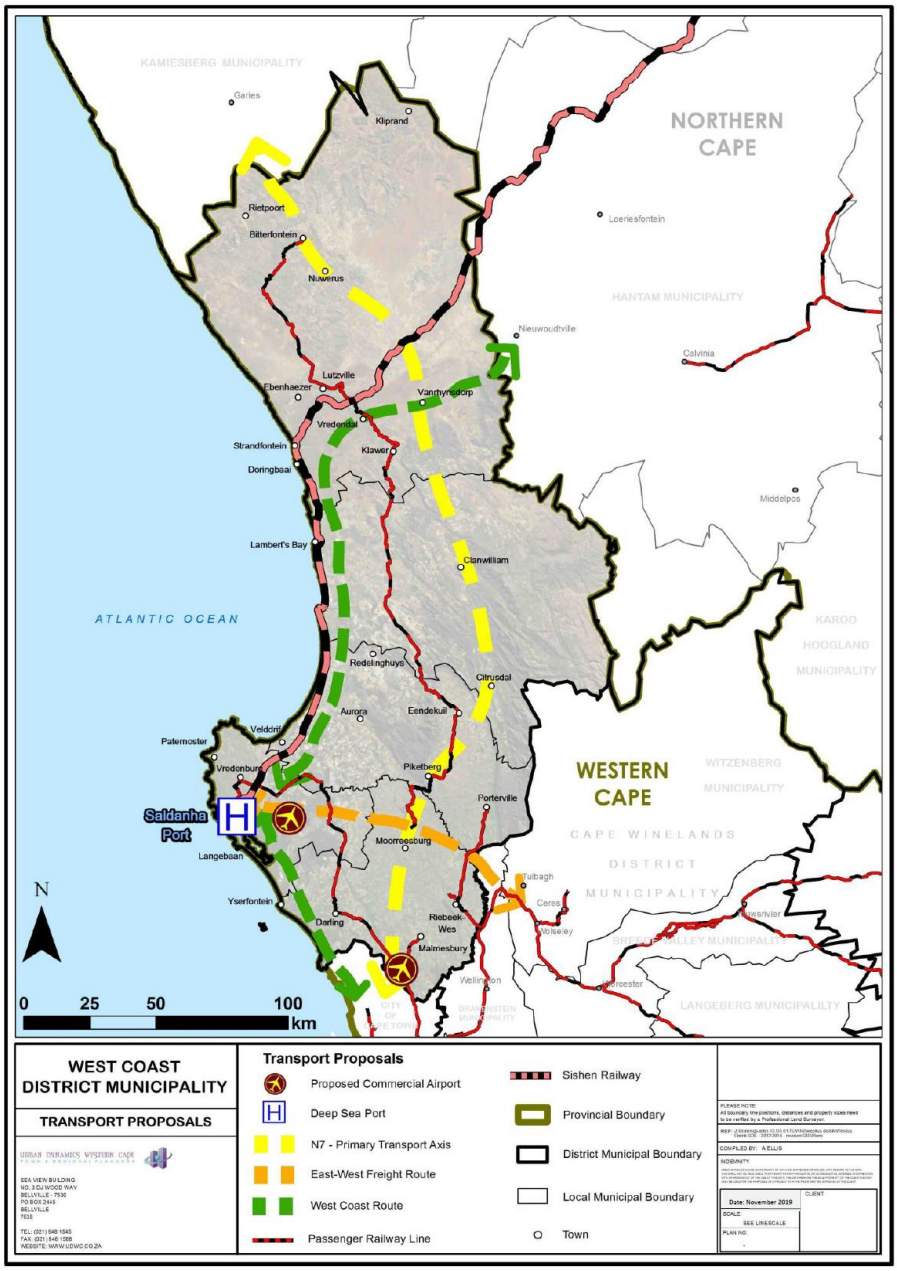
***Solar PV***
In terms of solar the SDF notes that a number of large-scale solar energy developments have been established and are currently being considered in the study area. The extent of land requirements, environmental impact and loss of potentially arable land should be taken into consideration in such projects.

***Wind***
In terms of wind the SDF notes that the wind resources in the West Coast District are substantial and comparably high in relation to the rest of the country. The Saldanha port also has sufficient infrastructure and capacity to facilitate imported wind turbines into the West Coast District.

In terms of the potential spatial implications the SDF notes the **alternative energy** facilities such as solar and wind farms have spatial implications relating to visual impacts, environmental impacts, etc. and its locality should be considered in terms of certain criteria.
Section 5 of the SDF provides an overview of the built environment. The subsections on transport (5.3), energy (5.6) and heritage (5.7) are relevant to the project.

**Transport**

The West Coast District is strategically located along the N7 transport corridor/axis between Cape Town and Namibia, which is a key tourism route and a prominent freight route between these two neighbouring countries. The SDF also notes that upgrading of the R27 north of Velddrif will unlock excellent tourism opportunities and the road will become a viable alternative to the N7 road (Figure 2.4).




Source: WCD SDF 2020

**Figure 2.4: Transport Proposal**

**Energy**

The SDF notes that the West Coast District has certain comparative advantages that can contribute to this district being a popular destination for renewable energy projects.

Section 5.6.3 Policies, lists two policies that are relevant to the development, namely:

- *BE16* Renewable energy sources (wind, solar, gas, etc.) should be promoted to support and enhance the electricity capacity in the West Coast District.
- *BE17* Wind and solar farm locations should be informed by a range of criteria, i.e. environmental considerations, topography, planning and land use considerations as well as infrastructure

The SDF also identifies a number of spatial issues and challenges, that are relevant to the proposed development, including:

- Random and scattered location of proposals for new wind and solar energy developments.
- Potential environmental impact of proposed wind and solar developments

In terms of the location the SDF refers to the studies undertaken by the Western Cape Provincial Government to determine the most suitable areas for the establishment of wind energy projects in a portion of the study area (Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape, 2006). The study was further updated in 2010, Strategic Environmental Assessment for the placement of wind farms (DEA&DP, 2010). The SDF notes that the study has not been formally adopted by the WCG but can be used as an informant to local municipalities in evaluating proposals for wind farm developments. The SDF also notes that the criteria that informed the study should also be used for solar projects. The key criteria that should inform the placement of wind farms, include:

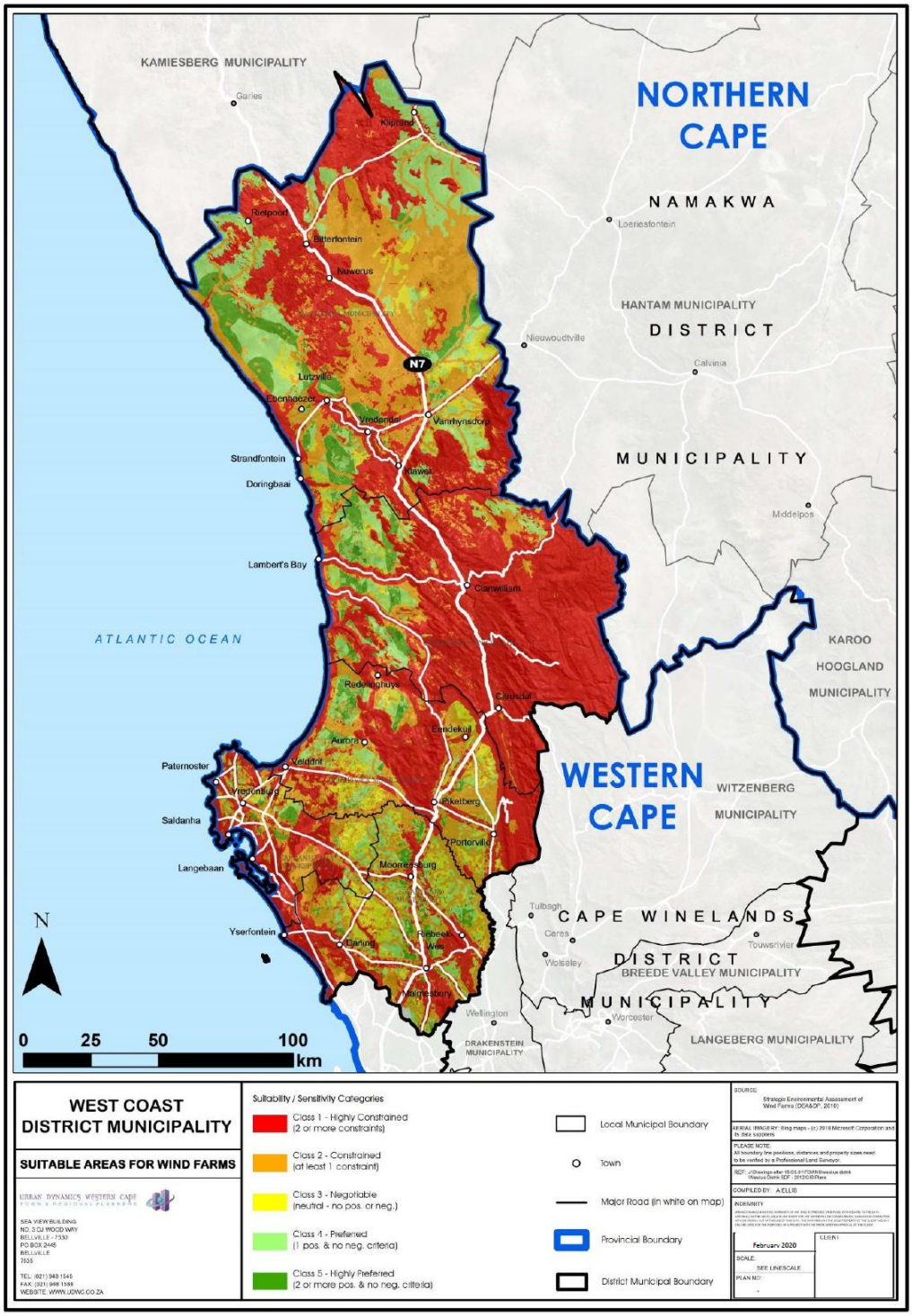
***Environmental Considerations***
- Conservancies.
- Mountain Catchments.
- Biosphere Reserves.
- Protected Areas.
- Heritage Protected Areas.
- Priority natural areas.
- Wetlands, waterbodies & rivers.
- Critical Biodiversity Areas & threatened ecosystems.
- Visually sensitive areas (higher elevated areas versus lower laying plains)
- Coastal areas (buffer zone).

***Topographical Considerations***
- Mountains, ridges & prominent hills

***Planning Considerations***
- Industrial areas, mining areas & residential areas

***Infrastructure Considerations***
- Airfields & airports
- Telecommunication masts
- Major roads & scenic routes
- Major existing power lines
- Existing railway lines

Figure 2.5 summarises the strategic environmental assessment undertaken by DEA&DP (2010). The SDF notes that the map should be used as informant to determine the sustainability and potential impact of new wind energy proposals in the West Coast District. Of relevance to the project the SDF also states that the criteria should also be considered when solar energy projects are proposed.




Source: WCD SDF 2020

**Figure 2.5: Suitable Areas for Wind Farms (SEA – DEA&DP, 2010)**

**Heritage**

The SDF notes that the unique '*West-Coast-Character-Areas'* could be considered as the key regional heritage category that requires spatial recognition and dedicated conservation. Section 5.7 includes a policy that is relevant to the development, namely:

- *BE19* Heritage resources (i.e. rural landscapes and cultural heritage) contribute to the scenic and tourist value of the District, and should therefore be considered as key informants when development applications are evaluated.

Section 6 Theme 2, provides an overview of the socio-economic environment. The section notes that although the annual growth rate is moderate, compared to some other districts in the province with higher growth projections, the population of the West Coast District will increase by approximately 130 000 people over the next 10 years to 2030. The spatial issues and challenges associated with this increase include:

- Increased demand for housing development, employment opportunities and social amenities.
- Increased pressure on infrastructure and basic services.
- Increased pressure on natural resources.

Section 6.2, Economic growth and employment, notes that the two most important sectors in the West Coast economy in terms of GDP are agriculture (20.2%) and manufacturing (20.3%), (MERO, 2018). As indicated above, climate change poses a key risk the agricultural sector. Key spatial issues and challenges facing the district include:

- Contraction in the agricultural & manufacturing sectors is concerning, as these sectors are the primary economic sectors and employment generators in the district.
- Impact on global markets on demand for products, specifically agricultural products.
- Growing unemployment figure – increased socio-economic problems, i.e. poverty, illiteracy, crime, etc.

Section 6.2.3, Policies, lists the policies to support economic growth and employment
- *HR1* Promote infrastructure development in locations with medium, high, and very high economic growth potential.
- *HR2* Invest in key economic sectors to facilitate development and employment opportunities.

Section 6.2.4, Proposals, identifies key priority sectors for investment. Of specific relevance to the development the SDF identifies renewable energy as a key sector.
Section 6.3, Tourism, notes that that the West Coast District is an attractive tourism destination with a variety of tourism attractions and assets. The area is also located, in relatively close proximity to the Cape Metropolitan area, and is therefore easily accessible.

Section 6.3.4, Proposals, notes the tourism routes should be promoted.


Source: WCD SDF 2020

**Figure 2.6: Tourism Proposals**

The SDF identifies the risks posed by Climate Change (Section 2.3.2.6). The implications for the WCDM include:

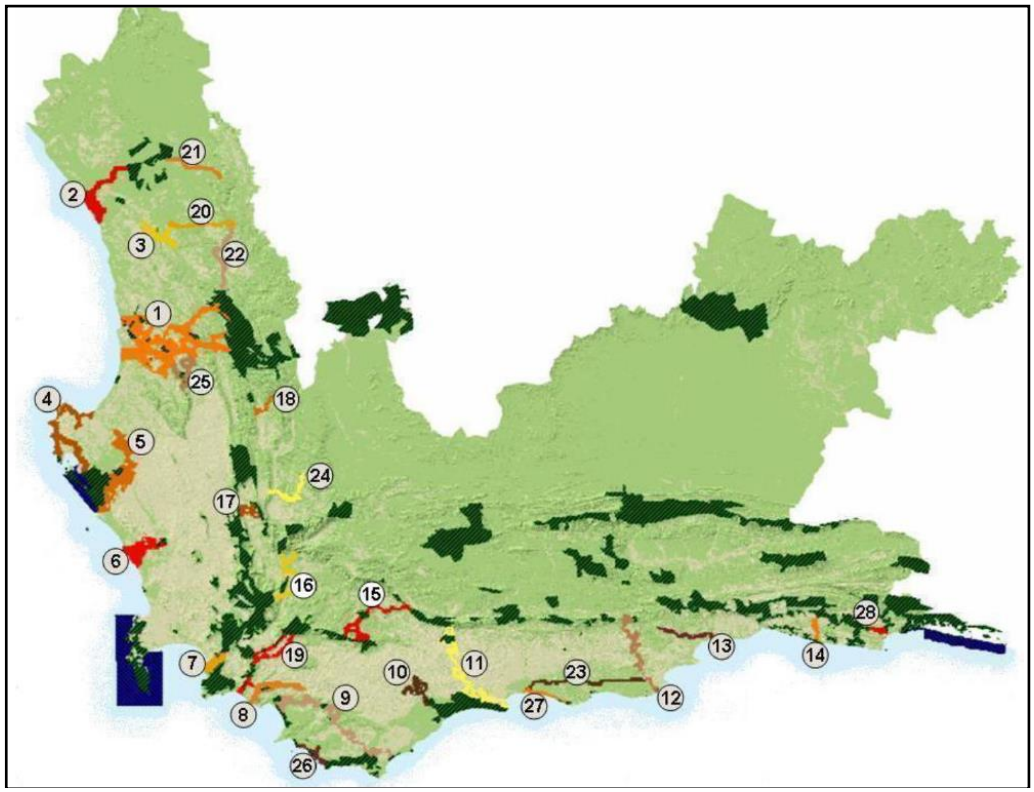
- **Water** - Lower precipitation and increased evaporation will result in decreased availability of water.
- **Biodiversity** - Sensitive terrestrial as well as marine biodiversity will be exposed to changing climate conditions that could result in the extinction of some species and the need to adapt to changing conditions.

- **Infrastructure** - Extreme events such as floods result in damages to infrastructure and have an indirect impact on the economy.
- **Agriculture** - Changing temperatures and precipitation patterns will influence the yields form crop and could have a dramatic impact on the soft fruit and wine industries.
- **Tourism -** The risk of encountering extreme events such as flooding and extreme heat may have a negative impact on tourism.
- **Health** - The effect of climate change on human health is potentially threatening and requires climate change adaption and responses to mitigate the severity of the impact.

The SDF also refers to a study by the WWF (2010) which identified a number of climate change corridors in the West Coast District area, namely:

- (1) West Coast – Cederberg Mountains.
- (2) Olifants River Mouth – Knersvlakte.
- (3) Gifberg & Doring – lower Olifants.
- (4) Vredenburg Peninsula Coastal Corridor.
- (5) West Coast National Park – Berg River.
- (20) Gifberg – Kobee Mountains.
- (21) Oorlogskloof – Knersvlakte.
- (22) Greater Cederberg Biodiversity Corridor north.
- (25) Greater Cederberg Biodiversity Corridor – Piketberg.

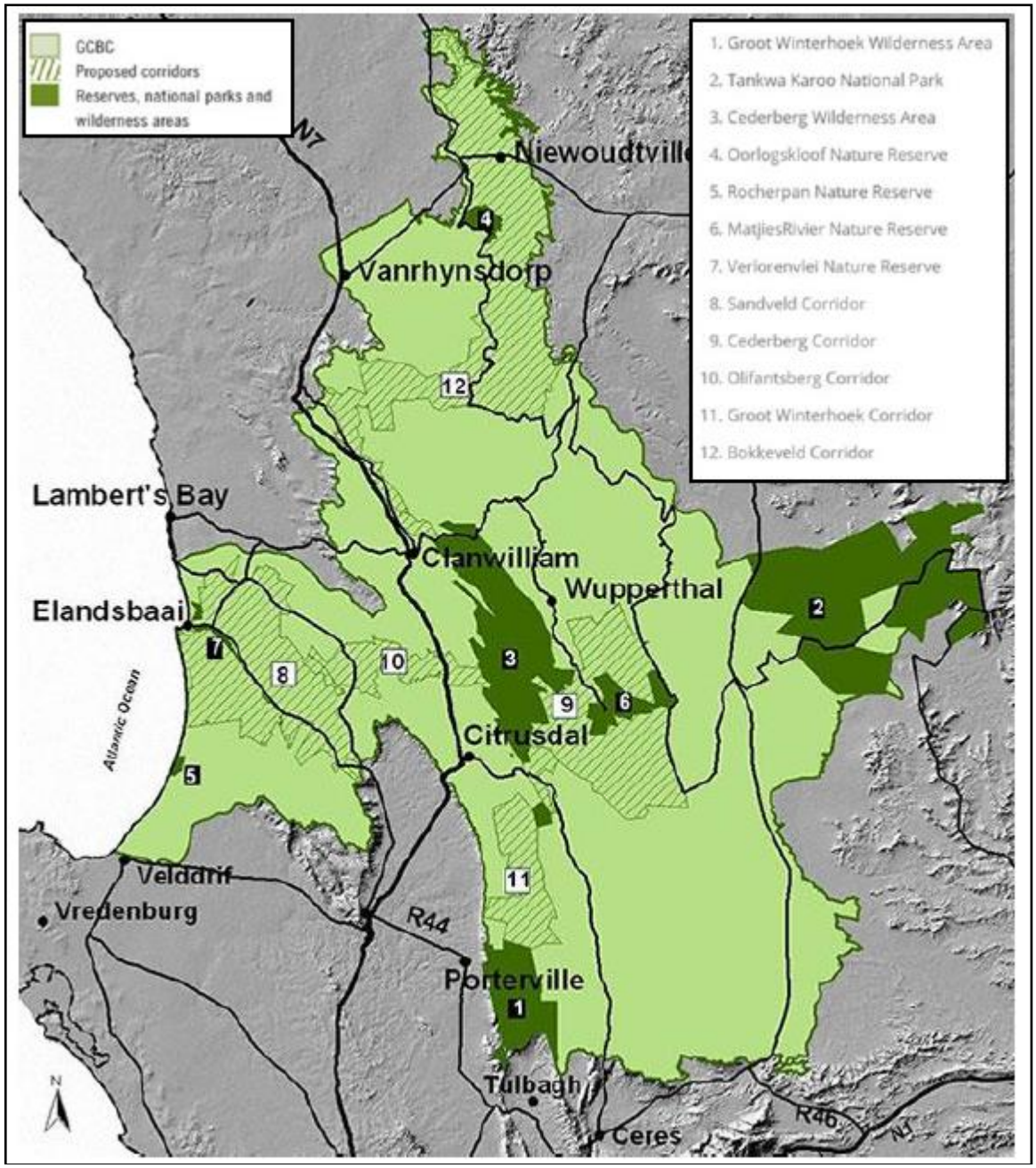
As indicated in Figure 2.7, the (1) West Coast – Cederberg Mountains corridor falls within study area is located to the north of the study area).




Source: WCD SDF 2020

**Figure 2.7: Climate Change Corridors *(WWF, 2010)***

The West Coast – Cederberg Mountains climate change corridor corresponds to the Greater Cederberg Biodiversity Corridor (GCBC). As indicated in Figure 2.8, the study area falls outside the Strandveld Corridor (8).




Source: WCD SDF 2020

**Figure 2.8: GCBC Map (CapeNature)**

### 2.3.6 Berg River Municipality Spatial Development Framework

Section 3.1.2, Key Challenges, of the Bergrivier Municipal Spatial Development Framework (BRSDF)(2019-2024) lists the key challenges facing the BRM, including legacy, current and future challenges. The relevant legacy challenges include:

- Extreme loss of biodiversity and landscape function from historical agricultural development, specifically in alluvial and shale soil Renosterveld habitats.

- Poorly considered and insensitive infrastructure and general development of natural landscapes without contemplation for or without comprehensive assessment of visual impacts on scenic landscape integrity.
- Coastal road and infrastructure location, and inland agricultural development leave few opportunities for natural or wilderness coastal experience despite the rural nature of the landscape.

Relevant current challenges include:

- Rapid recent loss of habitat and resulting increase in threat status, particularly in Sandveld.
- Increasing rainfall variability and 2015-2018 drought associated with climate change.
- Loss of remoteness and rural authenticity caused by impending and ongoing upgrades to infrastructure (roads, water treatment/ supply, energy supply and so forth).
- Loss of authentic landscapes and settlement patterns.
- Loss of scenic resources that are economically valuable in terms of tourism.

Relevant future challenges include:

- To comply substantially with the systematic framework of Critical Biodiversity Areas and Ecological Support Areas of the 2017 Western Cape Biodiversity Spatial Plan so as to affect its ability to provide the most benefit to people and biodiversity at a landscape level and avoid land-hungry alternative development options and offsets. This is particularly challenging, but also important in a municipality with such high levels of lowland habitat transformation that ability of the landscape to maintain ecosystem services and be resilient in the face of climate extremes is already severely compromised.
- Maintaining a dominance of rural landscapes, wilderness and authentic settlement whilst enabling infrastructure and other development by introducing no-go regions.
- By considered interventions where large scale infrastructure is to be located within or adjacent to landscapes of high heritage and scenic significance (e.g. wind-farms, power stations, transmission lines, solar energy plants).
- Safeguarding local landscape and scenic value through appropriate land use location, scale, and form.
- Addressing climate change pressures to diversify and adapt to changing market conditions, extreme climatic conditions and increasing food security concerns, given the resource – dependent nature of the local economy.

Relevant potential opportunities include:

- Capitalising on the scenic landscapes
- Reducing climate vulnerability, improving landscape resilience by growing a ***green economy.***
- Eco-tourism - capitalising on the significant biodiversity and scenic landscapes of the area.

Section 3.2 provides an overview of the socio-economic environment. The section lists the key challenges facing the BRM, including legacy, current and future challenges. The relevant legacy challenges include:

- Inequitable distribution of opportunities and benefits to participate in the local economy.
- Historical skills deficits amongst the poorest communities.

The relevant current challenges include:

- Displacement of the farm worker population given agricultural mechanisation, recessionary climate, farm property consolidation and non-agricultural land use
- Continuing skills deficits in relation to the needs of the economy in the region.
- Social pathologies related to alcohol and drug dependency, including Foetal Alcohol Syndrome, crime, and violence.

The relevant future challenges include:

- Accommodating migrants and job seekers in the economy by promoting employment-driven urban and rural economic growth that can utilise the pool of unskilled and semiskilled job seekers.
- Addressing rural poverty and vulnerability due to joblessness, homelessness, tenure, and food insecurity.
- Creating platforms and forums to build and/or strengthen collaborative and partnership-based approaches to socio-economic development.

Relevant potential opportunities include:

- Eco tourism and Heritage tourism.

Section 3.5 provided a synthesis of the spatial implications of the identified threats and opportunities.

***Biophysical environment***
The key threats area linked to increasing rainfall variability and the impact on the agricultural economy. The spatial implications included reducing climate vulnerability and improve landscape resilience by developing a 'green' economy and by taking advantage of the economic opportunities.

***Socio-economic environment***
As in the case with the biophysical environment the key threat is linked to climate change. High levels of rural poverty and vulnerability also represent a key threat. The spatial implications include improving the resilience of the agriculture sector to climate change and creating opportunities for land reform. Safeguarding Bergrivier's agricultural assets emerges as a key theme.

The SDF notes that the unique biological diversity of the Cape Floral Kingdom provides a natural environment that supports a variety of livelihoods and economic activities and attracts national and international visitors. The spatial implications include safeguarding the region's natural assets and promoting sustainable land uses.

Figure 2.9 represents the composite spatial framework for the BLM. As indicated in Figure 2.9, the study area appears to be located in an area identified as a Core 2 / Buffer and Agricultural Area (light brown). This will be confirmed by the botanical assessment.

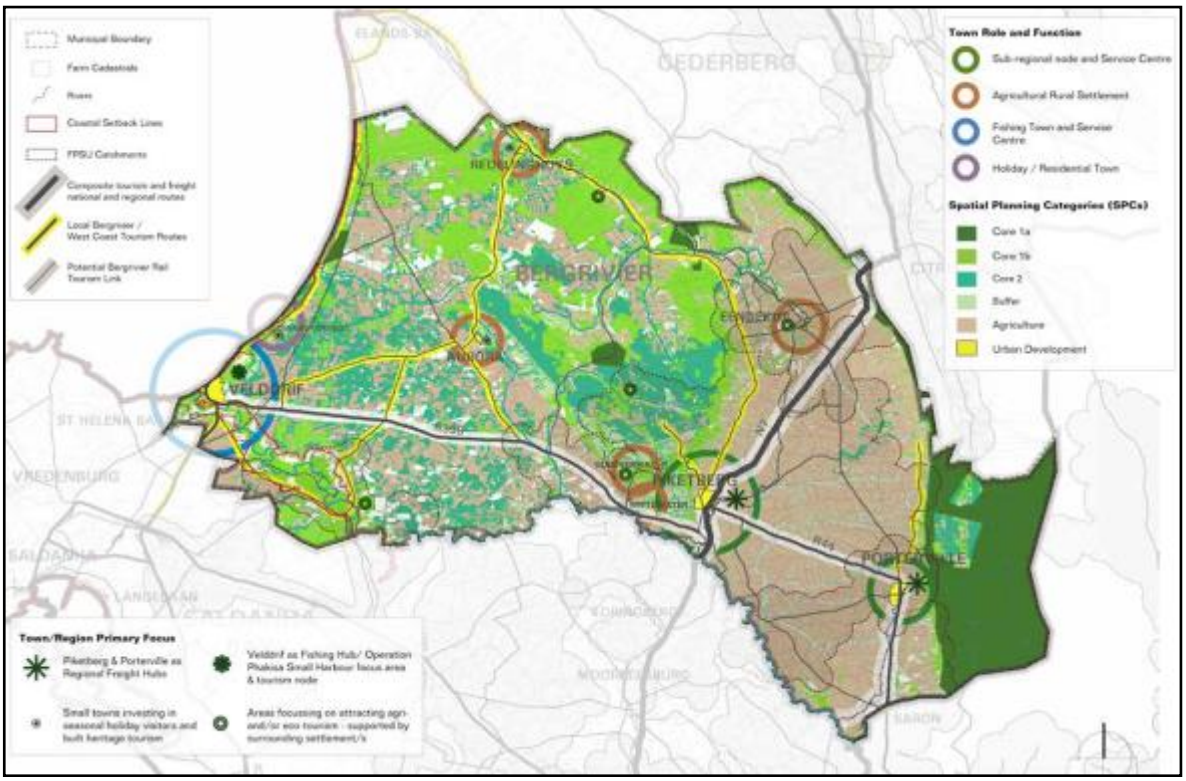



**Figure 2.9: Composite municipal framework**

In terms of land uses the SDF notes that Core 2 should be maintained in a natural or near-natural state, with no further loss of natural habitat; or where some losses of natural habitat have occurred or are permitted to occur, such areas should be maintained at least in a functional, near-natural state provided that underlying biodiversity objectives and ecological functioning are not compromised. Wherever possible, Core 2 areas should be rehabilitated.

The compatible land uses include extensive game farming and eco-tourism operations with strict control on environmental impacts and carrying capacities, conservation management and associated activities, including alien clearing, research, and environmental education. Managed and controlled extensive livestock production in line with the sustainable carrying capacity of the habitat type and other site sensitivities is also permitted.

Buffer areas should be managed to retain or rehabilitate their ecological processes in order to minimize impacts on ecological functioning, especially soil and water-related processes (so-called ecosystem services). The compatible land uses include:

- Conservation and associated activities.
- Extensive game farming and eco-tourism operations.
- Extensive Livestock Production.
- Low density rural residential, smallholdings or resorts or other developments where development design and overall development densities allow maintenance of ecological functioning.
- Existing activities (e.g. arable agriculture) should be maintained, but where possible a transition to less intensive land uses or ecological restoration should be promoted/favoured.

Agricultural area are areas where limited or no natural vegetation remains and that are uses for.

- Extensive livestock or game farming.
- Intensive agriculture including irrigated cultivation.
- Dryland crop production and tillage.
- Forestry and timber plantations.

The SDF notes that the agricultural sector is an important sector in the economic makeup of the BRM, forming part of the primary sector but also providing inputs towards processing and manufacturing activities in the secondary sector and representing an important element of the value chain in the tertiary sector.

In terms of spatial distribution, the best dry-land agricultural potential (e.g. grain) area is the higher potential south of Porterville and Piketberg and in the Kliphoek-Driefontein-Redelinghuys area, followed by the lower in the Piketberg-Porterville valley north of Piketberg (Figure 2.10).

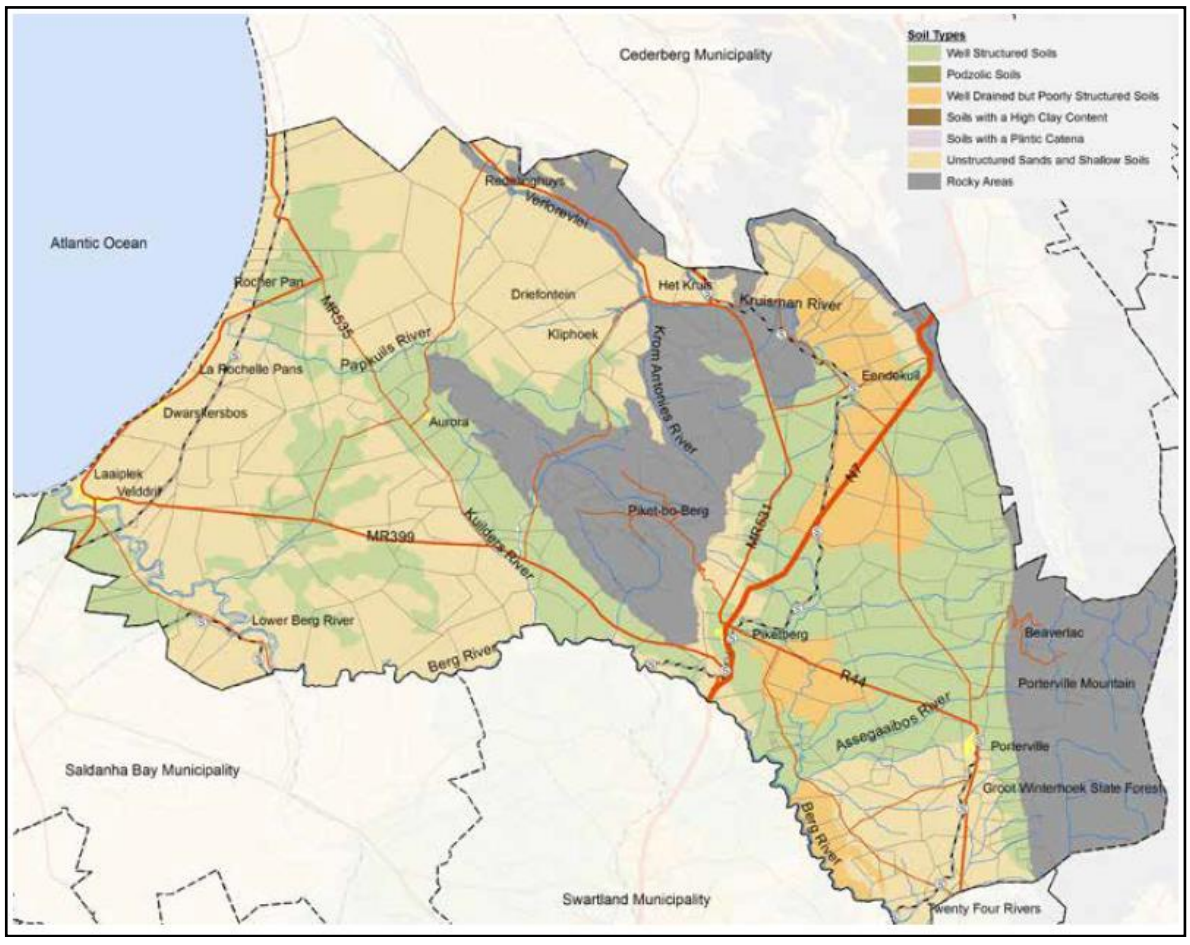



**Figure 2.10: Soil Types**

Section 3.1.1.5, Cultural Landscapes, notes that a substantial portion of the Bergrivier area comprises relatively flat, open, and dry yet cultivated landscape bounded to the west by an undeveloped and unspoilt coastline stretch. The Berg River and estuary form the southern boundary. The SDF also refers to the Verlorenvlei River estuary, lagoon, and wetland with associated archaeological sites (Baboon Point, Mussel Point, Diepkloof

Rock Shelter), which is shared with the neighbouring Cederberg Municipality (Figure 2.11).

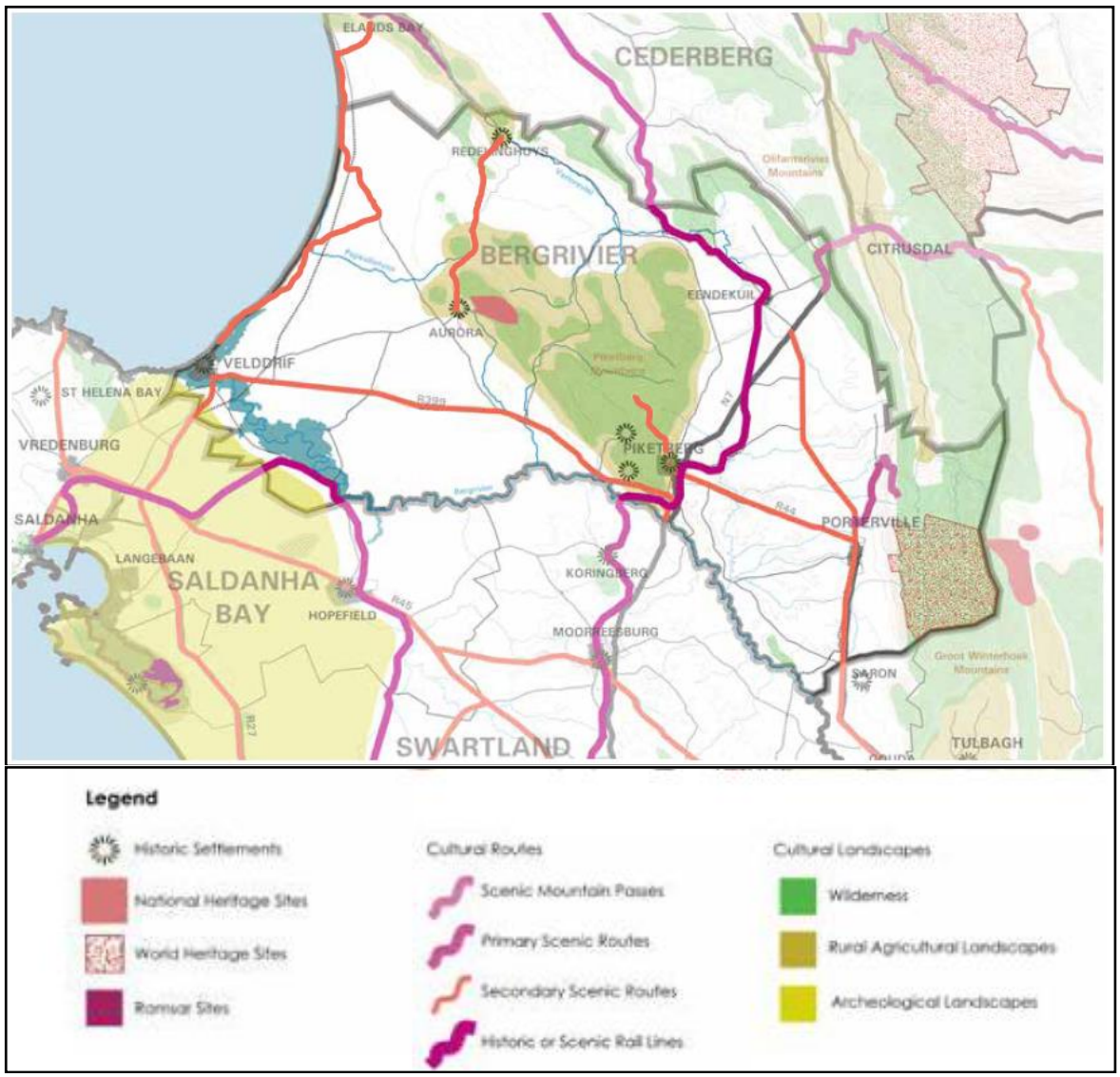



**Figure 2.11: Cultural Landscapes**

### 2.3.7 Berg River Municipality Integrated Development Plan

The BRM Integrated Development Plan (2022-2027) notes that vision and mission of Berg River Municipality is "a prosperous community where all want to a live, work, learn and play in a dignified manner". The mission statement associated with the vision is a "commitment to sustainable development and the delivery of services that are responsive to the developmental needs of all communities in Berg River Municipality".

The IDP lists five strategic goals and associated objectives, namely:

- Strategic Goal 1: Strengthen financial sustainability.
- Strategic Goal 2: Ensure good governance.
- Strategic Goal 3: Sustainable service delivery.

- Strategic Goal 4: Facilitate an enabling environment for a diversified economy and growth to alleviate poverty.
- Strategic goal 5: Empower people through innovation.

**Strategic Goal 1: Strengthen financial sustainability**

The key challenges facing SG 1 that are relevant to the development include:

***Indigent households***
The high poverty levels impact on a municipality's financial viability and manifests in a high number of indigent households who qualify for indigent support. This is being exacerbated by increased migration into the area.

***Inadequate and declining revenue base***
Linked to high poverty levels is the declining revenue base. As a result, existing sources of revenue are no longer adequate to financially sustain the Municipality. The Municipality has a narrow rate base but cannot consider excessive increases on rates and service fees as the ability of many of consumers to pay their accounts is already severally impaired by the declining economy.

***Infrastructure and bulk service backlogs***
Bulk service and service infrastructure is exceeding design capacity and the inability to provide sufficient bulk capacity makes the municipality unable to respond to development opportunities.

**Strategic Goal 3: Sustainable service delivery**

A key objective under SG 3 is to source alternative sources of energy in the context of national electricity provision and conserve and manage the natural environment and mitigate the impacts of climate change.

**Strategic Goal 4: Facilitate an enabling environment for economic growth to alleviate poverty**

A key objective under SG 4 is to attract investment through catalytic infrastructure.

The IDP lists a number of key challenges facing both the BRM and the West Coast District Municipality, these include:

- Rising population and poor households.
- Households with no income.
- High unemployment rate and in-migration.
- Informal dwellers.
- Teenage pregnancies.
- ART and TB patient loads.
- Sustainability of service levels.
- Shortage of relevant and appropriate human resource.
- Water and other resources, including funding.
- Climate change and effect on agriculture.

The IDP highlights the threats posed by climate change to the area and notes that the Western Cape is particularly vulnerable to climate change and the hotter drier conditions predicted for the West Coast could have far reaching impacts. Of specific relevance the BRMs local economy is driven by agriculture and there is concern about the negative

impacts of climate change on the agricultural sector which will in turn impact on the local economy

Main strategic responses that need to be incorporated in municipal planning include:

- Addressing specific spatial climate risks, either by reducing vulnerability or by avoiding hazards, to reduce the long-term burden on municipal resources.
- Rectifying spatial patterns that may have resulted in vulnerability and greenhouse gas intensity, thereby improving resilience and municipal functioning.
- Anticipation of continued urban growth and urbanisation of society and how to ensure that this includes sustainability and climate change considerations in planning for it.

Of relevance the IDP notes that in addressing the impact of climate change the municipality must assess the availability or potential for generation of renewable, zero emissions energy for household and commercial use, as well as the ability of the local distribution grids to collect, balance, store and redistribute electricity generated by a range of sources.

The IDP refers to the Local Economic Development (LED) Strategy approved by Council in 2021. The aim of the LED strategy is to enhance economic growth to ensure an improvement in the quality of life for all its residents firstly and secondly to enhance the revenue of the municipality.

The LED strategy lists the competitive advantages and disadvantages associated with the BRM. The relevant advantages include:

- Agriculture.
- Tourism.
- R27 (end of West Coast Road).

The relevant disadvantages include:

- Variation in quality of school education.
- Limited skills and training, including business skills training.
- Limited activities for the youth.

In terms of tourism, the competitive advantages include:

- Numerous natural resources and attractions.
- Beautiful landscapes and vistas which change over seasons.
- Multiple heritage sites and assets.
- Proximity to Cape Town.
- Eco-tourism, including Berg estuary, Verlorenvlei, and Rocher Pan.
- Good, safe beach at Dwarskersbos.

## 2.4 OVERVIEW RENEWABLE ENERGY SECTOR IN SOUTH AFRICA

The section below provides an overview of the potential benefits associated with the renewable energy sector in South Africa. Given that South Africa supports the development of renewable energy at national level, the intention is not to provide a critical review of renewable energy. The focus is therefore on the contribution of renewable energy, specifically in terms of supporting economic development.

The following documents were reviewed:

- Independent Power Producers Procurement Programme (IPPPP): An Overview (December 2021), Department of Energy, National Treasury and DBSA.
- Green Jobs Study (2011), IDC, DBSA Ltd and TIPS.
- Powering the Future: Renewable Energy Roll-out in South Africa (2013), Greenpeace South Africa.
- WWF SA, Renewable Energy Vision 2030, South Africa, 2014.
- Jacqueline M. Borel-Saladin, Ivan N. Turok, (2013). The impact of the green economy on jobs in South Africa), South African Journal of Science, *Volume 109 /Number 9/10, September/October 2013.*
- The potential for local community benefits from wind farms in South Africa, Louise Tait (2012), Master's Thesis, Energy Research Centre University of Cape Town.

### 2.4.1 Independent Power Producers Procurement Programme (IPPPP): An Overview

The document presents an overview of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) undertaken by the Department of Energy, National Treasury, and the Development Bank of South Africa in December 2021. The programme's primary mandate is to secure electrical energy from the private sector for renewable and non-renewable energy sources. With regard to renewables, the programme is designed to reduce the country's reliance on fossil fuels, stimulate an indigenous renewable energy industry and contribute to socio-economic development and environmentally sustainable growth. The IPPPP has been designed not only to procure energy but has also been structured to contribute to the broader national development objectives of job creation, social upliftment and broadening of economic ownership.

The Integrated Resource Plan for electricity (IRP) provides South Africa's long-term plan for electricity generation. It primarily aims to ensure security of electricity supply, minimise the cost of that supply, limit water usage and reduce greenhouse gas (GHG) emissions, while allowing for policy adjustment in support of broader socio-economic developmental imperatives. The IRP 2019 was promulgated in October 2019 and replaced the IRP 2010 as the country's official electricity infrastructure plan.

It calls for 37 696MW of new and committed capacity to be added between 2019 and 2030 from a diverse mix of energy sources and technologies as ageing coal plants are decommissioned and the country transitions to a larger share of renewable energy. By2030, the electricity generation mix is set to comprise of 33 364MW (42.6%) coal, 17 742MW (22.7%) wind, 8 288MW (10.6%) solar photovoltaic (PV), 6 830MW(8.7%) gas or diesel, 5 000MW (6.4%) energy storage, 4 600MW (5.9%) hydro, 1 860MW (2.4%) nuclear and 600MW (0.8%) concentrating solar power (CSP). Additionally, a short-term gap at least 2000MW is to be filled between 2019 and 2022, thereby further raising new capacity requirements, while distributed or embedded generation for own-use is positioned to add 4 000MW between 2023 and 2030. The IRP is intended to be frequently updated, which could impact future capacity allocations from various energy sources and technologies.

***Energy supply***
By the end of December 2021, the REIPPPP had made the following significant impacts.

- 6 323 MW of electricity had been procured from 92 RE Independent Power Producers (IPPs) in BW1-4.

- 5 661 MW of electricity generation capacity from 85 IPP projects has been connected to the national grid.
- 71 073GWh of energy has been generated by renewable energy sources procured under the REIPPPP since the first project became operational in November 2013.

Renewable energy IPPs have proved to be very reliable. Of the 85 projects that have reached COD, 77 projects have been operational for longer than a year. The energy generated over the past 12-month period for these 77 projects is 14 117GWh, which is 95% of their annual energy contribution projections (P50) of 14 924GWh over a 12-month delivery period. Thirty-one (31) of the 77 projects (40%) have individually exceeded their P50 projections.

Comparatively, the following statistics were presented at the REIPPPP Bid Window 6 Bidders Conference on 7 July 2022 by the IPP Office based on data as of March 2022 following seven bid rounds (IPP Office, 2022[5]):

- 92 IPPs have been selected as preferred bidders.
- 6 323 MW of electricity capacity procured.
- 5 826 MW already operational from 87 IPPs.
- 74 805 GWh energy generated by Renewable Energy sources.

***Energy costs***

In line with international experience, the price of renewable energy is increasingly cost competitive when compared with conventional power sources. The REIPPPP has effectively captured this global downward trend with prices decreasing in every bid window. Energy procured by the REIPPPP is progressively more cost effective and has approached a point where the wholesale pricing for new coal-and renewable-generated energy intersect.

Through the competitive bidding process, the IPPPP effectively leveraged rapid, global technology developments and price trends, buying clean energy at lower and lower rates with every bid cycle, resulting in SA getting the benefit of renewable energy at some of the lowest tariffs in the world. The price for wind power has dropped by 50% to R0.94/kWh, while solar PV has dropped with 75% to R1.14/kWh between BW1 and BW4.

Prices contracted under the REIPPPP for all technologies are well below the published REFIT prices. The REIPPPP has effectively translated policy and planning into delivery of clean energy at very competitive prices. As such it is contributing to the national aspirations of secure, affordable energy, lower carbon intensity and a transformed 'green' economy. with the BW4 price directly comparable with the per kWh price of new coal generation. Solar PV has dropped most significantly with a price decrease of 75% to R1.10/kWh between BW1 and BW4. This compares with the industry estimates in April 2020 of R1.45/kWh for Medupi. Considering the on-going delays incompletion, indications are that these costs may even be significantly higher. BESS costs are also declining and technological advances have enabled them to be cost effective given the higher peak tariff rates offered at night time (averaged over a year).

[5] IPP Office (2022). RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME (REIPPPP) BID WINDOW 6 BIDDERS' CONFERENCE, 7 JULY 2022 [online]. Accessed July 2022. https://www.ipp-renewables.co.za/PressCentre/GetPressRelease?fileid=16a21004-f9fd-ec11-9578-2c59e59ac9cd&fileName=BW6%20Bidders%20Conference%20Consolidated.pdf.

***Investment***
The document notes that the REIPPPP has attracted significant investment in the development of the REIPPs into the country. The total investment (total project costs[6]), including interest during construction, of projects under construction and projects in the process of closure is R209.6 billion (this includes total debt and equity of R209 billion, as well as early revenue and VAT facility of R0.5 billion).

The REIPPPP has attracted R42 billion in foreign investment and financing in the seven bid windows (BW1 – BW4). This is almost double the inward FDI attracted into South Africa during 2015 (R22.6 billion). The document notes that the share of foreign investment and equity showed an increase in the most recent bid window (2S2), suggesting that the REIPPPP continued to generate investor confidence despite the poor economic conditions in South Africa in recent years.

Comparatively, based on the information presented at the REIPPPP Bid Window 6 Bidders Conference on 7 July 2022 by the IPP Office (IPP Office, 2022), approximately R209.6 billion investment has been attracted for energy infrastructure in all bid windows; and as at March 2022 an actual R1.9 billion contribution was realised for socio-economic development.

***South African citizen shareholding***
The importance of retaining local shareholding in IPPs is key condition of the procurement requirements. The RFP notes that bidders are required to have South African Equity Participation of 40% in order to be evaluated. South African (local) equity shareholding across BW1-4 equates to 52% (R31.4 billion) of the total equity shareholding (R61.0 billion) was held by South African's across BW1 to BW4, 1S2 and 2S2. This equates to substantially more than the 40% requirement. Foreign equity amounts to R29.6 billion and contributes 49% of total equity.

The REIPPPP also contributes to Broad Based Black Economic Empowerment (BBBEE) and the creation of black industrialists. In this regard, Black South Africans own, on average, 34% of projects that have reached financial close (BW1-BW4), which is 4% higher than the 30% target. This includes black people in local communities that have ownership in the IPP projects that operate in or near their communities and represents the majority share of total South African Entity Participation.

On average, black local communities own 9% of projects that have reached financial close. This is well above the 5% target. In addition, an average of 21% shareholding by black people in engineering, procurement, and construction (EPC) contractors has been attained for projects that have reached financial closure. This is higher than 20% target. The shareholding by black people in operating companies of IPPs has averaged 30% (against the targeted 20%) for the 85 projects in operation (i.e. in BW1–4).

The target for shareholding by black people in top management has been set at 40%, with an average 68% achieved to date. The target has therefore been significantly exceeded.

***Community shareholding and community trusts***
The regulations require a minimum ownership of 2.5% by local communities in IPP projects as a procurement condition. This is to ensure that a substantial portion of the investments has been structured and secured as local community equity. An individual

[6] Total project costs means the total capital expenditure to be incurred up to the commercial operations date in the design, construction, development, installation, and or commissioning of the project)

community's dividends earned will depend on the terms of each transaction corresponding with the relevant equity share. To date all shareholding for local communities have been structured through the establishment of community trusts. For projects in BW1 to BW4, qualifying communities will receive R25.5 billion net income over the life of the projects (20 years). The report notes that the bulk of the money will however only start flowing into the communities from 2028 due to repayment obligations in the preceding years (repayment obligations are mostly to development funding institutions). However, despite the delay this represents a significant injection of capital into mainly rural areas of South Africa. If the net projected income for the first seven bid windows (BW1-BW4) was structured as equal payments overtime, it would represent an annual net income of R1.27 billion per year.

Income to all shareholders only commences with operation of the facility. Revenue generated to date by the 85 operational IPPs amounts to R149.9 billion.

***Procurement spend***

In addition to the financial investments into the economy and favourable equity structures aimed at supporting BEE, the REIPPPP also targets broader economic and socio-economic investment. This is through procurement spend and local content.

The total projected procurement spend for BW1 to BW4 during the construction phase was R71.1 billion, while the projected operations procurement spend over the 20 years operational life is estimated at 75.2 billion. The combined (construction and operations) procurement value is projected as R146.3 billion of which R92.1 billion has been spent to date. For construction, of the R71.1 billion already spent to date, R71 billion is from the 85 projects which have already been completed. These 85 projects had planned to spend R64.2 billion. The actual procurement construction costs have therefore exceeded the planned costs by 11% for completed projects.

***Preferential procurement***

The share of procurement that is sourced from Broad Based Black Economic Empowered (BBBEE) suppliers, Qualifying Small Enterprises (QSE), Exempted Micro Enterprises (EME) and women owned vendors are tracked against commitments and targeted percentages. The IA target requirement for BBBEE is 60% of total procurement spend. However, the actual share of procurement spend by IPPs from BBBEE suppliers for construction and operations combined is currently reported as 83%, which is significantly higher than the target of 60%, but also the 71% that had been committed by IPPs. BBBEE, as a share of procurement spend for projects in construction, is also reported as 84% with operations slightly lower at 74%.

The majority of the procurement spend to date has been for construction purposes. Of the R76 billion spent on procurement during construction, R64.3 billion has reportedly been procured from BBBEE suppliers, achieving 84.6% of total procured. Actual BBBEE spend during construction for BW1 and BW2 alone was R25.5 billion, 81% more than the 14.1 billion planned by the IPPs. The R64.3 billion spent on BBBEE during construction is 30% more than the R49.7 billion that had originally been anticipated by all IPPs procured in BW1-4.

Total procurement spend by IPPs from QSE and EMEs has amounted to R28.1 billion (construction and operations) to date, which exceeds commitments by 250% and is 30% of total procurement spend to date (while the required target is 10%). QSE and EME's procurement spend for construction was 31% of construction procurement to date and 26% of operational procurement, exceeding the 10% targets set. QSE and EME share of construction procurement spend totals R23.8 billion, which is 5.4 times the planned spend for construction of R4.4 billion during this procurement phase.

In terms of procurement from women-owned vendors to date, 5% of total construction procurement spend has been from woman-owned vendors (against a targeted 5%), and 6% of operational procurement spend has been realised from woman-owned vendors to date, thereby exceeding the targeted 5%. In terms of construction spend, R 4.1 billion was undertaken by women-owned vendors, which is almost double the R 1.8 billion expected to be spent for the construction of projects that have reached financial close.

The REIPPPP has therefore created significant employment opportunities for black South African citizens and local communities beyond planned targets. This highlights the importance of the programme in terms of employment equity and the creation of more equal societies.

***Local Content***[7]

The report notes that the REIPPP programme represents the country's most comprehensive strategy to date in achieving the transition to a greener economy. Local content minimum thresholds and targets were set higher for each subsequent bid window. The report notes that for a programme of this magnitude, with construction procurement spend alone estimated at R71.1 billion, the result is a substantial stimulus for establishing local manufacturing capacity. The local content strategy has created the required incentives for a number of international technology and component manufactures to establish local manufacturing facilities.

The documents notes that for the portfolio as a whole, the expectation would reasonably be for local content spend to fall between 25% and 65% of the total project value (considering the range of targets and minimum requirements). Local content commitments by IPPs amount to R66.3 billion or 45% of total project value (R148.2 billion for all bid windows).

Actual local content spend reported for IPPs that have started construction amounts to R63.3 billion against a corresponding project value (as realised to date) of R127.2 billion. This means that 50% of the project value has been locally procured, exceeding the 45% commitment from IPPs and the thresholds for BW1 – BW4 (25-45%).

To date, the R63.3 billion local content spend reported by active IPPs is already 96% of the R66 billion local content expected. This is with 6 projects still in construction, and 85 of the 91 active projects having reached COD (i.e. 93% of the active portfolio complete). For the 85 projects that have reached COD, local content spend has been R 58.72 billion of a committed R58.67 billion, which is 0.1 more than the planned local spend[8].

***Leveraging employment opportunities***

To date, a total of 63 291 job years[9] have been created for South African citizens, of which 48 110 job years were in construction and 15 182 in operations. These job years should rise further past the planned target as more projects enter the construction phase. Employment opportunities across BW1-4 are 143% of the planned number during the construction phase (i.e. 33 707 job years), with 6 projects still in construction

[7] Local content is expressed as a % of the total project value and not procurement or total project costs.

[8] If Vanadium Redox flow batteries are used for the BESS, the local content is ~ 70%.

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

and employing people. The number of employment opportunities is therefore likely to continue to grow beyond the original expectations.

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.

The report notes that employment thresholds and targets were consistently exceeded across the entire portfolio. The average share of South African citizens of total South Africa based employees for BW1 – BW4 was 91% during construction (against a target of 80%), while it was 96% during operations for BW1 – BW4 (against a target of 80%). The report notes that the construction phase offers a high number of opportunities over shorter durations, while the operations phase requires fewer people, but over an extended operating period.

To date, 48 110 job years for SA citizens were achieved during construction, which is 43% above the planned 33 707 job years for active projects. These job years are expected to rise further since 6 projects are still in construction.

In terms of benefits for local communities, significantly more people from local communities were employed 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 6 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 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 – significantly exceeding the minimum threshold of 12% and the target of 20%.

***Socio-economic development (SED) contributions***

An important focus of the REIPPPP is to ensure that the build programme secures sustainable value for the country and enables local communities to benefit directly from the investments attracted into the area. In this regard, IPPs are required to contribute a percentage of projected revenues accrued over the 20-year project operational life toward SED initiatives. These contributions accrue over the 20-year project operation life and are used to invest in housing and infrastructure as well as healthcare, education, and skills development.

The minimum compliance threshold for SED contributions is 1% of the revenue with 1.5% the targeted level over the 20-year project operational life. For the current portfolio of projects, the average commitment level is 2%, which is 101% higher than the minimum threshold level. To date (across BW1-4) a total contribution of R22.8 billion has been committed to SED initiatives. Assuming an even, annual revenue spread, the average contribution per year would be R1.1 billion. Of the total commitment, R18.5 billion is specifically allocated for local communities where the IPPs operate. With every new IPP on the grid, revenues and the respective SED contributions will increase.

As a percentage of revenue, SED obligations become effective only when operations commence, and revenue is generated. Of the 91 IPPs that have reached financial close (BW1–BW4), 85 are operational. The SED contributions associated with these 85 projects has amounted to R 1.8 billion to date.

In terms of ED and SED spend, education, social welfare, and health care initiatives have a SED focus. SED spend on education has been almost double the expenditure on enterprise development. This is despite enterprise development being a stand-alone commitment category in terms of the IA. This is, in part, due to the fact that some early childhood development programmes have also been incorporated in educational programmes. IPPs have supported 1 388 education institutions with a total of R437 million in contributions, from 2015 to the end of June 2021. A total of 1 276 bursaries, amounting to R210.8 million, have been awarded by 67 IPPs from 2015 until the end of June 2021. The largest portion of the bursaries were awarded to African and Coloured students (97.4%), with women and girls receiving 56.3% of total bursaries. The Northern Cape province benefitted most from the bursaries awarded, with 57.2%, followed by the Eastern Cape (20.2%) and Western Cape (14.1%). Enterprise development and social welfare are the focus areas that have received the second highest share of the contributions to date.

***Enterprise development contributions***

The target for IPPs to spend on enterprise development is 0.6% of revenues over the 20- year project operational life. However, for the current portfolio, IPPs have committed an average of 0.63% or 0.03% more than the target. Enterprise development contributions committed for BW1-4, amount to R7.2 billion. Assuming an equal distribution of revenue over the 20-year project operational life, enterprise development contributions would be R358 million per annum. Of the total commitment, R5.6 billion is specifically committed directly within the local communities where the IPPs operate, contributing significantly to local enterprise development.

Of the total commitment, R5.6 billion is specifically committed directly within the local communities where the IPPs operate, contributing significantly to local enterprise development. A total contribution of R504.1 million has already been made to the local communities (i.e. 94%of the total R537.9 million enterprise development contributions made to date).

***Contribution to cleaner energy and water savings***

As part of the global commitment, South Africa is targeting an emissions trajectory that peaks at 34% below a "business as usual" case in 2020, 42% below in 2025 and from 2035 declines in absolute terms. The REIPPPP contributes constructively to economic stability, energy security and environmental sustainability.

The emission reductions for the programme during the preceding 12 months (June 2019-June 2020) is calculated as 15.1 million tonnes $CO_2$ ($MtonCO_2$) based on the 14 835 GWh energy that has been generated and supplied to the grid over this period. This represents 75% of the total projected annual emission reductions (20.5$MtonCO_2$) achieved with only

partial operations. A total of 72.1 Mton $CO_2$ equivalent reduction has been realised from programme inception to date.

The March 2019 Report also notes that since operation, the IPPs have saved 42.8 million kilolitres of water related to fossil fuel power generation. This saving will have increased with the increase in energy generated by renewable energy since 2019. The REIPPPP therefore contributes significantly towards meeting South Africa's GHG emission targets and, at the same time, supporting energy security, economic stability, and environmental sustainability.

### 2.4.2 Green Jobs Study

The study notes that South Africa has one of the most carbon-intensive economies in the world, therefore making the greening of the electricity mix a national imperative. Within this context the study notes that the green economy could be an extremely important trigger and lever for enhancing a country's growth potential and redirecting its development trajectory in the 21st century. The attractiveness of wind and solar technologies is not only supported by local conditions, but also by the relatively mature stage of their technological development.

The aim of the Green Jobs study was to provide information on the net direct job creation anticipated to emerge in the formal economy across a wide range of technologies/activities that may be classified as green or contributing to the greening of the economy. The study looked at the employment potential for a number of green sectors, including power generation, over three consecutive timeframes, namely, the short term (2011 – 12), medium term (2013 – 17) and long term (2018 – 25). The analysis attempts to estimate the employment potential associated with: building, construction and installation activities; operations and maintenance services; as well as the possible localisation spin-offs for the manufacturing sector as the domestic production of equipment, parts and components benefits from preferential local procurement. It is also worth noting that the study only considered direct jobs in the formal economy. Multiplier effects were not taken into account. As a result, the analysis only captures a portion of the potential employment impact of a greening economy. International studies have indicated that there are considerable backward and forward linkages through various value chains of production, as well as of indirect and induced employment effects. The employment figures can therefore be regarded as conservative.

The analysis reveals the potential of an unfolding green economy to lead to the creation of approximately 98 000 new direct jobs, on average, in the short term, almost 255 000 in the medium term and around 462 000 employment opportunities in the formal economy in the long term. The number of jobs linked to the power generation was estimated to be ~ 12 500 in the short term, 57 500 in the medium term and 130 000 in the long term. Power generation jobs therefore account for 28% of the employment opportunities created in the long term. However, the report notes that the contribution made by a progressively expanding green energy generation segment increases from 14% of the total in the short term, or just over 13 500 jobs, to more than 28% in the long term (166 400) (Table 2.1). The study also found that energy generation is expected to become an increasingly important contributor to green job creation over time, as projects are constructed or commissioned.

**Table 2.1: Net direct employment potential estimated for the four broad types of activity and their respective segments in the long term, and an indication of the roll-out over the three timeframes**

| Broad green economy category | | Segment | Technology/product | Total net direct employment potential in the long-term | Net direct manufacturing employment potential in the long-term | Total net direct employment potential (ST, MT, LT) | Net direct manufacturing employment potential (ST, MT, LT) |
|---|---|---|---|---|---|---|---|
| ENERGY GENERATION | Renewable (non-fuel) electricity | Wind power | Onshore wind power | 5 156 | 2 105 | VL, L, M | L, M, H |
| | | | Offshore wind power | | | | |
| | | Solar power | Concentrated solar power | 3 014 | 608 | N, VL, M | N, VL, M |
| | | | Photovoltaic power | 13 541 | 8 463 | M, H, H | H, VH, VH |
| | | Marine power | Marine power | 197 | 0 | N, N, VL | N, N, N |
| | | Hydro power | Large hydro power | 272 | 111 | VL, VL, VL | VL, M, VL |
| | | | Micro-/small-hydro power | 100 | 0 | VL, VL, VL | N, N, N |
| | Fuel-based renewable electricity | Waste-to-energy | Landfills | 1 178 | 180 | VL, VL, L | VL, VL, L |
| | | | Biomass combustion | 37 270 | 154 | VL, H, VH | VL, VL, L |
| | | | Anaerobic digestion | 1 429 | 591 | VL, VL, L | VL, L, M |
| | | | Pyrolysis/Gasification | 4 348 | 2 663 | VL, L, M | VL, H, H |
| | | | Co-generation | 10 789 | 1 050 | L, M, H | M, H, H |
| | Liquid fuel | Bio-fuels | Bio-ethanol | 52 729 | 6 641 | M, H, VH | L, H, VH |
| | | | Bio-diesel | | | | |
| **ENERGY GENERATION SUB-TOTAL** | | | | **130 023** | **22 566** | | |
| ENERGY & RESOURCE EFFICIENCY | | Green buildings | Insulation, lighting, windows | 7 340 | 838 | L, M, M | L, M, M |
| | | | Solar water heaters | 17 621 | 1 225 | L, H, H | L, M, H |
| | | | Rain water harvesting | 1 275 | 181 | VL, VL, L | VL, VL, L |
| | | Transportation | Bus Rapid Transport | 41 641 | 350 | VH, VH, VH | H, M, L |
| | | Industrial | Energy efficient motors | -566 | 4 | VL, VL, VL | VL, VL, VL |
| | | | Mechanical insulation | 666 | 89 | VL, VL, VL | VL, VL, VL |
| **ENERGY & RESOURCE EFFICIENCY SUB-TOTAL** | | | | **67 977** | **2 686** | | |
| EMMISIONS AND POLLUTION MITIGATION | | Pollution control | Air pollution control | 900 | 166 | N, VL, VL | N, L, L |
| | | | Electrical vehicles | 11 428 | 10 642 | VL, L, H | N, H, VH |
| | | | Clean stoves | 2 783 | 973 | VL, VL, L | VL, L, M |
| | | | Acid mine water treatment | 361 | 0 | VL, VL, VL | N, N, N |
| | | Carbon Capture and Storage | | 251 | 0 | N, VL, VL | N, N, N |
| | | Recycling | | 15 918 | 9 016 | M, H, H | H, VH, VH |
| **EMMISIONS AND POLLUTION MITIGATION SUB-TOTAL** | | | | **31 641** | **20 797** | | |
| NATURAL RESOURCE MANAGEMENT | | Biodiversity conservation & eco-system restoration | | 121 553 | 0 | H, VH, VH | N, N, N |
| | | Soil & land management | | 111 373 | 0 | VH, VH, VH | N, N, N |
| **NATURAL RESOURCE MANAGEMENT SUB-TOTAL** | | | | **232 926** | **0** | | |
| **TOTAL** | | | | **462 567** | **46 049** | | |

*(Source: Green Jobs Study, 2011)*

Notes:

- VH = very high (total employment potential > 20 000 direct jobs; manufacturing employment potential > 3 000 direct jobs);
- H = high (total employment potential > 8 000 but < 20 000; manufacturing employment potential > 1 000 but < 3 000);
- M = medium (total employment potential > 3 000 but < 8 000; manufacturing employment potential > 500 but < 1 000);
- L = low (total employment potential > 1 000 but < 3 000; manufacturing employment potential > 150 but < 500);
- VL = very low (total employment potential > 0 but < 1 000; manufacturing employment potential > 0 but < 150);
- N = negligible/none (total employment potential = 0; manufacturing employment potential = 0).

Of relevance the study also notes that the largest gains are likely to be associated with operations and maintenance (O&M) activities, particularly those involved in the various

natural resource management initiatives. In this regard, operations and maintenance employment linked to renewable energy generation plants will also be substantial in the longer term. The employment growth momentum related to building, construction and installation activities peaks in the medium term, largely propelled by mass transportation infrastructure, stabilising thereafter as green building methods become progressively entrenched.

In addition, as projects related to a greening economy are progressively commissioned, the potential for local manufacturing also become increasingly viable. Employment gains in manufacturing are also expected to be relatively more stable than construction activities, since the sector should continue exhibiting growth potential as new and replacement components are produced, as additional markets are penetrated and as new green technologies are introduced. Manufacturing segments with high employment potential in the long term would include suppliers of components for wind and solar farms. The study does note that a shortage of skills in certain professional fields pertinent to renewable energy generation presents a challenge that must be overcome.

The study also identifies a number of advantages associated with renewable energy with a large 'technical' generation potential. In this regard, renewable energy, such as solar and wind, does not emit carbon dioxide ($CO_2$) in generating electricity and is associated with exceptionally low lifecycle emissions. The construction period for renewable energy projects are much shorter than those of conventional power stations, while an income stream may, in certain instances, be provided to local communities through employment and land rental. The study also notes that the greenhouse gases (GHG) associated with the construction phase are offset within a short period of time compared with the project's lifespan. Renewable power therefore provides an ideal means for reaching emission reduction targets in a relatively easy manner. In addition, and of specific relevance to South Africa, renewable energy source is not dependent on water (as compared to the massive water requirements of conventional power stations), has a limited footprint and therefore does not impact on large tracts of land, poses limited pollution and health risks, specifically when compared to coal and nuclear energy plants.

Of relevance, the study also notes that renewable energy projects in rural areas create an opportunity to benefit the local and regional economy through the creation of jobs and tax revenues.

### 2.4.3 Powering the Future: Renewable Energy Roll-out in South Africa

The study notes that South Africa has higher $CO_2$ emissions per GDPppp (2002 figures) from energy and cement production than China or the USA (Letete, T et al). Energy accounts for 83% of the total GHG emissions (excluding land use, land use change and forestry) with fuel combustion in the energy industry accounting for 65% of the energy emissions of South Africa (DEA, 2011).

Within a broader context of climate change, coal energy does not only have environmental impacts, it also has socio-economic impacts. Acid mine drainage from abandoned mines in South Africa impacts on water quality and poses the biggest threat to the country's limited water resources. Huge volumes of water are also required to wash coal and cool operating power stations. Eskom uses an estimated 10 000 litres of water per second due to its dependency on coal (Greenpeace, 2012).

The report notes that the concerns relating to whether South Africa can afford renewable energy arise out of the perception that renewable energy (RE) is expensive while fossil and nuclear technologies are cheap. The premise also ignores life cycle costing of the

technologies which is favourable to renewable technologies where the sources of fuel are free or cheap.

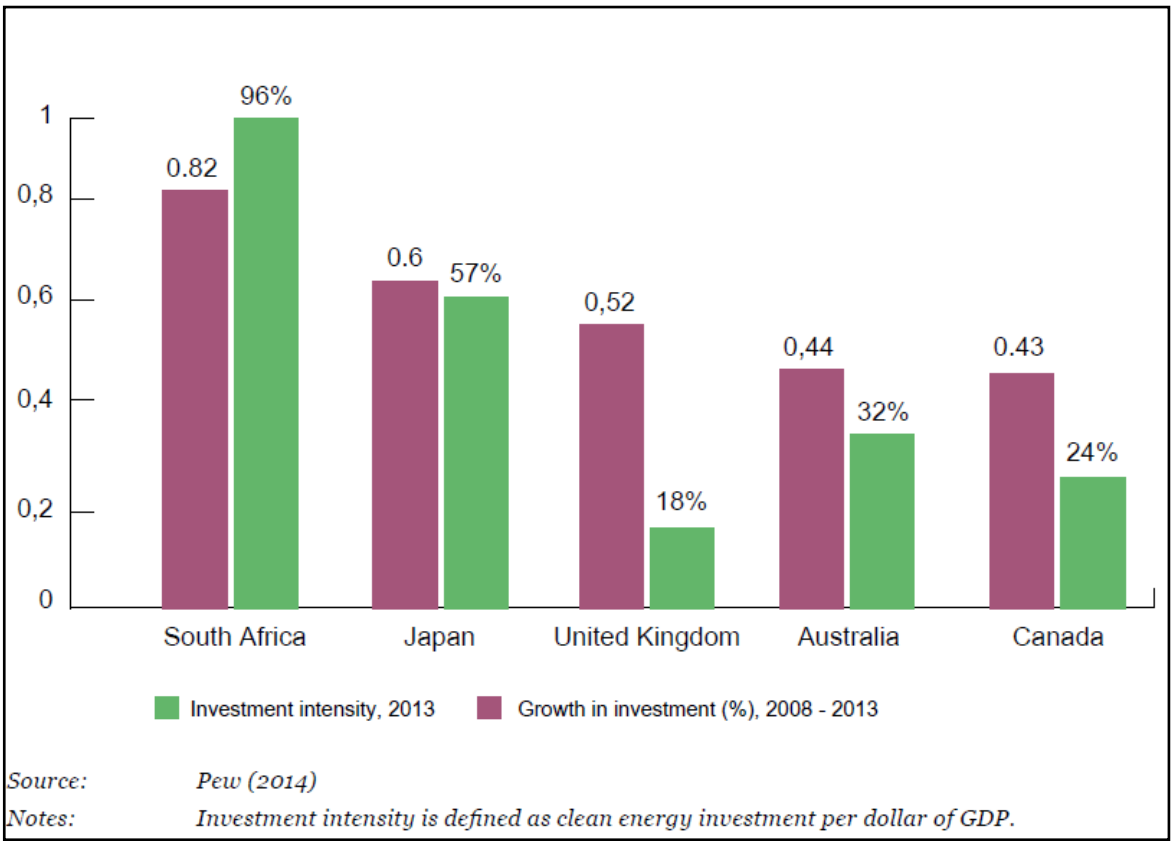
### 2.4.4 WWF SA Renewable Energy Vision 2030

In its vision the WWF motivated for a more ambitious plan, suggesting that the IRP should provide for an 11-19% share of electricity capacity by 2030, depending on the country's growth rate over the next fifteen years. The vision is to increase renewable energy at the expense of new coal-fired and nuclear capacity. The report notes that in addition to the obvious environmental benefits of this scenario, it will enable South Africa to add flexibility to energy supply capacity on an on-demand basis.

The report notes that Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) introduced in 2011, has by all accounts been highly successful in quickly and efficiently delivering clean energy to the grid. Increasingly competitive bidding rounds have led to substantial price reductions. In this regard, the study indicates that in three years, wind and solar PV have reached pricing parity with supply from new coal-fired power stations from a levelised cost of electricity (LCOE) perspective.

In bidding window 3 of August 2013, the average tariffs bid for wind and solar PV were R0,66/kWh and R0.88/kWh respectively, well below the recent estimates of R1.05/kWh for supply from the coal-fired Medupi and Kusile power stations (Papapetrou 2014).

The report also notes that the REIPPPP has several contracting rounds for new renewables supply. A robust procurement process, extension of a 20-year sovereign guarantee on the power purchase agreement (PPA) and, especially, ideal solar power conditions, have driven the investment case for RE in South Africa. In this regard, South Africa has been identified as one of the worlds' leading clean energy investment destinations (Figure 2.13).




*Source:* *Pew (2014)*

*Notes:* *Investment intensity is defined as clean energy investment per dollar of GDP.*

**Figure 2.13: South Africa leads as a clean energy investment destination**

With regard to local economic development, the REIPPPP sets out various local economic development requirements with stipulated minimum threshold and aspirational targeted levels, which each bidder must comply with. Based on the Broad-Based Black Economic Empowerment Codes, this requirement comprises the following components which make up a scorecard:

- Ownership by black people and local communities.
- Job creation.
- Local content.
- Management control.
- Preferential procurement.
- Enterprise development.
- Socio-economic development.

The final award is based on a combined evaluation in which price determines 70% of the ranking and performance on the local economic development scorecard the remaining 30%. This gives non-price criteria a much heavier weighting than they would normally enjoy under Government's preferential procurement policy.

Job creation, local content and preferential procurement accounted for the bulk of possible points on the scorecard in REIPPPP Round 3. Consequently, a requirement to source goods and services locally is considered to be the central driver of project costs associated with local economic development. In terms of local content, the definition of local content is quite broad, being the value of sales less the costs associated with imports. However, through successive bidding rounds, the definition has become subject to more detailed definition, with an expanding list of exclusions and increased targeting

in terms of key components identified by the Department of Trade and Industry for local manufacturing. This has benefitted local manufacturers and suppliers.

The WWF study considers a low and high growth renewable energy scenario. The capital requirements for the low growth scenario are estimated at R474 billion over the period 2014-2030 (2014 Rand value), rising to R1.084 trillion in the high-growth scenario, in which 35 GW of capacity is built. Each annual round of purchasing 2 200 MW of RE capacity would cost approximately R77 billion in 2014 Rand value terms. In relative economic terms, this equates to 2% of the GDP per annum or approximately one quarter of Government's planned annual investment in infrastructure over the medium term. In the low economic growth scenario, which is arguably the more realistic one, the average annual new liability over the period is approximately R40 billion.

The study also points out that infrastructure spend is more beneficial than other government expenditure due to the infrastructure multiplier effect. This refers to the beneficial impact of infrastructure on economic growth in both the short term, resulting from expansion in aggregate demand, as well as in the longer term (six to eight years) due to enhanced productive capacity in the economy. A recent USA study on highway expenditure revealed the infrastructure multiplier to be a factor of two on average, and greater during economic downturns (Leduc & Wilson 2013). This means that one dollar spent on infrastructure raises GDP by two dollars. If the same were to hold true, as similar analysis suggests it would (Kumo 2012, Ngandu et al 2010), this indicates that the construction of renewable energy plants could be a valuable economic growth driver at a time when fears of recession abound.

The report concludes that the WWF is optimistic that South Africa can achieve a much more promising clean energy future than current plans allow for. With an excellent solar resource and several good wind-producing pockets, the country is an ideal candidate for a renewable energy revolution.

The report indicates that the levelised cost of producing renewable energy already competes favourably with the three main alternatives, namely coal, gas and nuclear. In addition, renewable energy would contribute to a more climate-resilient future and insulate South Africa from dependence on expensive and unreliable fuel sources priced in dollars. Critical from a planning perspective, the report notes that renewable energy can also provide added flexibly on an 'as needed' basis, as electricity demand grows. This is vital in a highly uncertain environment.

### 2.4.5 The impact of the green economy on jobs in South Africa

The paper notes that greening the economy is particularly important in South Africa for two basic reasons: (1) the exceptional level of unemployment that the country is experiencing and (2) the high carbon impact of the economy.

In terms of employment, the paper refers to the IDC *Green Jobs R*eport (2011). In summary, the short-term (next 2 years) estimate of total net employment potential is 98 000 jobs, and the long-term (next 8 years) employment potential is 462 567 jobs. Natural resource management is predicted to lead to the greatest number of these at 232 926 long-term jobs. Green energy generation is estimated to produce 130 023 long-term jobs, with energy and resource efficiency measures adding another 67 977 long-term jobs.

The paper notes that the Green Jobs Report was prepared by seventeen primary researchers from three prominent organisations, namely the IDC, the Development Bank of South Africa, and Trade and Industrial Policy Strategies. Many role players from other

organisations were also consulted, including the World Wide Fund for Nature, the Green Building Council, the Economic Development Department and private companies involved in green industries.

Despite questions surrounding the employment estimates contained in the Green Jobs Report, green economic activity does appear to generate more local jobs than fossil-fuel-based industries. Some of the estimates also indicate the potential for significant employment. The paper concludes that the figures represent a promising starting point that warrants further research and policy involvement in greening the economy in South Africa.

### 2.4.6 The potential for local community benefits[10]

In her thesis, Tait[11] notes that the distributed nature of renewable energy generation can induce a more geographically dispersed pattern of development. As a result, RE sites can be highly suited to rural locations with otherwise poor potential to attract local inward investment therefore enabling to target particularly vulnerable areas.

In her conclusion, Tait notes that the thesis has found positive evidence for the establishment of community benefit schemes in the wind sector in South Africa. These benefits would also apply to solar projects. The BBBEE requirements for developers as set out in the DoE's IPPPP for renewables is the primary driver for such schemes. The procurement programme, in keeping with the objective of maximising the economic development potential from this new sector, includes a specific focus on local communities in which wind farms are located.

The procurement programme, typical of all Government tendering processes, includes a BBBEE scorecard on which renewable energy projects are evaluated. However, the renewables scorecard appears to play an important part in a renewed focus on the broad-based Aspects of the legislation, as enforced by a recent national review of the BBBEE Act. In this regard, the renewables scorecard includes specifications for local communities in respect of broad-based ownership schemes, socio--economic development and enterprise development contributions. This approach to legislating social responsibilities of business in all sectors definitely has a South African flavour, borne out of the political history of the country and the imperatives for social transformation laid out in the constitution.

While Tait notes that it is still early days for the development of this sector and one cannot determine the impact that such benefit schemes may have, it is clear though that targeted development expenditure will be directed to multiple rural communities and there seems to be a strong potential to deliver socio-economic benefits.

[10] Similar benefits are also likely to be associated with solar energy projects.
[11] The potential for local community benefits from wind farms in South Africa, Louise Tait (2012), Master's Thesis, Energy Research Centre University of Cape Town

# SECTION 3: OVERVIEW OF STUDY AREA

## 3.1 INTRODUCTION

Section 3 provides a baseline description of the study area with regard to:

- The administrative context.
- Demographic overview of local municipality.
- Economic overview of the local municipality.
- Site and surrounding land uses.

## 3.2 ADMINISTRATIVE CONTEXT

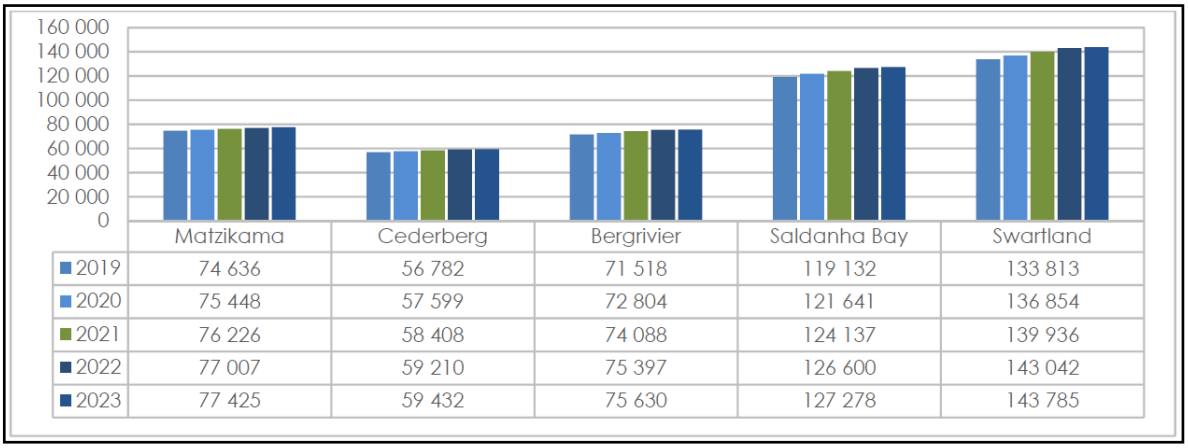
The Berg River Municipality (BRM) is one of five municipalities that make up the West Coast District Municipality (WCDM). The other four are the Matzikama, Cederberg, Saldanha Bay and Swartland Municipality (Figure 3.1). The town of Velddrif is the administrative seat of the BRM.


**Figure 3.1: Location of Berg River Municipality**

## 3.3 DEMOGRAPHIC OVERVIEW

***Population***

The 2019 Socio-Economic Profile for the Berg River Municipality (BRM) prepared by the Western Cape Department of Social Development, indicates that the population of the BRM in 2019 was 71 518, making it the second least populated municipal area in the West Coast District, after Cederberg with 56 782 people. The total population of the BRM is estimated to increase to 75 630 by 2023 which equates to 1.4 % cent average annual growth. The population growth rate of Berg River is just below that of the West Coast District's estimated population growth of 1.5 % cent over this period (Figure 3.2).




| | Matzikama | Cederberg | Bergrivier | Saldanha Bay | Swartland |
|---|---|---|---|---|---|
| 2019 | 74 636 | 56 782 | 71 518 | 119 132 | 133 813 |
| 2020 | 75 448 | 57 599 | 72 804 | 121 641 | 136 854 |
| 2021 | 76 226 | 58 408 | 74 088 | 124 137 | 139 936 |
| 2022 | 77 007 | 59 210 | 75 397 | 126 600 | 143 042 |
| 2023 | 77 425 | 59 432 | 75 630 | 127 278 | 143 785 |

Source: 2019 Socio-Economic Profile for the BRM

**Figure 3.2: Population projections for Berg River Municipality**

Based on the 2016 Community Household Survey Coloureds made up 76.5%, followed by Whites (19.3%) and Black Africans (4.1%). The main first language spoken in the LM was Afrikaans (92.2%), followed by IsiXhosa (3.2%) and English (2.5%) and (Community Household Survey 2016).

The 2019 Socio-Economic Profile for the BRM indicates that 27.4% of the population in 2022 fell within the 0-14 age group, 67% fell within the economically active age group of 15 to 65, and 5.6 % were over the age of 65 (Figure 3.3). This translates in a dependency ratio[12] of 49.1%. In terms of trends, between 2019 and 2025, the highest growth was recorded in the over 65 age group which grew at an annual average rate of 2.4 %. The child and working age groups grew by 1.3 and 1.4% respectively. The increase in the over 65 cohort is expected to increase the dependency ratio in 2025 to 49.5%.

[12] The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services.

| Bergrivier: Age Cohorts, 2019 – 2025 | | | | |
|---|---|---|---|---|
| Year | Children 0 – 14 Years | Working Age 16 – 65 Years | Aged 65+ | Dependency Ratio |
| 2019 | 19 742 | 47 929 | 3 848 | 49.2 |
| 2022 | 20 630 | 50 557 | 4 210 | 49.1 |
| 2025 | 21 391 | 52 195 | 4 434 | 49.5 |
| Growth | 1.3% | 1.4% | 2.4% | - |

Source: 2019 Socio-Economic Profile for BRM

**Figure 3.3: Age breakdown of Berg River Municipality population**

***Households, house types and ownership***

Based on the information from the 2016 Household Community Survey there were 19 074 households in the BRM. Most households resided in formal houses (85%). This is higher than the figure for the WCD (80.3%) and significantly higher than the figure for the Western Cape (72.2%). 5.7% of the households in the BRM resided in shacks, while 3.3% resided in backyard flats. In terms of ownership, 53.5% of houses are owned and fully paid off, 7.4% are owned but in the process of being paid off, 20.2% are rented, and 12.3% are occupied rent free. The relatively higher percentage of houses occupied rent free is likely to be associated with farm workers.

Based on the information from the 2016 Community Household Survey 35.4% of the households in the BRM are headed by females. This figure is higher than the figure for the WCD (32.78%), but lower than the provincial figure of 38.04%. For Ward 6, 33.1% of the households are headed by females.

The relatively high number of female-headed households at the local municipal level reflects the lack on formal employment and economic opportunities in the BRM. As a result, job seekers from the BRM need to seek work in the larger centres, specifically Cape Town and Winelands area. The majority of the job seekers are likely to be males. This is due to traditional rural patriarchal societies where the role of the women is usually linked to maintaining the house and raising the children, while the men tend to be the ones that migrate to other areas in search of employment.

***Household income***

Based on the data from the 2011 Census, 9.4% of the population of the BRM had no formal income, 1.4% earned less than R 4 800, 1.9% earned between R 5 000 and R 10 000 per annum, 13.8% between R 10 000 and R 20 000 per annum and 22.4% between R 20 000 and R 40 000 per annum (2016). The figures for Ward 6 were 16.1% (no formal income), 2.8% earned less than R 4 800, 3.9% earned between R 5 000 and R 10 000 per annum, 15.7% between R 10 000 and R 20 000 per annum and 22.7% between R 20 000 and R 40 000 per annum (2016).

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 48.9% of the households in the BRM and 61.3% in Ward 6 live close to or below the poverty line. The figures for the WCD

and Western Cape were 51.6% and 50.1% respectively. The low-income levels, specifically in Ward 6, reflect the limited employment opportunities linked to the decline in the fishing and dependence on the agricultural sector. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the BRM. This in turn impacts on the ability of the BRM to maintain and provide services. As indicated above, this has been identified as a key challenge in the BRM IDP.

***Employment***

Since 2015, the unemployment rate4 has been rising steadily in the area, reaching 5.0% in 2018. This is much lower than the WCD rate of 10.7% in 2018, as well as lower than the Provincial rate of 17.7% (Figure 3.4). The SEP notes that with rising population numbers, increasing unemployment is a key challenge in the BRM. The Bergrivier area also has the challenge of upskilling of the large agricultural sector labour force, the implementation of local economic development to increase potential employment opportunities and boost economic growth in the area.

| Unemployment Rates for the Western Cape (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Bergriver Municipality | 3.1 | 3.9 | 4.7 | 5.0 | 4.7 | 4.4 | 4.7 | 3.9 | 4.4 | 4.8 | 5.0 |
| West Coast District | 6.8 | 8.2 | 9.6 | 10.0 | 9.7 | 9.2 | 9.8 | 8.6 | 9.6 | 10.5 | 10.7 |
| Western Cape | 12.7 | 14.0 | 15.4 | 15.5 | 15.6 | 15.5 | 15.9 | 15.9 | 17.1 | 17.8 | 17.7 |

Source: 2019 Socio-Economic Profile for BRM

**Figure 3.4: Unemployment rates for Berg River Municipality**

***Education***

Education levels in the BRM are reflected by the percentage of the population under the age of 20 that have no education, the percentage that have some primary and or have completed primary school, and the percentage that have passed grade 12 (matric). Based on the 2016 Household Community Survey, 3.1% of the population over the age of 20 had not formal education. This is slightly lower than figure for WCD (3.8%), but higher than the Western Cape (2.4%). The percentage with some primary and primary school was 12.1%, compared to 11.3% and 8.2% for the WCD and Western Cape Province, respectively. The percentage with matric was 29%, which was lower than the figure for the WCD (31%) and Western Cape (35.2%). The figures for Ward 6 were 5.2% (no formal education), 17.2% some primary, and 21% matric (Table 3.2).

The 2019 SEP notes that the matric pass rate in the BRM dropped from 92.6% in 2016 to 87.0% in 2017, declining even further to 85.7% cent 2018. Between 2016 and 2018 the matric pass rates have generally declined across the WCD. The average District rate in 2018 was 82.0%.

**Table 3.1: Population by highest educational level BRM**

| Column | Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| None | 3.1% | 1,385 | 3.8% | 10,954 | 2.4% | 99,112 |
| Other | 0.8% | 358 | 0.4% | 1,097 | 0.6% | 22,923 |
| Some primary | 12.1% | 5,321 | 11.3% | 32,207 | 8.2% | 341,614 |
| Primary | 7.5% | 3,312 | 6.6% | 18,940 | 4.9% | 203,457 |
| Some secondary | 38.2% | 16,863 | 38.6% | 110,381 | 36.4% | 1,510,481 |
| Grade 12 (Matric) | 29% | 12,808 | 31% | 88,577 | 35.2% | 1,461,693 |
| Undergrad | 3.4% | 1,514 | 2.9% | 8,216 | 4.9% | 201,354 |
| Post-grad | 2.2% | 989 | 2% | 5,732 | 4.5% | 187,570 |
| N/A | 3.7% | 1,618 | 3.5% | 9,877 | 2.9% | 120,830 |

Source: Wazimap: 2016 Household Community Survey

**Table 3.2: Population by highest educational level Ward 6**

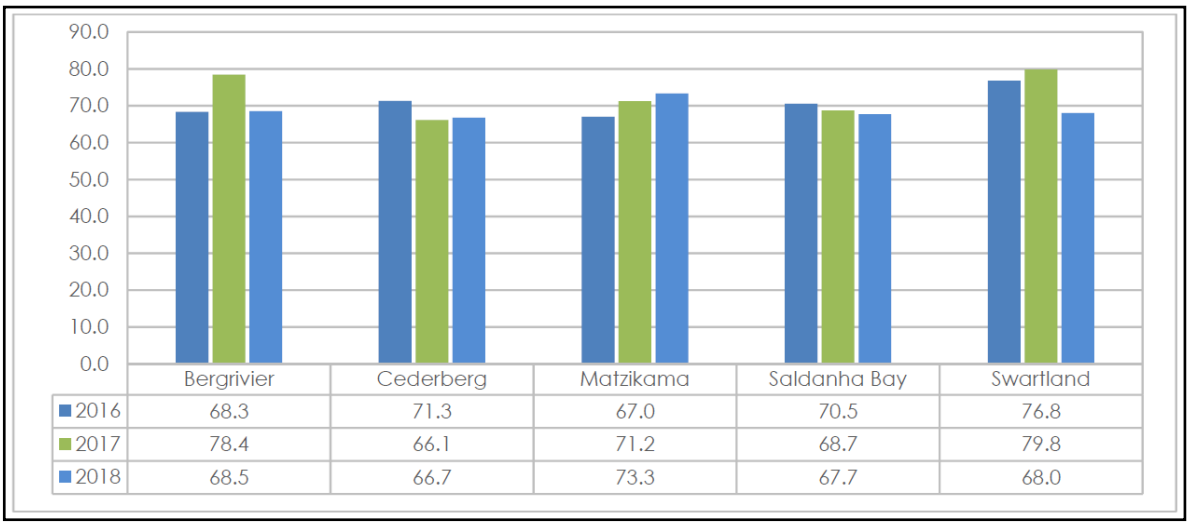
| Column | Ward 6 Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| None | 5.2% | 327 | 5% | 13,067 | 2.6% | 102,242 |
| Other | 0.3% | 20 | 0.3% | 700 | 0.5% | 18,304 |
| Some primary | 17.2% | 1,072 | 15.5% | 40,180 | 10.4% | 401,360 |
| Primary | 9.5% | 591 | 7.6% | 19,806 | 5.4% | 208,798 |
| Some secondary | 40.5% | 2,527 | 35.5% | 92,103 | 36.9% | 1,430,911 |
| Grade 12 (Matric) | 21% | 1,308 | 25% | 64,845 | 31.5% | 1,222,835 |
| Undergrad | 1.8% | 109 | 3.2% | 8,219 | 5.7% | 221,633 |
| Post-grad | 0.9% | 59 | 1.3% | 3,387 | 3.5% | 134,911 |
| N/A | 3.7% | 231 | 6.7% | 17,306 | 3.6% | 137,815 |

Source: Wazimap: 2016 Household Community Survey

***Learner retention***

The leaner retention rates[13], which reflect the number of students that start Grade 12 as a percentage of the number of students that enrolled in Grade 10, are also a cause for concern. The learner retention rate for the BRM fluctuated between 2016 and 2018, improving from 68.3% in 2016 to 78.4% in 2017, but dropping back to 68.5% in 2018 (Figure 3.4). Although the retention rates in the BRM are relatively high, the 2018 figure still implies that 31.5% of the students that started Grade 10 did not make it or enrol in Grade 12. The reasons why learners drop out of school vary but are strongly linked to a range of interrelated socio-economic factors, including lack of disposable income, lack for support from parents, and the perception that a matric qualification will not enhance the chance of finding employment.

[13] Also referred to as the drop-out rate.




| | Bergrivier | Cederberg | Matzikama | Saldanha Bay | Swartland |
|---|---|---|---|---|---|
| 2016 | 68.3 | 71.3 | 67.0 | 70.5 | 76.8 |
| 2017 | 78.4 | 66.1 | 71.2 | 68.7 | 79.8 |
| 2018 | 68.5 | 66.7 | 73.3 | 67.7 | 68.0 |

Source: 2019 Socio-Economic Profile for BRM

**Figure 3.4: Learner retention for Berg River Municipality**

## 3.4 MUNICIPAL SERVICES

***Electricity***

Based on the information from the 2016 Community Survey 98.7% of households in the BRM had access to electricity. Of this total 76.2% had in-house prepaid meters, while 17.3% have conventional in-house meters. Only 1.3% of households did not have access to electricity, this lower than the figure for the WCD (2.9%) and Western Cape (1.9%) (Table 3.3).

**Table 3.3: Population by electricity access**

| Column | Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| **In-house prepaid meter** | 76.2% | 51,381 | 71.1% | 310,120 | 77.5% | 4,868,696 |
| **In-house conventional meter** | 17.3% | 11,664 | 21.5% | 93,626 | 16.9% | 1,059,707 |
| **Other source (not paying for)** | 4.3% | 2,886 | 3.4% | 14,693 | 2.6% | 162,682 |
| **No access to electricity** | 1.3% | 868 | 2.9% | 12,794 | 1.9% | 116,206 |
| **Other** | 1% | 674 | 1.2% | 5,171 | 1.2% | 72,439 |

Source: Wazimap: 2016 Household Community Survey

***Access to water***

Based on the information from the 2016 Community Survey 82.5% of households in the BRM were supplied by a regional or local service provider. In terms of access to water, 86.3% of the households had piped water inside their houses, while 11.1% relied on piped water inside the yard. The figures piped water supplied inside of homes for the WCD and Western Cape were 84.4% and 80.7% respectively. The figures for the BRM are therefore higher than the district and provincial levels. (Table 3.4).

**Table 3.4: Population by water source**

| Column | Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| **Piped water inside house** | 86.3% | 58,210 | 84.4% | 368,149 | 80.7% | 5,069,195 |
| **Piped water inside yard** | 11.1% | 7,494 | 9.9% | 43,115 | 10.8% | 680,929 |
| **Borehole outside yard** | 0.5% | 364 | 0.7% | 3,218 | 0.1% | 6,916 |
| **River** | 0.4% | 295 | 0.2% | 954 | 0.1% | 6,070 |
| **Other** | 1.7% | 1,111 | 4.8% | 20,967 | 8.2% | 516,6 |

Source: Wazimap: 2016 Household Community Survey

***Sanitation***

Based on the information from the 2016 Community Survey, 98.5% of households have access to flush toilets, while 0.5% rely on bucket toilets and 0.4% relied on pit toilets The access to flush toilets is higher than the WCD (94.7%) and Western Cape (95.6%) to flush toilet facilities, with only 0.3% reporting having no access to toilet facilities (Table 3.5).

**Table 3.5: Population by toilet facilities**

| Column | Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| **Flush toilet** | 98.5% | 66,488 | 94.7% | 412,372 | 95.6% | 5,951,904 |
| **Bucket toilet** | 0.5% | 303 | 3% | 12,882 | 2.9% | 180,258 |
| **Other** | 0.4% | 258 | 0.8% | 3,416 | 0.4% | 24,692 |
| **Pit toilet** | 0.4% | 258 | 0.5% | 2,015 | 0.3% | 20,806 |

Source: Wazimap: 2016 Household Community Survey

***Refuse collection***

Based on the information from the 2016 Community Survey, 85.2% of households in the BRM have their refuse collected by a local authority of private company on a regular basis, while 11.2% rely on their own waste disposal dump. The relatively high number that dispose of their waste at their own dump reflects the rural nature of the BRM. The majority of these households are likely to be associated with farms in the BRM. (Table 3.6).

**Table 3.6: Population by refuse disposal**

| Column | Berg River | | West Coast | | Western Cape | |
|---|---|---|---|---|---|---|
| **Service provider (regularly)** | 85.2% | 57,467 | 86.9% | 379,160 | 88.7% | 5,570,202 |
| **Own dump** | 11.1% | 7,498 | 8.4% | 36,650 | 2% | 125,124 |
| **Communal dump** | 2.2% | 1,514 | 1.5% | 6,710 | 1.5% | 95,488 |
| **Service provider (not regularly)** | 1% | 677 | 1.3% | 5,539 | 3% | 187,367 |
| **Other** | 0.5% | 317 | 1.9% | 8,343 | 4.8% | 301,550 |

Source: Wazimap: 2016 Household Community Survey

In summary, based on the 2016 Community Survey the service levels in the BRM can be describe as high. In this regard 98.7% of households are supplied with electricity, 97.4% have access to potable water, 98.5% have access to flush toilet facilities, and 85.2% have their waste collected on a regular basis by a service provider.

## 3.5 EDUCATION AND HEALTH CARE FACILITIES

***Education facilities***

In 2018, the Bergrivier municipal area had a total of 20 public schools, the smallest number of schools in the WCD even though Cederberg had the lowest number of learners. This however is only indicative of the number of schools, but not of the learner capacity or number of learners at the schools. 65% of the schools were no fee schools. Of the 20 government schools, 60% (12) were equipped with libraries in 2018.

***Health care facilities***

Access to healthcare services is a basic human right and one that is directly affected by the number and spread of facilities within their geographical area. In terms of healthcare facilities, the BRM had 2 District Hospitals, 3 fixed primary health care (PHC) clinics, and 7 non-fixed PHC clinics. There are also 13 Tuberculosis and 8 Antiretroviral treatment clinics/sites (Table 3.7).

**Table 3.7: Health facilities in Berg River Municipality**

| Area | PHC Clinics | | Community Health Centres | Community Day Centres | Hospitals | | Treatment Sites | |
|---|---|---|---|---|---|---|---|---|
| | Fixed | Non-fixed | | | District | Regional | ART Clinics | TB Clinics |
| Bergrivier Municipality | 3 | 7 | 0 | 0 | 2 | 0 | 8 | 13 |
| West Coast District | 25 | 37 | 0 | 1 | 7 | 0 | 43 | 75 |

Source: 2019 Socio-Economic Profile for BRM

***Child health***

Child health is a key indicator of well-being and potential needs. The United Nations Sustainable Development Goals (SDGs) aim to end preventable deaths of new-borns and children under 5 years of age by 2030, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1 000 live births and under-5 mortalities to at least as low as 25 per 1 000 live births (Source: UN SDG's). Key criteria used to measure

child health include immunisation rates[14], percentage of malnourished children[15], neonatal mortality rate[16] and birth weight[17].

The immunisation coverage rate for children under the age of one in the BRM increased from 44.1% to 56% between 2017 and 2018. These figures are lower than the rates for the WCD (54.3% and 59.1% respectively). The number of malnourished children under five years (per 100 000) in 2017/18 was 0.8, which was lower than the rate for the WCD. The neonatal mortality rate (NMR) (deaths per 1 000 live births before 28 days of life) remained at zero deaths in 2017 and 2018. The low-birth weight indicator for BRM increased from 14% in 2017 to 17.4 % in 2018. Although the low birth rate has increased, this has not impacted on the NMR (Table 3.8).

**Table 3.8: Child health statistics for Berg River Municipality**

| Area | Immunisation rate under 1 | | Acute malnutrition - child under 5 | | Neonatal mortality rate | | Low birth weight | |
|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2017 | 2018 | 2017 | 2018 | 2017 | 2018 |
| Bergrivier Municipality | 44.1 | 56.0 | 0.8 | 0.8 | 0.0 | 0.0 | 14.0 | 17.4 |
| West Coast District | 54.3 | 59.1 | 1.7 | 2.1 | 9.2 | 6.4 | 13.4 | 13.8 |

Source: 2019 Socio-Economic Profile for BRM

## 3.2 ECONOMIC OVERVIEW

Economic activity in the BRM plays a key role in terms of creating employment opportunities and addressing poverty and human development. The ability of households to pay for services such as water, electricity, sanitation, and refuse removal is dependent upon the ability to generate income from economic activities. A slowdown or deterioration in economic activities typically results in job losses and the inability of households to pay for services, which in turn impacts on municipal revenues and the ability to provide and maintain services and municipal infrastructure.

### Economic sectors

In 2017 the local economy in the BRM was dominated by the agriculture, forestry and fishing sector (28.8% of GDP), followed by manufacturing (22.7%), wholesale and retail

[14] **Immunisation:** *The immunisation rate is calculated as the number of children immunised as a percentage of the total number of children less than one year of age.* Immunisation protects both adults and children against preventable infectious diseases. Low immunisation rates speak to the need for parents to understand the critical importance of immunisation, as well as the need to encourage parents to have their young children immunised.

[15] **Malnutrition:** *Expressed as the number of malnourished children under five years per 100 000 people.* Malnutrition (either under- or over-nutrition) refers to the condition whereby an individual does not receive adequate amounts or receives excessive amounts of nutrients.

[16] **Neonatal mortality rate:** *Measured as the number of neonates dying before reaching 28 days of age, per 1 000 live births in a given year.* The first 28 days of life (neonatal period) represent the most vulnerable time for a child's survival. The Province's target for 2019 is 6.0 per 1 000 live births.

[17] **Low birth weight:** *Percentage of all babies born in facility that weighed less than 2 500 g.* Low birth weight is associated with a range of both short- and long-term consequences.

trade, catering and accommodation (12.9%) and finance, insurance, real estate and business services (10.0%). Combined, these top sectors contributed (74.4%) to GDP of the BRM, which was estimated to be worth R4.434 billion in 2017.

**Employment**
In terms of employment the agriculture, forestry and fishing sector contributed more than half of all the jobs to the area in 2017 (51.0%), followed by the wholesale and retail trade, catering and accommodation sector (13.2%) and the community, social and personal services (9.0%) sector. Combined, these three sectors contributed 73.1% of the total jobs in 2017. The COVID-19 pandemic is likely to have resulted in job losses during 2020, extending into 2022.

In terms of skills levels, the majority of workers in the BRM in 2017 were low-skilled (55.3%), while only 14.0% were skilled. The proportion of low- skilled workers is mainly due the fact that 51.0% of the labour force is employed in the agriculture, forestry and fishing sector (Figure Table 3.9).

**Table 3.9: Labour forces trends in Berg River Municipality**

| Bergrivier: Trends in formal labour force skills | | | | |
|---|---|---|---|---|
| Formal employment by skill | Skill level contribution (%) | Average growth (%) | Number of jobs | |
| | 2017 | 2014 - 2018e | 2017 | 2018e |
| Skilled | 14.0 | 3.5 | 3 095 | 3 182 |
| Semi-skilled | 30.7 | 2.5 | 6 785 | 6 875 |
| Low-skilled | 55.3 | 4.4 | 12 233 | 12 334 |
| **Total Bergrivier** | **100.0** | **3.7** | **22 113** | **22 391** |

Source: 2019 Socio-Economic Profile for BRM

## 3.6 OVERVIEW OF STUDY AREA[18]

### 3.6.1 Settlement patterns and land uses

The area to the east of Velddrif is dominated by agricultural land uses. The settlement pattern is sparse with farmsteads located east of the Sishen Saldanha railway line (~1.5 km east of Velddrif) set back from the R399. The farming activities are typically mixed, consisting of wheat and other winter cereal crops and fodder crops (for seed and fodder) (Photograph 3.1 and 3.2)). Compared to the Swartland the average wheat yields are modest (on average about half of Swartland areas like Moorreesburg). Irrigated cropping – mainly of fodder crops – is restricted to areas near the Berg River. Wool sheep, and beef – and to a lesser extent dairy – cattle are also farmed. Carrying capacities are modest – approximately 4-6 ha/ large stock unit. Game farming also takes place in the area, specifically on Doornfontein. Most of the farms in the study area are inhabited. The only large cluster of residential buildings is located on Melkplaas (Nuweplaas), near the Berg River.

[18] The overview of the study area and affected properties is based on the information collected during the SIAs for the Doornfontein and Kruispad PV SEFs undertaken in 2017 and 2019.

**Photograph 3.1: Wheat field on Doornfontein Farm**

**Photograph 3.2: Sheep grazing on Doornfontein Farm**

The tourism related activities and facilities in and around Velddrif are concentrated along the Berg River. The main attractions include bird watching, fishing, and boating. The only tourism accommodation in the study area north of the Berg River is provided on Kruispad and Doornfontein Farm.

The landscape is relatively flat and consists of low Sandveld vegetation interspersed with cultivated fields. Due to the predominantly sandy soils, the cropping pattern is characterised by smaller areas separated by vegetated windbreaks, typically broad strips of veld. Some properties along the R399 have been invaded by alien Rooikrans (Photograph 3.3). The area is hot, dry and windy in summer, and is therefore fire prone.

Apart from the R399, infrastructure in the vicinity of the site is limited to the Sishen-Saldanha ore line and an existing 400 kV line. The Sishen-Saldanha rail corridor is located ~ 2-3 km to the west of site (Photograph 3.4). The 400 kV line, aligned across Doornfontein Farm, traverses the R399 ~1.3 km to the east of Kruispad (Photograph 3.5).

**Photograph 3.3: Strandveld invaded with Rooikrans**

**Photograph 3.4: Sishen-Saldanha ore line**

**Photograph 3.5: 400 kV line crossing the R399**

### 3.6.2 Doornfontein

Farm Doornfontein (RE/118) covers an area of 3788.62 ha in extent and consists of a patchwork of cultivated fields and veld. The farm is owned by Mr Nick Melck, the fourth generation Melck to own the property, and a descendent of Martin Melck, one of the first major farm owners along the lower Berg River (Kersefontein, during the late 18$^{th}$ century). Doornfontein is bisected by the R399, with the bulk of the property located to the south of the road, stretching down to the Berg River. The property is accessed directly from the R399. The historic farmyard (the farmhouse dates to 1870) is located ~4 km to the south of the R399 and ~2.4 km north of the Berg River (Photograph 3.6). A guest accommodation facility – Doornfontein Guest Farm – is located on the main werf (Photograph 3.7). Farm labourer's houses are located adjacent to the east of the farmyard.

**Photograph 3.6: Doornfontein farmstead.**

**Photograph 3.7: Doornfontein guest facility**

Arable portions of the Doornfontein are rented out to adjacent farmers for cropping as part of their respective farming operations. Doornfontein's own operations are based on livestock and game farming, supplemented by the guest facility (Photograph 3.8).

**Photograph 3.8: Cattle on Doornfontein north of R399**

The game is kept in an enclosed game camp in the central portion of the property, just to the north of the farmyard. The game operation is focused on trophy hunting, catering mainly to overseas hunters. The Guest Farm is integrated with the trophy hunting component, but also caters to non-hunting visitors, and is open throughout the year. Doornfontein also caters for weddings of up to 120 guests and has a conference venue[19].

[19] http://www.doornfonteinfarm.co.za/html/function_venue.html.

The wedding facilities are located at the farmyard. The nearest proposed development area would be located ~3.1 km north of the farmyard. The yard would be screened from the development areas by the distance, topography, and vegetation. At the time of undertaking the interviews in 2017 Mr Melck confirmed that the proposed PV SEF would not impact on the farm's operations.

Many areas on Doornfontein Farm are not suitable for cropping due to poor soil conditions. Development is proposed on sections of the property located to both the north and south of the R399. The development areas consist of veld or previously cultivated fields that have been left to revert to veld (Photographs 3.9 and 3.10). The development area located to the north of the R399 is heavily infested with alien Rooikrans (Photograph 3.9). Both farm portions to the north and south of the R399 are affected by a 400-kV power line which traverses the property from north-east to south-west. The powerline traverses the access road to Doornfontein, and passes ~1.6 km to the west of the farmyard. The line is not visible from the yard due to topography and tree screening.

**Photograph 3.9: View from R399 of development areas located south of R399**

**Photograph 3.10: View from R399 of development areas located north of R399**

### 3.6.3 Kruispad

Kruispad is owned by the Kruispad Family Trust (Mr Arthur Melck and his son Graham) and covers are area of 2585.77 ha located between the R399 and the Berg River, with only small portion located to the north of the R399. The entrance to Kruispad off the R399 and is located opposite to the intersection of the R399 and the Aurora gravel road.

The farmyard is located near the Berg River, approximately 2.8 km to the south of the nearest proposed solar panels (Photograph 3.11). The terrain to the south of the R399 dips towards the Berg River. Kruispad farmyard is therefore screened from the portions of the property proposed for development by the natural topography.

**Photograph 3.11: One of the two inhabited farm houses on Kruispad**

Farming operations on Kruispad are mixed and include wool sheep and beef cattle together with dryland wheat and irrigated fodder cropping (Photographs 3.12 and 3.13). Irrigated cropping is limited to the more clay-rich soils in proximity to the Berg River and is irrigated from the Berg River.

**Photograph 3.12: Sheep on Kruispad**

**Photograph 3.10: Wheat field on Kruispad**

Only indigenous small game species are located on the property. No hunting takes place on the property. Two cottages providing guest accommodation are located along the Berg River just to the west of the farmyard (Photograph 3.11). Kruispad consist of a patchwork of cultivated fields and natural vegetation and many areas are not suitable for cropping due to the poor soil conditions. The development areas on Kruispad consist of veld and marginal lands (Photograph 3.12 and 3.13). Both areas are considered low potential cropping land and dispensable for grazing. The owners of the property indicated that the development areas would not be visible from the farmstead.

**Photograph 3.11: The riverside cottages on Kruispad**

**Photograph 3.12: Kruispad development area from R399**

**Photograph 3.13: Marginal cropland in Kruispad development area**

### 3.6.4 Nuweplaas/ Melkplaas

Nuweplaas (Velddrif 71/110) is located to the west of Kruispad and is bisected by the R399. The bulk located to the south of the road towards the Berg River. Nuweplaas and Melkplaas RE/4/110 (adjacent to its west) are owned by the same owners. The properties are collectively referred to as Melkplaas. Together, the properties are 1048.75 ha in extent, with Nuweplaas (753.35 ha) representing the bulk. Each owner has a private stand of 3ha, with the remainder of the property collectively owned and farmed as Melkplaas farm. The residential stands are clustered along the Berg River, approximately 2.5 km south-west of the nearest proposed development area on Kruispad (Photograph 3.14). Access is via a private access road off the R399 located ~1 km to the west of Kruispad. The owners indicated that they had no concerns about the proposed development on Kruispad.

**Photograph 3.14: Cluster of buildings associated with Melkplaas (Nuweplaas)**

# 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.
- Experience/ familiarity of the author with the area and local conditions based on previous site visits to the study area.
- Interviews with key stakeholders for other projects in the area.
- 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 impact on sense of place.

## 4.2 ASSESSMENT OF POLICY AND PLANNING FIT

The development of renewable energy is strongly supported at a national, provincial, and local level. The 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. The development of renewable energy is also supported at a provincial and local level. The development of the proposed PV SEF is therefore supported by key policy and planning documents.

## 4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

**Potential positive impacts**

- Creation of employment and business opportunities, and opportunity for skills development and on-site training.

**Potential negative impacts**

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

### 4.3.1 Creation of local employment, training, and business opportunities

The construction phase of PV SEF will extend over a period of approximately 24 months and create in the region of 300-350 employment opportunities. Members from the local communities in the area, specifically Velddrif, Vredenberg and Saldanha Bay, 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. Based on information from similar projects the total wage bill will be in the region of R 80 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 local towns in the area.

Given relatively high local unemployment levels and limited job opportunities in the area, this will represent a significant, if localised, social benefit. The capital expenditure associated with the construction phase will be approximately R 6 billion (2023 Rand value). Given the well-developed industrial sector in Saldanha Bay the potential for local companies (engineering, civils etc.) in the SBM and BRM to benefit from the project is high. The local service sector will also benefit from the construction phase. The potential opportunities would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

The hospitality industry in the area will also benefit from the provision of accommodation and meals for professionals (engineers, quantity surveyors, project managers, product representatives etc.) and other (non-construction) personnel involved on the project. Experience from other construction projects indicates that the potential opportunities are not limited to on-site construction workers but also to consultants and product representatives associated with the project.

**Table 4.1: Impact assessment of employment and business creation**

| **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** | Probable (3) | Highly probable (4) |
| **Significance** | Medium (30) | 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:**<br>In order to enhance local employment and business opportunities associated with the construction phase, the following measures should be implemented:<br><br>**Employment**<br>• Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.<br>• Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.<br>• Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. | | |

- Before the construction phase commences the proponent should meet with representatives from the BRM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

**Business**
- The proponent should liaise with the BRM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

**Residual impacts:** Improved pool of skills and experience in the local area.

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

### 4.3.2 Impact of construction workers on local communities

The presence of construction workers poses a potential risk to family structures and social networks. 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 impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of 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 unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

The objective will be to source as many of the low and semi-skilled workers locally. These workers will be from the local community and form part of the local family and social networks. This will reduce the risk and mitigate the potential impacts on the local community. Given the well-developed mining sector, local low, semi and skilled workers are likely to be available. The potential impact on the local community will therefore be negligible. The balance of semi-skilled and skilled workers will be accommodated in Velddrif, Vredenberg and Saldanha Bay.

**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** | Moderate (6) | Low (4) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Medium (30) | Low (21) |
| **Status** | Negative | Negative |
| **Reversibility** | No in case of HIV and AIDS | No in case of HIV and AIDS |
| **Irreplaceable loss of resources?** | Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods | |
| **Can impact be mitigated?** | Yes, to some degree. However, the risk cannot be eliminated | |

**Recommended mitigation measures:**

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of 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.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP.
- The proponent and contractor 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 the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.
- The proponent and the 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.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

| |
|---|
| **Residual impacts:** Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community. |

**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 tend to 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. While the proposed project on its own does not constitute a large construction project, the establishment of a number of renewable energy projects in the area may attract job seekers to the area. 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. Given the relatively small scale of the project the potential for economically motivated in-migration and subsequent labour stranding is likely to be negligible.

**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 (2) | Local (1) |
| **Duration** | Short term (2) | Short term (2) |
| **Magnitude** | Low (2) | Low (2) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Low (18) | Low (15) |
| **Status** | Negative | Negative |
| **Reversibility** | No in case of HIV and AIDS | No in case of HIV and AIDS |
| **Irreplaceable loss of resources?** | Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods | |

| | | |
|---|---|---|
| **Can impact be mitigated?** | Yes, to some degree. However, the risk cannot be eliminated | |

**Recommended mitigation measures:**
It is impossible to stop people from coming to the area in search of employment. However, as indicated above, the proponent should ensure that the employment criteria favour residents from the area. In addition:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The proponent, in consultation with the DBNLM should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area.
- The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities.
- The proponent should implement a policy that no employment will be available at the gate.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

**Residual impacts:** Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.

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

### 4.3.4 Risk to safety and security

The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open. The presence of construction workers on the site increases the exposure of farming operations and livestock to the outside world, which, in turn, had the potential to increase the risk of stock theft and crime. This risk would be increase if construction workers are accommodated on the site.

The local farmers in the area indicated that due to potential safety and security risks associated with the movement of workers on an off the site they were not in favour of a construction workers being accommodated on the site. Local farmers interviewed as part of the SIA for the Doornfontein and Kruispad SIAs indicated that incidents of stock theft and petty theft had increased during the construction work associated with the recent upgrade of the R399 (Brand, pers. comm).

**Table 4.4: Assessment of risk to local communities**

| **Nature:** Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site | | |
|---|---|---|
| | **Without Mitigation** | **With Mitigation** |
| **Extent** | Local (3) | Local (2) |
| **Duration** | Short term (2) | Short term (2) |
| **Magnitude** | Medium (6) | Low (4) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Medium (33) | Low (24) |
| **Status** | Negative | Negative |
| **Reversibility** | Yes, compensation paid for stock losses and damage to farm infrastructure etc. | Yes, compensation paid for stock losses and damage to farm infrastructure etc. |
| **Irreplaceable loss of resources?** | No | No |
| **Can impact be mitigated?** | Yes | Yes |

**Mitigation:**

- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The proponent should engage with the local farming association and other PV SEF developers to identify was in which PV SEF developers can contribute towards improving security in the area.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.
- The proponent should establish a MC and CoC for workers (see above).
- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the CoC to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below).
- The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc.
- The Environmental Management Plan Report (EMPr) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

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| **Residual impacts:** No**,** provided losses are compensated for. |

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

### 4.3.5 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 damage roads. The impacts will be largely local and can be effectively mitigated.

**Table 4.5**: **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 | |

**Mitigation:**
- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The movement of construction vehicles on the site should be confined to agreed access road/s.
- Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.
- The movement of heavy vehicles associated with the construction phase should be timed to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher.
- Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.
- Dust suppression measures should be implemented, such as wetting 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.

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| **Residual impacts** If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage. |

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

### 4.3.6 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock, crops, wildlife, and farmsteads in the area. In the process, farm infrastructure may also be damaged or destroyed, and human lives threatened. Local farmers interviewed indicated that grass fires were a concern and posed a threat to their farming operations, which include livestock, crops, and high value wildlife, such as Sable and Roan Antelope and Buffalo.

The potential risk of grass fires is heightened by the windy conditions in the area, specifically during the dry, windy summer months from October to March. In terms of potential mitigation measures the option of establishing a firebreak around the perimeter of the site prior to the commencement of the construction phase should be investigated. In addition, a fire-fighting vehicle should be present at all times on the site during the construction phase.

**Table 4.6: Assessment of impact of increased risk of grass fires**

| **Nature:** Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires | | |
|---|---|---|
| | **Without Mitigation** | **With Mitigation** |
| **Extent** | Local (4) | Local (2) |
| **Duration** | Short term (2) | short term (2) |
| **Magnitude** | Moderate (6) | Low (4) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Medium (36) | Low (24) |
| **Status** | Negative | Negative |
| **Reversibility** | Yes, compensation paid for stock and crop losses etc. | |
| **Irreplaceable loss of resources?** | No | No |
| **Can impact be mitigated?** | Yes | |
| **Mitigation**<br>• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.<br>• The option of establishing a firebreak around the perimeter of the site prior to the commencement of the construction phase should be investigated.<br>• Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.<br>• Smoking on site should be confined to designated areas.<br>• Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has | | |

| |
|---|
| been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy summer months.<br>• Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.<br>• Contractor should provide fire-fighting training to selected construction staff.<br>• No construction staff, except for security staff, to be accommodated on site overnight.<br>• As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities. |
| **Residual impacts:** See cumulative impacts. |

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

## 4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The following key social issues are of relevance to the operational phase:

**Potential positive impacts**
- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.
- Benefits associated with the socio-economic contributions to community development.

**Potential negative impacts**
- Visual impacts and associated impacts on sense of place.

### 4.4.1 Improve energy security and support the renewable energy sector

The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. The proposed SEF also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs, and secondly, within the context of the success of the REIPPPP.

***Improved energy security***
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[20].

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

[20] 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

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[21].

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[22]. The inclusion of a BESS also increases stability and resilience of the facility.

***Impact of a coal powered economy***
The Green Jobs study (2011) notes that South Africa has one of the most carbon-intensive economies in the world, thus making the greening of the electricity mix a national imperative. The study notes that renewable energy provides an ideal means for reaching emission reduction targets in a relatively easy manner. In addition, and of specific relevance to South Africa renewable energy is not as dependent on water compared to the massive water requirements of conventional power stations, has a limited footprint and therefore does not impact on large tracts of land, poses limited pollution and health risks, specifically when compared to coal and nuclear energy plants.

The Greenpeace Report (powering the future: Renewable Energy Roll-out in South Africa, 2013), also notes that within a broader context of climate change, coal energy does not only have environmental impacts, it also has socio-economic impacts. These include acid mine drainage from abandoned mines in South Africa and the risk this poses on the country's limited water resources.

***Benefits associated with REIPPPP***
Through the competitive bidding process, the IPPPP has effectively leveraged rapid, global technology developments and price trends, buying clean energy at lower and lower rates with every bid cycle, resulting in SA getting the benefit of renewable energy at some of the lowest tariffs in the world. The price for wind power has dropped by 50% to R0.94/kWh, while solar PV has dropped with 75% to R1.14/kWh between BW1 and BW4.

Prices contracted under the REIPPPP for all technologies are well below the published REFIT prices. The REIPPPP has effectively translated policy and planning into delivery of clean energy at very competitive prices. As such it is contributing to the national aspirations of secure, affordable energy, lower carbon intensity and a transformed 'green' economy.

**Table 4.7: 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 (4) | Local, Regional and National (5) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Moderate (6) | Moderate (6) |

[21] The economic consequences of load shedding in South Africa and - Generator King (genking.co.za)
[22] "How does load shedding affect small business in SA?". *The Yoco Small Business Pulse (3: Q1 2019): 3*

| | | |
|---|---|---|
| **Probability** | Highly Probable (4) | Definite (5) |
| **Significance** | Medium (56) | High (60) |
| **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 mitigated?** | Yes | |
| **Enhancement:**<br>Should the project be approved the proponent should:<br>• Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members.<br>• Maximise opportunities for local content, procurement, and community shareholding.<br>• Maximise opportunities for local content and procurement. | | |
| **Residual impacts:** Overall reduction in $CO_2$ emission, reduction in water consumption for energy generation, contribution to establishing an economically viable commercial renewables generation sector in South Africa. The addition of large BESS also improves energy security by time shifting the increased solar energy production to nighttime. | | |

**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 Creation of employment opportunities

The proposed development will create approximately 20-30 full time employment opportunities during the operational phase, of which 70% will be unskilled, 25% semi-skilled 25%, and 5% skilled 5%. Based on similar projects the annual operating budget will be in the region of R 40 million (2023 Rand values), including wages.

**Table 4.8: 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:**
In order to enhance local employment and business opportunities associated with the operational phase, the following measures should be implemented:

**Employment**
- Where reasonable and practical, the proponent should implement a 'locals first' policy, especially for semi and low-skilled job categories.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the operational phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

**Business**
- The proponent should liaise with the BRM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers for the operational phase (e.g., waste collection companies, security companies etc.). These companies should be notified of the tender process and invited to bid for project-related work.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the operational phase.

**Residual impacts:** Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area

### 4.4.3 Benefits associated with the socio-economic development contributions

The REIPPPP has been designed not only to procure energy but has also been structured to contribute to the broader national development objectives of job creation, social upliftment and broadening of economic ownership. Socio-economic development (SED) contributions are an important focus of the REIPPPP and are aimed at ensuring that local communities benefit directly from the investments attracted into the area. These contributions are linked to Community Trusts and accrue over the project operation life and, in so doing, create an opportunity to generate a steady revenue stream over an extended period. This revenue can be used to fund development initiatives in the area and support the local community. The long-term duration of the revenue stream also allows local municipalities and communities to undertake long term planning for the area. The revenue from the proposed SEF can be used to support a number of social and economic initiatives in the area, including:

- Creation of jobs.
- Education.
- Support for and provision of basic services.
- School feeding schemes.
- Training and skills development.
- Support for SMME's.

The minimum compliance threshold for SED contributions is 1% of the revenue with 1.5% the targeted level over the 20-year project operational life. For the current portfolio of projects, the average commitment level is 2%, which is 101% higher than the minimum threshold level. To date (across BW1-4) a total contribution of R22.8 billion has been committed to SED initiatives. Assuming an even, annual revenue spread, the average contribution per year would be R1.1 billion. Of the total commitment, R18.5

billion is specifically allocated for local communities where the IPPs operate. With every new IPP on the grid, revenues and the respective SED contributions will increase. As a percentage of revenue, SED obligations become effective only when operations commence, and revenue is generated. Of the 91 IPPs that have reached financial close (BW1–BW4), 85 are operational. The SED contributions associated with these 85 projects has amounted to R 1.8 billion to date. In terms of ED and SED spend, education, social welfare, and health care initiatives have a SED focus. SED spend on education has been almost double the expenditure on enterprise development. In this regard IPPs have supported 1 388 education institutions with a total of R437 million in contributions, from 2015 to the end of June 2021. A total of 1 276 bursaries, amounting to R210.8 million, have been awarded by 67 IPPs from 2015 until the end of June 2021. The largest portion of the bursaries were awarded to African and Coloured students (97.4%), with women and girls receiving 56.3% of total bursaries. The Northern Cape province benefitted most from the bursaries awarded, with 57.2%, followed by the Eastern Cape (20.2%) and Western Cape (14.1%). Enterprise development and social welfare are the focus areas that have received the second highest share of the contributions to date.

The Green Jobs study (2011) found that the case for renewable energy is enhanced by the positive effect on rural or regional development. Renewable energy facilities located in rural areas create an opportunity to benefit the local and regional economy through the creation of jobs and tax revenues. However, socio-economic development contributions can be mismanaged. This is an issue that will need to be addressed during the operational phase.

**Table 4.9: Assessment of benefits associated with socio-economic development contributions**

| **Nature**: Benefits associated with support for local community's form SED contributions | | |
|---|---|---|
| | **Without Enhancement** | **With Enhancement[23]** |
| **Extent** | Local and Regional (2) | Local and Regional (3) |
| **Duration** | Long term (4) | Long term (4) |
| **Intensity** | Low (4) | Moderate (6) |
| **Likelihood** | Probable (3) | Definite (5) |
| **Significance** | Medium (30) | High (65) |
| **Status** | Positive | Positive |
| **Reversibility** | Yes | Yes |
| **Can impact be enhanced?** | Yes | |
| **Enhancement:**<br>To maximise the benefits and minimise the potential for corruption and misappropriation of funds the following measures should be implemented:<br><br>• The proponents should liaise with the BRM to identify projects that can be supported by SED contributions.<br>• Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community.<br>• Strict financial management controls, including annual audits, should be instituted to manage the SED contributions. | | |

[23] Enhancement assumes effective management of the community trust

| |
|---|
| **Residual impacts:** Promotion of social and economic development and improvement in the overall well-being of the community |

**Assessment of No-Go option**
There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the supporting the social and economic development in the area would be lost. This would also represent a negative impact.

### 4.4.4 Generate income for affected landowners

The proponent has entered into rental agreements with the affected landowner/s for the use of the land for the establishment of the proposed SEF. In terms of the rental agreement the affected landowner will be paid an annual amount for the area taken up by the proposed SEF. The additional income will reduce the risk to farm livelihoods posed by droughts and fluctuating market prices for outputs, such as crops, and inputs, such as fuel, feed etc. Given the low carrying capacity of the veld the additional income represents a significant benefit for the affected landowner.

**Table 4.10: Assessment of benefits associated with income generated for the affected farmer(s)**

| **Nature:** The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc. | | |
|---|---|---|
| | **Without Mitigation** | **With Enhancement** |
| **Extent** | Local (1) | Local (3) |
| **Duration** | Long term (4) | Long term (4) |
| **Intensity** | Low (4) | Moderate (6) |
| **Likelihood** | Probable (3) | Definite (5) |
| **Significance** | Low (27) | Medium (53) |
| **Status** | Positive | Positive |
| **Reversibility** | Yes | Yes |
| **Can impact be enhanced?** | Yes | |
| **Enhancement:**<br>Implement agreements with affected landowner. | | |
| **Residual impacts:** See cumulative impacts | | |

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

### 4.4.5 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. The potential impact on the area's sense of place was assessed as part of the Visual Impact Assessment (VIA). The potential impact on sense of place associated with PV SEFs was not raised as a key concern by local landowners interviewed during the SIAs undertaken for the Kruispad and Doornfontein PV SEFs in 2019 and 2017.

**Table 4.11: Visual impact and impact on sense of place**

| **Nature:** Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place. | | |
|---|---|---|
| | **Without Mitigation** | **With Mitigation** |
| **Extent** | Local (2) | Local (2) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Low (4) | Minor (2) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Medium (30) | Low (24) |
| **Status** | Negative | Negative |
| **Reversibility** | Yes, SEF components and other infrastructure can be removed. | |
| **Irreplaceable loss of resources?** | No | |
| **Can impact be mitigated?** | Yes | |
| **Mitigation:**<br>The recommendations contained in the VIA should be implemented. | | |
| **Residual impacts:** Potential impact on current rural sense of place | | |

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

### 4.4.6 Impact on tourism

The proposed SEF has the potential to impact on the area's existing sense of place, which in turn may impact on the tourism-related activities and operations in the area. Based on the location of the proposed PV SEF the potential impact on tourism at a local and regional level will be negligible. The owners of Doornfontein and Kruipspad Farm (the only farms with tourist facilities in the area) also indicated at the time that the proposed SEFs would not impact on their tourist related operations. The local planner for the BRLM at the time also indicated that the R399 is not considered a key tourism or scenic route.

**Table 4.12: Impact on tourism in the region**

| **Nature:** Potential impact of the SEF on local tourism | | |
|---|---|---|
| | **Without Mitigation** | **With Enhancement / Mitigation** |
| **Extent** | Local (2) | Local (2) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Minor (2) | Minor (2) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Low (24) | Low (24) |
| **Status** | Negative | Negative |
| **Reversibility** | Yes | Yes |

| | | |
|---|---|---|
| **Irreplaceable loss of resources?** | No | No |
| **Can impact be mitigated?** | Yes | |
| **Mitigation:**<br>The recommendations contained in the VIA should be implemented. | | |
| **Residual impacts:** Linked to visual impact on sense of place. | | |

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

### 4.4.7 Impact on property values

The potential visual impacts associated with the proposed PV SEF have the potential to impact on property values. Based on the results of a literature review undertaken for wind farms the potential impact on property values in rural areas is likely to be limited. In this regard a study undertaken in Australia in 2016 (Urbis Pty Ltd) found that:

- Appropriately located wind farms within rural areas, removed from higher density residential areas, are unlikely to have a measurable negative impact on surrounding land values.
- There is limited available sales data to make a conclusive finding relating to value impacts on residential or lifestyle properties located close to wind farm turbines, noting that wind farms in NSW have been constructed in predominantly rural areas.

The impact of SEFs on property values is likely to be lower than the impact of WEFs due to the reduced visual impact. The Impact of the proposed PV SEF on property values is therefore likely to be low. In addition, none of the landowners interviewed raised concerns about potential impact on property values.

**Table 4.13: Visual impact and impact property values**

| **Nature:** Potential impact of the WEF 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 enhanced?** | Yes | |
| **Mitigation**<br>The recommendations contained in the VIA should be implemented. | | |

| |
|---|
| **Residual impacts:** Linked to visual impact on sense of place. |

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

## 4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The potential cumulative impacts on the area's sense of place will be 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 likely to be relevant to solar facilities and associated infrastructure. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more wind farms will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more wind farms along a single journey, e.g. road or walking trail).
- The visual compatibility of different wind 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 SEF and associated infrastructure on the areas sense of place is likely to be low. However, there are a number of renewable energy projects proposed in the area. The potential for combined and sequential visibility does therefore exist.

**Table 4.14: Cumulative impacts on sense of place and the landscape**

| **Nature:** Visual impacts associated with the establishment of associated grid infrastructure and the potential impact on the area's rural sense of place and character of the landscape. | | |
|---|---|---|
| | **Overall impact of the proposed project considered in isolation** | **Cumulative impact of the project and other projects in the area** |
| **Extent** | Local (2) | Regional (2) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Low (2) | Medium (4) |
| **Reversibility** | Reversible (1) | Reversible (1) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Low (27) | Moderate (30) |
| **Status** | Negative | Negative |
| **Can impacts be mitigated?** | Limited | |
| **Mitigation:** The recommendations contained in the VIA should be implemented. | | |

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

## 4.6 CUMULATIVE IMPACT ON LOCAL SERVICES AND ACCOMMODATION

The establishment of a number of REFs has the potential to place pressure on local services and accommodation, specifically during the construction phase. As indicated above, the majority of skilled, semi-skilled and low-skilled workers for the construction phase will be sourced from the BRM and SBM. This potential pressure on local services and accommodation is therefore likely to be negligible.

The potential impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of the proposed facility and associated renewable energy projects in the BRM and SBM. These benefits will create opportunities for investment in the BRM and SBM, including the opportunity to up-grade and expand existing services and the construction of new houses.

**Table 4.15: Cumulative impacts on local services**

| **Nature:** The establishment of a number of renewable energy facilities and associated projects, such as the proposed SEF, in the BRM has the potential to place pressure on local services, specifically medical, education and accommodation. | | |
|---|---|---|
| | **Overall impact of the proposed project considered in isolation** | **Cumulative impact of the project and other projects in the area** |
| **Extent** | Local (1) | Local and regional (2) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Low (4) | Low (4) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Low (27) | Medium (30)[24] |
| **Status (positive/negative)** | Negative | Negative |
| **Reversibility** | Yes. REF components and other infrastructure can be removed. | |
| **Loss of resources?** | No | No |
| **Can impacts be mitigated?** | Yes | |
| **Confidence in findings:** High. | | |
| **Mitigation:**<br>The proponent should liaise with the BRM to address potential impacts on local services and accommodation needs. | | |

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

[24] With effective mitigation and planning the significance will be Low Negative.

## 4.7 CUMULATIVE IMPACT ON LOCAL ECONOMY

In addition to the potential negative impacts, the establishment of renewable energy facilities and associated infrastructure, including the proposed SEF, will also create several socio-economic opportunities for the BRM and SBM. The positive cumulative opportunities include creation of employment, skills development and training opportunities, and downstream business opportunities.

The review of the REIPPPP (December 2021) indicates that to date (across BW1-4) a total contribution of R22.8 billion has been committed to SED initiatives. Assuming an even, annual revenue spread, the average contribution per year would be R1.1 billion. Of the total commitment, R18.5 billion is specifically allocated for local communities where the IPPs operate. With every new IPP on the grid, revenues and the respective SED contributions will increase.

The potential cumulative benefits for the local and regional economy are therefore associated with both the construction and operational phase of renewable energy projects and associated infrastructure and extend over a period of 20-25 years.

**Table 4.16: Cumulative impacts on local economy**

| **Nature:** The establishment of renewable energy facilities and associated projects, such as the SEF, in the BRM will create employment, skills development and training opportunities, creation of downstream business opportunities. | | |
|---|---|---|
| | **Overall impact of the proposed project considered in isolation** | **Cumulative impact of the project and other projects in the area** |
| **Extent** | Local (1) | Local and regional (3) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Low (4) | High (8) |
| **Probability** | Highly Probable (4) | Highly Probable (4) |
| **Significance** | Medium (36) | High (60) |
| **Status (positive/negative)** | Positive | Positive |
| **Reversibility** | Yes. REF components and other infrastructure can be removed. | |
| **Loss of resources?** | No | No |
| **Can impacts be mitigated?** | Yes | |
| **Confidence in findings:** High. | | |
| **Mitigation:**<br>The proponent should liaise with the BRM to identify measures to maximise SED opportunities associated with the project. | | |

**Assessment of No-Go option**
There is no impact as it maintains the current status quo. This would represent a lost socio-economic opportunity for the BRM and SBM.

## 4.8 ASSESSMENT OF NO-DEVELOPMENT OPTION

The primary goal of the Project is to assist in providing additional capacity to Eskom to assist in addressing the current energy supply constraints. The project also aims to reduce the 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 carbon emissions.

The No-Development option would represent a lost opportunity for South Africa 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 4.17: Assessment of no-development option**

| **Nature:** The no-development option would result in the lost opportunity for South Africa to improve energy security and assist to support with the development of clean, renewable energy | | |
|---|---|---|
| | **Without Mitigation[25]** | **With Mitigation[26]** |
| **Extent** | Local-International (4) | Local-International (4) |
| **Duration** | Long term (4) | Long term (4) |
| **Magnitude** | Moderate (6) | Moderate (6) |
| **Probability** | Highly Probable (4) | Highly Probable (4) |
| **Significance** | Moderate (56) | Moderate (56) |
| **Status** | Negative | Positive |
| **Reversibility** | Yes | |
| **Irreplaceable loss of resources?** | Yes, impact of climate change on ecosystems | |
| **Can impact be mitigated?** | Yes | |
| **Enhancement:** See below | | |
| **Residual impacts:** Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change. | | |

**Recommended enhancement measures**
The proposed SEF should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.

[25] Assumes project is not developed.

[26] Assumes project is developed.

## 4.9 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 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 (~ 20-30) 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.

**Table 4.18: Social impacts associated with decommissioning**

| **Nature** Social impacts associated with retrenchment including loss of jobs, and source of income. Decommissioning will also create temporary employment opportunities, which would represent a positive temporary impact | | |
|---|---|---|
| | **Without Mitigation** | **With Mitigation** |
| **Extent** | Local (4) | Local (2) |
| **Duration** | Short term (2) | short term (2) |
| **Magnitude** | Moderate (6) | Low (4) |
| **Probability** | Probable (3) | Probable (3) |
| **Significance** | Medium (36) | Low (24) |
| **Status** | Negative | Negative |
| **Reversibility** | N/A | |
| **Irreplaceable loss of resources?** | No | No |
| **Can impact be mitigated?** | Yes | |
| **Mitigation:**<br>• The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.<br>• All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning. | | |
| **Residual impacts:** No, provided effective retrenchment package. | | |

**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 for other renewable energy projects.
- Interviews with key stakeholders.
- Experience/ familiarity of the author with the area and local conditions.
- 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. The 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. The development of renewable energy is also supported at a provincial and local level. The development of the proposed PV SEF is therefore supported by key policy and planning documents.

### 5.2.2 Construction phase impacts

**Potential positive impacts**

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase is expected to extend over a period of ~24 months and create approximately 300-350 employment opportunities. The total wage bill for the construction phase is estimated to be in the region of R 80 million (2023 Rand value). A percentage of the wage bill will be spent in the local economy which will create opportunities for local businesses in the BRM and SBM.

Some of the employment opportunities, specifically the low and semi-skilled opportunities, will be available to residents in the area, specifically residents from local towns in the study area, including Velddrif, Vredenburg and Saldanha Bay. Most of

beneficiaries are likely to be historically disadvantaged (HD) members from the community. This would represent a significant positive social benefit in an area with limited employment opportunities. However, in the absence of specific commitments from the developer to employ local contractors the potential for meaningful skills to local employment targets the benefits for members from the local communities may be limited. In addition, the low education and skills levels in the area are likely to hamper potential opportunities for local communities.

The potential benefits for local communities are confirmed by the findings of the Overview of the IPPPP undertaken by the Department of Energy, National Treasury and DBSA (December 2021). The review found that by the end of December 2021 the construction phase of the 85 renewable energy projects that had been successfully completed had created 44 172 job years[27] of employment, compared to the anticipated 30 488. This was 45% more than planned. The study also found that significantly more people from local communities were employed during construction than was initially planned.

The capital expenditure associated with the construction phase will be in the region of R 6 billion (2023 Rand value). The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

**Potential negative impacts**

- Impacts associated with the presence of construction workers on local communities.
- Increased risks safety, livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- 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.

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

**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** | Medium (Positive) | Medium (Positive) |
| **Presence of construction workers and potential impacts on family structures and social networks** | Medium (Negative) | Low (Negative) |
| **Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers** | Medium (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.
- Benefits for local landowners.
- Benefits associated with socio-economic contributions to community development.

The proposed project will supplement South Africa's energy 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.
- Potential impact on property values.
- Potential impact on tourism.

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** | High (Positive) | High (Positive) |
| **Creation of employment and business opportunities during maintenance** | Low (Positive) | Medium (Positive) |
| **Benefits associated with socio-economic contributions to community development** | Medium (Positive) | High (Positive) |
| **Benefits for landowners** | Low (Positive) | Medium (Positive) |
| **Visual impact and impact on sense of place** | Medium (Negative) | Low (Negative) |
| **Impact on property values** | Low (Negative) | Low (Negative) |
| **Impact on tourism** | Low (Negative) | Low (Negative) |

### 5.2.4 Cumulative impacts

***Cumulative impact on sense of place***
There are several proposed renewable energy projects in the area. The potential for cumulative impact on the areas sense of place therefore exists. The significance is rated as **Moderate Negative** depending on how many facilities are established in the area.

***Cumulative impact on local services and accommodation***
The significance of this impact with mitigation was rated as **Low Negative**.

***Cumulative impact on local economy***
The significance of this impact with enhancement was rated as **High Positive**.

### 5.2.5 Decommissioning phase

Given the relatively small number of people employed during the operational phase (~20-30), 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 South Africa to improve energy security 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 Sunveld PV SEF and associated infrastructure will create employment and business opportunities in the BRM and SBM during both the construction and operational phase of the project. The potential negative impacts can also be effectively mitigated.

The project will also create opportunities for contributions to socio-economic development in the local community. The enhancement measures listed in the report should be implemented in order to maximise the potential benefits. The significance of this impact is rated as **High Positive**. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to direct foreign investment, local employment and procurement and investment in local community initiatives.

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

# ANNEXURE A

## INTERVIEWS UNDERTAKEN IN 2017 AND 2019

- Brand, Mr Flip (20-10-17). Grootvlei and Soutkloof Farms.
- Brink, Mr (19-10-17). Soutkloof Farm (10/21).
- Crafford, Cllr Sandra (19-10-17). Bergrivier Local Municipality Ward 7 Councillor.
- Kotze, Ms Dorothea (telephonic 16-10-17). Head Planner: West Coast District Municipality.
- Melck, Mr Arthur (20-10-17). Kruispad Farm.
- Melck, Mr Graham (20-10-17). Kruispad Farm.
- Melck, Mr Nick (20-10-17). Doornfontein Farm.
- Small, Cllr Audrey (19-10-17). Bergrivier Local Municipality Ward 6 Councillor.
- Tredoux, Mr Fanie (19-10-17). Klipfontein Farm, Melkplaas Eiendomme.
- Vermeulen, Mr Hannes (19-10-17). Bergrivier Local Municipality Planner Area West.
- Visser, Mr. Boeta (20-10-17). Volstruisfontein Farm.
- Visser, Mr. Gielie (20-10-17). Volstruisfontein Farm.
- Visser, Mr Jacobus (19-10-17). Dansvlakte Boerdery.

## REFERENCES


- 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 Energy Plan (2016).
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- 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 Provincial Strategic Plan (2014).
- Western Cape Green Economy Strategy (2013).
- One Cape 2040 (2012)
- West Coast District Municipality Spatial Development Framework (2020).
- Berg River Municipality Integrated Development Plan (IDP) (2022-2027).
- Berg River Municipality Spatial Development Framework (2019-2029).

# 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

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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.

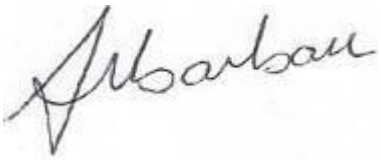
## ANNEXURE D

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):

14 November 2023

Date: