

Socio- Economic Statement of
Proposed Darling Municipal Solar Facility
March 2024



Prepared by
sustainable development

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Socio-Economic Statement:

Proposed Darling 19.9MW Solar Photovoltaic Facility

19.9MW solar photovoltaic facility on Erf 551, Darling

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EXECUTIVE SUMMARY

Purpose of Socio-Economic Statement

The Socio-Economic statement highlights the intended (direct and indirect impacts) and unintended (residual) consequences on the human and natural environment caused by the proposed solar facility. Management measures are proposed to mitigate these consequences.

The proposed 19.9MW capacity solar facility and ±54ha in extent is located adjacent to Darling on Erf 551. The consequences of development of such scale and extent on the Darling community, requires a socio-economic perspective (or statement) to inform the need and desirability thereof. The site is reached from the R315 and gravel road DR1156 crossing the site.

The impacts identified, are considered based on assessments of similar solar facilities of which one solar facilities of similar extent (19MW) is located in close proximity in the Swartland Municipal area. Mitigation measures are suggested for the various impacts considered as per the last Chapter of this statement.

Proposed Solar Facility

The proposed PV Plant of approximately 54ha will generate a projected power peak (electricity) of approximately 19.9 MWp. The proposed facility will either make use of PV modules mounted on a table array anchored to the ground or solar containers or both. The final details will be determined once a developer is identified. The Solar photovoltaic facility will comprise Solar PV generation, lithium battery storage and electrical reticulation equipment.

The solar field will comprise rows of panels called strings arranged to capture the most sunlight. The panels are typically up to 2.3m x 1.13m in area and each panel is mounted on a metal frame (called an array table). The arrays (with a total height of 5m) are either fixed on a tracking system (4.5m high). An array of PV Panels faces due north and running east to west across the site. The mounted panels on a table array are anchored to the ground utilizing rammed or planted steel support posts. A concrete foot piece secured to a steel pen driven into the ground will be used where ramming does not prove feasible.

PV Solar containers, also known as solar power containers or solar farms in a box, are self-contained units that house solar power generation equipment within a standardized shipping container. These containers are designed to make solar energy installations more modular, portable, and easy to deploy.

The facility and associated infrastructure will be accessed via existing access road. A 5m management track will surround each block of photovoltaic arrays. These single-track management roads will be used as access roads to service and maintain structures and to serve as fire breaks. On full commissioning of the facility, any access points to the site which are not required during operational phase will be closed.

Impacts addressing community needs

Of note are the following impacts of the proposed solar facility:

- Supply of bulk services unlocking economic opportunities;
- Improved proximity to work and generation of jobs;

These impacts generated by the proposed solar facility address the social and economic status of the receiving community significantly. Needs expressed in Swartland IDP, 2022 – 2027, confirmed the social and economic status of the broader Darling and Swartland community. The table below presents the social and economic needs that the proposed solar facility is likely to address.

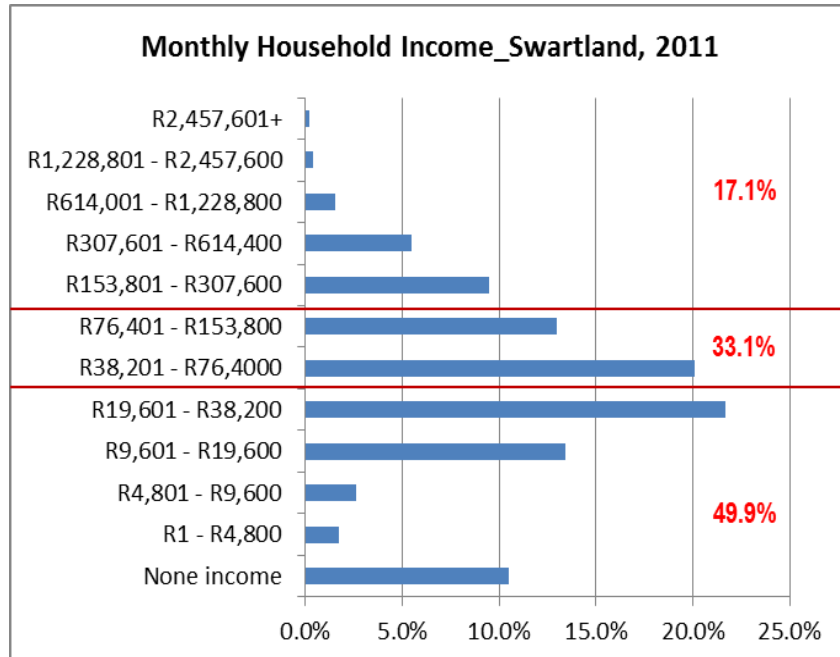
Social and economic status and needs	Significant Impacts of the proposed mixed-use development
Economic growth is slow.	Generation of Electricity for Darling & Swartland Municipality.
Unemployment is high and keeps rising.	Improved proximity to work and job generation.
Financial Sustainability of service delivery vs strong dependency on grants (indigent).	Supply of bulk services unlocking economic opportunities and settlement (housing) development.
Quality of the living environment including municipal services, social spaces – some creating vibrancy and some peace and quietness and recreational facilities.	Creating sustainable settlements operating with green energy.
Housing and ownership particularly for backyarders whom constitute the biggest segment of the housing waiting list.	Supply of bulk services unlocking economic opportunities.
Cultural and heritage resources need protection to keep tourism growing: Renosterbos, rolling wheat fields, views of Table Mountain.	Darling enhances its status as a business destination.
Affordable opportunities to access Further Education and skills development that result in employment. Upgrading of schools and crèches	Social investment target scarce subjects in schools.
Rehabilitation support / family relief - working population at home, not economically active yet caring for family members unable to do so themselves.	No direct contribution to these specific facilities is made.
Decreased maternal and child health amongst women and children.	Indirectly.
Safety and social well-being as the number of street kids increases.	Indirectly.

Receiving Community

In 2020 the Swartland population of 147 225 people represented 39 929 households with an average household size of 3.5 people. Darling has 14 828 residents representing 10% of the Swartland population.

Since the 2016 Community Survey, the **average annual growth rate** of the Swartland population is calculated as **3.3%**. The population is fairly equally distributed in terms of gender with 50.4% females and 49.6% males. Of note are the **28.5% female-headed households** whilst 39.2% of households have partners who are married or live as married partners. Thus, **60% of households are single parents** in one way or another (never married, widowed, separated or divorced). The population of the Swartland is relatively young as the Youth (0-14) represents 25%, **the working-age population** (15 – 64) represents **69.1%** and the Elderly (65+) 5.9% of the total population.

According to StatsSA (2011) half (**49.8% or 14 603**) of the households within the municipal area **earned less than R3 500** per month and qualify for subsidized housing and indigent services provision.



More than half (51%) of the working-age (15-64) Swartland population are employed, 39% are not economically active while 8% are unemployed and 2% are discouraged work-seekers (StatsSA 2011).

In 2017 the Swartland unemployment rate of 10.4% was slightly less than that of the West Coast District **unemployment rate of 11.1%** (StatsSA) and the **youth unemployment rate was 17.9%**.

The decrease in employment opportunities in agriculture, forestry and fishing will most

likely cause discomfort for the 50.1% of the workforce that is low-skilled and the 34.6% of the workforce that is semi-skilled. The growth in the secondary economic sector such as wholesale, retail and trade and tertiary economic sectors such as financial and business services will most likely favour the 15.2% of the population that are skilled (Quantec Research, 2018).

The competitive strengths of the region reside in its food value chain (processing), including a stable Agricultural sector producing for the export and local market, as well as associated agricultural industries. However, a reliable and constant power supply is key for the agri-industrial activities.

In Swartland, basic services are accessed by the 90.9% households that live in formal dwellings and those not so fortunate:

- Water (piped water inside the dwelling): 80.6%.
- Energy / Electricity for lighting: 97.8%
- Sanitation: Flush toilet connected to sewerage: 77.3%
- Weekly refuse removal: 76.1%

Whilst forty four percent (**43.6%**) of households own and nearly nine percent (**8.6%**) of households pay off their homes, **28% of households rent** their homes.

The **Swartland has the second largest economy in the WCD**, with a regional gross domestic product (GDP) of **R7.4 billion** in 2016 with Malmesbury comprising the economic hub. More than three quarters (77.5%) of the contribution to Swartland's economy comes from the five main sectors. These are manufacturing (R1 689.0 million or 22.9%), wholesale and retail, catering and accommodation (R1 289.2 million or 17.5%) and agriculture, forestry and fishing (R1 173.4 million or 15.9% in 2016). Government services are the fourth biggest contributor (R851.0 million or 11.5%) whilst finance, insurance, real estate

and business services (R704.7 million or 9.6%) follows as the fifth biggest contributor as Swartland is renowned as a sought after tourist destination.

Though income disparity, and hence the poverty rate is high, the community is stable and resilient.

Approach and Assumptions

The approach to the study is directed by the requirements for Environmental Impact Assessments and the Guidelines for Social Impact Assessments (SIA) and Economic Impact Assessments (EIA) commissioned by the Department of Environmental Affairs and Development Planning (DEA&DP).

Hence, this Social Economic Statement (SES):

- Reviews the social status of the receiving community;
- Identifies development impacts and state significance of impacts based on experience and communication with the developer, specialists and key project team members;
- Recommends likely management and mitigation measures;
- Concludes the assessment result.

This socio-economic statement considers the development alternative proposed as the preferred alternative and refers to the no-go alternative. Furthermore, the following assumptions and limitations shaped the assessment:

- (a) There is a high degree of certainty that a solar facility will take place.
- (b) The event of a complete demolition is unlikely and therefore has not been assessed.
- (c) Calculation of the number of jobs created was based on limited information sources, i.e. estimates and indicative data from specialist reports only.
- (d) Interviews are limited to the developer's representatives and specialists.

Policy and Planning Context

An analysis of the compatibility of the proposed project with the relevant sector policies and development plans concluded that the proposed solar facility is compatible with the following National and Provincial plans and policies:

- White Paper on Energy Policy for the RSA (1998);
- White Paper on Renewable Energy (2003);
- National Energy Act (2008);
- National Alternative Energy Strategy (2009);
- National Spatial Development Framework (2006);
- Western Cape Provincial Spatial Development Framework (PSDF), March 2014 revised 2019;
- Swartland Spatial Development Framework;
- Swartland IDP;
- Swartland Human Settlement Plan.

The proposed development represents a solar facility with amenities and employment opportunities within walking distance.

Impacts, Direct, Indirect and Residual

The significance of impacts is expressed according the score scale as per the table below:

Rating	Score -	Score +
Low	0 to – 40	0 to 40
Medium	- 41 to – 80	- 41 to 80
High	- 81 to – 120	- 81 to 120
Very High	> - 120	> 120

Overall, the impacts generated by the proposed solar facility are:

Positive, direct impacts are:

Generating employment:

- During construction, the generation of ± 106 jobs and a wage bill of $\pm R45$ million over 18 months and R36 million benefitting the 85 locals, providing broadly 21 unskilled, 51 semi-skilled and 13 skilled people employment.
- During operations, the generation of ± 37 jobs, and an annual wage bill of R11 million of which R8.8 million will benefit locals. For the first ten years, the wage bill will be R144 million.
- During decommissioning, the creation of ± 85 opportunities and ± 43 jobs with a wage bill of R4.4 million over 6 months and R3.5 million benefitting the locals, providing 21 unskilled, 51 semi-skilled and 13 skilled local people employment opportunities.

Contributing to the Swartland GDP:

- During construction, operations and decommissioning the facility contribute <1% to the Swartland GDP mainly from sales generated from the wage bill, material and services, and the sale of electricity by the municipality.

Generating work within <1km proximity, during operations.

Enhancing supply of bulk services as 19.9MW and 6 200 households are provided with electricity, during operations.

Improved skills:

- During construction, operations and decommissioning, skills development as informal training takes place.
- During construction and operations raising awareness of career options having skilled and semi-skilled others present in the community working on the solar facility.

Positive Indirect impacts are:

Increased SMME participation as services, including maintenance services are rendered, during operations.

Improved educational levels:

- During operations, increased levels of education as personal choices in the world of work are enhance by supporting the teaching of scare school subjects.

Positive Residual impacts are:

Improved self-image, being held in high esteem and family coherence of vulnerable people

- Improved family coherence as young women and youth are held in high-esteem, during construction, operations and decommissioning.
- Youth's self-esteem developed and found employment (employment equity) and development opportunities resulted from social investment during construction, operations and decommissioning.
- Family structure changes as family members are becoming available to work.

Negative Direct impacts are:

Changed sense of place:

- During construction and decommissioning and within limits, though negative, increased use of social amenities and services, decreased road safety and increased noise and dust.
- During construction, operations and decommissioning (if no decommissioning takes place), the change in the sense of place.
- During decommissioning the land return to fallow fields which is a positive impact.

Loss of agricultural land:

- During operations, Loss of ±54ha agricultural land suitable for grazing (food security potential is low).

Loss of employment:

- During decommissioning Retrenchment and loss of income for ±37 employees maintaining the solar facility.

Loss of social benefits:

- During decommissioning, social benefits ceased enabling individual achievement and development benefits the Swartland community.

Negative Indirect impacts are:

Influx of people

- Community stability decrease as the perception of work cause an influx of employed and unemployed people.

Negative Residual Impacts:

Change of culture:

- Diversification of culture because of the influx of people to find work or to conduct business (entrepreneurs) during operations.

Cumulative Impacts

The cumulative impacts associated with the proposed solar energy facility are:

Positive cumulative impacts:

- a) Job creation that results directly into skills development and improved income and indirectly into economic growth (and growth in SMMEs and self-esteem).
 - o Unemployment levels decrease and income and spending power increase;
 - o Skills development and training is offered to those employed and skills levels improve;

- Entrepreneurs, and local entrepreneurs render services to the facility and employ locals (and the cycle of spending power increasing sales and economic growth, benefitting locals repeat itself as in the case by those employed by the solar facility.

The impact supported by similar impacts of solar facilities in the immediate region (another in Darling, one in Malmesbury, two in Kalbaskraal) culminate in a positive impact of economic growth and increased per capita income of families settled in Swartland.

The impact is also enhanced by mitigation measures that keep the benefits of the solar facility local for example giving preference to employ locals and use the services of local service providers.

- b) Bulk infrastructure/ alternative energy generation contributes to the national goal of reducing the carbon footprint and prohibiting global warming and climate change.
 - Reliability of energy availability is also under direct control of

Negative cumulative impacts

Change in sense of place as the visual nature of the western entrance change from fallow agricultural land to solar facility, is moderate on the local sense of place. .

As Darling is a tourism destination, the change of sense of place being of a visual nature (the presence of the PV panels and associated infrastructure) at the western entrance of Darling will become part of the new association with Darling, and will negatively affect tourism.

Impacts accumulate and together with the results from this impact, change of sense of place of western entrance, when added to other similar activities (utility and bulk services infrastructure) and unregulated background pressures (farm entrance gates erected in the absence of a guideline and overall road interfaces) and trends onto the receiving landscape (Darling's western entrance and surroundings. Darling's surroundings include its double eastern and western entrance and the viewshed on the stretch of road between R27 and Darling with a secondary sphere from the coast to Darling). The combined effect of individual impacts (the proposed development and existing and future utility and bulk services developments together with unguided tourism and road interface developments) occurs when a receptor, the scenic landscape, is affected by more than one impact during any phase of development (Seagrave Road Environmental Statement Addendum Vol1). The impact of the proposed development will be a sufficient addition, given its extent and longer term presence, to change the association with Darling from rural (natural, conservation and agricultural landscape) to an uneasiness because of the visibility of utilities, bulk service infrastructure and unguided road interface development and in the longer term landscape deterioration, which become the replacement association. The replacement association will impact negatively on Darling as tourist destination which will be counterproductive to the gains of the proposed development.

Therefore, application of and adherence to the landscaping mitigation measures that can mitigate the impact on the immediate environment and by implication on the wider surroundings should be a condition of proceeding with the proposed development. The landscaping will remove the uneasiness as the utilities and infrastructure will be partially shielded and the rural association will be maintained. Hence the future of Darling as a tourism destination will not be jeopardized.

This study does not assess the overall cumulative impact i.e. the optimal number and location of solar facilities in the area, on the rural character and the sense of place of the surroundings.

Likely cumulative impacts that do not contribute to regional impacts

There are three impacts which do not add to surrounding impacts as the loss anticipated could be mitigated or avoided:

Loss of agricultural land:

- It is grazing land of which there is no shortage and does not impact on food security.
- It seldom contributed to the livelihood of a farming entity renting the land and do not affect farmers, their families or agri-workers as it is owned by the Swartland Municipality. As it is not a scarce resource, the loss is not assessed as cumulative.
- The remainder of the land can still be used for small scale agriculture and agricultural reform.

Loss of biodiversity and ecological infrastructure:

- The impact is diverted and ecological infrastructure is being protected by avoiding the water course and biodiversity. There is thus no addition to impacts of biodiversity loss that may occur because of the solar projects in the Swartland region.

The influx of outsider looking for work and remaining in the area during the various phases of the proposed facility causing increased use of social amenities, competition to find employment, unemployment, poverty and crime can be mitigated and do no result into a cumulative impact. The culminative impact of employment and economic growth, will ultimately absorb the influx.

- Partnerships with entities promoting education and government should enhance provision of service and opportunities to participate in the economy.
- Community structure could be strengthened and partnerships with communities can be managed by establishing Trusts, securing benefits for local communities.

No Go Alternative

The No-Go Alternative would lose an opportunity for South Africa to supplement its current energy needs with clean, renewable energy and achieve its targets. Not reaching its targets and being one of the highest per capita producers of carbon emissions in the world (80% emission for energy use vs. 49% for developing countries) this alternative represents a negative impact socially and environmentally.

Furthermore, the No-Go Alternative will also:

- (a) Result in a loss of employment opportunities generated during construction and operations.
- (b) Result in no social investment to support specific social (improvement of education in scarce subjects) and economic (enhancing small businesses) initiatives as identified by the specialist studies and developers.

This alternative represents a negative social cost particularly for the local community.

Recommendation

The proposed solar facility is deemed acceptable as it is:

Generating employment equal to ±149 one-year or slightly longer jobs and 37 full-time jobs for twenty years during all three phases benefitting the locals

Contributing R39.5 million during the construction and demolition phases and R8.8 million annually during operations to the local wage bill

Generating work within <1km proximity, during operations.

Enhancing supply of bulk services as 19.9MWh and approximately 6 200 households are provided with electricity, during operations.

Bound by mitigation measures in Section 4 of the Assessment to be included in the EMPR.

The proposed solar facility as a whole should be authorized on condition that the Landscape Mitigation Measures be adhere to in order to maintain the sense of place that Darling as tourism destination holds.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:
NEAS Reference

(For official use only)
12/12/20/
DEAT/EIA/

Application for authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

Proposed Darling Solar PV facility, Cape Province

Specialist: Contact person:	Anelia Coetzee (MURP & MBA)		
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The specialist appointed in terms of the Regulations_

I, Anelia **Coetzee**, declare that

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;

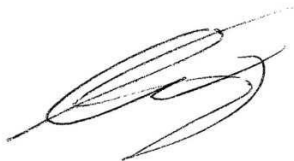
I will comply with the Act, regulations and all other applicable legislation;

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 71 and is punishable in terms



Signature of the specialist:

Leap Sustainable Development cc (BEE Level Four Contributor)

Name of company (if applicable):

Date: 26 March 2024

Socio-Economic Statement:

Proposed Solar Facility, Darling

Section 1: Project Overview and Assessment Scope

1.1 Introduction

EnviroAfrica cc was appointed by Swartland Municipality as Environmental Assessment Practitioners to undertake an Environmental Impact Assessment for a proposed solar facility on Erf 551 and 371ha in extent, Darling, in the Swartland Municipal area, Western Cape. Leap Sustainable Development was appointed by EnviroAfrica cc to undertake a specialist Socio-economic statement (SES) as part of the Environmental Impact Assessment application.

1.2 Description of Proposed Development and Alternatives

Location, extent and elevation:

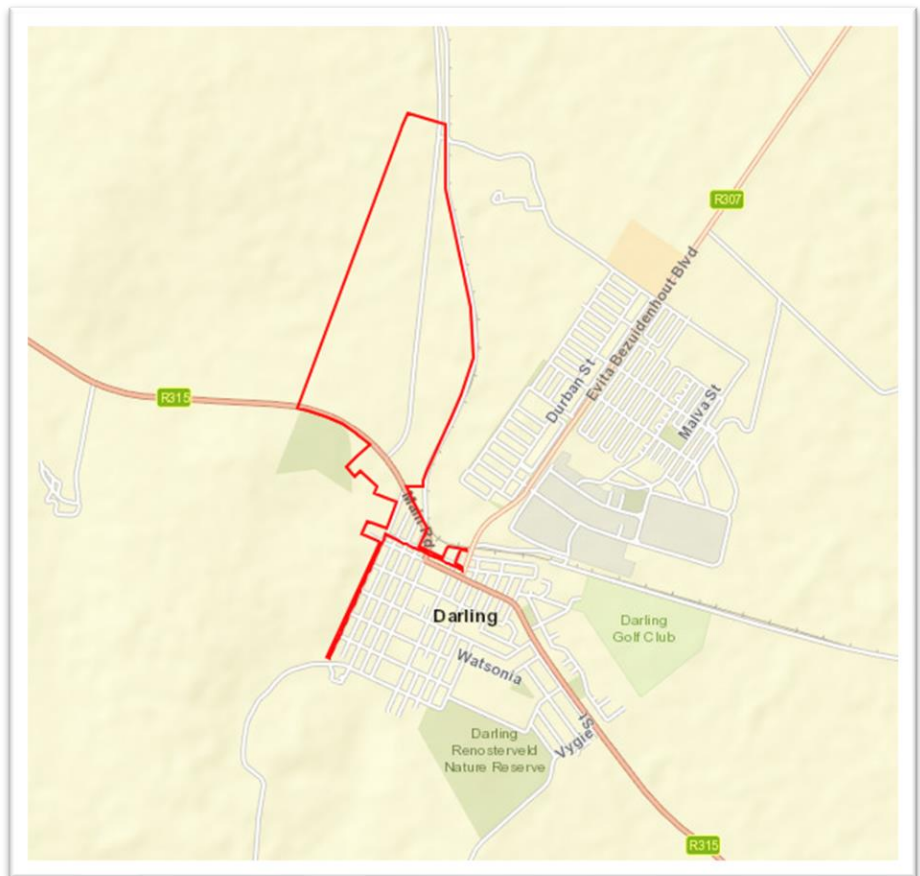
A Solar PV generation facility is proposed to provide base load electrical supply to Swartland Municipality in Darling, Western Cape. The proposed solar facility and ± 54 ha in extent is located adjacent to Darling. The site is reached via the R315 and gravel road DR1156 crossing the site.

The terrain is flat and typical of the Swartland countryside.

Generated Product:

Solar PV technology is a method of generating electrical power by converting solar radiation using semiconductors through a process known as the Photovoltaic Effect. It is not the heat required from the sun but the amount of irradiation available that allows for electrical energy to be generated. The use of solar energy, a natural resource, is non-consumptive and emits zero greenhouse gasses. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity.

The proposed PV Plant of approximately 54ha will generate a projected power peak (electricity) of approximately 19.9 MWp. The proposed facility will either make use of PV modules mounted on a table array



anchored to the ground or solar containers or both. The final details will be determined once a developer is identified. The Solar photovoltaic facility will comprise Solar PV generation, lithium battery storage and electrical reticulation equipment.

The facility and associated infrastructure will be accessed via existing access road. A 5m management track will surround each block of photovoltaic arrays. These single-track management roads will be used as access roads to service and maintain structures and to serve as fire breaks. On full commissioning of the facility, any access points to the site which are not required during operational phase will be closed.

PV Modules on a table array anchored to the ground has the following components which consist of:

- **PV Cell:** A basic PV device, which generates electricity when exposed to solar radiation. All PV cells produce Direct Current (DC) electricity;
- **PV Module or Panel:** The smallest complete assembly of interconnected PV cells. The modules are typically mounted in a lightweight aluminium frame to form a panel.
- **PV Array:** A group of PV panels connected together is termed as PV Array. An interconnected system of PV modules that function as a single electricity producing unit. The proposed PV panels are approximately 2.3 m in height and 1.3m in width (depending on the make and model – will be later confirmed). These panels will be installed on single axis tracking mounting structures. The mounted panels on a table array is anchored to the ground utilising rammed or planted steel support posts. A concrete foot piece secured to a steel pen driven into the ground will be used where ramming does not prove feasible. The maximum height of the solar array tables in operation would be approximately 5m and would allow sufficient ground clearance for the free flow of surface water underneath the panels (see mounting structure).
- **Mounting Structure:** The single axis tracking mounting structure is approx. 4.5 m in height. Total height is approximately 5m depending on the specific ground clearance allowed below the structure and make and model of the PV array. The mounting structure is supported by soundly secured steel posts, planted in the ground, providing structural support for the PV array. Each PV Array table is approximately 12m in length and 4.5m width. The array tables are arranged in series to make a Solar Array table row. The total length of each row depends on site geometry but typically varies from 260-360m. The rows are then arranged in a matrix throughout the Solar field with all energy generated being consolidated at the electrical reticulation points. See example below.



Figure 1: Proposed solar facility (example)

The number of panels comprising the array will depend on the solar resource at the site, the installed capacity and the choice of panels. The 1) solar field will comprise rows of panels called strings arranged to capture the most sunlight or 2) various solar containers (see *Figures above and below*).

PV Solar containers, also known as solar power containers or solar farms in a box, are self-contained units that house solar power generation equipment within a standardized shipping container. These containers are designed to make solar energy installations more modular, portable, and easy to deploy. Inside the container, you typically find solar panels, inverters, batteries (if applicable), and the necessary control and monitoring systems. The container's roof or sides are equipped with solar panels that capture sunlight and convert it into direct current (DC) electricity using photovoltaic (PV) cells. These panels are designed to efficiently harness sunlight and generate electricity even in challenging environmental conditions. The DC electricity generated by the solar panels needs to be converted into alternating current (AC), which is the type of electricity used in most buildings and for various appliances. Inverters inside the container perform this conversion. They ensure that the electricity produced is suitable for immediate use or for feeding into the grid.

Some solar containers also incorporate energy storage systems, usually in the form of batteries. These batteries store excess electricity generated during sunny periods so that it can be used during cloudy periods or at night when solar generation is not possible. This enhances the stability and reliability of the energy supply. Solar containers are equipped with sophisticated control systems that manage the operation of the solar panels, inverters, and batteries. These systems optimize energy production, monitor system health, and can be remotely controlled and monitored. This remote management capability is particularly useful for maintenance and troubleshooting.



Figure 2: Solar containers (example)

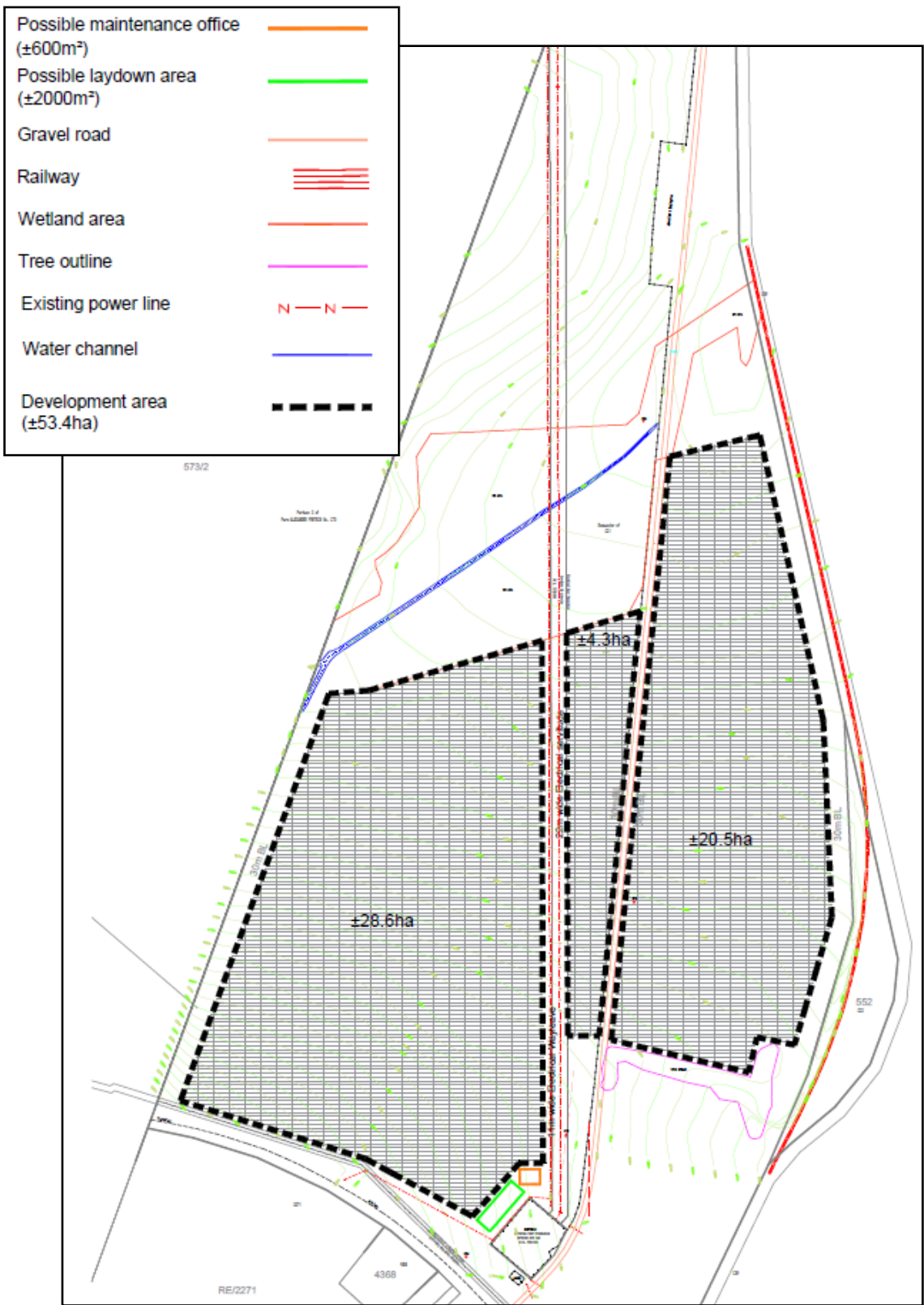


Figure 3: Proposed Site Development Plan

No site alternatives or development alternatives are proposed except for the no go alternative.

The facility will be developed to provide a total of 19.9MW.

1.3 Purpose of the Assessment

A Socio-Economic Statement predict and reflect the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes involved by those interventions so as to bring about a more sustainable and equitable biophysical and human environment (Vanclay, 2002).

At a broad level the impacts on the overall welfare of a community should be reflected considering the efficiency, equity and sustainability of the project as well as the trade-offs or 'opportunity cost' the various alternatives will yield.

1.4 Approach

The approach to the study is directed by the requirements for Environmental Impact Assessments and the Guidelines for Social Impact Assessments (SIA) and Economic Impact Assessments commissioned by DEA&DP i.e.:

- Reviews the social status of the receiving community,
- Identifies development impacts and state significance of impacts based on experience and communication with the develop, specialists and key project team members;
- Recommends likely management and mitigation measures;
- Concludes the assessment result.

1.5 Assumptions & Limitations

The following risks and level thereof, are inherent to the proposed development.

Table 1: Inherent Risk Overview Matrix_ Darling Solar Facility

Risks	In case of such a risk, its scope is:					Aspects the risk will impact on:	Vs Impact of proposed development
	Extend	Duration	Intensity	Probability	Confidence	Element	Proposed Solar Facility
Inequality	Local Direct	Perm	Low	Unlikely	Mod	Employment. Opportunities to operate related businesses. Access to household energy.	No risk: no exclusions. Benefits all income (low, middle and high) and gender groups its employment, business opportunities and access to energy.
Social Fabric	Local Indirect	Temp	Low	Unlikely	Mod	Scale (extent) Labour force	Very limited risk. Construction Phase: Labour travel to site daily and are not temporarily located on site.

Livelihoods	Local Direct	Perm	Med	Likely	High	Income generation opportunity (ies)	Definite risk if no alternative is considered. If considered: Does not take away; does create reliable energy source.
Vulnerable communities	Local Indirect	Perm	Med	Likely	Mod	Vulnerable community members (and absence of concentration of): women, elderly, children, dependents.	Definite risk if no alternative is considered. If considered: Does not directly impact. Does create reliable energy source that enable community to be less vulnerable and ultimately decrease vulnerability of vulnerable groups.
Critical resources	Local Direct	Perm	Low	Likely	Mod	Water, energy and clean air	No risk: Operates according to national and international standards, and contribute to reliable & safe use of natural resource.
Economic vulnerability	Local Indirect	Perm	Med	Likely	Mod	Population size, merchandise export concentration, share of agriculture in GDP homelessness (natural disasters) instability of agricultural production, instability of exports of goods and services, (Human Asset Index): - Health (<5 & maternal mortality rate, stunting) and - Education (gross secondary school enrolment & gender parity, adult literacy)	Definite risk if no alternative is considered. If considered: Stable Enable export concentration. Expansion of major (3 rd biggest) contributor Provide additional capacity Stable Stable Access to health services & education enhanced
Sustainability	Local Direct	Perm	Med	Likely	Mod	Balance between social, economic and natural; Able to meet present needs without negatively impacting on future	Definite risk if no alternative is considered. If considered Contributes to economic development and meeting present needs, whilst managing future impacts
Extend: Local or Regional, Duration: Short, Medium and Long term and Perm – Permanent, Intensity: Low, Med – Medium and High. Probability: Likely, Perhaps, Unl – Unlikely, Confidence: Con – Confidence, Directly or Indirectly							

The above matrix aid to avoid risk and be cautious. The impacts of the risks considered, is local (limited to the settlement of Darling and surrounding settlements such as Yzerfontein), permanent and mostly moderate in intensity where there is a direct risk. Their permanency maintains a positive contribution in future.

The following assumptions and limitations shaped the impact assessment:

Assumptions:

This socio-economic impact assumes that:

- (a) Only one type of land use is required, as this is the only land use that can accommodate alternative energy generation and sufficient provision is made within Darling for other uses.
- (b) The decommissioning costs are similar to construction figures.
- (c) A job has the following duration: Construction: 18 months, Operations: 3 years or more, Demolition: 12 months. Where a phase is shorter than the duration assumed, the opportunities are added and the number of jobs is calculated accordingly.

The gaps in current knowledge are as follows:

- (a) Alternative energy generation can include a variety of activities which is unlikely to be harmful to the environment depending on how waste and decommissioning are handled and managed. Alternative energy generation require fewer raw materials, space and power and causes little pollution, particularly compared to traditional energy generation. Alternative energy generation production, and in particular solar energy, has less environmental impact than those associated with traditional energy generation. For that reason zoning laws are more likely to permit solar energy generation near residential areas or on roofs of buildings (O'Sullivan, 2003 adjusted).^[1]
- (b) Number of people employed directly from Darling in proposed solar facility, is not guaranteed. Mitigation could direct employment opportunities to favour inhabitants of Darling.

Limitations:

- (a) Assessment of alternatives is limited.
The alternatives assessed in the Socio- Economic Impact Assessment are limited to the proposed project site and the no-go alternative.

Although the Swartland SDF does not provide for sites or alternative sites the location was determined by:

- Related infrastructure in relatively close proximity to access opportunities
- The need to establish complementary zonings to integrate land uses for example residential and alternative energy generation.
- The need to bring work in close proximity to the workforce.

- (b) Calculation of the number of jobs created is limited.
The number of jobs created was based on information obtained from the development extent, the developer and very limited figures from specialist reports as the only sources. No other job generation benchmarks were considered.

1.6 Specialist details

The author of this report is an independent specialist with 10 years' experience in the field of rural development, 7 years in community education, 10 years in project management and coordination, 14 years in town and regional planning (Reg. no: A/1369/2010) and 12 years in socio-economic research.

1.7 Declaration of Independence

This is to confirm that Anelia Coetzee, responsible for preparing the Socio-Economic Statement, is independent and has no vested or financial interests in the proposed development being either approved or rejected.

1.8 Report Outline

The report is divided into four sections, namely:

- Section 1: Project Overview.
- Section 2: Socio- Economic Overview of Study Area and Applicable Legal Context.
- Section 3: Statement of Impacts: Construction, Operations and Decommissioning Phases.
- Section 4: Management guidelines to address socio-economic impact.

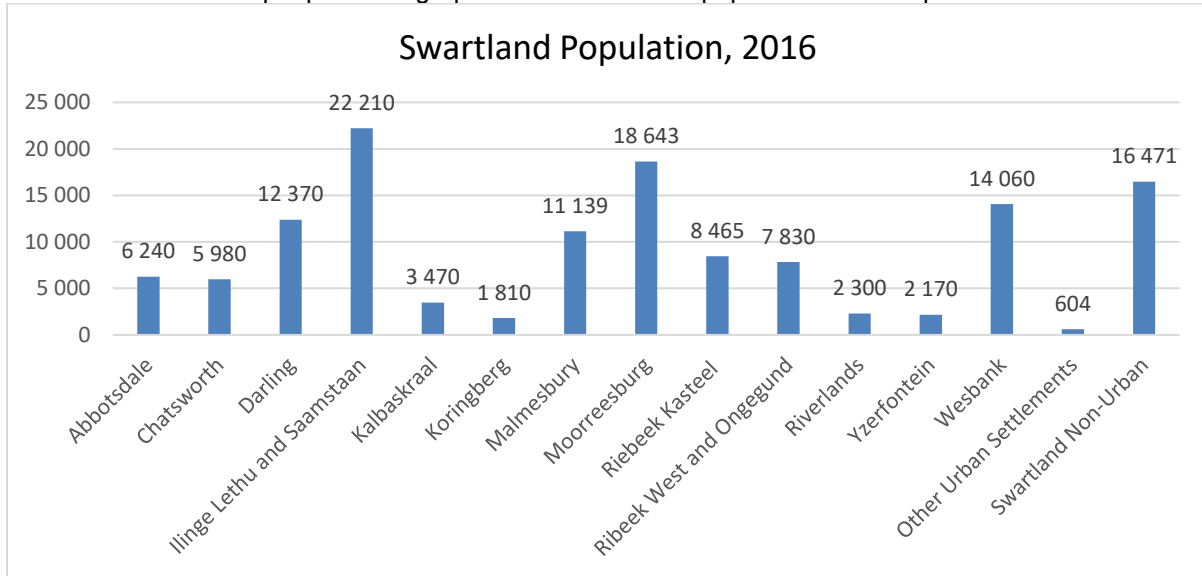
Section 2: Socio- Economic Overview of Study Area and Applicable Legal Context

This section provides an overview of the baseline socio-economic conditions of the receiving environment and the policy context.

2.1 Socio-Economic overview of Swartland

Demographics

In 2022, the Swartland population of 140 697 people represented 32 515 households with an average household size of 4.2 people. The graph below reflects the population in 2016 per settlement.



Graph 1: Swartland Population, 2016 (Swartland IDP 2023)

Three-quarters of the total population live in urban areas, while slightly more than a quarter resides in rural areas. The community profile of Swartland households living in the municipal area according to StatsSA 2011 and the 2022 Socio-Economic Profile for Swartland, is tabulated below.

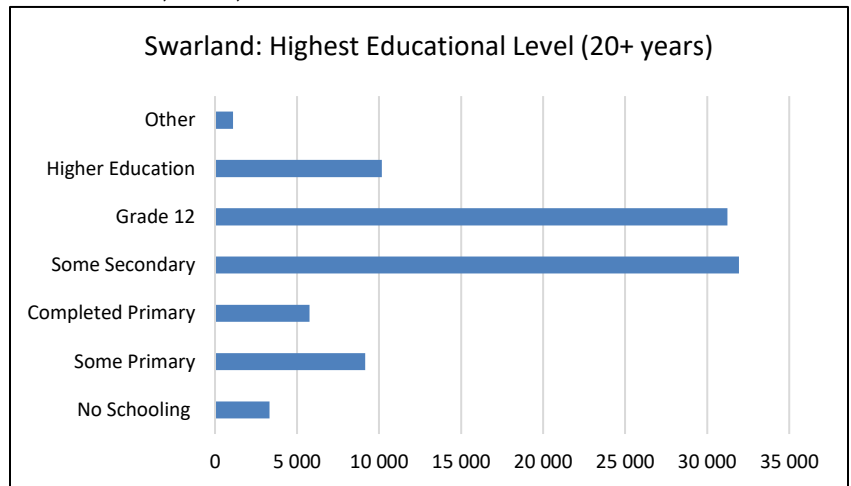
Table 2: Swartland Population and Households 2011 (Source: StatsSA, 2011)

		2011	2022
Population	Total Population	113 782	140 697
	Population Growth Rate	4.56%	3.3%
	15-64 years of age	78 610 (69.1%)	98 193 (69.8%)
Households	Number of Households	29 324	32 515
	Average Household Size	3.9	4.2
	Female-Headed Households	8 384 (29%)	
	Housing Owned / Paying off	15 547 (52%)	
	Formal Dwellings	26 068 (91%)	29 647 (91.2%)

According to the 2022 Socio-Economic Profile for Swartland, the average annual growth rate of the Swartland population is calculated as 3.3%. The population is fairly equally distributed in terms of gender with 50.3% females and 49.7% males. Of note are the 28.5% female-headed households, whilst 39.2% of households have partners who are married or live as married partners. Thus, 60% of households are single parents in one way or another (never married, widowed, separated or divorced). The population of the Swartland is relatively young as the Youth (0-14) represents 25.2%, the working-age population (15 – 64) represents 69.8% and the Elderly (65+) 5% of the total population.

Education

According to the Socio-Economic Profile for Swartland, 2022, learner enrolment in Swartland has increased consistently between 2019 and 2021, with increases ranging between 381 and 504 additional learners per year for this period. In 2019, 2020 and 2021, the learner enrolment numbers were 18 269, 18 650 and 19 154 respectively. There was a consistent decline in the Grade 12 dropout rate with 25.9% in 2019, 25.3% in 2018 and 23.9% in 2021. The matric pass rate increased from 84% in 2018 to 85.8% in 2020 and remained unchanged in 2021. The learner-teacher ratio is 32.9.

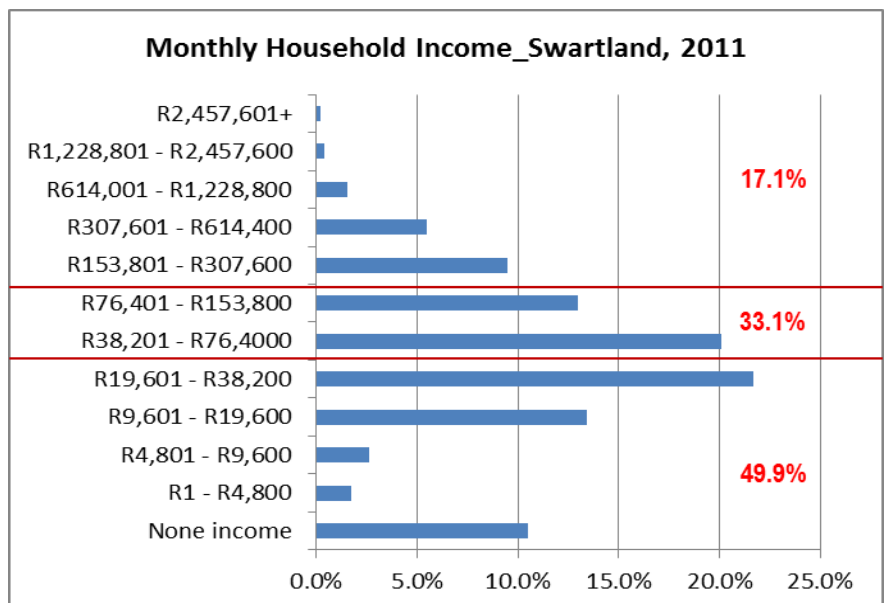


Graph 2: Highest level of Education Achieved, Swartland (Census 2022)

The Labour Market

According to StatsSA, 2011 half (49.8% or 14 603) of the households within the municipal area earned less than R3 500 per month and as indigent households, qualify for subsidized housing and free civil and electrical services provision.

The dependency ratio is 43.3% meaning that for every dependent non-working aged person there are two working-age persons. However, adding the number of people that are unemployed, discouraged work seekers and those not actively involved in the economy, the

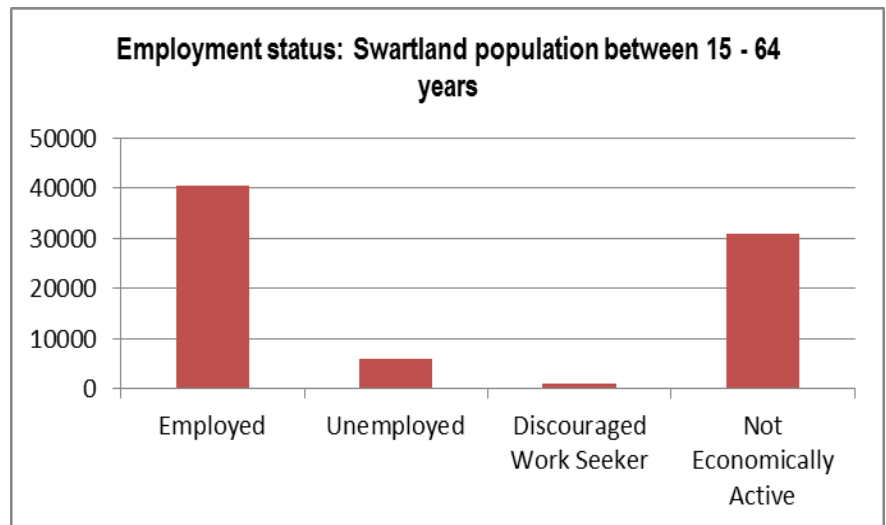


Graph 3: Monthly Household Income, Swartland (StatsSA 2011)

dependency ratio changes to 93% meaning that for every person actively involved in the economy there is a person that is not involved.

More than half (51%) of the working-age (15 -64) Swartland population are employed, 39% are not economically active while 8% are unemployed and 2% are discouraged work-seekers (StatsSA, 2011).

In 2017 the unemployment rate for the West Coast District was 11.1% (StatsSA) and the youth unemployment rate was 17.9%.



Graph 4: Swartland Employment Status of Working Age Population (StatsSA 2011)

Table 3: Labour market summary

With a population of 113 762 in 2011, and the working-age population (15 -64) representing 69.1% of the population, a third of the population is of non-working age: Youth (0-14) (25%) and the Elderly (65+) (5.9%). Of the working-age population of 78 610 persons, 8% are not in employment and 2% are discouraged work-seekers totalling 7 125 persons whilst nearly forty percent (39.3% or 30 854 persons) of the working-age population are not economically active. The nearly 41 000 persons (51.7%) of working age that are employed are mainly employed in the formal sector.

Working Age Population	78 610
Employed	40 651
Unemployed	5 928
Discouraged Work Seeker	1 197
Not Economically Active	30 854

Over the last decade, the unemployment rate¹ has been rising steadily. Unemployment in the Swartland municipal area is estimated at 14.6% in 2021. Swartland's unemployment rate in 2021 is just slightly lower than that of the District's 16% as well as that of the Province's 18.2 per cent.

Table 4: Unemployment rate 20211 – 2021, SEP, 2018

Area	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Swartland	9.4	9.2	8.9	9.5	8.5	9.3	10.1	10.2	11.1	11.8	14.6
West Coast District	10.6	10.2	9.7	10.3	9.1	10	10.9	11.1	12.1	12.9	16

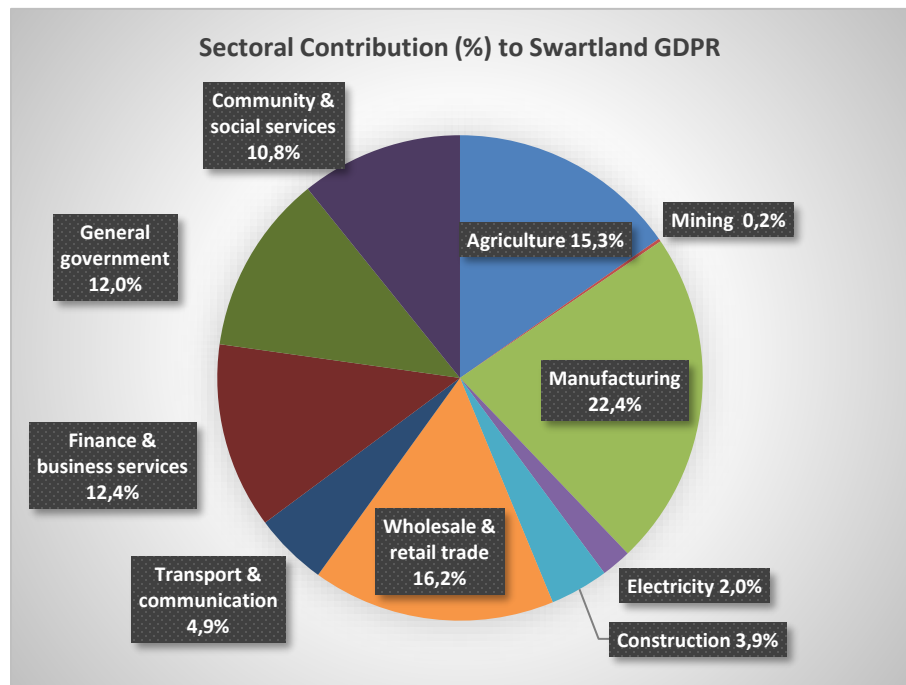
The tertiary sector (24 211 jobs) was the largest contributor to employment in 2020, followed by the primary sector (12 212 jobs) and the secondary sector (6 777 jobs). The municipal areas lost 296 jobs annually between 2016 and 2020 owing to the large number of jobs shed in 2020 as a result of the COVID-19 pandemic. The only sectors that created jobs between 2016 and 2020 were the manufacturing sector (8 jobs),

¹ Narrow definition: Percentage of people that is able/ willing to work, but unable to find employment. In turn, broad definition refers to people that are able to work, but not actively seeking employment. Broad definition is more difficult to accurately measure/calculate.

the trade sector (75 jobs), the finance sector (82 jobs) and the general government sector, which created 54 jobs annually. Due to the large contribution to employment from the agriculture, forestry and fishing sector (28.2%), the majority of formally employed workers in the Swartland municipal area are low-skilled (49.3%). The agriculture, forestry and fishing sector in the Swartland area reported the largest average decrease in the number of jobs (-460) between 2016 and 2020. Most of the formally employed (35 541) consisted of low-skilled (49.3%) and semi-skilled (54.5%) workers. Although the skilled category only contributed 17.2% to total formal employment (2020), it outpaced the other two categories in terms of average annual growth – between 2016 and 2020. Evidently, the demand for skilled labour is on the rise which implies the need to capacitate and empower low-skilled and semi-skilled workers.

Economy

The Swartland Municipal area has the second largest economy in the WCD, with a GDP of R8.9 billion in 2020 with Malmesbury comprising the economic hub. More than three quarters (78.3%) of the contribution to Swartland’s economy comes from the five main sectors that are manufacturing (R2 010.3 million or 22.4%), wholesale and retail, catering and accommodation (R1 450.9 million or 16.2%) and agriculture, forestry and fishing (R1 378.1 million or 15.3%). Finance, insurance, real estate and business services are the fourth biggest contributor (R1 115.6 million or 12.4%) whilst Government services (R1 075.6 million or 12%) follows as the fifth biggest contributor.



Graph 5: Economic Sector Contributions to the Swartland GDP, 2020

The economic growth rate is contributed to by agriculture forestry and fishing and in manufacturing whilst the tertiary sector experienced a slower growth. These trends are not driven from within the municipal area or the region but by the national economy.

Historical trends between 2016 and 2020 indicates that the municipal economy grew marginally at an average annual growth rate of 0.1%. Although the secondary sector contracted, the primary and tertiary sectors continued to grow at 2.1 and 0.3% respectively. The growth can be attributed to the good growth in the agriculture, forestry & fishing sector (2.1%) as well as relatively strong growth in the finance, insurance, real estate & business services (2.0%) and general government (2.3%) sectors. The biggest contractions occurred in the construction sector (-6.1%), the transport, storage and communication sector (-3.5%) and the

electricity, gas and water sector (-3.3%). The 2020 recession made a substantial dent in the average growth rate over the period, but load shedding and the drought within the Province also played a major role in prior years.

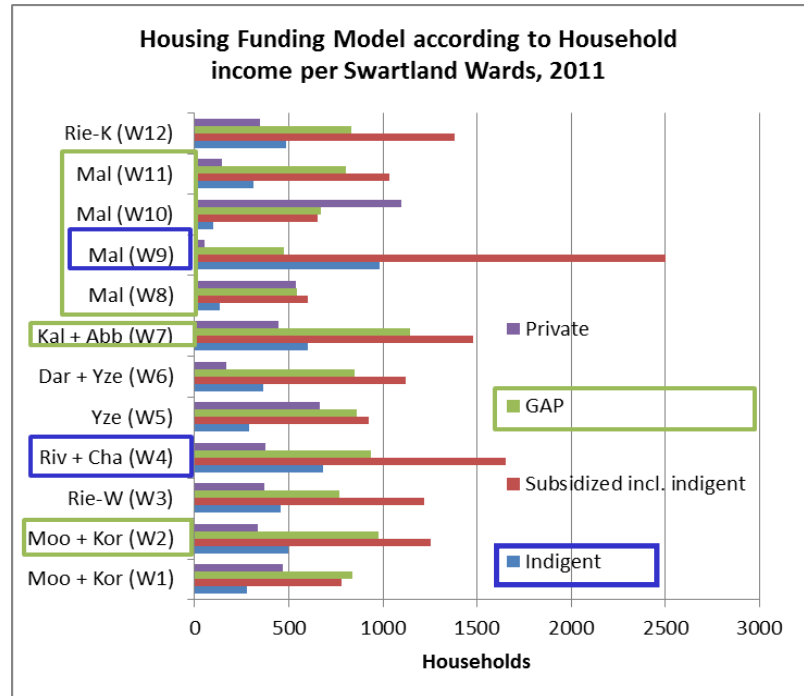
Housing Typologies

Educational levels impact on household income which in turn determines house typologies and government funding models. Hence Ilingsburg (W9) and Chatsworth (W4) have the highest need for Subsidized housing while Moorreesburg (W2), Abbotsdale (W7), Riebeek Kasteel (W7), Kalbaskraal (W7) and Malmesbury (W8-11) have the highest need for GAP housing.

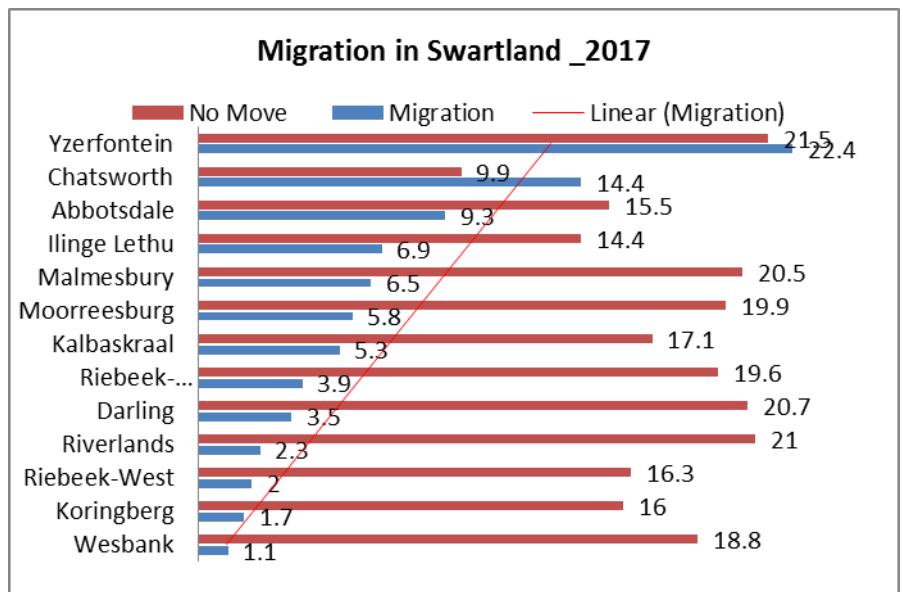
The towns with the highest number of households living in informal backyard structures are Malmesbury and in particular Wards 9 and 11 (Ilingsburg and Saamstaan) followed by Abbotsdale and Kalbaskraal (Ward 7). A potential 54% of the households on the waiting list in Abbotsdale and Kalbaskraal are accommodated in formalized accommodation that is secondary to the main dwelling on the property however it is unlikely they are connected to services. There are informal precincts in Pola Park in Malmesbury on Erven 7456 and 9895. Formalizing the informal structures has been prioritized.

Development trends in the region and at neighbouring municipalities cause migration. On average 18.8% of Swartland households have not moved for a period of 5 years and more. Yzerfontein, Darling, Riverlands and Malmesbury are the settlements with the most (20% and more) households that did not move

in the last five years. Contrary, Yzerfontein and Chatsworth are the exceptions as more households (22.4%) and (14.4%) moved into these settlements than those staying there for 5 years and more.



Graph 6: Housing typologies required per Swartland Wards, 2011

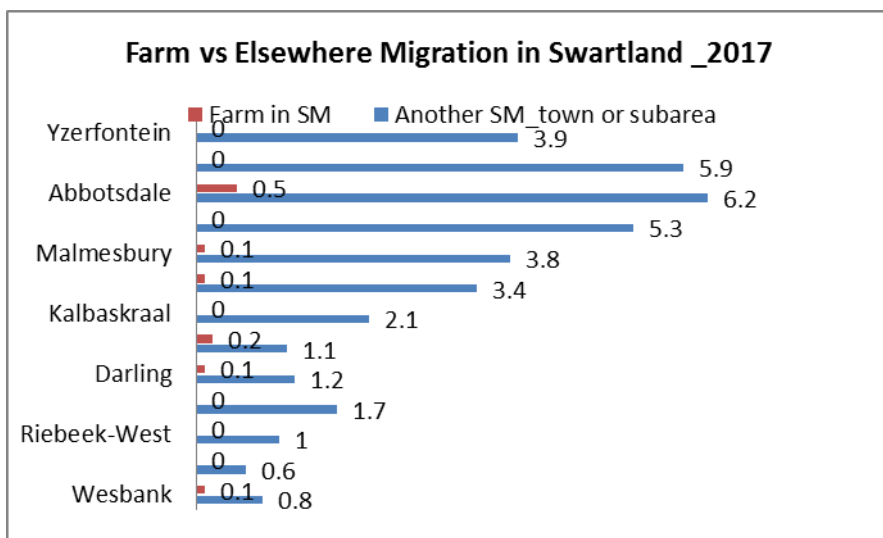


Graph 7: Migration in Swartland, 2017 (Municipal Census Survey, 2016)

There are 2 416 agricultural households in rural Swartland (StatsSA 2011) representing 6% of the total Swartland households. The migration trends of agricultural households urbanizing compared to settlement inhabitants moving within Swartland settlements are low. This can be attributed to the majority of farms practicing extensive agricultural cultivation and being home to a few households per farm. Abbotsdale and Riebeek Kasteel are the preferred settlements for farmworkers to relocate.

Intensive agricultural areas of the Swartland, in comparison with extensive agricultural areas, contribute the most to farm households urbanizing.

Intensive agriculture can be divided into two categories i.e. growing fruit and wine making or intensive agriculture (dairies) and feedlots. There are three areas in the Swartland that practice intensive agriculture: Darling, Riebeek Valley and along the Berg River (Broodkraal). These areas are more labour intensive than extensive agriculture e.g. growing grain. The need for either on or off farm housing is inferred in the population



Graph 8: Farm worker vs within and between settlement migration, Swartland, 2017

and/or marriageable-age population growth rate trends in Riebeek Valley, Nuwedorp in Darling and Koringberg. The need for housing for farmworkers is illustrated by the migration of farmworkers into Riebeek Kasteel and Abbotsdale as per the graph above.

Surrounding municipalities i.e. Cape Metropole, Drakenstein and Saldanha Bay have high migration rates which may result in Swartland absorbing some of those households. Malmesbury in particular is a place of transit (North to South) and an alternative to settling in Cape Town.

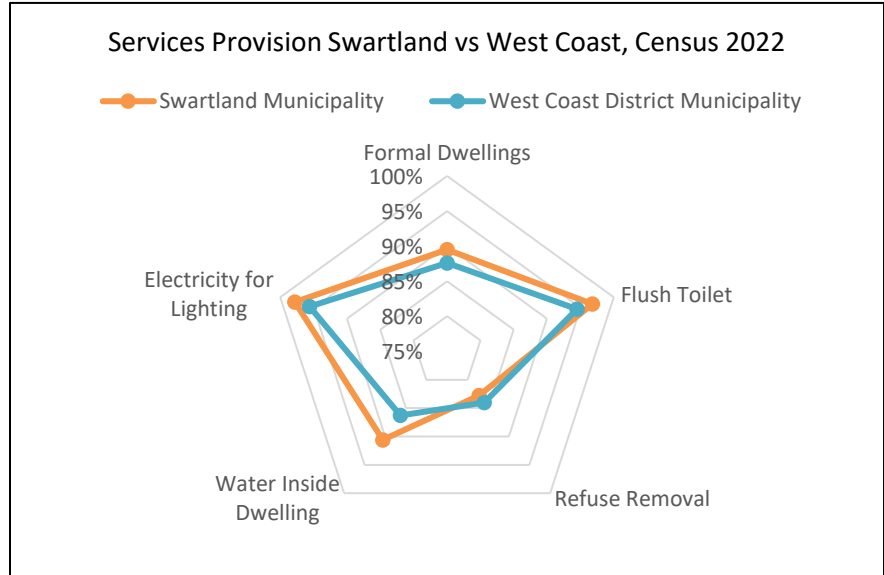
Access to basic services

Table 5: Access of Swartland Households to basic services vs West Coast Households

Socio-Economic Profile 2022	Swartland Households	Swartland % of Households	West Coast District Households	West Coast District % Households
Total No of Households	32 515	100%	124 952	100%
Formal main dwelling	29 647	91.2%	109 822	87.9%
Water (piped inside dwelling / within 200m)	32 352	99.5%	123 827	99.1%
Electricity (primary source of lighting)	31 995	98.4%	119 954	96%
Sanitation (flush/ chemi)	31 605	97.2%	121 078	96.9%
Refuse removal (weekly)	25 459	78.3%	103 085	82.5%

According to the Census, 2022, in Swartland, basic services is accessed by most of the 44 856 households:

- Water (piped water inside the dwelling): 90.6%.
- Energy / Electricity for lighting: 97.8%
- Sanitation: Flush toilet connects to sewerage: 96.8%
- Weekly refuse removal: 82.8%
- Housing (formal dwelling): 89.5%



Graph 9: Services Provision Swartland vs West Coast District, 2022

Health & Health Facilities

In 2021/22, Swartland had a total of 5 primary health care facilities, comprising of 4 clinics and one (1) community day center, as well as, 9 additional mobile clinics, and 1 district Hospital. There are 14 ART clinics serving 3 058 (2021/22) patients and 15 TB clinics serving 651 TB patients in 2021/22.

Child Health or the health of new born up to children under 5 years of age has declined in Swartland from 2020/21 to 2021/22 as:

- The immunization rate declined from 64.4% to 63.5%.
- The number of malnourished children under five years increased from 1.0 to 1.5 per 100 000 people.
- Neonatal mortality rate (NMR measures the number of deaths within the first 28 days of age per 1000 live births) 2.1 to 4.9 per 1 000 live births.
- Low birth weight indicator (babies born weighing less than 2.5kg) decreased from 12.1% to 11.5%.

Maternal health has improved in Swartland from 2020/21 to 2021/22 as:

- Maternal mortality (deaths per 100 000 live births) decreased from 211.9 to 0.
- The delivery rate of women under 20 years of age decreased from 15.8% to 14.8%.
- The termination of pregnancy rate remained unchanged at 0.2%.

Safety and security

Drug related crimes and residential burglaries are the most prevalent in Swartland and are trending upwards since the late 2000s. The actual number of reported cases in 2021/22 are 1 226 and 525 respectively.

Settlement Needs (per Ward)

According to the IDP, 2019/2020 and prioritizing the top five needs in each ward, resulted in the following settlement making related needs:

Housing in Moorreesburg (W2), Riebeek West (W3), Chatsworth & Riverlands (W4), Darling (W6), Kalbaskraal & Abbotsdale, Riebeek Kasteel (W7), Saamstaan (W11) and Riebeek Kasteel (W12), including housing for backyard dwellers in Saamstaan.

Recreational facilities: in all wards in need of housing with the exception of Saamstaan (W11) and Riebeek Kasteel (W12).

Educational facilities in all wards: Schools, upgrading of schools and crèches in all wards with the exception of Moorreesburg (W2) and Saamstaan (W11): High schools in both Darling (W6) and Riebeek Kasteel (W12).

Multipurpose centers in Riebeek West (W3), Riverlands and Chatsworth (W4) and Kalbaskraal (W7).
A rehabilitation center in Malmesbury (W8).

Of note is an Old Age Homes in Koringberg (W1), Riebeek West (W3) and Malmesbury (W8) of which the former two settlements are settlements to where farmworkers migrate to. Most likely these farm workers are retired.

Poverty

Living condition (standard of living) are measured by means of indicators including **GDP per capita**, **income inequality** and **human development (HDI)** to show the current reality of households residing in the Swartland municipal area based on most recent data including Global Insight and Quantec.

Economic theory suggests that when an **economy prospers** its households are expected to enjoy an improved standard of living. The deteriorating financial health of households and individuals, specifically between 2011 and 2015, has resulted in an increase in the poverty levels, according to Statistics South Africa (Poverty Trends in South Africa report, 2017). Rising unemployment levels, low commodity prices, higher consumer prices, and lower investment levels, household dependency on credit and grants, and policy uncertainty are key contributors to economic decline in South Africa.

As per definition, the Upper Bound Poverty Line (UBPL) is the proportion of the population living below the UBPL i.e. that cannot afford to purchase adequate levels of food and non-food items, an individual living in South Africa with less than R1 227 (in April 2019 prices) per person per month was considered poor. In 2021, 57.73% of Swartland's population fell below the UBPL. This figure improved somewhat from the 59.87% and 59.60% recorded for the periods 2015 and 2018, respectively.

An **increase in real GDP per capita**, i.e. GDP per person, is experienced only if the **real economic growth rate exceeds the population growth rate**. Even though real GDP per capita reflects changes in the overall well-being of the population, not everyone within an economy will earn the same amount of money as estimated by the real GDP per capita indicator. At R58 884 in 2021, Swartland municipal area's real GDP per capita was marginally below that of the West Coast District's figure of R61 352 as well as below that of the Western Cape's R81 650.

The National Development Plan set a target of reducing income inequality in South Africa from a **Gini coefficient² of 0.7** in 2010 to 0.6 by 2030 whilst in the Swartland, it measured 0.61 in 2021.

The Human Development Index (HDI)³ is used to benchmark the relative level of socio-economic development in countries. Indicators used to measure human development including education, housing, access to basic services and health indicators. Per capita income is the **average income per person** of the population per year; per capita income does not represent individual income within the population. The life expectancy and infant mortality rates are other important criteria for measuring development. There has been a general increase in the HDI of Swartland Municipality, the West Coast District as well as for the Western Cape since 2008. However, Swartland's HDI has decreased slightly to 0.679 in 2021. Naturally, per capita income as per definition did mimic the HDI trend.

Sense of place

The Swartland municipal area has 13 settlements having each a role, an economic base and locational advantages. Malmesbury is viewed as the breadbasket of the Western Cape, and the long ago church town and settlement are now performing the role of the regional and administrative center. Darling is performing the role of a service centre for the western Swartland region. Its locational advantage is that it is in close proximity to Cape Town and easily accessible from the R2. Towns with regional roles and locational advantages have the highest potential for future growth and to sustain such growth. Towns such as Malmesbury and Darling have a very high potential score and are prioritized for future settlement development and in particular subsidized housing.

Regional developments that do and will impact on the role of Swartland towns and their growth potential are:

- a) the upgrade of the N7 (linking Cape Town and Namibia into Africa)
- b) The development of the Industrial Development Zone in Saldanha.

The key initial insights of the social status of the receiving community are that:

Similar to other rural municipalities, Swartland also experiences common challenges such as a lack of skills, skew patterns of wealth distribution, relatively high levels of unemployment yet still low levels of crime. Despite the relatively positive economic growth it is quite evident that not all sectors of society share in the benefit resulting from this. In fact, it seems that the gap between rich and poor is actually widening as poverty stays prevalent. The challenge stays to increase the participation of emerging entrepreneurs in the mainstream economy and to bring the first and second economy closer together.

The key initial insights of the social status of the receiving community are that:

- Unemployment is high and keeps rising. Yet at the same time foreign entrepreneurs, commenting at the lower end of the income scale, pose a continuous challenge.
- Economic growth is slow.

² **Gini index** < 0.2 represents perfect income equality, 0.2–0.3 relative equality, 0.3–0.4 adequate equality, 0.4–0.5 big income gap, and above 0.5 represents severe income gap.

³ Human Development Index is a statistic composite index of life expectancy, education, and per capita income indicators. A value above 0.800 is very high, between 0.700 and 0.799 high, 0.550 to 0.699 as medium and below 0.550 as low.

- Financial Sustainability of the tax base of municipalities, is a challenge if there is a strong dependency on grants.
- Housing and ownership are a need and desire to provide housing to backyarders whom constitute the biggest segment of the housing waiting list.
- Quality of the living environment including municipal services: Older residents want peace and quietness, which most subsidized development does not bring about.
- Cultural and heritage resources need protection to keep tourism growing. The character of the Swartland landscape include the rolling wheat fields, vineyards, patches of Renosterbos and views of Table Mountain. The landscape should be protected through mitigation.
- Safety and social well-being kids are a concern as the number and Street kids has increase.
- Decreased maternal and child health amongst women and children: Health care should become a focus of future community spaces and institutions.
- Affordable opportunities to access Further Education and Skills Development that result in employment are a challenge. Work shadowing and – replacement programmes offered by the college and university will enable the desired educational and skills development.
- Rehabilitation support / family relief as there is a large percentage of the working population that is at home and is not economically active. However, working population at home play a vital role in caring for family members that h unable to do so themselves.

Overall there is a strong sense that a vibrant living environment is required for the social well-being of the community and for the growth of the economy. The balance between conservation, cultural and heritage resources and development in particular can go a long way to address a vibrant living environment that will provide shelter, security and safety whilst enhancing the economy to grow. Hence agri-industrial development outside the urban area contributes to keeping a vibrant living environment whilst sustainably growing the economy.

2.2 Policy and Planning Context

An analysis of the compatibility of the proposed project with the relevant sector policies and development plans concluded that the proposed solar facility is compatible with the following National and Provincial plans and policies:

- White Paper on Energy Policy for the RSA (1998);
- White Paper on Renewable Energy (2003);
- National Energy Act (2008);
- National Alternative Energy Strategy (2009);
- National Spatial Development Framework (2006);
- Western Cape Provincial Spatial Development Framework (PSDF), March 2014 revised 2019;
- Swartland Spatial Development Framework;
- Swartland IDP;
- Swartland Human Settlement Plan.

The proposed development represents a solar facility with amenities and employment opportunities within walking distance from Darling.

2.2.1 National Level

White Paper on Energy Policy for the RSA (1998)

The White Paper on Energy Policy for South Africa (December 1998) give recognition to “renewable 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”. As South Africa has a very attractive range of renewable resources, particularly solar and wind, the fact that renewable applications are the least costly particularly when social and environmental costs are considered, is strongly emphasized.

The proposed Darling Solar Facility is in line with the principles of the White Paper on Energy Policy for South Africa it promotes the use of renewable resources to generate energy.

White Paper on Renewable Energy (2003)

As signatory to the Kyoto Protocol, Government is determined to, by means of the White Paper on Renewable Energy (November, 2003):

- (a) Make good the country’s commitment to reduce greenhouse gas emissions and
- (b) Ensure energy security through diversification of supply (National Energy Act).

Government’s long-term goal is to establish a renewable energy industry that will offer in future sustainable, fully non-subsidized alternatives to fossil fuels. The medium-term (10-year) target set in the White Paper is *10 000 GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro electrical plants*. This target constitutes 4% of the total projected demand. The proposed Darling Solar Facility supports government’s medium and long term renewable energy goals as it will assist to make good the country’s greenhouse gas emissions and ensure energy security.

National Energy Act (2008)

Again, the National Energy Act (Act 34 of 2008) promotes diversification of energy sources and supply including renewable resources, i.e. solar and wind. The diversified energy resources have to be available in sustainable quantities at affordable prices and should support economic growth, poverty alleviation and consider the preservation of the environment.

As the proposed Darling Solar Facility enhances energy source diversification, it is thus in line with the National Energy Act.

National Alternative Energy Strategy

South Africa’s government has identified around 20GW of pure renewable energy capacity and 4GW of cogeneration technologies that may form part of its renewable energy procurement plan under the region’s feed-in tariff programme. Concentrated solar power accounted ten percent (10%) of proposed capacity (NewsNet, 2010). The proposed solar facility contributes to this capacity.

National Spatial Development Framework, 2006 (NSDF)

To National Spatial Development Framework serves as instrument to coordinate all government action and to align social, economic and environmental goals. The National Spatial Development Framework provides the basis to maximize the overall social and economic impact of government development investment through interpreting the strategic direction, policy coordination and combining government action into a continuous spatial framework of reference.

The ultimate goal is to provide basic services, to ameliorate poverty and undo uneven and ineffective spatial patterns and address the additional burden on poor people.

The proposed Darling Solar Facility complies with the normative principles of the National Spatial Development Framework as follows:

NSDF Principles	Proposed Darling Solar Facility
a) Economic growth is a prerequisite to achieve policy objectives.	The proposed project will contribute positively to the GGP of the province.
b) Government spending on fixed investment should therefore be focused on localities of economic growth or economic potential.	Malmesbury, Moorreesburg, Darling and Riebeek Valley are earmarked as growth nodes (of different rankings) and government spending are earmarked on these localities of economic growth.
c) Efforts to address past and current social inequalities should focus on people not places.	The proposed solar facility create employment and on the job skills development opportunities.
d) To overcome the spatial distortions of apartheid, future settlement and economic development opportunities should be channeled into corridors and nodes that are adjacent to or link the main economic growth centers.	The proposed facility will provide economic development opportunities aligned with being located adjacent to a growth node. Malmesbury is the main town centre and growth node for the Swartland and the alternative for the City of Cape Town. Darling is the main town for the western Swartland region (Wards 5 and 6) and a residential alternative for City of Cape Town.
e) Future urban and rural development in the province should change the current pattern of resource application and investment significantly to ensure a sustainable environment for the future. Infrastructure investment and development spending should primarily support localities that will become major growth nodes in South Africa.	

The proposed solar facility is in line with the principles of the National Spatial Development Framework as it promotes alternative energy generation and is adjacent to Darling, an economic growth node.

National and Western Cape Policies and Directives

The proposed development supports the following plans and frameworks that give effect to the PSDF:

Table 6: Plans and frameworks supported and given effect to by the PSDF

<p>National Development Plan (NDP) of 2012</p> <ul style="list-style-type: none"> - strives to eliminate poverty and reduce inequality by creating jobs and livelihoods, - transform urban spaces, - expand infrastructure, provide capable public services, etc. 	<p>Proposed development</p> <p>Supports the NDP initiative by creating an urban solar facility in a suitable location maximizing efficient use of infrastructure, creating jobs and livelihoods and transform urban spaces.</p>
<p>OneCape 2040</p> <p>Intends:</p> <ul style="list-style-type: none"> • An enabling spatial framework • Integrated neighbourhoods • Healthy and caring living areas • Settlements that addresses resource scarcity and quality living through design. • Integrated services planning & provision • Mostly low-carbon resource use. Limited toxic use. • Healthy, accessible, liveable, multi-opportunity communities. • Social value capture • High level of local connectivity and global market fluency • High innovation opportunity. 	<p>Propose development</p> <p>Support OneCape vision as it:</p> <ul style="list-style-type: none"> • Gives effect to the Swartland SDF without limiting future uses whilst enhancing sustainability. • Integrates complementary land uses: residential and utility uses connecting economic and social opportunities. Generates local economic opportunities whilst attracting international investors. • Increases intensification of use in appropriate locations aligned with resources and space economy. • Provides affordable services as existing services are extended. Thus spatially aligned infrastructure planning, prioritisation and investment. • Creates variety of employment, livelihood and income opportunities in close proximity to residential areas. • Proactively manages economic assets (community resources) i.e. energy/ electricity generation.
<p>Western Cape Infrastructure Framework (2013)</p> <p>Prioritises:</p> <ul style="list-style-type: none"> • Invest in public transport and non-motorised transport (NMT) infrastructure, particularly in larger urban centres • Continue to provide basic services to achieve national targets • Diversify the housing programme • Integrate settlement development, prioritising public service facilities in previously neglected areas • Improve energy efficiency in buildings through design standards • Distribute health and education facilities equitably 	<p>Proposed development</p> <p>Complies as it:</p> <ul style="list-style-type: none"> • <i>Makes use of existing services and propose upgrades.</i> • <i>Can introduce improved energy efficiency in building by means of design standards.</i>

The proposed development focus on the integration of two different land uses to create an integrated sustainable settlement. The design of the development incorporated the location of the land to promote service efficiency to ensure the sustainable use of service resources. In-turn, and as national and provincial plans and frameworks giving effect to the PSDF are supported, the principles of the Provincial Spatial Development Framework are supported by the proposed solar facility (See table and sketch below):

Table 7: Compliance of proposed solar facility with PSDF

A. Western Cape SDF (2014) principles	Proposed development
<p>Policy R1: Protect Biodiversity and Ecosystem services:</p> <ul style="list-style-type: none"> ○ divert urban growth pressures away from critical biodiversity areas 	<p><i>Proposed development footprint is outside the urban edge of Darling.</i></p> <p>Conservation of ecological support areas around the stream on the northern side of the site.</p> <p>The proposed development falls within the category earmarked infrastructure, that can be located in Buffer 2 areas</p>
<p>Policy R2: Safeguard inland and coastal water resources, and manage the sustainable use of water:</p> <ul style="list-style-type: none"> ○ Given current water deficits, practice ‘water wise’ planning and design approach ○ Protect and rehabilitate river systems and high yielding groundwater recharge areas, particularly in areas of intensive land use 	<p><i>Facility will have its own storm water system that is either re-used or disposed. Storm water run-off will be discharged away from water courses (drainage channels, streams or dams) during construction and augmented during operations and used as needed.</i></p>
<p>Policy R3: Safeguard the Western Cape’s Agricultural and Mineral resources, and manage their sustainable use:</p> <ul style="list-style-type: none"> ○ Reconcile ecosystem requirements with conflicting land development pressures. 	<p><i>The proposed development will complement the rehabilitation of the medium high potential agricultural soil.</i></p>
<p>Policy R4: Recycle and recover waste, deliver clean sources of energy to urban consumers, shift from private to public transport, and adapt to mitigate against climate change:</p> <ul style="list-style-type: none"> ○ Provide low-income areas with access to electricity and systematically upgrade informal settlements ○ Avoid developing new residential areas in proximity of agricultural crop spraying ○ Pursue energy diversification and energy efficiency and delink economic growth from energy use ○ Support emergent Independent Power Producers ○ Address climate change mitigation measures in Municipal SDFs ○ Encourage and support renewable energy generation at scale 	<p><i>Operational guidelines should include guidelines and requirements for recycling and recovering of waste;</i></p>
<p>Policy R5: Safeguard cultural and scenic assets:</p> <ul style="list-style-type: none"> ○ Include townscape and landscape making considerations into municipal SDF’s, land use management systems and infrastructure development programmes ○ Protect heritage and scenic assets from inappropriate development and land use change ○ The delineation of urban edges to safeguard scenery and natural and cultural landscapes 	<p>The development is outside the urban edge footprint and along the railway line and visible from the R315 (Darling – Malmesbury Road). Hence the interface of the proposed solar facility has to be integrated with the surrounding environment and planting endemic species for screening has been recommended together with natural colouration of fencing and structures and good planting maintenance.</p>
<p>Policy E1: Use regional infrastructure investment to leverage economic growth:</p> <ul style="list-style-type: none"> ○ Develop the renewable energy sector ○ Reduce reliance of transport on liquid fuels 	<p><i>Job opportunities are provided within walking distance.</i></p>

<ul style="list-style-type: none"> ○ Invest in public transport and non-motorised transport (NMT) infrastructure ○ Promote denser settlement patterns, reduce the need for travel and create walkable neighbourhoods ○ Designing human settlements to accommodate infrastructural smart grids 	
<p>Policy E3: Revitalise and strengthen urban space-economies as the engine of growth:</p> <ul style="list-style-type: none"> ○ Renewable energy (low job creation potential) – on farms subject to consistency with biodiversity, heritage, scenic and agricultural requirements 	<p>Increases intensification of use in appropriate locations aligned with resources and space economy.</p>
<p>Policy S1: Protect, manage and enhance the sense of place, cultural and scenic landscape:</p> <ul style="list-style-type: none"> ○ Prevent settlement encroachment into viable agricultural areas, scenic landscapes and biodiversity areas ○ Promote smart growth ensuring efficient use of land and infrastructure, containing urban sprawl and prioritising infill ○ Enhance an economically, socially and spatially meaningful settlement hierarchy while preserving structural hierarchy of towns, villages, hamlets and farmsteads in relation to historical settlement patterns 	<p><i>The endemic species screening will integrate the agricultural sense in the design of the proposed solar facility and keep the essence of agricultural production of the area part of the proposed development.</i></p> <ul style="list-style-type: none"> - <i>The development is outside the urban edge.</i> - <i>The development takes place on medium high potential agricultural soil.</i> - <i>The infrastructure development enhances settlement hierarchy (service centre) while preserving historical structural hierarchy of settlements in relation to historical settlement patterns.</i>
<p>Policy S2: Improve provincial, Inter and Intra-regional accessibility:</p> <ul style="list-style-type: none"> ○ Develop human settlement patterns that are compact and accessible so that they can all access the opportunities of urban environments ○ Built environment projects should focus on compacting and connecting urban development and clustering public facilities along these connections 	<ul style="list-style-type: none"> - <i>The development will be accessible from the surrounding urban areas as well as regionally.</i>
<p>Policy S3: Promote compact, industrial and integrated settlements:</p> <ul style="list-style-type: none"> ○ Secure a more sustainable future settlement plan by means of higher densities and compact settlements save people time and money, ○ Promote functional integration and industrial as a key component of achieving improved levels of settlement liveability and counter apartheid spatial patterns and decentralization through densification and infill development ○ Locate and package integrated land development packages, infrastructure and services as critical inputs to business establishment and expansion in places that capture efficiencies associated with agglomeration 	<ul style="list-style-type: none"> - <i>The solar facility area represents a more intensified use. More intensified use and compact development design save people time and money.</i> - <i>Promote solar intensification (and energy reliability) and proximity as a key component of achieving improved levels of settlement liveability.</i> - <i>Represents a well-located integrated land development and business development and expansion that capture efficiencies associated with agglomeration such as infrastructure and services.</i>

<ul style="list-style-type: none"> ○ Policy S4: Balance and coordinate the delivery of facilities and social services: ○ Balance sustainable service delivery and equitable access to education and health services ○ Apply the principles of space utilization efficiency, multi-functionality and clustering to all facility provision projects ○ Ensure that developments take place in a holistic, integrated and sustainable manner, equitable and accessible distribution of social services and facilities is required 	<ul style="list-style-type: none"> - <i>the solar facility area is located next to a main route and easily accessible.</i> <p>Existing social services and amenities is close by (in Darling) and within walking distance.</p>
<p>Policy S5: Promote sustainable, integrated and inclusive housing in formal and informal markets:</p> <ul style="list-style-type: none"> ○ Investment in housing ensures optimal and sustainable use of all resources, including financial, land, social and infrastructure components ○ Provide a wide choice of housing typologies and tenure options, based on economic, fiscal, and social affordability. ○ Incremental housing development to be pursued, with phased service provision to accelerate housing provision ○ Provide households with the residential environments, mobility and access to opportunities that support productive activities ○ Achieve a wider range of housing opportunities and options 	<p><i>Afford entrepreneurs the opportunity to offer their businesses services.</i></p>

2.2.2 Swartland Spatial Development Framework

The proposed development is located outside the urban edge of Darling. The locality of the properties is ideal seeing that developable area is along the railway line and directly east of Darling. Solar facility contributing to achieving sustainable settlements is a main strategy of the SDF and the proposed development follows to establish an integrated, compact, solar facility precinct.

The principles of the Swartland Spatial Development Framework are supported by the proposed solar facility (See Table 8):

Table 8: Compliance of proposed solar facility with Swartland SDF

A. Swartland SDF (2023 - 2027) principles	Compliance by proposed solar facility
Adhere to four bioregional planning categories of which settlement is one category.	Conservation of ecological support areas around the stream on the northern side of the site. The proposed development falls within the category earmarked infrastructure, that can be located in Buffer 2 areas
Walking distance as primary measure for access (20min, 1000m or 1km).	Amenities planned are within walking distance.

Integration of urban activities: At least 50% of the activities found in an urban area should be in walking distance.	Though infrastructure is not an activity, it is located within walking distance.
Socio-economic integration: complete socio-economic cross section should be within 1km from urban center. Social gradient should be low (small differences between abutting community layers especially in income)	Sustainable development will bring about socio-economic integration. See SDF proposals for solar facility.
Enhance densification within the urban edge and of vacant and under-utilized land; Densify along major routes	Proposed development will bring about intensification of use along major routes/ infrastructure.
Create pleasant interfaces	Conservation of ecological support areas around the stream on the northern side of the site. Protect existing screening and add (See visual impact for screening)
Employ service roads to densify along major roads: Promote such roads as activity streets and corridors.	Collectors provide access to development. Energy to be generate can support densification and intensification along activity streets and corridors.
Development to seek to optimize public transportation and avoid cramming/ Preserve well located open spaces and promote open space networks.	Well located open spaces (threatened Renosterbos) are preserved and cramming are avoided whilst public transport is optimized. Alternative energy generation facility not in conflict with conservation and can be part of climate change corridors.
Local economic development to address in-migration	SMMEs enhanced to offer services
Integrate the 1 st and 2 nd economy spatially Enhance CBDs	The development address economic integration in the long term (20 Years +) as outlined in the SDF.
Protect historic core and layout of settlements	Sense of place is not affected by the solar facility. Facility enhances night lighting to emphasize layout and historic resources.

Ultimately the SDF aims to establish well **performing** settlements and regions within Livable Environments and Sustainable Settlements Qualities. The proposed solar facility enhances these characteristics.

Section 3: Assessment Impacts

The chapter provides a description of impacts assessed according to standard assessment measures (Addendum A). Impacts are classified firstly according to the environment (as per built environment) they impact upon, the formality of the impact, the unit of people or receptors involved (individual, family or community) and having a direct, indirect, residual or cumulative result.

Table 9: Impact classification Matrix

Environment	Level of Formality	Population unit	Directness
Built	Informal: Individual & family	Individual	Direct
Environment (Natural)	Life/ Relational/ Social	Family	Indirect
Social	Formal (Regulated):	Community	Residual
Economic	Institutional/ Social		Cumulative

Direct impacts occur as a direct result of an action at the same time **and** location as the action. **Indirect impacts** are reasonably foreseeable **and** occur as a result of an action, but occur later in time or are removed from the action location.

Residual impacts are the result(s) of a project or action, secondary to the main purpose of the project that is nonetheless impacting on the surroundings and the community (<https://bizfluent.com>, September 2017). Residual Impacts are defined as those impacts that remain following the implementation of mitigation measures (Seagrave Road Environmental Statement Addendum Vol1).

Cumulative Impacts are the **impact** which results from the action when added to other past, present, and reasonably foreseeable future actions which include proposed project activities, other similar activities and unregulated background pressures and trends. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation (Business Biodiversity and Offsets Programme (BBOP) 2012). The combined effect of individual impacts occurs when a receptor is affected by more than one impact during any phase of development (Seagrave Road Environmental Statement Addendum Vol1).

The assessment of impacts will be reflected according to the following ratings as per standard assessment measures.

Table 10: Impact rating scale

Rating	Score -	Score +
Low	0 to - 40	0 to 40
Medium	- 41 to - 80	- 41 to 80
High	- 81 to - 120	- 81 to 120
Very High	> - 120	> 120

3.1 Construction Phase:

The construction phase will include the following broad activities:

Following main work areas:

- Final design works.
- Procurement and manufacture of equipment.
- Site access.
- Security.
- Foundation construction.
- Mounting frame construction.
- Module installation.
- Substation construction.
- Electrical site works.
- Grid interconnection works.
- Commissioning and testing.

The construction of civil and electrical infrastructure such as road and bulk services will first take place and followed by the construction of structures and buildings. The construction phase will include the following broad activities to erect the Solar PV panels and electrical reticulation:

Activity	Skills required
1. Prepare site	Fencing, surveying, grading only where required and ground clearance to ensure free flow of surface water underneath the panels.
2. Excavate and install reticulation network	Excavation, trenching, cable laying, concrete work should any be required and electrical assembly of connections with sub-power station and steelwork assembly.
3. Build internal access road	Building road to access (and fire breaks) facility and associated infrastructure and a 5m management single track surrounding each block of photovoltaic arrays: Earthworks (to provide a firm, stable foundation); Installing embankments, levelling, fill, compacting, drainage; Placing gravel on bed before a final series of compactions to reach the desired height; throughout employing soil stabilization and dust control.
4. Install panels	Panels are mounting into a metal frame that is used as structural support for the PV array which are fixed to the ground on a centred or screw pile type foundation.
5. Complete balance of plant	Installing inverters and batteries and site Rehabilitation.

The impacts identified, are considered based on assessments of similar solar facilities of which one solar facilities of similar extent (19MW) is located in close proximity in Swartland. Mitigation measures are suggested for the various impacts considered.

3.1.1 Direct and Positive Impacts during the Construction Phase

a) Employment opportunities increase

Experienced as: Working-age people find employment temporarily and permanently

According to similar facilities, an estimated Capital Expenditure of ±R656 million will be required to develop the solar facility. The expected value of construction and employment over approximately eighteen (±18) months is ±R45 million. Not less than ±R36 million should benefit previously disadvantaged individuals. The number of jobs generated during construction was calculated as hundred and six (106) persons being employed during the construction period of one and a half years or eighteen (±18) months. Of these who does construction work 25% (or 26 people) are unskilled, 60% (or 63 people) are semi-skilled and 15% (16 people) are skilled. The installation and development contractor are most likely from the Western Cape. These jobs include, but are not limited to site clearing, fencing, general construction work (boxing, concrete mixing and casting), digging trenches, creation of fire breaks and operating the construction vehicles. The no go alternative has no impact on the population of Darling and its immediate surroundings.

A breakdown of the jobs generated to construct 19.9MW follows below

No of jobs:	Duration of contract	Skills levels Required	Value of employment opportunities	Involvement of locals
±106	18 months	26 unskilled 63 semi-skilled 16 skilled	R45 million	Moderate, locals lack skills required

The average number of direct jobs the development will create 106 jobs for the period of 18 months. Eighty percent (80%) or of these jobs should be reserved for locals. Thus, the project will result in an increase of 85 people employed for 18 months in the Construction sector which is a secondary economic sector. Of those employed, 21 would be unskilled, 51 would be semi-skilled and 13 would be skilled.

Given the Swartland municipal trend of employed, unemployed, discouraged work seekers and economically not active people, the same trend should be found in Darling. There are thus 63.7% (9 445 people) in Darling that are of working age. Of those 10.4% are unemployed and discouraged work seekers totaling 982 persons and 3 683 are not economically active. The 4 779 persons of working age that are employed are mainly employed in the formal sector.

The unemployment rate (10.4% of employable population in 2017) in Swartland Municipality is high. Of the total number of unemployed and discouraged work seekers (982) in Darling, nearly eleven percent (10,8%) is likely to find employment from the proposed solar facility. It is unlikely that the entire labour force will be from Darling, but would most likely be from Swartland.

Of the working-age population of 78 610 persons in the Swartland, 8% are not in employment and 2% are discouraged work-seekers totaling 7 125 persons. The proposed solar facility employing 106 persons represent nearly 11% of the unemployed in Darling, which is a significant contribution to decrease the local unemployment rate, whilst within the region the 106 employees represent 1.5% of the unemployed. The community also views and rates *creating jobs* as highly significant as unemployment in the municipal area are high.

Mitigation measures:

- Contractor should be required to employ 80% locals of whom 80% is HDIs and are suitably qualified; Should there be a lack of suitably qualified people, skills transfer should be prioritized whilst construction is taking place.
- The municipality, local community and community organizations should be informed of the project and potential job opportunities by the developer.
- A database of locals including small businesses owned and run by HDIs that qualify as service providers (construction companies, catering companies, waste collection companies, site cleaning companies etc.) should be compiled by the contractor prior to the commencement of the project. These firms should be invited to render services where required.
- Establish a Monitoring Committee for the construction phase in collaboration with representatives of the local community. The Monitoring Committee has to ensure that the solar facility is implemented and that any problems that arise and is associated with this phase, is addressed.

The increase in the number of jobs is positive, and the significance of the impact is rated as before and after mitigation as medium at a local level.

The No go alternative has no impact.

b) Increased Income

Experienced as: Working age person find employment and contribute to household income

Similarly to solar facilities of the same extent, the average household income overall is low as 49.9% of the population earns R42 000 (maximum R3 500 per month) and less, whilst 54.1% earns between R 42 000 and R 153 800 (maximum R12 800 per month) and 17% earn more than R12 800 per month:

Annual household income below R42 000	49.9%
Annual household income between R42 001 and R144 000	54.1%
Annual household income above R144 000	17.1%

The construction phase will bring about jobs for some locals that will result in an income for eighteen (18) months. Generally the income earned would be higher than other contract unskilled and semiskilled work. The expected value of employment over twenty months is ±R45 million. Not less than ±R36 million should benefit previously disadvantaged individuals.

Mitigation measures:

- Developer and contractor to act as reference for locals employed.
- Developer and contractor to liaise with existing or future projects to access employment for locals.

The construction of the proposed solar will impact positively on the income of households employed locally and regionally. The impact is short-term and the significance of the impact is therefore rated low before and after mitigation.

The No Go alternative has no impact.

c) Skills development of working age population

Experienced as: People find employment temporarily and permanently

To benefit the local community 80% of those employed to install the solar panels and internal services, should be from the local population.

As education and skills levels in Darling are low (50.1% unskilled, 34.6% semi-skilled and 15.2% skilled), the receiving community may not have the skills required for the installation and development. The skills required to do the installation include general building skills (casting foundations, bricklaying, roofing, guttering, plumbing, electrification and painting, securing construction materials, scaffolding, transportation and logistics and construction management) and rigging skills.

Should capacity building and skills development training programmes be implemented, they will benefit the community in the short term and long term. As people get trained their skills level and income will increase and their economic and material well-being will improve. Obtaining skills will enable community members to find work at future construction projects or to do maintenance within the settlement, the municipality and the region. The creation of the opportunity to work and to receive training and skills development will cause more jobseekers to settle in the Darling and immediate surrounding communities. The influx of jobseekers may cause societal tension and instability particularly if the unemployment rates stay high and locals do not find work.

Mitigation measures:

- Reserve 80% of jobs for local labour.
- Require contractor to put mechanisms in place to enable locals to access jobs offered by the proposed solar facility development.
- Require the contractor to enhance formal and informal skills transfer:
 - Should skilled persons from outside the settlement and municipal area be employed, the developer should consider implementing a training and skills development programme to enhance the opportunities for local historically disadvantaged individuals in the construction industry. Measures should be put in place to ensure successful training and development i.e. structured job shadowing and learnerships. Such a programme should be offered in liaison with an accredited Further Education and Training College like the West Coast College or University of Technology;
 - Some basic skills can be tutored at school level in a joint venture established by the developer between the primary schools in Darling and the schools or education and skills training providers. In the long term (generationally) the improved skills level will ultimately lead to improved levels of education.
 - An “access to education support service” assisting future students should be considered attending to application fees for bursaries, career and financial planning and strategies for the period of studying.
 - The proposed development should invest in teacher training and teacher support training to offer scarce subjects such as mathematics, science, physical science and conservation science and the tuition of learners in these subjects. Besides investing in teacher training the proposed development should fund the tuition of the scarce subjects.

The impact of the skills increase is medium positive before and after mitigation. Creating skills development opportunities and developing the skills of locals, is viewed significantly positive given the challenge of unemployment in the municipality and in the province. Moreover, skills are a long-term investment.

The No-go Alternative has no impact.

d) Improved local Economy and Increased Sales and GGP

Experienced as: Increase in income

The improvement of the economy will be measure by the Gross Value Added (GVA) and ultimate change in Gross Domestic/ Geographical Product (GGP) of the Swartland Municipal, applying the 2016 GDP of R7.4 billion and that of the Western Cape province at R 424.38 billion (2016).

The contribution by the proposed solar facility to the Swartland Municipal, 2016 GDP of R7.4 billion is \pm R656 million of which the wage bill constitutes \pm R45 million. The locals should benefit at least \pm R36 million of the wage bill. Not all purchases representing the expenditure from wages and salaries earned, will be done locally and thus local GDP contribution is calculated as a percentage of the total contribution. The local contribution represents a less than 1% increase in the Swartland GDP and sales.

During the construction phase, the general project purchases i.e. most building materials, fuel and domestic purchases, such as groceries, liquor and restaurant services will be purchased locally. This will cause the sales volumes (direct and indirect) to increase. The panels and related equipment will be purchased internationally. The impact on increased international sales is not assessed, as the assessment focused on the local GDP.

Intensity of the change in GGP will be rated according to the following scale: Low <1%, Medium 1 -3% and High >3%. The development of the solar facility has a low contribution to the GDP of Swartland. The increase in sales volume is also low.

Mitigation measures:

- Contractors should be directed by tender criteria to purchase locally and to make use of local service providers.
- Spending money locally purchasing from locals and South African should benefit employees. The proposed development should leverage discount in the local economy of the municipal area and employees should be made aware of it.
- Small business should be supported (i.e. skills training, assistance and guidance to set up small businesses) and joint ventures with previous disadvantaged persons should be promoted.
- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business should be encouraged.

The improvement of the economy, measured by the change in Gross Domestic/ Geographical Product (GGP) of the Swartland reflects as low measured against the 2016 GDP, yet the impact is low before and after mitigation.

The No Go alternative has a low impact.

3.1.2 Direct and Negative Impacts during the Construction Phase

e) Increased use of Social Amenities and Services

Experienced as: Diminishing social amenity and services capacity

Health amenities, i.e. the local clinic, local doctors and regional ambulances will be utilized should a construction-related accident during work or at home happens. It is anticipated that any serious emergencies will be routed to Cape Town. However the likelihood of emergencies on site occurring is unlikely as national safety standards will have to be adhered to.

The temporary stay of the non-local construction team will add negligible pressure on the demand for basic services i.e. water, sewerage and electricity and removing refuse.

Demand for municipal traffic and administrative services may increase on a sporadic basis as abnormal loads have to be transported.

Mitigation measures:

- To adhere to international construction, health and safety standards and precaution measures.
- To provide health and social training for the project team and in the community which include HIV/AIDs and Covid awareness training.

The impact of the temporary construction team on amenities and municipal services is low, yet the intensity is negative and stay low negative after mitigation.

The No Go alternative has no impact.

f) Increased traffic levels

Experienced as: Motorized and non-motorized traffic levels increase

The construction of the proposed development can be accommodated in the day-to-day traffic and no upgrades will be required as a result of construction traffic added to the existing traffic volumes. All intersections in the study area are currently operating well at Level Of Service during the morning and afternoon peak hours. No upgrades will be required during operations as a result of future background traffic volumes following the construction.

During the construction and assembly phase, construction vehicles (graders, TLB's and cement trucks etc.) would be used. These vehicles would stay onsite and their impact on the roads surrounding Darling will be minimal as most of these vehicles will be transported to the site. Vehicles transporting goods, materials and equipment would make use mainly of the N7/R27 and R315 and associated gravel roads.

As slow-moving delivery vehicles (trucks with loads) and employees on foot (pedestrians) could impact on road safety, road signs, erected to address the impact of the slow-moving vehicles and that of pedestrians on foot, will neutralize this impact.

Mitigation measures:

- Upgrade road signs to address the movement conflict.
- Road signs for protecting pedestrians crossing and accessing the road should be displayed.
- Provide transport to decrease pedestrian traffic.
- Restrict heavy vehicles to specific hours.
- Erect road signs signaling times when heavy vehicles will make use of the road.
- Adhere to national traffic safety standards and precaution measures.
- Contractor/ Implementation agent to provide a traffic safety awareness programme amongst the project team and the community, particularly the kids

The intensity of the impact caused by the increase of traffic is negative and of low significance and stay low negative after mitigation.

The No Go alternative will have no impact.

g) Increased noise and dust levels

Experienced as: Living conditions turn harsh with increased dust and noise.

Noise and dust will be generated during the establishment of the construction site, but only for a limited period of time. Excavation activities for building infrastructure foundations, trenches for cabling and piping may affect the noise and dust levels. After preparation and during the building period noise will be generated by activities such as concrete mixing, construction and transport vehicles to and from the site along gravel roads, building, concrete vibration and steel work, and the installation of services. On-site vehicle movement, delivery of materials and equipment and additional traffic will also create noise. These impacts will be of a local nature, and Darling will be affected however for a limited period of time.

Mitigation measures:

- Dust creation must be controlled as per construction management and control code.
- Noise creation should be controlled as per construction management and control code.
- Appoint an Environmental Control Officer to supervise construction and building.
- Adhere to the Environmental Management Plan (EMPr) for the Construction Phase.
- All workers and management must undergo an induction course.
- Enforce strict operating hours for heavy vehicles and construction activities on site to reduce noise and dust impacts on adjacent landowners.
- Implementation of dust suppression measures.
- Access must be on recognized routes.
- Litter and littering must be strictly controlled.
- All construction waste and building rubble must be removed off site.

The impact of dust and noise is low negative before and after mitigation as it occurs over short intervals and will affect the immediate community of Darling. After mitigation the likelihood of the impact to occur, becomes less.

The No Go alternative has no impact.

h) Change in sense of place

Experienced as: Living environment change

The proposed development will represent a change in land use and form and thus the status quo. The sense of place and visual landscape are altered during the construction phase as a result of the infrastructure of the proposed development being introduced onto the dominantly vacant land landscape with Darling as a backdrop.

The sense of place of Darling is rolling wheat fields, vineyards and Renosterbos remnants, whilst the settlement character is that of a rural settlement with some gravel roads and well-preserved historic buildings and an eclectic main street not representative of the settlement character.

Darling as service center with a diversified economic base, enjoys high level of mobility with the dual N7 national road connecting Cape Town and Namibia route and the R27 connecting Cape Town and the West Coast as well as the railway lines and supporting infrastructure. Hence Darling is in close proximity to the Cape Town Markets and the Saldanha IDZ.

During the construction phase, the proposed development will impact on the settlement sense of place given the loss of fallow agricultural land being replaced by the assembly of PV arrays and the development site approximately ±54ha in extent.

The site is a flat to gently undulating field and can be easily seen when driving into the town from the west/ Yzerfontein side. An old double avenue of gum trees lines the southern boundary along the R307 partially obscuring the view from this major road, otherwise, it is open to view particularly from overlooking hills nearby and is highly visible from local roads, particularly the back road to Mooresburg. The visual and aesthetic sensitivity of the area is moderate-high while the anticipated impact on the landscape is high. Hence, tree and vegetation conservation, screening the site with endemic vegetation and using natural colours for structures and fencing is recommended. The site choice is somewhat questionable, as the land between the dirt road and Nuwedorp is similar, and would contain urban-infrastructure sprawl, while retaining the moderate-high value landscape and scenic value of the proposed site.

Mitigation measures during the construction phase:

- Clear all alien vegetation.
- Keep disturbed areas to a minimum.
- Buildings and similar structures must be in keeping with regional planning policy documents, especially the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits.
- Utilize existing roads and tracks to the maximum extent possible.
- Provide pedestrian walkways where desire lines are identified.
- Outdoor lighting must be strictly controlled so as to prevent light pollution.
- All lighting must be installed at downward angles.

- Sources of light must as far as possible be shielded by physical barriers such as trees and buildings or structures.
- Use only minimum wattage light fixtures.
- Visual management and maintenance: Scheme maintenance covering site tidiness should be maintained at all times including during construction.

The construction phase of the solar facility development has a visual impact that is distinct in extent, short-term duration, medium intensity, definite probability, and of low significance on the landscape. The intensity of the visual impact during construction is low negative before and after mitigation.

The No Go alternative has no impact.

3.1.3 Indirect and Negative Impacts during the Construction Phase

i) Community stability and homogeneousness

Experienced as: Influx of people (employed and unemployed) permanently or semi-permanently looking for work / in anticipation to access employment

The construction phase of the proposed solar facility development will impact on the population of Darling and its immediate surroundings and cause an influx of skilled and un-skilled people temporarily and permanently as they come to work on the construction site and come to look for work. The influx of people may result in a socially less stable community and higher levels of migration

Mitigation measures:

- Ensure that the contractor (implementation agent) employ at least 80% locals of whom 80% were previously disadvantaged across all skills categories (unskilled, semi-skilled and skilled).
- If not suitably qualified, make an effort to transfer skills on the job.
- Involve schools and college to visit construction site to inspire youngsters to join the construction industry.
- Establish a Monitoring Committee for the construction phase in collaboration with representatives of the local community. The Monitoring Committee has to ensure that the proposed solar facility is implemented and that any problems that arise and is associated with the demolition of the informal structures and construction phase, is addressed.

The impact of the influx of people during the construction phase of the proposed solar facility is rated before and after mitigation as low negative.

The No-Go Alternative has no impact.

3.1.4 Positive Residual Impacts during the Construction Phase

j) Youth self-esteem develop

Experienced as: Young people find employment temporarily and permanently

Given the high youth unemployment rate of 17.9% in relation to the unemployment rate of 10.4% (in 2017) there is a need that young people be employed as part of the local component that have to constitute such a

project. As the young people may not have the skills, they have little to aspire to and employment is limited to entrance level jobs should they get employed.

Job reservation for youth is a mitigation measure to improve the social wellbeing of the community. The impact of employing youth was assessed as part of the impacts during the Construction Phase. The opportunity afforded to youth to work was assessed as positive. A subsequent impact is that families may start to hold youth in a position of higher esteem than previously. As this view changes positively **family and community life** will be touched and change positively in the long term breaking the cycle of hopelessness of youth in the local and regional community.

Mitigation measures:

- Reserve 60% jobs for youth: Of the 106 jobs per the construction period, and the 85 jobs reserved for locals, 68 jobs should be earmarked to be taken up by people 35 years of age and younger.
- Require contractor to facilitate mechanisms to enable youth to access employment.
- Pay youth market related prices for the job.
- Require contractor to facilitate that youth gain equal access to training and education opportunities.

The improved self-esteem of youth will change their social well-being and in turn change the social well-being of the family. Although the significance of the impact is low before and after mitigation, the impact is viewed as significant and positive as it assists to break the local cycle of hopelessness.

The No Go alternative has no impact.

k) Employment equity of vulnerable groups:

Experienced as: Youth and Women find employment temporarily and permanently

Affording youth and women the opportunity to join the workforce, will improve the social well-being of these vulnerable groups. Given the high youth unemployment rate of 17.9% in relation to the unemployment rate of 10.4% (in 2017), it is likely that fewer young people will get employed. As the young people may not have many skills, they have little to aspire to and employment is limited to entrance level jobs should they get employed. Of the jobs generated per annum, 60% jobs should be earmarked to be taken up by people younger than 35 years of age and slightly more than half of these jobs are earmarked to be taken up by women.

Mitigation measures:

- Municipality facilitates that youth and women gain equal access to training and education opportunities: Skills development and improvement of educational qualifications should be a project component and youth and women should gain equal access to training and education opportunities.
- Reserve 60% of jobs for youth and 40% for women.
- Municipality to facilitate access to employment for youth and women.
- Pay youth and women market related prices and the same as men for the job.

The opportunity afforded to youth and women is positive. Although the significance of the impact is low before and after mitigation, the change in social wellbeing of youth and women will change the social well-being of their families. However the impact is viewed as significantly positive, as it may assist in breaking the cycle of hopelessness within poorer communities.

The No Go alternative has no impact.

3.1.5 Summary of impacts during the Construction Phase and Conclusion

Overall, the construction phase brings about some direct and positive impacts, direct and negative impacts and indirect positive and negative impacts.

Direct and Positive Impacts during the Construction Phase are tabulated below:

Table 11: A summary of direct and positive impacts, Construction Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
A	Increased Employment opportunities	Economic:	Working age people find employment temporarily and permanently: 106 Jobs	Individual, family and community	Medium, Positive	Medium positive
B	Increased Income	Economic	Income of families increases as working age people are employed: R45 million wage bill of which R36million should benefit the locals.	Family	Low Positive	Low Positive
C	Increased skills levels of working age population	Economic:	Skills development (informal) of those that find employment temporarily and permanently: 21 unskilled, 51 semi- & 13 skilled	Individual	Medium, Positive	Medium Positive
D	Increased Local Sales and GGP	Economic	Increased sales and income: <1% contribution to Swartland GDP	Community	Low, Positive	Low positive

Direct and Negative Impacts during the Construction Phase are tabulated below:

Table 122: A summary of direct and negative impacts, Construction Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
E	Increased Use of Social Amenities & Service	Social & Economic	Diminishing social amenity and services capacity: Within norms.	Community	Low, Negative	Low, Negative
F	Increased motorized and non-motorized traffic levels	Economic	Decreased road safety. Within norms	Individuals & Community	Low, Negative	Low, Negative

G	Increased noise & dust levels	Social (Health) & Environmental	Result in Harsh living conditions as dust and noise increases: Within norms.	Individuals & Family	Low, Negative	Low, Negative
H	Change in sense of place	Social	Living environment change in quality as infrastructure replace fallow agricultural fields	Community members	Low, Negative	Low negative

Indirect and Negative Impacts during the Construction Phase are tabulated below:

Table 13: A summary of indirect and negative impacts, Construction Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
I	Community stability & homogeneity	Social	Influx of people (employed and unemployed) permanently or semi-permanently: Awareness of career options increases.	Individual, Family, Community	Low, Negative	Low Negative

Residual and Positive Impacts during the Construction Phase are tabulated below:

Table 144: A summary of residual and positive impacts, Construction Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
J	Youth's self-esteem developed	Environmental & Social	Youth are employed: Improved self confidence	Families	Low, Positive	Low Positive
K	Employment equity of vulnerable groups	Social	Youth and Women find employment temporarily and permanently: Improved family coherence.	Community and Individual	Low, Positive	Low positive

Overall the impacts during the Construction Phase that are:

Positive and:

Direct are:

- The creation of 106 jobs with a wage bill of R45 million over 18 months and R36 million benefitting the 85 locals, providing 21 unskilled and 51 semi-skilled and 13 skilled people employment opportunities and contributing <1% to the Swartland GDP.
- Raising awareness of career options by having skilled and semi-skilled others present in the community working on the solar facility.

Residual are:

- Improved family coherence as youth and women are employed and being held in high-esteem.

Negative and

Direct are:

- Within limits, increased use of social amenities and services, decreased road safety and increased noise and dust.
- The change in the sense of place during construction.

Indirect are:

- Community stability decrease as the perception of work cause an influx of employed and unemployed people.

3.2 Operational Phase

During the operational phase, the solar facility has to be maintained and kept clean. The generation of energy is not labour intensive and services will be hired. According to similar facilities a total of approximately thirty seven (± 37) direct jobs will be created. Whilst maintenance may occur more sporadically, the facility will be cleaned on average four times a year. A security service will be required daily.

The maintenance and cleaning team will include general workers (cleaners), technicians and a project manager (electrician). Employment contracts, most likely biannual temporary contract, will be offered to those maintaining, cleaning and securing the facility.

The expected current value of the employment for the first ten (10) years is R144 million of which approximately 80% or R116 million rand will benefit previously disadvantaged individuals.

The following impacts during the operational phase are evaluated individually:

3.2.1 Direct and Positive Impacts during the Operational Phase

a) Increased Employment Opportunities

Experienced as: Working age people find employment temporarily and permanently

The generation of energy is not labour intensive and a total of thirty seven (± 37) jobs will be created. Employment contracts will be offered to maintain, clean and secure the facility.

Whilst maintenance may occur more sporadically, the facility will be cleaned on regular intervals. A security service will be required daily.

The maintenance and cleaning team will include general workers (cleaners), technicians and a project manager (electrician). Of those employed, 9 would be unskilled, 22 would be semi-skilled and 6 would be skilled. The local community and the region will benefit from the jobs created. Granting most of the unskilled and semi-skilled jobs to locals will limit the competition with “outsiders” and reduce conflict. The employment of locals would have a consistent positive impact on the economic and material well-being of the local community as the expected value of employment annually is $\pm R11$ million. Of this amount $\pm R8.8$ million should benefit the local community annually. Employing locals will cause the earnings to flow back into the community and being spent most likely inside the municipal area and region.

Of the people in Darling that are of working age, 10.4% are unemployed (municipal wide rate) and discouraged work seekers totaling 982 persons and 39% (municipal wide rate) are not economically active. The proposed development contributes to decrease the unemployment rate. It is unlikely that the entire labour force will be from Darling, but would most likely be from Swartland. (8% are not in employment and 2% are discouraged work-seekers totaling 7 125 persons).

A breakdown of the jobs generated during the operation of the proposed solar facility development follows below:

No of jobs	Duration contract	Skills levels required	Value of employment opportunities / jobs	Involvement of locals
±37 direct	Annual Contracts	9 unskilled, 22 semi-skilled, 6 skilled	R11 million annual R144 million over ten years	Approximately 80% (30) of the employees will be local (from Darling)

The impact rates low as less than 1% of employable people that are not working (41 000 persons (51.7%) of working age: 39.3% or 30 854 persons not economically active, 8% unemployed and 2% discouraged work-seekers totaling 7 125 persons) of the working-age population are not economically active can be employed by the proposed solar facility. However, the community rates creating jobs and improving education as significant given the challenge of unemployment in the municipal area. The skilled jobs are sector related (i.e. engineering) and specialized.

Mitigation measures:

- Contractors, employing or seeking to employ local HDIs who are suitably qualified, should get preference;
- The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer;
- The developer should, where necessary, assist local HDI owned firms to complete and submit the required tender forms on condition that local labour is used;
- Skills transfer and development, formally and informally, should be implemented together with local education and skills training providers (e.g. job shadowing).

The community perceives job creation as highly positive and the number of jobs created over the entire operational period is rate high and is positive, as locals get employed. The impact rates high positive before and after mitigation.

The No Go alternative generates no opportunities.

b) Increased Income

Experienced as: Income of families increases as working age people are employed

The 2011 average household income overall in Swartland is low as 48.9% or 14 603 of the population earns R38 400 (maximum R3 200 per month) and less, whilst 54.1% earns between R38 401 and R153 800 (maximum R12 800 per month) and 17% earn more than R12 800 per month. These figures correlate with the skills levels as per Quantec Research, 2018 of 50.1% un-skilled, 34.6% semi-skilled, 15.2% skilled.

The expected current value of the employment for the first ten (10) years is ±R144 million of which approximately 80% or ±R116 million rand will benefit ±30 previously disadvantaged individuals. Household members getting employed or getting employed in a better paying job may now have an income or additional income. Overall household income increases.

Mitigation measures:

- Developer, municipality and business owners to liaise with existing or future projects to enhance employment opportunities for locals.
- Developer and contractor to act as reference for locals employed.

The operation of the proposed solar facility will impact positively on the income of some households locally as member(s) of these households find employment. The significance of the impact is medium positive before and after mitigation.

The No Go option has no impact.

c) Increased skills levels of working age population and youth in particular

Experienced as: People find employment temporarily and permanently as their employability improve

Should capacity building and skills development training programmes be attended and completed, these programmes will benefit the community in the short term and long term directly. As people get trained their skills level and income will increase and their economic and material well-being will improve. Not only training will build capacity but work experience will also contribute to skills levels.

Obtaining skills will enable locals to find work within the settlement, the municipality and the region. The creation of employment opportunities, training and skills development opportunities and work experience will cause more jobseekers to settle in the Darling and immediate surrounding communities. This may cause societal tension and instability particularly if the unemployment rates stay high and locals do not find work.

Mitigation measures:

- Reserve 80% of jobs for locals.
- Facilitate mechanisms to enable locals to access training opportunities offered by the proposed solar facility.
- Require formal and informal skills transfer:

Should skilled persons from outside the community be employed, facility owners/ developers should consider implementing a training and skills development programme to enhance the opportunities for local historically disadvantaged individuals in their specific industry. Measures should be put in place to ensure successful training and development i.e. structured job shadowing and learnerships. Such a programme should be offered in liaison with an accredited Further Education and Training College like the West Coast College or University of Technology or the Proposed university.

The impact of the skills increase is moderately positive before and after mitigation. Creating skills development opportunities for locals, irrespective of its significance, is viewed as significantly positive given the challenge of unemployment in the municipal area and in the province. Moreover skills are a long-term investment.

The No Go alternative has no impact.

d) Growth of local economy and Increased Sales and GGP

Experienced as: Increase in sales, income and spending

When in operation, the contribution by the proposed solar facility to the Swartland Municipal, 2016 GDP of R7.4 billion and salaries are estimated at ±R11 million per annum. The local GGP will increase by <1%. During the operational phase regular purchases will be made in Darling, Yzerfontein and Malmesbury as materials and equipment will be required for maintenance. This will cause the sales volumes (direct and indirect) to increase slightly. Sales of the proposed project will contribute to the economy locally at municipal level and regionally. An effort should be made to keep the sales in the Western Cape and appropriate mitigations measure should be explored.

The sale of energy and the expense to operate the facility will benefit the local community and the region. The increase in sales volume related to the selling of electricity will contribute to the local GGP.

Mitigation measures:

- Business should be directed to purchase locally and to make use of local service providers.
- Spending money locally purchasing from locals and South African should benefit merchants. Any discount leveraged in the local economy of the municipal area should benefit locals
- Small business should be supported (i.e. skills training, assistance and guidance to set up small businesses) and joint ventures with previous disadvantaged persons should be promoted.
- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business should be encouraged.

The improvement of the economy, measured by the change in Gross Domestic/ Geographical Product (GGP) of the Swartland reflects as low measured against the 2016 GDP, though the impact is rated as moderate before and after mitigation.

The No Go alternative has a no impact.

e) Proximity to work

Experienced as: Employment opportunities are close to where working age people live

The proximity of work adjacent to Darling and close to Nuwedorp enable those of working age to reach work in a shorter time span and to walk to work. Spending less time and money to get to work is an indirect benefit to individuals and ultimately to families. Walking to work or using non-motorized transport is enhancing individual health and decreasing the carbon footprint of the settlement.

The proximity to work rates highly positive as it enables policy directives of the SDF and several other policies and plans. No mitigation measures are proposed.

The no-go alternative has no impact.

f) Enhanced supply of bulk services

Experienced as: Electricity is generated and distributed

Swartland Municipality required electricity capacity and the solar plant will provide the required capacity. The provision of bulk electricity unlocks a business opportunity.

Without the development (No Go alternative), providing bulk electrical service would not have been efficiently provided and reliant on ESKOM provision of energy to Swartland Municipality. Neither would any business opportunities have been unlocked.

The impact of the provision of electrical services rates medium positive and no mitigation is recommended.

The No Go alternative rates moderately negative. In essence, the No Go alternative cannot be considered as the proposed development is viewed as a strategic infrastructure project.

3.2.2 Direct and Negative Impacts during the Operational Phase

g) Change in sense of place

Experienced as: Living environment change

The proposed development will represent a change in land use and form and thus the status quo at the western entrance of Darling. The sense of place and visual landscape are altered during the operational phase as a result of the infrastructure of the proposed development being introduced onto the dominantly vacant landscape with Darling as part of the view shed.

The sense of place of Darling is rolling wheat fields, vineyards and Renosterbos remnants, whilst the settlement character is that of a rural settlement with some gravel roads and well-preserved historic buildings and an eclectic main street not representative of the settlement character. Darling is a tourist destination.

Darling as service center with a diversified economic base, enjoys high level of mobility with the dual N7 national road connecting Cape Town and Namibia route and the R27 connecting Cape Town and the West Coast as well as the railway lines and supporting infrastructure. Hence Darling is in close proximity to the Cape Town Markets and the Saldanha IDZ.

During the operation phase the proposed development will moderately to highly impact on the settlement's sense of place as the visual and aesthetic sensitivity of the area are moderate-high. The flat to gently undulating property is visible when driving into the town from the west/Yzerfontein side and the fallow land will be replaced by a ±54ha in extent assembly of PV panel arrays having a moderate-high impact on the landscape.

Whilst an old double avenue of gum trees lines on the southern boundary along the R307 partially obscures the view, screening the site with endemic vegetation, conserving the trees and existing vegetation, and using natural colours for structures and fencing will help to mitigate the impact.

The solar facility site has moderate-high visual exposure, moderate-high visual absorption capacity, low compatibility and moderate-high visibility. The nature of the visual impact has a district extent, long-term duration, medium intensity, definite probability, and is medium significance.

The visual and aesthetic sensitivity of the area is moderate-high and the anticipated impact on scenic resources by the low compatible infrastructure located on a site that is moderately to highly visible, is moderate. The Operational phase of the solar facility has a visual impact that is local in extent, long term, medium intensity, definite probability, and of moderate significance on the landscape of Darling as a tourist destination.

Mitigation measures during the operational phase, include:

- Tree and vegetation conservation.
- Screening the site with endemic vegetation.
- The use of natural colours for all fencing and structures.
- Good planting maintenance.
- Keep disturbed areas to a minimum.
- Utilize existing roads and tracks to the maximum extent possible.
- Maintain pedestrian walkways where desire lines are identified.
- Outdoor lighting must be strictly controlled so as to prevent light pollution.
- All lighting must be installed at downward angles.
- Sources of light must as far as possible be kept shielded by physical barriers such as trees and buildings or structures.
- Use only minimum wattage light fixtures.
- Visual management and maintenance:
Scheme maintenance covering site tidiness should be maintained at all times.

After mitigation, the impact is still significant on the landscape of the tourist destination and stay moderate.

The No Go alternative has no impact.

h) Loss of Agricultural Potential and land

Experienced as: Decline in food security potential

The proposed solar facility development site is located on fallow land with medium - low agricultural potential.

The total footprint of the facility that excludes agricultural land use has been evaluated together with the scale of loss for agricultural production potential of the land at a regional level. Agricultural land occupied by the development infrastructure will become unavailable for agricultural use, with consequent potential loss of agricultural productivity and employment. Once the land is returned to agricultural use after decommissioning, the soil can be degraded by erosion and topsoil loss. According the agricultural statement, the site or area where the solar facility is going to be located, has limitations on its cropping potential and is considered to be below the threshold for being conserved as agricultural production land. The capacity of the agricultural land is limited to only being suitable as grazing land, and there is no particular scarcity of such land in the country.

The site has limited current agricultural production and limited future agricultural production potential and is a site which can be used for non-agricultural purposes without loss of a high agricultural production potential.

Electrical grid infrastructure, that is a transmission station, is on site. This is supportive to the efficient use of resources and limiting the loss of energy generated. Besides that, Swartland Municipality owns the land, the location of the transmission station is a benefit to the proposed development.

The potential cumulative impact of loss of agricultural land by occupation and degradation and consequent decrease in agricultural production at a regional level, is low.

The development will lead to a loss of cultivated production from ±54 hectares, but it will generate a greater per hectare income for the farming enterprise than the existing agriculture will earn. It will also generate additional income and employment in the local economy. In addition, it will contribute to the country's need for energy generation, particularly renewable energy that has lower environmental and agricultural impact than existing, coal powered energy generation.

The loss of agricultural land caused by the proposed development, is of low significance. Mitigation promotes strict storm water management and erosion control directly. The recommended mitigation measures are implementation of an effective system of storm water run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.

Mitigation measures:

- Implement an effective system of storm water run-off control at any point where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.
- Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.
- Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion, and to reduce dust formation.
- If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface, and then stabilized by facilitating vegetation cover.
- Enhance on-site conservation where appropriate.
- Indirectly enhance off-site conservation of neighbouring property as critically threatened conservation area.
- Enhance conservation tourism.

Due to the fact that the energy facility will not occupy scarce, viable cropland, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance before and after mitigation and as acceptable. The proposed development is acceptable because it leads to a very limited loss of potential cropland and therefore minimal loss of future agricultural production potential.

The No Go alternative has no impact.

i) Loss of Biodiversity

Experienced as: Deterioration of natural environment

At present the site consists of fallow land used for grazing. The area does not contain any intact natural vegetation of any significance and had been cultivated on and off over a long period of time. Originally, the area would have been covered by Swartland Granite Renosterveld vegetation, an endangered type. .

The site likely impact on ecological support areas (ESA 2) and critical biodiversity areas (CBA 1) associated with a small seasonal degraded watercourse running north of the development footprint. The delineated development footprint avoid this watercourse.

No red-data or any protected plant species were observed. No species protected in terms of NEM: BA was observed. No species protected in terms of the NFA was observed. The relative plant species sensitivity is considered "Highly Sensitivity". Because of the degraded state of the study area, it is considered unlikely that the proposed solar facility will result in any significant additional impact on sensitive plants. The Plant Species theme for this study area is rated as Low Sensitive.

The site is highly sensitive to Fauna and Avifauna, yet highly unlikely that the proposed development will result in any significant additional impact on any of these species. The animal species theme sensitivity for the proposed development is considered to be Low.

Rehabilitating and conservating the site is not considered a viable option as compared to other areas more worthy of conservation efforts.

The Terrestrial Biodiversity Sensitivity is Very High. It is considered highly unlikely that the development will contribute significantly to any of the following:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g., migration patterns, pollinators, river function etc.) due to construction and operational activities.
- Loss of local biodiversity and threatened species.
- Loss of ecosystem connectivity.

The Terrestrial Biodiversity Theme Sensitivity for the proposed site is considered to be low Sensitive.

The following recommendations aims at the protection of seasonal watercourse:

- The aquatic CBA area must be considered a no-go area (to be protected).
- Indiscriminate clearing of any area outside of the footprint must be avoided.

The plant species theme, fauna species theme and terrestrial biodiversity theme Sensitivity for the proposed site is considered to be of low sensitivity whilst the sensitivity of all three themes are indicated as high for Darling and its surroundings. The proposed solar facility will have a low impact on the biodiversity of the site and its surroundings and the impact stays low after mitigation.

The No Go alternative has no impact.

j) Loss of Fresh Water Volumes and Quality (ecological infrastructure)

Experienced as: Decline in fresh water quality and volumes

The site is ecologically very much degraded, with little if any of its natural attributes left. Note that:

- The PV panels and other infrastructure will not dam the flow of storm water and cause permanent Inundation.
- The water quality will be modified as it is not foreseen that the washing of the PV panels will result in any runoff. No detergents or chemicals will be released, not on the short or longer term. New technology with non-stick and dirt-repellent surfaces allows for the cleaning of the panels with compressed air and not water.
- No canals or other storm water infrastructure are required on the construction site.
- The PF installation is not about to alter the topography of the landscape.
- The PV installation will not add to any further terrestrial encroachment.

The proposed development will have no direct impact on the stream in the north and the mitigation measures will enhance the ecological support areas on which the propose development impact indirectly on.

The following mitigation measures is recommended for the proposed development.

- Proper drainage infrastructure around the roads in and around the PV units to prohibit preferential flow paths.
- Immediate stabilisation and rehabilitation of disturbed areas during the construction phase as storm water can wash sand and mud into small wetlands, trenches and streams (towards the north of the sub-catchment).
- Kept solar energy panels 32m away not to disturb vegetation in and around the drainage lines
- Controlling invasive vegetation on the PV installation site as an ongoing standard operating procedure.
- Livestock will not be permitted to graze on the site of the PV installation. Over utilization will cease.
- Groundwater table will be kept stable as no water will be required and subsequently less dehydration of waterways than the current farming operation.
- Conservancy tanks will be installed that will be emptied by tanker trucks. Litter will be collected in household wheelie bins and it will be disposed of on the municipal waste disposal site.

The proposed development has no direct impact on the ecological infrastructure and it is rated as low negative. Mitigation measures will enhance the ecological support areas supporting the stream in the north (low positive).

The No-Go alternative has no impact.

3.2.3 Indirect and Positive Impacts during the Operational Phase

k) Increased levels of education

Experienced as: Enhanced personal choices in the world of work as people gain skills and experience

More inhabitants of Darling and the Swartland will improve their educational qualifications as:

- Those who find employment will gain skills and work experience and will inspire young people to further their studies. As youngsters will take the opportunity to further their studies and it is likely that the matric drop-out rate decreases and the pass rate increases.
- Influx of skilled persons consulting at the proposed development will encourage youth to obtain an education.

The improvement of educational qualifications will enhance personal choices, particularly in the world of work.

Nationally, there is a need amongst young people to access education in scarce subjects i.e. mathematics, physics and science. The proposed solar facility undertakes to invest the bulk of 1.5% of its annual revenue into teacher and teacher supporter training to ensure the offering of scarce subjects and conservation science and the tuition of learner in these subjects. This will result in the improvement of the education and skills levels in Darling and its immediate surrounding benefitting the community in the long term. The scarce subjects should include conservation sciences and ecological infrastructure management. The balance of the social investment can be utilized for sport and arts and other identified needs. Effort should be made to assist learners that are at risk to be directed to take mathematical literacy.

Mitigation measures:

- Facilitate mechanisms to enable local young people to access the educational opportunities to attend courses in scarce subjects.
- The educational opportunities should include formal and informal education:
 - On successful completion of subjects and courses, opportunities to access further education should be made accessible.
- Support school education in scarce subjects. Include the following:
 - scarce subjects should include mathematics, science and physical science, conservation sciences and ecological infrastructure management.
 - Teacher training and teacher support training in scarce subjects.
 - Tuition in scarce subjects.
 - Effort should be made to assist learners that are at risk to be directed to take mathematical literacy.

As people get the opportunity to improve their education, self-development opportunities and income will increase and their economic and material well-being will improve. Young people will experience hope as they main stream into the regional and national economy. The impact is medium positive before and after mitigation.

The No Go alternative has no impact.

l) Increased SMME participation

Experienced as: Increased economic participation by individual small business owners

Interviews confirm that there is a need to encourage and support small businesses. Mechanisms should be put in place to enable investment to build small businesses and industries. This will result in the improvement of the local economy in Darling and its immediate surrounding benefitting the community in the long term.

Mitigation measures:

- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established businesses.
- Implement formal small business training and mentoring programmes.
- Provide urban space to conduct business.
- Establish a mechanism to enable investment into small businesses.

The impact of more small businesses is of low significance before and after mitigation. Where individuals or families do get involved in SMMEs, their involvement will have a significant impact on their families.

The No Go alternative has no impact.

3.2.4 Positive Residual Impacts during the Operational Phase

m) Self-esteem and image of youth and change

Experienced as: Young people find employment temporarily and permanently

An indirect consequence of the dependency rate (i.e. high unemployment (10.4%) and economically not active (39%) rate) of 1.5 dependents per every person working, social well-being is weak i.e. abuse and having low self-esteem.

The improved self-esteem of the youth (amongst themselves and within the community) and women generated during the construction phase should be continued to be strengthened through enhancing their employability in the operational phase. The self-image of women could keep improving by employing women and young women as part of the maintenance team. The impact is evaluated over a 10-year period (long term).

Young women are afforded the opportunity to obtain education in scarce subjects such as mathematics, science and physics. This will enhance women's self-esteem and how the community view young women (image of young women).

Mitigation measures:

- Reserve a number of jobs for women and youth.
- Facilitate mechanisms to enable women and youth to access employment.
- Pay men and women doing the same job, equally.
- Ensure that women gain equal access to training and education opportunities than men do.

- Reserve a number of study opportunities for women.

The improved self-esteem of youth and women will change their social well-being and in turn change the social well-being of the family. Therefore, the impact is viewed as positive, though the significance is rated low before and after mitigation, as it assists to break the local cycle of hopelessness.

The No Go alternative has no impact.

n) Employment equity of vulnerable groups:

Experienced as: Youth and Women find employment temporarily and permanently

Affording youth and women the opportunity to join the workforce, will improve the social well-being of these vulnerable groups. Given the high youth unemployment rate of 17.9% in relation to the unemployment rate of 10.4% (in 2017), it is likely that fewer young people will get employed. As the young people may not have many skills, they have little to aspire to and employment is limited to entrance level jobs should they get employed. Of the jobs generated per annum, 80% jobs should be earmarked to be taken up by people younger than 35 years of age and half of these jobs are earmarked to be taken up by women.

Mitigation measures:

- Municipality facilitates that youth and women gain equal access to training and education opportunities: Skills development and improvement of educational qualifications should be a project component and youth and women should gain equal access to training and education opportunities.
- Reserve 60% of jobs for youth and 40% for women.
- Municipality to facilitate access to employment for youth and women.
- Pay youth and women market related prices for the job.

The opportunity afforded to youth and women is positive. Although the significance of the impact is low, the change in social wellbeing of youth and women will change the social well-being of their families. The impact is viewed as significantly positive, as it may assist in breaking the cycle of hopelessness within poorer communities. The impact is rated as medium positive before and after mitigation. .

The No Go alternative has no impact.

o) Family Structure Change

Experienced as: Resilient families as per capita income increases

Should no provision be made to break the cycle of poverty, vulnerable persons (i.e. youngsters, disabled, women etc.) will stay part of the household and unemployed.

Should vulnerable people' self-esteem improve by being employed and as they become independent, changes in the family structure may take place for example to release grandparents looking after siblings. This result, obtained over the long term, will be an indirect but positive result from the proposed solar facility.

Mitigation measures:

- Put mechanisms in place that vulnerable or unemployed people gain equal access to training and education opportunities: Skills development and improvement of educational qualifications should be a project component and vulnerable people should gain equal access to training and education opportunities.
- Reserve 60% of jobs for vulnerable people.
- Municipality to facilitate access to employment for vulnerable people.
- Pay youth and women market related prices for the job.

The change in family structure as vulnerable people find employment is moderately positive before and after mitigation. Although the significance of the impact is medium, the change in social wellbeing of families is significant. The significance of the impact is experienced by the community as high as it aids in breaking the cycle of hopelessness within poorer communities.

The No Go alternative has no impact.

3.2.5 Negative Residual Impacts during the Operational Phase

p) Diversification of cultures

Experienced as:

Influx of people (employed and unemployed) permanently or semi-permanently to work or in anticipation to access employment or to settle as entrepreneurs.

Changes in community stability and homogeneousness

The influx of unemployed people semi-permanently in anticipation to access employment will cause community stability to be affected. Should these job seekers not find work the rate of unemployment will increase most likely.

As unemployed and most likely unskilled people together with foreigners that are skilled, the social environment will be affected and the relationship between these individuals and families in the community that do no work are indirectly affected.

The influx of self- and unemployed and foreign persons will impact moderately negatively on the social stability and the homogeneity of the local and regional community. The influx of unemployed persons and from different cultures is an indirect result of the proposed solar facility.

No mitigation measures are recommended.

The No-go Alternative has no impact.

3.2.6. Summary of Impacts during the Operational Phase

Overall, the operational phase brings about some direct and positive impacts, direct and negative impacts and indirect positive and negative impacts.

Direct and Positive Impacts during the Operational Phase are tabulated below:

Table 15: A summary of direct and positive impacts, Operational Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
A	Increased Employment opportunities	Economic	Working age people find employment temporarily and permanently: 37 jobs generated.	Individual, family and community	High, Positive	High positive
B	Increased Income	Economic	Income of families increases as working age people are employed	Family	Medium, Positive	Mitigation Positive
C	Increased Skills	Economic	People find employment temporarily and permanently as their employability improve	Individual and Family Unit	Medium, Positive	Medium Positive
D	Increased Local Sales and GGP	Economic	Increased sales and income	Community	Medium, Positive	Medium Positive
E	Proximity to work	Social	Employment opportunities close to residence	Individual and community	High, Positive	No Mitigation
F	Enhanced supply of Bulk Services	Social	Electricity is generated and distributed.	Community	Medium, Positive	No mitigation

Direct and Negative Impacts during the Operational Phase are tabulated below:

Table 166: A summary of direct and negative impacts, Operational Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
G	Changed sense of place	Social	A permanent change of regional landscape (complete change in use that is of medium intensity and decreasing living environment vibrance	Individuals & Community	Medium, Negative	Medium, Negative
H	Loss of Agricultural Land (food security potential)	Economic	Alternative use of fallow agricultural land.	Community members	Low, Negative	No mitigation
I	Loss of biodiversity	Natural	Change in Natural Environment and resilience	Community member	Low, Negative	Low Negative

J	Loss of ecological infrastructure	Natural REVERSEABLE	Decrease in fresh water volumes and quality	Community members	Low, Negative	Low, Positive
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Indirect and Positive Impacts during the Operational Phase are tabulated below:

Table 177: A summary of indirect and positive impacts, Operational Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
K	Increased levels of education (Individual development)	Social	Influx of skilled people to work encourage youth to obtain an education; Enhance personal choices in world of work	Individual	Medium Positive	Medium Positive
L	Increased SMME participation	Economic	Increased economic participation by individual small business owners	Community	Low, Positive	Low positive

Residual and Positive Impacts during the Operational Phase are tabulated below:

Table 188: A summary of residual and positive impacts, Operational Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
M	Youth's self-esteem develops	Social	Youth find employment temporarily and permanently	Families	Low, Positive	Low, Positive
N	Employment equity of vulnerable groups	Social	Women and Youth find employment temporarily and permanently	Community and Individuals	Medium, Positive	Medium, Positive
O	Family Structure Change	Social	Resilient families as per capita income increases	Individuals and families	Medium, Positive	Medium, Positive

Residual and Negative Impacts during the Operational Phase are tabulated below:

Table 19: A summary of residual and negative impacts, Operational Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
P	Diversification of culture	Social	Influx of people to find employment or to settle as entrepreneurs; Changes in stability and homogeneity	Families	Medium, Negative	No mitigation

Overall, the impacts during the Operational Phase are:

Positive and

Direct are:

- Increased employment as ±37 jobs are generated, and an annual wage bill of R11 million of which R8.8 million is spend locally.
- Increased GDP results from the contributions by the wage and maintenance bill and selling electricity.
- Proximity to work is <1km and people can walk to work.
- Enhance supply of bulk services as 19.9MW are generated and 6 200 households are provided with electricity.
- Increased skills as informal training takes place.

Indirect are:

- Increased levels of education as personal choices in world of work are enhance by supporting the teaching scare school subjects.
- Increased SMME participation as services, including maintenance services is rendered.

Residual are:

- Youth self-esteem developed and found employment and development opportunities resulted from social investment.
- Employment equity of vulnerable groups improves family relations.
- Family structure changes as family members are becoming available to work.

Negative and

Direct are:

- A changed sense of place as land use changed at the western entrance of Darling as a tourist destination.
- Loss of fallow agricultural land (food security potential).

Residual are:

- Diversification of culture because of the influx of people to find work or to conduct business (entrepreneurs).

3.3 Decommissioning Phase

The decommissioning phase will last for 6 months whilst it is estimated that slightly fewer workers than the number of construction workers, i.e. eighty five (85) persons, will be employed to demolish the plant. The truckloads of the demolished material to be transported and those maintained on site (if any) have not yet been determined.

3.3.1 Direct and Positive Impacts during the Decommissioning Phase

a) Employment opportunities increase

Experienced as: Working-age people find employment temporarily and permanently

It is estimated that the project will result in an increase of jobs as approximately eighty five (85) persons will be employed over a period of approximately six months in the decommissioning phase. Approximately twenty one (21) of these opportunities will fall in the unskilled and fifty one (51) in the semiskilled categories. These temporary un- & semi-skilled job opportunities include, but are not limited to site clearing, breaking up fencing, demolition of concrete foundations should any have used, digging trenches to take out cabling and infrastructure.

No of jobs	Duration of contract	Skills levels	Value of employment	Involvement of locals
85 opportunities 43 jobs	6 Months	21 unskilled, 51 semi-skilled, 13 skilled	R4.4million	High

Some locals will be recruited to do the unskilled and semi-skilled work during the demolition phase. Skilled labour (i.e. a project manager (a civil engineer) and electricians) may be mostly sourced locally or regionally.

The employment of locals would have a short-term positive impact on the economic and material well-being of the local community as the expected value of jobs created over 6 months is ±R4.4 million. Not less than R3.5 million should benefit previously disadvantaged individuals.

The impact rates as low as less than 1% of employable people can be employed by the demolition of the proposed solar facility. However, the community rates creating jobs as highly significant given the challenge of unemployment in the municipal area. However the short term nature of the impact keeps the impact low.

Mitigation measures:

- Contractor should be required to employ 80% locals of whom 80% is HDIs and are suitably qualified. Should there be a lack of suitably qualified people, skills transfer should be prioritized whilst decommissioning is taking place.
- The municipality, local community and community organizations should be informed of the project and potential job opportunities by the decommissioning contractor.
- A database of locals including small businesses owned and run by HDIs that qualify as service providers and compiled by the construction contractor prior to the commencement of the project should be used by the decommissioning contractor to invite small businesses to render services where required.

- The established Monitoring Committee for the decommission phase in collaboration with representatives of the local community, has to ensure that the solar facility is decommissioned and that any problems that arise and is associated with the decommissioning phase, is addressed.

The increase in the number of jobs is positive, but the significance of the impact is low before and after as the duration of the jobs generated is short term.

The No go alternative has no impact.

b) Increased Income

Experienced as: Working age person find employment and contribute to household increases

The average household income overall is low as 49.9% of the population earns R42 000 (maximum R3 500 per month) and less, whilst 54.1% earns between R 42 000 and R 153 800 (maximum R12 800 per month) and 17% earn more than R12 800 per month.

Annual household income below R42 000	49.9%
Annual household income between R42 001 and R144 000	54.1%
Annual household income above R144 000	17.1%

The temporary jobs for ±68 people or likely less than 85 local people will increase the income of these households. Of the expected that R4.4 million salary bill, R3.5 million rand will benefit previously disadvantaged individuals.

Of the total number of unemployed and discouraged work seekers (982) in Darling, nearly nine percent (8,7%) is likely to find employment from the proposed solar facility. The high unemployment and economically not active rate together with low monthly household income amplifies the income generated by the decommissioning. Households that did not have any income may now have an income or as an additional member of the household is employed, the household income may now increase. The community also views and rates *creating jobs* as highly significant as unemployment in the municipal area are high.

Mitigation measures:

- Developer and contractor to act as reference for locals employed.
- Developer and contractor to liaise with existing or future projects to enhance employment opportunities for locals.

The decommissioning of the proposed solar facility will impact positively on the income of some households locally although the impact is rated as low before and after mitigation.

The No Go alternative has no impact.

c) Skills development of working age population

Experienced as: People find employment temporarily

The need for skills has been confirmed (15.2% skilled, 50.1% un-skilled and 34.6% semi-skilled). It is unlikely that on the job or formal skills training will take place that benefit the local community during the demolition phase. Should any formal training take place, it possibly may benefit outsiders.

Mitigation measures:

- Require that a number of jobs for local un- & semi-skilled labour get reserved.
- Facilitate mechanisms to enable locals to access to the formal learning opportunities during the demolition phase.

The skills increase is positive, but the probability of the impact rates low and stay low after mitigation, as it may not be offered formally. Creating skills development opportunities for locals, irrespective of its low probability, is viewed positive given the challenge of unemployment in the municipality and in the province.

d) Improved local Economy and Increased Sales and GGP

Experienced as: Increase in income

During the demolition phase, the general purchases i.e. fuel and domestic purchases will be made locally in Darling, Yzerfontein and Malmesbury. This will cause the sales volumes (direct and indirect) to increase. The demolition phase will bring about business opportunities for subcontractors and service providers. The recycled plant material will be sold locally.

The increase in sales volume will contribute to the GGP of the district and the province. The impact during the demolition phase will not be significant enough to change the leading economic contributor to the Western Cape GDP.

The total contribution to sales and GDP has not been determined, yet the impact is projected to be moderate and positive for the district and low for the province. It is most likely that as in the construction and operational phase, the contribution to the provincial sales will be <1%.

Mitigation measures:

- Decommissioning Contractors should be directed by tender criteria to purchase locally and to make use of local service providers.
- Spending money locally purchasing from locals and South African should benefit employees. The proposed development should leverage discount in the local economy of the municipal area and employees should be made aware of it.
- Small business should be supported and joint ventures with small businesses owned by previous disadvantaged persons should be promoted.

The improvement of the economy, measured by the change in Gross Domestic/ Geographical Product (GGP) of the Swartland reflects as low measured against the 2016 GDP before and after mitigation.

The No Go alternative has no impact.

3.3.2 Direct and Negative Impacts during the Decommissioning Phase

e) Increased use of Social Amenities and Services

Experienced as: Diminishing social amenity and services capacity

Health amenities, such as clinics, local doctors and ambulances will be utilized should a demolition related accident happens. Darling has limited facilities. It is anticipated that there is sufficient capacity in Malmesbury to handle emergencies or to route such emergencies to Cape Town. Demolition related accidents may in the short-term, place additional pressure on the existing emergency facilities. However the likelihood of emergencies occurring is unlikely as national safety standard will have to be adhered to.

Mitigation measures:

- To adhere to international construction, health and safety standards and precaution measures.

The impact of the temporary decommissioning team on amenities and municipal serves is low, yet the intensity is negative before and after mitigation.

The No Go alternative has no impact.

f) Increased traffic levels

Experienced as: Motorized and non-motorized traffic levels increase

During the demolition phase, demolition vehicles (TLB's, trucks and a site crane) would be used. Some of these vehicles would stay onsite and some will be used to transport the demolished material. Vehicles transporting demolished materials and equipment would make use of the R27, N7 and the R315. The number of truckloads of materials have not as yet been determined though the impact of low significance as it would be slightly less than during the construction period. Although the trip frequency maybe low, the road surface of the minor gravel road may deteriorate and will have to be maintained as the practice was during the construction phase.

Mitigation measures:

- Rehabilitate the gravel road during and particularly after demolition to at least the same standard as is currently.
- Upgrade road signs to address the movement conflict.
- Road signs for protecting pedestrians crossing and accessing the road shoulder should be displayed.
- Provide transport to decrease pedestrian traffic.
- Restrict heavy vehicles to specific hours.
- Erect road signs signaling times when heavy vehicles will make use of the road.
- Adhere to national traffic safety standards and precaution measures.

The slow-moving vehicles (trucks with loads) may impact on road safety on the minor road at the intersection of the site and on the N7 and R27. Road signs, erected to address the additional impact of the slow-moving vehicles, will decrease the impact and conflict that may arise at the junction to these high order roads.

The intensity of the impact caused by the increase of traffic is negative and of low significance. Mitigation measures will change the impact to be of less significant, yet still negative.

The No Go alternative will have no impact.

g) Increased noise and dust levels

Experienced as: Living conditions turn harsh with increased dust and noise.

Dust and noise will be generated during the demolition of the facility. Demolition activities such as taking down the solar panels and pedestals, breaking up the foundations and taking out the cabling and piping may affect the noise and dust levels for a limited time. On-site vehicle movement, removal of materials and equipment will also create noise. These impacts will be of a local nature and for a limited period of time.

Mitigation measures:

- Dust creation must be controlled similar as per construction management and control code.
- Noise creation should be controlled as per construction management and control code.
- Appoint an Environmental Control Officer to supervise decommissioning.
- Adhere to the Environmental Management Plan (EMPr) for the decommissioning Phase.
- All workers and management must undergo an induction session.
- Enforce strict operating hours for heavy vehicles and demolition activities on site to reduce noise and dust impacts on adjacent landowners.
- Implementation of dust suppression measures.
- Access must be on recognized routes.
- Litter and littering must be strictly controlled.
- All demolition waste and building rubble must be removed off site.

The impact of dust and noise is low negative before and after mitigation as it occurs over short intervals and will affect the immediate community of Darling.

The No Go alternative has no impact.

h) Change in sense of place

Experienced as: Living environment change

During the decommissioning phase, the site should be returned to as near as its pre-development visual state as is possible and all waste material has to be removed from the site. The sense of place should be restored after the proposed solar facility has been demolished. This would impact positively on the site.

Mitigation measures:

- Prepare a decommissioning plan to establish a timeframe and order of decommissioning and rehabilitation of the plant.
- During demolition the site should be returned to as near as its existing state as is possible.
- All waste material has to be removed.

- Removal of all infrastructure introduced into the landscape (i.e. PV panels, ancillary infrastructure such as a maintenance workshop, storage building and offices).
- Rehabilitate all new access roads created during the construction period.
- Institute monitoring of all decommissioned and rehabilitated sections of the project site at regular intervals.

The restoration of the site to its former state and sense of place is rated as moderately positive before and after mitigation.

The No Go alternative has no impact.

i) Retrenchments

Experienced as: Loss of income.

The approximately thirty seven (± 37) project maintenance staff will be retrenched as their contracts will not be renewed. These retrenched persons may not be able to find work within the immediate community or in the region. These households will experience a decrease in income as it is likely that their family members may not find employment.

Mitigation measures:

- Ensure that the decommission contractor employ at least 80% locals of whom 80% were previously disadvantaged and across at least two skills categories (unskilled, semi-skilled and skilled).
- If not suitably qualified, ensure transfer skills on the job.
- The established Monitoring Committee for the construction phase in collaboration with representatives of the local community, has to ensure that the solar facility is decommissioned and that any problems that arise and is associated with the decommissioning phase, is addressed.

The decrease in the number of jobs is moderately negative and mitigating the intensity decreases the impact but stay low moderate.

The No Go alternative will have no impact.

j) Social benefits ceased

Experienced as: Individual achievement and development benefits the Swartland community

The social contribution of the proposed project during operations will cease as well as the benefit the local and regional community obtained from the fund created by the social contribution. The impact thereof may not be experienced immediately, but within three to five years (medium term).

This impact was assessed during the operational phase. This impact may cease depending on the provision made to maintain the offering of subjects in scarce disciplines (i.e. mathematics, science, physics and technology education and training) as the social contribution of the proposed solar facility will come to an end.

The support and skills development to small businesses will cease.

Mitigation measures:

- The social benefit fund should explore partnerships and other sources of funding.
- Some funds should be invested as a source for future support to local children.

The decrease of the social funds will impact over the long term negatively on the development of teachers, and support teachers offering scarce subjects including conservation science and the tuition of learners in these subjects and as a result the educational levels and readiness of local community. The impact is rated medium negative before and after mitigation.

The No Go alternative has no impact.

k) Renewal of Plant (Solar Facility)

The proposed solar facility has an average life span of 20 years. The resilience of the plant will direct renewal. This will be a new project and will not be assessed as such.

3.3.3 Indirect and Negative Impacts during the Decommissioning Phase

k) Community stability and homogeneity

Experienced as: Influx of people (employed and unemployed) permanently or semi-permanently in anticipation to access employment

The decommissioning phase of the proposed solar facility development will impact on the population of Darling and cause an influx of people temporarily and permanently as contractors come to work on the decommission site and people come to look for work. The influx of people may result in a socially less stable community and higher levels of migration (people staying in the Swartland for less than 5 years) although it is anticipated that most of the contractors including the employees, is local.

Mitigation measures:

- Contractors, employing or seeking to employ local HDIs who are suitably qualified, should get preference.
- The developer should, where necessary, assist local HDI owned firms to complete and submit the required tender forms on condition that local labour is used.
- The established Monitoring Committee for the construction phase in collaboration with representatives of the local community, has to ensure that the solar facility is decommissioned and that any problems that arise and is associated with the decommissioning phase, is addressed.

The influx of unskilled people has a low negative impact locally before and after mitigation. The influx of people may result in a socially less stable local community.

The No-Go alternative has no impact.

3.3.4. Summary of impacts during the Decommissioning Phase

Overall, the construction phase brings about some direct and positive impacts, direct and negative impacts and indirect positive and negative impacts.

Direct and Positive Impacts during the Decommissioning Phase are tabulated below:

Table 20: A summary of direct and positive impacts, Decommissioning Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
A	Increased Employment opportunities	Economic: 85 opportunities; jobs, 43 jobs (12 months)	Working age people find employment temporarily and permanently	Individual, family and community	Low, Positive	Low positive
B	Increased Income	Economic R4. 4million & R3.5million local	Income of families increases as working age people are employed	Family	Low, Positive	Low, Positive
C	Increased skills levels of working age population	Economic: Informal Training	Skills development of those that find employment temporarily and permanently	Individual	Low, Positive	Low Positive
D	Increased Local Sales and GGP	Economic: Low contribution: <1%	Increased sales and income	Community	Low, Positive	Low Positive

Direct and Negative Impacts during the Decommissioning Phase are tabulated below:

Table 21: A summary of direct and negative impacts, Decommissioning Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
E	Increased Use of Social Amenities & Service	Social & Economic	Diminishing social amenity and services capacity	Community	Low, Negative	Low negative
F	Increased motorized and non-motorized traffic levels	Economic	Decreased road safety	Individuals & Community	Low, Negative	Low negative
G	Increased noise & dust levels	Social (Health) & Environmental	Result in Harsh living conditions as dust and noise increases.	Individuals & Family	Low, Negative	Low negative
H	Change in sense of place (return to as before facility was built)	Social	Living environment change in quality and return to as before solar facility was built.	Community	Medium, Positive	Medium positive
I	Retrenchments	Economic	Loss of Income	Family and Individual	Medium, Negative	Low, Negative

J	Social benefits ceased	Social	Individual achievement and development benefit the Swartland community	Family, Individual and Community	Medium negative	Medium Negative
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Indirect and Negative Impacts during the Decommissioning Phase are tabulated below:

Table 22: A summary of indirect impacts, Decommissioning Phase

	Impact (s)	Environment	Experienced as	Population Unit	Rating	Mitigated
K	Community stability & homogeneity	Social	Influx of people (employed and unemployed) permanently or semi-permanently	Individual, Family, Community	Low Negative	Low Negative

Overall, the impacts during the decommissioning phase that are:

Positive and

Direct are:

- The creation of 85 opportunities and 43 jobs with a wage bill of R4.4 million over 6 months and R3.5 million benefitting the locals, providing 21 unskilled and 51 semi-skilled and 13 skilled local people employment opportunities and contributing <1% to the Swartland GDP.
- The return of the sense of place after decommissioning as the area return to fallow land.

Negative and

Direct are:

- Within limits, though negative, increased use of social amenities and services, decreased road safety and increased noise and dust.
- Retrenchment and loss of income for ±37 employees maintaining the solar facility.
- Social benefits ceased enabling individual achievement and development benefits the Swartland community.

Residual are:

- Diversification of culture because of the influx of people to find work or to conduct business (entrepreneurs).

3.4 Cumulative Impacts

The cumulative impacts associated with the proposed solar energy facility are:

Positive cumulative impacts:

- a) Job creation that results directly into skills development and improved income and indirectly into economic growth (and growth in SMMEs and self-esteem).
 - o Unemployment levels decrease and income and spending power increase;

- Skills development and training is offered to those employed and skills levels improve;
- Entrepreneurs, and local entrepreneurs render services to the facility and employ locals (and the cycle of spending power increasing sales and economic growth, benefitting locals repeat itself as in the case by those employed by the solar facility.

The impact supported by similar impacts of solar facilities in the immediate region (another in Darling, one in Malmesbury, two in Kalbaskraal) culminate in a positive impact of economic growth and increased per capita income of families settled in Swartland.

The impact is also enhanced by mitigation measures that keep the benefits of the solar facility local for example giving preference to employ locals and use the services of local service providers.

- b) Bulk infrastructure/ alternative energy generation contributes to the national goal of reducing the carbon footprint and prohibiting global warming and climate change.
 - Reliability of energy availability is also under direct control of

Negative cumulative impacts

Change in sense of place as the visual nature of the western entrance change from fallow agricultural land to solar facility, is moderate on the local sense of place. .

As Darling is a tourism destination, the change of sense of place being of a visual nature (the presence of the PV panels and associated infrastructure) at the western entrance of Darling will become part of the new association with Darling, and will negatively affect tourism.

Impacts accumulate and together with the results from this impact, change of sense of place of western entrance, when added to other similar activities (utility and bulk services infrastructure) and unregulated background pressures (farm entrance gates erected in the absence of a guideline and overall road interfaces) and trends onto the receiving landscape (Darling's western entrance and surroundings. Darling's surroundings include its double eastern and western entrance and the viewshed on the stretch of road between R27 and Darling with a secondary sphere from the coast to Darling). The combined effect of individual impacts (the proposed development and existing and future utility and bulk services developments together with unguided tourism and road interface developments) occurs when a receptor, the scenic landscape, is affected by more than one impact during any phase of development (Seagrave Road Environmental Statement Addendum Vol1). The impact of the proposed development will be a sufficient addition, given its extent and longer term presence, to change the association with Darling from rural (natural, conservation and agricultural landscape) to an uneasiness because of the visibility of utilities, bulk service infrastructure and unguided road interface development and in the longer term landscape deterioration, which become the replacement association. The replacement association will impact negatively on Darling as tourist destination which will be counterproductive to the gains of the proposed development.

Therefore, application of and adherence to the landscaping mitigation measures that can mitigate the impact on the immediate environment and by implication on the wider surroundings should be a condition of proceeding with the proposed development. The landscaping will remove the uneasiness as the utilities and infrastructure will be partially shielded and the rural association will be maintained. Hence the future of Darling as a tourism destination will not be jeopardized.

This study does not assess the overall cumulative impact i.e. the optimal number and location of solar facilities in the area, on the rural character and the sense of place of the surroundings.

Likely cumulative impacts that do not contribute to regional impacts

There are three impacts which do not add to surrounding impacts as the loss anticipated could be mitigated or avoided:

Loss of agricultural land:

- It is grazing land of which there is no shortage and does not impact on food security.
- It seldom contributed to the livelihood of a farming entity renting the land and do not affect farmers, their families or agri-workers as it is owned by the Swartland Municipality. As it is not a scarce resource, the loss is not assessed as cumulative.
- The remainder of the land can still be used for small scale agriculture and agricultural reform.

Loss of biodiversity and ecological infrastructure:

- The impact is diverted and ecological infrastructure is being protected by avoiding the water course and biodiversity. There is thus no addition to impacts of biodiversity loss that may occur because of the solar projects in the Swartland region.

The influx of outsider looking for work and remaining in the area during the various phases of the proposed facility causing increased use of social amenities, competition to find employment, unemployment, poverty and crime can be mitigated and do no result into a cumulative impact. The culminative impact of employment and economic growth, will ultimately absorb the influx.

- Partnerships with entities promoting education and government should enhance provision of service and opportunities to participate in the economy.
- Community structure could be strengthened and partnerships with communities can be managed by establishing Trusts, securing benefits for local communities.

3.5 Summary of impacts of the No Go Alternative

The No-Go Alternative would lose an opportunity for South Africa to supplement its current energy needs with clean, renewable energy and achieve its targets. Not reaching its targets and being one of the highest per capita producers of carbon emissions in the world (80% emission for energy use vs. 49% for developing countries) this alternative represents a negative impact socially and environmentally.

Furthermore, the No-Go Alternative will also

- (a) result in a loss of employment opportunities generated during construction and operations.
- (b) result in no social investment to support specific social (improvement of education in scarce subjects) and economic (enhancing small businesses) initiatives as identified by the specialist studies and developers.

This alternative represents a negative social cost particularly for the local community. The No Go alternative cannot be considered as the proposed development is viewed as a strategic infrastructure project.

3.6 Recommendation

The proposed solar facility is deemed acceptable as it is:

Generating employment equal to ±149 one-year or slightly longer jobs and 37 full-time jobs for twenty years during all three phases benefitting the locals

Contributing R39.5 million during the construction and demolition phases and R8.8 million annually during operations to the local wage bill

Generating work within <1km proximity, during operations.

Enhancing supply of bulk services as 19.9MWh and approximately 6 200 households are provided with electricity, during operations.

Bound by mitigation measures in Section 4 of the Assessment to be included in the EMPR.

The proposed solar facility as a whole should be authorized on condition that the Landscape Mitigation Measures be adhere to in order to maintain the sense of place that Darling as tourism destination holds.

Section 4. Management guidelines to address socio-economic impacts

In order to ensure that the disadvantages are managed to maximize positive impacts, specific management strategies and mechanisms need to become part of the proposed development. These strategies and mechanisms need to be implemented through development conditions and are as follows:

- a) Preferential procurement of goods, services and labour,
- b) Skills transfer
- c) Security control
- d) Safety Management
- e) Traffic Regulation
- f) Dust & noise control
- g) Enhancing the economy
- h) Maintaining Sense of place
- i) Loss of ecological Infrastructure (Fresh water and Biodiversity)
- j) Loss of Biodiversity
- k) Maintaining Social benefits
- l) Mitigating Retrenchments.

To implement the strategies and mechanisms, the development should enable the administration thereof. The administration of the strategies and mechanisms should be in partnership with the local authority.

The recommendations follow below.

4.1 Preferential procurement of goods, services and labour

Construction, Operation and Demolition

- Contractors, employing or seeking to employ local HDIs who are suitably qualified, should get preference.
- The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
- The developer should, where necessary, assist local HDI owned firms to complete and submit the required tender forms on condition that local labour is used.
- Developer and contractor to act as reference for locals employed.
- Developer and contractor to liaise with existing or future projects to enhance employment opportunities for locals.

Construction and Operation

- Reserve a number of jobs for youth and women.
- Facilitate mechanisms to enable youth and women to access employment.
- Pay men, youth and women doing the same job, equally.
- Ensure that youth and women gain equal access to training and education opportunities than men do.

Construction and Demolition

- A database of locally based firms, including SMME's owned and run by HDIs that qualify as service providers (construction companies, catering companies, waste collection companies, site cleaning companies etc.) should be compiled by the developer prior to the commencement of the tender process. These firms should be invited to bid for tenders;
- Establish a Monitoring Committee for the construction and decommissioning phase in collaboration with representatives of the local community. The Monitoring Committee has to ensure that the EMP is implemented and that any problems that arise which are associated with the construction and decommissioning phase, are addressed.
- Developer and contractor to act as reference for locals employed.
- Developer and contractor to liaise with existing or future projects to access employment for locals.
- Reserve a number of jobs (80%) for local labour (un- & semi-skilled labour).
- Facilitate mechanisms to enable locals to access employment and learning opportunities offered by the proposed solar facility.
- If not suitably qualified, make an effort to transfer skills on the job. (From Construction Phase Community stability and homogeneity)
- Involve schools and college to visit construction site to inspire youngsters to join the construction industry.

4.2 Skills transfer and Learning Opportunities

Construction

- Reserve 80% of jobs for local labour.
- Require contractor to put mechanisms in place to enable locals to access jobs offered by the proposed solar facility development.
- The proposed development should enhance formal and informal skills transfer:
 - Should skilled persons from outside the community be employed, the developer should consider implementing a training and skills development programme to enhance the opportunities for local historically disadvantaged individuals in the construction and maintenance industry. Measures should be put in place to ensure successful training and development i.e. structured job shadowing and learnerships. Such a programme should be offered in liaison with an accredited Further Education and Training College or University of Technology;
 - Some basic skills can be tutored at school level in a joint venture established by the developer between the primary schools in Malmesbury and the schools or education and skills training providers. In the long term (generationally) the improved skills level will ultimately lead to improved levels of education.
 - An "access to education support service" assisting future students should be considered attending to application fees for bursaries, career and financial planning and strategies for the period of studying.
 - The proposed development should invest in teacher training and teacher support training to offer scarce subjects such as mathematics, science, physical science and conservation science and in tuition of learners in these subjects. Besides investing in teacher training the proposed development should fund the tuition of the scarce subjects.

Operational

- Reserve 80% of jobs for locals.
- Facilitate mechanisms to enable locals to access training opportunities offered by the proposed solar facility.
- Require formal and informal skills transfer:
 - Offer training and skills development programme for local historically disadvantaged individuals in their specific industry particularly should skilled persons from outside be employed.
 - Ensure structured and measurable training and development i.e. structured job shadowing and learnerships.
 - Offer training in liaison with an accredited Further Education and Training College such as the West Coast College or University of Technology or the Proposed university.
- Skills transfer and development (e.g. job shadowing), formally and informally, should be implemented together with local education and skills training providers.
- Facilitate mechanisms to enable local young people to access the educational opportunities to attend courses in scarce subjects.
- Educational opportunities should include formal and informal education:
 - On successful completion of subjects and courses, opportunities to access further education should be made accessible.
- Support school education in scarce subjects. Include the following:
 - scarce subjects should include mathematics, science and physical science, conservation sciences and ecological infrastructure management.
 - Teacher training and teacher support training in scarce subjects.
 - Tuition in scarce subjects.
 - Effort should be made to assist learners that are at risk to be directed to take mathematical literacy.
- Reserve a number of study opportunities for women. (From Self-esteem and image of youth and change)

Demolition

- Require that a number of jobs for local un- & semi-skilled labour get reserved.
- Facilitate mechanisms to enable locals to access to the formal learning opportunities during the demolition phase.

4.3 Security Control

Construction

- Regularly alternated twenty four hour security to guard the development.
- Documentation of all movement and vehicles entering and leaving the premises.
- Regular searching of all vehicles entering and leaving the premises.
- No persons not concerned with the development to enter on the premises.
- Limit access points to one point.

4.4 Safety Management

Construction and Demolition

- Adhere to international construction health and safety standards and precaution measures.

- Provide health and social training amongst the project team and in the community.
- To provide health and social training for the project team and in the community which include HIV/AIDs and Covid awareness training.
- Make effort to ensure that the construction team and their families meet regularly (monthly).

4.5 Traffic Regulation

Construction and Demolition

- Rehabilitate the gravel road during and particularly after construction and decommissioning to at least the same standard as is currently.
- Upgrade road signs to address the movement conflict at the intersection.
- Road signs for protecting pedestrians crossing and accessing the road should be displayed.
- Provide transport to decrease pedestrian traffic.
- Restrict heavy vehicles to specific hours.
- Erect road signs signal times when heavy vehicles will make use of the road.
- Assure adherence to national traffic safety standards and precaution measures.

Construction

- Adhere to national traffic safety standards and precaution measures.
- Provide traffic safety awareness amongst the project team and the community.

4.6 Dust and Noise control

Construction & Demolition

- Dust creation must be controlled as per construction and demolition management and control code.
- Noise creation should be controlled as per construction and demolition management and control code.
- Appoint an Environmental Control Officer to supervise construction and building and demolition.
- Adhere to the Environmental Management Plan (EMPr) for the Construction and Decommissioning Phase.
- All workers and management must undergo an induction course.
- Any natural habitat destroyed by constructing infrastructure should be rehabilitated.
- Enforce strict operating hours for heavy vehicles and construction activities on site to reduce noise and dust impacts on adjacent landowners.
- Implementation dust suppression measures;
- Access must be on recognized routes.
- Litter and littering must be strictly controlled.
- All construction waste and building rubble and demolition waste and rubble must be removed off site.
- Cut and fill should be kept to a minimum and should be rehabilitated immediately.

4.7 Enhancing the economy

Construction, Operations and Demolition

- Contractors should be directed by tender criteria to purchase locally and to make use of local service providers.

- Spending money locally purchasing from locals and South African should benefit employees. The proposed development should leverage discount in the local economy of the municipal area and employees should be made aware of it.
- Small business should be supported (i.e. skills training, assistance and guidance to set up small businesses) and joint ventures with previous disadvantaged persons should be promoted.
- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business should be encouraged.

Operations

- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business.
- Implement formal small business training and mentoring programmes.
- Provide urban space to conduct business.
- Establish a mechanism to enable investment into small businesses.

4.8 Maintenance of Sense of place:

Design and Planning phase

- Prepare an environmental constraint plan to establish the environmental sensitive areas and those areas upon which the development may occur.
- Plan the establishment of vegetated and landscaped berms around the perimeter of the project site to minimize visual impacts onto the site.
- Design buildings to reflect the local architecture and sense of place of the environment. Buildings and similar structures must be in keeping with regional planning policy documents, especially the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits.
- Consider raising the PV platforms sufficiently so that cattle, sheep, and goats can roam underneath.
- Should it be required, install anti-reflective coating or glass to reduce the sunlight that is reflected and increase the amount of sunlight that is absorbed.
- Consider installing all electrical cables underground en-route to the substation.
- Where cables cannot be laid underground and electricity towers (pylons) need to be erected, install H-frame wooden poles, or similar structures, to transmit electrical lines instead of steel towers.

Construction phase

- An Environmental Control Officer (ECO) must be appointed to oversee the construction process and ensure compliance with conditions of approval.
- Contractor to sign and undertake to comply with Environmental Specifications
- Demarcate sensitive areas and no-go areas with danger tape to prevent disturbance during construction.
- Pre-construction keep disturbed areas to a minimum. No clearing of land to take place outside the demarcated footprint.
- Throughout construction, identify suitable areas within the construction site for fuel storage, temporary workshops, eating areas, ablution facilities and washing areas.
- Throughout construction institute a solid waste management programme to minimize waste generated on the construction site and recycle where possible.

- Throughout construction reduce and control dust using approved dust suspension techniques as and when required.
- Should the ECO authorize night work, low flux and frequency lighting shall be used.
- Throughout construction, rehabilitate all disturbed areas in accordance with the development plan.
- The fencing design is to imitate the agricultural fencing in the area while at the same time providing the security. It is to be visually permeable. No barbed wire is to be used.
- Any necessary lighting must be shielded in such a way that no direct light is allowed to escape into the surrounding terrain or up into the sky. Only the areas that are necessary to be lit must be lit with the surrounding.
- Outdoor lighting must be strictly controlled so as to prevent light pollution.
- All lighting must be installed at downward angles.
- Sources of light must as far as possible be shielded by physical barriers such as trees and buildings or structures.
- Use only minimum wattage light fixtures.
- Clear all alien vegetation.
- Buildings and similar structures must be in keeping with regional planning policy documents, especially the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits.
- Utilize existing roads and tracks to the maximum extent possible.
- Provide pedestrian walkways where desire lines are identified.
- Visual management and maintenance: Scheme maintenance covering site tidiness should be maintained at all times including during construction.

Operational

- Maintain the general appearance of the facility as a whole (i.e. the PV panels, buildings and associated infrastructure, roads and natural environment).
- Littering is to be strictly controlled over the entire life of the project.
- All waste is to be regularly removed from facility to a recognized transfer or dumping site. Waste, in any form, should not be allowed to collect on the site.
- Maintain access roads to prevent scouring and erosion, especially after rains.
- A strict fire prevention policy must be implemented and monitored-
- Initiate and maintain tree and vegetation conservation.
- Screening the site with endemic vegetation.
- Use natural colours for all fencing and structures.
- Keep to a good planting maintenance programme.
- Keep disturbed areas to a minimum.
- Utilize existing roads and tracks to the maximum extent possible.
- Maintain pedestrian walkways where desire lines are identified.
- Outdoor lighting must be strictly controlled so as to prevent light pollution.
- All lighting must be installed at downward angles.
- Sources of light must as far as possible be kept shielded by physical barriers such as trees and buildings or structures.
- Use only minimum wattage light fixtures.

- Consider the application of motion detectors to allow the application of lighting only where and when it is required-
- Visual management and maintenance:
Scheme maintenance covering site tidiness should be maintained at all times.

Decommissioning

- Prepare a decommissioning plan to establish a timeframe and order of decommissioning of the plant.
- During demolition the site should be returned to as near as its existing state as is possible.
- All waste material has to be removed.
- Removal of all infrastructure introduced into the landscape (i.e. PV panels, ancillary infrastructure such as a maintenance workshop, storage building and offices).
- Rehabilitate all new access roads created during the construction period.
- Institute monitoring of all decommissioned and rehabilitated sections of the project site at regular intervals.

4.9 Loss of ecological infrastructure (freshwater and biodiversity)

All phases

- Proper drainage infrastructure around the roads in and around the PV units to prohibit preferential flow paths.
- Immediate stabilisation and rehabilitation of disturbed areas during the construction phase as storm water can wash sand and mud into small wetlands, trenches and streams (towards the north of the sub-catchment).
- Keep solar energy panels 32m away not to disturb vegetation in and around the drainage lines
- Controlling invasive vegetation on the PV installation site as an ongoing standard operating procedure.
- Livestock should and will not be permitted to graze on the site of the PV installation. Over utilization will cease.
- Groundwater table will be kept stable as no water will be required and subsequently less dehydration of waterways than the current farming operation.
- Conservancy tanks will be installed that will be emptied by tanker trucks.
- The proposed development has no direct impact (low negative) on the ecological infrastructure and mitigation measures will enhance the ecological support areas supporting the stream in the north (low positive).
- Prevent the loss of biodiversity and the protection of seasonal watercourse:
 - Consider the aquatic CBA area as a no-go area (to be protected).
 - Indiscriminate clearing of any area outside of the footprint must be avoided.

4.10 Loss of Agricultural land and activities

General

- Implement recommendations of Visual Impact Assessment and Agricultural Impact Assessment.
- Implement Environmental Management Plan.

Construction Phase:

The site should be developed with as little disturbance as possible to be able to rehabilitate it back to its natural form:

- Control vehicle access and constructional activity on roads and minimal footprint areas only.
- Strip and stockpile topsoil from all areas where soil will be disturbed.
- After cessation of disturbance, re-spread topsoil over the surface.
- Dispose of any sub-surface, clay spoils from excavations where they will not impact on vegetated land, or where they can be effectively covered with topsoil.

Construction, Operational and Decommissioning

- Promotes strict storm water management and erosion control: Implementation of an effective system of storm water run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.
- Implement an effective system of run-off control which collects and disseminates run-off water from hardened surfaces and prevents potential down slope erosion (all phases).

Operational

- Implement an effective system of storm water run-off control at any point where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.
- Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.
- Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion, and to reduce dust formation.
- If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface, and then stabilized by facilitating vegetation cover.
- Enhance on-site conservation where appropriate.
- Indirectly enhance off-site conservation of neighbouring property as critically threatened conservation area.
- Enhance conservation tourism.

4.11 Loss of Biodiversity

Construction, Operational and Decommissioning

- The aquatic CBA area must be considered a no-go area (to be protected).
- Indiscriminate clearing of any area outside of the footprint must be avoided.

4.12 Maintaining Social Benefits

Decommissioning

- The social benefit fund should explore partnership and other sources of funding.
- Some funds should be invested as a source for future support to local children.

4.13 Mitigate Retrenchments

Decommissioning

- During the contract period, provision should be made for those employed to obtain additional skills set.
- Effort should be made to obtain placement for contract workers in either their current or their alternative field of expertise.
- The developer should establish a fund from which these contractors could benefit.
- Ensure that the decommission contractor employ at least 80% locals of whom 80% were previously disadvantaged and across at least two skills categories (unskilled, semi-skilled and skilled).
- If not suitably qualified, ensure transfer skills on the job.
- The established Monitoring Committee for all phases in collaboration with representatives of the local community, has to ensure that the solar facility is decommissioned according to the EMPr and that any problems that arise and is associated with the decommissioning phase, is addressed.

4.14 Conclusion

The above management guidelines have been presented in terms of the specific losses that might result due to the proposed Solar Facility and related infrastructure. These guidelines aim to minimize losses to enhance the gains for the immediate and surrounding community. The main loss of sense of place is reduced after mitigation and enhanced by the social and economic gains, i.e. reliable electricity, jobs in close proximity, skills and improved income, the local community of Darling and the inhabitants of Swartland Municipality will gain.

List of References

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Swartland Municipality: Swartland Municipality Spatial Development Framework, 2023-2027.

Swartland Municipality: Swartland Municipality Human Settlement Plan, 2017 - 2022.

Swartland Municipality: Integrated Development Plan, May 2023.

WATSAN Africa.: Freshwater report for the proposed Darling Solar plant on Erf 551, Darling, August 2023.

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Statistics South Africa: Census 2011.

Addendum A

Assessment Measures

The assessment departs from a factual description of the nature of the impact. This description is followed by an appraisal including a description of the effect the activity has on the environment. The description should include what is being affected and how it is affected. Assessment Measures are then applied to refine the results.

Extent (A)

This assessment measures the geographical scale of the impact

Extent of the Impact		
Rating	Definition of rating	Score
Local	Extending only as far as the activity, Will be limited to the site and its immediate surroundings	4
Regional	Will have an impact on the region	3
National	Will have an impact on a national scale	2
International	Will have an impact across international borders	1

Usually, the scores are in ascending order from 1 to 4 (local to international) but given the levels of poverty and remoteness the scores for this project have been changed to a descending order of 4 to 1 (local to international).

Duration (B)

This assessment measure indicates the lifetime of the impact.

Duration of the Impact		
Rating	Definition of rating	Score
Short term	0-5 years	1
Medium term	e.g. 5-15 years	2
Long term	The impact will cease after the operational life of the activity, either because of natural process or by human intervention	3
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient	4

The duration of some of the impacts during construction is considered mainly short term, whilst the duration of the impacts during the operational phase is considered long term.

Intensity (C)

Here it should be established whether the impact is destructive or benign and should be indicated as:

Intensity of the Impact		
Rating	Definition of rating	Score
Low	The impact affects the environment in such a way that natural, cultural and social functions and processes are not affected	1(±)
Medium	The affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; and	2(±)
High	Natural, cultural or social functions or processes are altered to the extent that it will temporarily or permanently cease.	3(±)

The intensity of some of the impacts of the proposed project varies. In the case of the proposed project the criteria were customize and refined to their particular study (e.g. a positive impact of “high” significance is when the project could reduce local employment by 5% or more).

Probability (D)

This should describe the likelihood of the impact actually occurring indicated as:

Probability of the Impact		
Rating	Definition of rating	Score
Improbable	The possibility of the impact to materialize is very low either because of design or historic experience;	1
Probable	There is a distinct possibility that the impact will occur	2
Highly probable	It is most likely that the impact will occur	3
Definite	The impact will occur regardless of any prevention measures	4

Significance

The significance of impacts is expressed as a combination and synthesis of the aspects produced in terms of their nature, duration, intensity, extent and probability (likelihood).