

*THE PROPOSED DEVELOPMENT OF A 3.5
MEGAWATT SOLAR PHOTOVOLTAIC (PV) FACILITY
ON ERF 77, GREENBUSHES, WITHIN THE NELSON
MANDELA BAY MUNICIPALITY, EASTERN CAPE*

FINAL BASIC ASSESSMENT REPORT

DEDEAT REFERENCE NUMBER: ECm1/C/LN1/M/28-2023



Prepared by:



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JULY 2023

Report Details

Report Title	Final Basic Assessment Report, The Proposed Development of a 3.5 Megawatt Solar Photovoltaic (PV) Facility on Erf 77, Greenbushes, within the Nelson Mandela Bay Municipality, Eastern Cape Province
Report Status	Final Report
Report Date	July 2023
Purpose of this Report	<p>This Basic Assessment Report forms the main information document provided during the Environmental Impact Assessment (EIA) process for the proposed Greenbushes Erf 77 solar development, within the Nelson Mandela Bay Municipality, Eastern Cape. As per Appendix 1 of the 2014 EIA Regulations (as amended), <i>“the objective of the basic assessment process is to, through a consultative process–</i></p> <ul style="list-style-type: none"> <i>(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;</i> <i>(b) identify the alternatives considered, including the activity, location, and technology alternatives;</i> <i>(c) describe the need and desirability of the proposed alternatives;</i> <i>(d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine–</i> <ul style="list-style-type: none"> <i>(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and</i> <i>(ii) the degree to which these impacts–</i> <ul style="list-style-type: none"> <i>(aa) can be reversed;</i> <i>(bb) may cause irreplaceable loss of resources; and</i> <i>(cc) can be avoided, managed or mitigated; and</i> <i>(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to–</i> <ul style="list-style-type: none"> <i>(i) identify and motivate a preferred site, activity and technology alternative;</i> <i>(ii) identify suitable measures to avoid, manage or mitigate identified impacts; and</i> <i>(iii) identify residual risks that need to be managed and monitored.</i> <p>The primary objective of this Basic Assessment Report is thus to present the project, outline its legislative requirements and identify impacts, as well as mitigation measures, that will be relevant to specific environmental attributes of the site and the proposed development.</p>
Report Writer	Roberto Almanza
Prepared For	Rent-A-Store (Pty) Ltd
Prepared By	Habitat Link Consulting (Pty) Ltd 117 Cape Road, Mount Croix, Gqeberha, 6001 www.habitatlink.co.za

Important Note:

All changes from the Draft Basic Assessment Report are indicated with **red text**.

Document Checklist

The requirements for the content of the Basic Assessment Report have been met in terms of Appendix 1 of the 2014 EIA Regulations (as amended). The table below indicates where the relevant information can be found within this report:

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(a) details of—	(i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Introduction, The Environmental Assessment Practitioner (EAP) (page vii) and <u>Appendix G.1.</u>
(b) the location of the activity, including—	(i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section A (3), Activity Position.
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is—	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	<u>Appendix A.</u>
(d) a description of the scope of the proposed activity, including—	(i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	Section A (1), Activity Description.
(e) a description of the policy and legislative context within which the development is proposed including—	(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section A (10), Applicable Legislation, Policies and/or Guidelines.
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section A (9), Activity Motivation.
(g)	a motivation for the preferred site, activity and technology alternative;	Section A (2), Feasible and Reasonable Alternatives.
(h) a full description of the process	(i) details of all the alternatives considered;	Section A (2), Feasible and Reasonable Alternatives.

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
followed to reach the proposed preferred alternative within the site, including—	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section C, Public Participation and Appendix E.
	(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Section C (5), Comments and Response Report and Appendix E.
	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section B, Site / Area / Property Description.
	(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Appendix G.3, Impact Assessment Methodology.
	(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.
	(viii) the possible mitigation measures that could be applied and level of residual risk;	
	(ix) the outcome of the site selection matrix;	Section D (3), Environmental Impact Statement.
	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Section A (2), Feasible and Reasonable Alternatives.
	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section A (2), Feasible and Reasonable Alternatives and Section A (3), Activity Position.

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report	
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—		
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—	(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.	
(j) an assessment of each identified potentially significant impact and risk, including—	(i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;		
(k)	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;		
(l) an environmental impact statement which contains—	(i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;		Section D (3), Environmental Impact Statement.
(m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;		Section E, Recommendations of the Practitioner.
(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;		
(o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;		Introduction, Assumptions and Limitations (page vii).
(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is		

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
	that it should be authorised, any conditions that should be made in respect of that authorisation;	
(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Section E, Recommendations of the Practitioner.
(r) an undertaking under oath or affirmation by the EAP in relation to—	(i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Appendix G.1.
(s)	where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	Not Applicable.
(t)	any specific information that may be required by the competent authority; and	Refer to Appendix E (Issues and Responses Trail).
(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	All matters required in terms of Section 24(4)(a) and (b) are included in this report.

Introduction

Background and Project Overview

Habitat Link Consulting (Pty) Ltd has been appointed by Rent-A-Store (Pty) Ltd, to apply for an Environmental Authorisation (EA) for the development of a solar photovoltaic (PV) facility in Greenbushes, within the Nelson Mandela Bay Municipality (NMBM). The proposed development will include the installation of a number of solar panels to be connected to the municipal electricity grid in order to supply renewable (solar) energy. The development will take place on Erf 77, Greenbushes, situated approximately 15 km west of the Gqeberha (Port Elizabeth) city centre, within the NMBM, Eastern Cape Province. The proposed development requires the submission of a Basic Assessment Report (BAR) in terms of the 2014 National Environmental Management Act (NEMA) EIA Regulations (as amended).

Assumptions and Limitations

According to Appendix 1, Section 3 (1), of the 2014 EIA Regulations (as amended), a Basic Assessment Report must include “(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.”

This report is based on information that is currently available and, as a result, the following limitations and assumptions under which this report were compiled are implicit:

- Descriptions of the natural and social environment are based on the fieldwork conducted and available literature at the time of compiling this report;
- The report is based on a project description and site layouts provided by the proponent that are likely to undergo several refinements (based on environmental and technical inputs); and
- It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the project maps. Therefore, this information cannot be applied to any other area without a detailed investigation being undertaken.

The Environmental Assessment Practitioner (EAP)

According to Appendix 1, Section 3 (1), of the 2014 EIA Regulations (as amended), a Basic Assessment Report must include “(a) details of— the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae.”

Details of the EAP

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Please refer to [Appendix G.1](#) for the curriculum vitae (CV) of the EAP, as well as a copy of the EAP’s declaration. Please refer to [Appendix G.2](#) for CVs of the specialists.

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BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:

NEAS Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for. This report is current as of **1 OCTOBER 2022**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority **unless indicated otherwise by the Department.**
7. No faxed or e-mailed reports will be accepted **unless indicated otherwise by the Department.**
8. The report must be compiled by an independent environmental assessment practitioner (EAP). The EAP must satisfy conditions 11 below.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

11.1 The Environmental Assessment Practitioner (EAP) must be registered in terms of S24H Regulations with the Registration Authority EAPASA as from 8 August 2022.

11.2. S24H (14) states that “only a person registered as an Environmental Assessment practitioner may perform tasks in connection with an application for an environmental authorisation contemplated in

(a) Chapter 5 of the Act read with the Environmental impact Assessment Regulations.

(b) Section 24G of the Act

(c) Chapter 5 of the National Environmental Management Waste Act 2008 (Act No 59 of 2008) read with the Environmental Impact Assessment Regulations

11.3. Tasks in regulation 14 may only be conducted by an EAP that is registered

11.4. Regulations 20 of S24H indicates the offences and penalties as indicated below:

“20. Offences and penalties

(1) A person is guilty of an offence if that person-

(a) contravenes regulation 14 of the Regulations; or

(b) pretends to be a registered environmental assessment practitioner or registered candidate environmental assessment practitioner.

(2) A person convicted of an offence in terms of subregulation (1) is liable to the penalties contemplated in section 49B(3) of the Act.”

Section 49B(3) of the Act states:

“A person convicted of an offence in terms of section 49A(1)(h), (l), (m), (n), (o) or (p) is liable to a fine or to imprisonment for a period not exceeding one year, or to both a fine and such imprisonment.”

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	
X	

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

Please refer to Appendix D for the Specialist Reports.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

Introduction

The applicant, Rent-A-Store (Pty) Ltd, proposes to develop a new 3.5 megawatt (MW) solar PV facility within the 2.2 hectare (ha) property located in Greenbushes. The proposed development will include the installation of a number of solar panels to be connected to the municipal electricity grid in order to supply renewable (solar) energy. The development will take place on Erf 77, Greenbushes, situated approximately 15 km west of the Gqeberha (Port Elizabeth) city centre, within the Nelson Mandela Bay Municipality (Figure 1.1).

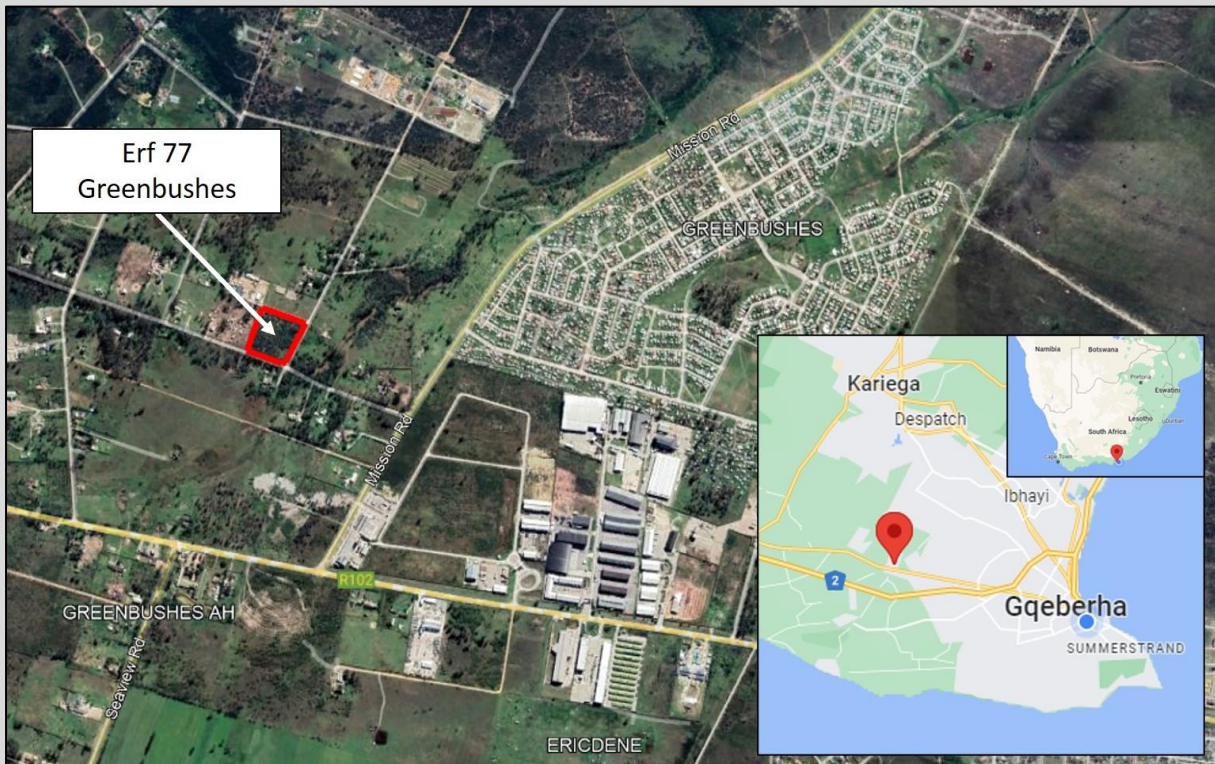


Figure 1.1: Locality map of the proposed solar PV development on Erf 77, Greenbushes, within the Nelson Mandela Bay Municipality, Easter Cape.

Project Description

The proposed facility will consist of approximately 4 000 solar panels that will feed renewable energy to the existing municipal electrical connection via a new municipal substation. The development will also consist of several out-buildings including ablution facilities, security control, store room, transformer/switch gear room and electrical metering room. Stormwater from the site will be diverted to a proposed pond in the south-east corner. Access to the site will be obtained off Pennelsdrift Road on the south-west corner and a new internal access road will be established along the boundary of the property. Several parking spaces will be allocated near the buildings (Figure 1.2 and Figure 1.3).

The proposed solar energy generation facility will initially produce 2.3 MW of green power (and later be upgraded to 3.5 MW), which can then be distributed to businesses in the area. This green power will allow these businesses to meet their sustainable mandates and assist with the exponential costs of electricity. This facility will also help to alleviate electrical consumption, improving grid stability and reducing load shedding.

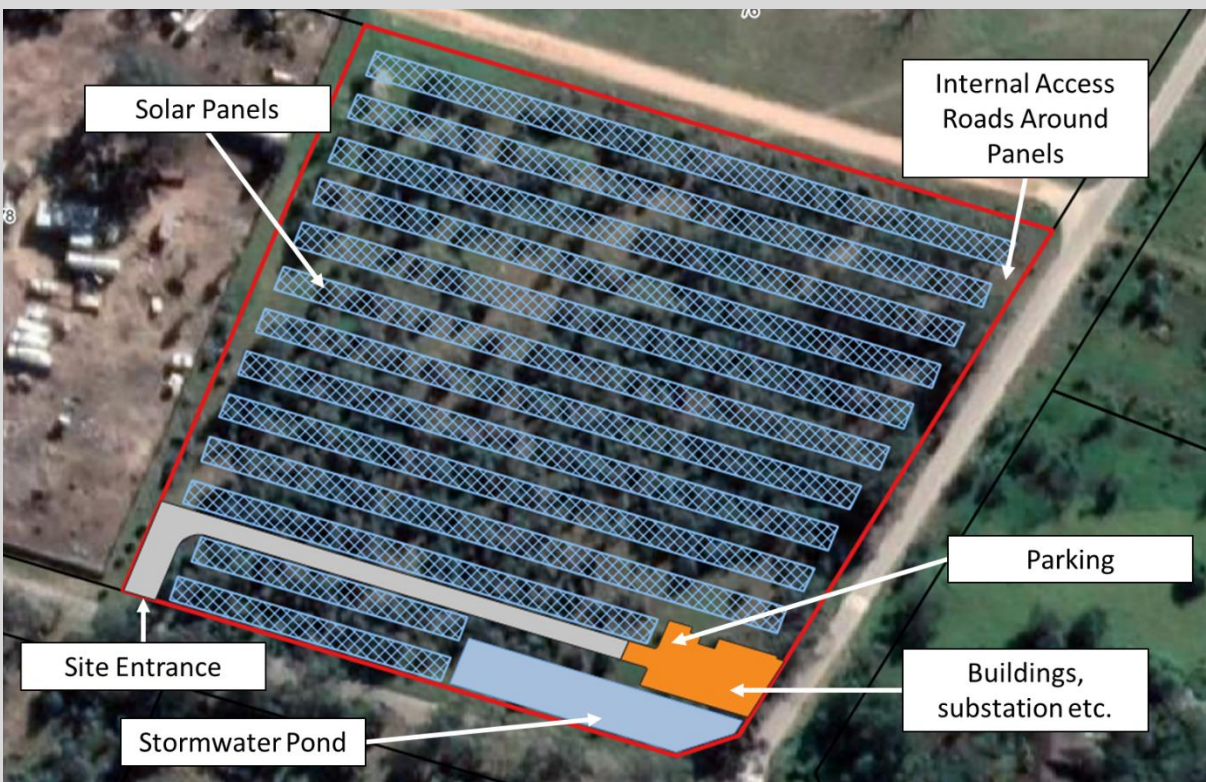


Figure 1.2: Proposed site layout.

Each row of solar panels will be fitted with two 80 kilowatt (kW) inverters, which will be connected, via cabling, to the on-site mini-substation/transformer via the electrical metering room. The mini-substation will be connected to the nearest municipal supply by either tapping into an existing 11 kilovolt (kV) or 22 kV cables by means of a Ring Main Unit, or by connecting to the nearest substation by means of an additional switch. If required, permissions for connecting to existing infrastructure via the municipal road will need to be obtained from the NMBM as well as from the adjacent landowner. For future upgrades to the 3.5 MW capacity, it is possible (although unlikely) that 33 kV underground

cabling will be required for the development. The cable upgrades will occur within the footprint of any existing cabling and will not exceed 2 km in length.

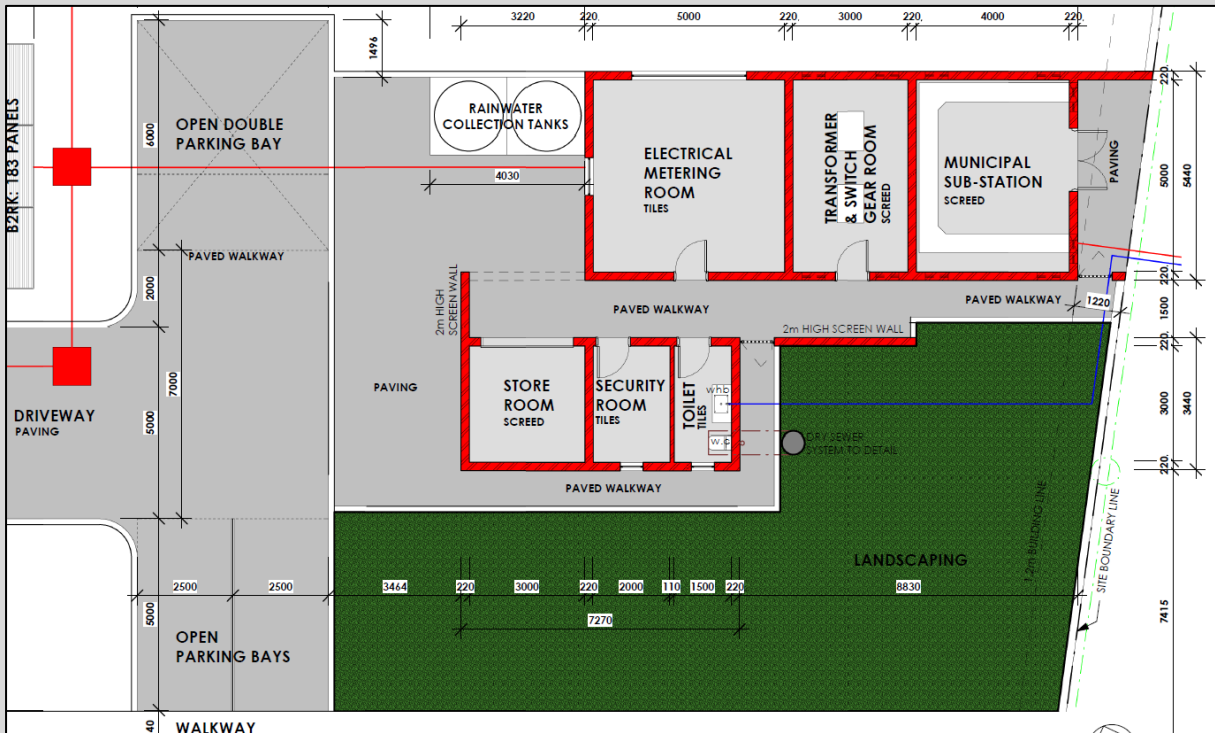


Figure 1.3: Detailed layout of the proposed buildings, substation etc.

While the majority of the property will consist of solar panels, the southern portion of the site has been earmarked for the development of the abovementioned associated infrastructure which include ablution facilities, security control room, store room, municipal sub-station, transformer/switch gear room and electrical metering room and parking. There is also proposed to be a 700 m² stormwater retention pond in the south-east corner of the site. It is proposed that the entire site will be fenced-off with mesh fencing, fitted with electrified fencing, in order to ensure security of the site. Further security measures will include full CCTV cameras fitted around the property boundary and at strategic points within the property. Remote off-site security monitoring will be carried out from a central control room.

Water Supply

Limited water will be required during the construction phase. This water will be used primarily for the suppression of dust following the clearance of vegetation. During the operational phase, a small amount of water will be required for the cleaning of solar panels up to three (3) times per year. The panels will primarily be cleaned using waterless microfibre cleaning devices. In some instances, water will be combined with this method to remove stubborn dirt and dust on the panels. The site only requires a standard municipal residential water connection. An existing municipal connection is located opposite the site (adjacent to the southern boundary of Pennelsdrift Road). A small (approximately 25 mm diameter) High Density Poly Ethylene (HDPE) pipeline will be connected and extended to the site.

Energy Sources

Fuel will be required for the bulldozer and excavator during the construction period. Since this is a renewable energy development, the only energy requirements would be those of 'start-up' during the operational phase. The facilities will be connected to the existing municipal electricity supply for start-up after which the site will operate off the proposed solar-generated power supply.

Solid Waste, Wastewater and Sewage

Solid waste derived from the construction phase of the proposed development will include minor discarded construction material, general domestic waste, existing waste located on the site and cleared vegetation (predominantly eucalyptus trees). This spoil waste will be reused, wherever possible (e.g. as fill material, depending on the quality). Any vegetation waste will be chipped and mulched and re-used on site wherever possible. All additional waste will be removed and disposed of in the correct manner at a licenced landfill site. During the construction phase, liquid effluent will be handled via the implementation of portable/temporary toilets for construction staff. The facilities will be serviced by an external service provider (e.g. Sanitech) to remove the waste to a sewage treatment facility. Should any soil become contaminated by an effluent or hydrocarbon spill, this will be separated as hazardous waste and removed to an adequate disposal facility. Construction phase activities may also generate hazardous waste such as empty chemical containers, oil rags and possible cement bags. These will be disposed by the Contractor at the nearest permitted landfill site.

During the operational phase, the majority of the waste derived from the development will be in the form of general domestic waste, derived from the operators and security staff present at the site. This waste will be disposed of via the municipal collection services on a weekly or biweekly basis and/or by an appointed recycling and/or waste removal company. The operational phase of the proposed development will generate effluent comprised of limited wash water and sewage. The applicant has confirmed that only a limited amount of water is required for the washing of solar panels and that no cleaning chemicals would be required. Effluent from the other facilities (e.g. ablution block) will be managed with a dry toilet solution that will be emptied on a regular basis by an appointed contractor **or managed with a conventional conservancy tank system**. A typical example of such a dry toilet solution would be the ECOSAN waterless toilet system (Figure 1.4). **However, upon further consultation with the project engineer, it may not be feasible to implement an ECOSAN system due to geotechnical constraints and therefore a conservancy tank may be the only effluent management option. The final effluent management solution will be confirmed prior to the commencement of construction.**

Stormwater Infrastructure

The management of stormwater during the construction phase may require the implementation of water diversion berms prior to the commencement of the site establishment. The diversion berms will be designed in such a way as to ensure that the proposed development site is properly protected from excess stormwater flow, while also ensuring that the surrounding land, specifically the nearby drainage areas, are capable of handling the additional (diverted) water. During the operational phase, stormwater from the entire property will be diverted to the proposed stormwater retention pond. The retention pond, which will be approximately 1m in depth (with its highest point located at current ground level), has been designed to accommodate a 1:100 year flood event in order to avoid excess stormwater runoff from leaving the site. A new stormwater pipeline (approximately 300 m in length)

will be implemented below-ground, extending from the retention pond to an outlet within the servitude of the Pennelsdrift Road reserve. The outlet from the pipeline, which will be located outside the floodplain of the nearby drainage line, will consist of a headwall and reno mattress with a total footprint of approximately 8 m³.

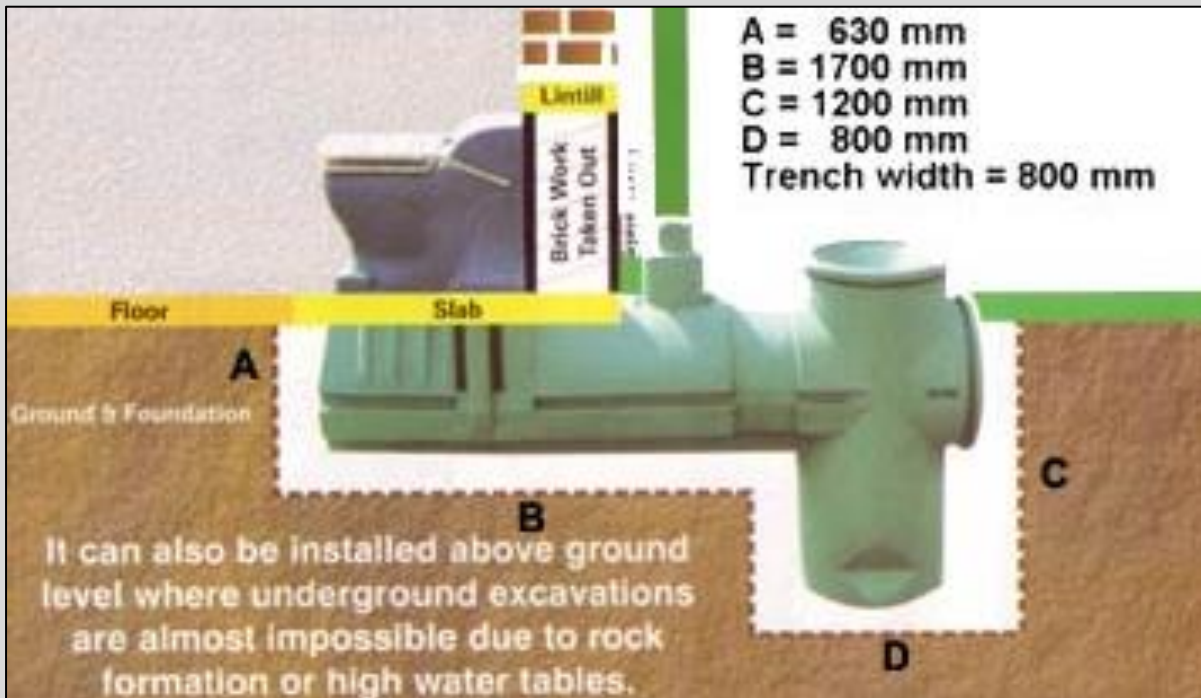


Figure 1.4: Example of waterless toilet solution (from http://www.ecosan.co.za/tech_spec.html).

NEMA Listed Activities Triggered by the Proposed Development

In terms of the 2014 NEMA Environmental Impact Assessment (EIA) Regulations, as amended, the following activities are subject to an assessment (Table 1.1).

Table 1.1: EIA Listed Activities relevant to the proposed development.

Activity No.	Description	Triggering activity
LISTING NOTICE 1 – GN R. 983 (GN R. 327)		
Activity 1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (i) the electricity output is more than 10 megawatts but less than 20 megawatts; or (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.	The proposed solar PV facility will exceed 1 ha in size. The development will be located outside urban areas and will not occur on any existing infrastructure.
Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	The proposed development may require the clearance of vegetation that is considered 'indigenous'.

Based on the listed activities identified in Listing Notice 1 and Listing Notice 3 of the NEMA EIA Regulations, the proposed project will be subject to a Basic Assessment process.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Locality/Site Alternatives



The preferred location for the activity has been chosen primarily because the property is owned by the applicant, Rent-A-Store (Pty) Ltd. This location has no fatal flaws and will allow the applicant to utilise the property for the purposes of developing the proposed solar PV facility. It will also be in keeping with the surrounding areas which consist of a number of mixed uses including a plant hire / construction company to the north and a scrapyards to the west. For these reasons, location alternatives have not been considered in the Basic Assessment and the preferred alternative is the only location alternative assessed. Since no other locality or sites are available to the applicant to undertake the proposed development, no site alternatives will be presented in this report.

Activity Alternatives

On 27 December 2009, the Eastern Cape Department of Economic Development Environmental Affairs and Tourism (DEDEAT), previously DEDEA, approved the development of the Rent-A-Store storage facility on this subject property. The proposal was to develop a small domestic storage units (garages) over the extent of the property for the sole purpose of private storage – please refer to [Appendix G.6](#) for the previous authorisation relevant to this property. The Environmental Authorisation (EA) for this facility has since lapsed without the development being commissioned. Due to the economic shift towards renewable energy in recent years, the landowner/applicant has identified that the property may serve a greater purpose to be used as a solar facility, generating renewable energy in order to reduce reliance on the national grid, which is constantly under strain.

Although not the subject of this assessment, an activity alternative that could be considered would be the development of the previously approved storage units, instead of the proposed solar development. Under this alternative, the NEMA Listed Activity regarding the clearance of more than 1 ha of indigenous vegetation (Listing Notice 1, Activity 27) would be triggered. The preferred activity (the solar development) triggers both Activity 27 and Activity 1 in Listing Notice 1 of the NEMA 2014 EIA Regulations (as amended). The advantages and disadvantages of each activity alternative are described below (Table 1.2).

Table 1.2: Assessment of activity alternatives.

Activity Alternative	Listed Activities Triggered	Potential Advantages	Potential Disadvantages
<p>Activity Alternative 1 (Preferred Alternative)</p> <p>Development of Solar PV Facility</p> 	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation</p>	<ul style="list-style-type: none"> • Generates renewable energy • Reduces energy consumption and reliance on national energy grid. • Groundcover/soil remains in place. • Less thoroughfare and associated security risk. • Relatively less construction activity required on site. 	<ul style="list-style-type: none"> • Domestic storage facility not realised
<p>Activity Alternative 2</p> <p>Development of Domestic Storage Facility</p> 	<p>The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.</p> <p>AND</p> <p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.</p>	<ul style="list-style-type: none"> • Domestic storage facilities realised. 	<ul style="list-style-type: none"> • No renewable energy generation. • No reduction in energy consumption and continued reliance on national energy grid. • Groundcover/soil completely transformed to hard surfaces. • Additional thoroughfare and associated security risk. • Relatively more construction activity required on site.

It is clear from the assessment of the advantages and disadvantages of the activity alternatives that the proposed solar development (Preferred Activity Alternative) has significantly more advantages than the development of domestic storage units (Activity Alternative 2). Further to this, the applicant has no current intention of developing storage units on the subject property and therefore Activity Alternative 2 is not deemed to be a feasible alternative for this application process. Only the Preferred Activity Alternative will be assessed further in this report.

Technology Alternatives

Solar Technology Alternatives

Two technology alternatives are generally considered for facilities associated with the generation of energy from solar resources, namely:

1. Solar photovoltaic (PV) panels, where the panels are comprised of a packaged interconnected assembly of solar cells, also known as photovoltaic cells; and
2. Concentrated Solar Power (CSP), whereby sunlight is concentrating through a lens onto high performance solar cells, thus increasing the electricity generated.

The advantages and disadvantages of these technology alternatives are presented below (Table 1.3). Based on the outcome of the advantages and disadvantages of the two technology alternatives and based on the project requirements, solar PV technology (Preferred Technology Alternative) was identified as the only feasible technology alternative for this application process. Only the Preferred Technology Alternative will be assessed further in this report.

Effluent Management Alternatives

Two technology alternatives have been considered for the management of the limited effluent that will be derived from the site operations, namely:



1. Waterborne sewage with conservancy tank; or
2. Waterless toilet option (e.g. ECOSAN toilet).

The advantages and disadvantages of these effluent management alternatives are presented below (Table 1.4). **Initially**, the waterless toilet option was identified as the preferred technology. **However, upon further consultation with the project engineer, it may not be feasible to implement an ECOSAN system due to geotechnical constraints and therefore a conservancy tank may be the only effluent management option.** Due to the limited use of water and ablutions envisaged at the site, the impacts associated with the two effluent management alternatives are expected to be negligible and will be assessed as a general impact in this report. **The final effluent management solution will be confirmed prior to the commencement of construction.**

Design or Layout Alternatives

The design and layout of the proposed solar PV facility was chosen as per the engineering advice received from the applicant at the time. While a number of design alternatives may be considered in the future, there are currently no design alternatives other than the current design presented in this report. With regards to layout alternatives, this relates mostly to alternative ways in which the proposed development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts. Micro-siting within the property will be informed by the findings of the sensitivity and impact assessments to follow in this report. At this stage of the assessment process, no design or layout alternatives are being considered other than that presented in this report.

Table 1.3: Assessment of technology alternatives (solar technology).

Technology Alternative	Description of Technology	Potential Advantages	Potential Disadvantages
<p>Technology Alternative 1 (Preferred Alternative)</p> <p>Solar PV Technology</p> 	<p>Solar PV absorbs direct sunlight through the photovoltaic effect to conduct an electric current.</p>	<ul style="list-style-type: none"> • Better economic performance than CSP • More cost effective than CSP meaning lower costs of capital resulting in lower tariffs. • Requires less water than CSP. 	<ul style="list-style-type: none"> • Additional batteries required for storage. • Without batteries, only generates power during the daytime. • Large area required for solar panels.
<p>Technology Alternative 2</p> <p>Solar CSP Technology</p> 	<p>CSP systems convert the sun's energy using various mirror configurations that drive a heat engine and produce electrical power.</p>	<ul style="list-style-type: none"> • Better electrical output than PV. • CSP systems can store energy in batteries that can be tapped for energy on demand, which helps the systems more consistently meet local 	<ul style="list-style-type: none"> • Very water intensive. • Higher negative visual impact than PV. • Large area required for solar panels.



Operational Alternatives

The operational phase of the project will consist of activities related to operating and managing of the solar PV facility, which has the primary role of providing renewable energy via solar panels connected to the proposed associated infrastructure. Similar to the Activity Alternatives presented above, this will be the only operational alternative relevant to the project and, therefore, this Basic Assessment has not considered any other operational alternatives.

Preferred (Only) Alternative

The preferred alternative for the proposed project would consist of the clearance of 2.2 ha of vegetation and development of facilities for the generation of up to 3.5 megawatts of electricity, utilising solar PV technology, as per the design and layout presented (with potential for future improved designs and technology). For the reasons outlined in the sections above, no feasible alternatives have been proposed as there are no other location, activity, layout, design, technology or operational alternatives that will achieve the overall purpose of the project. It is likely that any minor deviations from this preferred alternative will have similar environmental impacts to those of the preferred alternative.

Table 1.4: Assessment of technology alternatives (effluent management options).

Technology Alternative	Description of Technology	Potential Advantages	Potential Disadvantages
<p>Effluent Management Alternative 1</p> <p>Waterborne sewage and conservancy tank</p> 	<p>Toilet connected to municipal water supply flushed to a conservancy tank that will be emptied by a honey-sucker</p>	<ul style="list-style-type: none"> • More common technology therefore better installation understanding • Potentially less cost • Suitable for geotechnical conditions of the site • Can handle wash-water and sewage 	<ul style="list-style-type: none"> • Additional water usage • Tank requires emptying on a more regular basis due to water volume • Potential for liquid contamination
<p>Effluent Management Alternative 2 (Preferred Alternative)</p> <p>Waterless toilet (e.g. ECOSAN system)</p> 	<p>Toilet connected to a waterless biological system that breaks down effluent to compost matter.</p>	<ul style="list-style-type: none"> • Reduced water usage • Less regular emptying of tanks • Closed system with no liquid, therefore less possibility for contamination 	<ul style="list-style-type: none"> • Installation potentially more complicated • Potentially a more expensive system • Unsuitable for geotechnical conditions of the site • Requires a separate tank for management of wash-water

No-Go Alternative

This alternative assumes that the status quo will remain unchanged and the property will remain in its current state, which consists of considerably degraded and transformed vegetation and significant illegal dumping within the site. Development pressure will continue, as a number of new developments are taking place in the wider Greenbushes area. The site will continue to be degraded by surrounding human activities and by invasion of alien invasive plants. While this alternative will mitigate the construction-related impacts associated with the proposed development, the opportunities associated with the generation of renewable energy, as well as the economic benefit and contribution to reducing energy demand, would be lost under the 'No-go' alternative. The employment opportunities associated with the construction phase, as well as the operational phase, of the proposed development will also be lost if the 'No-go' alternative is applied.

Paragraphs 3 – 13 below should be completed for each alternative.

As per the reasons provided above, only the preferred alternative will be assessed in this report.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.

Alternative:

- Alternative S1¹ (preferred or only site alternative)
- Alternative S2 (if any)
- Alternative S3 (if any)

Latitude (S):	Longitude (E):
33°55'16.25"S	25°25'31.69"E

In the case of linear activities:

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

Alternative:

- Alternative S1 (preferred or only route alternative)
 - Starting point of the activity
 - Middle point of the activity
 - End point of the activity
- Alternative S2 (if any)
 - Starting point of the activity
 - Middle point of the activity
 - End point of the activity
- Alternative S3 (if any)
 - Starting point of the activity
 - Middle point of the activity
 - End point of the activity

Latitude (S):

Longitude (E):

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

The development will be located on Erf 77, Greenbushes, located within the NMBM, Eastern Cape Province (Figure 1.1). It is situated approximately 15 km west of the Gqeberha (formerly Port Elizabeth) city centre (Figure 1.5 and Table 1.5).

¹ "Alternative S.." refer to site alternatives.

Table 1.5: Details of the affected property (as defined by the Chief Surveyor-General).

Property Name and Number	21-Digit Surveyor General Code	Ward	Municipality
Erf 77, Greenbushes	C05900130000007700000	40	Nelson Mandela Bay Municipality



Figure 1.5: Affected erf and neighbouring properties.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Size of the activity:

2.2 ha

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Length of the activity:

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Size of the site/servitude:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

2.2 ha

5. SITE ACCESS

Does ready access to the site exist?

YES X

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

No new access road is planned for this development. The property can be accessed from the centre of Gqeberha (formerly Port Elizabeth) via the National Route 2 (N2) or the R102 regional road (Cape Road) and then via existing municipal roads including Mission Road, Pennelsdrif Weg and Blommelaan, the latter two of which are directly adjacent to the property (Figure 1.6). There will be one main entrance to the solar facility, which will be off Pennelsdrif Weg. A new internal access road will be established along the boundary of the property and several parking spaces will be allocated near the buildings.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

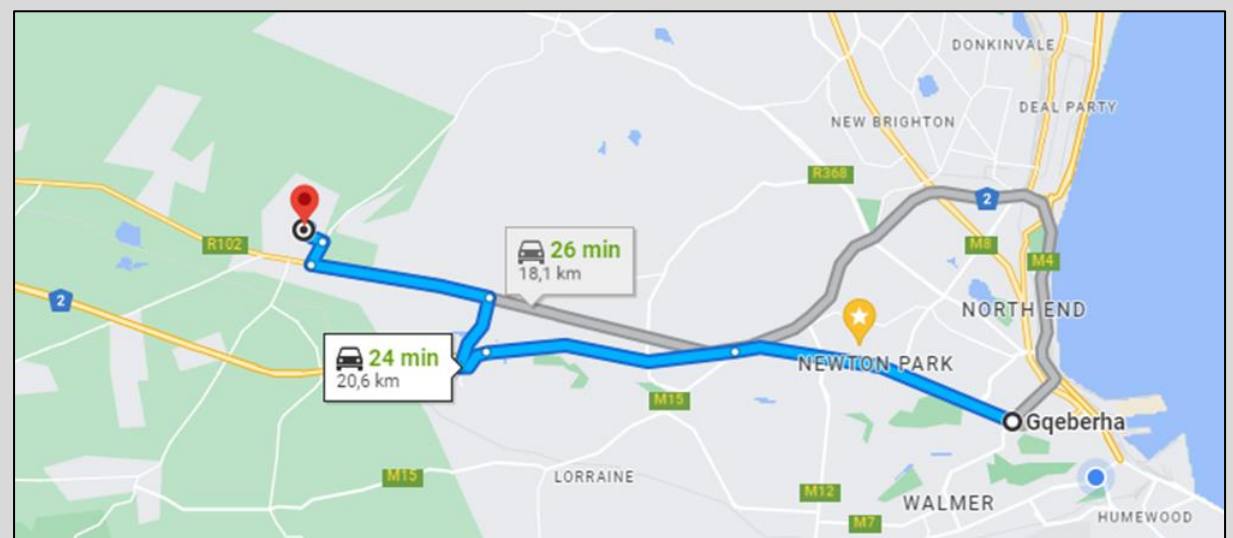


Figure 1.6: Access (blue route) to be utilised to access the proposed site via the N2 and R 102.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;

- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100-year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken.

Please refer to [Appendix A](#) for the detailed site plan and associated maps.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Please refer to [Appendix B](#) for the site photographs.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Please refer to [Appendix C](#) for the detailed facility illustrations.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

± R 50 million	
To be determined depending on tariff structure	
	NO X
	NO X

How many new employment opportunities will be created in the development phase of the activity?

What is the expected value of the employment opportunities during the development phase?

What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?

What is the expected current value of the employment opportunities during the first 10 years?

What percentage of this will accrue to previously disadvantaged individuals?

60
± R 10 million
90 %
15
R 50 million
80%

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The need for the proposed development is largely based on the demand for renewable energy in the face of ongoing electricity generation problems and loadshedding throughout South Africa. The proposed solar development contributes to the National Development Plan goals, by indirectly addressing climate change commitments through the reduced reliance on carbon-based power generation. The proposed solar facility would help to address the need for increased and stable electricity supply while also be providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area.

Given the current energy situation in South Africa as well as the global climate emergency the world is facing, it is imperative to begin to move away from unsustainable fossil fuels towards alternative energy supplies. The proposed solar energy generation facility will produce up to 3.5 megawatts of power which can be distributed to businesses in the area. This renewable energy will allow these businesses to meet their sustainable mandates as well as assist cumulatively in the energy transition away from fossil fuels. The project will also help bring down exponential costs of electricity and alleviate grid consumption, improving grid stability and reducing load shedding. The project will make a positive contribution to sustainable economic growth, skills development and employment opportunities in the NMBM.

Indicate any benefits that the activity will have for society in general:

In addition to the provision of renewable energy, this project would assist in the economic development of the NMBM by stimulating investment in infrastructure, creating temporary employment during the construction phase, creating permanent employment during the operational phase, as well as provide the municipality with additional revenue in the form of rates and taxes.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed development is expected to result in approximately 60 temporary employment opportunities during the construction phase as well as up to 15 permanent positions during the operational phase. The workers will likely be sourced from the local community. In addition, the development could indirectly benefit local communities in terms of supplies being purchased from local shops as well as support been given to local businesses.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act No. 107 of 1998)	Department of Forestry, Fisheries and the Environment (DFFE) and the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism	1998
National Environmental Management Act (Act No. 107 of 1998), Environmental Impact Assessment Regulations		2017
National Environmental Management: Waste Act (Act No. 59 of 2008)		2008
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)		2004
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Alien and Invasive Species regulations		2014
National Environmental Management: Air Quality Act (Act No. 39 of 2004)		2004
Environmental Conservation Act (Act No. 73 of 1989)		1989
National Heritage Resources Act (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resource Authority (ECPHRA)	1999
National Water Act (Act No. 36 of 1998)	Department of Water and Sanitation (DWS)	1998
Hazardous Substances Act (Act No. 15 of 1973)	Department of Health (DoH)	1973
Occupational Health and Safety Act (Act No. 85 of 1993)	Department of Labour (DoL)	1993
National Road Traffic Act (Act No. 93 of 1996)	Department of Transport (DoT)	1996
National Forests Act (Act No. 84 of 1998)	Department of Agriculture, Forestry and Fisheries (DAFF)	1998
National Veld and Forest Fires Act (Act No. 101 of 1998)		1998
Nature Conservation Ordinance (19 of 1974)	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism	1974
The National Energy Act	Department of Energy (DoE)	2008
The White Paper on the Energy Policy of the Republic of South Africa		1998
The White Paper on Renewable Energy		2003
Spatial Planning and Land Use Management Act	Nelson Mandela Bay Municipality	2015
Municipal By-Laws		Various
The South African Vegetation Map (Mucina and Rutherford)	South African National Biodiversity Institute (SANBI)	2006
The Eastern Cape Biodiversity Conservation Plan (ECBCP)	South African National Biodiversity Institute (SANBI)	2007

NMBM Bioregional Plan	South African National Biodiversity Institute (SANBI)	2009
The National Freshwater Ecosystem Priority Areas (NFEPA) project	South African National Biodiversity Institute (SANBI)	2011 / 2014
Protection of Personal Information Act (POPIA)	Information Regulator	2013 (2021)
NMBM Bioregional Plan	Nelson Mandela Bay Municipality	2015

On 8 September 2022 the Department of Forestry, Fisheries and the Environment (DFFE) gazetted the 'Consultation on the intention to exclude the development and expansion of solar photovoltaic installations from the requirement to obtain an environmental authorisation based on compliance with an adopted environmental management instrument' in terms of NEMA. At the time of preparing this report, these final regulations had yet to be gazetted.

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?
If yes, what estimated quantity will be produced per month?

YES X	
Approx. 10 tonnes	

How will the construction solid waste be disposed of (describe)?

The construction phase will generate general solid waste associated with a new development. The construction waste will be disposed of by the Contractor at a registered waste disposal site. Where possible, the construction material will be re-used or recycled, but if and when it is determined that the waste cannot be used, it will be transported to the nearest registered municipal waste disposal site.

Where will the construction solid waste be disposed of (describe)?

The construction phase general solid waste that cannot be reused or recycled will be disposed by the appointed Contractor at a general landfill site.

Will the activity produce solid waste during its operational phase?
If yes, what estimated quantity will be produced per month?

YES X	
Approx. 10 kg	

How will the solid waste be disposed of (describe)?

The operational phase will generate limited general domestic waste from staff members working at the facility. The waste will then be disposed of via the municipal collection services on a weekly or biweekly basis.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Not applicable. All solid waste from the operational phase will feed into the municipal waste stream.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Not applicable. All solid waste from the operational phase will feed into the municipal waste stream.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? **NO X**

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Not applicable. Very limited hazardous waste from the construction phase, such as cement bags, empty chemical containers and oil rags will be disposed of by the Contractor at the nearest permitted landfill site (Aloes II waste disposal site) or collected by an external service provider and disposed of according to their specific protocol. There is not anticipated to be any hazardous wastes associated with the operational phase of the facility.

Is the activity that is being applied for a solid waste handling or treatment facility? **NO X**

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable. The activity is not a solid waste handling or treatment facility.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? **NO X**

If yes, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site? **NO X**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable. The operational phase of the proposed development will generate effluent comprised of limited wash water and sewage. The applicant has confirmed that only a limited amount of water is required for the washing of solar panels and that no cleaning chemicals would be required. Effluent from the other facilities (e.g. ablution block) will be managed with **either** a dry toilet solution **or conservancy tank system** that will be emptied on a regular basis by an appointed contractor. A typical example of such a dry toilet solution would be the ECOSAN waterless toilet system (see Figure 1.4). **However, upon further consultation with the project engineer, it may not be feasible to implement an ECOSAN system due to geotechnical constraints and therefore a conservancy tank may be the only effluent management option. The final effluent management solution will be confirmed prior to the commencement of construction.**

Will the activity produce effluent that will be treated and/or disposed of at another facility?

NO X

If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Not Applicable

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Rainwater harvesting tanks may be installed to collect runoff from the gutters fitted to the facility buildings.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES X

If yes, is it controlled by any legislation of any sphere of government?

NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable.

If no, describe the emissions in terms of type and concentration:

It is highly likely that dust will be generated during the construction phase, particularly during strong winds. In addition, vehicle exhaust emissions from construction vehicles may occur. However, both of these construction-related emissions will be short-lived and can be adequately controlled using simple management measures. During the operational phase, it is unlikely that any significant emissions will occur except for potential minor exhaust emissions from vehicles entering and exiting the facility.

11(d) Generation of noise

Will the activity generate noise?

YES X

If yes, is it controlled by any legislation of any sphere of government?

NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable.

If no, describe the noise in terms of type and level:

The construction phase of the proposed development will result in elevated noise levels related to the use of machinery, vehicles and contractors on site. Since the surrounding area has a variety of land uses, there may be some sensitive receptors to elevated noise levels. Provided that construction activities occur within normal working hours, disturbance by elevated noise levels is likely to be minimal. During the operational phase, little to no noise will be generated by the facility.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

Municipal X	water board	groundwater	river, stream, dam or lake	other	The activity will not use water
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Limited water will be required during the construction phase. This water will be used primarily for the suppression of dust following the clearance of vegetation. During the operational phase, a small amount of water will be required for the cleaning of solar panels up to three (3) times per year. The panels will primarily be cleaned using waterless microfibre cleaning devices. In some instances, water will be combined with this method to remove stubborn dirt and dust on the panels. The site only requires a standard municipal residential water connection.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

N/A

Does the activity require a water use permit from the Department of Water Affairs?

YES X

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

Water supply obtained for the development will be municipal and therefore no water abstraction or storage licencing will be required. However, the proposed development is located within 500 m of a wetland and within 100 m of a drainage line, both of which are located on properties to the south-east of the site. The Department of Water and Sanitation (DWS) has confirmed that a Water Use Authorisation (WUA) process is required in terms of Section 21(i) of the National Water Act (NWA). This application is in process with the DWS.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Since this is a renewable energy development, the only energy requirements would be those of 'start-up' during the operational phase. During construction (and where possible), energy saving technology (e.g. recycling of waste, re-use of materials etc.) will be implemented. During the operational phase, the various project facilities will be connected to the existing municipal electricity supply for start-up after which the site will operate off the proposed solar-generated power supply. External lighting and any lighting that will be within the facility will be made energy efficient (e.g. solar and/or motion activated with LED light-bulbs).

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

As above, this is a renewable energy development (solar plant).

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

A (only copy)

- Paragraphs 1 - 6 below must be completed for each alternative.

There is only one (1) reasonable and feasible locality/site identified in Section A(2) above.

- Has a specialist been consulted to assist with the completion of this section?

YES X

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Please refer to Appendix D for the specialist reports.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

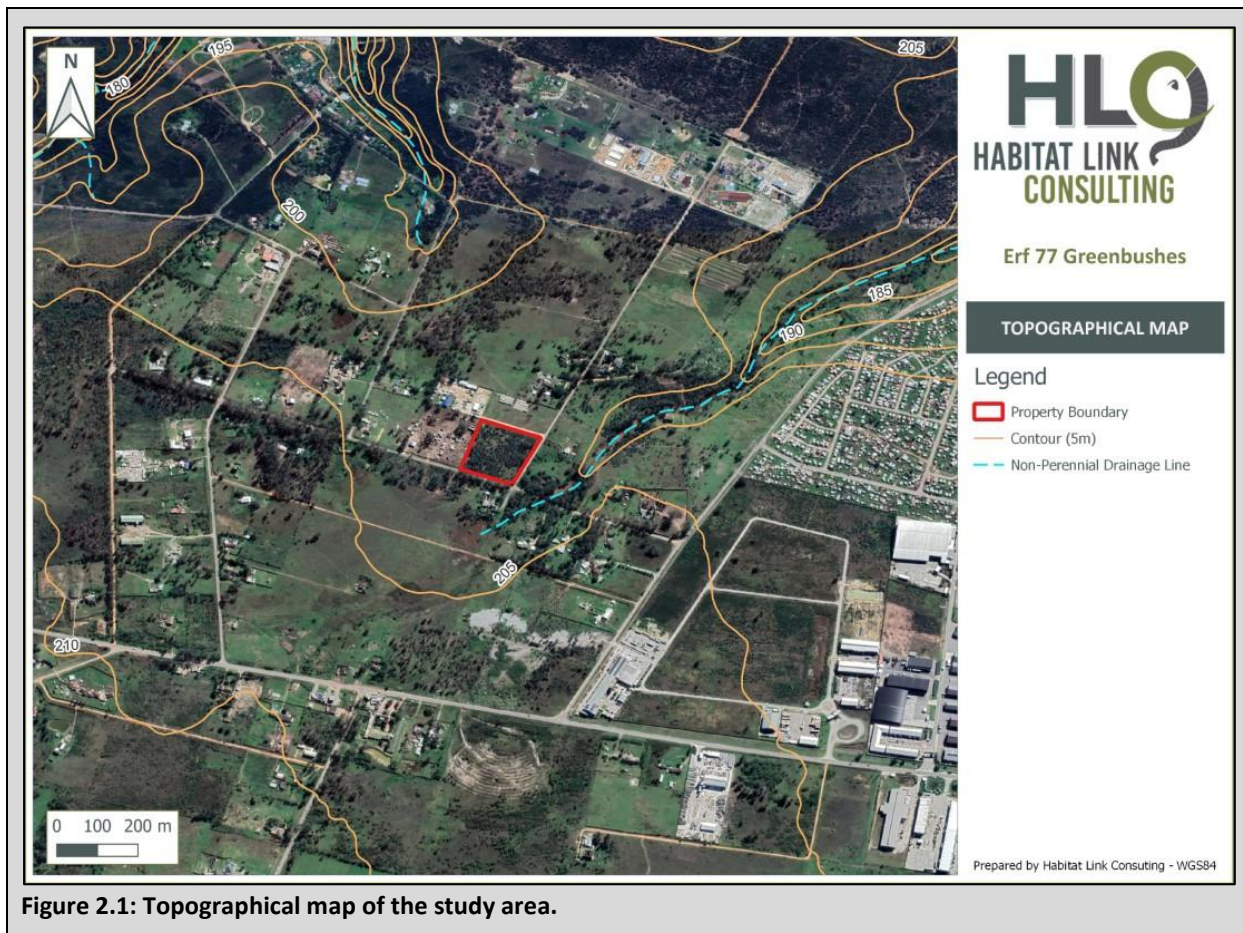
Flat X	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
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Alternative S2 (if any):

Alternative S3 (if any):

Topography

The study area is situated at approximately 206 m above sea-level and is flat across the entire area of the property (Figure 2.1). To the south-east of the property, the topography drops down towards a small drainage line although the majority of the surrounding areas are also relatively flat.



2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side-slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley

2.6 Plain **X**

- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	NO X		
Dolomite, sinkhole or doline areas	NO X		

Seasonally wet soils (often close to water bodies)
 Unstable rocky slopes or steep slopes with loose soil
 Dispersive soils (soils that dissolve in water)
 Soils with high clay content (clay fraction more than 40%)
 Any other unstable soil or geological feature
 An area sensitive to erosion

	NO X
	NO X
	NO X
	NO X
	NO X
	NO X



Geology and Soils

Rocks within the proposed development site comprise of quartz arenites (sandstones), with minor shales and conglomerates of the Pakhuis Formation, which forms the main unit of the Table Mountain Group (Cape Supergroup). The quartz arenites can be up to 2 700 m thick in places. Soils within the proposed development site are categorized as acidic lithosol soils derived from Ordovician sandstones of the Table Mountain Group (Cape Supergroup).

Surface Water Features

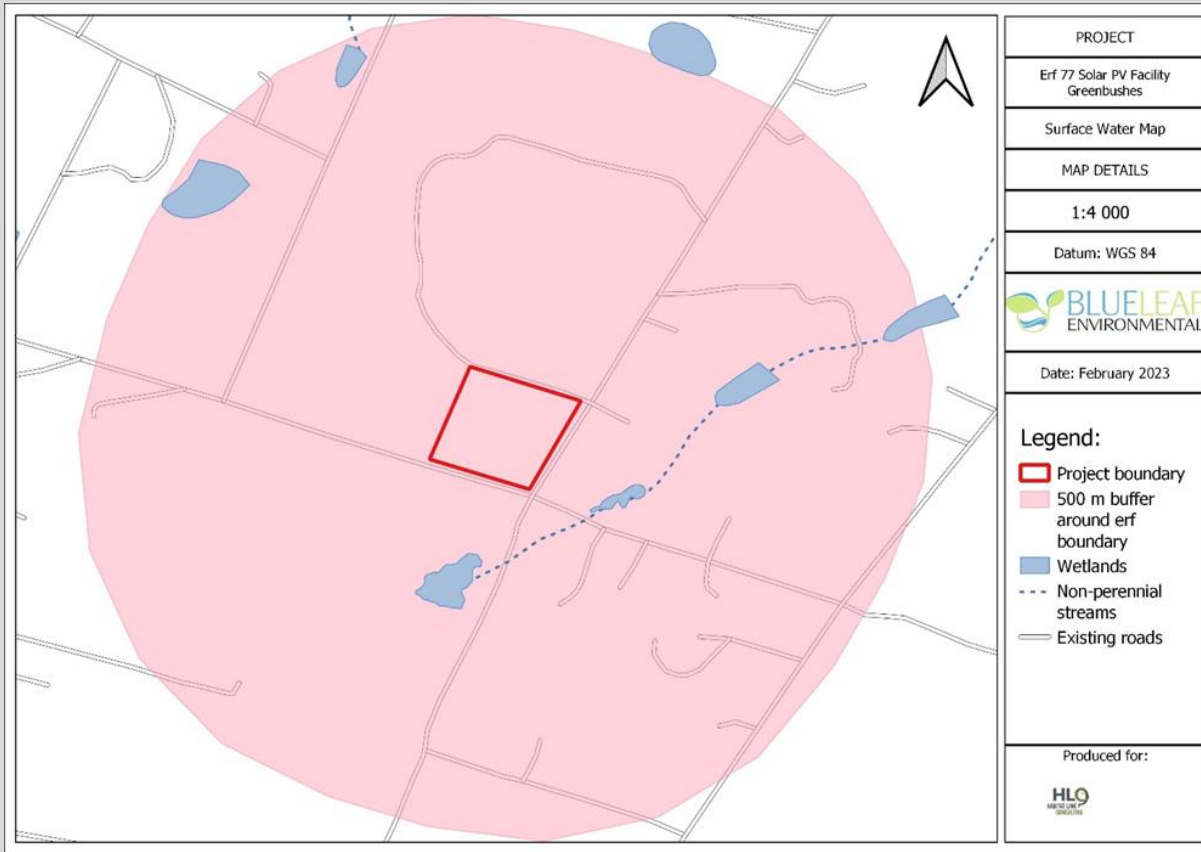


Figure 2.2: Drainage map of the proposed site showing the drainage line (to the south-east) as well as the six (6) wetlands located within 500m of the site.

The study area is located within Water Management Area 15 (Fishriver to Tsitsikamma) and falls within quaternary catchment M10D. The mean annual run-off for the site is 48.79 mm/annum. The south-eastern corner of the property is located within 77 m of an unnamed ephemeral (non-perennial)

stream. Six (6) wetlands have been identified within 500 m of the property boundary, of which five (5) have been classified as artificial dams, while one (1) is considered as a non-perennial pan (Figure 2.2). Wetlands 1 to 4 are all listed and classified by the National Freshwater Ecosystem Priority Areas (NFEPA, 2011) while wetlands 5 and 6 were identified during the site assessment.

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

For more information regarding the aquatic environment, please refer to [Appendix D.3](#) for the Aquatic Biodiversity Compliance Statement. For information regarding the geotechnical characteristics of the site, please refer to [Appendix G.5](#).

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition^E

4.2 Natural veld – scattered aliens^E

4.3 Natural veld with heavy alien infestation^E

4.4 Veld dominated by alien species^E

4.5 Gardens

4.6 Sport field

4.7 Cultivated land

4.8 Paved surface

4.9 Building or other structure

4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld – good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
		X	X	
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

Please refer to [Appendix D.2](#) for the Terrestrial Biodiversity Compliance Statement.

Vegetation

According to the Mucina and Rutherford national vegetation classification (SANBI, 2018), the pre-transformation vegetation type in the study area is Algoa Sandstone Fynbos, a vegetation type that occurs as a grassy shrubland on coastal flats between Van Stadens and Summerstrand in the Gqeberha area (Figure 2.3). Algoa Sandstone Fynbos is classified as Critically Endangered as more than 50% of the vegetation type has been transformed due to urban development and agriculture. The Final Nelson Mandela Bay Municipality (NMBM) Conservation Assessment and Plan (SRK 2010) identifies and describes vegetation types on a local scale, and the vegetation type identified on site is Rowallan Park Grassy Fynbos, which is classified as vulnerable (Figure 2.4).

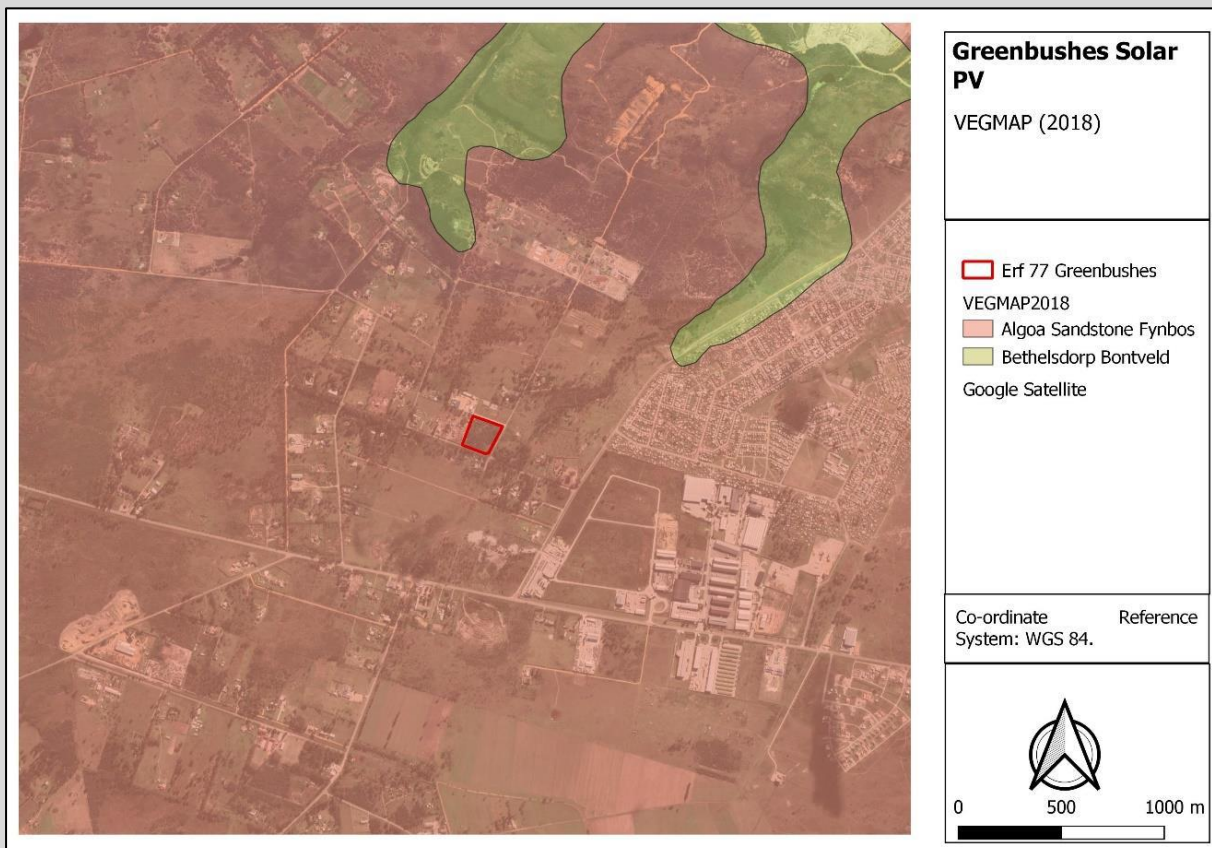


Figure 2.3: National vegetation map of South Africa (SANBI) showing the site located within Algoa Sandstone Fynbos vegetation type.

The study site can be considered transformed, and no indigenous vegetation remains. There is evidence of historical soil disturbance, with building rubble and litter is present across the site. The site can be described as an open Eucalyptus woodland, with the majority of the site dominated by invasive trees. The ground layer consists of weedy and common grasses, succulents and herbs. A few succulents, mostly pioneer species occur between the building rubble and in the open patches. A number of indigenous fynbos species occur on site, mostly in very low numbers, and more than likely secondary colonisation from the intact fynbos in the vicinity.

No plant Species of Conservation Concern (SCC) were identified on site. The site is transformed, previous soil disturbance has taken place, and no habitat for SCCs remain. The likelihood of any SCCs

occurring on site is considered low. There are also no forest patches within the corridor of the proposed project.



Figure 2.4: The development site is situated in Rowallan Park Grassy Fynbos, as identified by the NMBM Conservation Assessment and Plan (SRK 2009).

Fauna

A total of 230 bird species of which 7 are SCCs, 16 frog species (no SCCs), 76 reptile species of which 2 are SCCs, 47 mammal species of which 3 are SCCs, 118 butterfly species of which 1 is an SCC were recorded as potentially occurring on site, as they have been recorded in the Quarter Degree Square (QDS). However, this does not mean that their feeding or breeding habitat occurs on site. Of these, no SCCs were confirmed on site or rated as having a High Probability of Occurrence; 1 was rated as medium and the remainder as Low. Of the species identified by the online Screening tool report, all were rated as Low.

Biodiversity and Protected Areas

Algoa Sandston Fynbos is a Threatened Ecosystem, and classified as Critically Endangered in the draft version of the updated List of Threatened Ecosystems. However, no intact vegetation is on site, and the site can be considered transformed. The proposed solar PV development site does not occur within or near to any protected area, or near to an area identified by the National Protected Area Expansion Strategy (NPAES) (Figure 2.5). The proposed development site also does not occur in a Critical Biodiversity Areas (CBA) or Ecological Process Area (EPA) according to the NMBM Bioregional Plan (SRK,

2014). The nearest CBA is located approximately 350 m north-east of the site, while the nearest protected area (according to the NMBM Bioregional Plan) is located 3.5 km north of the site. According to the Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019), the site is also outside of any aquatic CBAs or Ecological Support Areas (ESA) (Figure 2.6).

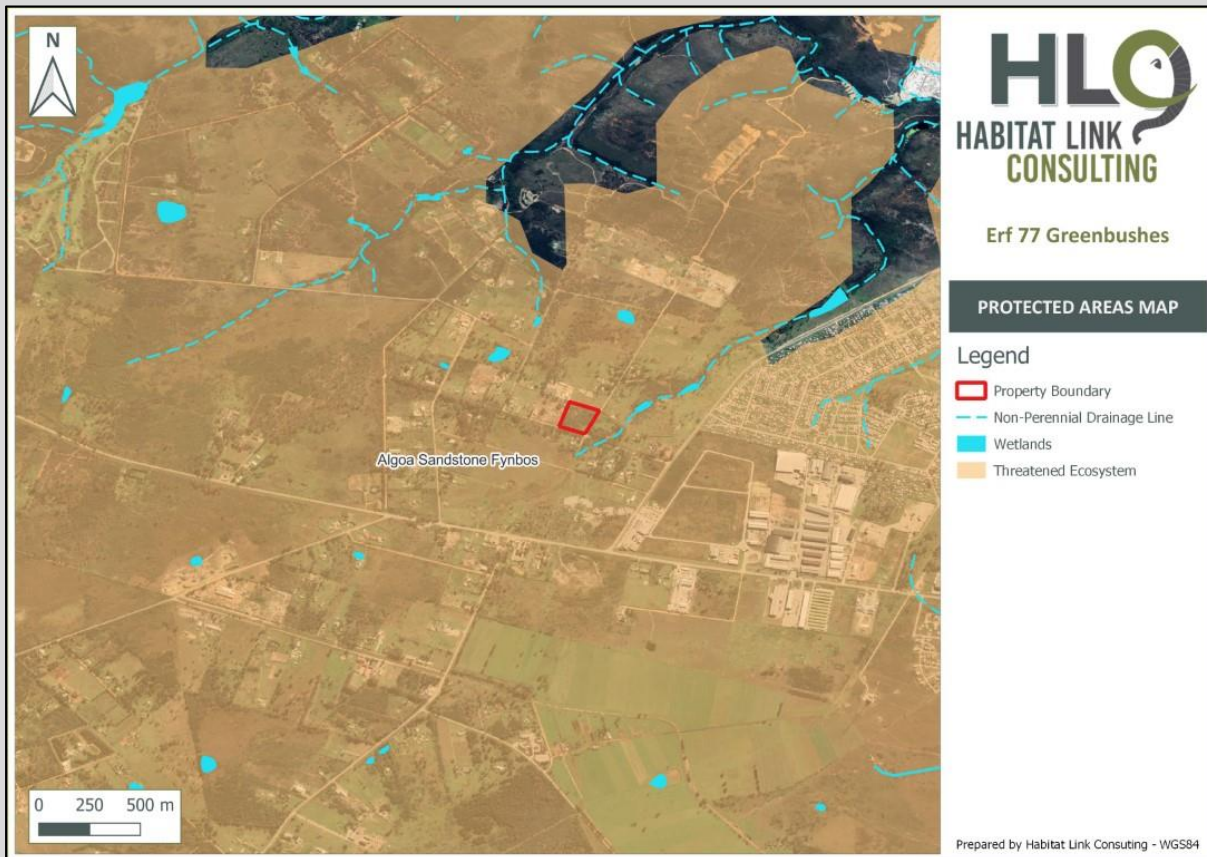
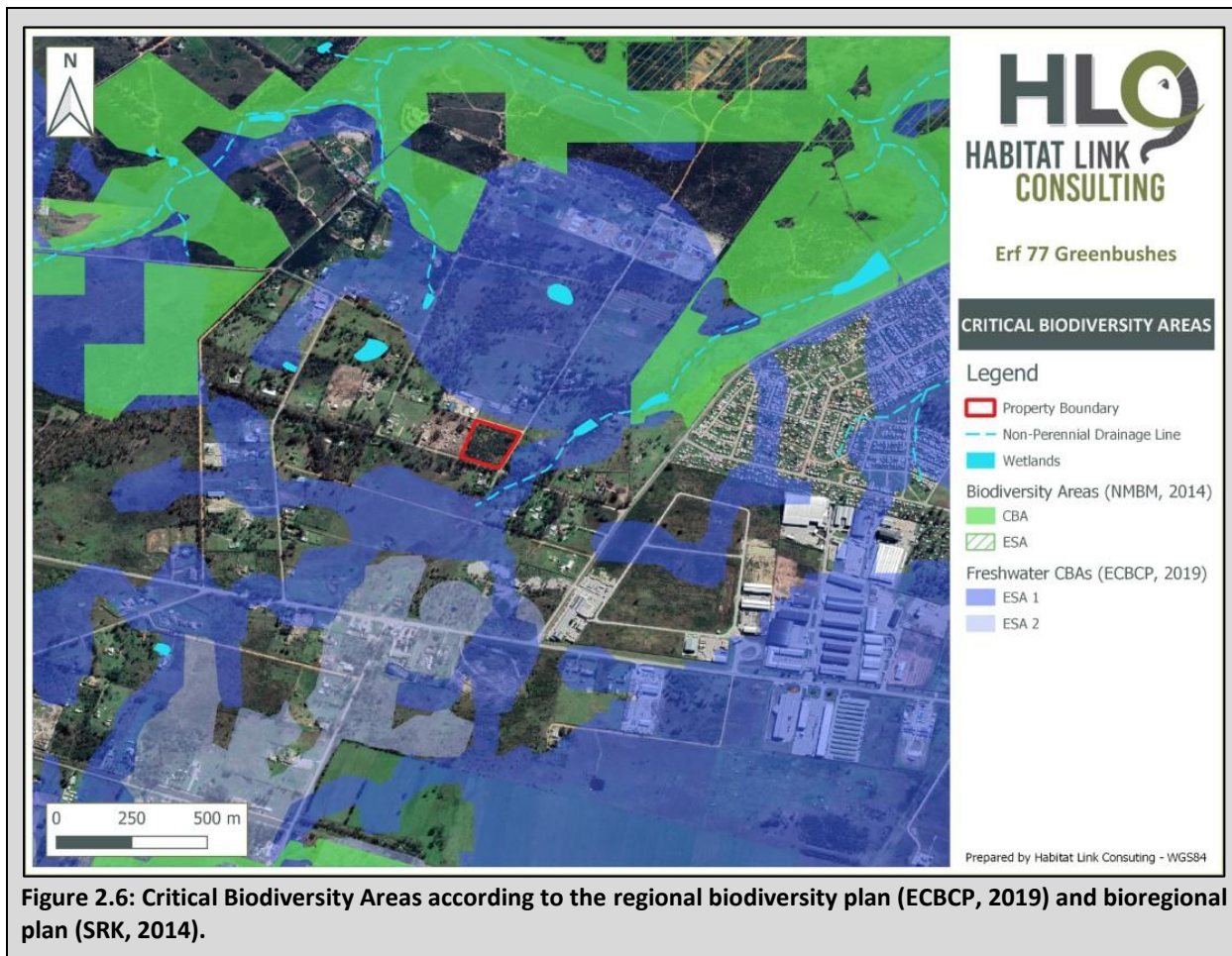


Figure 2.5: Map showing the site in proximity to the regional protected areas.



For more information regarding the terrestrial biodiversity, please refer to [Appendix D.2](#) for the Terrestrial Biodiversity Compliance Statement.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area	X
5.2 Low density residential	X
5.3 Medium density residential	
5.4 High density residential	
5.5 Informal residential	
5.6 Retail commercial & warehousing	X
5.7 Light industrial	X
5.8 Medium industrial ^{AN}	
5.9 Heavy industrial ^{AN}	
5.10 Power station	
5.11 Office/consulting room	X
5.12 Military or police base/station/compound	

- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N
- 5.23 Railway line^N
- 5.24 Major road (4 lanes or more)^N
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation

5.33 Agriculture	X
5.34 River, stream or wetland	X

- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity.

Not applicable.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

Not applicable.

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

Not applicable.

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
YES	NO

If YES, explain:

Not applicable.

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

<p>According to the archaeological specialist, no archaeological sites/materials were observed during the investigation of the proposed study area. The remains of a demolished structure on the property does not appear to be older than 60 years and it therefore does not fall under the general protection in terms of Section 34 of the National Heritage Resources Act, No. 25 of 1999. According to the paleontological specialist, the geological formation is identified as sensitive, however fossils in the formation are sparse and mostly consist of trace fossils. The footprint of the development is small and for that reason there is a very small chance that fossils could be discovered, damaged, or lost during the construction.</p> <p>Please refer to <u>Appendix D.4 (Archaeological Letter)</u> and <u>Appendix D.5 (Paleontological Impact Assessment)</u> for additional details.</p>

Will any building or structure older than 60 years be affected in any way?
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
YES	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>
NO	YES

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

No heritage application necessary, refer to <u>Appendix D.4.</u>
--

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (ii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and

- (iv) the manner in which and the person to whom representations in respect of the application may be made.

Site Notice

A site notice was placed at the entrance to the proposed site (as per the requirements of Section 41 of the 2014 NEMA EIA Regulations) on 22 July 2022 (Figure 3.1 and 3.2).



Figure 3.1: Site notice placed on site.



Coordinates: 33°56'42.71"S, 25°32'1.11"E

Figure 3.2: Position where site notice was placed.

Notification of the Basic Assessment Process

Notification of the Basic Assessment process commenced on 1 November 2022 when the letters of notification were sent, via email, to all I&APs. A newspaper advertisement will be placed in The Herald on 27 June 2023 to notify further potential I&APs of the availability of the Draft Basic Assessment Report.

Distribution of Background Information Documents (BIDs)

The purpose of the Background Information Document (BID) is to ensure that the relevant information, including the process being followed, was made available to a wide range of stakeholders. The BID formed part of the notification that was sent to all I&APs. The BID included information regarding the project details, the public participation process and the contact details for commenting on the development (Figure 3.3).



Figure 3.3: Preview of the Background Information Document (BID).

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

Advertisement

On 27 June 2023, a newspaper advertisement was placed in The Herald, which is a provincial publication that is distributed throughout the Nelson Mandela Bay Municipality. The advertisement was used to notify the general public of the proposed project and the availability of the Draft BAR for public review. Proof of placement of the newspaper advertisement will be included in Appendix E.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

The public participation process to be undertaken for this project aligns with the requirements of the 2014 NEMA EIA Regulations (as amended).

Completed Public Participation

In order to ensure that all Interested and/or Affected Parties (I&APs) are aware of the proposed project and afforded sufficient opportunity to raise comments and or concerns, the Basic Assessment process was announced using the following methods:

- Site notices;
- Electronic distribution of written notifications (via email);
- Notification of the proposed development via WhatsApp;
- Newspaper advertisement; and
- Electronic distribution of Background Information Documents (BIDs) (via email);

Not only did the abovementioned methods allow for the notification of the proposed development, but they also made provision for I&APs to request, review and comment on all draft reports. The contact details of the EAP (including email address, telephone number and postal address) were provided on all notification documentation, allowing the I&APs to contact the EAP and request project information and/or reports, via numerous communication methods. **All comments and concerns provided by the I&APs have been included and addressed in this Final BAR.**

Public Participation on the Draft BAR

The Draft BAR was made available for a thirty (30) day review period starting on 27 June 2023 and ending on 27 July 2023. All stakeholders and I&APs were notified of the availability of the draft reports via the newspaper advertisement and via email notifications, following confirmation that they are able to access the reports electronically. The Draft BAR was made available for the prescribed period and could be viewed / downloaded from the Habitat Link Consulting website (<https://habitatlink.co.za/current-projects/>). Please refer to additional details regarding the PPP process included in Appendix E.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

Please refer to Appendix E for the detailed correspondences sent to all I&APs. Any issues or concerns received on the Draft Basic Assessment Reports have been included and addressed in the Issues & Response Trail (IRT) in the Final BAR (this report).

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

A full I&AP list can be viewed in Appendix E of this report together with relevant proof of notifications.

List of authorities from whom comments have been received:

The following authorities have provided comments on the proposed development:

- The Department of Water and Sanitation (DWS): WUA requirements.
- Eastern Cape Provincial Heritage Resources Authority (ECPHRA): Heritage compliance.

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

During the inception phase of the EIA process, I&APs and other key stakeholders were identified for the proposed development. This included identification of surrounding landowners, land occupants, ward councillor and relevant governmental officials. The engagement with I&APs and other stakeholders will continue throughout the Basic Assessment process. All I&AP information (including contact details) is maintained by the EAP and recorded in a comprehensive I&AP database. This database will be updated on an on-going basis throughout the project and will act as a record of the communication and involvement process.

Has any comment been received from stakeholders?

YES X

If “YES”, briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Comments received during the pre-application phase:

- DWS: The Proposed Development of Solar Photovoltaic Facility On Erf 77 – A water use authorisation in terms of S21c&i is required before the project may commence.
- ECPHRA: Desktop PIA and Phase I AIA accepted.

Comments received during the initial 30-day commenting period on the Draft BAR:

- No additional comments received.

Detailed proof of placement of PPP material, as well as the full I&AP list and correspondence received from all I&APs is provided in Appendix E.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The following issues were raised by I&APs to date:

1. Water Use Authorisation (WUA) is required for the proposed development.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

The EAP's response to the abovementioned issues raised to date are as follows:

1. The applicant has appointed HLC to commence with the application for a WUA.

Please refer to Appendix E for the detailed correspondences from the EAP to all I&APs. Any issues or concerns received on the Draft Basic Assessment Reports have been included and addressed in the Issues & Response Trail (IRT) in the Final BAR (this report).

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

The identified impacts associated with the proposed development, as well as the proposed mitigation measures, are provided below. The impact assessment methodology is provided in Appendix G.3 of this report.

Planning and Design Phase Impacts

Activities associated with the design and pre-construction phase pertains mostly to planning and design around the proposed development, and is done at a desktop level. In some cases, site visits need to take place but the impact of these visits is negligible, if any, e.g. photographs, GPS point's etc.

Construction Phase Impacts

These impacts pertain to the clearing of approximately 2.2 ha of vegetation with a bulldozer, the chipping and mulching of the cleared vegetation, the levelling and shaping of the construction area, construction of the solar plant, construction of associated infrastructure and rehabilitation of the site following completion of construction (Table 4.1).

Table 4.1: Construction phase impacts associated with the proposed development together with the relevant mitigation measures and resultant impact significance.

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
<p>1. Direct loss of vegetation and faunal habitat due to clearing – Direct Negative Impact The construction of the proposed solar facility will not result in the loss of any significant area of indigenous vegetation or the loss of breeding and feeding habitat for faunal species. Algoa Sandstone Fynbos, specifically Rowallan Park Grassy Fynbos, is recorded as historically occurring on site, but it has been totally transformed. Due to the transformed nature of the site, the indigenous fauna on site can be considered highly reduced, as the quality of the present faunal habitat is low. Furthermore, developments surrounding the site, with alien dominated vegetation, do not promote any ecological functioning in the adjacent properties. Nevertheless, there remains the possibility of small indigenous fauna such as snakes, lizards, frogs, mice and tortoises that may be present on site, which may be impacted upon by construction activities. In addition, there are possibly birds and nests within the property that will be disturbed during the clearance of the vegetation.</p>	Site	Long-term	Minor	Partly Reversible	Resource may be partly destroyed	Definite	Moderate	LOW –	<ul style="list-style-type: none"> • Relevant permits must be obtained to remove any protected species (flora and fauna). • A walk down by a suitably qualified person should be conducted as construction is initiated in order to remove any fauna (including birds and nests) that may be disturbed during the construction process. • No fauna encountered on site may be intentionally harmed or killed. • All personnel should be made aware of the need to protect fauna on site. • All open excavations must be barricaded or fenced. • Excavations must be checked daily for trapped fauna, and trapped animals must be rescued and released. • Injured fauna should be referred to an appropriate rehabilitation facility. • After construction activities are complete, only use indigenous plant species for rehabilitation and landscaping. • Utilise indigenous fynbos shrubs, grasses and trees when landscaping the site after construction phase is complete. 	LOW –
<p>2. Invasion of alien vegetation – Indirect and Cumulative Impact Clearing for the construction phase of the project, as well as for maintenance during the operation phase, will result in soil disturbance and increasing the potential for further establishment of alien invasive plants. However, upon completion of the development and if mitigation measures are correctly implemented, there will be far less</p>	Local	Long-term	Low	Completely Reversible	Resource will not be lost	Possible	High	NEGLECTIBLE –	<ul style="list-style-type: none"> • Clear all Alien Invasive Species (AIS) from the site, and continue with AIS monitoring during the operation phase of the development. • Limit the use of pesticides and herbicides during the operation phase, particularly with the control of AIS. • Reduce the areas and stockpiles of bare soil during construction phase by using adequate covers or sowing with fast growing grasses such as kweek (<i>Cynodon dactylon</i>). 	LOW +

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
alien vegetation, and less chance for the spread of alien vegetation.									<ul style="list-style-type: none"> On-going removal and disposal of alien vegetation species. Only local topsoil maybe used and if any is imported, this should be certified alien plant free. 	
<p>3. Sedimentation and soil erosional impacts – Direct and Indirect Negative Impact With the removal of vegetation during construction, soils will be exposed to wind and rain and topsoil may be lost. This may result in erosion and sedimentation, following rainfall and subsequent sheet-wash. In addition, the soils will be traversed by a number of vehicles during the construction phase which is likely to result in soil compaction. This may result in degradation of the soil over time.</p>	Local	Short-term	Moderate	Completely Reversible	Resource will not be lost	Probable	High	LOW –	<ul style="list-style-type: none"> Clearing of vegetation to only be undertaken immediately preceding commencement of construction. Care must be taken to ensure that runoff is well dispersed so as to limit erosion. Appropriate erosion control measures must be implemented to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken. Temporary stabilisation measures (e.g., silt traps) should be implemented at the first signs of any erosion. Any additional impacted areas must be rehabilitated with indigenous vegetation should construction affect areas outside of the approved footprint. 	NEGLIGIBLE –
<p>4. Pollution of surface water resources – Indirect Negative Impact Spills and leaks from any plant during the construction phase of the development could potentially impact the downstream water quality (on neighbouring properties) via chemical pollution. This is unlikely to occur due to the distance between the site and the drainage line.</p>	Local	Medium-term	High	Partly Reversible	Resource may be partly destroyed	Possible	High	LOW –	<ul style="list-style-type: none"> Chemicals used for construction must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early. No re-fuelling of construction vehicles or maintenance activities to occur in close proximity to watercourses. All fuel storage areas, wash bays and vehicle servicing areas must be located within bunded areas with a separate dirty water handling system and oil/grease trap. It is also recommended that the wash bay water is filtered for reuse and that any ablution facilities are disposed of at a licensed WWTW. General sediment traps should also be included where suitable. The ablution facilities for construction workers must be located on the western side of the property (i.e., as far as possible from the closest drainage line). Toilets must be emptied regularly and before any extended site shutdown or builder’s break. Hazardous waste bins/skips to be made weather proof. Stockpiles to be located on the western side of the property (i.e. as far as possible from the closest drainage line). 	NEGLIGIBLE –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
<p>5. Solid Waste Pollution – Direct Negative Impact The construction phase of the activity will produce construction waste in the form of discarded construction material (e.g., packaging material etc.), excess soil/spoil (from levelling) and a large volume of cleared bush vegetation (alien vegetation). The incorrect management of these wastes may result in pollution of the surrounding natural areas.</p>	Site	Short-Term	Low	Completely Reversible	Resource Will Not Be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Construction material must be reused or recycled where possible (e.g. mulching of cleared vegetation). Vegetation that is cleared from the site (and is not mulched for use on site) must be removed to a registered garden refuse site. Staff must be trained to implement waste control and to identify hazardous waste. Other waste to be removed to a licenced landfill site. General good house-keeping must be implemented. No litter to remain on site. Spills must be avoided during transportation of waste material. Disposal certificates must be obtained for all waste disposals. Sufficient and appropriate weather- and scavenger-proof bins must be made available on-site during construction and removed/emptied on a daily basis. 	NEGLECTIBLE –
<p>6. Dust Creation – Direct Negative Impact The construction activities will increase the potential for dust especially from the clearing of vegetation. During the construction phase of the activity, materials will be moved to and from the project site and this could result in dust pollution not only from the materials, but also from the construction vehicles which will be operating on site. The effects of dust will be exacerbated during high wind conditions.</p>	Local	Short-term	Low	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Ensure that exposed areas are dampened with non-potable water following vegetation clearance. Construction work to be halted during periods of strong wind. The loading of materials must be done with the lowest drop height and those vehicles carrying dusty materials must be securely and properly covered before they leave the site. Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor. If possible, maintain vegetation as a windbreak in the area facing the prevailing wind direction until the completion of construction. During construction, dust suppression should be applied to avoid the creation of dust clouds to areas cleared of vegetation. 	NEGLECTIBLE –
<p>7. Noise Nuisance – Direct Negative Impact It can be expected that there will be an increase in noise levels during the site preparation and construction phase of the development. The increase in noise will be associated with the operation of construction equipment, labourers and vehicles, especially the bulldozer used to clear vegetation.</p>	Local	Short-term	Moderate	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Construction vehicles to be in sound working order and fitted with mufflers if necessary. The Contractor must adhere to the relevant noise regulations and limit noise to within standard working hours. As construction workers operate in a noisy environment, it must be ensured that their working conditions comply with the requirements of the Occupational Health and 	NEGLECTIBLE –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
									<p>Safety Act (Act No 85 of 1993). Where necessary, ear protection gear must be worn.</p> <ul style="list-style-type: none"> • Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery. • Limit construction to daylight hours. • Restrict unnecessary noise (e.g., portable radios, vehicle radios, whistles etc.). • Adhere to municipal noise regulations at all times. 	
<p>8. <u>Impact on the Visual Aesthetics of the Area – Direct Negative Impact</u> During construction, the proposed project site will be transformed as a result of construction vehicles and workers moving throughout the area. The clearance of a large area of vegetation will visually change the aesthetics of the site. The construction taking place on the property will be visible by direct adjacent neighbours and will result in aesthetic changes to the views from the current adjacent properties. The vegetation clearance and potential for dust could result in minor visual impacts during the construction phase.</p>	Local	Short-term	Low	Completely Reversible	Resource cannot be replaced	Definite	Moderate	LOW –	<ul style="list-style-type: none"> • Good house-keeping to be implemented on site. • No visually intrusive practices (e.g., night-lighting) will be allowed on site or in the surrounding areas during the construction phase. • Any reflective construction material must be stored and placed in such a manner that it does not reflect sunlight towards the surrounding properties. • Construction materials to be stored neatly and waste to be collected on a regular basis. • Erosion, waste vegetation and dust to be mitigated as per the abovementioned mitigation measures. • All disturbed areas surrounding the proposed development must be rehabilitated and all alien vegetation and weeds removed from these areas. • Recommendations of the visual impact assessment specialist must be implemented during construction (refer to Appendix D.7). 	LOW –
<p>9. <u>Impacts on Health, Safety and Fire Risk – Direct Negative Impact</u> The use of construction machinery during the construction phase poses a potential risk to the health and safety of people working at the construction site. The movement of construction vehicles also increases the risk of accidents along provincial roads. The risk of accidents, fires and potential injuries must be mitigated effectively.</p>	Site	Short-term	High	Partly Reversible	Resource May Be Partly Destroyed	Possible	High	LOW –	<ul style="list-style-type: none"> • All relevant Health and Safety legislation as required in South Africa should be strictly adhered to, including but not limited to the Occupational Health and Safety Act, 1993 (No. 85 of 1993). • Smoking should be restricted to a designated smoking area. • Ensure availability of fire extinguishers. • All employees must be aware of emergency/contingency plans to ensure an understanding of the hazards and procedures required during an emergency situation. 	NEGLIGIBLE –
<p>10. <u>Impact on Archaeological and/or Paleontological Resources – Direct Negative Impact</u> Although highly unlikely, it is possible that the discovery or exposure of archaeological artefacts or fossil remains may occur during</p>	Site	Permanent	Minor	Irreversible	Resource may be partly destroyed	Unlikely	Moderate	NEGLIGIBLE –	<ul style="list-style-type: none"> • The Contractor and ECO responsible for the development should be alerted to the possibility of archaeological artifacts or fossil remains being found either on the surface or exposed by fresh excavations during construction. 	NEGLIGIBLE –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
the construction phase. Should this be the case, it is also possible that these heritage resources will be damaged or lost during the construction phase.									<ul style="list-style-type: none"> Should any heritage artefacts or fossils be discovered during construction, these should be safeguarded (preferably <i>in situ</i>) and the ECO should alert the Eastern Cape Provincial Heritage Resources Authority (ECPHRA. Contact details: Ms. A Mama, 74 Alexander Road, King Williams Town 5600; Email: amncwabe@gmail.com). 	
<p>11. Construction Traffic and Road Impacts – Direct Negative Impact</p> <p>During construction, there will be an increase in the number of vehicles using the nearby roads, including some heavy construction vehicles. This may result in damage to the roads. The construction vehicles could also impede other road users at certain sections of the roads to the site if not adequately managed and controlled.</p>	Local	Short-term	Moderate	Partly Reversible	Resource will not be lost	Probable	High	LOW –	<ul style="list-style-type: none"> All drivers to have the necessary driving permits to operate the plant/vehicles; All traffic laws must be obeyed at all times; Avoid transportation of construction material during peak hours; Any abnormal loads must be approved with the traffic authorities and must comply with any conditions imposed by the authorities; Avoid transportation of construction material during peak hours; The Contractor must employ flag staff in order to prevent on-site accidents; Speed must be limited to 30 km/h on site; The developer to provide a photographic record of the condition of Hospice Lane prior to construction, monitor the condition regularly (bi-weekly) during construction and repair any damage to the road by construction vehicles at their cost; Suitable temporary signage be erected in the Warbler Street approaches to Hospice Lane, warning motorists of the presence of heavy construction vehicles exiting Hospice Lane; Overloading of vehicles must not occur; and Any damage to existing access roads as a result of the construction activities must be immediately repaired. 	NEGLIGIBLE –
<p>12. Employment Creation and Local Business Development – Direct and Indirect Positive Impact</p> <p>The construction phase of the proposed development will create temporary jobs for locals within the area. Where possible, materials will be sourced from local businesses and this will result in a boost of the local economy of the immediate vicinity and surrounding areas.</p>	Local	Short-Term	Moderate	Completely Reversible	Not Applicable	Highly Probable	High	LOW +	<ul style="list-style-type: none"> Employ local people wherever possible; and Purchase materials from local businesses wherever possible. 	MODERATE +

Operational Phase Impacts

These impacts pertain to the operation of a solar photovoltaic development, which will include the management of 4 000 solar panels and associated infrastructure and the operation of suitable stormwater management (Table 4.2).

Table 4.2: Operational phase impacts associated with the proposed development together with the relevant mitigation measures and resultant impact significance.

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
<p>1. Invasive and Alien Species Management – <i>Direct Impact (Negative or Positive)</i> During the operational phase, any bare soil surfaces as well as the potential for unmaintained gardens or open areas compounds the potential invasion by alien plant species. This, coupled with the lack of alien vegetation management may result in large scale alien plant invasion similar to what is currently observed on site. However, should the facility management implement an effective alien vegetation management plan, this could result in a significantly positive improvement to alien species management.</p>	Local	Long-term	Low	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> • Areas disturbed with alien plants must be actively rehabilitated with indigenous vegetation. • Alien plant regrowth within the property must be monitored, and any such species should be removed on an ongoing basis. • Only local topsoil may be used and if any additional topsoil is required, this should be certified alien plant free. • Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. 	LOW +
<p>2. Impact on Surface Water Runoff Patterns – <i>Direct and Negative Impact</i> The clearing of vegetation that will be replaced with hard surfaces has the ability to increase run-off due to reduced vegetation cover and/or change in vegetation cover. By intercepting and slowing precipitation hitting the ground, vegetation substantially reduces the volume and rate of runoff. This then prevents soil erosion. Increased runoff due to the nature of the development may result in increased erosion potential during the operational phase however this will be mitigated by the implementation of the proposed stormwater retention pond.</p>	Local	Long-Term	Low	Partly Reversible	Resource May Be Partly Destroyed	Highly Probable	Moderate	LOW –	<ul style="list-style-type: none"> • Development footprints should be minimised, where possible, to reduce hardened surfaces which contribute to stormwater generation. • Stormwater runoff to be managed as per the provisions of the stormwater engineer. • Ensure proper stormwater management by channelling flows into a stormwater pond, ensuring that it does not flow directly into any nearby watercourses. • Ensure stormwater channels do not cause erosion. • Stormwater management structures must be monitored and maintained throughout the operational phase. • Should further erosion be observed, additional stormwater management and erosion measures must be put in place. 	LOW –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
<p>3. Potential Pollution of Nearby Drainage Area – Direct and Cumulative Negative Impact Poor maintenance of the sewage infrastructure, poor waste disposal practices and/or any significant vehicle/machinery breakdown in or around the facility could result in pollution of the nearby drainage area and downstream water resources (wetlands). Due to the limited occupation expected for the facility (i.e. limited potential for waste or sewage) as well as the fact that solar panels will not be cleaned with any chemicals, this impact is unlikely to occur.</p>	Local	Long-term	Moderate	Partly Reversible	Resource may be partly destroyed	Possible	High	LOW -	<ul style="list-style-type: none"> • Appropriate waste management, as described further below, must be implemented for the operation of the facility. • All sewage infrastructure (e.g. pipes and tanks) must be regularly serviced and maintained. • No servicing of vehicles or other machinery in or around the facility should be permitted. • Any pollution from leaks or spills must be immediately cleaned and removed from the complex. • Cleaning of solar panels must be done without the use of any chemicals or soaps. Any potential pollutant from the cleaning of panels must be diverted to a separate waste storage tank and disposed of as wastewater at an appropriate wastewater treatment facility. • Limit the use of pesticides and herbicides during the operation phase in terms of alien vegetation management. • Outflow from the stormwater retention pond must be managed in such a way that pollutants (e.g. litter, spills etc.) do not exit the site. The installation of litter grids as well as the provision of a spill collection sump within the retention pond are recommended. 	NEGLIGIBLE –
<p>4. Utilisation of Water Resources – Direct and Cumulative Negative Impact The proposed development will rely on water from the municipal supply in order to meet the daily consumption demands as estimated by the developer. Although the volume of water required is minimal, this will place cumulative strain on the current drought situation in the area.</p>	Regional	Long-term	Minor	Completely Reversible	Resource will not be lost	Probable	Moderate	LOW -	<ul style="list-style-type: none"> • Excessive use of water to be avoided wherever possible. • Ensure that all water reticulation infrastructure is maintained regularly to avoid leaks. • Rainwater harvesting must be implemented to collect rainwater from the building drains and gutters. • Make use of water saving products such as water saving toilets with a dual-flush valve, water saving taps with spray cartridges and timed turn-off taps. • Monitor water consumption to ensure water is utilised within the volumes made available by any relevant municipal drought regulations. 	NEGLIGIBLE –
<p>5. Traffic Impact - Direct and Cumulative Negative Impact There is likely to be a slight increase in traffic as a result of vehicles entering and exiting the facility on a daily basis. Although this additional traffic is minimal, it may place additional cumulative strain on the nearby road network. This increases the potential</p>	Local	Long-term	Minor	Completely Reversible	Resource will not be lost	Probable	Moderate	LOW -	<ul style="list-style-type: none"> • The entrance to the facility must be positioned and managed in such a way so as to avoid backing-up of vehicles along the existing municipal roads. • Appropriate traffic warning signs must be erected at and before the entrance to the facility. • Speeding within the facility must be strictly 	NEGLIGIBLE –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
for collisions with other vehicles and pedestrians in the area.									<p>prohibited to ensure the safety of staff.</p> <ul style="list-style-type: none"> Any deliveries to the facility should be arranged for outside of peak traffic times. 	
<p>6. Noise Disturbance – Direct Negative Impact During the operational phase, limited noise will be generated by the facility as a result of the generation of electricity as well as the presence of staff at the site. Due to the nature of the area, this unlikely to have any significant change on current noise levels or have any impact on sensitive receptors.</p>	Local	Long-term	Minor	Completely Reversible	Resource will not be lost	Possible	Moderate	NEGLIGIBLE –	<ul style="list-style-type: none"> Any noisy electricity generation facilities should be positioned in such a way as to avoid the noise travelling to neighbouring properties (e.g. via the use of noise-damping walls or vegetation cover). Excessively noisy vehicles to be prohibited from entering the facility. Restriction of any unnecessary noise (e.g. loud music, whistles etc.) must be implemented within the facility. Noise-dampening walls and other designs must be implemented wherever possible. General adherence to the municipal by-laws regarding noise must be adhered to at all times. 	NEGLIGIBLE –
<p>7. Solid Waste Pollution– Direct Negative Impact During the operational phase, the proposed development will produce solid waste in the form of domestic general waste from the staff, as well as minor hazardous waste (e.g., oily rags, paint, chemical containers). The incorrect management of these wastes will have a negative impact on the surrounding environment as it can cause unnecessary pollution and also have a detrimental effect on the aesthetics of the facility itself. Unmitigated litter from the facility may be blown to neighbouring properties.</p>	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Probable	High	LOW –	<ul style="list-style-type: none"> General good house-keeping should be practiced on site. Litter must be controlled by ensuring that adequate bins are made available for staff and that waste is removed to a dedicated storage area. Recycling and reusing of plastic and cardboard must be promoted to reduce the amount of waste being disposed of at the municipal transfer station. Waste must be removed from the facility on a weekly basis and disposed of in the correct manner. Any spillages of waste products must be cleaned up immediately. 	NEGLIGIBLE –
<p>8. Increase in Vermin and Pests – Direct Negative Impact The presence of domestic waste, especially any food waste, will attract opportunistic vermin and pest species (e.g. flies, rodents, crows etc.). Indigenous faunal species may also become problematic (e.g. scavengers). The increase in numbers of these species could displace surrounding resident species by outcompeting for shared habitat resources in the immediate area. Vermin, pests and scavengers may also carry diseases, which could spread to nearby</p>	Local	Long-term	High	Completely Reversible	Resource may be partly destroyed	Possible	High	LOW –	<ul style="list-style-type: none"> The waste storage area must remain closed and secured at all times in order to prevent scavengers from entering the premises. All refuse and waste must be placed in scavenger-proof bins within the storage area. Limited and regularised pest and rodent control measures, as per industry standard, may be utilised at strategic positions around the facility however, great care must be taken (e.g. use of poison-free rodent control). Staff must be informed of the correct waste disposal procedures. Should any significant numbers of vermin be 	LOW –

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
farming communities and residential areas.									observed, this must be reported to the local animal management authorities (e.g. SPCA/Animal Welfare) as well as the municipality.	
<p>9. <u>Visual Impact – Direct and Cumulative Negative Impact</u> The site is currently undeveloped and covered in tall alien vegetation. The development will result in a change in visual character from an unbuilt landscape to a built landscape. The proposed development would be visible from immediate adjacent roads (Blommelaan and Pennelsdrif roads). The proposed development will require lighting which will have a visual impact at night. This will be visible to the surrounding areas and sensitive receptors in these areas.</p>	Local	Long-term	High	Completely Reversible	Resource will not be lost	Definite	Moderate	HIGH –	<ul style="list-style-type: none"> Mitigation measures associated with alien vegetation and waste management (above) to be implemented. Lighting of the solar PV plant at night should be limited to security lighting (where this is necessary). It is acknowledged that emergency operational lighting may be required, but this should not be permanently lit. The height of all lights should be limited; more lights should be installed at lower heights than floodlights that would be visible from a wider area. All lighting should be faced downward and inward facing (towards the solar PV plant), to avoid light spilling into the surrounding areas. As the structures supporting the panels could create cumulative glint and glare if these are metallic and reflective, the consideration of non-reflective material for the supports is recommended. 	LOW –
<p>10. <u>Health, Safety and Fire Risks - Direct and Indirect Positive Impact</u> The operation of the facility poses ongoing health and safety risks to staff if the correct procedures are not followed at all times. Failure to plan for accidental fires during the operation of the electricity generation facility could result in potential harm to the staff and/or surrounding landowners and their property.</p>	Local	Long-Term	Moderate	Completely Reversible	Not Applicable	Probable	Moderate	LOW +	<ul style="list-style-type: none"> A health and safety (H&S) plan in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) must be drawn up by an appropriately qualified H&S specialists prior to commissioning of the facility in order to ensure staff safety. Emergency preparedness must be in place during the operational phase and must form part of ongoing training for staff operating at the facility. Facility management must plan for and put measures in place to prevent and deal with fires including the provision of firefighting equipment. No open fires are to be permitted within the property. 	LOW +
<p>11. <u>Provision of Renewable Electricity – Direct, Indirect and Cumulative Positive Impact</u> The proposed facility will generate up to 3.5 MW of electricity, which can feed into the municipal electricity supply. This will assist with the cumulative reduction on fossil fuel reliance and contribute to a reliable</p>	Regional	Long-term	High	Completely Reversible	Resource will not be lost	Definite	High	HIGH +	<ul style="list-style-type: none"> Regular maintenance and inspections of all infrastructure and services must be undertaken to ensure ongoing reliable production of renewable energy. 	HIGH +

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
electricity supply for the municipality. It would also indirectly and cumulatively contribute to a reduction on load-shedding requirements for the area.										
<p>12. Employment Creation and Local Business Development – Direct and Indirect Positive Impact</p> <p>The operational phase of the proposed development will create permanent jobs for locals within the area. Where possible, materials will be sourced from local businesses and this will result in a boost of the local economy of the immediate vicinity and surrounding areas. Furthermore, a reliable supply of renewable energy to local businesses will have an indirect positive contribution to the local economy.</p>	Local	Long-Term	Low	Completely Reversible	Not Applicable	Highly probable	Moderate	<p>LOW +</p> <ul style="list-style-type: none"> • Employ local people wherever possible. • Purchase maintenance materials from local businesses wherever possible. • Encourage other businesses to implement solar energy solutions wherever possible. 	MODERATE +	

Decommissioning Phase Impacts

Once operational, it is unlikely that the proposed solar development and associated infrastructure will be decommissioned in the near future, although panels and infrastructure will likely be maintained or possibly upgraded over time. Should decommissioning of the facility take place, the impacts relevant to decommissioning would be similar to those listed for the construction phase above. The relevant authorisations and approval of a rehabilitation plan for the site would need to be granted by the authorities should decommissioning take place.

Impacts Associated with the No-Go Alternative

These impacts pertain to the scenario whereby the proposed solar facility is not implemented and the *status quo* of the property remains unchanged (i.e. transformed site dominated by alien vegetation) (Table 4.3). The methodology applied to the No-Go Alternative does not provide for the mitigation of the impact as it is assumed that no changes will be made to the study site. Reversibility and mitigation potential are thus marked as 'not applicable' for all No-Go impacts.

Table 4.3: Impacts associated with the status quo (No-Go Alternative).

IMPACT	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE
<p>1. Continued Proliferation of Alien Plant and Tree Species – Direct and Cumulative Negative Impact Although the management of alien vegetation is an ongoing and legislative responsibility of the landowner, the reality is that a property such as this one is unlikely to be maintained on an ongoing basis if no activity is present on the site. Ongoing proliferation of alien plants and trees contributes to the spread of seeds and establishment of additional alien vegetation in the nearby areas.</p>	Local	Long-term	Moderate	Not Applicable	Resource will not be lost	Highly Probable	Not Applicable	MODERATE –
<p>2. Continued Potential for Vagrants, Squatters and Ongoing Security Concerns – Direct and Indirect Negative Impact If the proposed development is not implemented, it is possible that the property may be utilised by vagrants and/or squatters. Not only will this introduce various other environmental impacts (e.g. waste pollution, effluent and noise), but will have an indirect negative impact on the security of neighbouring residents and businesses.</p>	Local	Long-term	High	Not Applicable	Resource will not be lost	Probable	Not Applicable	LOW –
<p>3. Continued Illegal Dumping – Direct and Cumulative Negative Impact If the proposed development is not implemented, it is likely that the illegal dumping observed at the property will continue to occur. This could have various environmental consequences (e.g. pollution of nearby drainage areas, odours and vermin/pests), which will have an indirect negative impact on the neighbouring residents and businesses.</p>	Site	Long-term	Moderate	Not Applicable	Resource will not be lost	Highly Probable	Not Applicable	MODERATE –
<p>4. Continued Reliance on Fossil Fuels and Non-Renewable Energy Sources – Indirect and Cumulative Negative Impact If the proposed development is not implemented, the opportunities associated with the generation of renewable energy, as well as the economic benefit and contribution to reducing energy demand, would be lost under the 'No-go' alternative. This would cumulatively contribute to ongoing loadshedding within the municipality and wider region.</p>	Site	Long-term	High	Not Applicable	Resource will not be lost	Highly Probable	Not Applicable	MODERATE –

3. CLIMATE CHANGE IMPACT ASSESSMENT

Climate change issues must be considered as part of the EIA process Please consider the Climate Change guideline. EAP must determine:

- a) The potential impact of climate change on society and the economy, whether the impact is negative or positive, considering that society needs to be at the centre of the proposed development;
- b) The potential alternatives of the proposed development, alternatives that will have less impact on climate change (environment and generation of waste included), the society and economy;
- c) whether, and to what extent, the proposed development will result in the release of greenhouse gas (GHG) emissions;
- d) whether the proposed development is necessary to achieve long term decarbonisation goals;
- e) the impact of the development on social, economic, natural and built environment that are crucial for climate change, adaptation and resilience;
- f) the projected impact of climate change on proposed development; and surrounding environment, and implications for the development.
- g) Explanation of how the impacts is likely to be exacerbated or minimised as result of climate change and what measures are likely to be implemented to accommodate and manage (adapt to) the anticipated worst scenario where applicable
- h) whether, and to what extent, the impacts identified in (a) -(g) can be mitigated.

Climate Change Considerations

Traditional fossil fuel based power generation systems have created serious environmental problems (i.e. climate change, air pollution, acid rain, and global warming, among others) which are harmful to human life. Solar PV energy is clean, silent, abundant, sustainable, and renewable as well as inherently safer than any other traditional electricity generation systems. Renewable energy systems can solve many environmental problems that were created by traditional fossil fuels (Hosenuzzaman *et al.*, 2015).

The use of renewable energy provides benefits that reduce emissions of air pollutants as well as greenhouse gases (GHG). Therefore, alternative sources of energy are needed so that mankind can survive on the Earth without depending on fossil fuels. Solar energy is one of the renewable energy sources that will contribute to the security of future energy supplies. Solar energy has obvious environmental advantages over other energy sources and will not deplete as a natural resource, produce CO₂ emission, or generate liquid or solid waste products (Hosenuzzaman *et al.*, 2015). However, PV systems cannot be regarded as completely eco-friendly systems with zero-emissions (Tawalbeh *et al.*, 2021). As with any type of power plant, large solar power plants can affect the environment at or near their locations. Clearing land for construction and the placement of the power plant may have long-term effects on the habitats of native plants and animals.

Green House Gas Emissions

Installing a solar energy system causes a lot less emissions than conventional energy systems, but it is not harmless. The process of manufacturing and transporting solar panels uses a lot of electricity and power which is still derived from fossil fuel-based power stations. Solar energy systems require use of materials, such as metals and glass, that are energy intensive to make. The environmental issues related to the production of these materials could be associated with solar energy systems when conducting life-cycle or so-called cradle-to-grave environmental analysis.

The solar carbon footprint during a solar energy plant's initial year of operation is significant. The carbon emissions amount to about 50g for every kilowatt produced every hour. After three years, a residential or commercial solar panel will become carbon neutral as it pays off its carbon debt during the rest of its operational lifespan of 20 years or even longer (Amplus Solar, 2023). By adopting green solar energy, it will eventually reduce the carbon footprint and the use of fossil fuels by the power generation industries.

In 2014 the Nelson Mandela Bay Municipality has partnered with the National Energy Regulator of South Africa (NERSA) to approve renewable energy systems up to 100kW to be connected to the national electricity grid. It is envisaged that in the medium term, 15% and long term 30% of the energy supply is produced from alternative sustainable sources (Nelson Mandela Bay Municipality Renewable Energy Guideline, 2021).

Possible Impacts Climate Change may have on the Solar PV Development

- The performance of the solar PV facility can be impacted by external factors such as, increased concentrations of GHG in the atmosphere. With increased GHG's in the atmosphere, incoming short wave radiation rays are scattered and/or blocked at a higher level in the atmosphere, limiting the solar rays that reach the PV panels and therefore the efficiency of the PV facility.
- With sporadic climatic conditions and longer duration of rain events, cloud cover could influence the solar regime for longer, meaning the solar rays available for the solar PV facility is reduced.
- Increased average temperature could potentially affect the performance of PV facilities negatively. Electrons are released inside the PV panels during normal operations and electricity is generated. Due to the law of thermodynamics, in the presence of excess heat (higher than normal temperatures), electrons can react sporadically and as a result generate lower voltages with less electrical output.

Mitigation and Management of Impacts Related to Climate Change

The negative environmental impacts of solar PV systems could be substantially mitigated using optimised design, development of novel materials, minimise the use of hazardous materials, recycling whenever possible, and careful site selection (Tawalbeh *et al.*, 2021). Such mitigation actions will reduce the emissions of GHG to the environment, decrease the accumulation of solid wastes, and preserve valuable water resources (Tawalbeh *et al.*, 2021). The carbon footprint of the PV system could be decreased further by one order of magnitude using novel manufacturing materials (Tawalbeh *et al.*, 2021). Recycling solar cell materials can also contribute up to a 42% reduction in GHG emissions (Tawalbeh *et al.*, 2021).

Additional measures for solar energy projects as per the Department of Environmental Affairs EIA Guideline for Renewable Energy Projects (2015) include:

- Conduct pre-disturbance surveys as appropriate to assess the presence of sensitive areas, fauna, flora and sensitive habitats;
- Plan visual impact reduction measures such as natural (vegetation and topography) and engineered (berms, fences, and shades, etc.) screens and buffers;
- Utilise existing roads and servitudes as much as possible to minimise project footprint;
- Site projects to avoid construction too near pristine natural areas and communities;
- Locate developments away from important habitat for faunal species, particularly species which are threatened or have restricted ranges, and are collision-prone or vulnerable to disturbance, displacement and/or habitat loss;
- Fence sites as appropriate to ensure safe restricted access;
- Ensure dust abatement measures are in place during and post construction;
- Develop and implement a storm water management plan;
- Develop and implement waste management plan; and
- Re-vegetation with appropriate indigenous species to prevent dust and erosion, as well as establishment of alien species.

Need for a Specialist Climate Change Assessment

The relatively low potential for GHG emissions associated with the proposed development, together with the overall positive impact relating to climate change (in terms of producing renewable energy in contrast to reliance on fossil fuels) means that the issue of climate change can be adequately assessed by the EAP. For these reasons, it was not deemed necessary to conduct a detailed Climate Change Specialist Assessment.

Conclusion

Climate change is an imminent multi-faceted concern that encompasses a large array of industries and will continue to evolve as the extent of this force is continuously explored and researched. Solar power is not perfect, but overall it provides a positive net environmental impact and financial impact. Immense amounts of energy are required to manufacture solar panels and chemicals are used during the manufacturing process. These two irrefutable facts do not equate to solar panels having a net negative impact though. The energy required to create a solar panel will be recouped in less than 2 years. Even considering the manufacturing and processing stage of solar, the emissions generated are 3 to 25 times less than generating the same amount of energy from fossil fuels. The reduced emissions from using solar energy versus any fossil fuel (especially coal) make the technology extremely beneficial.

Being at the forefront of climate change, innovation and resiliency projects can effectively strategise and minimise its adverse effects while simultaneously delivering a superior and greener product. The proposed renewable energy project is anticipated to decrease negative impacts on climate change and the environment. It is anticipated to have a positive impact on the economy and society by decreasing the reliance on the Eskom grid and coal fired electricity. The advantages to using solar energy include lower carbon footprints, improving air quality, and lowering energy and operating costs, as well as your dependence on the local grid with limited to negligible effect on climate change.

4. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

A summary of the impacts as well as the significance of the impacts before and after mitigation has been tabulated (Table 4.4). In addition, the impacts associated with the No-Go alternative have been summarised (Table 4.5).

Table 4.4: Summary of the impacts and their significance before and after mitigation.

IMPACT	SIGNIFICANCE (before mitigation)	SIGNIFICANCE (after mitigation)
CONSTRUCTION PHASE		
1. Direct loss of vegetation and faunal habitat	LOW –	LOW –
2. Invasion of alien vegetation	NEGLIGIBLE –	LOW +
3. Sedimentation and soil erosional impacts	LOW –	NEGLIGIBLE –
4. Pollution of surface water resources	LOW –	NEGLIGIBLE –
5. Solid Waste Pollution	LOW –	NEGLIGIBLE –
6. Dust Creation	LOW –	NEGLIGIBLE –
7. Noise Nuisance	LOW –	NEGLIGIBLE –
8. Impact on the Visual Aesthetics of the Area	LOW –	LOW –
9. Impacts on Health, Safety and Fire Risk	LOW –	NEGLIGIBLE –
10. Impact on Archaeological / Paleontological Resources	NEGLIGIBLE –	NEGLIGIBLE –
11. Construction Traffic and Road Impacts	LOW –	NEGLIGIBLE –
12. Employment Creation and Local Business Development	LOW +	MODERATE +
OPERATIONAL PHASE		
1. Invasive and Alien Species Management	LOW –	LOW +
2. Impact on Surface Water Runoff Patterns	LOW –	LOW –
3. Potential Pollution of Nearby Drainage Area	LOW –	NEGLIGIBLE –
4. Utilisation of Water	LOW –	NEGLIGIBLE –
5. Traffic Impact	LOW –	NEGLIGIBLE –
6. Noise Disturbance	NEGLIGIBLE –	NEGLIGIBLE –
7. Solid Waste Pollution	LOW –	NEGLIGIBLE –
8. Increase in Vermin and Pests	LOW –	LOW –
9. Visual Impact	HIGH –	LOW –
10. Health, Safety and Fire Risks	LOW +	LOW +
11. Provision of Renewable Electricity	HIGH +	HIGH +
12. Employment Creation and Local Business Development	LOW +	MODERATE +

Table 4.5: Summary of the No-Go Alternative impacts and their significance.

IMPACT	SIGNIFICANCE
1. Continued Proliferation of Alien Plant and Tree Species	MODERATE –
2. Continued Potential for Vagrants, Squatters and Ongoing Security Concerns	LOW –
3. Continued Illegal Dumping	MODERATE –
4. Continued Reliance on Fossil Fuels and Non-Renewable Energy Sources	MODERATE –

Alternative 1 (preferred alternative)

For the preferred alternative, twenty-four (24) impacts have been identified. This consists of 12 construction phase impacts and 12 operational phase impacts. Without mitigation, there will be 1 negative impact of high significance, 16 negative impacts of low significance and 3 negligible impacts. There will also be 4 positive impacts (3 low and 1 high). With the implementation of mitigation measures, there will be 5 negative impacts of low significance and 13 negligible impacts. There will also be 6 positive impacts (3 low, 2 moderate and 1 high) following implementation of mitigation. Although there are a greater number of negative impacts, the significance of the positive impacts outweighs the significance of the negative impacts, the majority of which are considered to be negligible if correct mitigation measures are implemented (Figure 4.1).

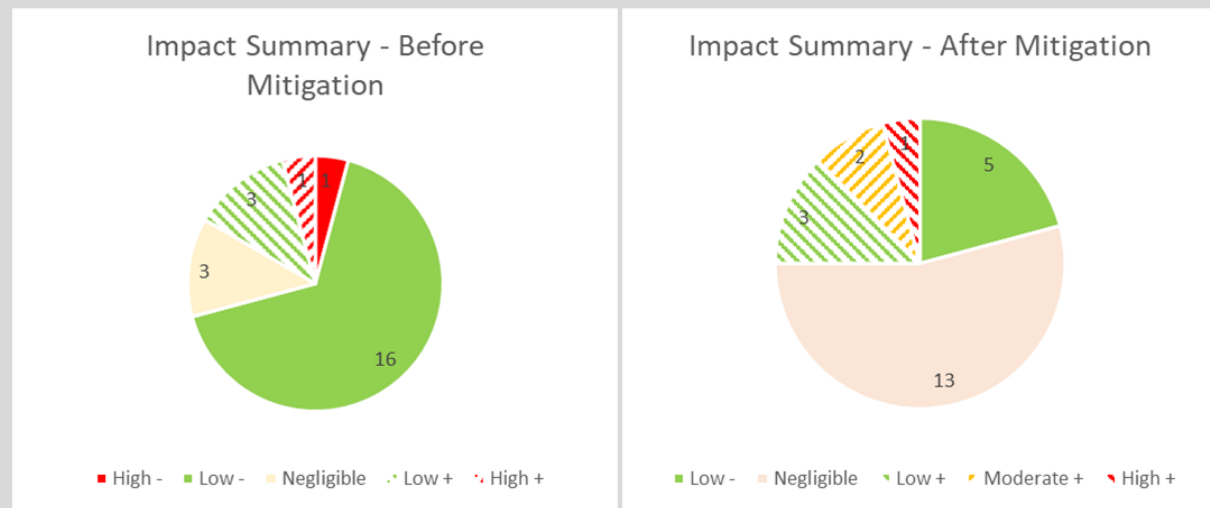


Figure 4.1: Summary of the number and significance of impacts before and after mitigation.

No-Go Alternative

For the No-Go alternative (status quo), there will be 3 negative impacts of moderate significance and 1 negative impacts of low significance. With the implementation of mitigation, the preferred alternative (above) has, overall, a significantly less negative impact in comparison with the No-Go alternative. In addition, the preferred alternative will have a number of positive impacts which would otherwise be lost if the status quo remained the same (Figure 4.2).

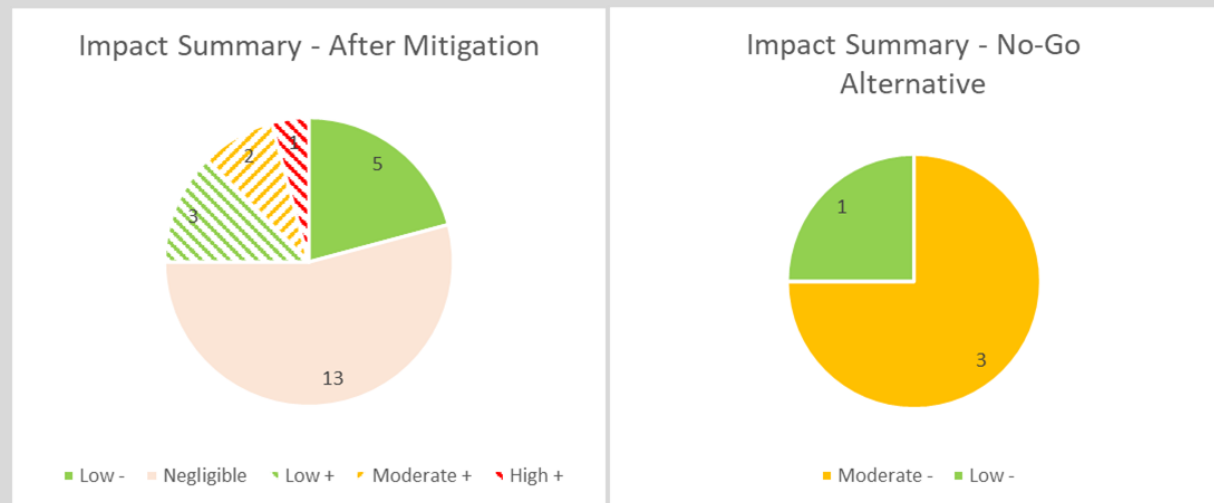


Figure 4.2: Comparison of the number of impacts associated with the preferred alternative (with mitigation) against the impacts associated with the No-Go alternative.

SECTION E: RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES X	
YES X	

Is an EMPr attached?

The EMPr must be attached as Appendix F.

Please refer to Appendix F for the Environmental Management Programme (EMPr).

If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

Not Applicable. All aspects associated with the proposed development are sufficiently assessed in this Basic Assessment Report.

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

EAP’s Recommendations

All mitigation measures, which have been outlined in this report as well as in the EMPr and specialist reports, must be fully adhered to.

In addition, the following recommendations have been made:

Pre-Construction

- The Contractor is encouraged to use an already disturbed area (or area demarcated for future structures) for construction camp and material laydown purposes and must ensure that all materials required during construction are available prior to the commencement of vegetation clearance;
- Location of proposed construction camp and laydown areas must be approved by the appointed ECO before commencement;
- Environmental sensitivities outlined in this report must be demarcated as ‘no-go’ areas and no activities to be permitted within these sensitive areas (Figure 5.1).

Construction Phase

- Ongoing rehabilitation must be implemented in the areas which will be affected during the construction phase;
- The proponent must appoint a full-time Environmental Site Officer (ESO) to oversee the construction phase, to ensure that the construction activities remain within the designated area and that no unauthorised activities occur; and
- The appointment of an external qualified Environmental Control Officer (ECO) must take place to conduct regular construction site audits of the proposed development. It is recommended that the ECO conducts one (1) monthly site visit and submits quarterly reports to the DEDEAT, as well as one (1) report to the DEDEAT at the completion of rehabilitation.

Operational Phase

- Ongoing eradication of alien invasive species within the study area must be undertaken by the project proponent; and
- A qualified contractor must be appointed to inspect the integrity of the buildings, sewage connections and stormwater retention pond on a minimum five (5) year basis. Should any damage be observed, or any maintenance determined necessary, this must be immediately undertaken; and
- An ECO should be present during any maintenance work.

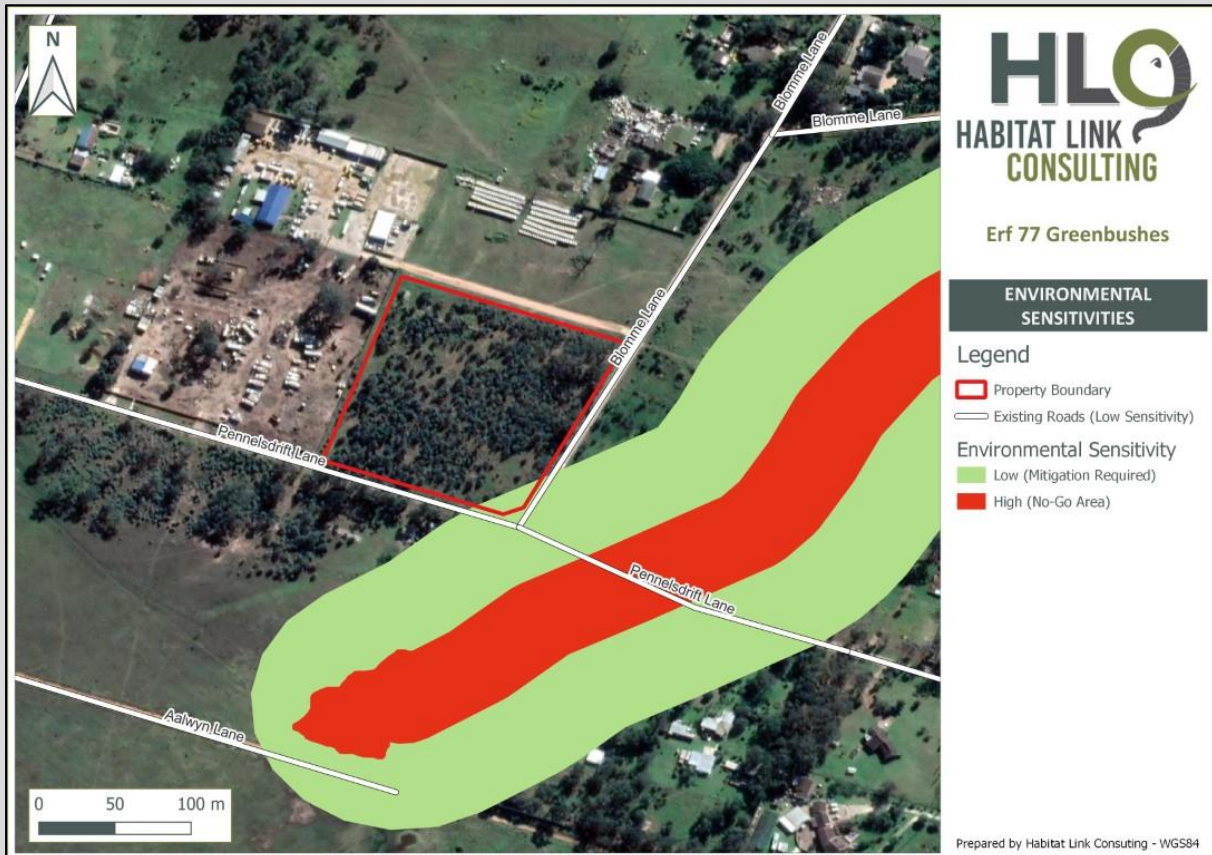


Figure 5.1: Environmental sensitivity map for the proposed development.

EAP's Opinion

It is the opinion of the EAP that no fatal flaws are associated with the proposed development and that all impacts can be adequately mitigated to reduce the risk or significance of the impacts to an acceptable level. Due to the type of project proposed, the negative aspects will be low or negligible following the correct implementation of mitigation measures and do not warrant any significant restrictions regarding the development proposal. It is the opinion of the EAP that this Basic Assessment Report contains sufficient information to allow the DEDEAT to make an informed decision. It is therefore recommended that the application for Environmental Authorisation should be approved on condition that the recommendations stated herein are effectively implemented.

Period of Environmental Authorisation:

The Environmental Authorisation (EA) for the construction of the proposed development is required for a period of five (5) years. This will allow sufficient time for the applicant to undertake the procurement process to appoint a Contractor, to furnish the appointed Contractor with the details of the EA and the conditions included in the EMPr, to complete the construction of the proposed development and to undertake the necessary rehabilitation of the site. An ECO must be appointed for the duration of the construction period and must submit quarterly reports to the DEDEAT.

The operational phase of the proposed development is expected to continue into the long-term future. The EA for the operational phase should thus be authorised without an expiry date provided the proponent adheres to the recommendations included in this report as well as the conditions of the EMPr. A separate authorisation would be required for any decommissioning that may occur in the long-term future.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site Plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

- D.1: Site Sensitivity Verification Report
- D.2: Terrestrial Biodiversity Compliance Statement
- D.3: Aquatic Biodiversity Compliance Statement
- D.4: Archaeological Heritage Letter
- D.5: Paleontological Impact Assessment
- D.6: Agricultural Compliance Statement
- D.7: Desktop Visual Study

Appendix E: Comments and Responses Report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

- G.1: CV and Undertaking under Oath by the EAP
- G.2: CVs and Declarations of the Specialists
- G.3: Impact Assessment Methodology
- G.4: Screening Tool Report
- G.5: Geotechnical Study
- G.6: Previous EA for the Property