GEORGE
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DRAFT
BASIC ASSESSMENT REPORT

FOR THE

HARTENBOS WASTEWATER TREATMENT WORKS PV SOLAR PLANT AND BATTERY STORAGE SYSTEMS ON REMAINDER OF PORTION 101 OF THE FARM NO. 217, HARTENBOS, MOSSEL BAY

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended 7 April 2017)

PREPARED FOR:	Mossel Bay Municipality Private Bag X29 Mossel Bay 6500	**DATE:**	08 January 2024
DEADP REF:	16/3/3/1/D6/18/0033/23		
SES REF NO:	02/HWWTW/PVSP/MBM/11/23		

Western Cape Government
Environmental Affairs and Development Planning

FORM NO. BAR10/2019

BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

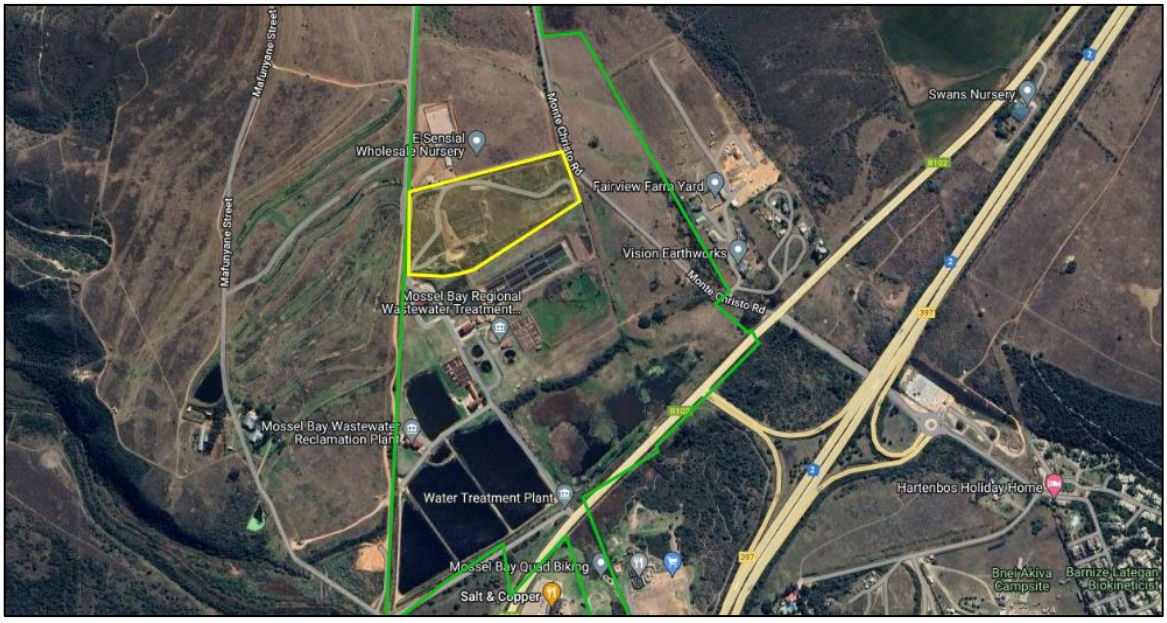
NOVEMBER 2019

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

GENERAL PROJECT DESCRIPTION

(This must Include an overview of the project including the Farm name/Portion/Erf number)

Hartenbos Wastewater Treatment Works PV Solar Plant and Battery storage Systems on Remainder of Portion 101 of the Farm no. 217, Hartenbos, Mossel Bay



IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.

2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 19998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".

3. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.

4. All applicable sections of this BAR must be completed.

5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.

6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at http://www.westerncape.gov.za/eadp to check for the latest version of this BAR.

7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.

8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.

9. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.

10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.

11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.

12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.

13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link https://screening.environment.gov.za/screeningtool to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

14. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('NEM:AQA"), the submission of the Report must also be made as follows, for-
Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office.

Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE: REGION 1 and REGION 2 **(Region 1: City of Cape Town, West Coast District)** **(Region 2: Cape Winelands District & Overberg District)**	**GEORGE OFFICE: REGION 3** **(Central Karoo District & Garden Route District)**
BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1 or 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1 and 2) at: Tel: (021) 483-5829 Fax (021) 483-4372	BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel: (044) 805-8600 Fax (044) 805 8650

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following:

	• The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as **Appendix C**. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference
WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ **(**tick) or a **x** (cross) to indicate whether the Appendix is attached to the BAR.

The following checklist of attachments must be completed.

APPENDIX			**✓ (Tick) or x (cross)**
Appendix A:	**Maps**		
	Appendix A1:	**Locality Map**	✓
	Appendix A2:	**Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning**	N/A
	Appendix A3:	**Map with the GPS co-ordinates for linear activities**	N/A
Appendix B:	**Appendix B1:**	**Site development plan(s)**	✓
	Appendix B2	**A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;**	✓
Appendix C:	**Photographs**		✓
Appendix D:	**Biodiversity overlay map**		✓
Appendix E:	**Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.**		
	Appendix E1:	**Final comment/ROD from HWC**	To be included in the Final BAR
	Appendix E2:	**Copy of comment from Cape Nature**	TBO
	Appendix E3:	**Final Comment from the DWS**	TBO
	Appendix E4:	**Comment from the DEA: Oceans and Coast**	N/A
	Appendix E5:	**Comment from the DAFF**	N/A
	Appendix E6:	**Comment from WCG: Transport and Public Works**	N/A
	Appendix E7:	**Comment from WCG: DoA**	TBO
	Appendix E8:	**Comment from WCG: DHS**	N/A
	Appendix E9:	**Comment from WCG: DoH**	N/A

	Appendix E10:	**Comment from DEA&DP: Pollution Management**	N/A
	Appendix E11:	**Comment from DEA&DP: Waste Management**	N/A
	Appendix E12:	**Comment from DEA&DP: Biodiversity**	
	Appendix E13:	**Comment from DEA&DP: Air Quality**	N/A
	Appendix E14:	**Comment from DEA&DP: Coastal Management**	N/A
	Appendix E15:	**Comment from the local authority**	TBO
	Appendix E16:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	
	Appendix E17:	**Comment from the District Municipality**	TBO
	Appendix E18:	**Copy of an exemption notice**	N/A
	Appendix E19	**Pre-approval for the reclamation of land**	
	Appendix E20:	**Proof of agreement/TOR of the specialist studies conducted.**	✓
	Appendix E21:	**Proof of land use rights**	
	Appendix E22:	**Proof of public participation agreement for linear activities**	N/A
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.**		To be included in the Final BAR
Appendix G:	**Specialist Report(s)** ✓ **G1: Botanical Compliance Report** ✓ **G2: Freshwater Compliance Statement** ✓ **G3: Terrestrial Biodiversity and Fauna Compliance Statement** ✓ **G4: Heritage Statement** ✓ **G5: Visual Impact Assessment**		✓
Appendix H:	**EMPr**		
Appendix I:	**Screening tool report**		✓
Appendix J:	**The impact and risk assessment for each alternative**		Section H
Appendix K:	**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**		Section E
Appendix L	**Preliminary Design Report**		✓

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		**GEORGE OFFICE:**
	REGION 1 (City of Cape Town, West Coast District	REGION 2 (Cape Winelands District & Overberg District)	**REGION 3 (Central Karoo District & Garden Route District)**
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent:	Mossel Bay Municipality		
Name of contact person for Applicant/Proponent (if other):	Mr. S. Naidoo		
Company/ Trading name/State Department/Organ of State:	Mossel Bay Municipality		
Company Registration Number:			
Postal address:	Private Bag X29		
	Mossel Bay		Postal code: 6500
Telephone:	044 606-5082		Cell:
E-mail:	dnaidoo@mosselbay.gov.za		Fax: ( )
Company of EAP:	Sharples Environmental Services cc		
EAP name:	Michael Jon Bennett Carla Swanepoel (Candidate EAP)		
Postal address:	PO Box 9087		
	George		Postal code: 6530
Telephone:	044 873 4923		Cell:
E-mail:	michael@sescc.net carla@sescc.net		Fax: ( )
Qualifications:	Michael:	BSc: Environmental and Geographic Science & Ocean and Atmospheric Science	
	Carla:	BSc Hons: Environmental Sciences	
EAPASA registration no:	Michael: 2021/3163		
Duplicate this section where there is more than one landowner Name of landowner:	Mossel Bay Municipality		
Name of contact person for landowner (if other):	Mr. S Naidoo		
Postal address:	Private Bag X29		
	Mossel Bay		Postal code: 6500
Telephone:	044 606-5082		Cell:
E-mail:	dnaidoo@mosselbay.gov.za		Fax: ( )
Name of Person in control of the land:	Mr. S. Naidoo		
Name of contact person for person in control of the land: Postal address:	Private Bag X 29		
	Mossel Bay		Postal code: 6500
Telephone:	044 606-5082		Cell:
E-mail:	dnaidoo@mosselbay.gov.za		Fax: ( )
Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall:	Garden Route District Municipality		
Contact person:	Lusanda Meze (Manager: Planning and Economic Development)		
Postal address:	PO Box 12		
	George		Postal code: 6530
Telephone	044 803 1300		Cell:
E-mail:	Lusanda@gardenroute.gov.za		Fax: ( )

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INLCUDED IN THE APPLICATION FORM

1.	Is the proposed development (please tick):	**New**	**X**	Expansion	
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
The site conforms more to that of a brownfield site, the site has not developed but is however not in its natural state as it has been severely modified and reshaped.					
~~3.~~	~~**For Linear activities or developments**~~				
~~3.1.~~	~~Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:~~				
~~3.2.~~	~~Development footprint of the proposed development for all alternatives.~~	~~m²~~			
~~3.3.~~	~~Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.~~				
~~3.4.~~	~~Indicate how access to the proposed routes will be obtained for all alternatives.~~				
~~3.5.~~	~~SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives~~				
~~3.6.~~	~~**Starting point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~º~~	~~'~~	~~"~~	
	~~**Middle-point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~º~~	~~'~~	~~"~~	
	~~**End point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~º~~	~~'~~	~~"~~	
Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3.					
4.	**Other developments**				
4.1.	Property size(s) of all proposed site(s):			74.85 ha	
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):			24.3 ha	
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:			**Alternative A** 58 200 m² 5.82 ha ~6 ha **Alternative B** 32 590.86 m² 3.259 ha	
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).				

(Source: Preliminary Design Report – PV Solar Plant & Battery Energy Storage Systems for Hartenbos Wastewater Treatment Works, September 2023, prepared by Element Consulting Engineers, Appendix L).

The Mossel Bay Municipality aims to improve quality of life within its supply area by improving energy efficiency, availability, and reliability. The Mossel Bay Municipality is therefore embarking on a journey of implementing embedded generation (own generation) and energy storage alternatives and thereby contributing to sustainable growth and development in the area through reliable and

cost-effective energy provision within its area of jurisdiction.

Considering the current problems experienced within Eskom in terms of availability and reliability of electrical energy supply, Mossel Bay Municipality recognises the need for planning more sustainable approaches to their energy production and distribution, to promote economic development and meet social needs while at the same time reducing local and global environmental impacts. The main aim, however, is to provide energy to the Wastewater Treatment Works.

The aim of the proposed solution was to design a hybrid system that will be grid-tied under normal operating conditions, providing battery backup as first line of support when the grid supply is interrupted. Furthermore, standby diesel generators (please refer to sections 4.9 and 4.10 of the Preliminary Design Report: Hartenbos WWTW – PV Solar & BESS, attached as Appendix L) will also be incorporated into the system design to serve as a final level of support to the load when the batteries are depleted, and the grid supply (or PV solar generation) remains unavailable.

SITE LAYOUT

The site layout of the Hartenbos WWTW, as well as a proposed area for the installation of PV Solar Array is indicated in Figure 1 below.

The image also indicates the following:

1. Main Incoming 11kV Overhead Line from Main Intake Substation
2. Position of Main Incoming Ring Main Unit
3. Position of MS A (Aerator supply)
4. Position of MS B (New Plant MCC)
5. Position of MS C (Old Plant MCC)
6. Position of MS RO Plant
7. Position of Control Room
8. Position of New Plant MCC Room
9. Position of Old Plant MCC Room

Figure 1: Site Layout: Hartenbos WWTW (Existing)

Please find the Electrical Network Assessment, Section 3, in the Preliminary Design Report: Hartenbos WWTW – PV Solar & BESS, attached as Appendix L. This section includes the Existing Network Configuration and the Load Profile Data.

PRELIMINARY DESIGN: ELECTRICAL

Specific Design Considerations

Specific design factors that were considered in the development of this solution included:

- Applicable tariff structures
- Scheduled network interruptions (load shedding)
- Seasonal consumption (load profile data)
- Project location
- Energy profiles (load profile data)
- Efficiency changes
- Array & mounting options
- Specific storage requirements

Proposed System Layout

The aim of the proposed solution was to design a hybrid system that will be grid-tied under normal operating conditions to supply the WWTW, providing battery backup as first line of support when the grid supply is interrupted. Furthermore, standby diesel generators will also be incorporated into the system design to serve as a final level of support to the load when the batteries are depleted, and

the grid supply (or PV solar generation) remains unavailable.

The proposed system configuration and how the various sub-systems are integrated is presented in Figure 2 below. It should be noted that each sub-system is described in more detail in sections of the Preliminary Design Report: Hartenbos WWTW – PV Solar & BESS, attached as Appendix L.

In summary, it can be concluded that the proposed hybrid system will consist of the following:

a) 1760 kVA grid-tied, free-field solar PV installation (requiring ± 20 000m^2 installation area).

b) Installation of 3692 x 550Wp Mono-crystalline Solar Panels, which convert the solar radiation into direct current.

c) Fixed tilt ground mounting structures, which supports the PV modules.

d) 5x String inverters, which convert the DC from the solar field to AC.

e) 1x MV Inverter Station (3.2MVA), which collects the AC output from each of the inverters and incorporates a step-up power transformer, which steps the inverter output voltage up to the 11kV network voltage. The inverter station also has integrated 11kV switchgear to connect to the MV network.

f) 4512 kWh Battery Energy Storage System (consisting of 2x 2256kWh batteries in containers).

g) 1x 1.757 MVA Power Conversion System (PCS), which converts the DC battery output to AC power.

h) 1x 1.6 MVA Isolation transformer, which steps the PCS output up to 11kV.

i) 2x 800 kVA Backup Diesel Generators (containerised).

j) 1x 1.6 MVA Step-up transformer, which steps the generator output up to 11kV.

k) 6x 11kV (25kA) AIS switchgear panels, complete with associated protection, metering and control elements, to be housed in a new substation building.

l) 1x 11kV Neutral Earthing Resistor (NER), to be installed on the star-point of the generator step-up transformer's MV winding.

m) DC cables (LV).

n) AC cables (LV & MV).

o) Energy Management System.

p) Communication Network.

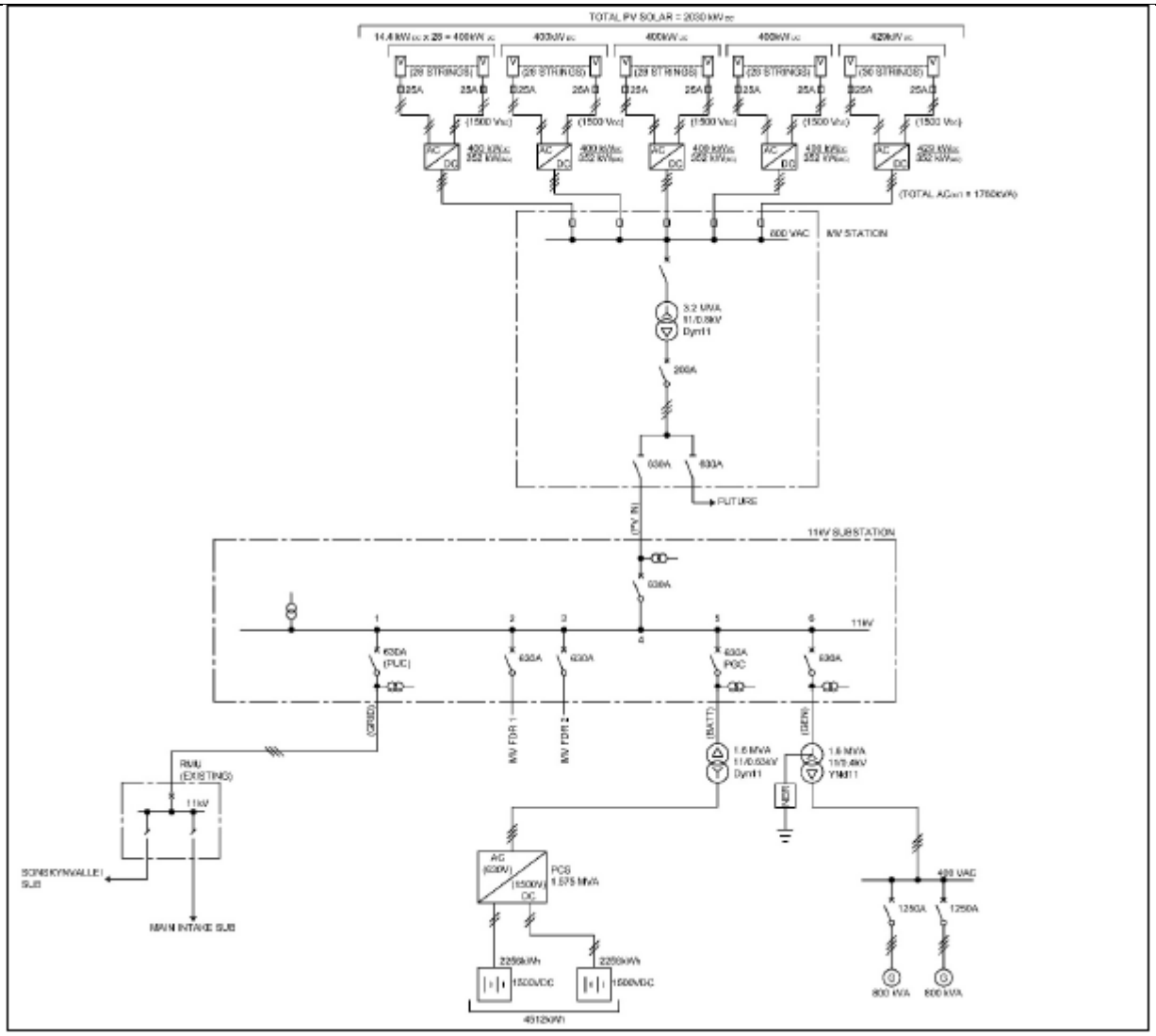


Figure 2: Proposed Hybrid System Layout.

Proposed Network Re-configuration

The proposed re-configuration of the Hartenbos WWTW network, and the way in which the hybrid solution is integrated, is presented the figure below.

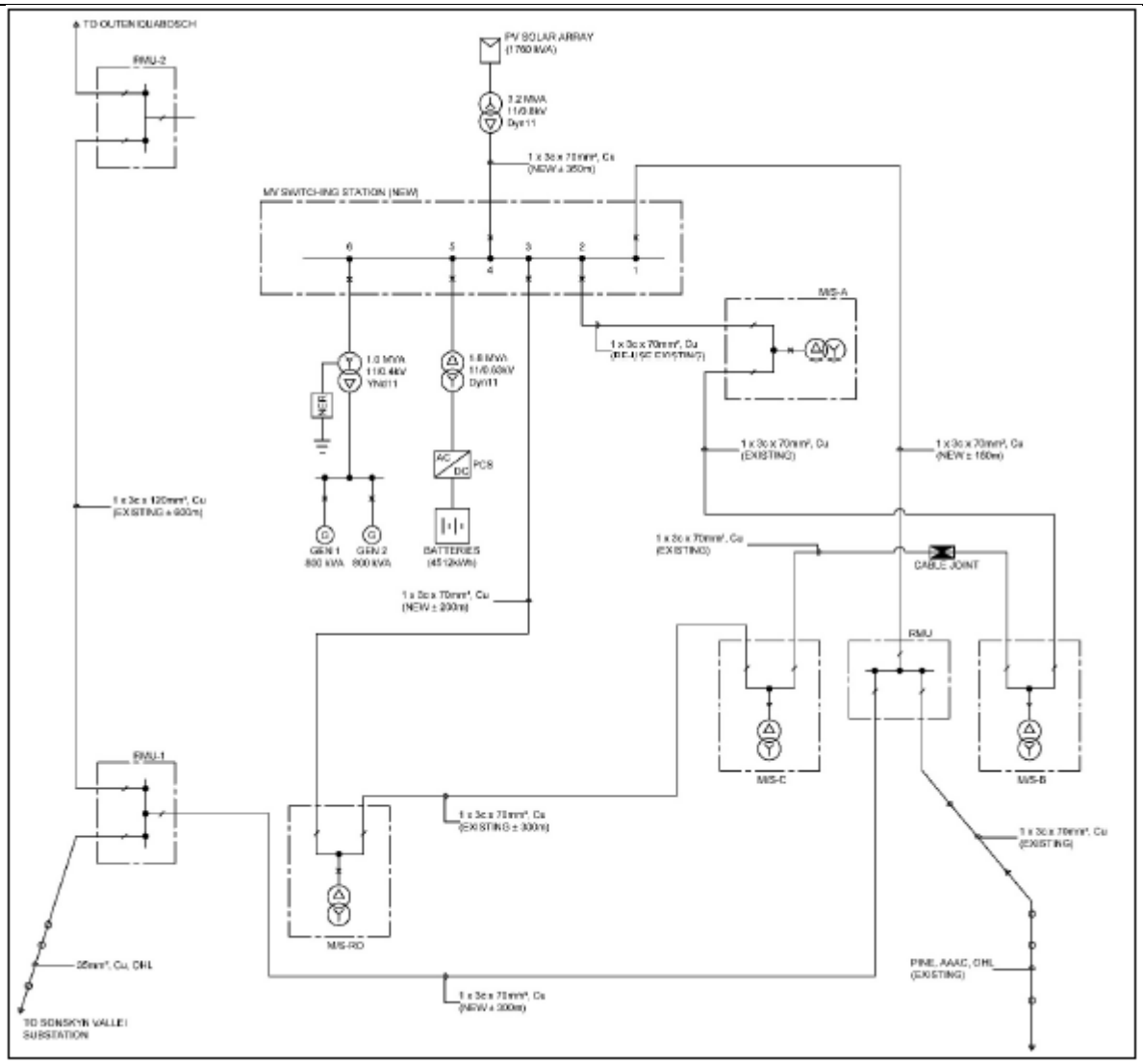


Figure 3: Proposed Network Configuration

In summary, it can be concluded that the proposed re-configuration of the 11kV network at the Hartenbos WWTW will consist of the following:

1. The existing 11kV (1x 3c x 70mm^2 Cu) cable from RMU-2 to M/S-A (approximately 120 m in length) will be disconnected from RMU-2 and connected to the new 11kV Circuit Breaker 2 (MV Feeder 1) in the new MV Switching Station. This means that the alternative supply to the WWTW from RMU-2 will no longer be available as multiple utility connection points will not be permitted.
2. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from RMU-2 to RMU-1 (approximately 600 m in length) will be left as is.
3. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from RMU-1 to M/S-RO (approximately 10 m in length) will be disconnected from M/S-RO and extended with a new section of cable (approximately 300 m in length) all the way to the Main Incoming RMU.
4. The Main Incoming RMU will be re-configured such that the Incoming Supply line from Main Intake Substation (via the AAAC, Pine OHL) will be connected to one of the network isolator switches, whilst the other Incoming Supply line from Sonskynvalley Substation (via the 35mm2, Cu OHL connected to RMU-1) will be connected to the other network isolator switch. The circuit breaker of the Main Incoming RMU will be connected to the new 11kV Circuit Breaker 1 (PUC) in the new MV Switching Station via a new 11kV (1x 3c x 70 mm^2 Cu) cable, approximately 150m in length. This re-configuration will result in the two alternative grid sources being available as a single utility source connection, depending on the supply selected.
5. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from M/S-C to M/S-RO (approximately 300 m in

length) will be left as is.

6. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from M/S-A to M/S-B (approximately 70 m in length) will be left as is.
7. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from the Main Incoming RMU to M/S-B (approximately 10m in length) will be disconnected from the RMU and extended with a new section of cable (approximately 20 m in length) to connect to M/S-C.
8. The existing 11kV (1x 3c x 70 mm^2 Cu) cable from RMU-1 to M/S-RO (approximately 10 m in length) will be disconnected from RMU-1. A new section of cable (approximately 200 m in length) will be installed from M/S-RO to the new 11kV Circuit Breaker 3 (MV Feeder 2) in the new MV Switching Station to complete the 11kV ring network.

Proposed Site Development Plan

The proposed site development plan, indicating the positions for the new equipment associated with the hybrid energy solution, is indicated in Figure 4 below. These positions are purely indicative for preliminary design purposes and will need to be further investigated as part of the detail design development. (A full-scale drawing of the proposed SDP has been included as an annexure to the prelim design report, Appendix L).

The main reason for the chosen positions is its central location between all of the different network components that need to be integrated. This ensures optimal cable lengths as well as easy access to all equipment for operation and maintenance purposes.

Figure 4: Proposed Layout – Alternative A – Original Preferred Alternative (please also refer to Figure 32, the revised layout which includes the No-Go areas recommended by the botanical Specialist)

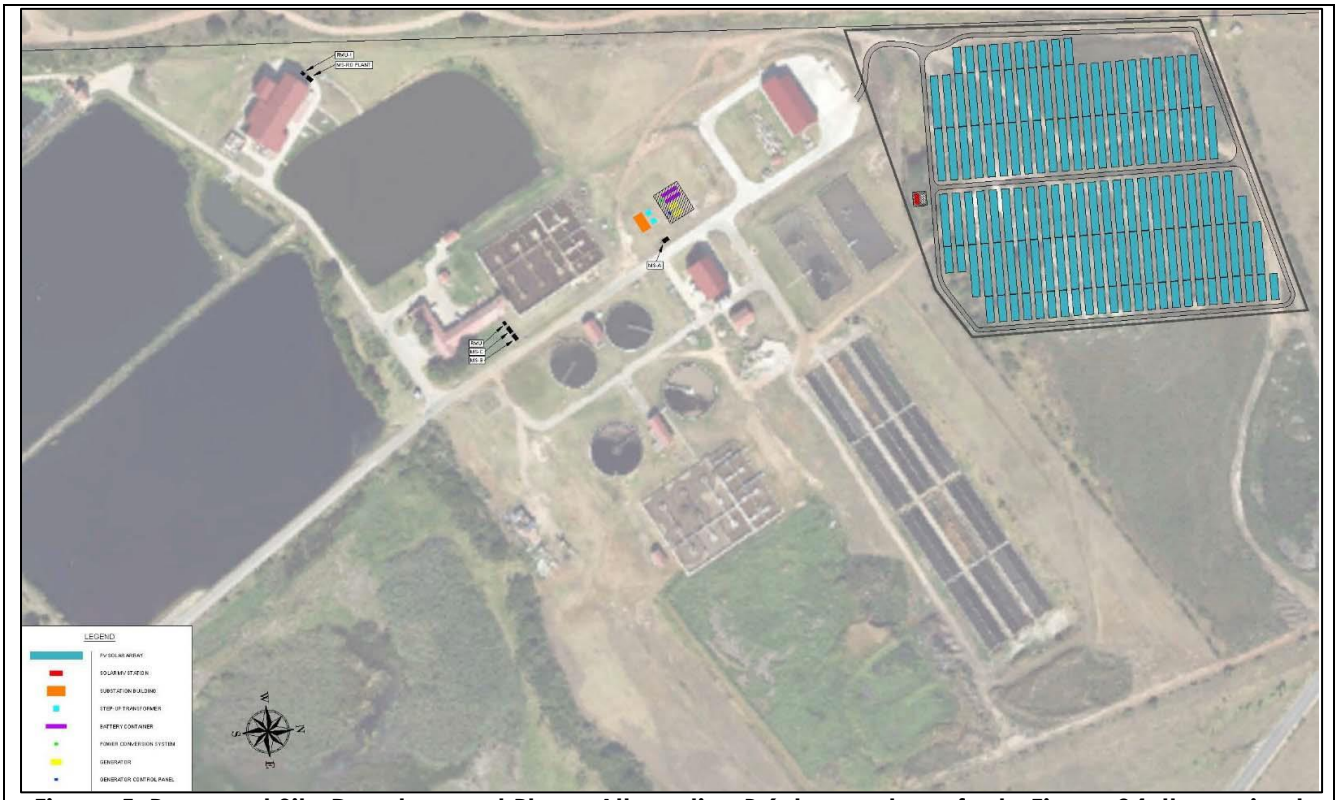


Figure 5: Proposed Site Development Plan – Alternative B (please also refer to Figure 34, the revised layout which includes the No-Go areas recommended by the botanical Specialist)

Please note that Alternative A (utilisation of the whole proposed site) is the preferred footprint being applied for. The technical specifications of Alternative B were calculated for the requirements of the WWTW facility. The need for Alternative A's footprint is due to the potential variation in materials and PV panels to construct the facility in order to achieve the calculated requirements of the facility. The contractor which is appointed will need to provide a proposal which means the efficiency of the PV panels may vary. Therefore, it may be that the cheapest quoting contractor calculates that more PV panels, with a lower output, is the best route to go with the proposal. This will however result in a larger footprint than if higher efficiency panels are utilised, requiring a smaller footprint.

This potential variation in PV panel efficiency (and corresponding footprint) arises from the cost and availability of the panels, as more efficient panels may not be economically viable, or availability (stock) may be low or vice versa. Therefore, if the small footprint (Alternative B) is authorised and there aren't enough high efficiency panels available, the development of the facility could be delayed and run much higher costs than expected. Additionally, as the WWTW expands the rest of the area will be used for panels. If the budget allows the entire area of Alternative A will be covered in panels which will feed electricity back into the grid for Mossel Bay.

Please find the Electrical Network Assessment, Sections 4.5 and 4.6, in the Preliminary Design Report: Hartenbos WWTW – PV Solar & BESS, attached as Appendix L, for the Proposed System Operation and Software Simulations.

Proposed PV Solar Plant

The simulation software calculated that the rated power of the PV Plant required to supply the load requirements, will be 1760.0 kWac and the peak power is 2030.6 kWdc resulting in a DC/AC ratio of 1.15.

Table 1: PV Solar Plant Sizing

MOSSEL BAY IPP TENDER Project	
Main characteristics	
Location	South Africa, Western Cape
Rated power (AC)	1760.0 kWac
Peak power (DC)	2030.6 kWdc
Ratio DC/AC	1.15
General Equipment	
Fixed structure	80
PV Modules (550.0 Wp)	3692
Power station (up to 1760.0 kW)	1
Number of inverters (up to 352.0 kVA)	5

Proposed PV Array Layout

The figure below provides a typical arrangement of the PV Solar panels and associated mounting frames, considering the slope and orientation of the land available.

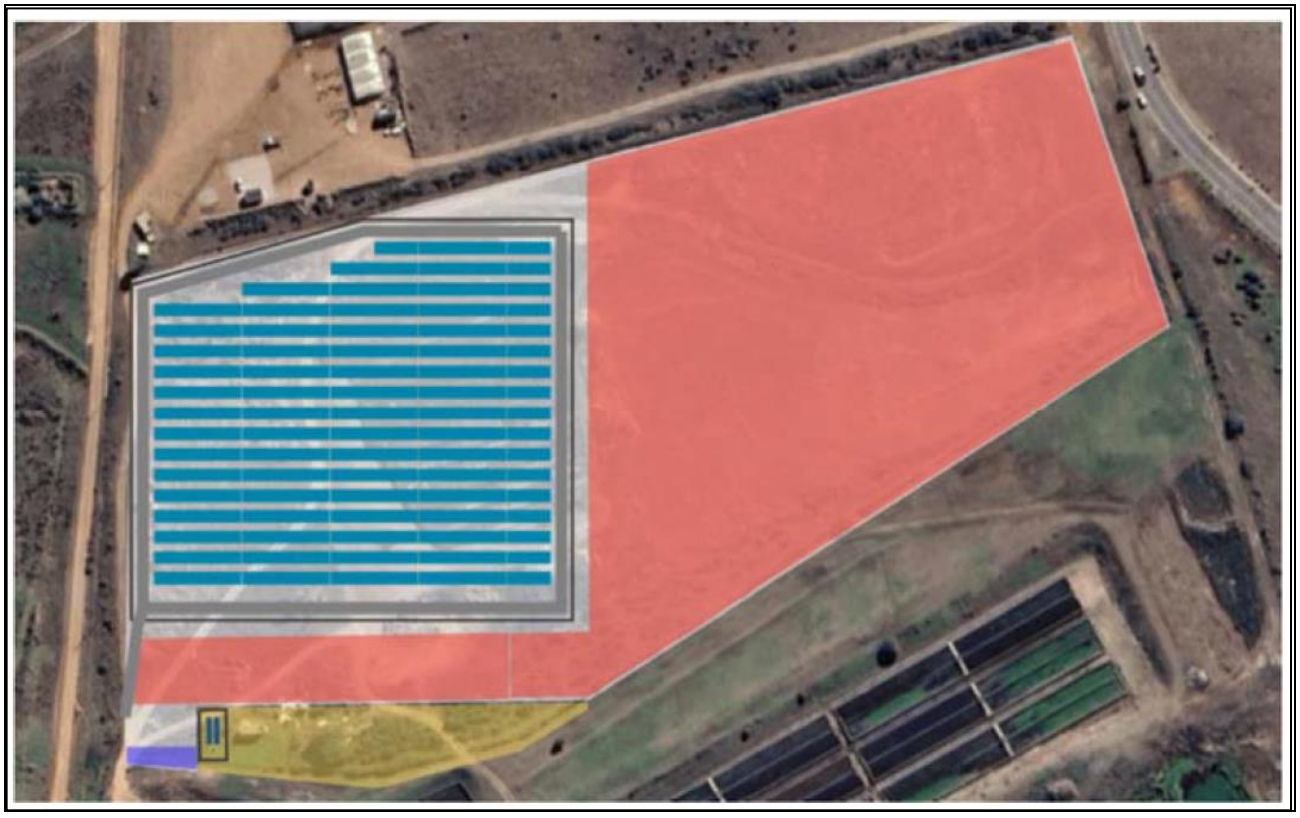


Figure 6: Proposed PV array Arrangement

Proposed Battery Energy Storage System

Based on the load profile data and solar yield calculations for this specific system (Appendix L), it

was calculated that a 4512 kWh Battery Storage System (2x 2256kWh units) will be the optimal size for this application.

The results from the HOMER software simulations, used to model a Stage 6 load shedding schedule (4 hour + 2 hour outage per day), indicated that this battery will support this specific plant load all year round, which should be sufficient to ensure an almost off-grid operation of the entire plant.

Should a number of consecutive overcast/rainy days be experienced that would result in the batteries not being sufficiently charged, a standby generator will be incorporated to support the load until the grid supply is restored.

Proposed Standby Generators

It is recommended that the backup generators required for this hybrid solution needs to consist of 2x 800 kVA (637kWe prime power) units, which will be used for directly supporting the full load of the plant.

The generator/s starting will be controlled (intelligently) by the Energy Management System and will only be started when the battery capacity reaches a pre-determined value such as 20% state-of-charge (SOC). The generators will then be started and synchronised to the system to support the full load capacity of the plant, whilst waiting for the grid supply to return or the PV solar system to re-charge the batteries back to a certain value. This philosophy will result in a huge cost saving on diesel, as the generators will no longer be the primary source of backup supply and will only be used to support the load when the battery storage capacity is depleted. According to the Homer software simulations, it is estimated that for a typical stage 6 load shedding schedule (with 4-hours and 2-hours interruptions of grid supply), this should only occur approximately 3-4 times per annum with the proposed hybrid system configuration.

When required, both generators will be started simultaneously by the Energy Management System, and one will be switched off (depending on the load requirements) to operate in "fuel save mode" and avoiding a situation where both generators are running at less than 50% of capacity.

SPECIFIC EQUIPMENT REQUIREMENTS

Mounting Structures

The PV solar modules will be mounted on a fixed structure. The structure will establish the orientation and inclination of the modules, as well as the separation between the rows. The structure/s will be composed of at least the following elements:

- A mounting structure formed by different types of metallic profiles.
- Foundation elements for anchoring the structure to the ground.
- Clamping elements and screws to assemble the structure and for mounting the modules on the structure.
- Structural reinforcement elements.

The preferred mounting structure will be of a landscape orientation with a fixed tilted angle of 29° (or calculated as per exact location). The structure should be capable of supporting the solar modules securely for the intended generation life of the installation. The mounting structure shall be installed to follow the contours of the site and shall be assembled with standard tools.

All structures shall have a minimum ground clearance of 600 mm ± 25 mm at the lowest point. A typical arrangement is shown in Figure 7 below. It should, however, be noted that the final tilt angles and distances between arrays will be determined from the detail designs for each specific site, based on the slope and orientation.

Foundations (if applicable) shall not impact the environment of the Site and must be dismountable

at the end of the solar plant operation life.

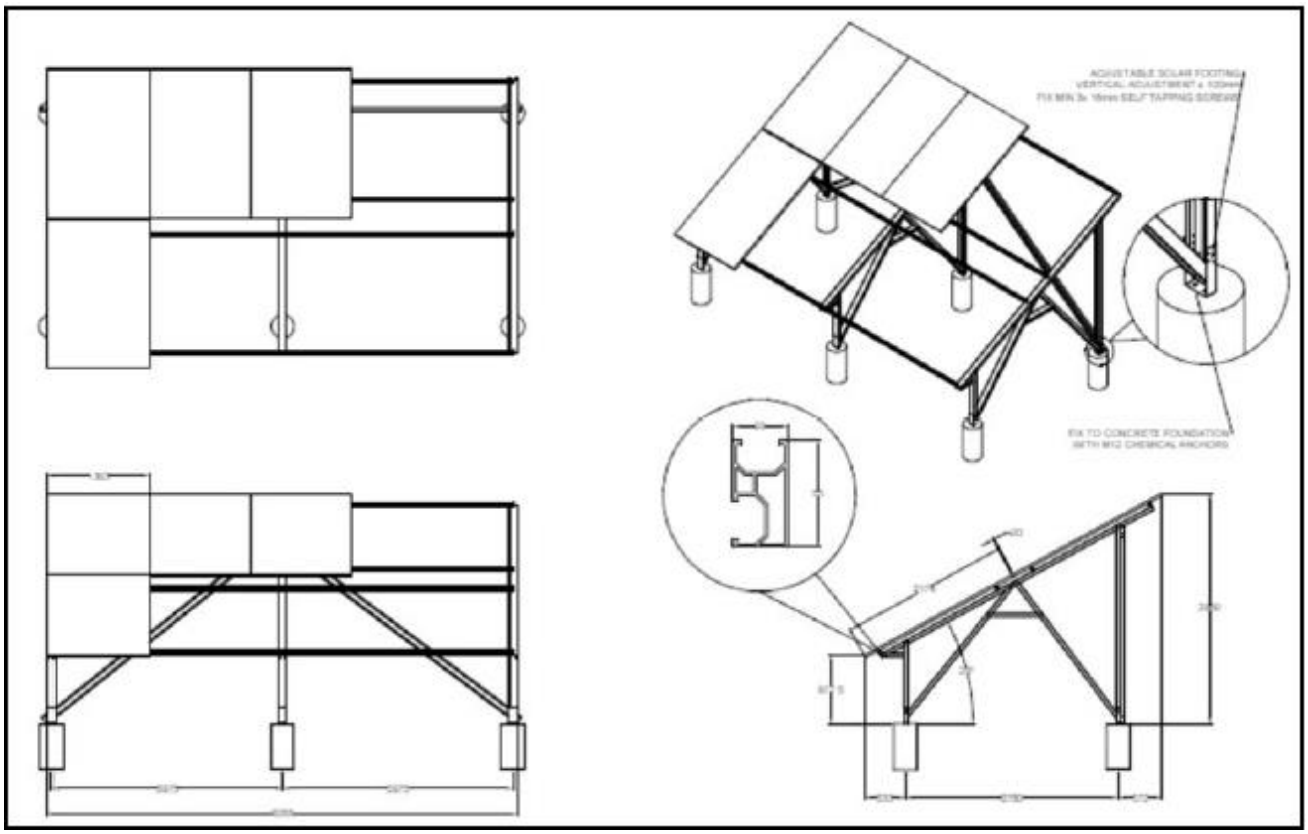


Figure 7: Typical PV Mounting Structure Configuration

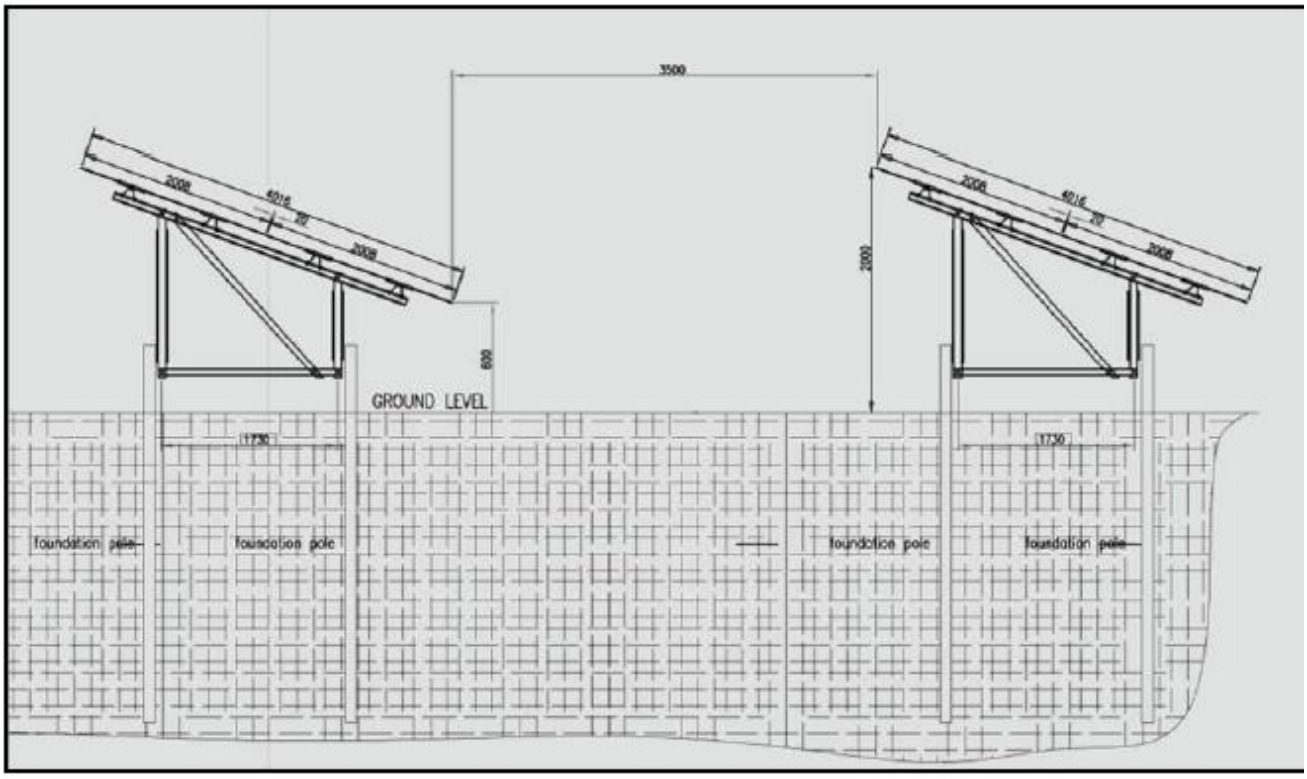


Figure 8: Typical PV Array Spacing

Photovoltaic (PV) Modules

The Contractor shall supply and install the PV Modules to achieve the specified levels of performance for the required design life of 25 years under the prevailing site environmental

conditions. PV Modules will have minimum product warranties of 12 years and minimum linear power output warranties of 90% of the nameplate power after 10 years and -0.4% per year thereafter up to 25 years.

The PV Modules offered shall:

- Be of the Mono-crystalline solar cell type only as per the latest edition of IEC 61215 Ed.2.
- Be of the same type, model and from a single manufacturer.
- Be chosen with the intention of maximizing the energy output per kW at low irradiation levels.

Temperature performance will be considered in the selection.

- Be able to withstand hail (maximum diameter of 25 mm with impact speed of 23 m/s) according to regulations for PV panels set out in IEC 61215.

Figure 9: Typical Fixed-tilt Ground-mount System (2V Arrangement)

PRELIMINARY DESIGN: CIVIL

1. Earthworks

Earthworks will form a major part of this development and it is crucial that all aspects surrounding earthworks are thoroughly addressed during the detail design stage. The following aspects will be considered:

1.1 Clearing and Excavation

Clear the site of vegetation, debris, and obstacles that could interfere with the grading process. Perform necessary excavation to remove unwanted material or achieve the desired grading level.

1.1.1 Vegetation Removal

- Clear the site of trees, shrubs, grass, and any other vegetation that may interfere with the solar PV system installation or cast shadows on the panels.
- Remove the root systems or treat the area to prevent regrowth. Where the roots of trees, have

been removed it is critical to follow the compaction requirements mentioned later in the document.

1.1.2 Debris and Obstacle Removal

- Clear the site of any debris, rocks, construction materials, or other obstacles that could hinder the installation process or pose a safety risk.
- Properly dispose of the cleared materials following local regulations and project requirements.
- Excavate the area using machinery such as excavators or bulldozers to remove unwanted material or create a suitable foundation for the solar PV system.

1.1.3 Soil Preparation

- Evaluate the soil conditions and make necessary adjustments during the excavation process to ensure a stable foundation.

1.1.4 Erosion Control

- Implement erosion control measures during the clearing and excavation process to prevent soil erosion and sedimentation.
- Use erosion control blankets, sediment barriers, or other erosion control techniques to minimize environmental impact if necessary.

1.1.5 Storm Water Management

- During the excavation and clearing, a storm water management plan must be implemented. Water must be moved off the solar PV site in a manged way to facilitate easier construction as well as ensure foundation are not compromised over time.
- Implement appropriate drainage features including but not limited to, French drains, cut away drains, gentle slopes, or swales in order to facilitate water movement away from the PV system, preventing pooling or erosion.
- Building roads, fences, or any other services on the site should be mindful of the impact on the drainage of the site.

1.2 Mass earthworks

Mass earthworks (cut and fill) will be required on this site to obtain a uniform and workable platform for the installation.

Compaction will be in 150 mm layers to ensure compliance to the compaction density. The compaction process ensures soil stability, load-bearing capacity, and reduces the potential for settlement or unevenness over time.

1.2.1 Compaction Equipment

- Utilize compaction equipment such as vibratory rollers or plate compactors suitable for the soil type and project scale. Select equipment with appropriate compaction force and compaction plate size to achieve desired compaction results.

1.2.2 Layer Material

- A G5 fill material is recommended.

1.2.3 Layer Thickness

- Compact the base where the impediment has been removed.

- Then compact the soil in layers with a maximum gauge of 150mm.
- Each layer should be uniformly compacted before proceeding to the next layer.
- The process must be repeated until natural ground level (NGL) has been met.
- Failure to adhere to the process may result in the compromising of the pile foundations over time.

1.2.4 Moisture Content

- Ensure the soil moisture content is within the specified range for optimum compaction.
- If the soil is too dry, moisten it using water to achieve the desired moisture content.
- If it is too wet, allow it to dry or add dry soil to adjust the moisture level.

1.2.5 Compaction Method

- Apply compaction equipment evenly across the surface of each layer.
- Use a combination of overlapping passes to achieve uniform compaction throughout the layer.

1.2.6 Compaction Density

- 95% Mod AASHTO.
- The specific compaction density requirements may vary depending on project specifications and soil characteristics.

1.2.7 Quality Control

- Regularly monitor and test the soil compaction during the process to ensure compliance with the specified compaction requirements.

1.2.8 Documentation

- Maintain records of compaction tests, including test results, equipment used, and the depth or thickness of each compacted layer and GPS location of the areas of compaction when localised.

1.3 Grading Plan

Solar PV sites, aside from clearing and excavation, will also require grading to ensure consistency across the site. Grading tolerances for fixed tilt solar PV mounting structures can vary based on project-specific requirements and industry standards. However, for the specific requirements outlined below, the following tolerances are recommended:

1.3.1 Elevation Variation

- Ensure a maximum tolerance of around -100mm- +100mm for elevation variation across a single table. This tolerance accounts for variations in the ground elevation from the specified target elevation.

1.3.2 Grading Uniformity

- Aim for a consistent slope within the project specifications considering the specified 0-3 degrees tolerance in the east-west direction and 0-5 degrees tolerance in the north-south direction, the maximum allowable deviation from the desired slope should not exceed these angular tolerances.

1.3.3 Quality Control

- Regularly inspect the grading work to verify adherence to the grading plan and required specifications.

- Employ surveying tools and techniques to ensure accuracy of grading levels and slopes.

2. Water

A brief discussion on bulk and internal water will be presented in this chapter and will be expanded upon during the detail design stage.

2.1 Water Demand and Availability

The Average Annual Daily Demand (AADD) for this proposed development will be less than 1kl/day and is deemed negligible from a design- and decision making perspective. Bulk water is available for this development.

Washing of the PV Solar panels will be performed by tanker with treated effluent from the WWTW, hence no potable water will be utilized for this maintenance item.

2.2 Connection Point

The site will be serviced via the existing water infrastructure from the Hartenbos Regional WWTW.

2.3 Design Criteria and Standard of Engineering Services

The design criteria and standard of engineering services for the project will be as follows:

- Design consumption
  - Industrial buildings – 100l/100m2GLA/day
- Peak factors as prescribed
- Minimum pressures for the network are calculated for a fire flow 30l/sec and peak demand at the
- point of lowest pressure under peak conditions.
- Maximum of 4 valves to isolate a pipe section.
- Maximum length of 600m of main pipe per isolated section.
- Air valves to be provided where applicable.
- Minimum cover to pipes to be 900mm.
- Pipe type and class to be uPVC class 6 to 12, depending on existing network pressure.
- Pipe diameters as required depending on pressure available and flow required.
- Fire hydrants to be provided in accordance with relevant guidelines and legislation.

2.4 Design

The design drawing will be finalised during the detail design stage but the current layout is adequate to assess the impacts.

3. Sewer

A brief discussion on bulk and internal sewer will be presented in this chapter and will be expanded upon during the detail design stage.

3.1 Design flow

The Average Dry Weather Flow (ADWF) of the development will be less than 1kl/day and is deemed negligible from a design- and decision making perspective.

3.2 Connection Point

No new sewer infrastructure will be constructed for this development. All sewer generated will be through the existing infrastructure at the Hartenbos Regional WWTW, i.e., existing offices and ablutions.

3.3 Capacity at Hartenbos Regional WWTW

The existing Hartenbos Regional WWTW has sufficient capacity to accommodate the additional demand generated by this development.

3.4 Site Layout Considerations

As no new sewer infrastructure will be developed for this proposed development, the site layout is not a consideration.

3.5 Design Criteria and Standards of Engineering Services

As no new sewer infrastructure will be developed for this proposed development, design criteria and standard of engineering design are not considerations.

4. Roads and access

4.1 Access

Access to the site will be via the Hartenbos Regional wastewater treatment works (WWTW), which in turn obtains access from the R102 (MR344) via a security controlled access gate. Access to the PV Solar site will be on the north-western corner of the Hartenbos WWTW. Access is depicted on the following diagram.

Figure 10: Access to the proposed development from the Hartenbos Regional WWTW indicated in red as well as internal perimeter roads.

4.2 Internal roads

An internal access and perimeter road network will be provided. The access road will be provided from the north-western corner of the existing WWTW and will be paved up the solar MV station. The remainder of the perimeter and internal roads will be gravel. The preliminary design is presented in the figure 10.

4.3 Internal Standards and Design Criteria

Internal standards and design criteria are specified as follows:

- Internal road widths of access road – 4 m; perimeter and other roads – 3 m
- Access road surfaced with interlocking paving; all other roads gravel wearing course.
- Pavement structural materials to be imported from commercial sources.
- All minimum radii at bell mouths to be 8 m.
- Minimum road grade of 0.4% and camber of 2%.
- Road design life of 20 years.

5. Traffic Impact Statement

Peak hour (morning and afternoon) trip generation from operation and maintenance personnel is estimated at less than 5 trips. The traffic impact of the proposed development will be negligible from a traffic engineering perspective.

6. Stormwater management plan

A stormwater management plan is presented in this chapter.

6.1 Design background

Stormwater technical design on this development is relatively uncomplicated due to the development being situated on a single gentle side slope of approximately 7 - 9% and hence only a single and simply defined drainage zone. Stormwater from the single drainage zone will drain into the existing stormwater channel on the western boundary of the existing WWTW site, which again drains into the Hartenbos lagoon on the south-western boundary of the site.

6.2 Design considerations

Stormwater design on this proposed development is notable not only from an engineering perspective but also from an environmental perspective due to the close vicinity to the Hartenbos lagoon.

Environmental design will make use of Sustainable Drainage Systems (SuDs) to manage stormwater within close proximity to the lagoon. SuDs will assist in preventing significant impact on the hydrological functioning of the lagoon and reduce the risk of erosion. SuDs vegetated with indigenous species can assist with water polishing, trapping hydrocarbons from stormwater runoff from the development area before this is released into the lagoon.

Although the proposed development does not propose to concentrate stormwater in any manner, notwithstanding, wherever stormwater is concentrated during the implementation phase, energy dissipation shall be performed as standard practice with gabion mattresses where required. Consideration shall be given during the detail design stage to using materials with high roughness in order to further assist with energy dissipation. This will further prevent erosion and improve habitat provision.

6.3 Stormwater design considerations

Designs must provide due consideration to the appropriate ecological input and be based on Sustainable Drainage Systems (SuDs). Permeable infrastructure must be considered where practical. This may include items such as permeable concrete block pavers, stone, gravel and grass cover. Soft and porous infiltration layers must be provided and will contribute to slowing surface flows. This may include a.o. gabion matrasses where required. Gradients of such infrastructure, e.g., gabion mattresses to be designed as flat as possible. This will provide filtration, removal of urban pollutants (e.g., hydrocarbons), provide attenuation, and dissipate energy of storm water flows through increased roughness.

Stormwater accumulation shall be prevented as far as possible. Stormwater infrastructure, such as gabion mattresses, must be located within the development footprint and not encroach into the buffer area.

Stormwater systems must trap any additional suspended solids and pollutants originating from the development.

6.4 Post-construction rehabilitation phase (as indicated in the prelim design report)

Post construction rehabilitation activities to all disturbed areas shall include the following:

- The area must be maintained through alien invasive plant species removal and the establishment of indigenous vegetation cover to filter run-off before it exists the site.
- All post-construction building material and waste must be cleared and disposed of in a suitable manner and areas rehabilitated.
- Removal of vegetation must only occur where required for the project and disturbance to the adjoining natural vegetation cover or soils is not allowed.
- Erosion features that have developed are to be stabilized and rehabilitated.
- A monitoring programme shall be in place to monitor any post-construction environmental issues and impacts such as increased surface runoff.
- All disturbed areas shall be rehabilitated and maintained.

6.5 Site layout considerations

Stormwater technical design on this development is relatively uncomplicated due to the development being situated on a single gentle side slope of approximately 7 - 9% and hence only a single and simply defined drainage zone.

The study area is drained by means of surface run-off (i.e.: sheetwash), with storm water following the topography of the site, i.e., the side slope. Stormwater from the single drainage zone will drain into the existing stormwater channel on the western boundary of the existing WWTW site, which again drains into the Hartenbos lagoon on the south-western boundary of the site.

No stormwater accumulation and concentration will be performed or allowed on the proposed development footprint.

The designated drainage zone as identified above are indicated diagrammatically on the figure below:

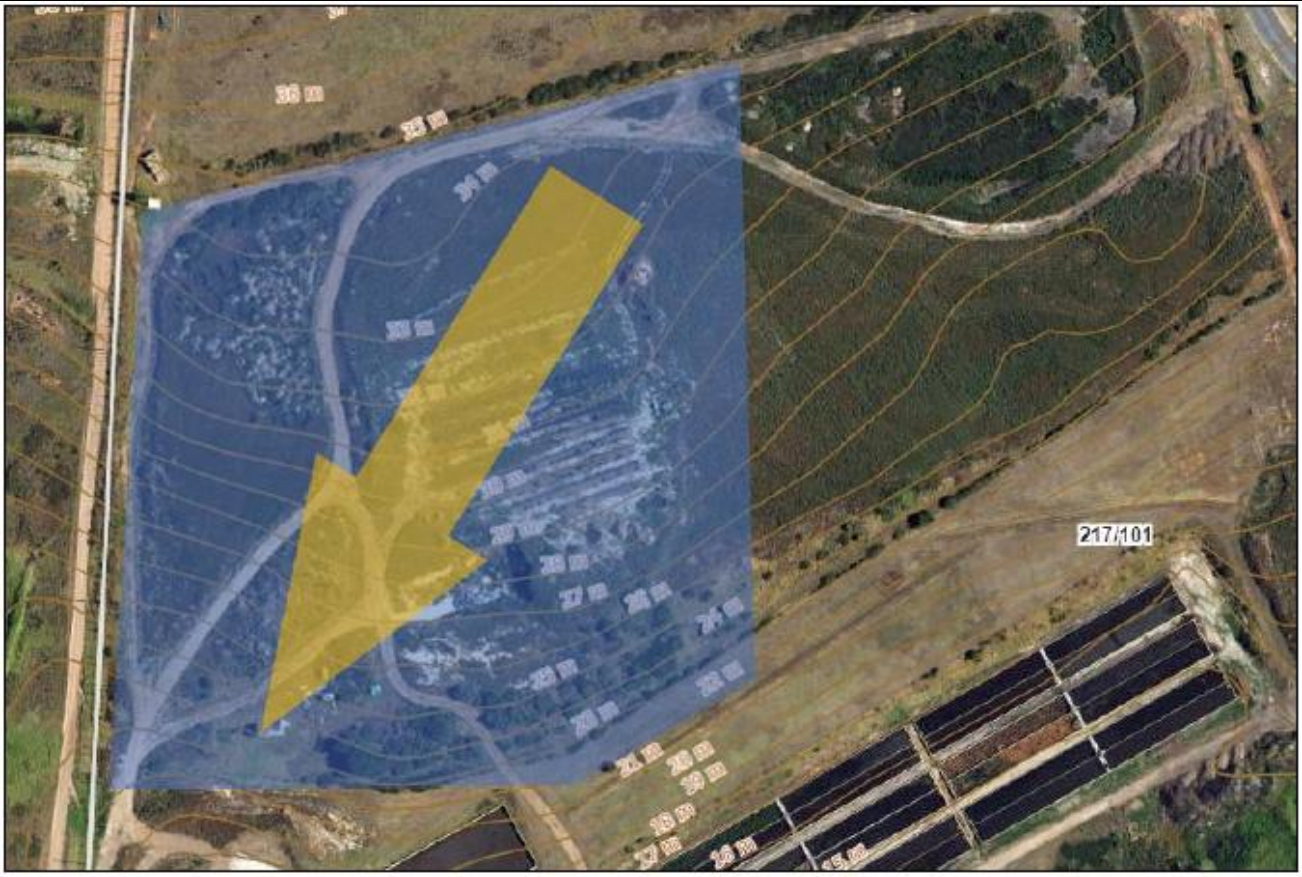


Figure 11: Single stormwater drainage zone (zone A).

6.5.1 Drainage zone A

Approximately 100% of the site drains towards a general south-western direction towards the lagoon. This area is designated as Zone A as depicted above.

Zone A has an area of approximately 2.5ha with an estimated 1:2 year peak flow of 0.162m3/s and 1:50 year peak flow of 0.462m^3/s and will be routed via unconcentrated sheetwash (surface run-off) into the existing stormwater channel on the western boundary of the existing WWTW site, which again drains into the Hartenbos lagoon on the south-western boundary of the site.

6.5.2 Energy dissipation

Energy dissipation shall be performed throughout the site with grass cover throughout, and porous materials wherever required. The site shall be covered with an indigenous grass mix and all post construction erosion or disturbed areas shall be sown with such a mix accordingly.

6.5.3 General design criteria

In accordance with all the design philosophies discussed above, the following general design criteria shall be utilized for this proposed development:

- No obstruction or concentration allowed on site.
- Perimeter road layout to be designed to line up with NGL.
- Perimeter road cross-section to be designed to tie into NGL.
- No obstruction or concentration allowed on fencing design; stormwater shall be allowed to pass through fence without any concentration.
- No obstruction or concentration allowed on pile-driven or other supports.

6.5.4 Stormwater design drawings

The diagrams below indicate the stormwater design drawings and the external drainage routes on the proposed development as discussed above.

Figure 12: No stormwater obstruction or concentration on site, roads to be designed to line up with NGL.

6.5.5 Perimeter and internal roads

Design of perimeter and internal roads is intertwined with stormwater design and from an engineering perspective, are considered a part of stormwater design. Internal standards and design criteria for internal street design, relevant to the stormwater management plan, are specified as follows:

- Internal road widths as specified.
- Gravel wearing course.
- Longitudinal alignment to align with NGL.
- Crossfall to align with NGL on both sides.
- No kerbing, or non-protruding concrete edging, to allow for cross section drainage.

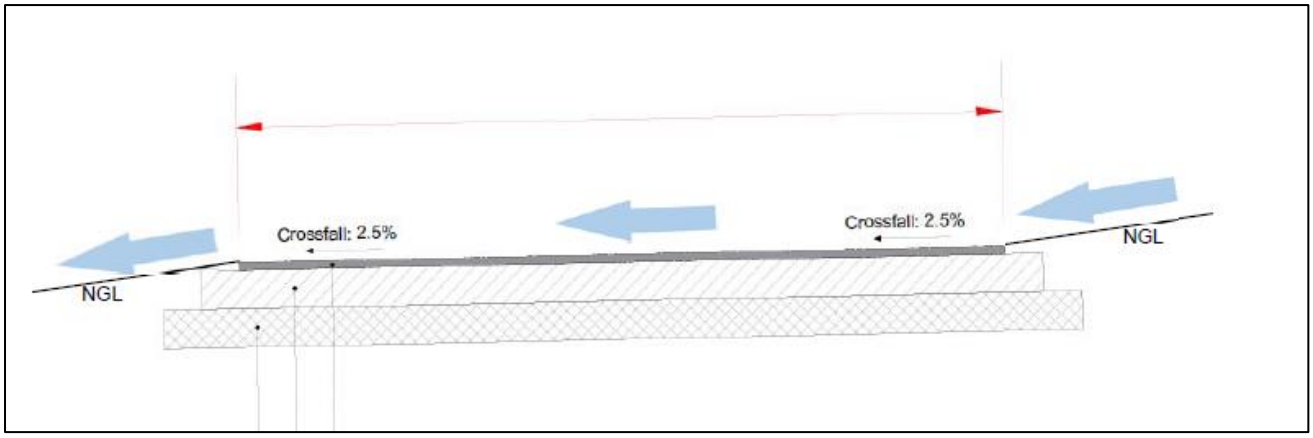


Figure 13: No obstruction or concentration on road cross-section – to be designed to tie into NGL.

6.5.6 Other design standards and criteria

- Kerbs, channels, pipes or cut-off drains to be utilized as little as possible.
- Where kerbs or concrete is inevitable, non-protruding designs shall be utilized.
- Gabion (reno) mattresses to be provided wherever required for energy dissipation and erosion protection.
- All infrastructure on the project to be non-erosive and non-concentrating.
- All stormwater infrastructure to be designed on SuDs principles.
- Soft and porous infiltration media to be provided throughout the site.

6.7 Final designs

All final design for stormwater systems and structures on this project to be designed by a professional engineer in accordance with this stormwater management plan.

7. Foundations and Structures

This chapter will discuss the preliminary design of the foundations and structures for the PV Solar array as well as the buildings for the project.

7.1 Foundations: PV Solar Array

The foundations of the PV Solar Array will be any one or combination of the following and will be determined during the detail design from the geotechnical investigation:

- Concrete plinths
- Drilled foundations
- Rammed-in foundations

7.2 Structure: PV Solar Array

The structure of the PV Solar Array will be a light steel frame structure and may take a number of forms, depending on the eventual detail design. A typical structure is presented in figure 7.

7.3 Foundations: Buildings

A number of buildings are foreseen for this project and include the following:

- Substation
- Battery and generator station
- Solar MV station

The localities of these buildings are indicated in the following diagram as extract from the SDP:

Figure 14: Substation (orange), MV Solar station (red) and Battery/generator station (purple and yellow)

The foundations of all buildings will be concrete raft foundations and will be finalised during the detail design based on the geotechnical investigation.

7.4 Structure: Buildings

The superstructure of the buildings will be as follows:

- Substation – Facebrick with IBR roof
- Battery and generator station – Steel frame with IBR roof
- Solar MV station – Steel frame with IBR roof

All structural designs will be finalised during the detail design stage.

7.5 Design Criteria and Standard of Engineering Services

The design criteria and standard of engineering services for the project will be as follows:

- All designs within various relevant SANS specifications
- Building foundations to be concrete raft foundations
- PV Solar Array foundations to be concrete plinths, drilled or rammed
- All foundation to be on engineered fill to at least 150kPa bearing pressure
- All mechanical and fire designs to be confirmed during detail design stage and in line with relevant guidelines and legislation

Please find the Preliminary Design Report: Hartenbos WWTW – PV Solar & BESS, attached as Appendix L for more details on the following: (p. 26 – 32)

1. Inverters
2. MV Inverter power station
3. Battery Energy Storage System
4. Medium Voltage Switchgear
5. MV Protection Elements
6. Substation Building
7. Standby diesel generators

8. Solid Waste

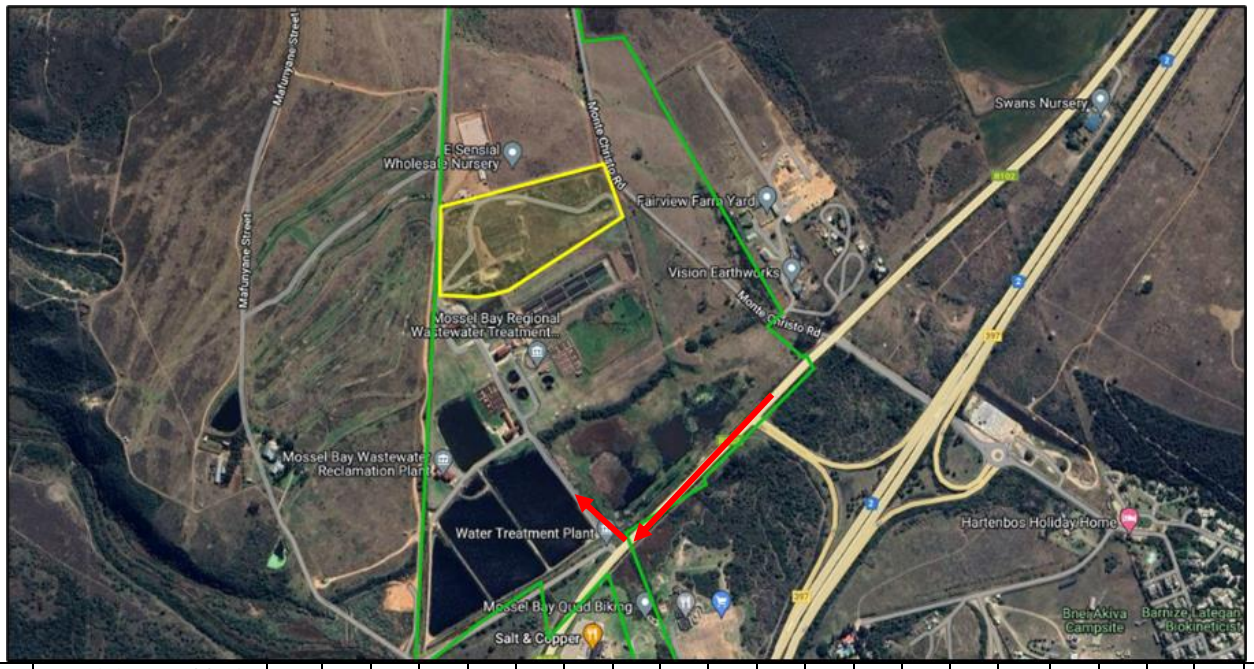
A formal solid waste collection area will be provided as part of the solid waste system of the existing WWTW and be collected in line with this arrangement.

9. Security Fencing

A high security fence (Clearvu or similar) shall be provided for the full perimeter in accordance with the SDP and shall conform to all prescribed coastal standards. Installation shall be performed strictly in accordance with the manufacturer's specifications. A concrete security ground beam shall be provided.

4.5.	Indicate how access to the proposed site(s) will be obtained for all alternatives.

Access to the facility is obtained from the R102 Main Road, via a tarred road on the southern boundary of the site, through a controlled access gate.



4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:	C	0	5	1	0	0	0	0	0	0	0	0	0	2	1	7	0	0	1	0	1

4.7.	Coordinates of the proposed site(s) for all alternatives:			
	Latitude (S)	34°	6‘	24.76“
	Longitude (E)	22°	6‘	7.59“

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

1. Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has exemption been applied for in terms of the NEMA and the NEMA EIA Regulations. If yes, include a copy of the exemption notice in Appendix E18.	YES	**NO**

2. Is the following legislation applicable to the proposed activity or development.

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (“ICMA”). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19.	YES	**NO**
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (“NHRA”). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1.	**YES**	NO
The National Water Act, 1998 (Act No. 36 of 1998) (“NWA”). If yes, attach a copy of the comment from the DWS as Appendix E3.	YES	**NO**
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (“NEM:AQA”). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	**NO**
The National Environmental Management Waste Act (Act No. 59 of 2008) (“NEM:WA”)	YES	**NO**
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 (“NEMBA”).	**YES**	NO
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (“NEMPAA”).	YES	**NO**
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES	**NO**

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.

- The National Environmental Management Laws Amendment Act, 2022
- Amended Environmental Impact Assessment Regulations, GN No. R. 324 – 327 (7 April 2017)
- The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)
- Spatial Planning and Land Use Management Act, No. 16 of 2013 (SPLUMA)
- Western Cape Land Use Planning Act, (Act 3 of 2014) (LUPA)
- George Municipality: By-law on Municipal Land Use Planning (2015)

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.

Western Cape Climate Change Response Strategy

Renewable energy is a key area of focus for the Western Cape and forms a fundamental component of the drive towards the Western Cape becoming the green economy hub for Africa.
The renewable energy sector in the Western Cape covers large scale wind and solar PV facilities as well as smaller scale, off-grid systems that are becoming more established.

South Africa’s National Climate Change Adaptation Strategy (NCCAS) supports the country’s ability to meeting its obligations in terms of the Paris Agreement on Climate Change. The NCCAS outlines a set of objectives, interventions and outcomes to enable the country to give expression to its commitment to the Paris Agreement. Developed in consultation with all relevant stakeholders and approved by Cabinet, it aims to reduce the vulnerability of society, the economy and the environment to the effects of climate change. It gives effect to the National Development Plan’s vision of creating a low-carbon, climate resilient economy and a just society

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.

Guideline on Need and Desirability (2013/2017)	Guideline considered during the assessment of the Need and Desirability of the proposed development project.
Guideline on Environmental Management Plans (2005)	Guideline considered in the compilation of the EMP attached to this Basic Assessment Report.
Guideline for the Review of Specialist Input into the EIA Process (2005)	Guideline considered during the review and integration of specialist input into this Basic Assessment Report
External Guideline: Generic Water Use Authorization Application Process (2007)	Guideline considered during the process of applying for the required water use authorization
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this Basic Assessment Report
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the assessment of the cumulative effect of the identified impacts.
Guideline on Public Participation (2013)	Guideline considered in the undertaking of the public participation for the proposed development. All relevant provisions contained in the guideline were adhered to in the basic assessment process as appropriate, except where an exemption/ deviation has been granted by the Competent Authority.
Guideline on Alternatives (2013)	Guideline considered when identifying and evaluating possible alternatives for the proposed development. Alternatives that were considered in the impact assessment process are reported on in this Basic Assessment Report (see section E)

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form

The following specialist studies were undertaken for this proposal:

No.	Specialist Assessment	Assessment Protocol
1.	Terrestrial Biodiversity Impact Assessment	Terrestrial
2.	Aquatic Biodiversity Impact Assessment	Aquatic
3.	Plant Species Assessment	Terrestrial Plant Species
4.	Animal Species Assessment	Terrestrial Animal Species
5.	Visual Impact Assessment	General Requirement
6.	Archaeological and Cultural Heritage Impact Assessment and Palaeontology Impact Assessment	General Requirement

The corresponding protocols were used by the specialists to compile and structure their reports.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1**	Describe the portion of the proposed development to which the applicable listed activity relates.
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;** excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs— (a) within an urban area; or (b) on existing infrastructure.	The area will be in excess of 1 ha for either Alternative A or B. This activity is therefore triggered by the proposal.
12	**The development of—** (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or **(ii) infrastructure or structures with a physical footprint of 100 square metres or more;** where such development occurs— (a) within a watercourse; (b) in front of a development setback; or **(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —** excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	The proposed development will be within 32 m of a mapped non-perennial centre line. This activity is therefore triggered by the proposal.
27	**The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation,** except where such clearance of indigenous vegetation is required for—	An area of more than 1 ha will have to be cleared for either Alternative A or B. Alternative A = approx. 6 ha. Alternative B = Approx 3 ha.

	(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	This activity may not be triggered by the proposal as the panels will not require the entire site to be cleared and the support structures for the panels can generally be pegged into the ground.
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3**	Describe the portion of the proposed development to which the applicable listed activity relates.
12	**The clearance of an area of 300 square metres or more of indigenous vegetation** except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape **i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;** ii. Within critical biodiversity areas identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	An area of more than 300 m^2 will have to be cleared for either Alternative A or B. Alternative A = approx. 6 ha. Alternative B = Approx 3 ha. The property is mapped as containing Mossel Bay Shale Renosterveld which is classified as an Endangered Ecosystem. This activity will therefore be triggered by the proposal. According to the botanist (Appendix G1) in order to avoid this activity, it is recommended that the layout be amended to exclude the thicket patches which contain indigenous vegetation.
14	**The development of—** (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or **(ii) infrastructure or structures with a physical footprint of 10 square metres or more;** where such development occurs— (a) within a watercourse; (b) in front of a development setback; or **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **i. Western Cape** i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies;	There are no Western Cape triggers applicable to this proposal and as such this activity will not be triggered by the proposal.

	(bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas listed in terms of an international convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Core areas in biosphere reserves; or (hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.	

Note:

- The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted.
- Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.

List the applicable waste management listed activities in terms of the NEM:WA

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Category A**	Describe the portion of the proposed development to which the applicable listed activity relates.

List the applicable listed activities in terms of the NEM:AQA

Activity No(s):	Provide the relevant **Listed Activity(ies)**	Describe the portion of the proposed development to which the applicable listed activity relates.

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.

Please note that Alternative A (Figure 5) is the preferred footprint being applied for. The technical specifications of Alternative B were calculated for the requirements of the WWTW facility. The need for Alternative A's footprint is due to the potential variation in materials and PV panels to construct the facility in order to achieve the calculated requirements of the facility. The contractor which is appointed will need to provide a proposal which means the efficiency of the PV panels may vary. Therefore, it may be that the cheapest quoting contractor calculates that more PV panels, with a lower output, is the best route to go with the proposal. This will however result in a larger footprint than if higher efficiency panels are utilised, requiring a smaller footprint.

This potential variation in PV panel efficiency (and corresponding footprint) arises from the cost and availability of the panels, as more efficient panels may not be economically viable, or availability (stock) may be low or vice versa. Therefore, if the small footprint (Alternative B) is authorised and there aren't enough high efficiency panels available, the development of the facility could be delayed and run much higher costs than expected. Additionally, as the WWTW expands the rest of the area will be used for panels. If the budget allows the entire area of Alternative A will be covered in panels which will feed electricity back into the grid for Mossel Bay Municipality.

2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.

Development parameters:

As determined by the Municipality.

The following Consent Uses can be applied for:

- Authority use
- Renewable energy structures

Land use description: "renewable energy structure":

a) means any wind turbine, solar energy generating apparatus, including solar photo-voltaic and concentrated solar thermal, hydro turbines or bio mass facility or any grouping thereof, that captures and converts wind, solar radiation or bio mass into energy for commercial gain; and
b) includes any appurtenant structure necessary for, or directly associated with, generation of renewable energy, or any test facility or structure that may lead to the generation of energy on a commercial basis, excluding electrical grid connections.

3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.

No known conflicts.

4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.

The proposal is to develop a PV Solar Plant in the existing Hartenbos WWTW property. As such the proposal is not a development on undeveloped land and as such does not have to align with the PSDF.

4.2	The Integrated Development Plan of the local municipality.

According to section 6.1.3 electricity distribution of the Mossel Bay IDP 2023/2024

Electricity is purchased from Eskom at seven intake substations with a notified maximum demand of 82mva and is distributed under a NERSA licence at voltages ranging from 230v to 66000v to various industrial, commercial and domestic customers. The peak maximum demand at this stage is 68,1mva and there is spare capacity of 13,9mva for future growth. The following service delivery challenges must be met within the five-year life cycle of this IDP:

- Ensure that every household has access to electricity
- electrify new dwellings in line with human settlement pipeline
- electrify informal settlements in line with the informal settlement upgrading plan:
- ensure sufficient capacity exists at all major substations to cater for rapid load growth.

Major projects in this category include:
- upgrading of the main 66000v intake substation at Voorbaai / Aalwyndal.
- construction of a new 11000v switching station in aalwyndal, to cater for the

Projected rapid development of this area;
- improve level of lighting along all major roads and public open spaces;
- promote energy efficiency programmes to prevent wastage of electricity;
- **promote and implement renewable energy and energy saving mechanisms within available funds.**
- replace low voltage overhead lines with underground cabling
- replace ageing infrastructure on a systematic basis

The proposal is therefore aligned with the Mossel Bay IDP.

4.3.	The Spatial Development Framework of the local municipality.

The proposal is to develop a PV Solar Plant in the existing Hartenbos WWTW property. As such the proposal is not a development on undeveloped land and as such does not have to align with the PSDF.

4.4.	The Environmental Management Framework applicable to the area.

Not Applicable – No EMF adopted for this area.

5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.

To be included in final BAR.

6.	Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.

According to the Western Cape Biodiversity Sector Plan (WCBSP; Pool-Stanvliet et al., 2017), the entirety of the proposed site is designated as a terrestrial Ecological Support Area (ESA; Figure 15) owing to the historical presence of an "Endangered" ecosystem type. According to The National List of Ecosystems that are Threatened and Need of Protection (Government Gazette, 2011), the project footprint overlaps with an "Endangered" ecosystem type, owing to the historical presence of Mossel Bay Shale Renosterveld. Due to its transformed state, Mossel Bay Shale Renosterveld is currently listed as Critically Endangered in the Revised National List of Threatened Ecosystems (DEA, 2022).

Even so, none of this vegetation or ecosystem type remains in the study area. Please refer to Section G. point 4 of this report.

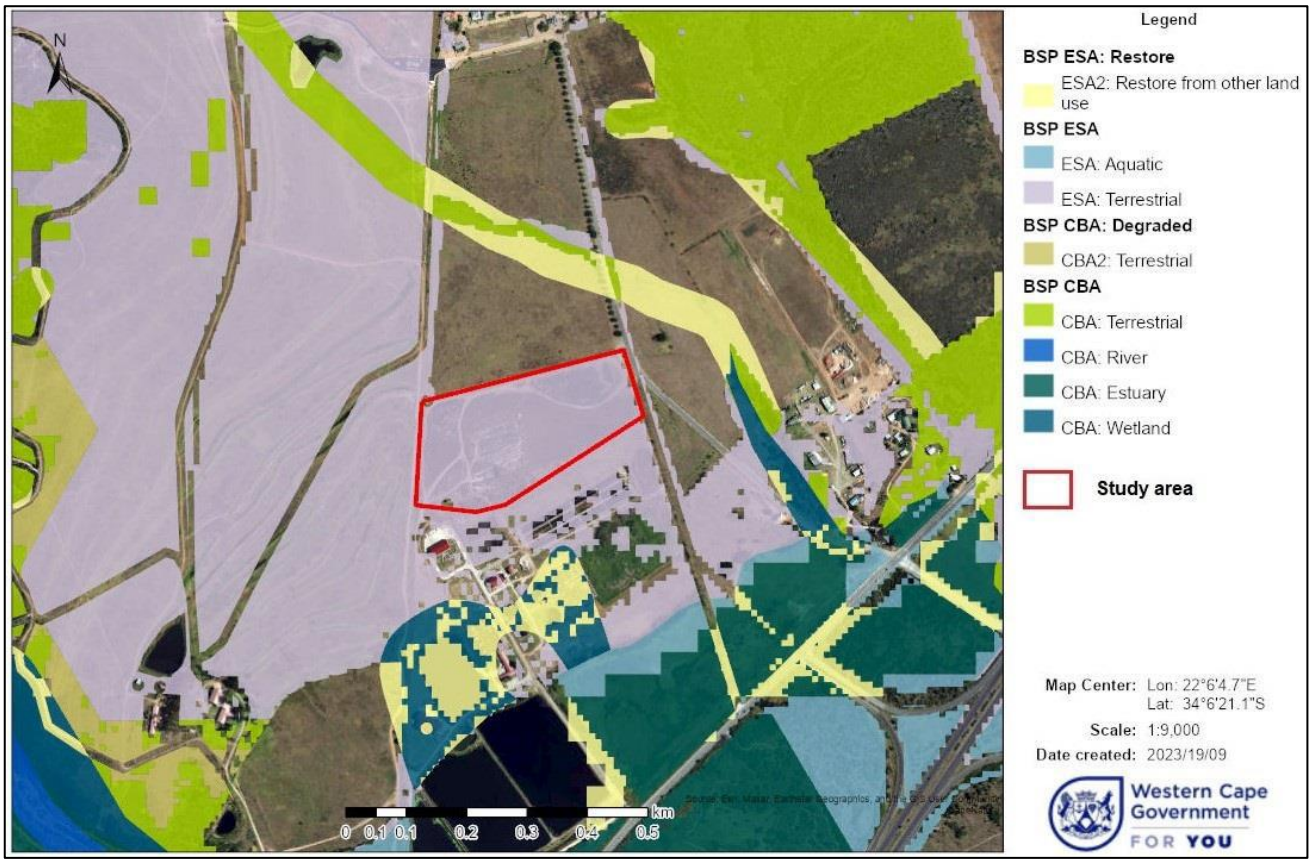


Figure 15: Extract of the Western Cape biodiversity network map (taken from Botanical Compliance Report, Appendix G1).

7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.

Not Applicable.

8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.

To be confirmed in the Final BAR.

Please find the Screening Tool Report attached as Appendix I.

9.	Explain how the proposed development will optimise vacant land available within an urban area.

The proposed site is located on the same property and adjacent to the existing waste water treatment works. The proposed development is an addition to the existing facility.

10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.

There are currently no existing resources or infrastructure on the proposed site. There is an existing track running across the site which will be used as access during the vegetation clearing and construction.

11.	Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).

The proposal will contribute positively to the municipal electrical capacity and will not require bulk municipal services during the operation of the WWTW.

12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.

The Mossel Bay Municipality (MBM) strives to be a sustainable, world-class municipality that is caring and committed to creating a better life for all of its people, which cannot be achieved without a clear set of policies and strategies for sustainable growth and development. The core role of energy within communities, in terms of socio-economic development and environmental sustainability, is being increasingly recognised by local authorities. Energy plays a vital role in providing basic services and meeting basic human needs, such as jobs, food, running water, sanitation, education and health services. Addressing these issues, inevitably involves an increase in the level of energy services.

MBM aims to improve quality of life within its supply area by improving energy efficiency, availability and reliability. MBM is therefore embarking on a journey of implementing embedded generation (own generation) and energy storage alternatives and thereby contributing to sustainable growth and development in the area through reliable and cost-effective energy provision within its area of jurisdiction.

Electricity generation in South Africa is currently primarily undertaken by state-owned power and utilities company Eskom, however increasingly by independent power producers. The transmission of electricity is undertaken by Eskom and electricity distribution (the final delivery of electricity to end users) is currently undertaken by Eskom together with various local municipalities, of which MBM is one.

Considering the current problems experienced within Eskom in terms of availability and reliability of electrical energy supply, Mossel Bay Municipality recognises the need for planning more sustainable approaches to their energy production and distribution, to promote economic development and meet social needs while at the same time reducing local and global environmental impacts.

The **Hartenbos Wastewater Treatment Works** has been identified as the first critical plant that will be selected for the implementation of a proposed hybrid renewable energy solution, as it provides an ideal scenario due to the following considerations:

- Treatment works has a very constant base load.
- Critical application, requiring standby diesel generation.
- Space around the plant for the installation of renewable energy sources.
- Not within the residential areas.
- Already identified as ideal position for application of renewable energy generation.
- Proposed PV Solar & BESS installation area (5.82 ha) available in close proximity to the water

treatment works.

- Proposed PV Solar & BESS installation area belongs to the Mossel Bay Municipality and has already been disturbed, which will simplify the EIA process.
- Entire plant area is already fenced and secured, which limits the risk of theft and vandalism.
- All loads being supplied from local (existing) LV switchboards.
- Localised MV supply network, dedicated for the supply of the treatment works, which will require minimal amount of modification to accommodate "islanded" operation.
- Sufficient space within the plant boundaries for the positioning of battery storage containers, standby generators and additional MV switchgear that will be required as part of the renewable energy plant installation.

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that If the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

N/A

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

To be included in the Final BAR.

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

To be included in the Final BAR.

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

To be included in the Final BAR.

5. if any of the State Departments and Organs of State did not respond, indicate which.

To be included in the Final BAR.

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

To be included in the Final BAR.

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&AP's that all information submitted by I&AP's becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that "*Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but* ***must*** *be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority.*"

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile Report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	**NO**
~~1.2.~~	~~Provide the name and or company who conducted the specialist study.~~		
~~1.3.~~	~~Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.~~		
~~1.4.~~	~~Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.~~		

2. Surface water

2.1.	Was a specialist study conducted?	**YES**	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
Dr. James M. Dabrowski from Confluent Environmental, Appendix G2.			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		

(Source: FRESHWATER COMPLIANCE STATEMENT Proposed PV Solar Plant, Hartenbos Wastewater Treatment Works, Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, 2023, prepared by Dr. James M. Dabrowski and Franco De Ridder of Confluent Environmental) (Appendix G2).

The site falls within the Primary Catchment K (Kromme) area and in quaternary catchment K10B (Figure 16). According to geospatial data sources, two non-perennial rivers are indicated to occur on the property (Figure 17). A non-perennial river is indicated to flow just west of the proposed development site; however, this non-perennial river was not observed during the site visit. Another other non-perennial river to the north and east of the proposed development site (Figure 17). No watercourses are indicated to occur within the boundaries of the proposed development site.

CONSERVATION AND CATCHMENT MANAGEMENT

According to the Western Cape Biodiversity Spatial Plan (WCBSP), the development area is mapped as a terrestrial Ecological Support Area (ESA) (Figure 18). No aquatic biodiversity areas are indicated to occur within the development footprint.

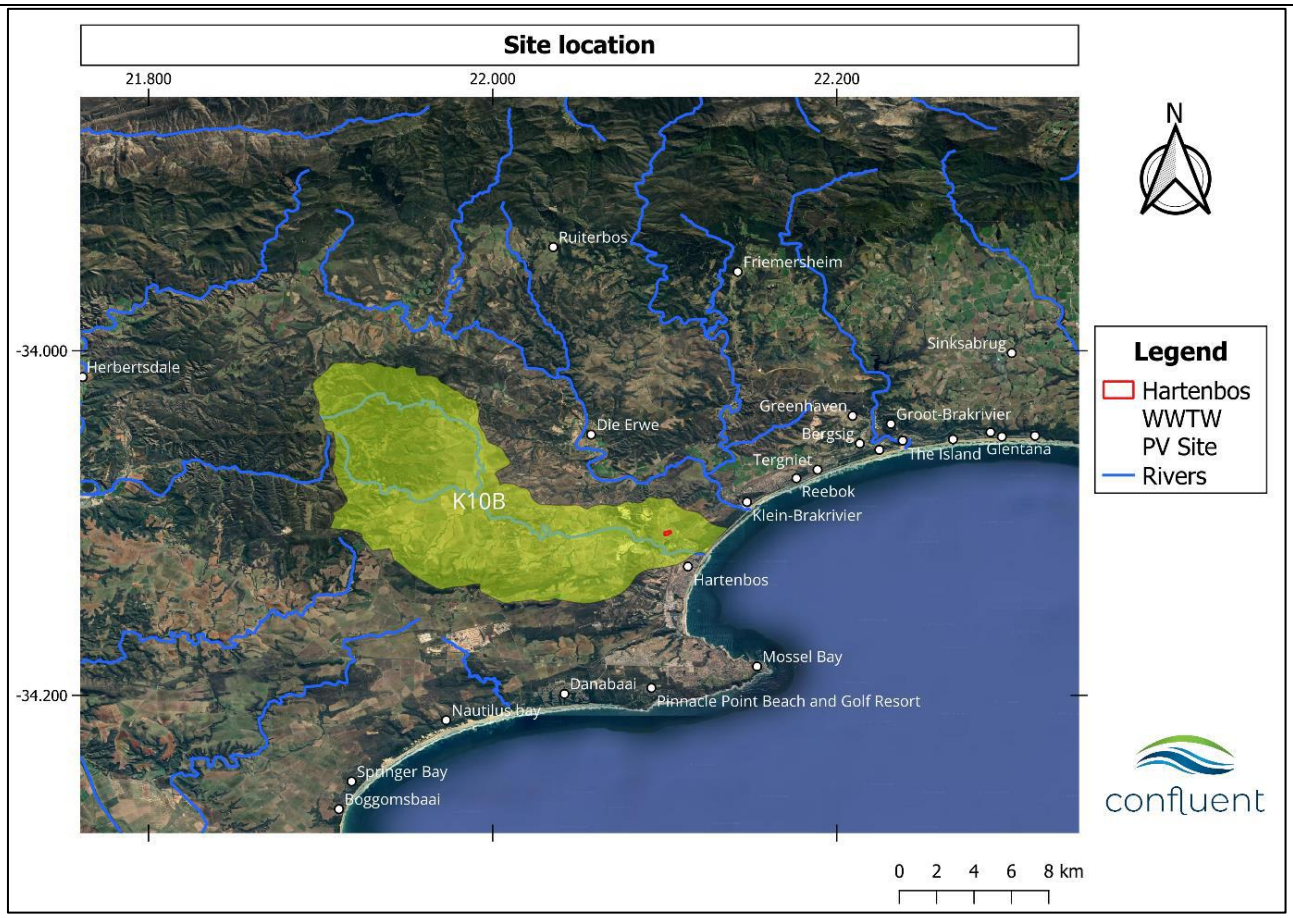


Figure 16: Map indicating the location of the property relative to the quaternary catchment area.

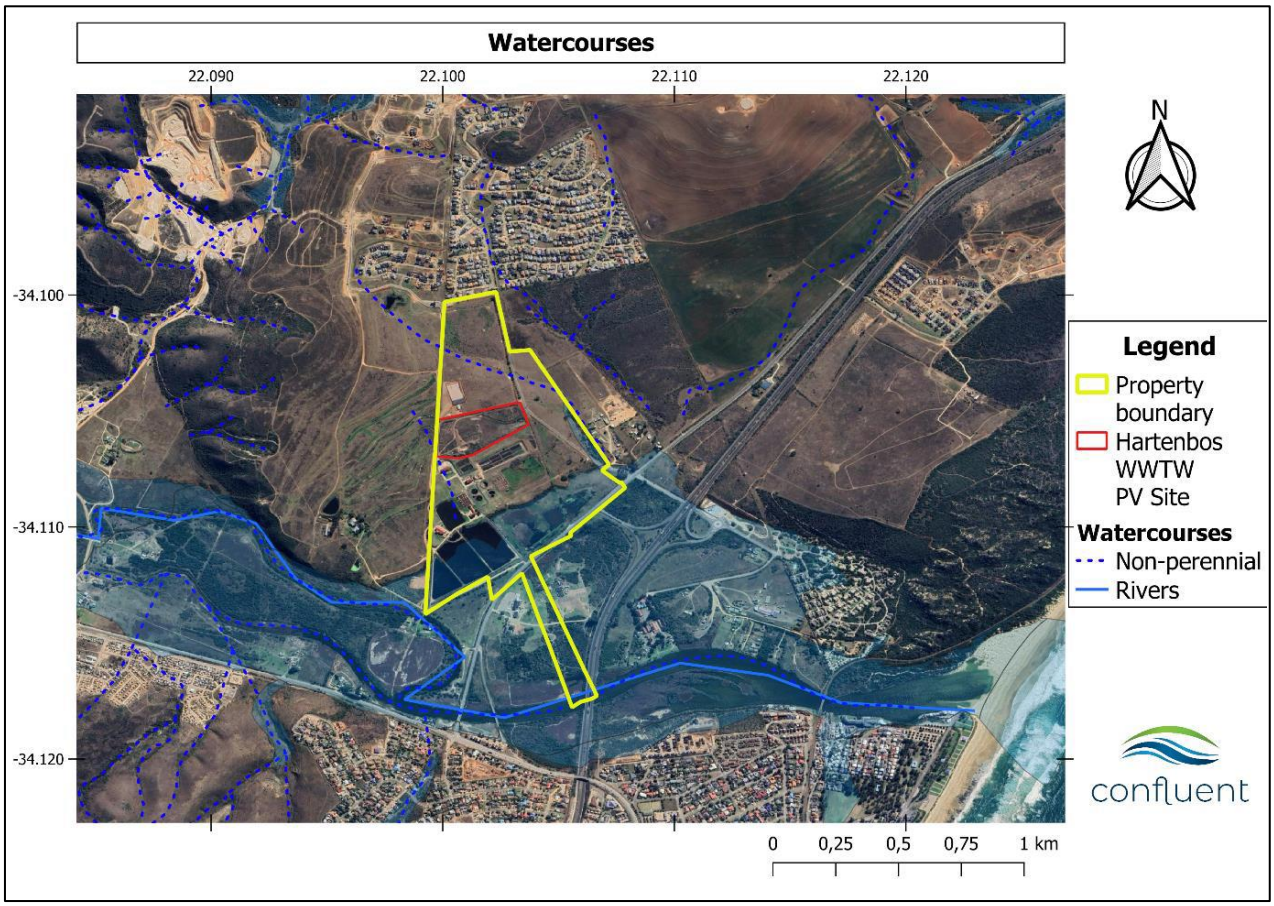


Figure 17: Location of the property in relation to watercourses.

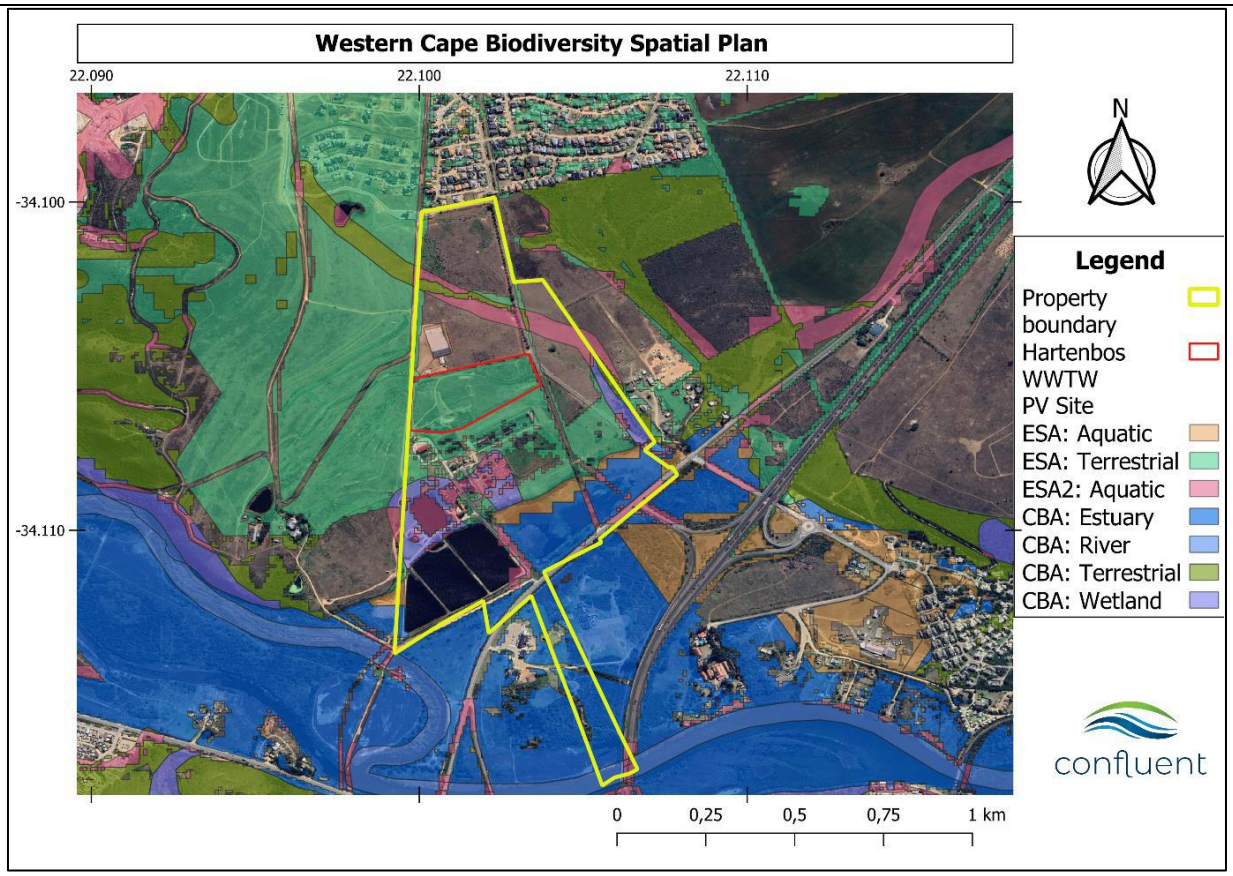


Figure 18: Map of the property relative to the Western Cape Biodiversity Spatial Plan (WCBSP).

NFEPA

According to the National Freshwater Ecosystem Priority Atlas (NFEPA; Nel et al., 2011) the sub-quaternary reach (SQR 9256) is classified as a Phase 2 Freshwater Ecosystem Priority Area (Phase 2 FEPA). This entails that any development conducted on the property must strive to do so with the least amount of impact on the environment to maintain the moderately modified (C ecological category) of the river reach to increase the likelihood of rehabilitation to a FEPA (Figure 19).

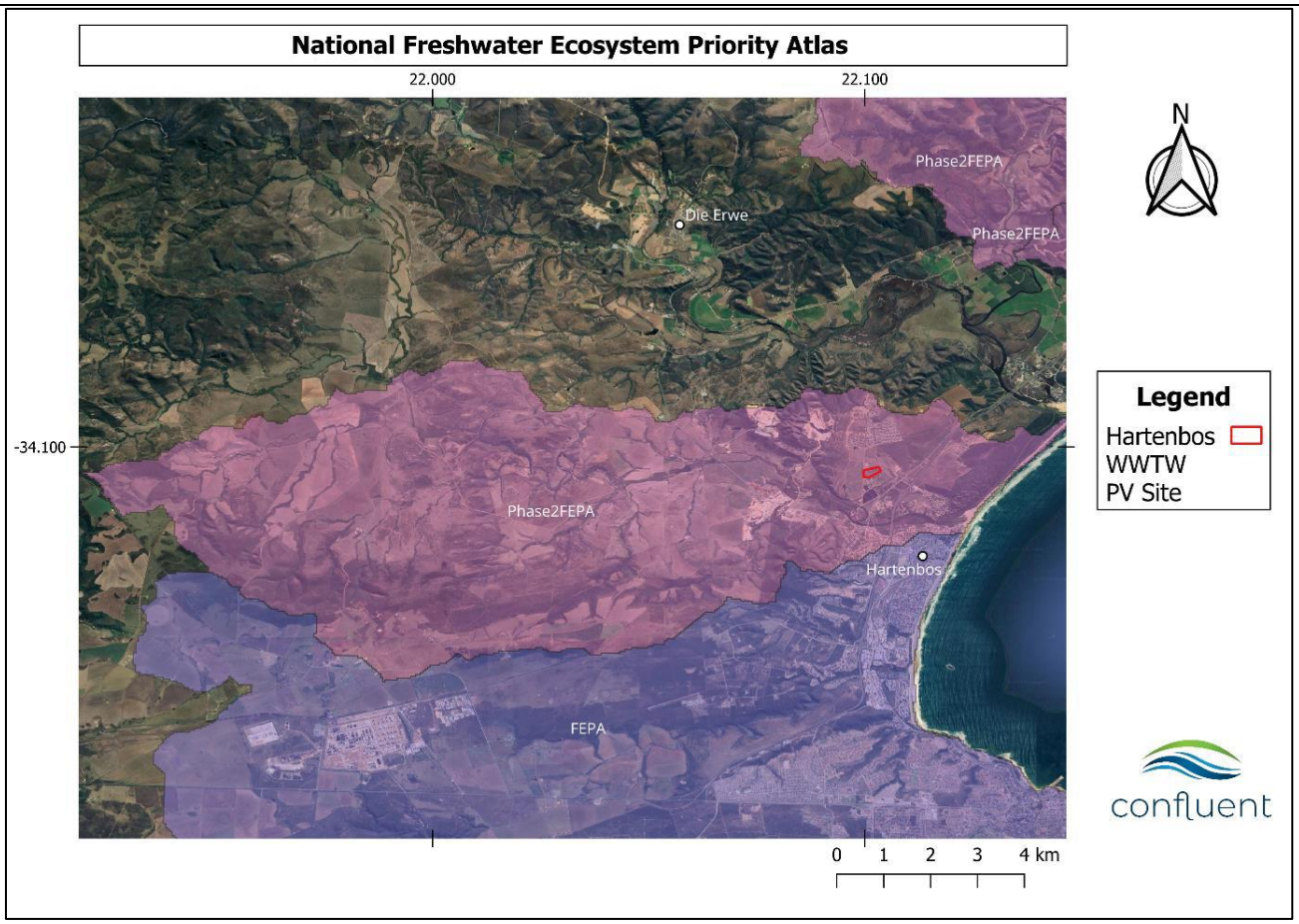


Figure 19: Map of the property relative to the National Freshwater Ecosystem Priority Atlas (NFEPA).

SITE VISIT

The site visit was conducted on the 5th of September 2023 during which time the entire development site was traversed by foot. The site slopes gently down towards the south (in the direction of the WWTW) and the entire site is covered in perennial weed species. Historically the site and surrounding areas has been constantly disturbed, and a berm is present in the north-east corner of the site. Apart from this berm, the topography is relatively uniform and there are no obvious areas of natural drainage on the site and no natural hydro-geomorphological landscape features (depressions, confined valleys, channels etc.) indicating the presence of a watercourse (i.e., stream, river or wetland) (Figure 20). The berm does create a slight depression where water is likely to accumulate periodically. This has resulted in the establishment of a small patch of Phragmites australis which provides no ecological function from an aquatic biodiversity perspective. The site is and has been used as a dump site for the solid waste from the WWTWs and there was evidence of dried sludge and other non-biodegradable waste dumped throughout the site (Figure 20).

In terms of legislation pertaining to the NWA, the development site falls less than 100 m away from a non-perennial stream to the north-east (Figure 21). The proposed development is however well outside the floodline and riparian zone and therefore does not fall within the regulated area of the stream. One small, mapped wetland area is located further along the drainage line and is less than 500 m away from the development, which does therefore fall within the regulated area of this wetland. The wetland area, while in a natural area of drainage, shows very limited hydrological wetland features. There are no indications of hydrophilic wetland plant species and vegetation was terrestrial (comprising of sparse thicket and grass pasture species) and is heavily invaded by Lantana camara (Figure 22). The area is utilised for cattle grazing and there was clear evidence of historical excavations throughout the area. The solar development is separated from the wetland by a tarred road and will have no impact on the hydrological or geomorphological attributes of this mapped wetland area. All other mapped wetlands are artificial and are maturation/oxidation ponds associated with the WWTWs (Figure 21).

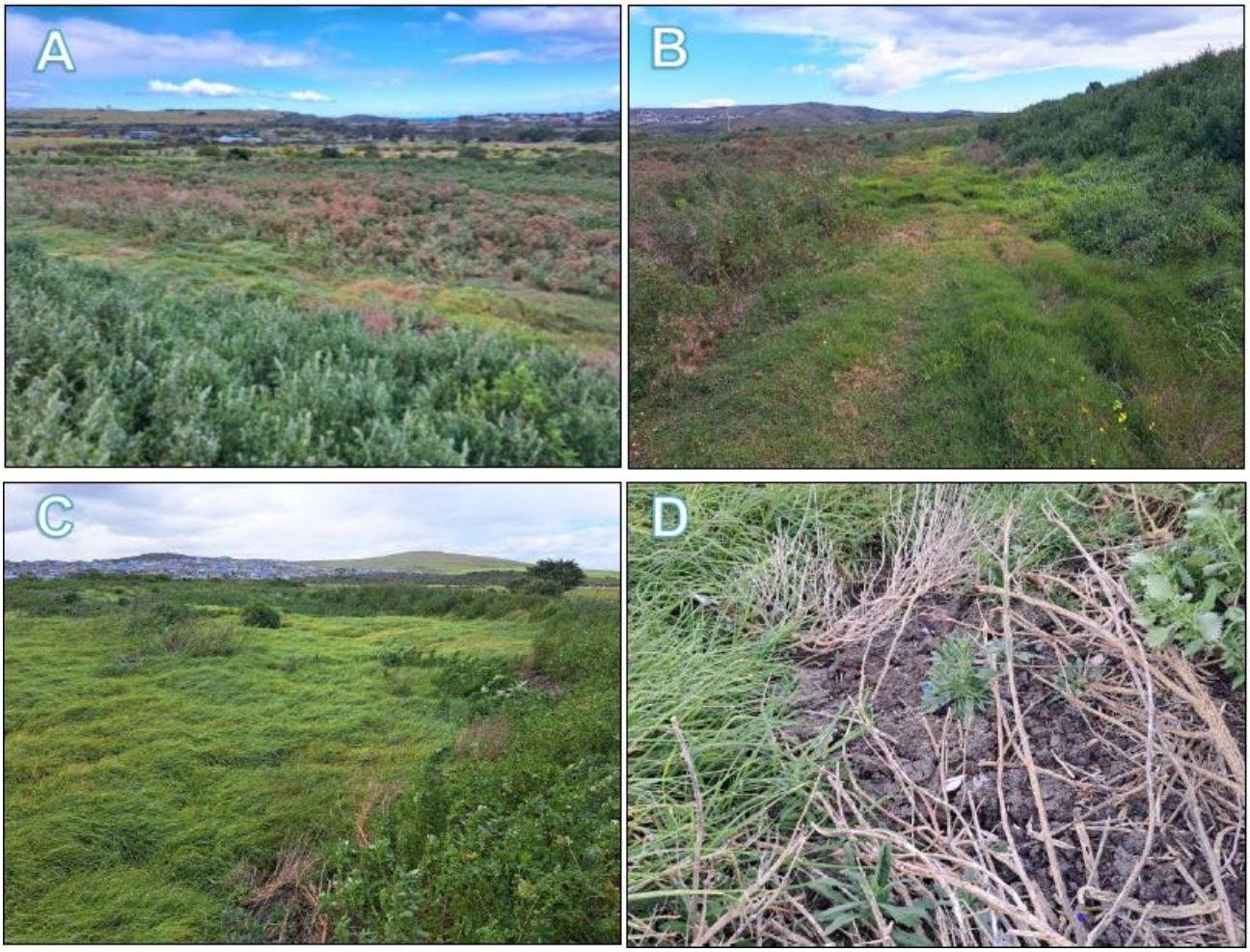


Figure 20: Photographs of the site including view to the east (A) view to the west showing an access road and the berm on the right (B) view of the inside of the berm from the top of the berm showing the small artificial wetland area filled with Cenchrus clandest

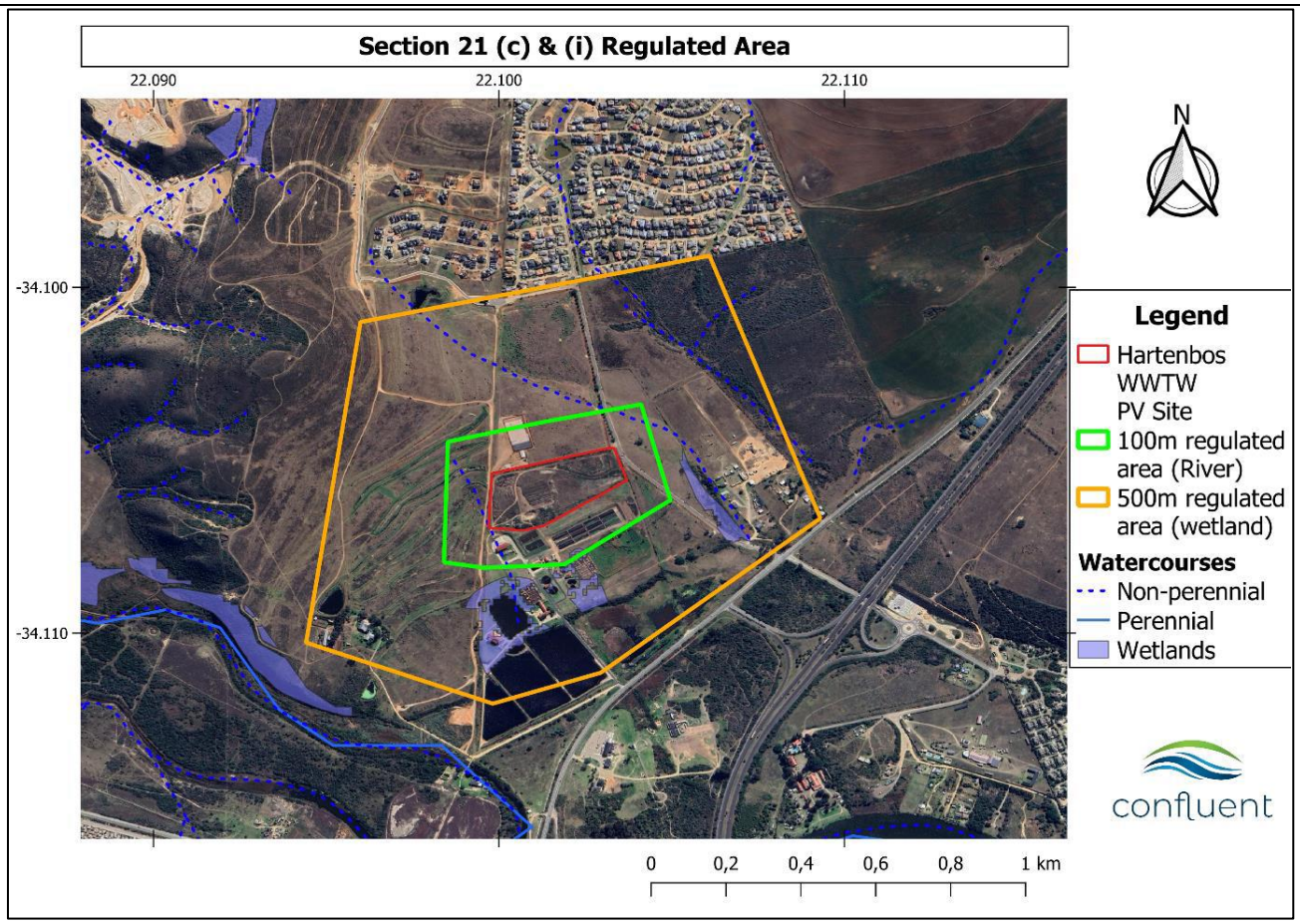


Figure 21: Map indicating two non-perennial rivers within 100 m of the site and three wetlands within 500 m of the site.

Figure 22: Photographs of the mapped wetland area occurring within 500 m of the proposed solar PV array.

AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

Based on the results of the desktop review and the site verification, it can be concluded that the proposed development of the solar PV plant on the Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, will not have any impact on any freshwater biodiversity and that the sensitivity of aquatic biodiversity on the property can be regarded as Low - regardless of the chosen option.

3. Coastal Environment

~~3.1.~~	~~Was a specialist study conducted?~~	~~YES~~	~~NO~~
~~3.2.~~	~~Provide the name and/or company who conducted the specialist study.~~		
~~3.3.~~	~~Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.~~		
~~3.4.~~	~~Explain how estuary management plans (if applicable) has influenced the proposed development.~~		
~~3.5.~~	~~Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.~~		

4. Biodiversity

4.1.	Were specialist studies conducted?	**YES**	NO
4.2.	Provide the name and/or company who conducted the specialist studies.		

- Mark Berry of Mark Berry Botanical Surveys, Botanical Impact Statement - Appendix G1
- Dr. Jacobus H. Visser of Blue Skies Research, Terrestrial Faunal and Avifaunal Species Compliance Statement - Appendix G3.

4.3.	Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.

Vegetation map: A product of The Vegetation of South Africa, Lesotho, and Swaziland (VEGMAP) (Mucina & Rutherford, 2006). The South African National Biodiversity Institute (SANBI) has updated the VEGMAP (2018). These shapefiles were used. In addition, the National Web-based Environmental Screening Tool was applied to determine the Relative Plant Species Theme Sensitivity as is required of botanical specialists.

According to the 2018 Vegetation Map of South Africa, the site is located inside **Mossel Bay Shale Renosterveld**. The latter occurs on the coastal plains (undulating hills) and valleys from the Kruisrivier near Riversdale to Klein Brak River, centred on the Gouritz River (Mucina, 2006). The renosterveld is described as a medium dense, medium tall cupressoid-leaved shrubland dominated by renosterbos (*Elytropappus rhinocerotis*) (Mucina, 2006). Thicket patches and thicket elements are also common. Apart from a few pioneer renosterveld species recorded in the regrowth, a few thicket elements were also noted.

Figure 23: Extract of the 2018 SA Vegetation map.

Due to its transformed state, Mossel Bay Shale Renosterveld is currently listed as **Critically Endangered** in the Revised National List of Threatened Ecosystems (DEA, 2022). Only about 38% of Mossel Bay Shale Renosterveld is still left, while 0.2% is currently protected. A large percentage of it has been transformed in the past for pastures and croplands (Mucina, 2006). The ecosystem is also degraded by erosion and overgrazing (Mucina, 2006). The unit is narrowly distributed with high rates of habitat loss in the past 30 years, placing it at risk of collapse. Being part of the Fynbos Biome, Mossel Bay Shale Renosterveld is maintained by a regular fire regime. Unfortunately, landscape fragmentation is disrupting this 'maintenance' requirement, often leading to localised species loss and bush encroachment or alien infestation (pers. obs.).

The vegetation of **the site**, as described by Mr. M. Berry. Please refer to Appendix G1 for the full report on the vegetation.

The vegetation covering the site can be described as an alien herbland, with a few small patches of thicket in the north-western corner and on the southern side. Structurally, it can be classified as a low (0.3-1.0 m) closed shrubland following Campbell's classification (Campbell, 1981). The dominant species are all herbaceous weeds and grasses such as *Chenopodium, Pseudognaphalium undulatum* and *Cenchrus clandestinus*. Due to the severity of past land-use activities (agriculture and dumping), it is highly unlikely that it will return to natural vegetation. The thicket patches, which are also degraded, include typical thicket species such as *Aloe ferox, Sideroxylon inerme, Schotia afra*, Searsia pterota, *Euclea undulata* and *Carissa bispinosa*. Disturbances, such as past farming activities, extensive dumping, farm tracks and alien infestation, were noted.

Alien species are abundant throughout the site, including *Acacia cyclops* (rooikrans, 1b), *Senna cf multiglandulosa* (buttercup bush), *Helminthotheca echioides* (ox tongue), *Sonchus oleraceus* (sowthistle), *Cirsium vulgare* (spear thistle, 1b), *Datura stramonium* (thorn apple, 1b), *Ricinus communis* (castor-oil plant, 2), *Trifolium repens* (white clover), *Myoporum laetum* (New Zealand manitoka, 3), *M. insulare (*manitoka, 3), *Lantana camara* (lantana, 1b), *Opuntia ficus-indica* (prickly pear, 1b), *Agave americana (*garingboom, 3), *Yucca aloifolia* (yucca), *Phytolacca octandra* (inkberry, 1b), *Chenopodium sp, Plantago lanceolata* (buckhorn plantain), *Erodium moschatum* (musk heron's bill), *Malva parviflora* (cheese weed), *Malva arborea* (tree mallow), *Sida poeppigiana, Cannabis sativa* (dagga), *Hirschfeldia incana* (Mediterranean mustard), *Lysimachia foemina* (blue pimpernel) and *Cenchrus clandestinus* (kikuyu, category 1b in protected areas). *Chenopodium sp* and *Cenchrus clandestinus* are dominant.

As indicated above, nearly half of these species are Categories 1b, 2 and 3 invaders in the Western Cape. In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List (2016), Category 1b invasive species require compulsory control as part of an invasive species control programme. Further in terms of the above Act, the harbouring of castor-oil plant (Category 2 invader) on a property is prohibited without a permit. Its fruits are extremely toxic to humans and animals, with just one fruit being potentially fatal (Bromilow, 2010). The high presence of aliens on the site is indicative of past disturbances (agricultural activities and dumping).

The impact on plant species, including potential SCC and protected tree species, is expected to be of little significance or concern. All the recorded species are common and widespread in the region. Two SCC were recorded on the site, namely *Hermannia lavandulifolia* (VU) and *Carpobrotus muirii* (NT). Both are still very common in the Mossel Bay area. A single milkwood, a protected tree species, was also recorded in one of the thicket patches on the southern side of the site. With a slight amendment to the layout, all these species can still be accommodated on site. The probability of SCC listed in the Screening Report to occur in the vicinity of the site is indicated in Table 6-1 in Appendix G1. Those with a low-medium probability to occur here have been recorded in similar habitats elsewhere in the Mossel Bay area.

Ecosystem threat status: Informed by (1) The National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011), (2) The Western Cape State of Biodiversity 2017 Report (Turner, 2017), and (3) The National Biodiversity Assessment (2018)(SANBI, 2019).

Due to its transformed state, Mossel Bay Shale Renosterveld is currently listed as **Critically Endangered** in the Revised National List of Threatened Ecosystems (DEA, 2022).

Biodiversity planning: The 2017 Western Cape Biodiversity Spatial Plan (CapeNature, 2017) GIS (Geographical Information System) shapefiles for the George Municipality is important for determining the conservation importance of the designated habitat. Ground-truthing is an essential component in terms of determining the habitat condition.

Important species: The presence or absence of threatened (i.e., species of conservation concern) and ecologically important species informs the ecological condition and sensitivity of the site. The latest conservation status of species is checked in the Red List of South African Plants (Raimondo et al. 2009) (www.redlist.sanbi.org).

Site boundary: these and other resource layers were used to define the site boundary and to compile several maps. This information is available on the CapeFarmMapper website (Department of Agriculture: gis.elsenberg.com).

4.4.	Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.

The 2017 WCBSP Handbook (Pool-Stanvliet et al., 2017) distinguishes between the various conservation planning categories. Critical Biodiversity Areas are habitats with high biodiversity and ecological value. Such areas include those that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2). Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the functioning of Protected Areas or CBAs and are often vital for delivering ecosystem services. A distinction is made between ESAs that are still likely to be functional (i.e., in a natural, near natural or moderately degraded condition; (ESA 1) and Ecological Support Areas that are severely degraded, or have no natural cover remaining, and therefore require restoration (ESA 2). Other Natural Area (ONA) sites are not currently identified as a priority but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem.

According to the botanical compliance report, the site falls inside the Mossel Bay biodiversity network (Figure 24). Nearly the entire site has been mapped as a terrestrial ecological support area (ESA). The site falls inside an ecological corridor linking the respective estuaries of the Hartenbos and Klein Brak Rivers. There is also a second corridor along the coastline linking the two estuaries. Reasons for the importance of the mapped ESA include the presence of a threatened vegetation type albeit the wrong one (Groot Brak Dune Strandveld) and threatened vertebrate habitat (bontebok). The closest protected area appears to be the Diosma Reserve, a contract nature reserve located 9 km away in Heiderand to the south of the site. It aims to protect *Diosma aristata*, a critically endangered local endemic species.

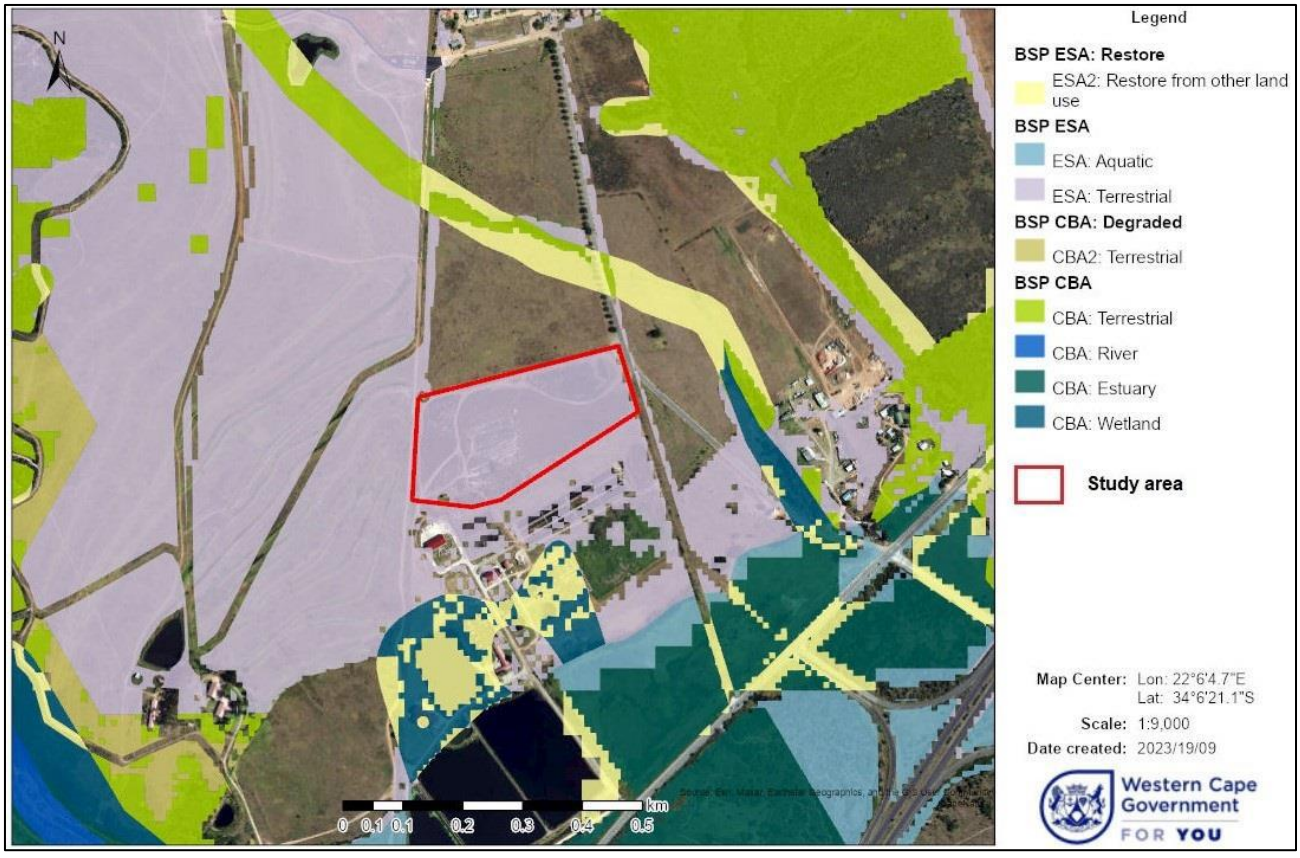


Figure 24: Extract of the Western Cape biodiversity network map.

4.5.	Explain what impact the proposed development will have on the site specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.

Two Species of Conservation Concern (SCC) were recorded on site, namely *Hermannia lavandulifolia* (VU) and *Carpobrotus muirii* (NR). The latter is still frequently encountered in the coastal strip between De Hoop and Mossel Bay, while *Hermannia lavandulifolia* is very common in the Mossel Bay area. The latter's listing as a threatened species is questionable. All the other recorded species are widespread and common in the region. Floristic association with Mossel Bay Shale Renosterveld is reasonable with a few important taxa recorded, namely *Carpobrotus acinaciformis Aloe ferox*, *Searsia pterota* and *Carissa bispinosa.* A single *Sideroxylon inerme* (milkwood), a protected tree species in terms of the National Forests Act (Act 84 of 1998), was recorded in one of the thicket patches on the southern side of the site. The removal of milkwoods requires a permit from the Department of Forestry.

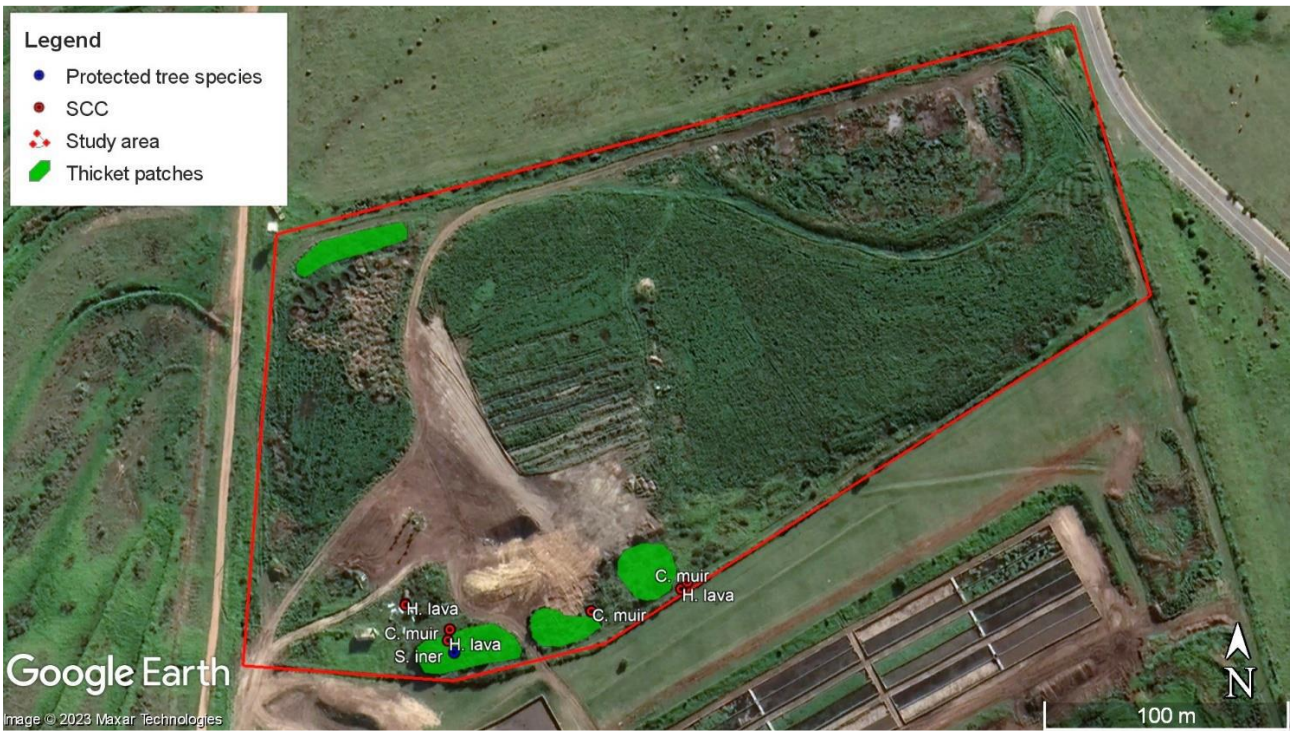


Figure 25: Botanical attributes of the site. The untoned area has been transformed.

Site Ecological Importance

In order to demonstrate the biodiversity sensitivity of the site, a site ecological importance (SEI) map was prepared (Figure 26). This map considers the biodiversity importance of the receptor area and its resilience to impacts. The receptor area is described as the affected habitat (transformed area and thicket patches in this instance), which may accommodate certain SCC. A **Very Low** SEI value was allocated to the site due to its transformed state, its relative isolation from large areas of natural vegetation and the small footprint (<0.5 ha) of the thicket patches.

Figure 26: Site ecological importance (SEI) map.

The table below was generated by the terrestrial biodiversity and faunal specialist and was taken from his report, Appendix G3. Please refer to his report for the full Evaluation of Site Ecological Importance (SEI) (p. 39).

Table 2: Evaluation of SEI for habitats within the study area landscape. BI = Biodiversity Importance, RR = Receptor Resilience.

Habitat type	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Shrubland	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal and avifaunal SCC.	**Very low** - No habitat connectivity except for flying species. Several major current negative ecological impacts (a highly degraded habitat structure with no remaining natural vegetation).	**Very high** - Because this habitat appears to have been a stockpile for dry wastes from the Hartenbos WWTW it and exists in a highly degraded and modified state with no natural habitats remaining, it can only recover to this highly degraded state.	**Very low** - BI = Very low; RR = Very high

The proposed layout and arrangement of the PV solar plant will exclude these trees listed above from the footprint. The trees will not have to be removed. The areas highlighted in figure 25 will form part of the proposed No-Go areas.

4.6.	If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.

N/A – The site is not within a protected area.

4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.

(Source: Terrestrial faunal and avifaunal species Compliance Statement Report for the Proposed Hartenbos Waste Water Treatment Works PV Solar Plant on remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, Mossel Bay Municipality, September 2023, Prepared by Dr. Jacobus H. Visser of Blueskies Research.) (Appendix G3).

The study area is comprised of a single habitat type which consists of pioneer shrub vegetation on an area which appears to have been previously used as a stockpile for dry waste from the Hartenbos WTWW. To this end, almost no natural habitats remain on the site, and the site appears to harbour a highly degraded habitat structure with significant signs of pollution.

Field survey – Mammals

Evidence of only two mammal species was recovered within the study area (Figures 27 and 28), both of which are currently classified as "Least concern" by the IUCN (Appendix C of Appendix G3). Mammal diversity appears highly impaired on the site, with evidence of one Common Duiker (*Sylvicapra grimmia*) being previously present on the site, and with only two instances of the presence of the African Mole-rat (*Cryptomys hottentotus*) noted.

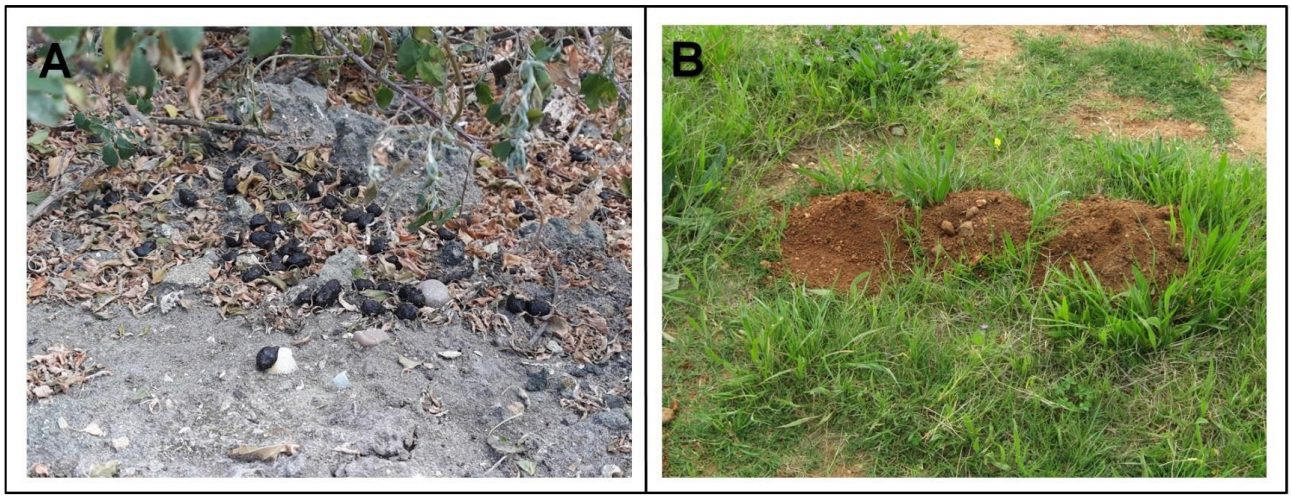


Figure 27: Photographic evidence of the different mammal species recorded in the study area. A) Scat of the Common Duiker (*Sylvicapra grimmia*). B) Mounds of the African Mole-rat (*Cryptomys hottentotus*).

Avifaunal

In total, only 25 bird species were recorded within the study area, all of which are currently classified as "Least concern" by the IUCN (Figures 16 and 17, Appendix C). While avifauna is the most prominent faunal feature on the site, all birds occurs in low number and constitute only common vegetation associated or terrestrial species.

Grasshoppers

The presence of the Yellow-winged Agile Grasshopper was evaluated based on suitable habitat (recently burnt Schlerophyll on south-facing slopes) for this species - habitat which is not present in the study area landscape. To this end, suitable habitat for the Yellow-winged Agile Grasshopper is absent from the site, and it is highly unlikely that this species will occur here.

Faunal and avifaunal diversity within the study area

Because the single habitat in the study area exists in a highly degraded and transformed state, faunal and avifaunal diversity appears low and is only comprised of only relatively common species of "Least Concern" (IUCN, 2021). Overall, the site supports no notable predator-prey dynamics and is indicative of highly altered and compromised ecosystem dynamics. The site is further adjoined by a nursery to the north, the Hartenbos WWTW to the south and the Monte Christo Road to the east from where daily noise and vibration from vehicles and foot traffic is evident. Furthermore, open farmland is also present to the east of the study area. Notwithstanding its isolated nature in the landscape, the site is fenced over its entirety, thereby precluding terrestrial faunal movement into the site. Given the degraded nature of the study area along with an almost complete lack of connectivity to surrounding natural areas therefore, the site does not represent a functional or important ecological link within the study area landscape.

Species of Conservation Concern

Along with the five (two mammal, two avifaunal and one invertebrate) SCC listed in the DFFE Screening Tool, the potential occurrence of 22 other (six mammal and 16 avifaunal) SCC within the study area was assessed (Table 3 in Appendix G3), given their recovery in the desktop assessment. Because the site appears to have been a stockpile for dry wastes from the Hartenbos WWTW it exists in a highly degraded and modified state with no natural habitats remaining. To this end, the study area does not support suitable habitats for any of the SCC considered, and it is highly unlikely that any of these species will occur here. To this end, the entire site may be considered as of a **"Very low"** sensitivity from a terrestrial faunal and avifaunal perspective.

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.

6. Heritage Resources

6.1.	Was a specialist study conducted?	**YES**	NO
6.2.	Provide the name and/or company who conducted the specialist study.		
Dr. Peter Nilssen, Appendix G4			
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.		

(Source: Heritage Statement in support of Heritage Western Cape Notification of Intent to Develop (HWC NID – Section 38), Proposed Hartenbos WWTW PV Solar Plant on a Portion of RE/101/217 of Farm Hartenbosch, Mossel Bay Municipality, Western Cape Province, 2023, Prepared by Dr. Peter Nilssen)(Appendix G4).

Of relevance to archaeological and palaeontological heritage resources are earthmoving activities. Earthworks will consist of excavations and levelling (cut and fill) to create a level area for the solar panels, and excavations or drilling for foundations. Foundations for structures and the mounting system may consist of conventional trenches or piles / plinths. Although depth of excavations is currently unknown and will be determined through geotechnical test excavations, it is not anticipated that any excavations will exceed 3 meters in depth. The only deep excavations will be those for piles/poles to support the mounting system and these excavations will be core or drill holes of limited spatial extent. Consequently, their impact will be limited to small surface areas. Considering that the existing "made ground" is likely a few meters thick and that surface sediments below "made ground" are already disturbed by a variety of agricultural and development activities, excavations are not anticipated to intercept significant in situ archaeological or palaeontological resources.

Palaeontology

The noticeable fossil material in the Hartenbos Fm. is an abundance of petrified (silicified) wood. Petrified logs of fossil wood are common overlying the Hartenbos Fm. outcrop areas on Farm Hartenbosch 217 (Viljoen & Malan, 1993). Evidently no fossil bones or fossil shells are reliably recorded. It is possible that groundwaters have destroyed such material relatively soon after deposition, while preserving the wood and plant fossils.

Anticipated Impacts

The Hartenbos Formation is depicted to be of VERY HIGH palaeontological sensitivity on the SAHRIS Palaeo-Map (Figure 20, Appendix 4), but this classification applies to the Uitenhage Group in general and not specifically to the Hartenbos Fm. This is the result of the various formations making up the Uitenhage Group, of differing sensitivity/fossil content, not being distinguished on the out-of-date 3322 OUDTSHOORN geological map on which the SAHRIS Palaeo-Map is based. In view of the weathered nature of the Hartenbos Fm. subsurface and the prevalence of petrified wood the palaeontological sensitivity of the formation is MODERATE.

However, the site has been extensively transformed, as seen in Google Earth images through time (Figures 35-37) and is evidently a landfill site. This has been confirmed by Dr Peter Nilssen (pers. comm.) who notes "The disturbance entails dumping and levelling and I have checked when driving past that the site does not follow the surrounding relatively gentle slopes towards the drainage line in the South and SW but is raised and "moundy". The topography appears interrupted and modified. My site inspection revealed that 90% of the development footprint is indeed 'made ground'".

Due to the extensive transformation of the site, and the prevalence of petrified fossil wood in the general area, a significant impact on the palaeontological resources of the Hartenbos Fm., due to construction of the SEF and BESS, is not anticipated.

Recommendation

Just in case in situ fossil wood is unearthed in the parts of the site which have not been covered by "made ground", such as from the shallow trenches made for the SEF cabling, an alert for the uncovering of fossil wood must be included in the Environmental Management Plan (EMP). A collection must be made of the finds of fossil wood, for later deposition at a museum, together with information of the find location. The fossil wood must be handed into the custody of the Environmental Control Officer (ECO) and/or the site manager, who must ensure its interim safe storage. On the completion of Construction Phase earthmoving activities, the fossil wood collection must be conveyed to a curatorial institution. The Albany Museum in Grahamstown (www.am.org.za) is an appropriate repository where palaeobotanist Dr Rosemary Prevec studies and curates the fossil plant collections, including Cretaceous plant fossils. A Collections Agreement exists with the Palaeosciences Centre, University of the Witwatersrand (Dr Marion Bamford), for petrified fossil wood specimens collected from the Maandagskop Quarry on Portion 12 of Farm Hartenbosch 217. As collaborating palaeobotanists Drs Bamford and Prevec must be consulted about the preferred repository for fossil wood specimens from the SEF site.

Archaeology

The DFFE screening tool map and table for the archaeological and cultural heritage theme sensitivity indicates that the proposed development footprint falls within an area of LOW sensitivity (Appendix I). A Heritage Impact Assessment conducted for a property a few hundred meters to the north-east (Nilssen 2023) confirmed that the area is not archaeologically sensitive and given the transformed state of the current study area and the fact that it consists of "made ground", the proposed activity will have no to negligible impact on the archaeological or heritage value of the area. Consequently, the proposed development footprint area is of LOW sensitivity concerning the archaeological and cultural heritage theme.

Based studies conducted in close proximity and with similar spatial and sedimentary contexts as that of RE/101/217, it is anticipated that the most likely archaeological resources to occur on the property are isolated Stone Age implements of mainly MSA and ESA origin with the occasional LSA piece, or at best, low to medium density scatters of the same materials (Hart 2005, Kaplan 2007, Nilssen 2005b & 2022 and Pelser 2021). Due to their low densities, often disturbed contexts and the complete absence of associated cultural and organic remains, such finds are of low to no archaeological value and hence given Grade IIIC or Not Conservation Worthy status. Nevertheless, given the completely transformed state of the study area and the fact that it consists of "made ground", the study area is not expected to be sensitive from a palaeontological, archaeological and cultural heritage standpoint.

No Provincial Heritage Sites, or any other known significant heritage sites will be impacted by the proposed development on RE/101/217.

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.
(Source: Heritage Statement in support of Heritage Western Cape Notification of Intent to Develop (HWC NID – Section 38), Proposed Hartenbos WWTW PV Solar Plant on a Portion of RE/101/217 of Farm Hartenbosch, Mossel Bay Municipality, Western Cape Province, 2023, Prepared by Dr. Peter Nilssen)(Appendix G4). The following includes information obtained from the available and relevant Surveyor General (SG) diagrams, title deeds and aerial photographs for RE/101/216, which was originally part of the larger farm Hartenbosch 217, Mossel Bay (Figure 22, Appendix G4). "In 1734 Governor Jan de le Fontaine awarded freehold title of the farm Hartenbosch to Cape burger Esais Engelbrecht Meyer. The award was bestowed on Esias Meyer for the part he played in assisting the distressed Dutch East India ship t' Huis te Marquette which had put into Mossel Bay for necessary storm damage repairs. It was recorded that Esais Meyer rode on horseback to Cape Town within a period of seven days in order to deliver letters to the Governor from the distressed ship's official. In addition Esais provided much needed fresh meat and provisions to the ship's crew" (De Kock 2022 pg. 9). The original farmstead on Hartenbosch 217 is indicated west of the Hartenbos River, at least 2 km west of the study area (De Kock 2022, Pg. 9). (Source: De Kock, S. 2022. Integrated Heritage Impact Assessment in Terms of Section 38 of the National Heritage Resources Act, 1999 (Act 25 of 1999): Proposed Residential Development on Erf 3122 (Hartenbos), Mossel Bay District and Municipality). The earliest diagram obtained for this study, SG Diagram 360/1863 of the farm Hartenbosch 217, "represents 3376 Morgen and 200 Square Roods [about 2892,7 ha] of Land, situated in the Division of Mossel Bay and Field Cornetcy of Brak River, being the Freehold Place of HARTENBOSCH (granted on the 7th Sept. 1734)" (Figure 22, Appendix G4). A date of 26 August 1864 and the name "Nicolaas Meyer & another" appear in a stamp on the diagram, and although some letters are legible, they do not appear to represent survey points on the diagram, and therefore, it is not clear if this indicates ownership of the whole or part of Farm 217. Nevertheless, Nicolaas Meyer was the son of Esais Engelbrecht Meyer, to whom the farm Hartenbosch 217 was originally granted in 1734. The nearest colonial period structure dating from at least 1863 is a house situated south of a spring and between 1 and 1, 5 km west of the study area (Figures 23 & 24, Appendix G4). The closest point of the original road between Mossel Bay and George is about 600 m to the SE of the affected portion of RE/101/217 and was in place by at least 1821 (Figures 23 & 24, Appendix G4). Deduction from SG Diagram 360/1863 includes Portion No. 2 (including RE/101/217), which was deducted in 1865 (diagram 565/1865), and was 499 Morgen (427, 4933 ha) in extent. Note that diagram 565/1865 was not supplied by the time of this writing. The approximate position of the affected portion of RE/101/217 on Portion No.2 of Hartenbosch 217 is shown in Figure 23. No colonial period structures or features are shown in the study area on the 1880-1890 SG Mapping, Mossel Bay (Figure 24, Appendix G4). The more recent 2003 and latest 2019 SG Diagrams for RE/101/217 are shown in Figures 25 and 26, Appendix G4. It is clear from the early SG diagrams that no colonial period structures or infrastructure is directly associated with the affected portion of RE/101/217. Archival research has shown that several slaves lived on Hartenbosch 217 from at least the early 1800s, but there is no evidence linking this heritage theme directly to the affected portion of RE/101/217 (De Kock 2022).

8. Socio/Economic Aspects

8.1.	Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.

According to the Mossel Bay Spatial Development Framework of May 2018 (latest SDF on website) the Hartenbos WWTW is located in what is called Hartenbos North.

Hartenbos North comprises a 4 km stretch of open country between the Klein Brak and Hartenbos rivers. For many years the partially developed Monte Cristo gated village, comprising of approx. 400 plots on 60 ha, was the main urban development in this region other than the Hartenbos landgoed and some smallholdings on the northern side of the estuary. More recently, a number of large projects totalling approx. 500 ha to accommodate approx. 2400 units have been approved, with another project of 40 units approved.

The population of the Mossel Bay Municipality is 96 114 people in 2021 making it the second most populated municipal area in the Garden Route District. This total is expected to grow to 97 514 by 2025, equating to an average annual growth rate of 0.4 per cent (Western Cape Provincial Treasury SEP, 2021). According to the 2022 Census the population of Mossel Bay grew to 140 072.

HOUSEHOLDS

To ensure basic service delivery to all, municipal budget allocations should be informed by credible and accurate assumption regarding the number of households within a municipal area. The

Mossel Bay municipal Area is estimated to have 30 015 households in 2021. The annual increase trends on the number of households means that the municipality must also base is plans in basic service delivery infrastructure in line with the increasing demand. The current population density is 48 people per square kilometre which makes Mossel Bay the third most dense municipal area within the Garden Route District after Bitou and Knysna respectively. (Western Cape Provincial Treasury SEP, 2021).

8.2.	Explain the socio-economic value/contribution of the proposed development.

- **Improve energy security and support the renewable energy sector**: South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The establishment of renewable energy facilities not only addresses environmental issues associated with climate change and consumption of scarce water resources, but also create significant socio-economic opportunities and benefits, specifically for historically disadvantaged, rural communities.

- **Creation of employment opportunities:** The direct employment opportunities associated with the operational phase of renewable energy projects are relatively limited. However, most employment will be in the construction phase.

- **Benefits associated with the socio-economic contributions:** The revenue from the proposed development can be used to support a number of social and economic initiatives in the area, including Creation of jobs, education, support for and provision of basic services, school feeding schemes, training and skills development, and support for Small, Medium and Micro Enterprises.

8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.

The project will make use of local labour as much as is practical for unskilled labour. A lot of the works are specialised and therefore will be done by specialists.

The Municipality is implementing the project completely to smooth out power supply to the WWTW. This will benefit the community.

The project will aim to reduce the impact of load shedding on the WWTW and if there is spare electricity it can be fed back into the grid.

8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development.

Construction phase:
The nearest houses to the proposed development is approx. 580 m to the north of the site. Potential construction nuisances will be temporary and is unlikely to affect the surrounding community as the site is not in close proximity to the nearest house or dwelling.

Operational phase:
The proposed development will positively impact on people's health and well-being because of the WWTW being supplied with electricity. Negative health impacts on people and communities' health and well-being as a result of loadshedding, have been reported. The security of electricity at the WWTW will allow for continuous operation of the facility.

The facility will be running mainly on solar energy, reducing the demand on fossil fuel derived energy, reducing carbon emissions, reducing pollution which is beneficial globally.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred property and site alternative.

The preferred and only property alternative is the Remainder of Portion 101 of the Farm Hartenbosch 217. The Hartenbos Waste Water Treatment Works is situated on this property and the proposed PV solar plant will provide the WWTW with more reliable electrical energy supply which will promote economic development and meet social needs while at the same time reducing local and global environmental impacts.

Figure 28: Remainder of Portion 101 of the Farm Hartenbosch 217 (red polygon) and the proposed site (yellow polygon).

Please note that the whole proposed site (Alternative A) is the preferred footprint being applied for. The technical specifications of Alternative B were calculated for the requirements of the WWTW facility. The need for Alternative A's footprint is due to the potential variation in materials and PV panels to construct the facility in order to achieve the calculated requirements of the facility. The contractor to be appointed will need to provide a construction proposal which means the efficiency of the PV panels

may vary. Therefore, it may be that the cheapest quoting contractor calculates that more PV panels, with a lower output, is the best option to deliver the best results. This may however result in a larger footprint than if higher efficiency panels are utilised, requiring a smaller footprint.

This potential variation in PV panel efficiency (and corresponding footprint) arises from the cost and availability of the panels, as more efficient panels may not be economically viable, or availability (stock) may be low or vice versa. Therefore, if the small footprint (Alternative B) is authorised and there aren't enough high efficiency panels available, the development of the facility could be delayed and run much higher costs than expected. Additionally, as the WWTW expands the rest of the area will be used for panels. If the budget allows the entire area of Alternative A will be covered in panels which will feed electricity back into the grid for Mossel Bay.

Provide a description of any other property and site alternatives investigated.

No other property alternatives exist.

Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.

The Hartenbos Waste Water Treatment Works is situated on this property and the proposed PV solar plant will provide the WWTW with more reliable electrical energy supply which will promote economic development and meet social needs while at the same time reducing local and global environmental impacts.

Provide a full description of the process followed to reach the preferred alternative within the site.

The specialists were sent to the property to assess it for the appropriate site. All three specialist (i.e., botanist, aquatic specialist and terrestrial biodiversity and faunal specialist) have found that the whole proposed site is developable.

Figure 29: Site ecological importance (SEI) map. (From the Botanical Report, Appendix G1).

Figure 30: "Constraints and Opportunities" map of the study area landscape showing areas which are of a lower sensitivity and are therefore suitable for potential development. (From the Ter. Bio and Faunal Species Report, Appendix G3).

Please see Section E of this report for more information on the specialist reports.

The botanist had, however, identified thicket patches in the northwestern corner as well as on the south western boundary of the site and it is his recommendation the exclude these patches from the layout. The thicket patches amount to a total area of 0.18 ha which decreases the size of Alternative B.

Discussed further in point 2 below.

Provide a detailed motivation if no property and site alternatives were considered.

The Hartenbos Waste Water Treatment Works is situated on this property and the proposed PV solar plant will provide the WWTW with more reliable electrical energy supply which will promote economic development and meet social needs while at the same time reducing local and global environmental

impacts.

Costs are also minimized at the proposed site as any other site could require long cables to get the power generated by the PV plant to the WWTW.

List the positive and negative impacts that the property and site alternatives will have on the environment.

Positive Impacts	**Negative Impacts**
Clearance of alien vegetation	Transformation of undeveloped land.
Utilisation of land within the urban edge of the Mossel Bay and within and already used property. .	
PV Solar Plant will be close by to where the power will mostly be used saving any costs and need for additional cables to tie into the WWTW.	

1.2. Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred activity alternative.

The preferred alternative is to clear the site of alien vegetation while retaining as much ground cover as possible and install PV Solar Panels along with the associated infrastructure.

Provide a description of any other activity alternatives investigated.

No other activity alternatives were investigated.

Provide a motivation for the preferred activity alternative.

South Africa's energy resources are currently under immense pressure, with the amount of the loadshedding increasing at least two- fold annually over the course of the last five years.

Considering the current problems experienced within Eskom in terms of availability and reliability of electrical energy supply, Mossel Bay Municipality recognises the need for planning more sustainable approaches to their energy production and distribution, to promote economic development and meet social needs while at the same time reducing local and global environmental impacts.

Provide a detailed motivation if no activity alternatives exist.

The purpose of this proposal is to develop a solar plant for the operation of Hartenbos WWTW.

List the positive and negative impacts that the activity alternatives will have on the environment.

Positive impacts:

- Adaptation to Climate change
- Eradication of alien invasive vegetation.
- Reducing the need for non-renewable energy resources.
- Alleviate loadshedding by generating surplus power.
- Ensure stable energy supply to the WWTW.
- Reduce reliance on Eskom and save costs over the long term.

Negative impacts:

- Transformation of undeveloped land.

1.3. Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts

Provide a description of the preferred design or layout alternative.

Proposed Site Development Plan and PV Array Layout

The proposed site development plan, indicating the positions for the new equipment associated with the hybrid energy solution, is indicated in Figure 31 below. These positions are purely indicative for preliminary design purposes and will need to be further investigated as part of the detail design development. (A full-scale drawing of the proposed SDP has been included as an annexure to the

report – Appendix L).

The main reason for the chosen positions is its central location between all of the different network components that need to be integrated. This ensures optimal cable lengths as well as easy access to all equipment for operation and maintenance purposes.

The figure below provides a typical arrangement of the PV Solar panels and associated mounting frames, taking into account the slope and orientation of the land available.

Figure 31: Original Proposed Layout (Option 1)

Figure 32: The New Preferred Layout after excluding the No-Go Areas.

Please note that the whole proposed site (Alternative A) is the preferred footprint being applied for. The technical specifications of Alternative B were calculated for the requirements of the WWTW facility only.

Provide a description of any other design or layout alternatives investigated.

Option 2 – Alternative B

Alternative B is the development of only approx. half of the preferred site. The botanist had identified thicket patches in the northwestern corner as well as on the south western boundary of the site and it is his recommendation the exclude these patches from the layout. The thicket patches amount to a total area of 0.18 ha which decreases the size of Alternative B.

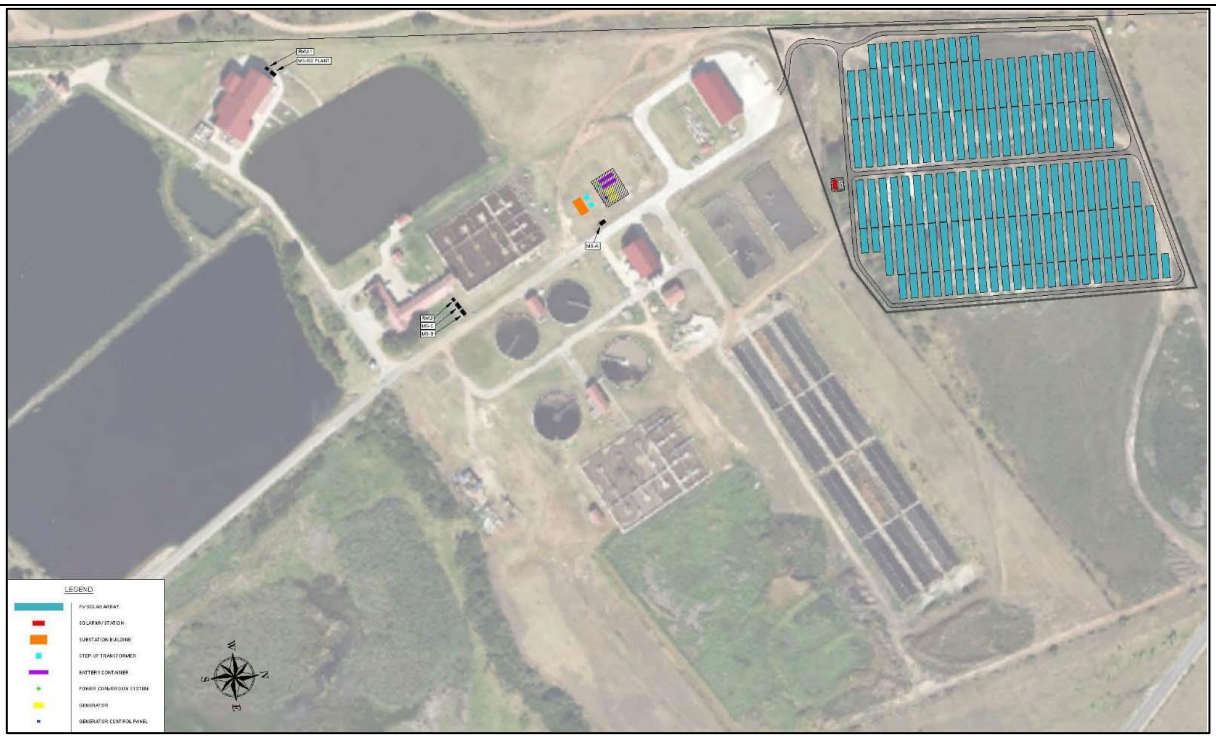


Figure 33: Proposed Site Development Plan (Option 2) – Alternative B

Figure 34: Proposed Site Development Plan (Option 2) – Alternative B with exclusion of the No-Go Areas.

Provide a motivation for the preferred design or layout alternative.

The need for Alternative A's footprint is due to the potential variation in materials and PV panels to construct the facility in order to achieve the calculated requirements of the facility. The contractor which is appointed will need to provide a proposal which means the efficiency of the PV panels may

vary. Therefore, it may be that the cheapest quoting contractor calculates that more PV panels, with a lower output, is the best route to go with the proposal. This will however result in a larger footprint than if higher efficiency panels are utilised, requiring a smaller footprint.

This potential variation in PV panel efficiency (and corresponding footprint) arises from the cost and availability of the panels, as more efficient panels may not be economically viable, or availability (stock) may be low or vice versa. Therefore, if the small footprint (Alternative B) is authorised and there aren't enough high efficiency panels available, the development of the facility could be delayed and run much higher costs than expected. Additionally, as the WWTW expands the rest of the area will be used for panels. If the budget allows the entire area of Alternative A will be covered in panels which will feed electricity back into the grid for Mossel Bay.

Provide a detailed motivation if no design or layout alternatives exist.

N/A

List the positive and negative impacts that the design alternatives will have on the environment.

The environmental impact assessment found that both alternatives (i.e., developing the whole site or only a portion of the site) will have no significant impact on the biophysical environment. The positive and negative impacts will thus be the same for both alternatives.

Alternative	Positive	Negative
Option 1 – Alternative A Preferred Alternative	• Transformation of an already disturbed and transformed area within an already utilised property. • Eradication of alien invasive vegetation. • Reducing the need for non-renewable energy resources. • Adaptation to Climate change • Alleviation of the impacts of loadshedding on the WWTWs.	• Temporary construction related nuisances.
Option 2 – Alternative B		

1.4.	Technology alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred technology alternative:

N/A

Provide a description of any other technology alternatives investigated.

N/A

Provide a motivation for the preferred technology alternative.

N/A

Provide a detailed motivation if no alternatives exist.

N/A

List the positive and negative impacts that the technology alternatives will have on the environment.

N/A

1.5.	Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred operational alternative.

Energy will be generated during the operational phase which will feed into the Wastewater Treatment Works' power supply. The excess will be fed to the Mossel Bay grid.

Provide a description of any other operational alternatives investigated.

None investigated as part of this BAR process.

Provide a motivation for the preferred operational alternative.

N/A
Provide a detailed motivation if no alternatives exist.
PV Solar Plants are globally recognised as the best practical option to generate renewable energy with the least negative environmental impact.
List the positive and negative impacts that the operational alternatives will have on the environment.
N/A

1.6.	The option of not implementing the activity (the 'No-Go' Option).

Provide an explanation as to why the 'No-Go' Option is not preferred.
The "No Go" alternative is the option of not developing the proposed development and associated infrastructure. The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and operation phase as well as a loss of the benefits associated with the of generation electricity. According to the botanist, in the case of the site not being developed (no-go alternative), it will remain in a degraded state with the potential for restoration being low.

1.7.	Provide and explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.

Other renewable energy system exist hydroelectric, concentrated solar array, wave energy. The proposed PV Solar Plant is the best suited proposal for the site to generate renewable energy.

1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.

It is proposed to develop a Photovoltaic Solar Plant on Remainder of Portion 101 of the Farm Hartenbosch 217. Alternative A is the preferred site footprint of approx. 6 ha. This site is relatively flat and large enough to avoid the thicket patches. The site is currently unused and in an already degraded state. The proposed PV Solar Plant is therefore seen as an appropriate proposal for this site and will alleviate the pressures of loadshedding during the operational phase.

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).
Although the botanist as well as the terrestrial biodiversity specialist concluded that the whole site is considered as being of "Very Low" sensitivity from a terrestrial biodiversity perspective and deemed the whole site as being developable, the botanist recommends excluding the identified thicket patches form the development footprint. As mentioned before, these patches contain two plant species of conservation concern and one protected tree species which will require a forestry permit to be removed. To avoid the removal of these species and to conserve these thicket patches, it should be considered as No-Go areas. The figure below highlights these areas in red.

Figure 35: Recommended No-Go areas in red.

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.

The assessment criteria utilised in this environmental impact assessment is based on, and adapted from, the *Guideline on Impact Significance, Integrated Environmental Management Information Series 5* (Department of Environmental Affairs and Tourism (DEAT), 2002) and the *Guideline 5: Assessment of Alternatives and Impacts in Support of the Environmental Impact Assessment Regulations* (DEAT, 2006).

Determination of Extent (Scale):

Site specific	On site or within 100 m of the site boundary, but not beyond the property boundaries.
Local	The impacted area includes the whole or a measurable portion of the site and property, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g., neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to the construction phase.
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 8 months after the completion of the construction phase.
Medium term	The impact will last up to the end of the construction phase, where after it will be entirely negated in a period shorter than 3 years after the completion of construction activities.
Long term	The impact will continue for the entire operational lifetime of the development but

	will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

No significance	The impact is not substantial and does not require any mitigation action.
Low	The impact is of little importance but may require limited mitigation.
Medium	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium-High	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Very High	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.
Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

Completely Reversible	The impact is reversible with implementation of minor mitigation measures
Partly Reversible	The impact is partly reversible but more intense mitigation measures
Barely Reversible	The impact is unlikely to be reversed even with intense mitigation measures
Irreversible	The impact is irreversible, and no mitigation measures exist

Determination of Degree to which an Impact can be Mitigated:

Can be mitigated	The impact is reversible with implementation of minor mitigation measures
Can be partly mitigated	The impact is partly reversible but more intense mitigation measures
Can be barely mitigated	The impact is unlikely to be reversed even with intense mitigation measures
Not able to mitigate	The impact is irreversible, and no mitigation measures exist

Determination of Loss of Resources:

No loss of resource	The impact will not result in the loss of any resources
Marginal loss of resource	The impact will result in marginal loss of resources
Significant loss of resources	The impact will result in significant loss of resources
Complete loss of resources	The impact will result in a complete loss of all resources

Determination of Cumulative Impact:

Negligible	The impact would result in negligible to no cumulative effects
Low	The impact would result in insignificant cumulative effects
Medium	The impact would result in minor cumulative effects
High	The impact would result in significant cumulative effects

Determination of Consequence significance:

Negligible	The impact would result in negligible to no consequences
Low	The impact would result in insignificant consequences
Medium	The impact would result in minor consequences
High	The impact would result in significant consequences

4. Assessment of each impact and risk identified for each alternative

Note: The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. The EAP may decide to include this section as Appendix J to this BAR.

Construction Phases Impacts

Due to the highly transformed state of the site and a high presence of invasive aliens, the impact posed by the development (both layout options) on **terrestrial biodiversity** is expected to be of **low significance**. Although the proposed development encroaches significantly onto a mapped ESA, it is **not expected to impact on the functionality of the greater biodiversity network**.

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Terrestrial biodiversity (vegetation)**		
Nature of impact:			Site remains in a degraded state with the potential for restoration low
Extent and duration of impact:			
Consequence of impact or risk:			
Probability of occurrence:			
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:			
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)			
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:			
Proposed mitigation:	The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised: • In order to avoid triggering any relevant NEMA listed activities, it is recommended Botanical Impact Statement that the layout be amended to exclude the thicket patches. See Activity 12 of Listing Notice 3 of the NEMA EIA regulations. • As a duty of care measure, indigenous succulent and bulb species (e.g., *Carpobrotus* species) can be searched and rescued to be replanted in suitable rehabilitation areas on site after construction. *Carpobrotus* species are useful soil binders.		
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**No significant impact identified**		

The **impact on plant species**, including potential SCC and protected tree species, is also **expected to be of little significance or concern**. All the recorded species are common and widespread in the region. Two SCC were recorded on the site, namely *Hermannia lavandulifolia* (VU) and *Carpobrotus muirii* (NT). Both are still very common in the Mossel Bay area. A single milkwood, a protected tree species, was also recorded in one of the thicket patches on the southern side of the site. With a slight amendment to the layout, all these species can still be accommodated on site.

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Impact on plant species**		
Nature of impact:			Site remains in a degraded state with the potential for restoration low
Extent and duration of impact:			
Consequence of impact or risk:			
Probability of occurrence:			
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:			
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)			
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:			
Proposed mitigation:	The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised: • In order to avoid triggering any relevant NEMA listed activities, it is recommended Botanical Impact Statement that the layout be amended to exclude the thicket patches. See Activity 12 of Listing Notice 3 of the NEMA EIA regulations. As a duty of care measure, indigenous succulent and bulb species (e.g., *Carpobrotus* species) can be searched and rescued to be replanted in suitable rehabilitation areas on site after construction. *Carpobrotus* species are useful soil binders.		
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**No significant impact identified**		

Based on the results of the desktop review and the site verification, it can be concluded that the proposed development of the solar PV plant on the Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, **will not have any impact on any freshwater biodiversity and that the sensitivity of aquatic biodiversity on the property can be regarded as Low - regardless of the chosen option.**

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Freshwater Biodiversity**		
Nature of impact:			
Extent and duration of impact:			
Consequence of impact or risk:			
Probability of occurrence:			
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:			
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)			
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	No Mitigation Measures Necessary		
Proposed mitigation:			
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**No significant impact identified**		**No Impact**

The site exists in a highly degraded state with almost no permanent terrestrial fauna and with the only notable faunal assemblage being highly mobile avifauna which are able to move away from any disturbance on their own accord. To this end, **impacts from the proposed development will be negligible from a faunal perspective during the construction and operational phases** of the project, and will not impinge on biodiversity patterns and processes in the broader landscape. This leaves the entire site as developable from a faunal perspective, with **no mitigation measures or impact management actions being advocated**.

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Terrestrial biodiversity (fauna)**		
Nature of impact:			
Extent and duration of impact:			
Consequence of impact or risk:			
Probability of occurrence:			
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:			
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or			

Very-High)		
Degree to which the impact can be avoided:		
Degree to which the impact can be managed:		
Degree to which the impact can be mitigated:		
Proposed mitigation:	no mitigation measures or impact management actions being advocated.	
Residual impacts:		
Cumulative impact post mitigation:		
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Negligible**	

Socio-Economic Impact

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**The majority of work during the construction phase is likely to be undertaken by local contractors and builders. The proposed development will therefore represent a positive benefit for the local construction and building sector in the Garden Route District Municipality (GRDM) and Mossel ay Local Municipality (MBLM). The majority of the building materials associated with the construction phase will be sourced from locally based suppliers from the GRDM and MBLM. A significant portion of the annual wage bill will be spent in the local GRDM and MBLM.**		**The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction. A high negative socio-economic impact significance would occur if the proposed development is not constructed.**
Nature of impact:	Positive		Negative
Extent and duration of impact:	Regional and Temporary		
Consequence of impact or risk:	Creation of Business & Employment Opportunities		
Probability of occurrence:	Definite		Definite
Degree to which the impact may cause irreplaceable loss of resources:	N/A – this is a positive impact, proposed to be enhanced		
Degree to which the impact can be reversed:	N/A – this is a positive impact, proposed to be enhanced		
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**		**High (-)**
Degree to which the impact can be avoided:	N/A		
Degree to which the impact can be managed:	N/A		
Degree to which the impact can be mitigated:	N/A – this is a positive impact, proposed to be **enhanced**		The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Proposed mitigation:	See below		The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Residual impacts:			

Cumulative impact post mitigation:		
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**High (+)**	**High (-)**

Proposed Enhancement:

In order to enhance local employment and business opportunities associated with the construction phase of the project the following measures are proposed to be implemented:

- The developer will inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors;
- The developer will establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process for the bulk services component of the project. These companies will be notified of the tender process and invited to bid for project related work;
- The developer in consultation with the appointed contractor/s will look to employ a percentage of the labour required for the construction phase from local area in order to maximize opportunities for members from the local HD communities.

Visual Impact

The nature of the visual impacts will be the visual effect the activity would have on the receiving environment, namely the visual effects the PV Solar Power Plant has on the rural, residential, industrial and urban landscape.

Alternative:	**Option 1(Preferred)**	**Option 2**	**No-Go**
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Visual scarring as a result of clearing vegetation and earth-works**		**Stays as is**
Nature of impact:			
Extent and duration of impact:	Local – limited to the site and surrounding municipal area Temporary		
Consequence of impact or risk:			
Probability of occurrence:	Definite		
Degree to which the impact may cause irreplaceable loss of resources:	Marginal		
Degree to which the impact can be reversed:	Partly		
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium**	**Medium -Low**	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	Minimise disturbance, create berms for screening on east, north and west boundaries, stockpile weedless topsoil for revegetation, revegetate berms with ground covers and hedges/shrubs/trees and PV areas with low growing indigenous lawn grass		
Residual impacts:			
Cumulative impact post mitigation:	Low	Low	
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium - Low**	**Low**	**No Impact**

Operational Phase Impacts

Alternative:	Option 1(Preferred)	Option 2	No-Go
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**The primary goal of the proposed project is to improve energy security in for the Hartenbos WWTW and potentially Mossel Bay by generating additional energy. The proposed PV SEFs also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs.**		**The No-Development option would represent a lost opportunity in terms of the benefits associated with the provision of additional energy security.**
Nature of impact:	Positive		Negative
Extent and duration of impact:	National and Permanent		National and Permanent
Consequence of impact or risk:	**Improve energy security and support renewable sector**		
Probability of occurrence:	Definite		Definite
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.		
Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.		Irreversible
Indirect impacts:			
Cumulative impact prior to mitigation:	High (+)		Medium (-)
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**High (+)**		**High (-)**
Degree to which the impact can be avoided:	N/A		
Degree to which the impact can be managed:	N/A		
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.		The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Proposed mitigation:	The proposed development represents an enhancement measure on its own.		The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Residual impacts:			
Cumulative impact post mitigation:	High (+)		Medium (-)
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**		**Medium (-)**

Visual impact

Alternative:	Option 1(Preferred)	Option 2	No-Go
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Visibility from the Residential areas to the north and south and from the tourist Routes/access roads.**		**Stays as is**
Nature of impact:			
Extent and duration of impact:	Local – limited to the site and surrounding municipal area Medium to Long Term		
Consequence of impact or risk:			
Probability of occurrence:	Highly Probable		
Degree to which the impact may cause irreplaceable loss of resources:	Marginal		
Degree to which the impact can be reversed:	Partly		
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium - High**	**Medium**	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	Create berms for screening on east, north and west boundaries, stockpile weedless topsoil for revegetation, revegetate berms with indigenous ground covers and hedges/shrubs/trees and PV areas with low growing indigenous lawn grass, Plant trees along Monte Christo Road		
Residual impacts:			
Cumulative impact post mitigation:	Low	Low	
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	**Medium - Low**	**Low**	**No Impact**

Mitigation Measures

The Hartenbos WWTW PV Solar Plant will result in a low to medium visual impact, being visible from residential areas and commuter roads.

Certain mitigation measures will reduce the visual impact of the proposed development on the residents and commuters namely:

- Create an earth/sand berm (long earth mound) on the eastern, northern and western borders of the site, approximately 1 - 1,5m high, within the fenced area of the site and plant this with coastal scrub typical of the surrounding area, that will get to a height of 1 - 1,5 meters. The selection of the plant species should be made in consultation with the botanist.
- Alternatively, a hedge could be planted along the eastern, northern and western boundaries with some larger trees along the eastern boundary that will help screen the PV Solar Plant from the north east - Hartland Estate, N2 and R102.
- Structures on the site should be painted recessive colours such as charcoal grey and the building materials should also be non - reflective and dark grey colours.

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1.	Provide a summary of the findings and impact management measures identified by all Specialist and an indication of how these findings and recommendations have influenced the proposed development.

The table below summarises the potential Impacts associated with the proposed development post mitigation. Please refer to the Section I (2) for the proposed mitigation measures to ensure the corresponding rating post mitigation.

Impact	Option 1(Preferred)	Option 2	No-Go
Construction Phase			
Impact on terrestrial biodiversity (vegetation)	No significant impact identified		No Impact
Impact on plant species	No significant impact identified		No Impact
Impact on aquatic biodiversity	No significant impact identified		No Impact
Impact on terrestrial biodiversity (fauna)	Negligible		No Impact
Craetion of temporary jobs	High (+)		No Impact
Visual scarring as a result of clearing vegetation and earth-works	Medium - Low (-)	Low (-)	No Impact
Operational Phase			
Energy security for the Hartenbos WWTW	Medium (+)		No Impact
Visibility from the Residential areas to the north and south and from the tourist Routes/access roads.	Medium - Low (-)	Low (-)	No Impact

BOTANICAL COMPLIANCE REPORT, Appendix G1

Terrestrial biodiversity (vegetation)

It is the author's opinion that the site is significantly transformed/degraded, with the chance of rehabilitation slim. Due to the highly transformed state of the site and a high presence of invasive aliens, the impact posed by the development (both layout options) on terrestrial biodiversity is expected to be of low significance. Although the proposed development encroaches significantly onto a mapped ESA, it is not expected to impact on the functionality of the greater biodiversity network for the reason(s) mentioned above.

The thicket patches amount to a total area of 0.18 ha, which may imply that Activity 12 of Listing Notice 3 of the relevant NEMA EIA regulations (as amended on 7 April 2017) will be triggered. In terms of the above regulations, the "clearance of an area of 300 m^2 or more of indigenous vegetation within any critically endangered or endangered ecosystem listed in terms of Section 52 of the NEMBA" is a listed activity. Environmental authorisation will be required in this instance. It is therefore recommended that the layout be slightly amended to exclude the thicket patches, which are accommodated in the description of Mossel Bay Shale Renosterveld.

In the case of the site not being developed (no-go alternative), it will remain in a degraded state with the potential for restoration low.

Plant species

The impact on plant species, including potential SCC and protected tree species, is also expected to be of little significance or concern. All the recorded species are common and widespread in the region. Two SCC were recorded on the site, namely *Hermannia lavandulifolia* (VU) and *Carpobrotus muirii* (NT). Both are still very common in the Mossel Bay area. A single milkwood, a protected tree species, was also recorded in one of the thicket patches on the southern side of the site. With a slight amendment to the layout, all these species can still be accommodated on site. The probability of

SCC listed in the Screening Report to occur in the vicinity of the site is indicated in Table 2. Those with a low-medium probability to occur here have been recorded in similar habitats elsewhere in the Mossel Bay area.

The identified construction and operational phase impacts are as follows:

Construction Phase
➢No significant impact identified.

Operational phase
➢Increased alien infestation.

Table 3: Threatened plant species as listed in the Screening Report.

Sensitivity	Feature(s)	Probability of presence & habitat
Medium	*Ruschia leptocalyx*	**Low**; recorded by the author and others elsewhere in the Mossel Bay area
Medium	*Selago ramosissima*	**Low-medium**; recorded in Mossel Bay area
Medium	*Hermannia lavandulifolia*	**Recorded on site**
Medium	Sensitive Species 633	**Low**; known from Klein Brak
Medium	Sensitive Species 268	**Low**; recorded in Mossel Bay area, but in a different habitat type
Medium	*Marsilea schelpeana*	**Low**; wetland species
Medium	Sensitive Species 1024	**Low**; recorded in renosterveld at Gondwana, east of Herbertsdale
Medium	*Relhania garnotii*	**Low**; known from Mossel Bay Shale Renosterveld, but no iNat records from the Mossel Bay area
Medium	*Polygala pubiflora*	**Low-medium**; limestone and stony clay soils
Medium	Sensitive Species 980	**Low**; recorded in renosterveld at Gondwana, northwest of Mossel Bay
Medium	Sensitive Species 516	**Low**; recorded in Mossel Bay area, but in a different habitat type
Medium	Sensitive Species 800	**Low-medium**; recorded in limestone and clay soils in Mossel Bay area
Medium	Sensitive Species 763	**Low**; no known records from Mossel Bay
Medium	*Diosma passerinoides*	**Low**; known from the hills between Herbertsdale and Friemersheim
Medium	*Agathosma microcarpa*	**Low-medium**; recorded in Mossel Bay area

The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity described above. In this instance, the loss of biodiversity and resultant cumulative impact is considered small (acceptable) due to the transformed state of the site.

Recommended Mitigation Measures

The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised:

- It is recommended that the layout be amended to exclude the thicket patches. Please see No-Go Areas and Figure 32 for new amended layout.
- As a duty of care measure, indigenous succulent and bulb species (e.g., *Carpobrotus* species)

can be searched and rescued to be replanted in suitable rehabilitation areas on site after construction. *Carpobrotus* species are useful soil binders.

AQUATIC BIODIVERSITY COMPLIANCE STATEMENT, Appendix G2

Based on the results of the desktop review and the site verification, it can be concluded that the proposed development of the solar PV plant on the Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, will not have any impact on any freshwater biodiversity and that the sensitivity of aquatic biodiversity on the property can be regarded as Low - regardless of the chosen option.

TERRESTRIAL FAUNAL AND AVIFAUNAL SPECIES COMPLIANCE STATEMENT REPORT, Appendix G3

This report provides a representative faunal and avifaunal assessment of the study area considering facets of: (sections listed refer to sections in the abovementioned report)

- Terrestrial faunal and avifaunal habitat composition (Section 7),
- terrestrial faunal and avifaunal components (Section 8),
- the presence of any terrestrial faunal and avifaunal SCC on the site (Section 9),
- the SEI of the single habitat within the study area, with associated acceptable development activities (Section 10), and
- a "Constraints and opportunities" map of the site (Section 11).

Taken together, the results of the report indicate the following:

- The study area is comprised of a single habitat type which consists of pioneer shrub vegetation on an area which appears to have been previously used as a stockpile for dry waste from the Hartenbos WWTW. To this end, almost no natural habitats remain on the site, and the site appears to harbour a highly degraded habitat structure with significant signs of pollution (Section 7).
- Faunal and avifaunal diversity appears low and is comprised of only relatively common species of "Least Concern". Overall, the site supports no notable predator-prey dynamics, is indicative of highly altered and compromised ecosystem dynamics and exhibits an almost complete lack of connectivity to surrounding natural areas. To this end, the site does not represent a functional or important ecological link within the study area landscape (Section 8).
- The study area does not support suitable habitats for any of the SCC considered, and it is highly unlikely that any of these species will occur here. To this end, the entire site may be considered as of a **"Very low" sensitivity** from a terrestrial faunal and avifaunal perspective (Section 9).
- The entire site is retrieved as having a **"Very low" SEI**, allowing for development activities of medium to high impact without restoration activities being required (Section 10).
- Current impacts within the study area (a highly degraded and modified state with almost no natural habitats remaining, significant signs of pollution, an isolated nature in relation to the surrounding landscape and a highly impaired terrestrial faunal diversity) appear severe and therefore contribute to the highly altered and compromised ecosystem dynamics on the site (Section 11).
- Impacts from the proposed development will be negligible from a faunal perspective during the construction and operational phases of the project and will not impinge on biodiversity patterns and processes in the broader landscape. This leaves the entire site as developable from a faunal perspective, **with no mitigation measures or impact management actions being advocated** (Section 11).
- The study area landscape may be considered as of a **"Low" to "Very low" sensitivity"** from a terrestrial faunal and avifaunal perspective, given a highly degraded habitat structure which harbours a highly impaired faunal diversity, and does not constitute suitable habitat for any of the SCC considered (Subsection 12.1).
- The study area exists in a highly degraded and secondary state, retaining almost none of its

original natural character or species composition with highly compromised biodiversity patterns, processes and ecosystem dynamics and with poor connectivity to the surrounding landscape. To this end, the study area fails to meet the criteria of an ESA, and no management objectives for the study area are prioritised, **allowing for high impact land uses** (Subsection 12.2).

Taken together therefore, there is no reason why the proposed development should not proceed, and the development is supported from a faunal biodiversity perspective.

HERITAGE STATEMENT, Appendix G4

The development footprint is significantly transformed and consists of "made ground", and no colonial or pre-colonial heritage resources of significance were identified in the study area. If present in buried sediments, then Stone Age implements are expected to be of low significance and Not Conservation Worthy. No caves or rock shelters occur in the development footprint. No heritage resources in the surroundings will be impacted by the proposed activity.

Because there are no significant heritage resources associated with the development footprint, it does not meaningfully contribute to the already altered cultural landscape of the area. For the same reason there will be negligible to no cumulative impact on the heritage value of the area.

Being a field of solar panels, the proposed PV solar plant will have a relatively low vertical aspect and will be partially screened by existing vegetation and developments. Nevertheless, on heritage grounds, due to the transformed nature of the site and the absence of heritage resources or themes in and around the affected portion of RE/101/217rf 116, the proposed solar facility and battery energy storage system will have a negligible to zero impact on the visual or aesthetic heritage value of the area. The former rural landscape is already transformed into an urban and residential cultural landscape with associated infrastructure. Consequently, the proposed solar plant will have negligible to zero visual impact on the aesthetic value of the area.

The positive socio-economic impact, including short-, medium- and long-term jobs as well as the urgent need for increasing the supply of electricity outweigh the negligible to zero negative impacts this project may have on heritage resources.

Because of the above, and because there is no reason to believe that significant heritage resources will be impacted by the proposed activity, it is recommended that the proposed activity be approved in full, and that a Heritage Impact Assessment is not warranted for the project.

Nevertheless, it is recommended that Heritage Western Cape consider and/or require that the following be included in the Environmental Authorisation / Environmental Management Program, if the project is approved:

- although not requiring further Palaeontological investigation, an alert for the uncovering of fossil wood must be included in the Environmental Authorisation and/or the Environmental Management Program (EMP) for the construction phase of project,
- due to the disturbed and transformed nature of the development footprint, as well as the findings of this and previous archaeological studies, archaeological monitoring is NOT recommended, but,
- if any human remains or significant archaeological materials are exposed during vegetation clearing or excavation activities, then the find should be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately. These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities. Any work in mitigation, if deemed appropriate, should be commissioned, and completed before construction continues in the affected area and will be at the expense of the developer.

VISUAL IMPACT ASSESSMENT, Appendix G5

The Hartenbos WWTW proposed PV Solar Plant is situated within an area that is characteristically light industrial, i.e. the WWTW and the green waste recycling/chipping area. The proposed PV Solar panels are therefore congruent with the immediate surrounds.

The affected residential areas are at least 1km from the site and N2 and R102 tourist routes are at least 500m from the site. The distance mitigates the visibility. The Monte Christo Road which is the Estates access road, passes next to the eastern boundary of the site and users will be the most impacted seeing the structures in close proximity if Alternative 1 (Option A) is developed.

The Hartenbos WWTW proposed PV Solar Plant will result in a medium to low visual impact, being visible from residential areas and commuter and tourist roads in the surrounding municipal areas.

Mitigation measures will reduce the potential impacts and if these mitigation measures are implemented. The significance of the visual impacts will be medium - low for Option A and Low for

Option B. The lesser footprint required for Option B allows more space for mitigation measures to be implemented.

The Scenic Resources and Landscape Character of the area will be little impacted as the development site is relatively low lying and within an area of similar development character. The proposed development is generally low, its scale is in keeping with other rural and residential blocks.

The specialist is of the opinion that if the mitigation measures are enforced, that the proposed Alternative 1 (Option A) will have a MEDIUM – LOW VISUAL IMPACT and Alternative 2 (Option B) will have a LOW VISUAL IMPACT.

2.	List the impact management measures that were identified by all Specialist that will be included in the EMPr

Recommended mitigation measures by the botanist, Appendix G1:

The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised:

- It is recommended that the layout be amended to exclude the thicket patches.

- As a duty of care measure, indigenous succulent and bulb species (e.g., *Carpobrotus* species) can be searched and rescued to be replanted in suitable rehabilitation areas on site after construction. *Carpobrotus* species are useful soil binders. However, it is proposed that the little areas of disturbance as possible is created during construction.

Recommendations in the Heritage Statement, Appendix G4:

It is recommended that the following be included in the Environmental Authorisation / Environmental Management Program, if the project is approved:

- although not requiring further Palaeontological investigation, an alert for the uncovering of fossil wood must be included in the Environmental Authorisation and/or the Environmental Management Program (EMP) for the construction phase of project,
- due to the disturbed and transformed nature of the development footprint, as well as the findings of this and previous archaeological studies, archaeological monitoring is NOT recommended, but,
- if any human remains or significant archaeological materials are exposed during mining activities, then the find should be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately. These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities. Any work in mitigation, if deemed appropriate, should be commissioned, and completed before construction continues in the affected area and will be at the expense of the

developer.

Recommended mitigation measures by the visual specialist, Appendix G5:

The Hartenbos WWTW PV Solar Plant will result in a low to medium visual impact, being visible from residential areas and commuter roads.

Certain mitigation measures will reduce the visual impact of the proposed development on the residents and commuters namely:

- Create an earth/sand berm (long earth mound) on the eastern, northern and western borders of the site, approximately 1 - 1,5m high, within the fenced area of the site and plant this with coastal scrub typical of the surrounding area, that will get to a height of 1 - 1,5 meters. The selection of the plant species should be made in consultation with the botanist.
- Alternatively, a hedge could be planted along the eastern, northern and western boundaries with some larger trees along the eastern boundary that will help screen the PV Solar Plant from the north east - Hartland Estate, N2 and R102.
- Structures on the site should be painted recessive colours such as charcoal grey and the building materials should also be non - reflective and dark grey colours.

Figure 36: View of proposed PV Solar Plant from Monte Christo Estate, 1000 meters to the north. Panels will be less visible as site slopes down from north (front) to south (back).

Figure 37: View of proposed PV Solar Plant from Monte Christo Estate, 1000 meters to the north showing.

3.	List the specialist investigations and the impact management measures that will **not** be implemented and provide an explanation as to why these measures will not be implemented.

N/A

4.	Explain how the proposed development will impact the surrounding communities.

The Mossel Bay Municipality (MBM) aims to improve quality of life within its supply area by improving energy efficiency, availability and reliability. MBM is therefore embarking on a journey of implementing embedded generation (own generation) and energy storage alternatives and thereby contributing to sustainable growth and development in the area through reliable and cost-effective energy provision within its area of jurisdiction.

It will provide constant power to the WWTW at lower costs.

Considering the current problems experienced within Eskom in terms of availability and reliability of electrical energy supply, Mossel Bay Municipality recognises the need for planning more sustainable approaches to their energy production and distribution, to promote economic development and meet social needs while at the same time reducing local and global environmental impacts.

5.	Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.

Running the WWTW from renewable energy will lower GHG emissions and help with combating climate change. The site is located approx. 30 m above sea level and will therefore to sea level rises.

6.	Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.

There are no conflicting recommendations from the different specialists.

7.	Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.

All the specialists found that there will be very low to no impacts on the biophysical environment. The botanist has recommended mitigation measures as a duty of care which will be incorporated into the EMPr and compliance will be monitored by the appointed ECO during the pre-construction and construction phases.

The archaeologist (heritage specialist) recommends that if any human remains or significant archaeological materials are exposed during vegetation clearing or excavation activities, then the find should be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately. These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities. Any work in mitigation, if deemed appropriate, should be commissioned, and completed before construction continues in the affected area and will be at the expense of the developer.

8.	Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.

MITIGATION HIERARCHY		
1	AVOID IMPACTS	All the specialists found that there will be very low to no impacts on the biophysical environment. The botanist did however recommend excluding two thicket patches from the development footprint.
2	MINIMISE IMPACTS	The implementation of the EMPr during the construction phase will minimise the impacts associated with the construction phase.
3	RECTIFY	The disturbances created by the construction phase will be rehabilitated in accordance with the EMPr.
4	OFFSET	Not necessary as no residual impacts not addressed by the previous steps of the mitigation hierarchy

SECTION J: GENERAL

1. Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.

The proposed activity is on a portion of RE/101/217 that is already transformed by the Hartenbos WWTW, transport infrastructure and agricultural activities. In addition, Google Earth historic imagery shows that the transformation of the proposed development footprint begins by at least 2005 with importing, dumping, and levelling of stockpiles of sediment likely originating from the Hartenbos WWTW (evident from vehicle tracks / roads), but possibly from elsewhere too. By 2019 this process has affected about 90% of the development footprint resulting in the vast bulk of the study area consisting of "made ground" with the original surface sediments now buried (Figures 35, 36 & 37).

Figure 38: Some disturbance of study area by 2005 (top) and notable dumping and spreading of stockpiles in 2013. Note that the offset in the 2005 image is a Google Earth mapping error. Courtesy of Google Earth 2023. (Source: Heritage Statement in support of Heritage Western Cape Notification of Intent to Develop (HWC NID – Section 38), Proposed Hartenbos WWTW PV Solar Plant on a Portion of RE/101/217 of Farm Hartenbosch, Mossel Bay Municipality, Western Cape Province, 2023, Prepared by Dr. Peter Nilssen)(Appendix G4).

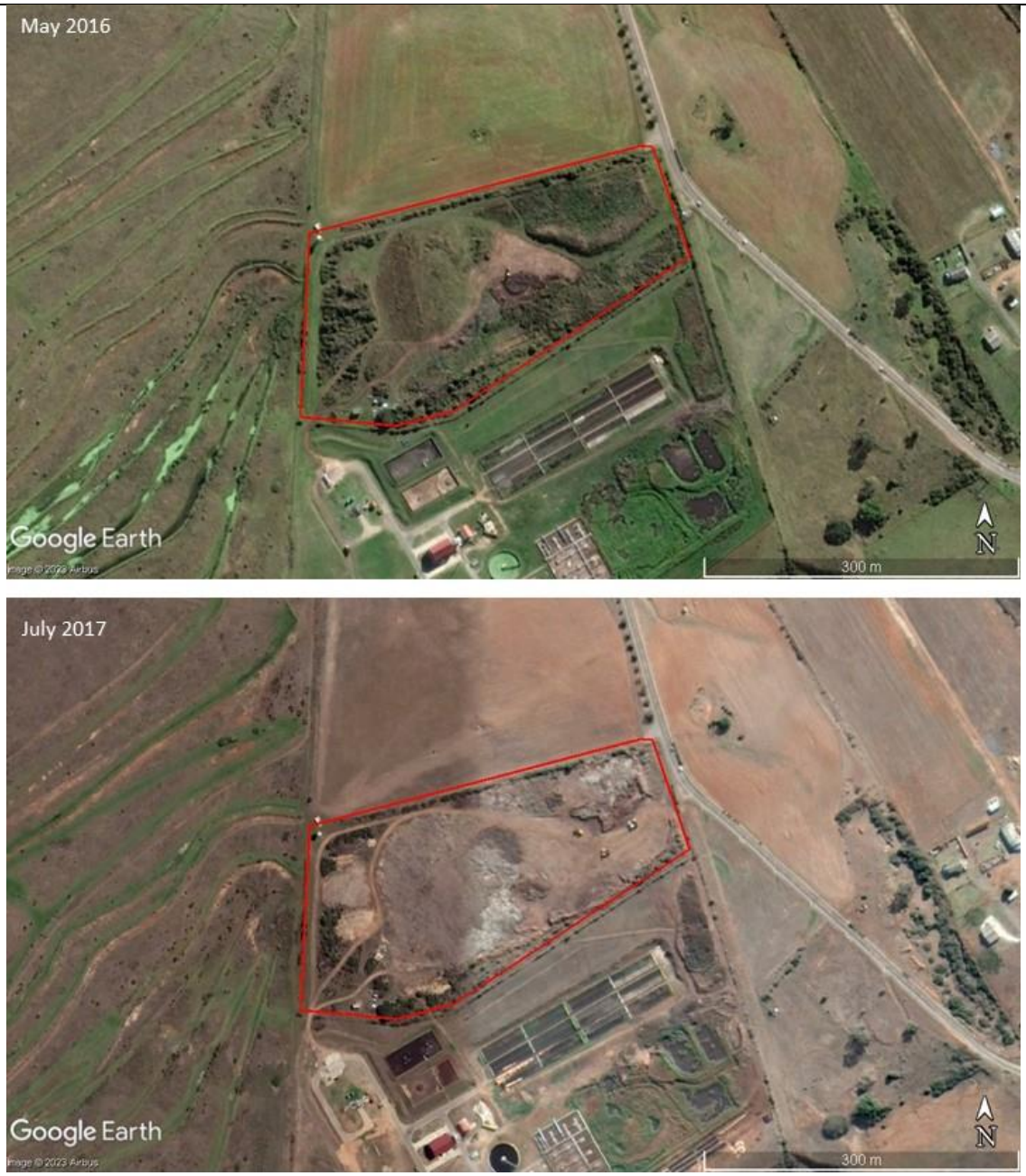


Figure 39: Further evidence of dumping and spreading of stockpiles in 2016 and 2017. Courtesy of Google Earth 2023. (Source: Heritage Statement in support of Heritage Western Cape Notification of Intent to Develop (HWC NID – Section 38), Proposed Hartenbos WWTW PV Solar Plant on a Portion of RE/101/217 of Farm Hartenbosch, Mossel Bay Municipality, Western Cape Province, 2023, Prepared by Dr. Peter Nilssen)(Appendix G4).

Figure 40: Evidence of continued dumping and spreading of stockpile sediments in 2018 and 2019 with the bulk of the study area now completely transformed and consisting of "made ground". Courtesy of Google Earth 2023. (Source: Heritage Statement in support of Heritage Western Cape Notification of Intent to Develop (HWC NID – Section 38), Proposed Hartenbos WWTW PV Solar Plant on a Portion of RE/101/217 of Farm Hartenbosch, Mossel Bay Municipality, Western Cape Province, 2023, Prepared by Dr. Peter Nilssen)(Appendix G4).

Botanical Compliance Report, Appendix G1:

This report sets out the results from a desktop study, as well as a field survey conducted on 27 September 2023, to ascertain terrestrial biodiversity and plant species constraints and possible impacts associated with the development of a PV solar plant next to the Hartenbos WWTW on Portion 101 of Farm Hartenbosch 217.

The vegetation covering the site can be described as an alien herbland, with a few small patches of thicket in the north-western corner and on the southern side. The dominant species are all herbaceous weeds and grasses. Due to the severity of past land-use activities, it is highly unlikely that it will return to natural vegetation. The thicket patches are also somewhat degraded. All the recorded indigenous species are common and widespread in the region. The two recorded SCC,

namely *Hermannia lavandulifolia* (VU) and *Carpobrotus muirii* (NT), are both very common in the Mossel Bay area. A single milkwood, a protected tree species, was also recorded in one of the thicket patches. With a slight amendment to the development layout, all these species can still be accommodated on site.

Due to the highly transformed state of the site, the impact on both terrestrial biodiversity and plant species is expected to be of low significance. Despite the site's position inside the biodiversity network, it is highly compromised by past agricultural and dumping activities and invasive aliens. The chance of successful rehabilitation is slim. It is therefore recommended that the proposed development be considered for approval, subject to the consideration of the proposed mitigation measures. Please see the new preferred layout in figure 32 which considers the Botanist's recommendation.

Aquatic Biodiversity Compliance Statement, Appendix G2:

Based on the results of the desktop review and the site verification, it can be concluded that the proposed development of the solar PV plant on the Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, will not have any impact on any freshwater biodiversity and that the sensitivity of aquatic biodiversity on the property can be regarded as Low - regardless of the chosen option.

Terrestrial Biodiversity and Fauna Species Report, Appendix G3:

1. Listed sensitivity in the DFFE Screening Tool Report

Although the site sensitivity for the study area is listed as "High" in the DFFE Screening Tool Report, the results from the current report indicate that the **site may be considered as of a "Low" to "Very low" sensitivity from a terrestrial faunal and avifaunal perspective**. This follows from the highly degraded habitat structure on the site which harbours a highly impaired faunal diversity and does not constitute suitable habitat for any of the SCC considered.

2. Overlap with an Ecological Support Area (ESA)

Currently, the site overlaps with a terrestrial Ecological Support Area (ESA) over its entirety. Following the ground-truthing phase however, it was established that **the study area exists in a highly degraded and secondary state**, retaining almost none of its original natural character or species composition **with highly compromised biodiversity patterns**, **processes and ecosystem dynamics** and with **poor connectivity to the surrounding landscape**. To this end, the study area fails to meet the criteria of an ESA, which is defined as: "Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services.". **As such, no management objectives for the study area are prioritised, allowing for high impact land uses**.

Heritage Statement, Appendix G4:

The following conclusions and recommendations were arrived at by Dr. Nilssen after reviewing information obtained through:

- previous heritage studies and HWC applications in the vicinity of the development footprint,
- SAHRIS PalaeoSensitivity map and inputs from palaeontologist Prof John Pether,
- previous archaeological and heritage related studies in the surrounding area,
- SG Diagrams,
- historic and Google Earth aerial photographs, and
- a site inspection (archaeological walk-through).

The SAHRIS PalaeoSensitivity map shows that the study area is shaded red, meaning that palaeontological sensitivity is VERY HIGH and that "field assessment and protocol for finds is required". Even though the study area is transformed and consists of "made ground", to err on the safe side palaeontologist, Prof John Pether was consulted by Dr. Nilssen for inputs.

Prof Pether concludes as follows "Due to the extensive transformation of the site, and the prevalence of petrified fossil wood in the general area, a significant impact on the palaeontological resources of the Hartenbos Fm., due to construction of the SEF and BESS, is not anticipated" (Pether 2023, Pg. 3).

"Just in case in situ fossil wood is unearthed in the parts of the site which have not been covered by "made ground", such as from the shallow trenches made for the SEF cabling, an alert for the uncovering of fossil wood must be included in the Environmental Management Plan (EMP). A collection must be made of the finds of fossil wood, for later deposition at a museum, together with information of the find location. The fossil wood must be handed into the custody of the Environmental Control Officer (ECO) and/or the site manager, who must ensure its interim safe storage. On the completion of Construction Phase earthmoving activities, the fossil wood collection must be conveyed to a curatorial institution. The Albany Museum in Grahamstown (www.am.org.za)) is an appropriate repository where palaeobotanist Dr Rosemary Prevec studies and curates the fossil plant collections, including Cretaceous plant fossils. A Collections Agreement exists with the Palaeosciences Centre, University of the Witwatersrand (Dr Marion Bamford), for petrified fossil wood specimens collected from the Maandagskop Quarry on Portion 12 of Farm Hartenbosch 217. As collaborating palaeobotanists Drs Bamford and Prevec must be consulted about the preferred repository for fossil wood specimens from the SEF site" (Pether 2023, Pg. 3).

Visual Impact Statement, Appendix G5:

The Hartenbos WWTW proposed PV Solar Plant is situated within an area that is characteristically light industrial, i.e. the WWTW and the green waste recycling/chipping area. The proposed PV Solar panels are therefore congruent with the immediate surrounds.

The affected residential areas are at least 1km from the site and N2 and R102 tourist routes are at least 500m from the site. The distance mitigates the visibility. The Monte Christo Road which is the Estates access road, passes next to the eastern boundary of the site and users will be the most impacted seeing the structures in close proximity if Alternative 1 (Option A) is developed.

The Hartenbos WWTW proposed PV Solar Plant will result in a medium to low visual impact, being visible from residential areas and commuter and tourist roads in the surrounding municipal areas.

Mitigation measures will reduce the potential impacts and if these mitigation measures are implemented. The significance of the visual impacts will be medium - low for Option A and Low for Option B. The lesser footprint required for Option B allows more space for mitigation measures to be implemented.

The Scenic Resources and Landscape Character of the area will be little impacted as the development site is relatively low lying and within an area of similar development character. The proposed development is generally low, its scale is in keeping with other rural and residential blocks.

The specialist is of the opinion that if the mitigation measures are enforced, that the proposed Alternative 1 (Option A) will have a MEDIUM – LOW VISUAL IMPACT and Alternative 2 (Option B) will have a LOW VISUAL IMPACT.

1.2.	Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)

Appendix B2

1.3.	Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.

The environmental impact assessment found that both alternatives (i.e., developing the whole site or only a portion of the site) will have no significant impact on the biophysical environment. The positive and negative impacts will thus be the same for both alternatives.

Alternative	Positive	Negative
Option 1 – Alternative A Preferred Alternative	• Transformation of an already disturbed and transformed area within an already utilised property. • Eradication of alien invasive vegetation. • Reducing the need for non-renewable energy resources. • Adaptation to Climate change • Alleviation of the impacts of loadshedding on the WWTWs. • Temporary job creation during construction phase	• Temporary construction related nuisances. • Transformation of undeveloped land.
Option 2 – Alternative B		

3. Recommendation of the Environmental Assessment Practitioner ("EAP")

2.1.	Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMPr

In order to obtain/reach the impact management objects the corresponding mitigation measures prescribed in the BAR and EMPr must be implemented.

The Impact monitoring will be undertaken by an appointed and independent ECO.

The impact management outcomes will be monitored by the appointed ECO, in addition to the implementation of mitigation measures during the duration of the development, if all management mitigation measures are implemented successfully the resulting impact management outcomes will mean that the develop was undertaken with no significant or avoidable impacts to the environment.

Impact management objectives and impact management outcomes included in the EMPr:

PRE-CONSTRUCTION PHASE	
IMPACT MANAGEMENT OBJECTIVES	**IMPACT MANAGEMENT OUTCOMES**
To appoint a suitably qualified and experienced Environmental Control Officer	The conditions of Environmental Authorisation and the requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.
Identify and demarcate no-go areas, working areas and site facilities	Future construction activities will be restricted to within the designated areas & environmentally sensitive areas (no-go areas) will be protected from disturbance
To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.
Environmental Control Officer to conduct an inspection prior to the commencement of construction activities on site	Good environmental management is promoted and enforced by the ECO during the full pre-construction and construction phases. Site facilities are appropriately located on site. Construction workers receive environmental

	awareness training before commencing work on site
CONSTRUCTION PHASE	
To limit noise generated by construction activities	No avoidable noise impacts emanate from the site during the construction phase
To create employment opportunities with potential for skills transfer, for members of the local community	The local community benefits from the employment opportunities created during the construction phase.
Prevent erosion	No erosion detected on site
POST CONSTRUCTION REHABILITATION PHASE	
To rehabilitate all areas disturbed by construction activities in an environmentally sensitive manner • Create an earth/sand berm (long earth mound) on the eastern, northern and western borders of the site, approximately 1 - 1,5m high, within the fenced area of the site and plant this with coastal scrub typical of the surrounding area, that will get to a height of 1 - 1,5 meters. The selection of the plant species should be made in consultation with the botanist. • Alternatively, a hedge could be planted along the eastern, northern and western boundaries with some larger trees along the eastern boundary that will help screen the PV Solar Plant from the north east - Hartland Estate, N2 and R102.	The site is neat and tidy and all exposed surfaces are suitably covered/ stabilised. There is no construction-related waste or pollution remaining on site.
Prevent alien vegetation establishment on the site	Only indigenous vegetation species establish on the disturbed areas
Any evidence of erosion from the stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters.	No erosion present anywhere on the site.

2.2.	Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.

The EMPr must be implemented, this is however a standard condition of Environmental Authorisation.

All mitigation measures from the specialists have been incorporated into the EMPr and as such are conditional to the environmental authorisation.

2.3.	Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.

The "No Go" alternative is the option of not developing the proposed solar PV facility. The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and operation phase as well as the benefits associated with the provision of an additional energy resource. A significantly high negative socio-economic impact significance would occur if the proposed development were not constructed in terms of the lost opportunity.

The environmental impact assessment found that both alternatives (i.e., developing the whole site or only a portion of the site) will have no significant impact on the biophysical environment. The positive and negative impacts will thus be the same for both alternatives.

The EAP is of the opinion that Alternative A – the preferred alternative should be authorised as this would cover the potential variation in materials and PV panels to construct the facility in order to achieve the calculated requirements of the facility.

2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and

	mitigation measures proposed.

A limitation to the assessment of the impacts would be that the impact of the manufacturing phase of the infrastructure will not be accounted for by the proposed development.

Due to solar PV technology being relatively new, the longevity of the infrastructure and the rapid pace of technologic advancements, the impact of the End-of-Life of the infrastructure has not been well documented.

Limitations and assumptions in the Visual Impact Assessment

This study does not include a Glint and Glare study.

The development information provided is at Concept Stage. Reference is made to mass earthworks (cut - fill). This has yet to be designed. The site cross sections will change, with the slope becoming flatter. **This may influence the significance of the visual impacts.**

2.5.	The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.

According to the prelim design report (Appendix L) a project programme was presented and briefly discussed. A large number of unknowns, such as tender period and when the EA will be issued and the authorisation period, are still present at this early stage of the project and the project programme may change accordingly. The preliminary design stage programme indicates the start date around mid 2024 and completion of commissioning and handover on 30 June 2025.

4. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.

The Average Annual Daily Demand (AADD) for this proposed development will be less than 1kl/day and is deemed negligible from a design- and decision making perspective. Bulk water is available for this development.

Washing of the PV Solar panels will be performed by tanker with treated effluent from the WWTW, hence no potable water will be utilized for this maintenance item.

The site will be serviced via the existing water infrastructure from the Hartenbos Regional WWTW.

5. Waste

Explain what measures have been taken to reduce, reuse or recycle waste.

A formal solid waste collection area will be provided as part of the solid waste system of the existing WWTW and be collected in line with this arrangement. The EMPr will also deal with the solid waste.

6. Energy Efficiency

8.1.	Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

Once operational the proposed PV Solar Plant will provide renewable energy for the operation of the WWTW.

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

Note: Duplicate this section where there is more than one Applicant.

I.....S Naidoo....., ID number ...6210245252084.....in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;
- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;
- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;
- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;
- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.

Signature of the Applicant: Naidoo Date: 15/01/2024

Mossel Bay Municipality
Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I .....Michael Bennett ....., EAPASA Registration number ...3163..... as the appointed EAP hereby declare/affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- 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 that:
- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);
- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Competent Authority or the objectivity of any report, plan or document prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;

Signature of the EAP: Date: 16 January 2024

Sharples Environmental Services cc

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I ……, EAPASA Registration number …….. as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):

10. DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I ……, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):

11.

12. DECLARATION OF The REVIEW SPECIALIST

I ……., as the appointed Review Specialist hereby declare/affirm that:

- I have reviewed all the work produced by the Specialist(s):
- I have reviewed the correctness of the specialist information provided as part of this Report;
- I meet all of the general requirements of specialists as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):