
FRESHWATER COMPLIANCE STATEMENT

**Proposed PV Solar Plant, Hartenbos Wastewater Treatment Works, Remainder
of Portion 101 of the Farm Hartenbosch 217, Mossel Bay**



Prepared for Sharples Environmental Services

by

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DECLARATION OF SPECIALIST INDEPENDANCE

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse any proposed developments, but aim to present facts, findings and recommendations based on relevant professional experience and scientific data;
- I do not have any influence over decisions made by the governing authorities;
- I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;
- I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the specialist investigators.
- All the particulars furnished by me in this document are true and correct.



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Date: September 2023

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1. INTRODUCTION

Confluent Environmental was appointed by Sharples Environmental Services to undertake a freshwater survey for the proposed construction of a solar photo-voltaic (PV) plant at the Hartenbos Wastewater Treatment Works (WWTW), on the Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay. The site has been classified as having '**Low**' aquatic biodiversity by the Department of Environmental Affairs (DEA) screening tool.

The scope of work for this report is guided by the legislative requirements of the National Environmental Management Act (NEMA).

1.1 National Environmental Management Act

According to the protocols specified in GN 1540 (Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in Terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when Applying for Environmental Authorisation), assessment and reporting requirements for aquatic biodiversity are associated with a level of environmental sensitivity identified by the national web-based environmental screening tool (screening tool). An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of:

- **Very High** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Specialist Assessment; or
- **Low** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Compliance Statement.

The screening tool classified the site as being of **Low** aquatic biodiversity. According to the protocol, a site sensitivity verification must be undertaken to confirm the sensitivity of the site as indicated by the screening tool:

- Where the information gathered from the site sensitivity verification differs from the screening tool designation of **Low** aquatic biodiversity sensitivity, and it is found to be of a **Very High** sensitivity, an Aquatic Biodiversity Specialist Assessment must be submitted.

1.2 National Water Act (NWA, 1998)

The Department of Water & Sanitation (DWS) is the custodian of South Africa's water resources and therefore assumes public trusteeship of water resources, which includes watercourses, surface water, estuaries, or aquifers.

A watercourse means:

- A river or spring;
- A natural channel in which water flows regularly or intermittently;
- A wetland, lake or dam into which, or from which, water flows; and
- Any collection of water which the Minister may, by notice in the Gazette, declare to be watercourse, and
- A reference to a watercourse includes, where relevant, its bed and banks.

For the purposes of this assessment, a wetland area is defined according to the NWA (Act No. 36 of 1998):

“Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil”.

Wetlands must therefore have one or more of the following attributes to meet the NWA wetland definition (DWAF, 2005):

- A high water table that results in the saturation at or near the surface, leading to anaerobic conditions developing in the top 50 cm of the soil;
- Wetland or hydromorphic soils that display characteristics resulting from prolonged saturation, i.e. mottling or grey soils; and
- The presence of, at least occasionally, hydrophilic plants, i.e. hydrophytes (water loving plants).

No activity may take place within a watercourse unless it is authorised by the Department of Water and Sanitation (DWS). According to Section 21 (c) and (i) of the National Water Act, an authorization (Water Use License or General Authorisation) is required for any activities that impede or divert the flow of water in a watercourse or alter the bed, banks, course or characteristics of a watercourse. The regulated area of a watercourse for section 21(c) or (i) of the Act water uses means:

- a) The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
- b) In the absence of a determined 1 in 100-year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or
- c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.

According to Section 21 (c) and (i) of the NWA, any water use activities that do occur within the regulated area of a watercourse must be assessed using the DWS Risk Assessment Matrix (GN 509) to determine the impact of construction and operational activities on the flow, water quality, habitat and biotic characteristics of the watercourse. Low Risk activities require a General Authorisation (GA), while Medium or High Risk activities require a Water Use License (WUL).

1.3 Scope of Work

The objectives of this assessment included the following:

- To undertake a desktop analysis and site inspection to verify the sensitivity of aquatic biodiversity as **Very High** or **Low**; and
- Compile an Aquatic Biodiversity Compliance Statement or Aquatic Biodiversity Specialist Assessment based on the site verification of the sensitivity of the site.

- Determine whether any activities fall within the regulated area of a watercourse as defined by the NWA.

2. APPROACH

The following rationale was adopted to determine the sensitivity of aquatic biodiversity within the footprint of the site:

- In the event that watercourses are confirmed to fall within the development footprint and that these watercourses will be impacted by the development, then the site sensitivity is confirmed as **Very High** and a full specialist freshwater assessment is required; and
- In the event that no watercourses are identified within the development footprint the site sensitivity is confirmed as **Low** and an Aquatic Compliance statement is required.

The determination of the site sensitivity relied upon the following approaches:

- Interrogation of available desktop resources including:
 - DWS spatial layers;
 - National Freshwater Ecosystem Priority Areas (NFEPA) spatial layers (Nel et al., 2011);
 - National Wetland Map 5 and Confidence Map (CSIR, 2018) – the latest national wetland inventory map for South Africa;
 - Western Cape Biodiversity and Spatial Plan (WCBSP) for Mossel Bay (CapeNature, 2017).
- A site visit was undertaken, during which time the following activities were undertaken:
 - Identification and classification of watercourses within the footprint of the site according to methods detailed in Ollis et al. (2013);
 - Soil augering to confirm the presence of soil indicators (DWAF, 2005) that may indicate the presence of a wetland (if applicable); and
 - Identification of hydrophilic plant species that may indicate the presence of wetland plant species (if applicable).

3. ASSUMPTIONS & LIMITATIONS

The assessment of the site visit represents a brief temporal snapshot of conditions on the site. Changes in season or short-term changes in climatic conditions may possibly result in the formation of aquatic habitats (e.g. temporary or seasonal wetlands) under significantly wetter conditions. Despite this limitation, the sensitivity of aquatic biodiversity on the site was determined with a very high level of confidence.

4. DESKTOP SURVEY

The site falls within the Primary Catchment K (Kromme) area and in quaternary catchment K10B (Figure 1). According to geospatial data sources, two non-perennial rivers are indicated to occur on the property (Figure 2). 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 2). No watercourses are indicated to occur within the boundaries of the proposed development site.

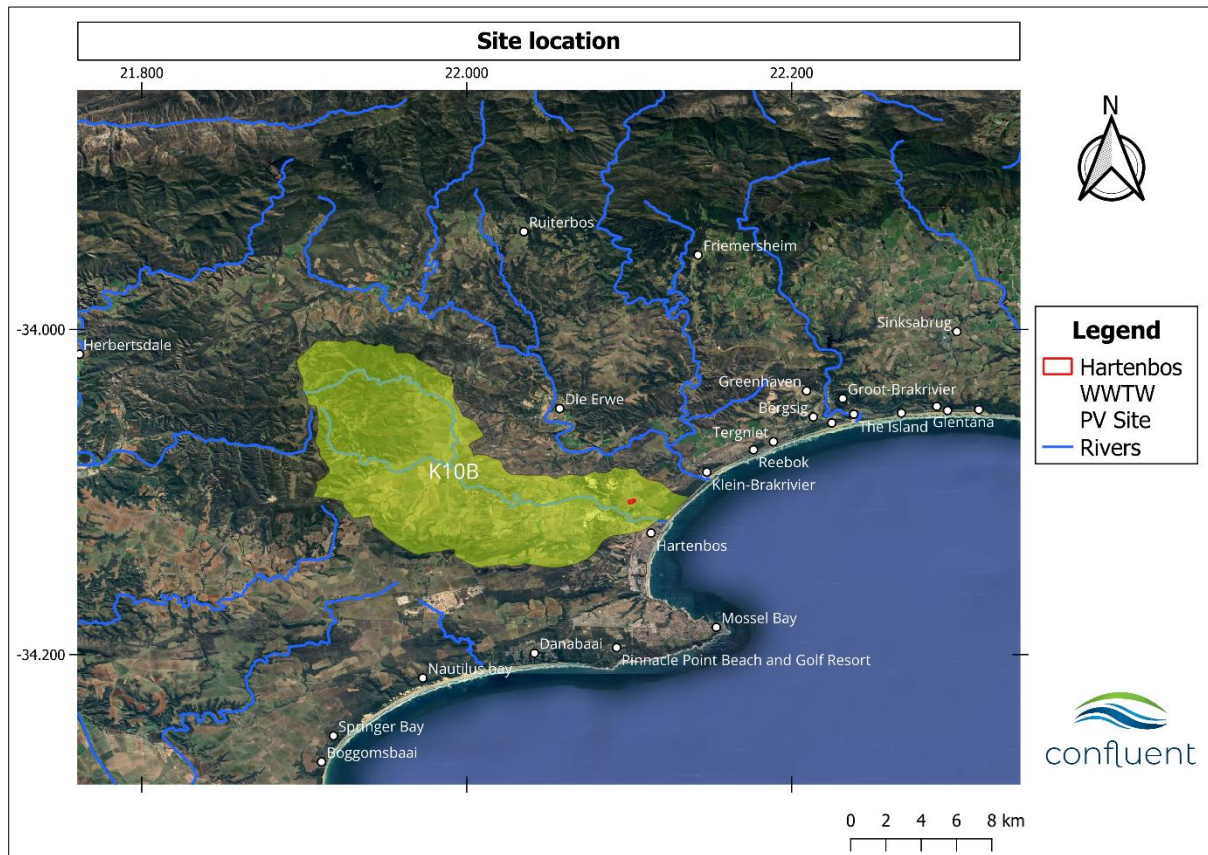


Figure 1: Map indicating the location of the property relative to the quaternary catchment area.

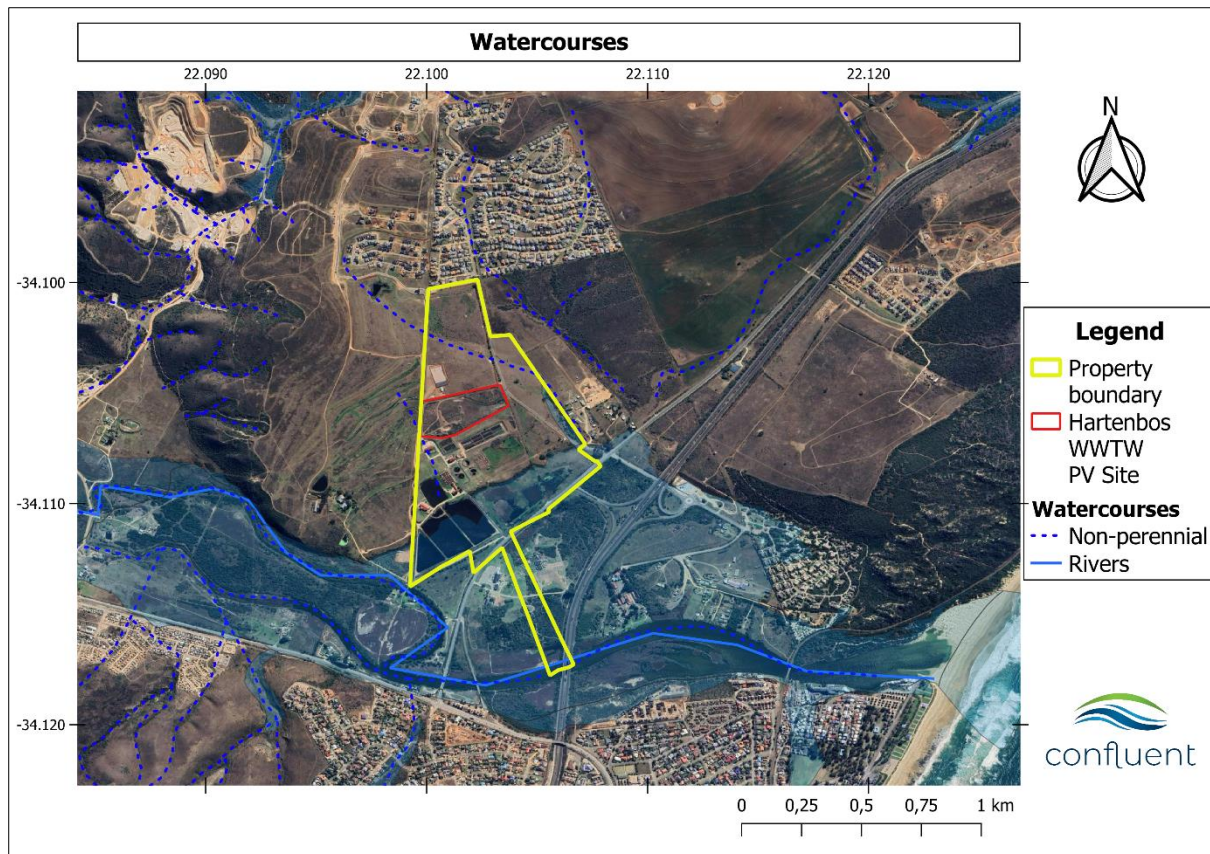


Figure 2: Location of the property in relation to watercourses.

4.1 CONSERVATION AND CATCHMENT MANAGEMENT

4.1.1 WCBSP

According to the Western Cape Biodiversity Spatial Plan (WCBSP), the development area is mapped as a terrestrial Ecological Support Area (ESA) (Figure 3). No aquatic biodiversity areas are indicated to occur within the development footprint.

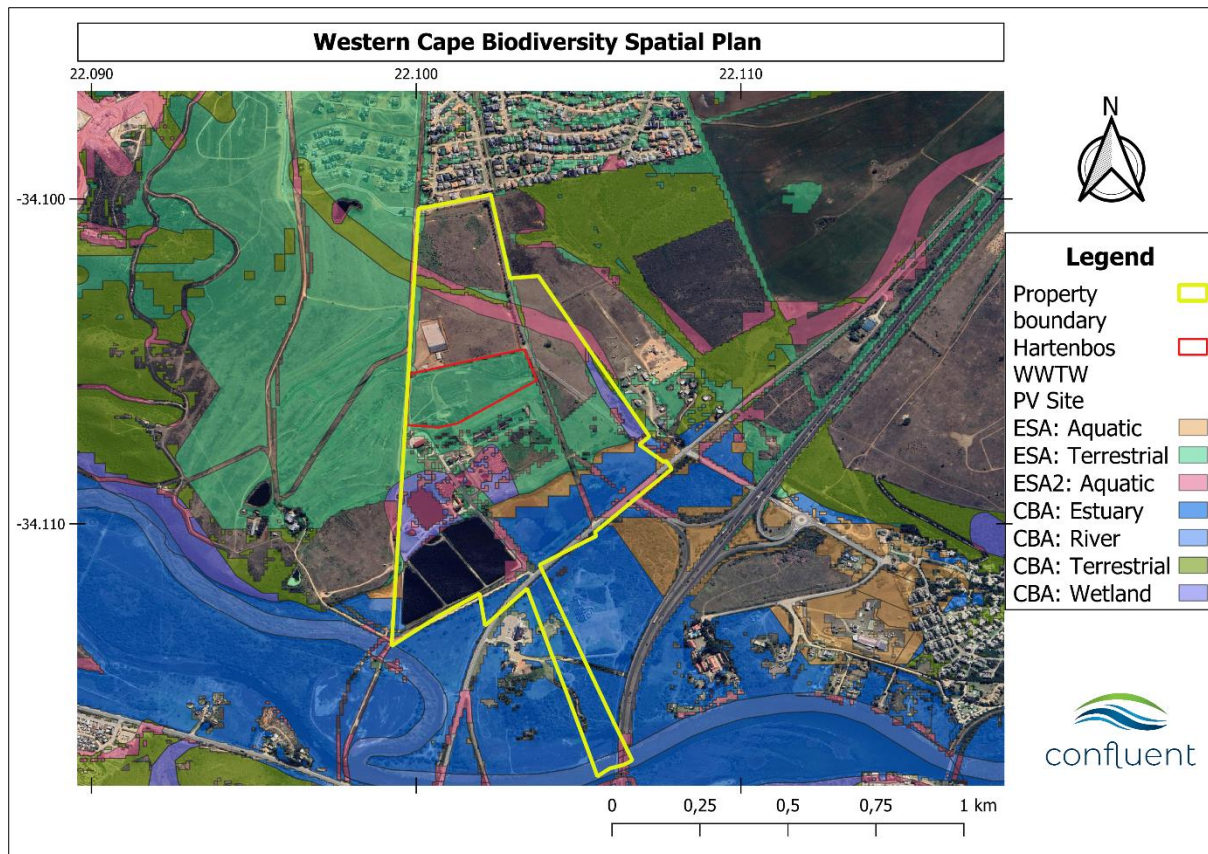


Figure 3: Map of the property relative to the Western Cape Biodiversity Spatial Plan (WCBSP).

4.1.2 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 4).

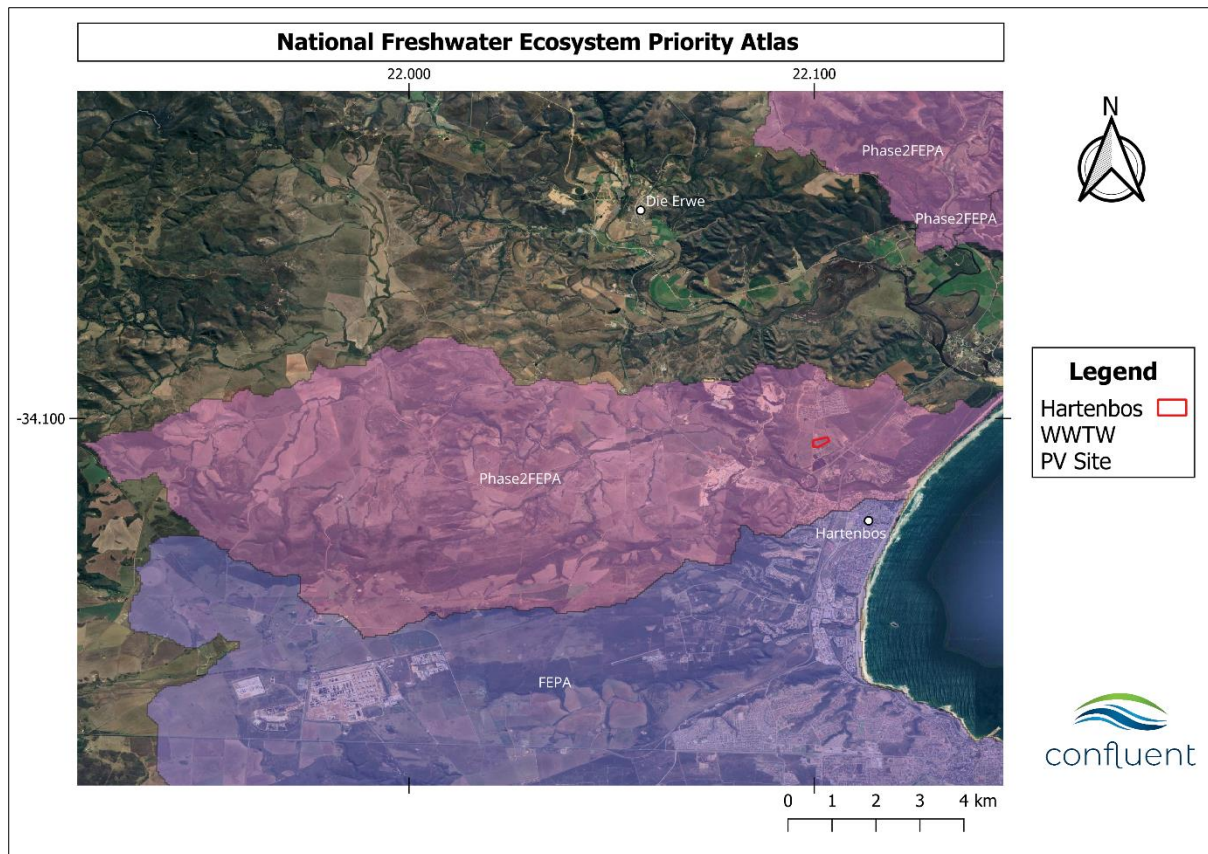


Figure 4: Map of the property relative to the National Freshwater Ecosystem Priority Atlas (NFEPA).

5. PROPOSED DEVELOPMENT PLAN

Two options for the development of the solar PV plant are proposed. Option 1 proposes the construction of solar panels covering the full area of the proposed site (Figure 5). Whereas Option 2 proposes the construction of solar panels covering only half of the area of the proposed site (Figure 6).

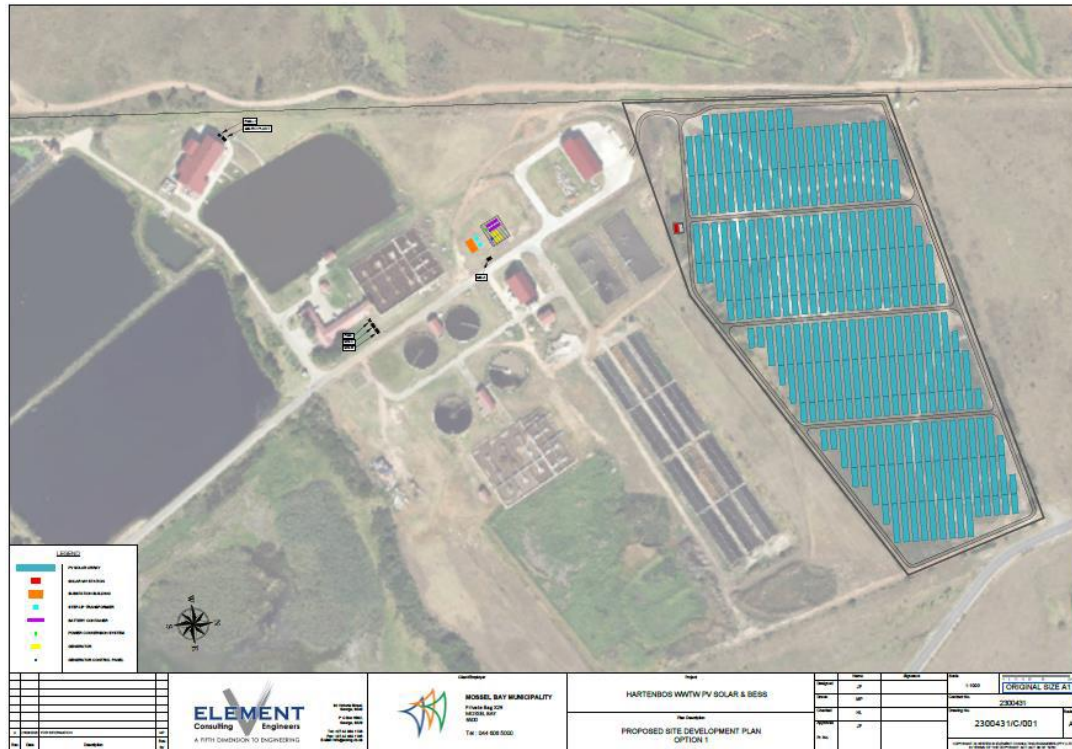


Figure 5: Proposed Site Development Plan, Option 1.

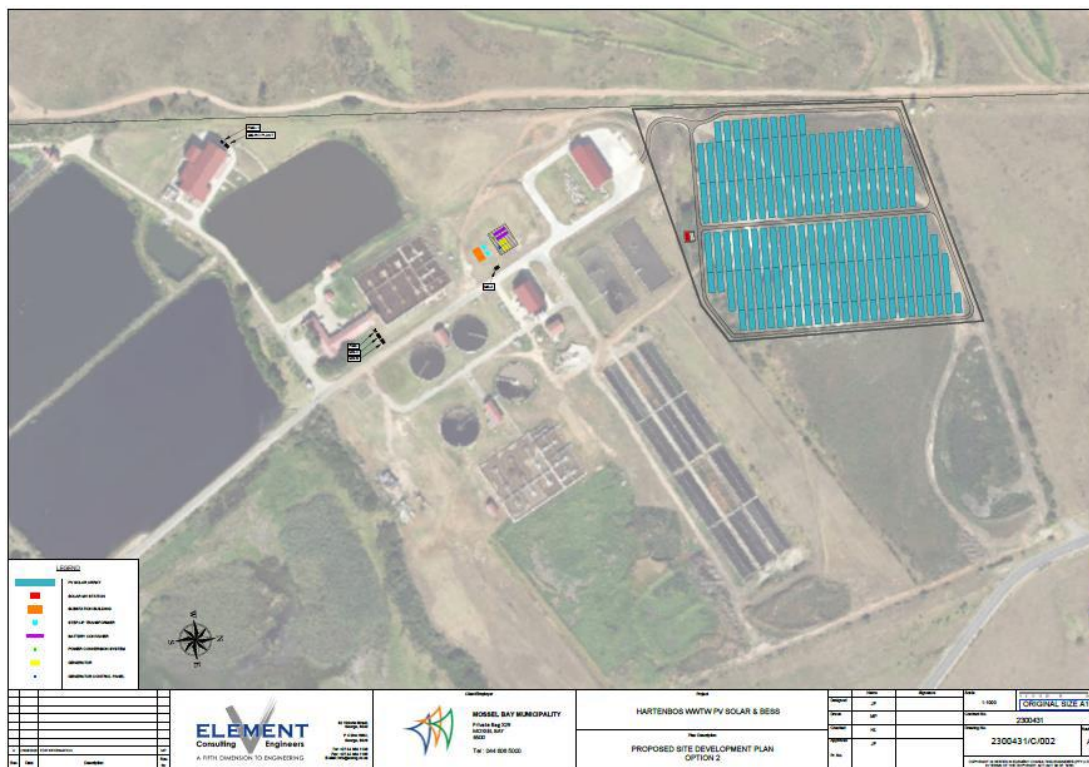


Figure 6: Proposed Site Development Plan, Option 2.

6. 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 (Figure 7) 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 8). 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 8).

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 9). 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 10). 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 9).



Figure 7: Historical photos showing the proposed site through notable changes between 2005 and 2022 (Google Earth imagery).

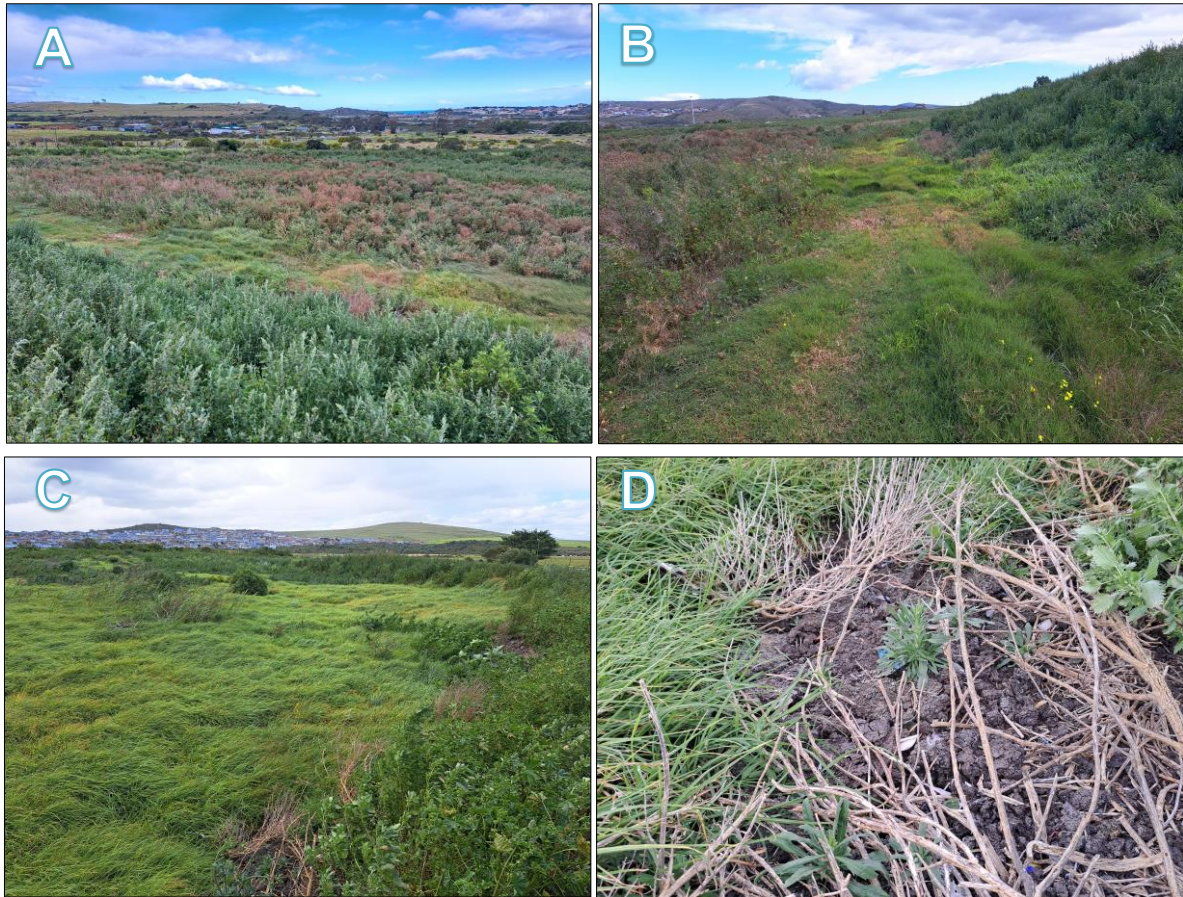


Figure 8: Photographs of the site including view to the east (A) view to the west showing an access road and the berm on the right (B) view of the inside of the berm from the top of the berm showing the small artificial wetland area filled with *Cenchrus clandestinus* and a small patch of *Phragmites* sp. (C) soil found at the site (D).

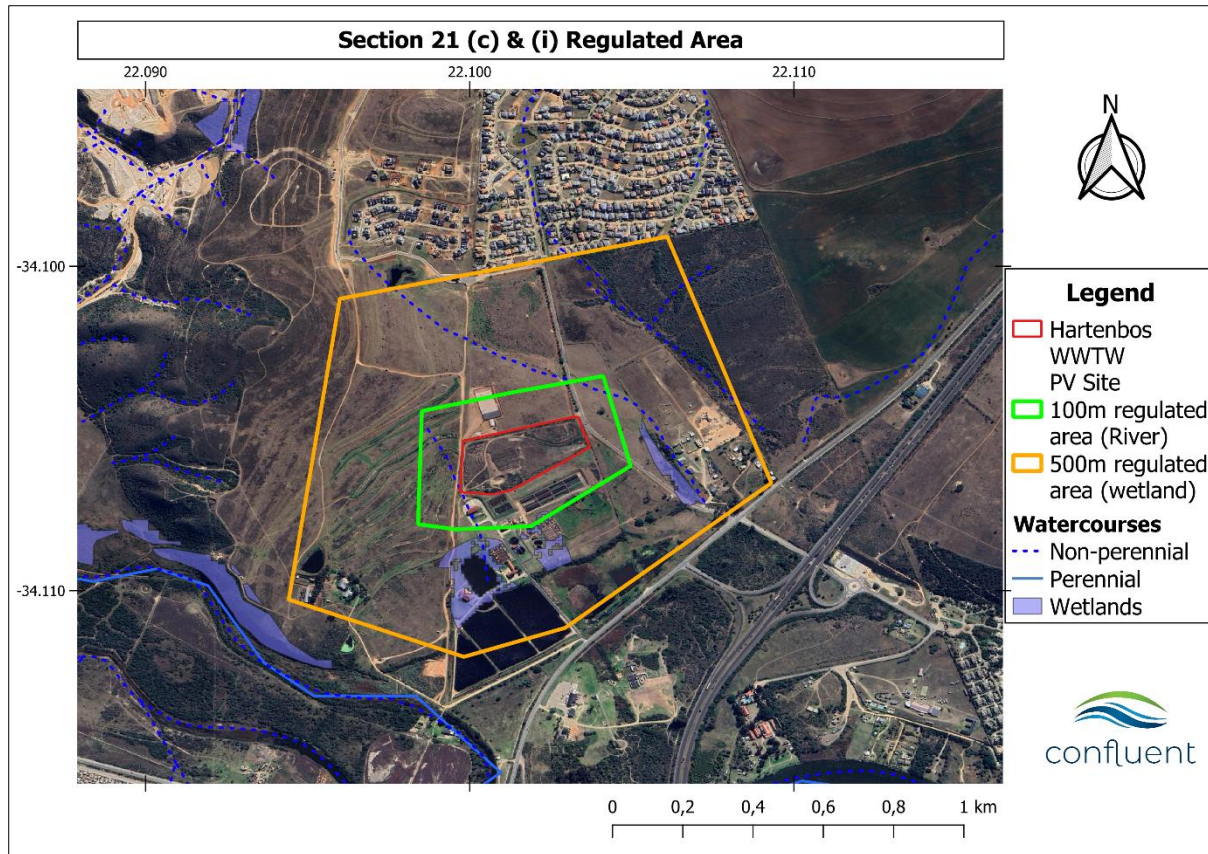


Figure 9: Map indicating two non-perennial rivers within 100 m of the site and three wetlands within 500 m of the site.



Figure 10: Photographs of the mapped wetland area occurring within 500 m of the proposed solar PV array.

7. 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.

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APPENDIX 1 – CV – JAMES MICHAEL DABROWSKI

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2000–2001: M.Sc. (Cum Laude): Department of Zoology, University of Stellenbosch
1999: B.Sc. Honours: Department of Zoology, University of Stellenbosch
1996-1998: B.Sc. in Zoology and Botany, University of Stellenbosch

EMPLOYMENT RECORD

Present: Confluent Environmental - Co-Director
2006-2017: CSIR (Natural Resources and Environment) – Principal Researcher
2004-2006: Department of Water Affairs and Forestry - Specialist Scientist
2002-2004: University of Cape Town - Scientific Officer

KEY EXPERTISE

Aquatic Biodiversity and Biomonitoring Surveys (Macroinvertebrates, Fish and Riparian and In-stream Habitat), Wetland Health Assessments, Wetland and Riparian Habitat Delineation, Aquatic Ecotoxicology, Ecological Risk Assessment, Interpretation and Analysis of Water Quality Data, Water Quality Guideline Development, Development of Integrated Water and Waste Management Plans (IWWMPs), Geospatial Mapping and Analysis, Catchment-scale Hydrological and Pollution Modelling; Project Management and Logistics.

PROFESSIONAL ASSOCIATIONS & OTHER QUALIFICATIONS

Research Affiliations

- Research Associate: Sustainability Research Unit, Nelson Mandela Metropolitan University
- Research Associate: Freshwater Research Centre

Professional Societies

- Society for Environmental Toxicology and Chemistry (SETAC)
- International Water Association (IWA)
- South African Council for Natural Scientific Professionals (SACNASP)

Scientific Review

- Associate editor: Bulletin for Environmental Toxicology and Chemistry
- Proposal reviewer: Water Research Commission and National Research Foundation
- Reference Groups: Water Research Commission

RELEVANT TRAINING

- River Health Ecstatus Models: (Department of Water Affairs and Forestry - 2006)
- Soil Water Assessment Tool (SWAT): (Stellenbosch University - July 2012)
- Water Governance in South Africa: Integrated Water Resource Management, the National Water Act, and Water Use Authorisations, focusing on Water Use License Applications and Integrated Water and Waste Management Plans (CBSS Training – August 2018)
- Wetland Management: Introduction and Delineation (Centre for Environmental Management, University of the Free State – November 2018)
- WRSM/PITMAN and WR2012 Website Information System Water Resources (Allan Bailey – September 2020)

SCIENTIFIC PUBLICATIONS

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