



Aquatic Biodiversity Compliance Statement

Establishment of a 3.5-Megawatt Solar Photo Voltaic (PV) facility on Erf 77, Greenbushes, within the Nelson Mandela Bay Municipality, Eastern Cape

Prepared for:

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Date submitted: 6 December 2022

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1. Declaration of independence

I, Roy de Kock as duly authorized representative of BlueLeaf Environmental (Pty) Ltd, hereby confirm my independence (as well as that of BlueLeaf) as a specialist and declare that neither I nor BlueLeaf have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Habitat Link was appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the Environmental Impact Assessment for the proposed establishment of a 3.5 Megawatt Solar Photo Voltaic (PV) facility on Erf 77 in Greenbushes, Eastern Cape. I further declare that I am confident in the results of the studies undertaken and conclusions drawn because of it – as is described in this report.



Full Name: Roy de Kock

Title / Position: Ecologist

Qualification(s): BSc (Hons) Geology; MSc Botany; Candidate PhD Botany

Experience (years/ months): 16 years

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2. Expertise of specialist

Roy has over 16 years' experience in environmental consulting and specialist services in the Eastern Cape. Various projects throughout South Africa as well as Africa at large has also been undertaken. Projects include baseline studies, impact assessments and compliance auditing for various large-scale projects including numerous wind farms, roads (National and Provincial), and infrastructure development projects. Roy has also conducted numerous specialist studies including but not limited to Ecological and Botanical assessments, Biodiversity studies, Plant and Animal Search and Rescue, Fauna and Flora permits, Aquatic Assessments, Agricultural and Soil Assessments and Environmental and Venomous animals training workshops.

Roy holds a BSc Honours in Geology and an MSc in Botany from the Nelson Mandela University in Port Elizabeth. He is currently busy with his PhD (Doctorate degree) in Botany and Soil Science. He has over 16 years' experience in environmental consulting focusing on Ecological and Agricultural Assessments, Geological and Geotechnical analysis, Environmental Management Plans, mining applications and various environmental impact studies.

Roy is registered as a professional natural scientist (Pri.Sci.Nat.) with SACNASP (Registration nr: 400216/16).

This study complies with the requirements as listed in the Gazetted protocols for an aquatic biodiversity assessment (GN. R 320 of 2020) and minimum report content requirements.

Projects Roy worked on in the last 3 years include:

- Cove Rock Estate WULA for the treatment of sewage, East London, Eastern Cape
- Enviroworks Addo Elephant national Park Development Aquatic Biodiversity Assessment, Eastern Cape
- EnviroWorks Phalaborwa Hotel Development Aquatic Biodiversity Assessment, Mpumalanga
- Lukhozi Retreat Housing Development Ecological Assessment, Muizenberg, Western Cape
- Lukhozi Vrygrond Housing Development Ecological Assessment, Muizenberg, Western Cape
- SANRAL Utentwe Bridge and various road upgrades, Lusikisiki, Eastern Cape
- Enviroworks Addo Elephant National Park Development Ecological Assessment, Eastern Cape
- Habitat Link Wolwerton Farm Plant and Animal Search and Rescue, Sunland, Eastern Cape
- Ilifa Ecological Impact Assessment of a road between Koster and Rustenburg, Northwest
- Knight Piesoldt Ecological Assessment of the N1 from Louis Trichardt to Musina, Limpopo
- Lwhethu Vegetation study for a new mine outside King Williams Town, Eastern Cape Province
- Vegetation Assessment for a proposed new housing expansion, Robberg, Western Cape.
- UWP Consulting Ecological Assessment of the R63 between Komga and the N9 Bridge, Eastern Cape Province

3. Introduction

BlueLeaf Environmental (Pty) Ltd has been appointed by Habitat Link Consulting to provide aquatic biodiversity input into their proposed environmental assessment for a new 3.5 MW Solar PV plant within the 2.2 hectare (ha) of on Erf 77 in Greenbushes, Gqeberha (Port Elizabeth) in the Eastern Cape province. The proposed development will include the installation of several solar panels to be connected to the municipal electricity grid to supply renewable (solar) energy. Erf 77 is situated approximately 15km west of Port Elizabeth city center, within the Nelson Mandela Bay Municipality (Figure 3.1).

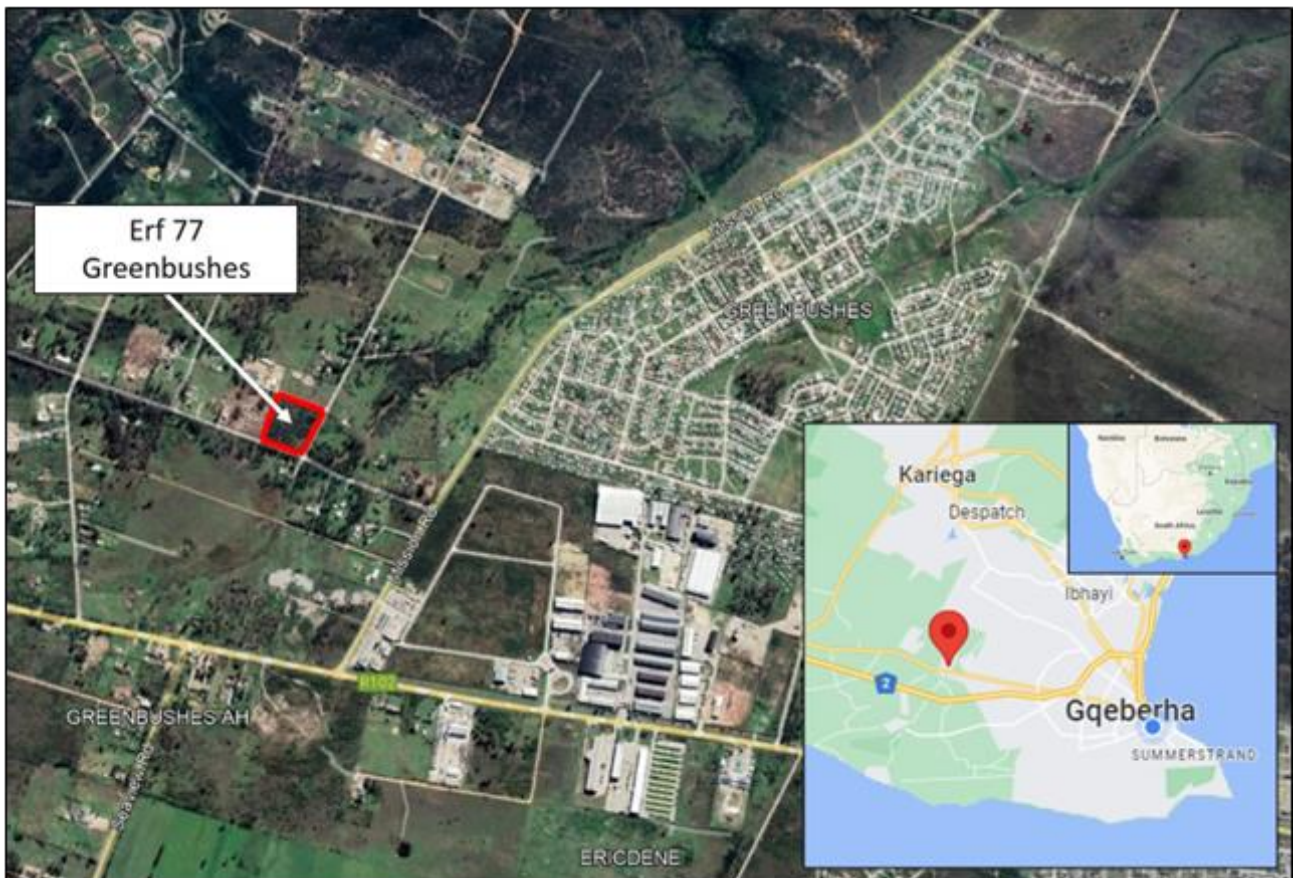


Figure 3.1: Locality Map of the proposed solar PV development on Erf 77, Greenbushes, within the Nelson Mandela Bay Municipality, Eastern Cape.

3.1 Methodology

This report has been drafted in accordance with the 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 NEMA (G.N.R. 1150 of 2020) – Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity.

A site sensitivity verification has been conducted (see Chapter 6) to confirm/dispute the current use of the land and environmental sensitivity as identified by the Screening Tool. Motivation, with photographic evidence, was provided as part of the site sensitivity verification.

Current literature that was used to describe the site includes:

- Aquatic CBA classification according to the Eastern Cape Biodiversity Conservation plan (ECBCP,

2007)

- Department of Water and Sanitation Desktop Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) Model (2014).
- Department of Water Affairs and Forestry: Level 2 River Eco-regional Classification System for South Africa, Lesotho, and Swaziland (2005).
- The National Freshwater Ecosystem Priority Areas (NFEPA) project (2011 - 2014)
- National Spatial Biodiversity Assessment (NSBA) – River Ecosystems (2004)
- SANBI National Vegetation Map (updated 2018).
- Screening Report – Establishment of a 3.5 MW Solar Photovoltaic (PV) facility on Erf 77, Greenbushes, Gqeberha (Port Elizabeth).

3.2 Screening Report

The National Web based Environmental Screening Tool is a geographically based web-enabled application which allows a proponent intending to apply for environmental authorization in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity.

The Screening Tool also provides site specific EIA process and review information, for example, the Screening Tool may identify if an industrial development zone, minimum information requirement, Environmental Management Framework or bio-regional plan applies to a specific area. Some of these documents can then be accessed through the Screening Tool via links, for consideration during screening.

Further to this, the Screening Tool identifies related exclusions and/ or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site.

Finally, the Screening Tool allows for the generating of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended whereby a Screening Report is required to accompany any application for Environmental Authorization and as such the tool has been developed in a manner that is user friendly and no specific software or specialized GIS skills are required to operate this system.

The DFFE screening report has listed the Aquatic Biodiversity theme for the study area as **low sensitive** (Figure 3.2).

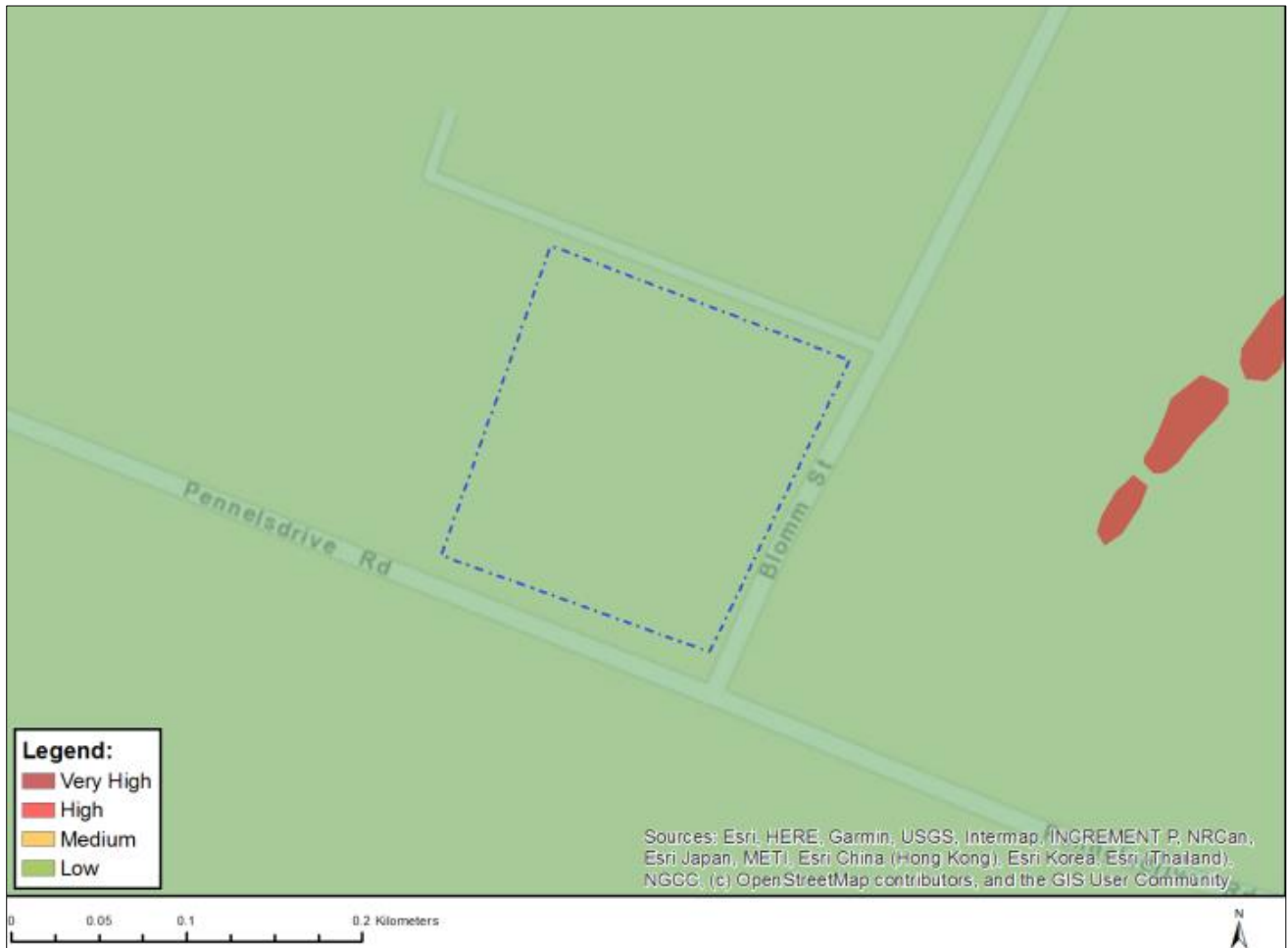


Figure 3.2: Aquatic biodiversity theme for the project site and surrounding areas (Screening Report)

Below is a desktop and site assessment to confirm/dispute the aquatic biodiversity theme sensitivity classification.

4. Project description

The proposed facility will consist of approximately 4 000 solar panels that will feed renewable energy to the existing municipal electrical connection via a new municipal substation (Figure 4.1). The development will also consist of several out-buildings including ablution facilities, security control, storeroom, transformer/switch gear room and electrical metering room. Stormwater from the site will be diverted to a proposed pond in the south-east corner. Access to the site will be obtained off Pennelsdrift Road on the south-west corner and a new internal access road will be established along the boundary of the property. Several parking spaces will be allocated near the buildings (Figure 4.1 and Figure 4.2).

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

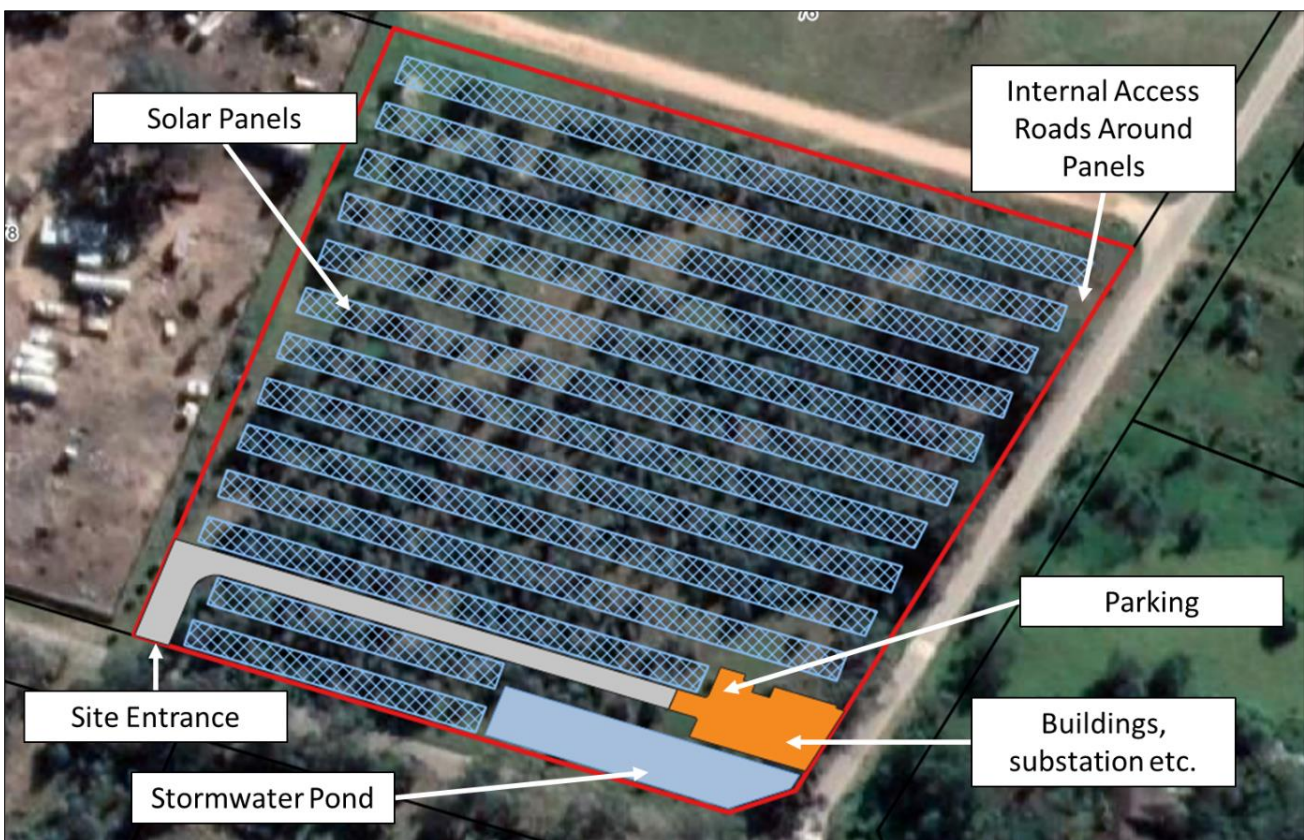


Figure 4.1: Site layout of the proposed solar PV development on Erf 77, Greenbushes, within the Nelson Mandela Bay Municipality, Eastern Cape.

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

any existing cabling and will not exceed 2 km in length.

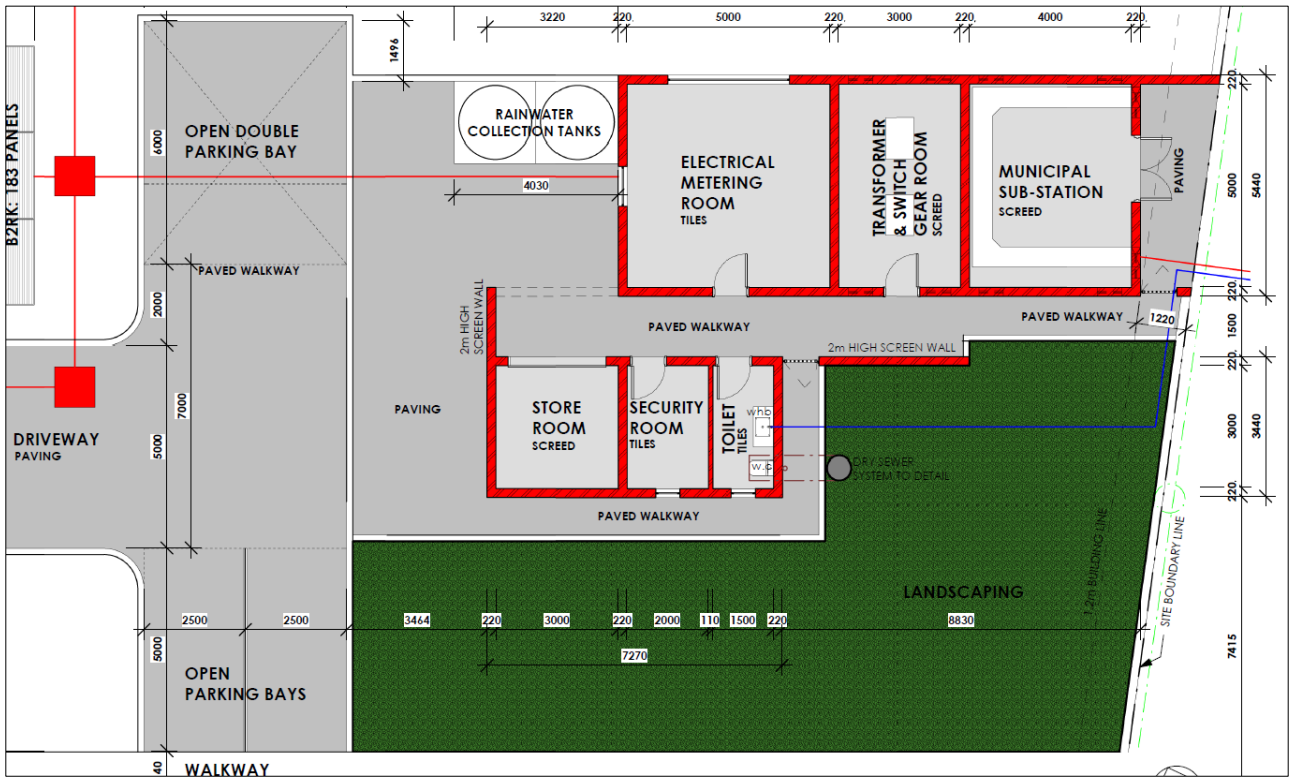


Figure 4.2: Detailed layout of the proposed building and substation.

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

4.1 Water supply

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

4.2 Energy Sources

Fuel will be required for the bulldozer and excavator during the construction period. Since this is a renewable energy development, the only energy requirements would be those of 'start-up' during

the operational phase. The facilities will be connected to the existing municipal electricity supply for start-up after which the site will operate off the proposed solar-generated power supply.

4.3 Solid waste, Wastewater and Sewage

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

During the operational phase, most of the waste derived from the development will be in the form of general domestic waste, derived from the operators and security staff present at the site. This waste will be disposed of via the municipal collection services on a weekly or biweekly basis and/or by an appointed recycling and/or waste removal company. The operational phase of the proposed development will generate effluent comprised of limited wash water and sewage. The applicant has confirmed that only a limited amount of water is required for the washing of solar panels and that no cleaning chemicals would be required. Effluent from the other facilities (e.g., ablution block) will be managed with a dry toilet solution that will be emptied on a regular basis by an appointed contractor. A typical example of such a dry toilet solution would be the ECOSAN waterless toilet system.

4.4 Stormwater Infrastructure

The management of stormwater during the construction phase may require the implementation of water diversion berms prior to the commencement of the site establishment. The diversion berms will be designed in such a way as to ensure that the proposed development site is properly protected from excess stormwater flow, while also ensuring that the surrounding land, specifically the nearby drainage areas, can handle the additional (diverted) water. During the operational phase, stormwater from the entire property will be diverted to the proposed stormwater retention pond. The retention pond, which will be approximately 1 m in depth (with its highest point located at current ground level), has been designed to accommodate a 1:100-year flood event to avoid excess stormwater runoff from leaving the site. A new stormwater pipeline (approximately 300 m in length) will be implemented below-ground, extending from the retention pond to an outlet within the servitude of the Pennelsdrift Road reserve (Figure 4.3). The outlet from the pipeline, which will be located outside the floodplain of the nearby drainage line, will consist of a headwall and reno mattress with a total footprint of approximately 8 m³.

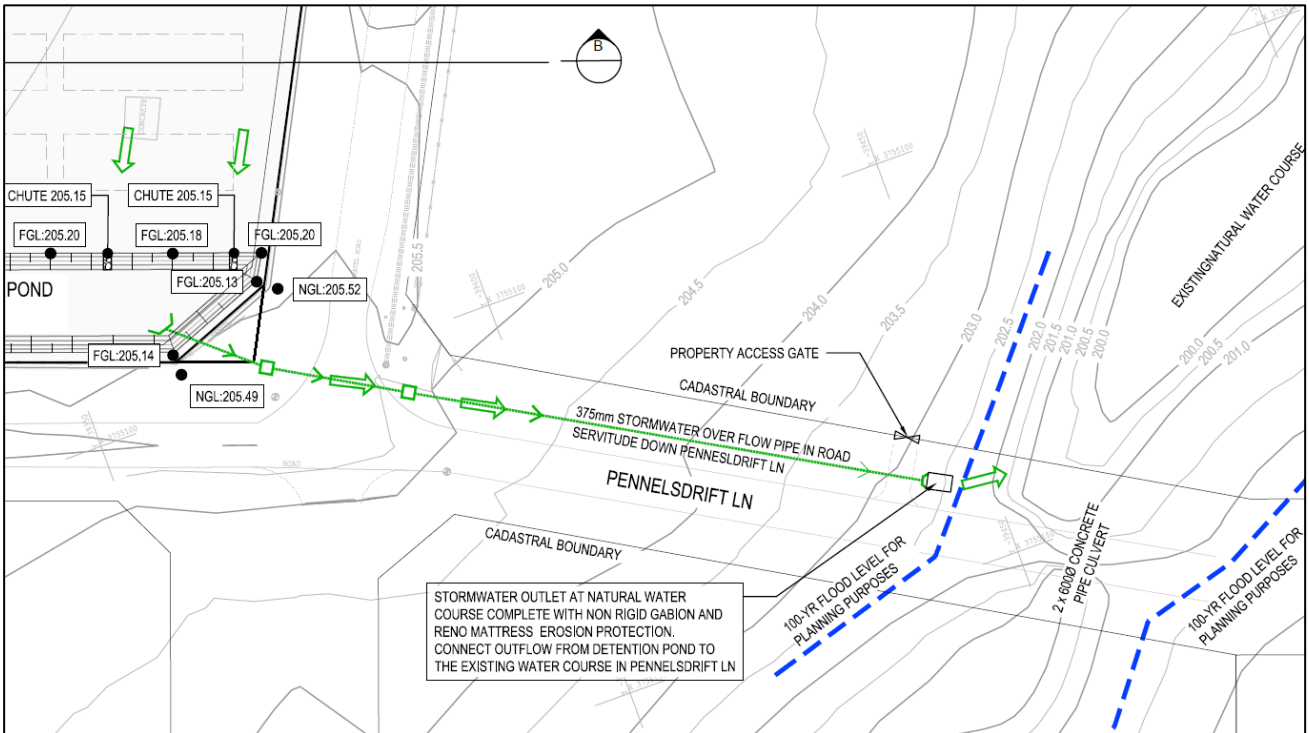


Figure 4.3: Stormwater management plan showing the proposed stormwater pipe extending from the site along the road reserve to the proposed stormwater outlet with reno mattress erosion protection.

4.5 Current Land-use

The site currently consists of vacant land with vegetation cover in the form of alien Black wattle and Eucalyptus (Gum) trees (Figure 4.2).

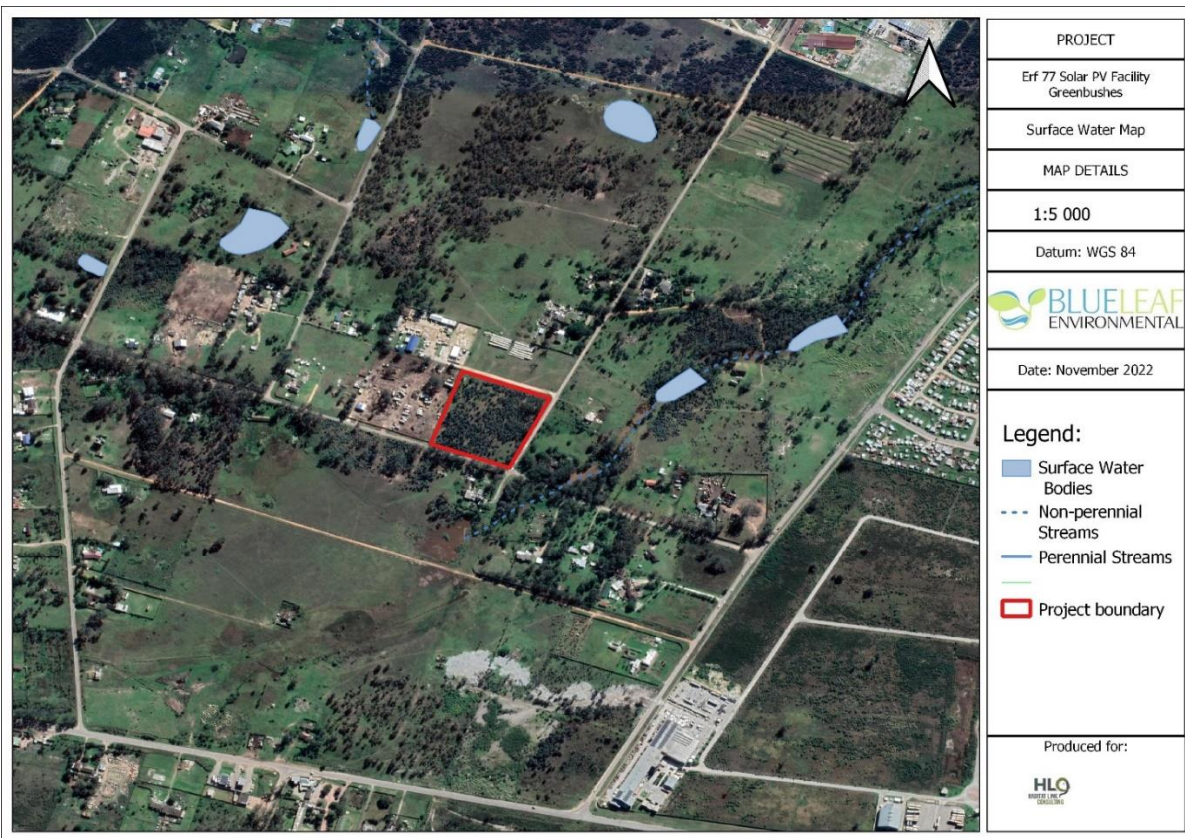


Figure 4.2: Aerial image of the study site and surrounding areas

Below is a photo sequence of the study site environment:



A scrapyard forms the western boundary of the site. Alien trees still dominate:



5. Desktop analysis

This section was completed prior to the site visit and consist of a desktop analysis of the site based on available literature, plans and legislation.

5.1 Vegetation

According to the Mucina and Rutherford national vegetation classification (SANBI, 2018), the pre-transformation vegetation type in the study is classified as Algoa Sandstone Fynbos. This vegetation unit, a form of Algoa Grassy Fynbos, is **listed as critically endangered**. Although the dominant vegetation type is Algoa Sandstone Fynbos, a large amount of alien invasives can also be observed on site such as Gum Trees (*Eucalyptus*) and Wattle. The species observed indicated that disturbance had taken place. According to the NMBM BP 2014, the dominant vegetation type is Rowallan Park Grassy Fynbos.

5.2 Topography

The landscape of the site area is considered flat and situated 200 m above sea level.

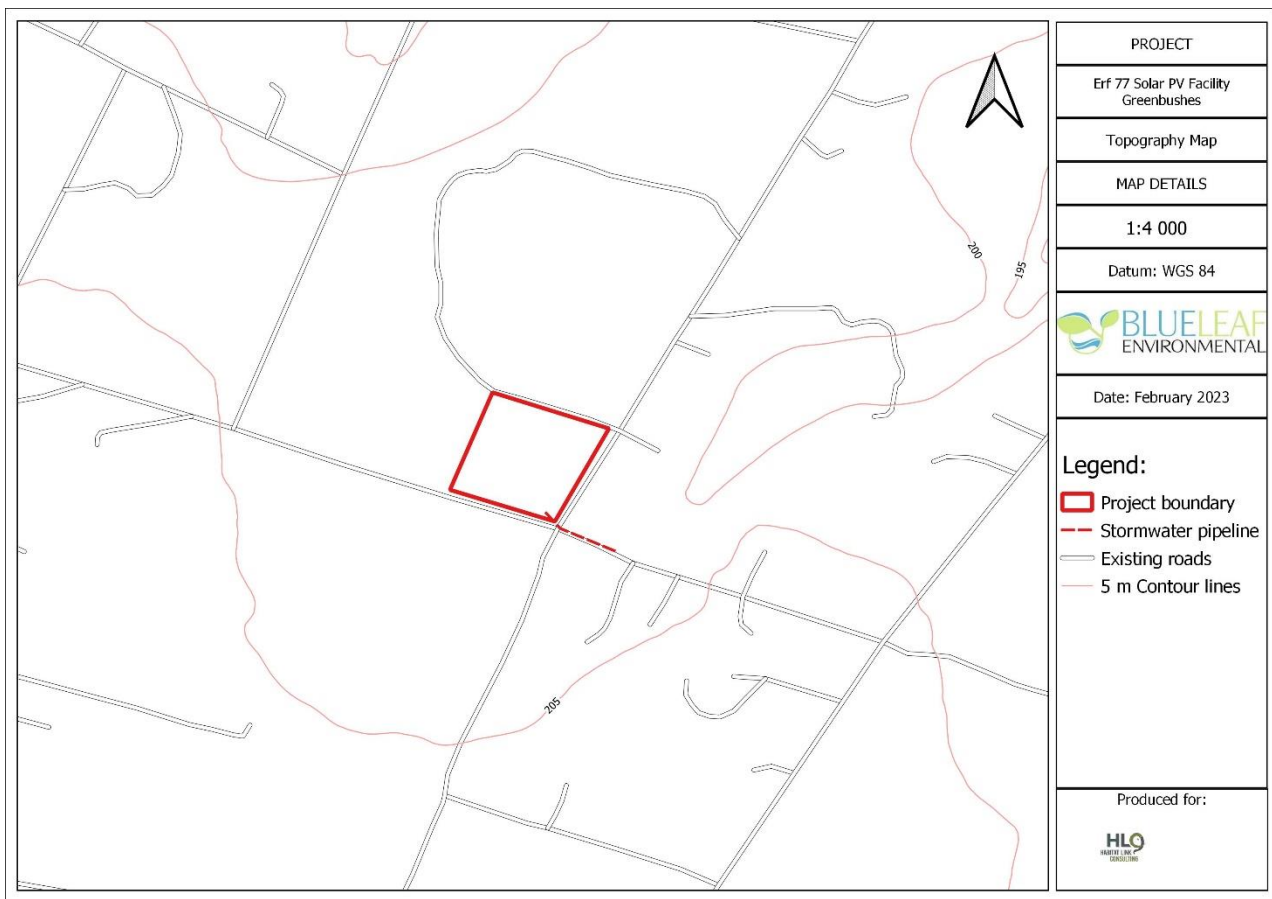


Figure 5.1: Topography of the study site and surrounding areas

5.3 Geology and Soils

Rocks within the proposed development site comprises of quartz arenites (sandstones) and minor shales and conglomerates of the Pakhuis Formation of rocks which forms the main unit of the Table Mountain Group (Cape Supergroup). Rocks can be up to 2700 m thick in places.

Soils within the proposed development site are categorized as acidic lithosol soils derived from Ordovician sandstones of the Table Mountain Group (Cape Supergroup).

5.4 Land cover

Land cover is a term used for both the dominant cover of the land as well as the main use of the land (land use). Erf 77 forms part of a cluster of smallholdings used for informal and small-scale farming (mostly grazing). Today, few of these smallholdings function as agricultural land and are either lying dormant with an infestation of alien vegetation trees creating dense woodlots or have been transformed into urban plots, or are used as commercial businesses. Two of the immediate adjacent erfes are used as a motor vehicle scrapyards (to the west) and as a construction plant hire (to the north). All the smallholdings are surrounded by various pockets of urban development.

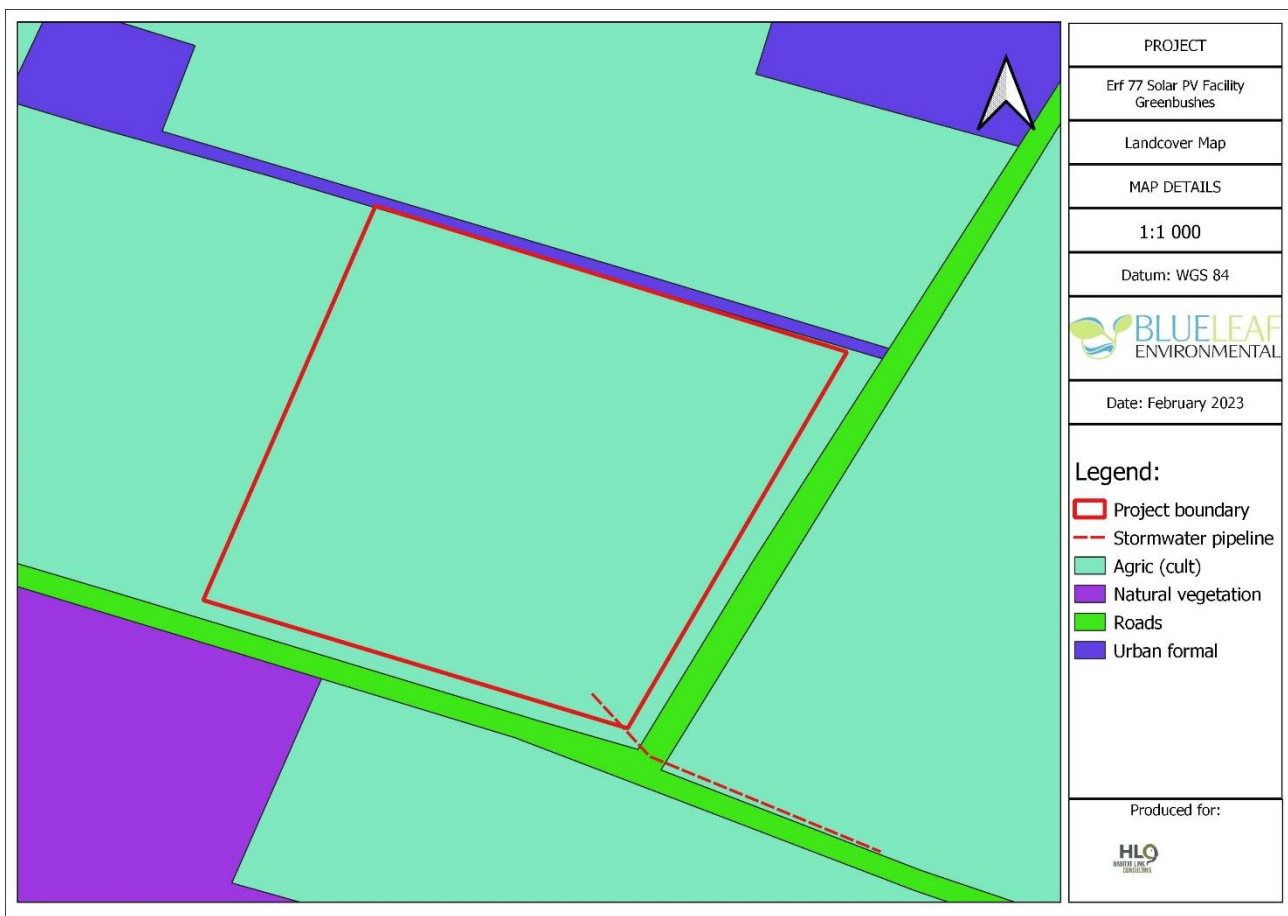


Figure 5.2: Land capability within the study site and surrounding areas

5.5 Aquatic Biodiversity

Critical Biodiversity Areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem function. According to the NMBM Biodiversity Plan (NMBM BSP, 2009) (which is a detailed and fine-scaled biodiversity map for the metropolitan area), the proposed project area is not located within a CBA or ESA (Ecological Support Area).

5.6 Quaternary catchment and Water Management Area

The study area is located within Water Management Area 15 (Fishriver to Tsitsikamma) and falls within quaternary catchment M10D. The mean annual run-off for the site is 48,79 mm/annum with the wetland confidence being 3, category D. The site is not located within a strategic water source area (SWSA).

5.7 Ecoregions

South Africa is a geologically, geomorphologically, climatically, and ecologically complex country, and this has resulted in a diverse range of ecosystems, including rivers. River ecoregional classification or typing allows the grouping of rivers according to similarities based on a top-down nested hierarchy. The principle of river typing is that rivers grouped together at a particular level of the typing hierarchy will be more like one another than rivers in other groups. Ecological regions are regions within which there is relative similarity in the mosaic of ecosystems and ecosystem components (biotic and abiotic, aquatic, and terrestrial).

According to the Department of Water and Sanitation Level 1 River Ecoregional Classification System (2005), the study area falls within Ecoregion 20.01: **South Eastern Coastal Belt**.

This ecoregion has the following characteristics:

- Mean annual precipitation: Predominantly high.
- Coefficient of variation of annual precipitation: Low to very low.
- Drainage density: Medium to high.
- Stream frequency: Medium/high to very high.
- Slopes <5%: Predominantly <20%.
- Median annual simulated runoff: High.
- Mean annual temperature: Moderate.

5.8 Surface water

The south-eastern corner of the property is located within 77 m of an unnamed ephemeral (non-perennial) stream. Six wetlands have been identified within 500 m of the property boundary, five has been classified as artificial dams while one is considered as a non-perennial pan (Figure 5.3 and 5.4). Table 5.1 below provides a more detailed classification of each identified surface water feature.

Figure 5.1: Identified surface water features within 500 m of the erf boundary.

Feature #	Coordinates		Type	Distance from site boundary
River 1	-	-	Non-perennial stream	77 m
Wetland 1	33°55'3.64"S	25°25'16.24"E	Artificial dam	450 m
Wetland 2	33°54'57.66"S	25°25'23.59"E	Artificial dam	450 m
Wetland 3	33°55'10.00"S	25°25'54.53"E	Artificial dam	500 m
Wetland 4	33°55'14.68"S	25°25'43.12"E	Artificial dam	400 m
Wetland 5	33°55'20.23"S	25°25'37.55"E	Artificial dam	120 m
Wetland 6	33°55'24.24"S	25°25'28.74"E	Non-perennial pan	150 m

Wetlands 1 to 4 are all listed and classified by the National Freshwater Ecosystem Priority Areas (NFEPA, 2011) while wetlands 5 and 6 were identified during the site assessment.

Confirmation from the Department of Water and Sanitation (DWS) is needed to determine whether a water-use license application needs to be submitted prior to the development of Erf 77.

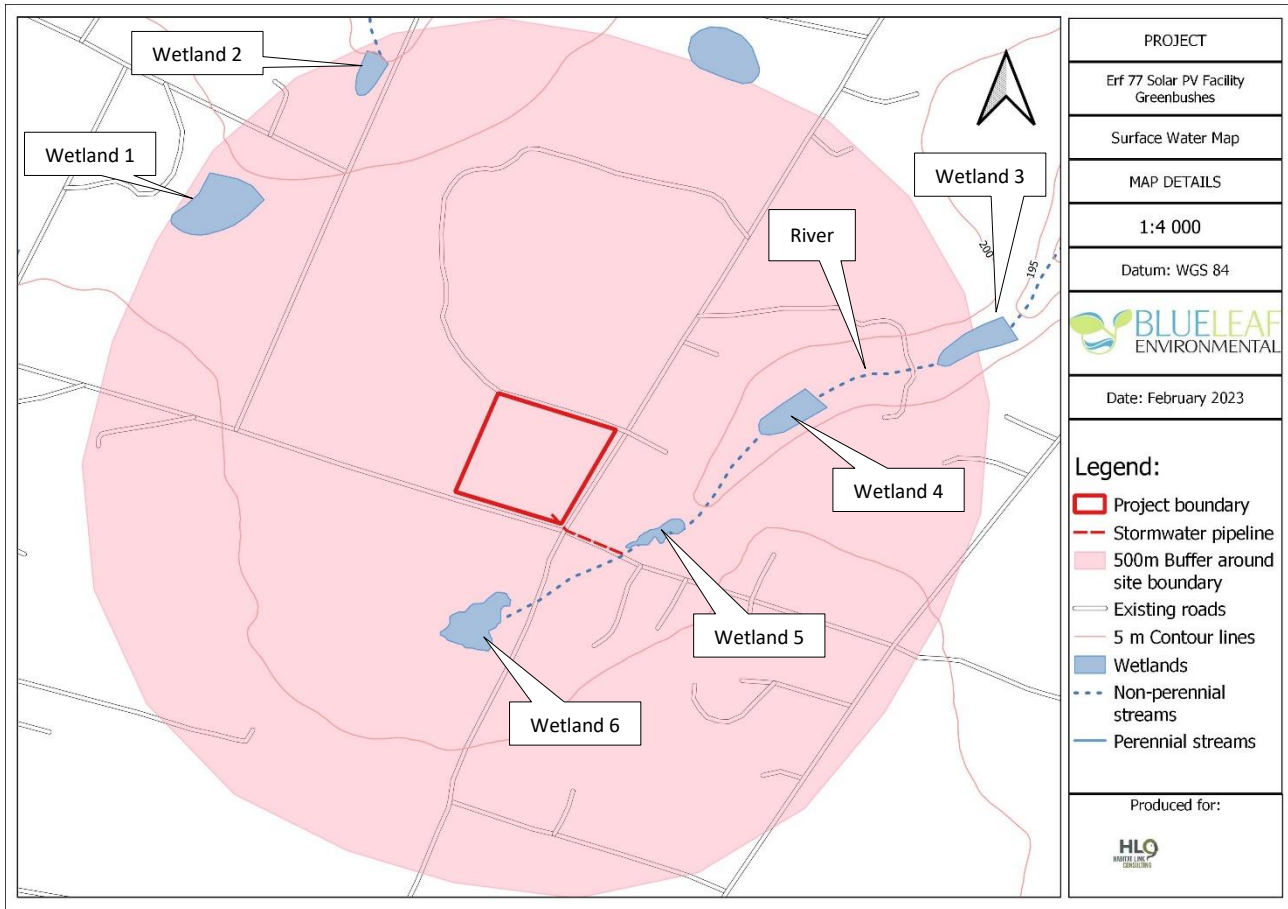


Figure 5.3: Surface water map of the study site and surrounding areas.

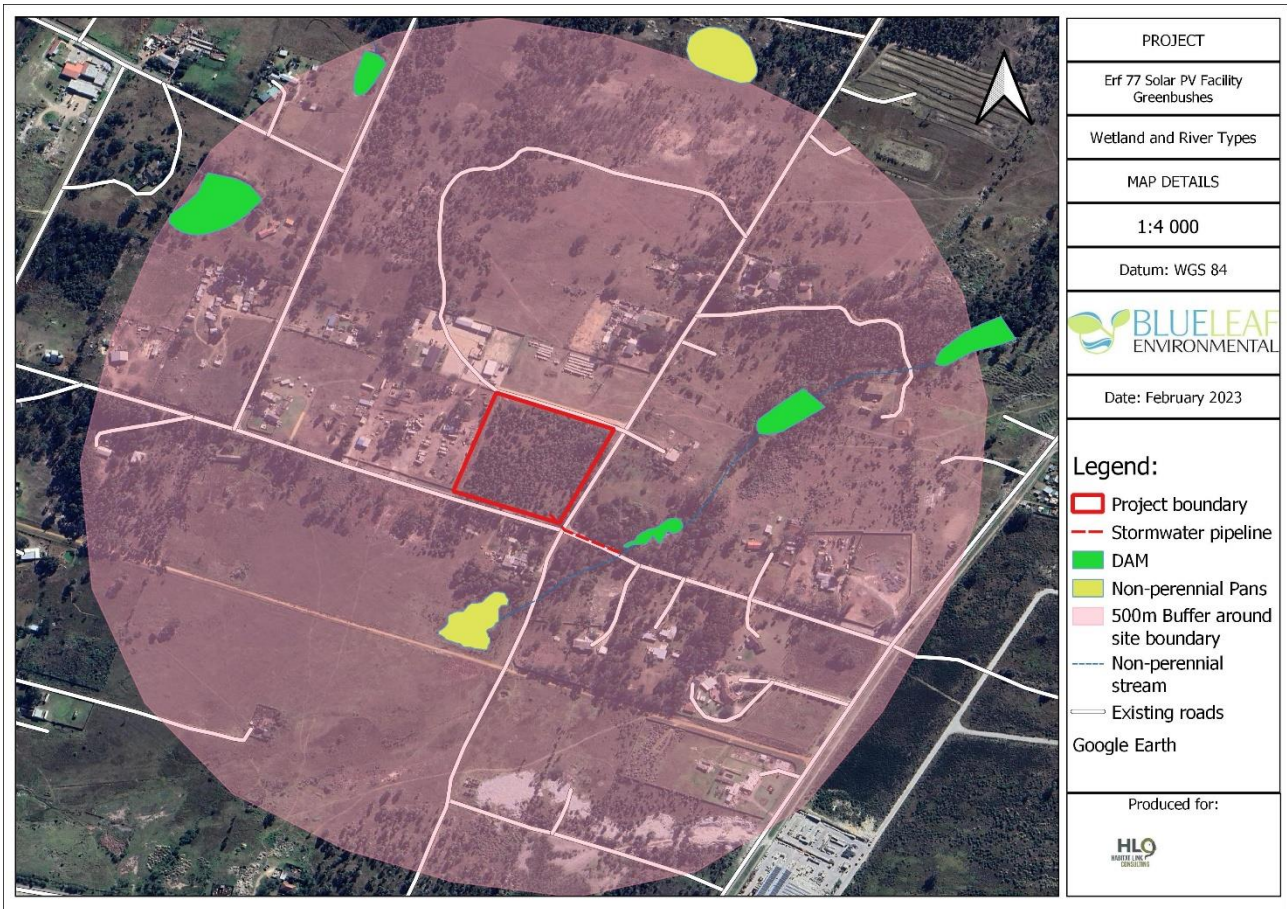


Figure 5.4: Map of the Wetland types within 500 m of the study area.

6. Site sensitivity verification

A site visit was conducted on the 3rd of November 2022, and the entire site, as shown in Figure 5.7, was assessed. The following was found:

- No surface water features were found within the boundary of the study site.
- No wetland/freshwater plant species was observed within the boundary of the study site.
- The site is not located in an aquatic CBA or ESA.
- Six wetlands were identified within 500 m of the study site (Figure 5.3). Refer to Table 5.1 above for details on each wetland.
- The south-eastern corner of the property is located within 77 m of an unnamed non-perennial tributary.
- The proposed stormwater pipe will drain into an existing drainage along Pennelsdrift Weg east of the site.
- Vegetation has been disturbed and the site consists largely of alien invasives species such as gum trees and wattle species.

Based on the above, it is the opinion of the specialist that the land is considered as **low sensitivity for aquatic biodiversity**. A full Aquatic Biodiversity Assessment is therefore NOT required. The proposed Solar Photo Voltaic (PV) development may therefore proceed, provided the following mitigations are included into the EMPr:

- A Stormwater Management Plan (SWMP) must be developed and implemented for all phases of development.
- An ECO must monitor the site for erosion during construction.
- An Alien Vegetation Management Plan (AVMP) must be developed and implemented for all phases of development. The number of alien vegetation on site must be reduced and the developer must ensure that alien vegetation does not spread to surrounding land.

7. Reference

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