



APPENDIX 6: Updated Site Sensitivity Verification Report

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**SCOPING & ENVIRONMENTAL IMPACT ASSESSMENT (S&EIA) FOR THE
PROPOSED 2 MEGALITRES PER DAY (MLD) SOLAR POWERED SEAWATER
DESALINATION PLANT IN THE PORT OF EAST LONDON, BUFFALO CITY
METROPOLITAN MUNICIPALITY, EASTERN CAPE PROVINCE, BY TRANSNET
NATIONAL PORTS AUTHORITY**

DFFE EA Application Reference Number: 14/12/16/3/3/2/2845

September 2026



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UPDATED SITE SENSITIVITY VERIFICATION REPORT

**SCOPING & ENVIRONMENTAL IMPACT ASSESSMENT (S&EIA) FOR THE
PROPOSED 2MLD SOLAR POWERED SEAWATER DESALINATION PLANT IN
THE PORT OF EAST LONDON, BUFFALO CITY METROPOLITAN MUNICIPALITY,
EASTERN CAPE PROVINCE, BY TRANSNET NATIONAL PORTS AUTHORITY**

DFFE EA Application Reference Number: 14/12/16/3/3/2/2675

April 2026

Report prepared for:



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Citation: Swart C and Armitage MA. 2026. Updated Site Sensitivity Verification: Scoping & Environmental Impact Assessment (S&EIA) for the Proposed 2MLD Solar Powered Seawater Desalination Plant in the Port of East London, Buffalo City Metropolitan Municipality, Eastern Cape Province, by Transnet National Ports Authority. Specialist Report no. 2176/11 prepared by Anchor Environmental Consultants (Pty) Ltd for Transnet National Ports Authority. 34 pp.

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TABLE OF CONTENTS

TABLE OF CONTENTS	II
I INTRODUCTION.....	I
1.1 PROJECT BACKGROUND AND LOCATION.....	1
1.2 NOTE REGARDING THE RESUBMISSION OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION	4
1.3 PURPOSE OF THIS REPORT	5
2 SITE SENSITIVITY VERIFICATION PROCESS.....	6
2.1 SITE SENSITIVITY VERIFICATION PROTOCOL.....	6
2.1 SITE SENSITIVITY VERIFICATION METHODOLOGY	7
3 SITE SENSITIVITY VERIFICATION FINDINGS	8
3.1 SCREENING TOOL RESULTS	8
3.2 DESKTOP REVIEW	10
3.2.1 <i>Municipal Land Zoning And Land-Use</i>	<i>10</i>
3.2.2 <i>Biodiversity Spatial Planning Considerations.....</i>	<i>10</i>
3.3 SITE ASSESSMENT	13
3.3.1 <i>RO & Solar Plant Site.....</i>	<i>14</i>
3.3.2 <i>Estuarine Intake Pipeline and Structures</i>	<i>16</i>
3.3.3 <i>Marine Outfall Pipeline</i>	<i>16</i>
4 SITE SENSITIVITY VERIFICATION CONCLUSIONS	19
4.1 SUMMARY OF RESULTS AND RECOMMENDED ASSESSMENTS	19
4.2 AGRICULTURAL THEME.....	21
4.3 ARCHAEOLOGICAL, CULTURAL HERITAGE AND PALAEOLOGY THEME	22
4.4 TERRESTRIAL BIODIVERSITY THEME.....	25
4.5 PLANT SPECIES ASSESSMENT	26
4.6 ANIMAL SPECIES THEME	26
4.7 AVIAN THEME	28
4.8 AQUATIC BIODIVERSITY THEME.....	28
4.9 MARINE ECOLOGY IMPACT ASSESSMENT	28
4.10 SOCIO-ECONOMIC ASSESSMENT.....	28
4.11 LANDSCAPE/VISUAL IMPACT THEME (SOLAR).....	29
4.12 NOISE THEME.....	29
4.13 HYDROLOGY THEME.....	30
4.14 GEOTECHNICAL THEME.....	30
4.15 CIVIL AVIATION THEME (SOLAR PV).....	30
4.16 RELATIVE DEFENCE THEME.....	32
4.17 RFI THEME.....	32
5 REFERENCES.....	34

I INTRODUCTION

I.1 PROJECT BACKGROUND AND LOCATION

Transnet SOC Ltd (through its division Transnet National Ports Authority (TNPA)) is applying for Environmental Authorisation (EA) for the construction and operation of a reverse osmosis (RO) desalination plant with the purpose of producing fresh potable water from saltwater, which has been abstracted from the estuarine/ marine environment. The proposed development will be situated within the Port of East London, in the Buffalo City Metropolitan Municipality, Eastern Cape Province (Figure I.1). The proposed development will span erven 63584, 38530 and 63586, all owned by the applicant.

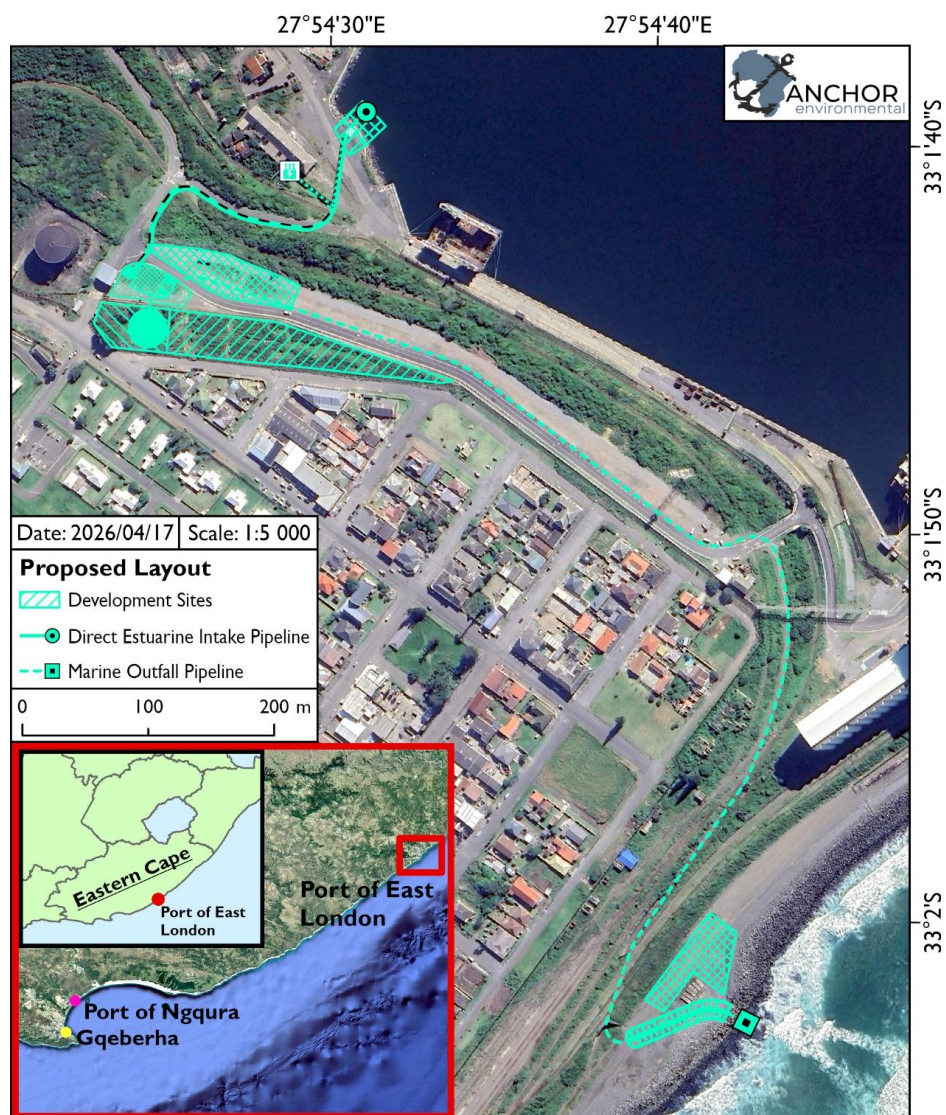


Figure I.1. Location of the proposed development within the Port of East London, Eastern Cape Coastline, South Africa

TNPA appointed Sunwater East London Joint Venture (Pty) Ltd. (Sunwater) to lead the engineering feasibility, implementation and operation of the project. Anchor Environmental

Consultants (Pty) Ltd. (Anchor) was appointed to provide independent Environmental Assessment Practitioner (EAP) services to undertake the Scoping and Environmental Impact Assessment (S&EIA) process required prior to construction and commissioning of this development and the application for the Coastal Waters Discharge Permit (CWDP).

Approximately 5 500 cubic meters (m³) (5.5 Megalitres (ML) or 5.5 million litres) of saline water will be abstracted daily from the Buffalo River Estuary and desalinated (salt removed) at the RO plant to produce potable water (freshwater), which meets SANS 241 standards. Some of the water will be stored in a 1 000 cubic metres (1 ML) freshwater reservoir. During the initial stages of the project, freshwater production will be approximately 500 cubic metres per day (0.5 ML per day (MLD)) and will gradually increase as the project advances. At full capacity, the plant will produce 2 000 cubic metres (2 MLD / two million litres). This water will be used to support port operations and reduce dependence on municipal water supplies. The desalination plant will be powered by a hybrid system that uses both solar energy and municipal grid electricity with the former being primary. If more electricity is generated than needed, batteries might be used in the future to store excess electricity in containers housed at the RO plant site. Brine, a by-product of desalination with elevated salt concentrations, will be discharged via a pipeline to a marine outfall where rapid dilution with ocean water is expected. It should be noted that brine is classified as effluent and may contain traces of chemicals used during the desalination process (such as cleaning agents and anti-scalants), but at highly periodic and very dilute concentrations. Since the facility will discharge brine into the marine environment, a CWDP is also required.

The total development disturbance footprint is estimated at approximately 25 162 m² and includes buffer corridors for linear infrastructure.

The main project components are outlined below, with their locations depicted in Figure 1.2.

- **Water Intake Site/ associated structures and buildings:**
 - Direct intake and pipeline:
 - For water abstraction from the Buffalo River Estuary: Stretches from intake point in estuary to raw water holding tank at the RO plant site.
 - Intake point in the estuary: Approximately ~13–18 m from the edge of existing wall and 1 m below surface
 - Pipe made from High-Density Polyethylene (HDPE); Diameter: 315 mm.
 - Intake head will include a strainer barrier to prevent fish and other organisms from being drawn into the pipe.
 - Pontoon system linked to the pump house and extends to the estuary intake: A floating platform that supports the pipeline and accommodates the intake structure within the estuary.
 - Parking area.
 - Pump house building and foundation.
- **Desalination Plant Site:**
 - RO Desalination plant building which includes (list not extensive):
 - General storage room;
 - Restrooms;
 - Control/operations room with switchboard and computers;
 - Feed pumps and pre-treatment filters;
 - A chemical storage room/container for Clean-in-place (CIP) and pre-treatment chemicals;

-
- Battery storage container (batteries only potentially required to store excess electricity, if generated by the solar plant).
 - Reverse osmosis pumps and energy recovery devices; and
 - Two trains of RO membranes.
 - A 60 m³ brine holding/storage tank (brine “treatment” tank).
 - A 80 m³ ultrafiltration tank.
 - A 200 m³ raw water holding tank.
 - Permeate pipeline: Pipeline that transports desalinated freshwater from the RO plant to reservoir.
 - Vehicle Access and Parking area
 - Mini substation/ Transformer: Situated next to RO plant building close to Motor Control Centre housed inside. Connected to proposed 11kV cable line, which connects to the existing substation near the intake.
 - Freshwater production will gradually be scaled up as project progresses:
 - Initial phase: The plant will produce 500 m³ (0.5MLD) of freshwater per day.
 - Full Capacity: The plant will produce 2 000 m³ of freshwater per day (2MLD).
 - **Solar Plant Site:**
 - 1000 m³ (1 ML) freshwater reservoir and booster pumps.
 - Solar panels and foundations. Estimated output of 525 kWp (kilowatt peak), generating direct current (DC) at up to 1 kV supplied directly to RO plant.
 - **Marine Outfall Site/ Infrastructure:**
 - Brine discharge pipeline passing over breakwater
 - Internal Diameter: 200 mm; Outlet diameter: 150mm
 - **Municipal Grid Connection:**
 - New low-voltage cable line from existing substation to intake pump house. Will power the pumphouse with electricity from the grid (will distribute 230-400V)
 - New 11 kV underground cable line line: Will run from existing substation to RO plant to supply power for specific low-voltage components and to supply backup electricity when needed (will distribute 11kV). Connects to newly installed mini substation/ transformer next to RO plant building. Will be installed instead of the previously proposed overhead electrical transmission line.
 - **Site Camps:**
 - Across the road from the desalination plant on a disturbed parking/ gravel area.
 - Close to the marine outfall next to the port breakwater.

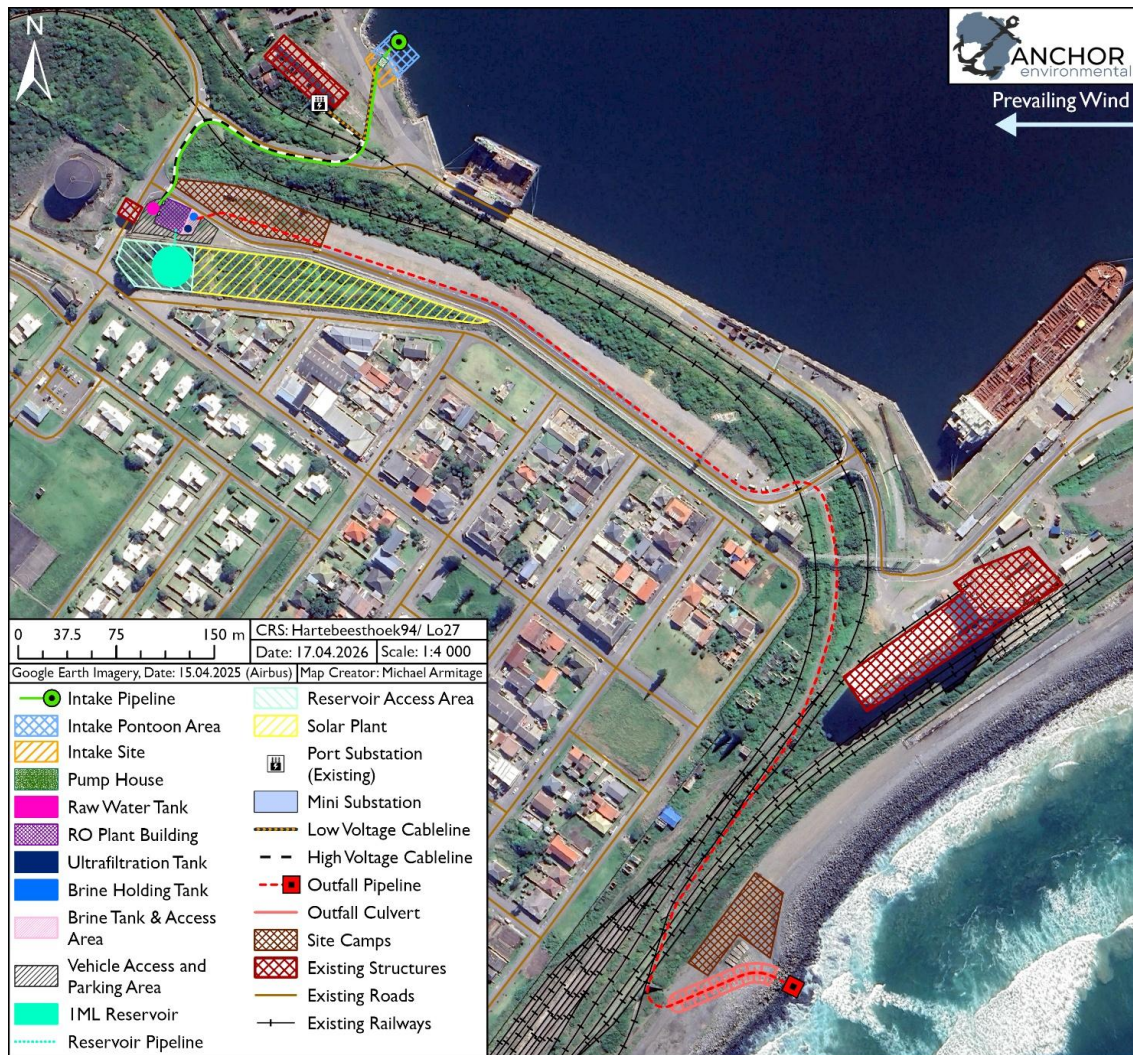


Figure I.2. Preferred development layout for the Solar & RO Desalination Plant and Intake and Outfall Pipelines and associated Infrastructure/ Structures.

I.2 NOTE REGARDING THE RESUBMISSION OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION

An application for Environmental Authorisation was initially submitted to the Department of Forestry, Fisheries and the Environment (DFFE) on 27 February 2025. The Final Scoping Report was submitted to and accepted by the DFFE on 30 May 2025. A Draft Environmental Impact Assessment Report (EIAR) was subsequently compiled and made available for public review and comment from 2 to 31 October 2025. However, due to delays in finalising the project layout, the Final EIAR could not be completed and submitted within the prescribed timeframe, and the application therefore lapsed. The project layout has since been finalised, enabling the applicant to proceed with the application for Environmental Authorisation.

This updated Site Sensitivity Verification (SSV) Report was prepared as part of the Environmental Authorisation resubmission process.

I.3 PURPOSE OF THIS REPORT

This SSV Report forms part of the S&EIA process for the proposed project. Its primary purpose is to identify the specialist studies required to inform the EIA phase.

The report presents the findings of the Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool (GN 960 of 2019) and the outcomes of the SSV process, in accordance with the applicable protocols for each environmental theme published under NEMA.

An initial Draft SSV Report was prepared during the Scoping Phase in 2025 and considered all project alternatives, most of which have since been screened out. Following refinement of the project description, removal of non-viable alternatives, and consultation with specialists during the 2025 EIA process, the SSV Report has been updated to reflect the final project layout, revised Screening Tool results, and specialist inputs.

This document therefore constitutes the Updated SSV Report prepared as part of the Environmental Authorisation resubmission process.

2 SITE SENSITIVITY VERIFICATION PROCESS

2.1 SITE SENSITIVITY VERIFICATION PROTOCOL

Prior to initiating the S&EIA Process, the legislated National Web-Based Environmental Screening Tool provided by the DFFE must be used to screen the proposed development area for environmental sensitivities. The Screening Tool generates a Screening Tool Report (STR), which outlines key environmental themes (e.g., agriculture, terrestrial biodiversity, aquatic biodiversity, etc.) and assigns a sensitivity rating to each theme based on the development footprint and type. These ratings are categorised as “Very High”, “High”, “Medium”, or “Low”. The STR further gives a list of potential Species of Conservation Concern (SCC) present within the area and recommends a list of specialist studies required for the EIA process. In many cases, the tool will indicate that a Compliance Statement, rather than a detailed Specialist Impact Assessment, will be required for certain themes. A Compliance Statement is usually required where a Low environmental sensitivity has been identified for the environmental theme. In some instances, specific themes may be screened out entirely, meaning neither a detailed Specialist Impact Assessment nor a Compliance Statement would be required. The purpose of the SSV and SSVR is to identify the list of specialist studies which will be conducted as part of the EIA process.

The Screening Tool draws on numerous national spatial datasets to assign these ratings, and forms the starting point of the environmental assessment process. Its use became mandatory on 5 July 2019, as per GN 960 of 2019, issued by the Minister of DFFE. However, due to the coarse spatial resolution and generalised nature of the Screening Tool outputs, the assigned sensitivities may not always accurately reflect actual on-site conditions. Therefore, the listed themes, sensitivity ratings, and associated study requirements, must be verified through a Site Sensitivity Verification (SSV) process.

The SSV is required under the “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes”, as set out in GN 320 of Government Gazette (GG) 43110 (2020) and GN 1150 of GG 43855 (2020, as amended), and promulgated under Sections 24(5)(a) and (h) and 44 of the NEMA. The SSV must be undertaken by a registered EAP, or jointly with a suitably qualified specialist, depending on the theme being verified, if the EAP does not have the requisite expertise to confirm or dispute the sensitivities.

The SSV and any subsequent specialist studies must comply with the relevant theme-specific protocols gazetted under GN 1150 (for Animal and Plant Species) and GN 320 (for Agriculture Aquatic Biodiversity, Terrestrial Biodiversity, Civil Aviation, and Defence). For themes where no protocols have been prescribed, assessments must be conducted in accordance with Appendix 6 of the 2014 EIA Regulations (e.g., for Marine Environment, Cultural Heritage and Archaeology, Palaeontology, Hydrology, Socio-economic, Geotechnical—note this list is not exhaustive). Additionally, assessments for animal, plant, aquatic, and terrestrial themes must consider the “Species Environmental Assessment Guidelines” (South African National Biodiversity Institute (SANBI), 2020).

A SSV typically involves analysis of recent satellite imagery and spatial datasets, a review of existing environmental data, an in-person site inspection and consultation with relevant specialists. The purpose of the SSV is to confirm or dispute the environmental themes and associated sensitivity ratings identified by the Screening Tool, as well as to verify the presence,

condition, and status of SCC and other important environmental attributes. Based on the findings, the EAP and/or relevant specialist(s) may confirm or revise the sensitivity ratings assigned by the Screening Tool. These verified or revised sensitivity ratings form the basis for determining the level of specialist assessment required for each theme—whether a detailed Specialist Impact Assessment, a Compliance Statement, or, where appropriate, a Statement of Exclusion. In addition, the EAP or specialist may motivate for the inclusion of additional specialist studies not originally recommended in the Screening Tool, should these be considered necessary based on site conditions.

The findings of the SSV, including photographic evidence and a clear record of the EAP/specialist's sensitivity verification and assessment recommendations, are compiled in the SSV Report. Both the SSV Report and the STR must be submitted with the Environmental Impact Assessment Report (EIR) to the Competent Authority.

2.1 SITE SENSITIVITY VERIFICATION METHODOLOGY

The SSV process followed a multi-step approach to verify the environmental sensitivities. The SSV was led by Ms Cheruscha Swart, and Mr Michael Armitage, with input from several suitably qualified specialists for the verification of theme-specific sensitivities identified by the ST. The steps undertaken were as follows:

- **Screening Tool:** The Screening Tool was run for the two main National Sector Classification Categories to ensure that all potential sensitivities associated with the proposed development, were identified. These included “*Utilities Infrastructure| Electricity| Generation| Renewable| Solar| PV*” and “*Services| Water services| Desalination*”. The area was selected to account for the outfall pipeline protruding into the marine environment and the brine discharge and mixing area. As the project includes a solar component, the tool was also run over a larger area to ensure that any bird species of conservation concern (SCC) within the wider landscape were identified and assessed. Results from the STR were reviewed to identify potential environmental sensitivities within the proposed development footprint. The most sensitive outcomes for each theme across both Categories were used in accordance with the NEMA “precautionary principle”. Additionally, relevant spatial datasets were reviewed to identify potential environmental sensitivities within the proposed development footprint. **Note:** STRs were previously generated during earlier iterations of this report. However, due to project layout revisions and the time elapsed, updated reports were generated on 23 April 2026. Sensitivity results remain unchanged.
- **Desktop Review:** Recent satellite imagery and relevant spatial datasets were analysed to identify additional potential environmental sensitivities within the proposed development footprint and to assess current land cover, existing infrastructure, and landscape features
- **Site Visit:** Site visits were undertaken by Anchor in April 2024, October 2025 and December 2025 to verify on-site conditions and confirm the presence or absence of environmental features and sensitivities.
- **Consultation with Specialists:** Where sensitivities flagged by the Screening Tool required specialist input, appropriately qualified and registered specialists were consulted. For this SSV, input was specifically obtained from Agriculture, Archaeology and Heritage, Terrestrial Biodiversity, Avifauna, Animal, Plant and Palaeontological specialists.

3 SITE SENSITIVITY VERIFICATION FINDINGS

3.1 SCREENING TOOL RESULTS

The general project area assessed using the Screening Tool is shown in Figure 3.1 below, while the larger area considered to account for additional bird SCC is shown in Figure 3.2.

Table 3.1. presents a summary of the Environmental Themes, associated Sensitivity Ratings and Specialist Assessment as identified by the Screening Tool for both the Desalination category and the Solar category. Where the sensitivity ratings differ for the same themes between the two categories, the highest sensitivity rating (or the most sensitive) was selected. However, given that the total extent of the solar farm is anticipated to be very small, additional solar-related sensitivities are anticipated to be minor (which is reflected in the EAP-adjusted sensitivity ratings). The animal species theme includes the results for the larger study area as depicted in Figure 4.2.

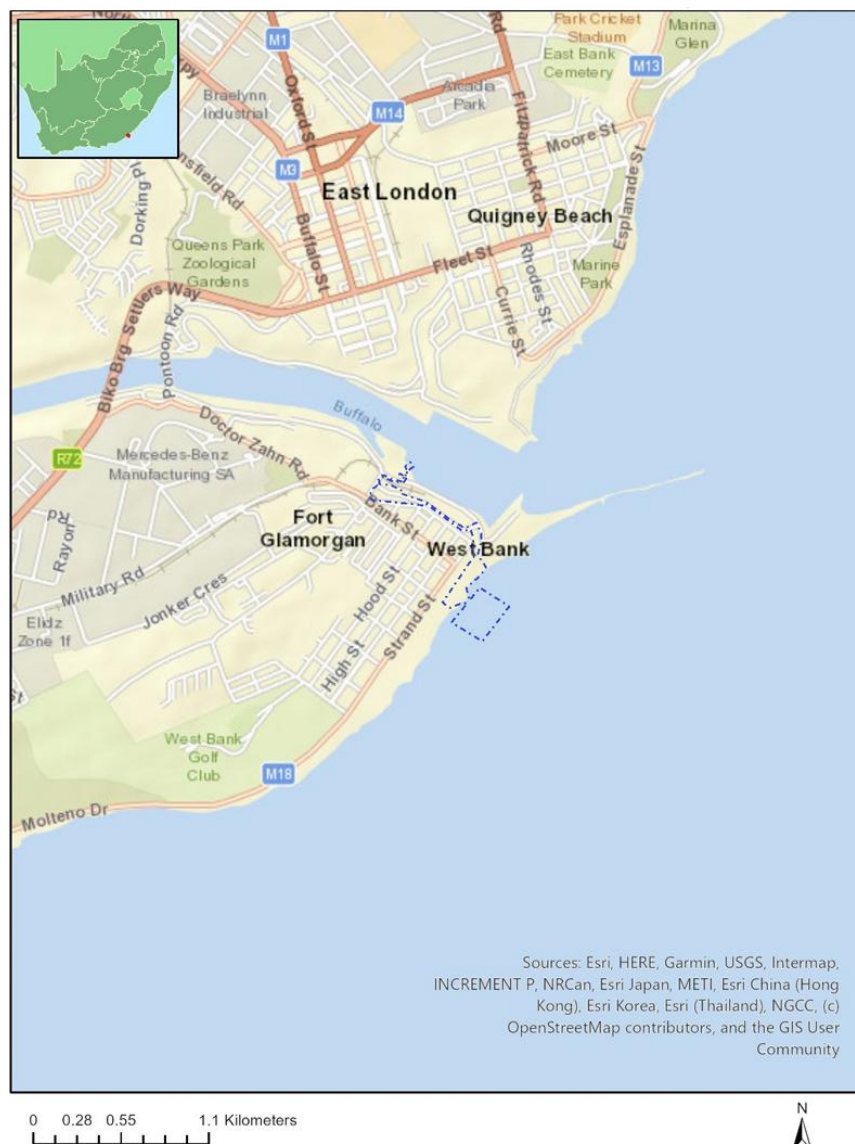


Figure 3.1. General location of the development for which both Screening Tool Reports were generated.

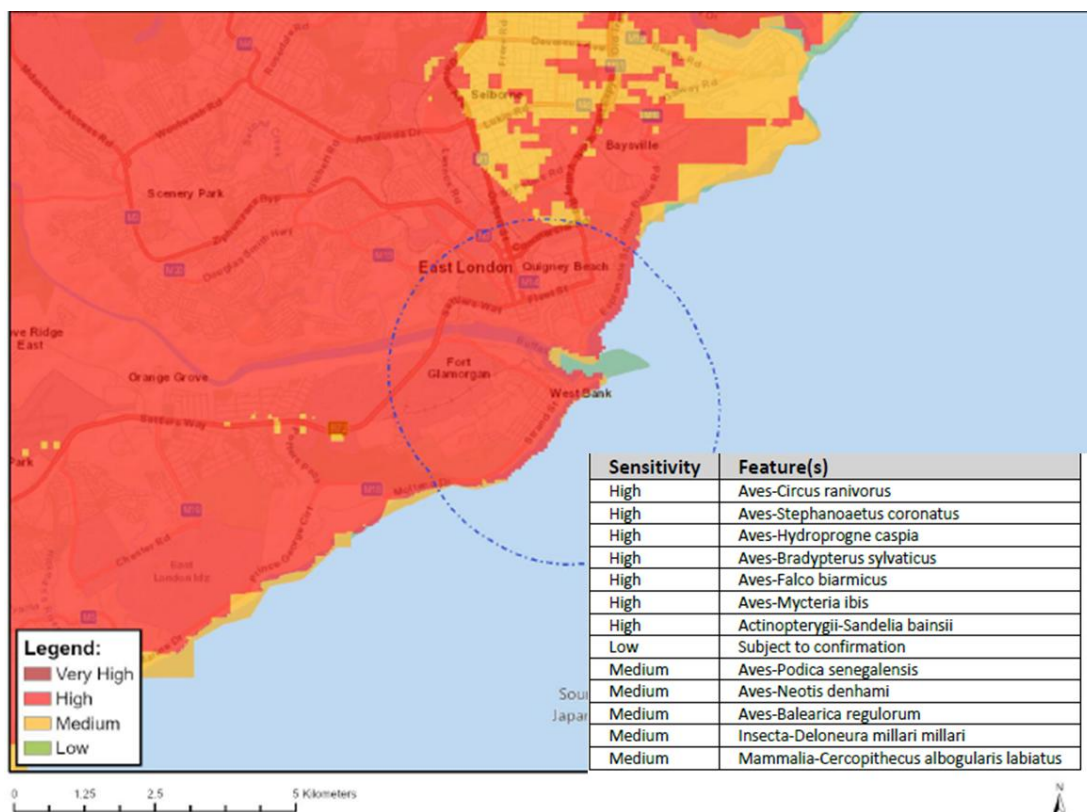


Figure 3.2. Larger area selected and run under the Solar Category in the Screening Tool to account for any bird species of conservation concern (SCC) within the wider landscape.

Table 3.1. Summary of Environmental Themes, associated Sensitivity Ratings and Specialist Assessment as identified by the Screening Tool. The sensitivity rating represents the “most sensitive” outcome for that theme across both of the selected National Sector Categories for which a Screening Tool Reports were generated. The animal species theme includes the results for the larger study area as depicted in Figure 3.2.

Theme/ Identified Assessment	Screening Tool Sensitivity Rating
Agricultural Theme	High
Landscape/ Visual (Solar) Theme	Very High
Archaeological and Cultural Heritage Theme	Very High
Palaeontological Theme	Very High
Terrestrial Biodiversity Theme	Very High
Animal Species Theme	High
Plant Species Theme	Medium
Avian Theme	Low
Aquatic Biodiversity Theme	Very High
Marine Ecology Theme	No Set Rating: Recommends Marine Impact Assessment
Socio-Economic Theme	No Set Rating: Recommends Socio-Economic Impact Assessment
Hydrology Theme	No Set Rating: Recommends Assessment
Geotechnical Theme	No Set Rating: Recommends Assessment
Civil Aviation Theme (General/ Solar)	Very High/ Medium
Relative Defence Theme (General/ Solar)	Very High/ Low
Radio Frequency Interference (RFI) Theme (Solar)	Medium
Noise Theme	No Set Rating: Recommends Assessment

3.2 DESKTOP REVIEW

3.2.1 MUNICIPAL LAND ZONING AND LAND-USE

The site is currently zoned as Transport Zoning I: Transport Use (Development Zone).

3.2.2 BIODIVERSITY SPATIAL PLANNING CONSIDERATIONS

CRITICAL BIODIVERSITY AND AREAS OF CONSERVATION CONCERN

Most of the development on land overlaps with a Terrestrial CBA I, while a section of the outfall pipeline, and the intake pipeline itself, overlaps with an aquatic (estuarine) ESA I (Figure 3.3). Despite being a Terrestrial CBA I, historical land use indicates that it does not meet CBA criteria, and associated land-use guidelines are not applicable. The development does not intersect with Protected Areas (PAs). Nearby protected areas, including Potters Pass Nature Reserve (1.3 km away), the Protected Area Expansion Strategy site (2.6 km upstream), and the Amathole MPA (5 km away) will not be affected by the development.

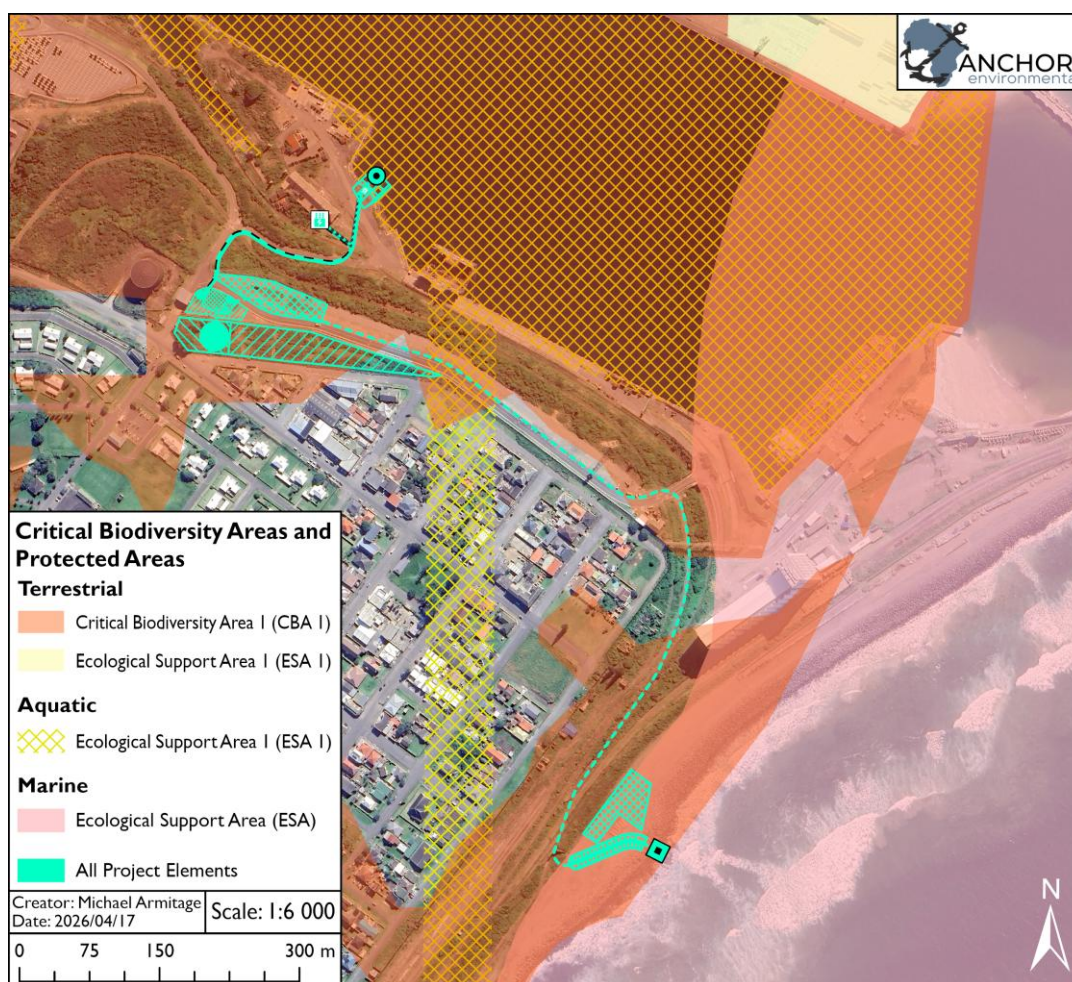


Figure 3.3. Marine, Terrestrial, and Aquatic Critical Biodiversity Areas (CBAs) (Eastern Cape Department of Economic Development and Environmental Affairs, 2018; Harris *et al.*, 2022)

ECOSYSTEM THREAT STATUS AND ECOSYSTEM TYPES

According to the National Biodiversity Assessment (NBA) 2018, the proposed development overlaps with three ecosystem types: Marine (Agulhas Exposed Rocky Shore) and Estuarine

(Warm Temperate Predominantly Open Estuary), both classified as Vulnerable, and Terrestrial (Umtiza Forest Thicket), classified as Critically Endangered (Figure 4.5). Despite these classifications, the terrestrial environment is highly modified and artificial, while the estuarine and marine environments fall within an active port area and are already heavily disturbed, as confirmed by the EAP and terrestrial specialist.

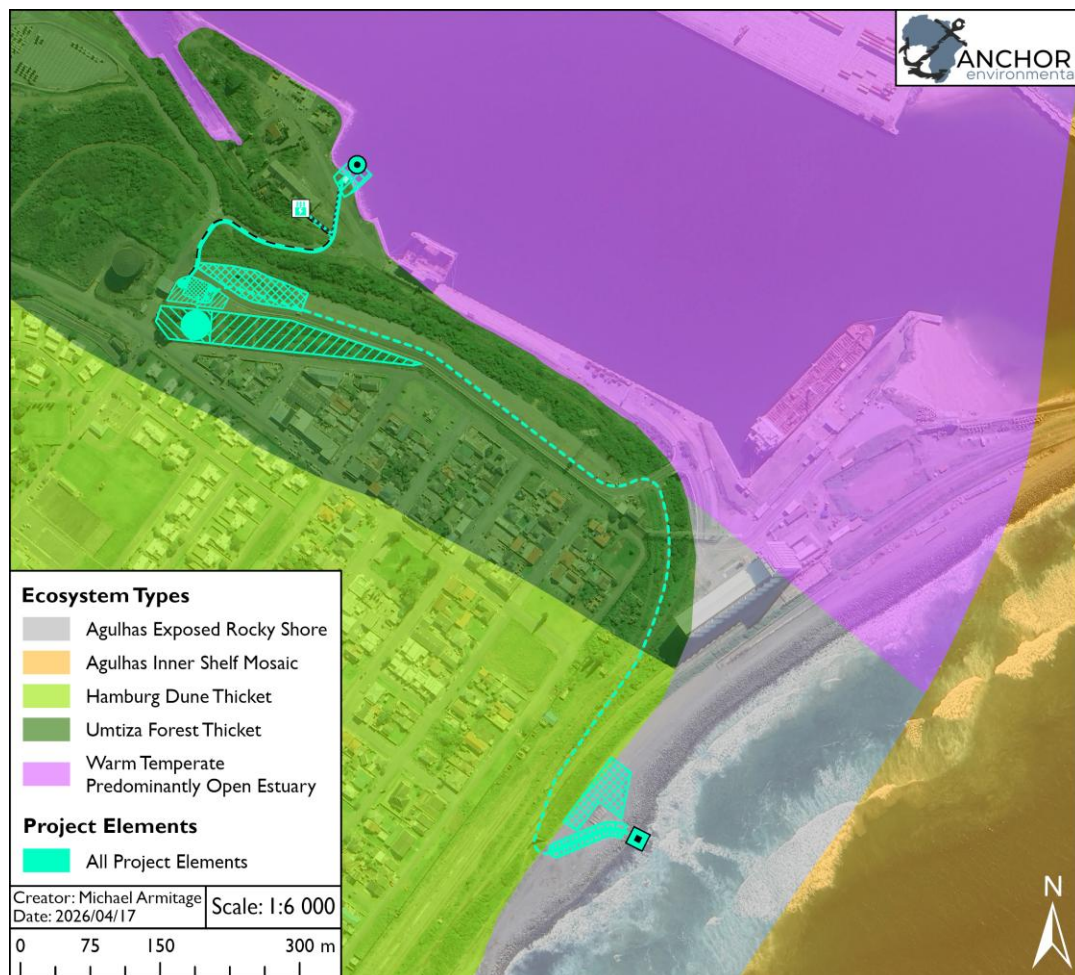


Figure 3.4. Estuarine, Terrestrial, and Marine Ecosystem types within the area as per the 2018 NBA (Van Niekerk et al., 2019c; Sink et al., 2019; Skowno et al., 2019, Sink et al. 2026).

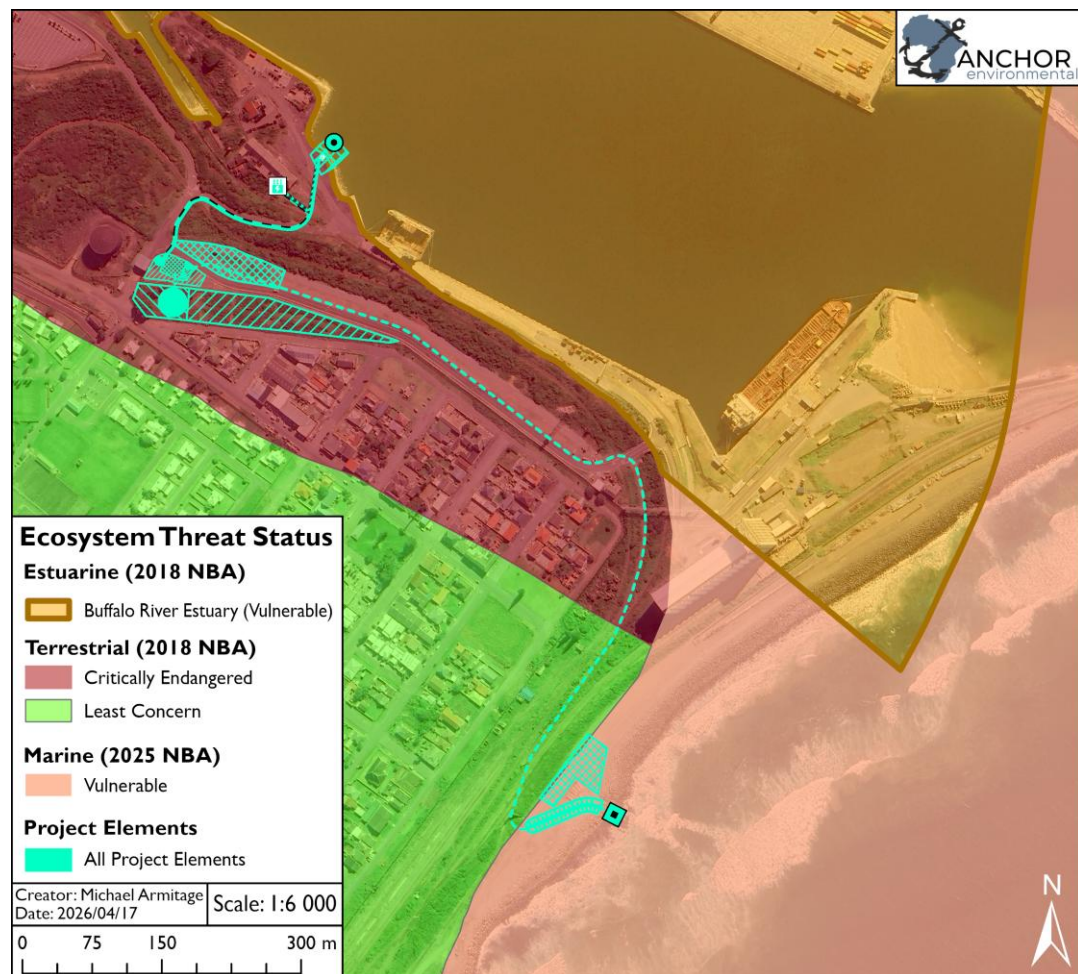


Figure 3.5. Estuarine, Terrestrial, and Marine Threat Status Mapping as per the 2018 NBA (Van Niekerk et al., 2019c; Sink et al., 2019; Skowno et al., 2019, Sink et al. 2026).

KEY BIODIVERSITY AREAS

Key Biodiversity Areas (KBAs) are internationally recognised sites important for global biodiversity (SANBI, 2024). KBA boundaries often cover large areas and reflect broader landscape-level ecological significance, rather than the specific ecological value of any one site within them. The project site lies within the broad Buffalo City Coast KBA (Figure 3.6), but is unlikely to affect its overall ecological integrity or conservation objectives.

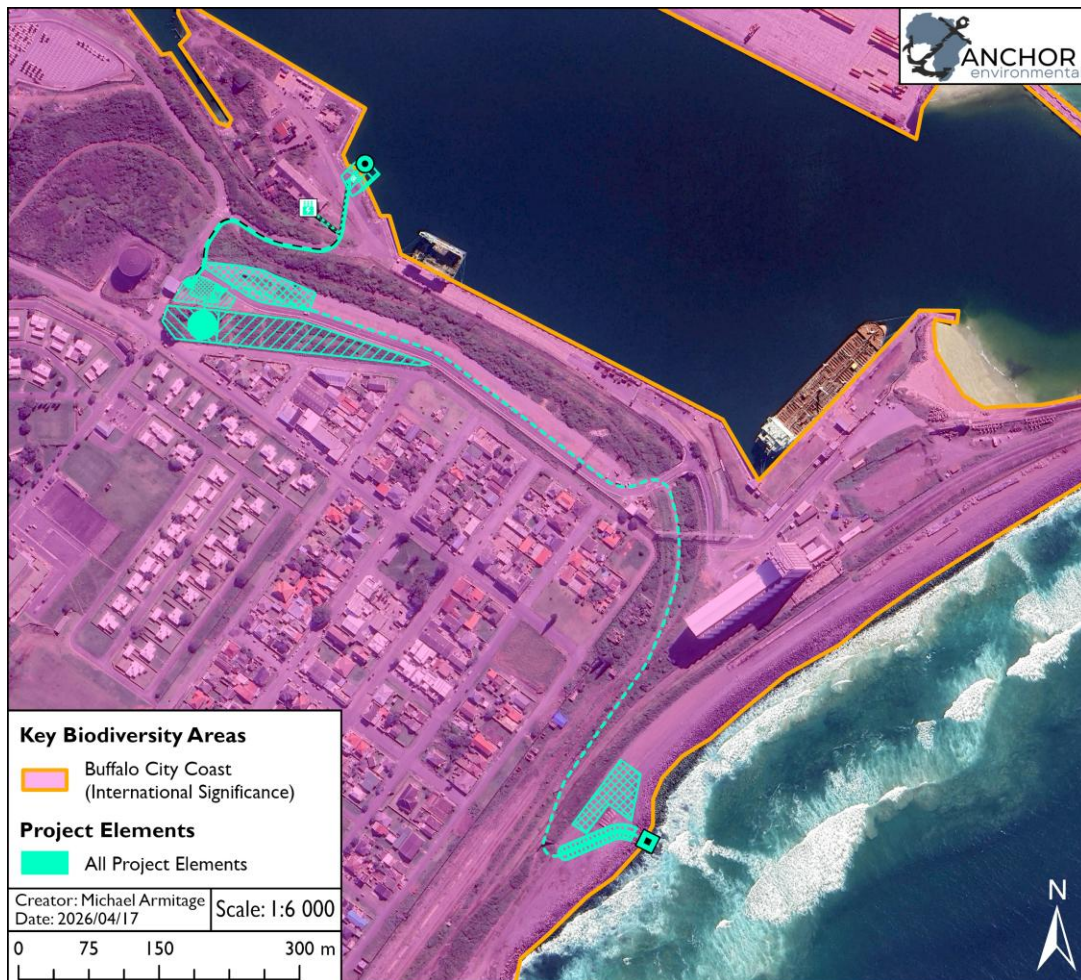


Figure 3.6. Delineated Key Biodiversity Areas (Von Staden, 2024)

NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS

The site does not overlap with a National Freshwater Ecosystem Priority Area (NFEPA).

STRATEGIC WATER SOURCE AREA

The site is not located within a Strategic Water Source Area.

3.3 SITE ASSESSMENT

Findings from the site inspection conducted by the EAP and in some cases the specialist are summarised in this section. The proposed development is located within a highly transformed environment within the Port of East London. The broader area is characterised by a mix of uses (Figure 3.7).

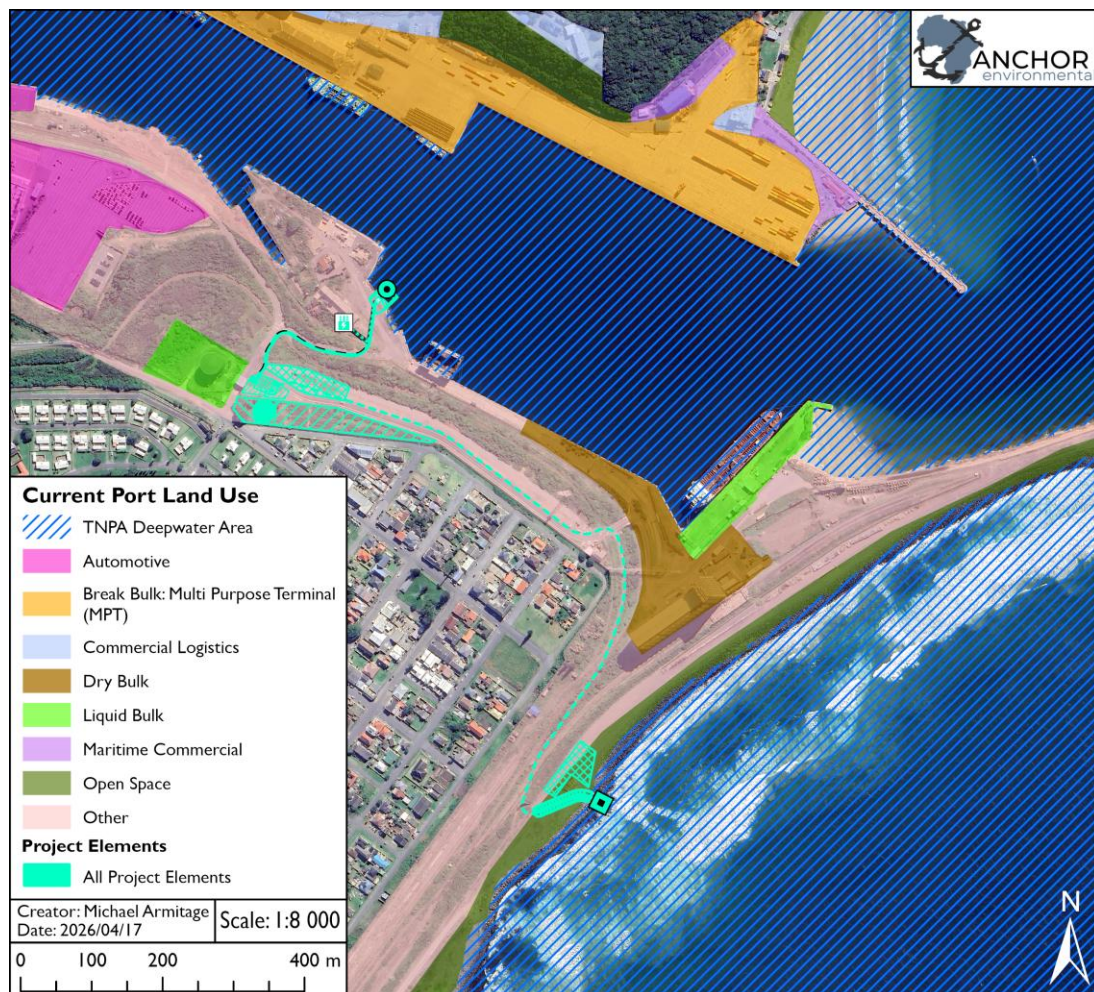


Figure 3.7. Current Port land uses.

3.3.1 RO & SOLAR PLANT SITE

The preferred site lies 100–200 m from the Buffalo River Estuary. The site is divided into two main areas by a tarred road (Figure 3.8).



Figure 3.8. Google Streetview image of the preferred RO Plant site (grassed area between the tar roads to the left of screen), note: the site currently has temporary container offices situated on it.

The RO plant and supporting infrastructure are proposed for the northern portion of the site (the green patch of grass to the left of the road near the white security house in Figure 3.8), while the solar farm and reservoir will be located on the long strip to the south (the green area to the right in Figure 3.8, and as shown in Figure 3.9). Despite both portions of the site being largely devoid of concrete, tar, or other non-permeable surfaces, the site is clearly disturbed and modified. The southern portion is densely vegetated with a combination of grasses, short shrubs, and trees. Over 80% of this area was estimated to be covered with alien plant species, according to the Terrestrial Ecology Specialist (Hawley & Balmer 2026). Additionally, evidence of recent alien clearing was observed during both site visits. Conversely, the northern portion of the site is entirely covered with a managed grass lawn, with no indigenous vegetation present. In addition, remnants of former buildings were observed in the southern portion of the site. These structures are now reduced to ruins and largely flattened.



Figure 3.9. Photographs of the preferred site as taken during the April 2024 site visit. Top: The eastern portion of the Solar Farm Site as viewed from the centre looking east. Bottom: The western portion of the Solar Farm and reservoir site as viewed from the centre looking west northwest.

3.3.2 ESTUARINE INTAKE PIPELINE AND STRUCTURES

Saltwater for the desalination process will be drawn from the Buffalo River Estuary via a direct intake pipeline. The associated infrastructure will be located on land adjacent to the intake point, about 200 m northeast of the RO plant. This section of the port is unvegetated and consists of compacted dirt and concrete surfacing (Figure 3.10).



Figure 3.10. Views of the proposed estuarine intake and pumpstation site. Top: The proposed pumpstation would be situated in the centre-left of the pane, whereas the municipal substation is located just beyond the grey-roofed building to the right of the screen. Bottom: The proposed intake pipeline will protrude into the estuarine waters to the centre-right of the pane

3.3.3 MARINE OUTFALL PIPELINE

The proposed Marine Outfall Pipeline will extend from the RO Plant, running adjacent to the internal road in a south-easterly direction towards the existing silo storage tank, from where it will continue in a southerly direction along the railway line (Figure 3.11). It will continue until reaching the railway underpass, where it will bend and proceed in an easterly direction, crossing the service road towards the breakwater and ocean (Figure 3.12). The pipeline will traverse the breakwater, which comprises rock and dolosse, and will terminate at the seaward edge of the breakwater (i.e. the outer edge of the dolosse), discharging into the ocean (Figure 3.12). From the RO Plant to the breakwater, the pipeline will largely follow existing roads and railway lines within already disturbed and modified areas. It will be buried wherever feasible, with short sections remaining exposed where burial is not practical. The last section of the pipeline will be secured by a concrete encasing.



Figure 3.11. The pipeline will largely follow existing roads and railway lines within already disturbed and modified areas. The silos are visible on the right-hand side of the right photograph.



Figure 3.12. The outfall pipeline will cross the service road (visible in the top image) towards the breakwater and ocean. It will then traverse the breakwater, which comprises rock and dolosse (visible in the bottom image), and terminate at the outer edge of the dolosse, discharging into the ocean.

4 SITE SENSITIVITY VERIFICATION CONCLUSIONS

The findings of the SSV process are summarised in Table 4.1 below. A detailed description of the assessment outcomes for each theme, based on the SSV process, is outlined in Section 4.2 to Section 4.17.

4.1 SUMMARY OF RESULTS AND RECOMMENDED ASSESSMENTS

Table 4.1. Summary Table of all site sensitivities from both the Screening Tool and the Environmental Assessment Practitioners Recommendations.

Theme/ Identified Assessment	Screening Tool Sensitivity Rating	EAP/ Specialist Sensitivity Rating	EAPs Assessment Recommendation
Agricultural Theme	High	Medium, as assessed by specialist.	Compliance statement To be prepared by suitably qualified Agricultural Specialist.
Archaeological and Cultural Heritage Theme	Very High	Medium (moderate as assessed by specialist).	Heritage Impact Assessment A suitably qualified Archaeological and Cultural Heritage Specialist was contacted to conduct the SSV and study. The specialist confirmed that a Heritage Impact Assessment (Archaeological, Palaeontological, and Cultural Heritage) is required as part of the EIA.
Palaeontological Theme	Very High	Low, as assessed by specialist.	Palaeontology Impact Assessment The Heritage Specialist received input from a Palaeontologist, the results of which were included in the Heritage SSV. Despite the sensitivity rating being reduced to low, the Heritage specialist confirmed that the Palaeontological theme will be assessed as a specialist study which will form part of the Heritage Impact Assessment.
Terrestrial Biodiversity Theme	Very High	Low as confirmed by the specialist.	Compliance Statement A site visit was conducted by the specialist in May 2025, who confirmed that, based on the survey and the historical degradation of the area, the sites are considered to have Low sensitivity. Consequently, a Compliance Statement should be prepared. Note: The EAP further recommended preparing a single consolidated report to avoid duplication of effort. This report would address multiple related themes, including Terrestrial Biodiversity, Plant Species, and Animal Species, and would cover birds, invertebrates, mammals, and any other species of concern relevant to the assessment and project footprint.
Animal Species Theme	High	Low as confirmed by the specialist.	Compliance Statement A site visit was conducted by the specialist in May 2025, who confirmed that, based on the survey and the historical degradation of the area, the sites are considered to have Low sensitivity. Consequently, a Compliance Statement should be prepared.
Plant Species Theme	Medium	Low as confirmed by the specialist.	Compliance Statement A site visit was conducted by the specialist in A site visit was conducted by the specialist in May 2025, who

Theme/ Identified Assessment	Screening Tool Sensitivity Rating	EAP/ Specialist Sensitivity Rating	EAPs Assessment Recommendation
			confirmed that, based on the survey and the historical degradation of the area, the sites are considered to have Low sensitivity. Consequently, a Compliance Statement should be prepared.
Avian Theme	Low	Low as confirmed by the specialist	Assessed as part of the Animal Species Compliance Statement Although this Theme was flagged, it was not listed as one of the required assessments. To avoid duplication of effort, it was recommended that the Avian Theme be addressed as part of the Animal Species Assessment, which already includes the three bird SCC.
Aquatic Biodiversity Theme	Very High	Very High	Marine and Estuarine Impact Assessment The development overlaps with/ is in proximity to the Buffalo River Estuarine Functional Zone (EFZ) and aquatic biodiversity Ecological Support Areas (ESAs). Study to be conducted by a suitable specialist.
Marine Ecology Theme	No Set Rating: Recommends Marine Impact Assessment	In Agreement with Screening Tool	Marine and Estuarine Impact Assessment The development is located within the coastal environment, with the marine outfall pipeline extending into the sea where brine will be discharged. It is recommended that a Marine Impact Assessment, including brine dispersion modelling, be undertaken by a suitably qualified specialist. A combined Marine and Estuarine Impact Assessment will be prepared.
Socio-Economic Theme	No Set Rating: Recommends Socio-Economic Impact Assessment	In agreement with Screening Tool.	Socio-economic, Visual and Noise Impact Assessment This study is recommended to evaluate potential community impacts and benefits, including reduced municipal water reliance, improved TNPA efficiency, economic gains, and construction-phase job creation, with Visual and Noise Themes assessed as part of this study.
Landscape/ Visual (Solar) Theme	Very High	Low	Socio-economic, Visual and Noise Impact Assessment The EAP considers that this theme still warrants an impact assessment rather than only a compliance statement. Visual impacts will be assessed as part of the Socio-economic, Visual and Noise Impact Assessment.
Noise Theme	No Set Rating: Recommends Assessment	In agreement that an assessment is required.	Socio-economic, Visual and Noise Impact Assessment The EAP recommends addressing noise impacts through an impact assessment rather than only a compliance statement. As ecological noise concerns are covered in the Terrestrial Ecology and Marine/Estuarine studies, only potential social impacts require assessment. These should be included in the Socio-Economic Impact Assessment, with no separate Noise Assessment or Compliance Statement required.
Hydrology Theme	No Set Rating: Recommends Assessment	In agreement with Screening Tool.	No further assessment required A hydrology assessment was initially conducted to evaluate beachwell and borehole intakes, but these were later ruled out due to low yield and poor water quality; no further hydrology assessment is required for the direct intake or above-ground components.

Theme/ Identified Assessment	Screening Tool Sensitivity Rating	EAP/ Specialist Sensitivity Rating	EAPs Assessment Recommendation
Geotechnical Theme	No Set Rating: Recommends Assessment	In agreement with Screening Tool.	Geotechnical Assessment as part of engineering feasibility. No further assessment required Was undertaken to evaluate soil and rock conditions, guide foundation and infrastructure placement, and inform construction methods for the development. No further impact assessment is required.
Civil Aviation Theme (General/ Solar)	Very High/ Medium	Low	Screened out. No further assessment required. Statement provided in Section 4.15 below. The site's small structures, low elevation relative to King Phalo Domestic Airport, and surrounding taller features mean negligible risk to flight paths or radar functionality. No further impact assessment is required.
Relative Defence Theme (General/ Solar)	Very High/ Low	Low	Screened out. No further assessment required. Statement provided in Section 4.16 below The site's small footprint. The low structures, and surrounding tall features mean negligible effects on military or defence radar installations. No further impact assessment is required.
Radio Frequency Interference (RFI) Theme (Solar)	Medium	Low	Screened out. No further assessment required. Statement provided in Section 4.17 below. Given the small footprint, low structural height, surrounding topography, and nearby tall structures, the development is unlikely to cause interference with radar or communications. As a result, the RFI sensitivity has been reduced to "Low," and no further RFI impact assessment is required.

4.2 AGRICULTURAL THEME

The agricultural sensitivity of a given area pertains to the suitability of the area for farming activities, whilst also indicting the potential loss of suitable agricultural land, should the land be developed/ lost. Despite falling within the boundary of a highly developed, and functioning port, the DFFE Screening Tool detected overlap with areas of "Medium" and "High" sensitivity, respectively. The site inspection confirmed that the area is transformed and does not constitute viable agricultural land, meaning the sensitivity rating could be reduced. An external Agricultural specialist from Soil ZA was consulted (Lanz and Lakey 2026). According to Lanz (2026), the Screening Tool utilises data from two independent datasets, in order to approximate the suitability of an area for crop production. However, these datasets were never designed for this purpose, with the first dataset being out of date, and the second being modelled data, conducted at a very coarse scale. Consequently, the screening tool reflects whichever of these two layers has the higher sensitivity for a given area, which is frequently inaccurate. The "True" agricultural sensitivity is given as a rating of the actual suitability of a given area for crop production, which the screening tool is not capable of indicating. This true sensitivity therefore needs to be determined through site-specific assessment. The agricultural specialist noted that, although the screening tool classified the site as having "high" agricultural sensitivity based on its land capability rating, an on-the-ground assessment determines that the site is actually of "medium" sensitivity due to its lack of viable cropping potential. The assessment therefore disputed the screening tool's classification. The specialist's site sensitivity verification confirmed that a full agricultural assessment is unnecessary, and that a

compliance statement is sufficient. The assessment by the agricultural specialist concluded that the proposed development is acceptable as it will have zero impact on future agricultural production potential. While the climate and terrain could theoretically support crop production, the site is completely surrounded by urban development, making agriculture impractical. As a result, the site's agricultural potential is deemed non-existent. Since agricultural impact requires a change in agricultural production potential, and this site has none, the development will not cause any agricultural impact. Therefore, from an agricultural perspective, the development is deemed acceptable and recommended for approval without conditions.

4.3 ARCHAEOLOGICAL, CULTURAL HERITAGE AND PALAEOLOGY THEME

The Screening Tool identified the study area to be of "Very High" Archaeological and Cultural Heritage significance owing to the location of the site within 2 km of at least one Grade 2 Heritage Site (of provincial significance). However, from the site inspection by the EAP and the specialist, it was apparent that most of the study area is highly disturbed and transformed, and likely has little above ground Archaeological and Cultural Heritage value. In addition, the construction of the desalination plant is not anticipated to negatively impact the associated Grade 2 Heritage sites. Remnants of former buildings were observed in the southern portion of the Solar site. These structures are now reduced to ruins and largely flattened. Due to the presence of heritage buildings on one of the sites, and in order to confirm the findings, and to assess maritime Archaeological and Cultural Heritage value of the area, the EAP consulted with John Gribble, an Archaeologist and Cultural Heritage Specialist from TerraMare Archaeology. Furthermore, the study area was identified to be of "Very High" Palaeontological significance by the screening tool. However, as with Archaeological and Cultural Heritage, it is unlikely that palaeontological resources are present on the site. This is due to the Port's highly disturbed nature resulting from previous and current port activities, such as dredging, infilling and other disruptive activities. Note that, even if such resources were present, many of the sites in question have been disturbed or infilled and it is not likely that construction phase excavations will go deep enough to disturb such resources. John Gribble therefore consulted with a palaeontologist to assess and confirm the palaeontology sensitivity. The following are the results from John Gribble's SSV. Note this is copied verbatim so as to not lose any important information. Any credit on the below is therefore to be attributed to John Gribble:

Findings:

The archaeological and cultural heritage and palaeontological sensitivities indicated in the Screening Tool Reports for the Port of East London Desalination Plant are reproduced in Figure 4.1 below:

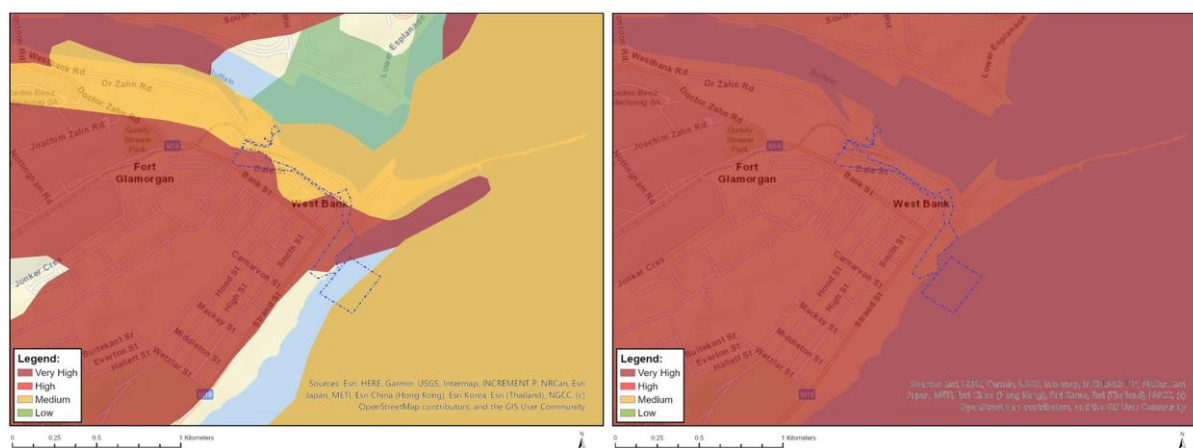


Figure 4.1: The palaeontological (left) and archaeological and cultural heritage (right) sensitivities indicated in the Port of East London Desalination Plant Screening Tool Reports.

Archaeology and Cultural Heritage: The Screening Tool indicates the site of the proposed desalination plant to be of very high archaeological and cultural heritage significance due to the location of the site within 2 km of several Grade 2 Heritage Sites (i.e. of provincial significance). The report provides no information about the identify of these sites, but one is undoubtedly Fort Glamorgan, south-east of the project area. The presence of these Grade 2 built heritage sites obscures any possible terrestrial archaeological sensitivities in the vicinity of the proposed desalination plant. It also potentially skews the results of Screening Tool Report, highlighting an inherent failing within the Screening Tool with respect to archaeological heritage in that it relies on point-plotted archaeological site data, which is generally not available for much of South Africa. The results of archaeological research and several heritage assessments carried out in recent years around East London and within the Industrial Development Zone (IDZ), immediately south of the area proposed for the desalination plant, indicate that there is a widespread and general occurrence of pre-colonial archaeological material in the West Bank area of East London. No Early Stone Age archaeological material has been reported from the area. Instead, the reported archaeology is dominated by a “litter” of Middle Stone Age lithic material that is present almost everywhere (Derricourt, 1977; Binneman and Webley, 1996; Anderson, 2009, 2013). This material is, in the main, in secondary context (i.e. it is not where it was originally deposited), and cannot generally be said to form discrete archaeological sites and is of low archaeological significance and sensitivity. In contrast, Later Stone Age archaeological material, also widely recorded in the area (Derricourt, 1977; Binneman and Webley, 1996; Anderson, 2009, 2013), most often as coastal shell middens, generally occurs as definable sites, sometimes in sealed contexts and accompanied by bone and other archaeological material. These sites are of moderate and sometimes high, local archaeological significance. Based on the above, this report disputes the very high archaeological and cultural heritage sensitivity indicated by the Screening Tool Reports. Instead a moderate sensitivity is proposed.

Palaeontology: With respect to the palaeontological sensitivity of the project area indicated in the Screening Tool Reports, the geological and SAHRIS palaeosensitivity mapping shown respectively in Figure 4.2 and Figure 4.3 below, indicates a varied range of palaeontological sensitivities in the area.

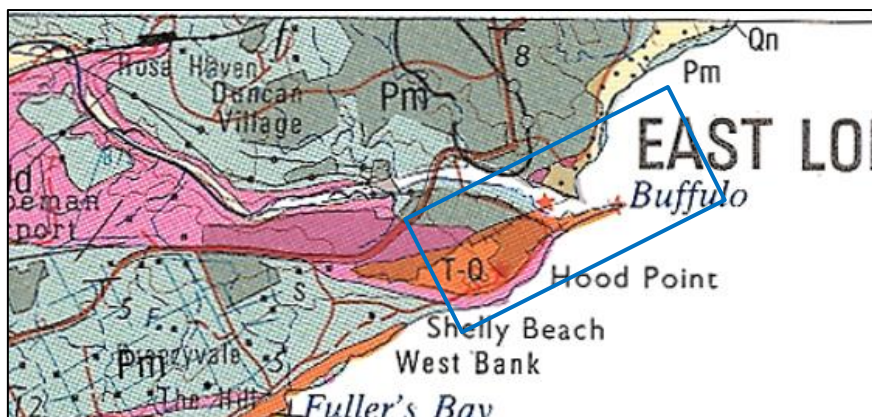


Figure 4.2: Geological map of the area around the Port of East London. The location of the proposed project is indicated within the blue rectangle. Abbreviations of the rock types are explained in Table 2. (Source: Geological Survey 1: 250 000 map 3326 Grahamstown).

The proposed development site lies on the potentially very highly sensitive, Plio-Pleistocene sands of the Nanaga Formation. This formation is part of the Quaternary age, Algoa Group of sediments and is composed of semi-consolidated calcareous sandstone with aeolian cross-bedding. The Nanaga Formation is known to preserve rare occurrences of oyster beds from road-cuttings farther inland than the proposed desalination plant (Hattingh & Goedhart, 1997), but these fossil occurrences within the formation are in fact very rare and frequently very weathered due to extensive post-depositional diagenesis, such as dissolution and re-precipitation of carbonate by groundwater (Roberts et al., 2006; Almond, 2011). For this reason, although the Nanaga Formation aeolianites are indicated as very highly sensitive in the Screening Tool Reports, Almond (2011), recommends that a more appropriate palaeosensitivity for this formation would be low. Based on the above, this report disputes the very high palaeontological sensitivity indicated by the Screening Tool Reports and suggests instead that it is low.

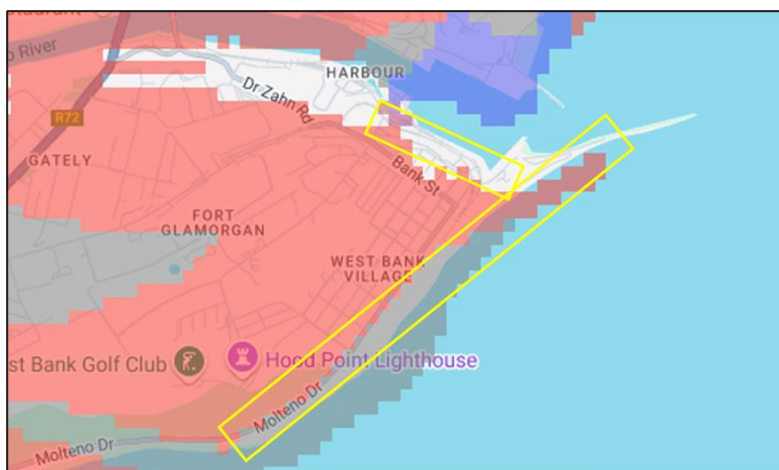


Figure 4.3: SAHRIS palaeosensitivity map for the site for the proposed desalination plant and infrastructure for the Port of East London, shown within the yellow rectangles. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; blue = low; grey = insignificant/zero (Source: <https://sahris.sahra.org.za/map/palaeo>).

Maritime Archaeology: A shipwreck database maintained by TerraMare Archaeology, and shipwreck information contained in underwater heritage impact assessment reports by Maitland (2018) for the proposed West Bank waste water treatment works marine outfall pipeline at Hood Point and Gribble (2018) for the

proposed IOX cable route, all indicate that there have been numerous historical shipping casualties in the vicinity of the Port of East London and the Buffalo River Mouth. Only relatively few of the recorded shipwrecks in the vicinity of the Port of East London are associated with known co-ordinates. There are accurate positions, but the database and reports referred to above all indicate that casualties occurred close to both Hood and Castle Points where most of the offshore elements of the desalination plant, namely the proposed marine intake and outfall pipelines, are proposed. The Screening Tool Reports do not address maritime archaeological resources as a theme. While there is an offshore area of very high sensitivity indicated for the archaeological and cultural heritage theme on Figure 4.1, this is an artefact of the 2 km buffer the Screening Tool places around certain categories of terrestrial built heritage sites and does not represent an offshore archaeological sensitivity. Based on the brief description of the known maritime casualties in the vicinity of the project, this SSVR recommends that the maritime archaeological sensitivity of the offshore, marine elements of the proposed desalination project be considered high.

In conclusion, John noted that it is anticipated that SAHRA and ECPHRA will require a Heritage Impact Assessment (HIA) which will encompass archaeological, palaeontological, and cultural heritage components, as part of the EIA process. Indeed, the authorities informed the EAP that both a Paleontological study and HIA will be required as part of the EIA.

4.4 TERRESTRIAL BIODIVERSITY THEME

The screening tool identified the project area to be of “Very High” sensitivity for Terrestrial Biodiversity owing to the site being classified as a Critical Biodiversity I (CBAI, Irreplaceable; Figure 3.3) and “Critically Endangered” Umtiza Forest Thicket vegetation (Figure 3.4, Figure 3.5,) and (ECBCP, 2018). These designations do not necessarily reflect what is actually found on the ground. The EAP found that the terrestrial environment is highly modified and artificial falling within an active port environment subject to high levels of disturbance and recommended that the sensitivity rating be reduced to Low. A suitably qualified specialist from Big Thorn Environmental was contacted to confirm the EAPs findings. A site visit was conducted by the specialist in May 2025. The Site Ecological Importance (SEI) was assessed based on conservation value, functional integrity, and receptor resilience for plants and animals. The entire development footprint was rated as Very Low. This rating reflects the site’s historical and extensive modification, its isolation from natural areas, and the absence of natural ecological drivers and processes. Urban, residential, and industrial edge effects further limit its value for species movement or connectivity, making it unlikely to contribute meaningfully to ecosystem conservation. Although the area falls within a Terrestrial CBAI in the Eastern Cape Biodiversity Conservation Plan (2019), historical land use shows that it does not meet CBA criteria, and associated land-use guidelines are not applicable. The specialist confirmed that the proposed development footprint overlaps only with historically modified areas and does not directly intersect with Umtiza Forest Thicket, a Critically Endangered ecosystem. Consequently, there is no significant ecological sensitivity, and the development is not expected to result in significant impacts. The specialist concurred with the EAPs Terrestrial Biodiversity sensitivity rating of Low and recommended that a compliance statement be prepared.

Note: The EAP further recommended preparing a single consolidated report to avoid duplication of effort. This report would address multiple related themes, including Terrestrial Biodiversity, Plant Species, and Animal Species, and would cover birds, invertebrates, mammals, and any other species of concern relevant to the assessment and project footprint.

4.5 PLANT SPECIES ASSESSMENT

The Screening Tool identified the project area to be of “Medium” sensitivity for the Plant Species theme, owing to the possible presence of the following sensitive plant species (Table 4.2). In total, there are nine “Medium” sensitivity plant species.

Table 4.2. Sensitive animal plant species identified by the screening tool.

Sensitivity	Feature (Species)–Scientific Name	Common Name
Medium	<i>Umtiza listerian</i>	
Medium	<i>Dietes bicolor</i>	African iris
Medium	<i>Riocreuxia flanaganii</i> var. <i>flanaganii</i>	
Medium	<i>Justicia bolusii</i>	
Medium	<i>Sensitive species 686</i>	
Medium	<i>Sensitive species 828</i>	
Medium	<i>Sensitive species 579</i>	
Medium	<i>Disperis woodie</i>	Horned Kappie
Medium	<i>Zostera capensis</i>	Cape eelgrass

Whilst it is unlikely that species will occur within most areas over the study area, there are patches which could theoretically support such species. The most suitable habitat is likely found in the southern portion of the Solar Site. There will almost certainly be no growth of *Z. Capensis* eelgrass this low down in the Buffalo River Estuary—due primarily to the great depth of the estuarine channel necessitated by port dredging, as well as due to physical removal by the dredging apparatus itself. The vegetation of most importance is therefore likely the species which could occur within the Critically Endangered Umtiza Forest Thicket vegetation type. Therefore, despite it being relatively unlikely that sensitive forest or dune vegetation will occur within areas considered for development of the RO Plant and supporting infrastructure, it is still recommended that a thorough site investigation be conducted by a suitably qualified specialist. A suitably qualified specialist from Big Thorn Environmental was contacted to confirm the sensitivity rating assigned by the Screening Tool. During the site visit, nine indigenous plant species were recorded, none of which are SCCs or protected. The vegetation is dominated by alien and invasive species (over 80% cover), which should be removed by the Developer. No threatened or protected plants are expected due to historical modification and degradation. Consequently, the site shows no significant ecological sensitivity for plants, and the proposed development is not expected to result in significant impacts on plants. The specialist recommended a Low sensitivity rating for Plant Species and the preparation of a compliance statement.

4.6 ANIMAL SPECIES THEME

The Screening Tool identified the project area to be of “High” sensitivity for animal species, owing to the possible presence of the following sensitive animal species (Table 4.3). In total, there are three “High” sensitivity species (all birds), and five “Medium” sensitivity species. A High and Medium sensitivity suggests that the area may overlap with possible habitat or records of these species. Note that, as mentioned above, the animal species theme was run for a larger area under the Solar category to account for bird SCC in the wider area.

Table 4.3. Sensitive animal species identified by the screening tool.

Sensitivity	Feature (Species)–Scientific Name	Common Name
High	Aves- <i>Circus ranivorus</i>	African marsh harrier
High	Aves- <i>Stephanoaetus coronatus</i>	Crowned Eagle
High	Aves- <i>Hydroprogne caspia</i>	Caspian tern
High	Aves- <i>Bradypterus sylvaticus</i>	Knysna warbler
High	Aves- <i>Falco biarmicus</i>	Lanner falcon
High	Aves- <i>Mycteria ibis</i>	Yellow-billed stork
High/ Medium	Actinopterygii- <i>Sandelia bainsii</i>	Eastern Province rocky
Medium	Aves- <i>Podica senegalensis</i>	African Finfoot
Medium	Aves- <i>Neotis denhami</i>	Denham's bustard
Medium	Aves- <i>Balearica regulorum</i>	Grey crowned crane
Medium	Insecta- <i>Deloneura millari millari</i>	Millar's buff butterfly
Medium	Mammalia- <i>Cercopithecus albogularis labiatus</i>	Samango Monkey
Medium	Mammalia- <i>Chrysospalax trevelyani</i>	Giant golden mole
Medium	Sensitive species 13	Not applicable
Medium	Invertebrate- <i>Prostalia granulata</i>	Bladder grasshopper

Although the screening tool identified potential overlap with the above-listed animal species, their presence within the study area is considered unlikely due to the highly modified port environment and fragmented green spaces. Some species, such as birds and insects, may occasionally enter the site, but construction and operational activities are not expected to result in significant negative impacts. On this basis, the EAP initially rated the site as Low sensitivity and recommended a Compliance Statement. However, a suitably qualified specialist was contacted to confirm the EAPs findings.

Only bird species and SCC were observed by the specialist during the site survey. No amphibian, reptile or mammal species or SCC were noted. While a number of invertebrates species were noted, there is no suitable habitat in the development sites for the threatened invertebrate SCC. Several threatened avifaunal species potentially occur within the project area and wider landscape. Of these, 11 species have a moderate likelihood and three a high likelihood of occurrence. Three of these were directly observed (Cape Cormorant *Phalacrocorax capensis* (EN), Caspian Tern *Hydroprogne caspia* (VU) and African Darter *Anhinga rufa* (NT)). Most species are waterbirds associated with coastal, estuarine, or freshwater habitats and are unlikely to be affected by land-based development in the Port. Four terrestrial species may occur in the wider landscape (Crowned Eagle *Stephanoaetus coronatus*, Forest Buzzard *Buteo trizonatus*, Black-winged Kite *Elanus caeruleus*, and Knysna Warbler *Bradypterus sylvaticus*), but only Crowned Eagles have been recorded roosting near the port, and the remaining species are unlikely to use the site frequently, given its transformed nature and disturbance levels. The port environment is highly modified and subject to ongoing disturbance from industrial and shipping activities. Bird populations that do occur within the area are considered to have adapted to these conditions and to the urban settlement. Existing rooftop solar installations indicate that the proposed development does not introduce novel disturbance. Given the already highly modified nature of the Port, the proposed desalination plant is unlikely to result in significant impacts on bird populations. The specialist therefore noted that, based on the site survey and historical degradation, the area is indeed of Low sensitivity and that a Compliance statement will suffice.

4.7 AVIAN THEME

The Screening Tool identified the Avian Theme for the project area and further rated it as having a “Low” sensitivity. This theme was most likely identified due to the selected Application Category (“Solar”), which often triggers this theme by default. In contrast, selecting the “Desalination” Application Category for the same footprint did not flag the Avian Theme. The sensitivity may also be linked to the site’s proximity to the marine environment (where seabirds may occur or breed) and the fact that the site has a High sensitivity in terms of three bird SCC (Table 4.3). Although the Avian Theme was flagged, it was not listed as one of the required assessments in the Screening Tool’s list of specialist studies. A full specialist study is therefore likely not required, and a Compliance Statement should be sufficient. The specialist from Coastal and Environmental Services was contacted to confirm the EAPs findings. To avoid duplication of effort, it is further recommended that the Avian Theme be addressed as part of the Animal Species Assessment, which already includes the three bird SCC. On this basis, a separate assessment for the Avian Theme is not deemed necessary and the bird assessment should instead be incorporated into the broader Animal Species Theme and associated assessment.

4.8 AQUATIC BIODIVERSITY THEME

The screening tool identified all considered sites to be of “Very High” significance for aquatic biodiversity. This is due to the development’s overlap with/ proximity to the Buffalo River Estuarine Functional Zone (EFZ) and aquatic biodiversity Ecological Support Areas (ESAs) (Figure 3.3, ECBCP, 2018). The Screening Tool sensitivity rating of “Very High” is upheld and an Aquatic Biodiversity Impact Assessment considered essential. As the EFZ overlaps with the marine environment and these habitats share ecosystems and species, a combined Marine and Estuarine Impact Assessment will be undertaken.

4.9 MARINE ECOLOGY IMPACT ASSESSMENT

The Screening Tool identified the need for a Marine Impact Assessment due to the project’s location within the coastal environment and the marine outfall pipeline extending into the sea. Given the location of the development, the planned brine discharge and the surrounding area’s classification as an ESA, the EAP concurs that this assessment is necessary. A Coastal Waters Discharge Permit (CWDP) is also required, which must include a brine dispersion model as part of the Marine Impact Assessment. As the EFZ overlaps with the marine environment and these habitats share ecosystems and species, a combined Marine and Estuarine Impact Assessment will be undertaken.

4.10 SOCIO-ECONOMIC ASSESSMENT

The Screening Tool identified the need for a Socio-Economic Impact Assessment. Given that a project of this nature has the potential to influence the local community in various ways during both the construction and operational phases, identifying and quantifying these impacts will be valuable. In addition, the project offers potential benefits, including reduced reliance on municipal water supply, improved operational efficiency for TNPA with associated economic advantages, and job creation during construction. The EAP therefore agrees with the Screening Tool and recommends that a Socio-Economic Impact Assessment be prepared

by a suitably qualified specialist. It is further recommended that the Visual and Noise Themes be assessed as part of this study, as these may also be considered social impacts.

4.11 LANDSCAPE/VISUAL IMPACT THEME (SOLAR)

The Screening Tool produced different sensitivities for the Landscape/Visual Theme. The “desalination” category identified no sensitivity, while the “Solar PV” category rated the site as “Very High”. This suggests that the solar panels are the main visual trigger. However, the desalination plant and solar array will be located within an active port already dominated by large industrial structures, making any additional aesthetic impact minor. The solar installation is small and intended only to power the RO plant, not the national grid, and many sensitivity criteria (e.g., slope as in Table 4.4) are not relevant. The EAP therefore recommends reducing the sensitivity from “Very High” to Low, but still considers that an impact assessment is warranted rather than only a compliance statement. It is further recommended that this theme be assessed as part of the Socio-economic Impact Assessment as these may also be considered social impacts.

Table 4.4. Landscape/ Visual Impact Theme (Solar) sensitivities identified by the Screening Tool.

Sensitivity	Feature(s)
High	Between 1 and 2 km of the coast
High	Between 500 and 1000 m of a town or village
High	Slope between 1:4 and 1:10
High	Between 1.5 and 3 km of a nature reserve
High	Within 500 m of a river
Low	Slope less than 1:10
Medium	Between a and 2 km of a town or village
Medium	Within 1000 m of a wetland
Very High	Within 1 km of the coast
Very High	Within 500 m of a town or village
Very High	Slope more than 1:4
Very High	Nature Reserve
Very High	Within 1.5 km of a nature reserve
Very High	Within 250 m of a river

4.12 NOISE THEME

The Screening Tool identified the need for a Noise Impact Assessment. However, the RO plant and associated infrastructure will generate only low-level noise within an already noisy port environment. The offshore pipeline will also be laid with minimal disturbance, and operational noise will be negligible compared to existing port activities. Noise significance is therefore rated as Low. The EAP nonetheless recommends addressing noise impacts through an impact assessment rather than only a compliance statement. As ecological noise concerns are covered in the Terrestrial Ecology and Marine/Estuarine studies, only potential social impacts require assessment. These should be included in the Socio-Economic Impact Assessment, with no separate Noise Assessment or Compliance Statement required.

4.13 HYDROLOGY THEME

The ST identified the need for a Hydrology Assessment, likely due to the selected Application Categories (Desalination), which often trigger this requirement by default. These assessments usually evaluate surface and subsurface water movement, flood risks (pluvial, fluvial, or groundwater), and the potential impacts of flooding on proposed infrastructure, particularly in greenfield areas or where hydrological data is limited. A Hydrology Assessment was undertaken by the project engineers. For this project, the purpose of this study was to assess the suitability of beachwells and boreholes as the intake method and to confirm technical parameters required to finalise the design (including borehole locations, depths, and pipeline lengths). Test boreholes were drilled as part of the geotechnical and geohydrology investigations. However, drilling results showed that the borehole intake was not viable due to low yield and poor water quality, and the intake method was subsequently revised to a direct intake. A Hydrology assessment was not deemed necessary for the direct intake or above ground project components as it is not expected to influence groundwater, flood risk, subsurface water movement, etc. Due to the nature of the study, formal impact ratings (via assessment tables) were not considered applicable and have therefore not been included in the impact assessment section of the EIA report.

4.14 GEOTECHNICAL THEME

The Screening Tool (ST) identified the need for a Geotechnical Assessment, likely because of the selected Application Categories (Solar PV, Desalination), which often trigger this requirement by default. Such assessments evaluate the physical and mechanical properties of foundation soils and rock to inform structural design, construction feasibility, and ground stability. They also consider potential risks to the environment and human safety. A Geotechnical Assessment was undertaken by the project engineers to investigate the underlying soil and geological conditions and determine suitable locations, foundations, and construction methods for the proposed development. The study focused on identifying and avoiding unsuitable, structurally unsound or sensitive areas during the feasibility stage, thereby reducing the risk of environmental or structural impacts during and after construction. Test pit analyses were completed for the desalination plant, solar plant, and reservoir sites to guide the selection of appropriate positions and minimise disturbance to the receiving environment. The study directly supports avoidance and mitigation by informing infrastructure placement and design in a way that prevents failure and limits unnecessary environmental disturbance. Due to the nature of the study, formal impact ratings (via assessment tables) were not considered applicable and have therefore not been included in the impact assessment section of the EIA report. As far as relevant, the study complies with Appendix 6 of the EIA Regulations.

4.15 CIVIL AVIATION THEME (SOLAR PV)

The Screening Tool results show a discrepancy between the Solar PV and Desalination criteria for the Civil Aviation Theme, with the Solar PV run indicating a “Medium” sensitivity and the Desalination run indicating a “Very High” sensitivity. This difference arises because the general methodology used for desalination plants applies more stringent restrictions, whereas the specific methodology for solar PV recognises that such installations pose minimal concern for civil aviation. It is understood that potential impacts or concerns pertaining to Civil aviation primarily relate to the construction of buildings, structures, powerlines, or other obstacles,

within the vicinity of flight paths of civil aircraft, as well as obstacles constructed in proximity of major highways, as these can sometimes function as emergency landing strips. Furthermore, concern is also placed on the impact that a given development will have on radar functionality, which is used for navigation by both aircraft, as well as air-traffic controllers and other ground-based entities. The above is detailed in the Civil Aviation Regulations (GN R425, as amended). In particular, Regulation 139.01.30 (4), states: “A building, a structure, or an object which projects above a slope of 1 in 20 and which is within 3 000m measured from the nearest point on the boundary of an aerodrome shall not be erected without prior approval of the Director.”, and “(9) A building or an object higher than 45m above the mean level of a landing area shall not, without the approval of the Director, be erected within 8 km measured from the nearest point on the boundary of an aerodrome.” In the case of the former, this would be relevant to buildings/ structures exceeding the relative heights specified in Table 4.5, below:

Table 4.5. Minimum height of buildings, structures, or objects, relative to the height of an aerodrome, requiring approval, in terms of Regulation 139.01.30 (4) of the Civil Aviation Regs.

Distance from nearest boundary of Aerodrome	Minimum height above aerodrome requiring approval
50 m	2.5 m
100 m	5 m
300 m	15 m
500 m	25 m
1000 m	50 m
2000 m	100 m
3000 m	150 m

However, in the case of this project, the closest aerodrome is ~6.6 km from the project site: rendering 139.01.30 inapplicable. Furthermore, while the plant is proposed to be constructed within 8 km of the King Phalo Domestic Airport, which accommodates civilian aircraft for EL and the surrounding areas, the average elevation of the airfield is much higher than even the highest point of the proposed structures, with the ground level falling at the proposed site falling approximately 100 m lower than the runway elevation, as per Google Earth (Figure 4.4).

In fact, the proposed RO plant is anticipated to be a single story in height, and be either take the form of a discrete building, or be constructed within Shipping Containers, with all options being less than 5 m in total height. Likewise, the solar panels are likely to have a panel angle of approximately 30°, and a total height of only ~2 m, relative to ground level. Finally, the 1 ML water reservoir is proposed to have a height of approximately 4.6 m. Cumulatively, even with a building height of 5 m, the maximum structural height will still be ~95 m below the runway height at King Phalo, and thus collision risk is considered to be nil. Likewise, given the low elevation of the site, and the proximity of other (much taller) structures, both in the sites proximity, as well as directly between the site and the airport (including buildings with extensive solar panel arrays which exceed the total proposed panel area by several orders of magnitude), it is anticipated that the proposed development will have negligible negative impacts on civilian radar returns. Consequently, the Civil Aviation sensitivity has been lowered from “Very High”/ “Medium” to “Low”, and no impact assessment is therefore further required, as per GN 320 of 2020.

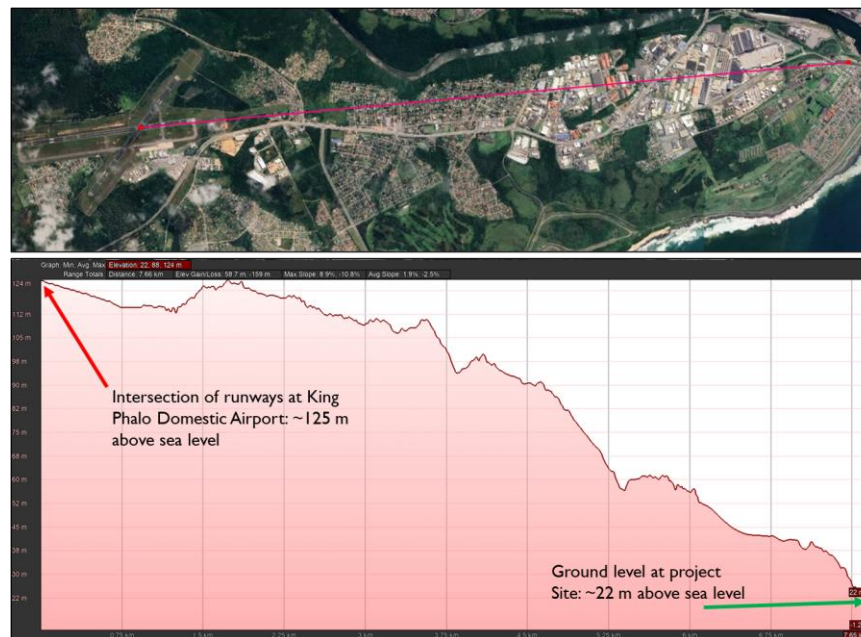


Figure 4.4. Approximate Ground Level of the Project Site, relative to the height of the runway at King Phalo Domestic Airport (Google Earth Imagery).

4.16 RELATIVE DEFENCE THEME

The Screening Tool runs have a disparity between the Solar PV and Desalination Criteria for the Relative Defence Theme, in that the Solar PV sensitivity was identified to have “Low” sensitivity, whilst the Desalination Screening Tool Run was identified to be of “Very High” sensitivity. As with Civil Aviation above, it is understood that potential defence impacts largely pertain to the effect that a given development could have on military and defence Radar Installations, and the potential for a development to interfere with/ disrupt radar returns. Additionally, whilst the Solar PV Screening Tool run identified no defence concerns for the proposed development, the more generic, “Desalination” run, identified the site to be within a buffer area surrounding an identified military/ defence site. Furthermore, the location of the site, both in respect to sea level, as well as surrounding tall structures, coupled with the relatively small construction footprint and maximum height of any of the individual structures, means that the development should have negligible effects on military or defence radar installations. Finally, the proposed purpose of the site for the production of water through the process of desalination should have no negative impacts from a military or defence perspective.

Consequently, the sensitivity has been adjusted from “Very High”/ “Low” to “Low”. No further impact assessment is therefore required.

4.17 RFI THEME

The Tool Identified the Study Area to have a “Medium” Radio Frequency Interference (RFI) Sensitivity, owing to the site being located “Between 30 and 60 km from a Weather Radar installation and within the radar’s line of sight” and “Within 1 km of a telecommunication facility”. This theme was considered due to the Solar-PV component of the development. As detailed with respect to both Civil Aviation and Defence sensitivities above, the location of the site, coupled with the relatively small development footprint and maximum structural

height, result in the development likely having negligible/ nil interference with any radar installations. The same is anticipated to be true for interference with other radio waves/ communications. Whereas radar installations/ instruments rely on transmitting radar waves and measuring the waves that return/ reflect off objects/ surfaces, radio waves can also be used for direct communication. However, again, the development should not interfere with any radio communications, and does not appear to fall directly within the path of any direct telecommunications pathways. Furthermore, the landscape to the south and west of the sites, both rise above the elevation of the project site, thus minimising the role that the development could have in any potential radio/ telecommunications disruption. Only alternative RO site 2 has the potential to be located between the Transnet Port Control Tower, and ships in the nearby marine environment, however, even this site is located adjacent to very high buildings (exceeding 50 m in height), and a railway berm that rises several metres above the site level, which also nullifies any potential impact on radio/ telecommunications.

Consequently, the RFI sensitivity has been reduced from “Medium” to “Low” and no further RFI impact assessment is therefore required.

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