



APPENDIX 10: Socio-Economic, Visual and Noise Assessment

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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FINAL SOCIO-ECONOMIC, VISUAL AND NOISE IMPACT ASSESSMENT

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



June 2026



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REPORT DETAILS

DFFE EA Application Ref No: 14/12/16/3/3/2/2675

Report Title: Final Socio-Economic, Visual and Noise Impact Assessment: Scoping & Environmental Impact Assessment (S&EIA) for the Proposed 2ML/d Solar Powered Seawater Desalination Plant in the Port of East London, Buffalo City Metropolitan Municipality, Eastern Cape Province, by Transnet National Ports Authority

Physical Location: Erven 63584, 38530 and 63586; Harbour; 5201; Port of East London; East London; Buffalo City Metropolitan Municipality; Eastern Cape Province; South Africa.

S&EIA Process Status: Final Environmental Impact Assessment Process (Phase)

Report Date: 03 June 2026

Report prepared for/ Client: Transnet SOC Limited—Division Transnet National Ports Authority (TNPA)—East London Port; Hely Hutchinson Rd, Quigney, East London, 5211

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EXECUTIVE SUMMARY

Introduction

Transnet SOC Limited, a division of Transnet National Ports Authority (TNPA), has appointed contractors Sunwater East London Joint Venture (Pty) Ltd (Sunwater) for the construction of a two (2) megalitre per day (MLD) solar-powered Reverse Osmosis (RO) desalination plant within the Port of East London, Buffalo City Metropolitan Municipality, East London (Figure A, and Figure B). Anchor Environmental Consultants (Pty) Ltd (Anchor) has been subcontracted to conduct the EIA prior to the construction and operation of the plant. The RO process involves producing fresh potable water from saltwater, which has been abstracted from the estuarine/ marine environment. This water will be used by TNPA to support port operations and help reduce reliance on municipal water.

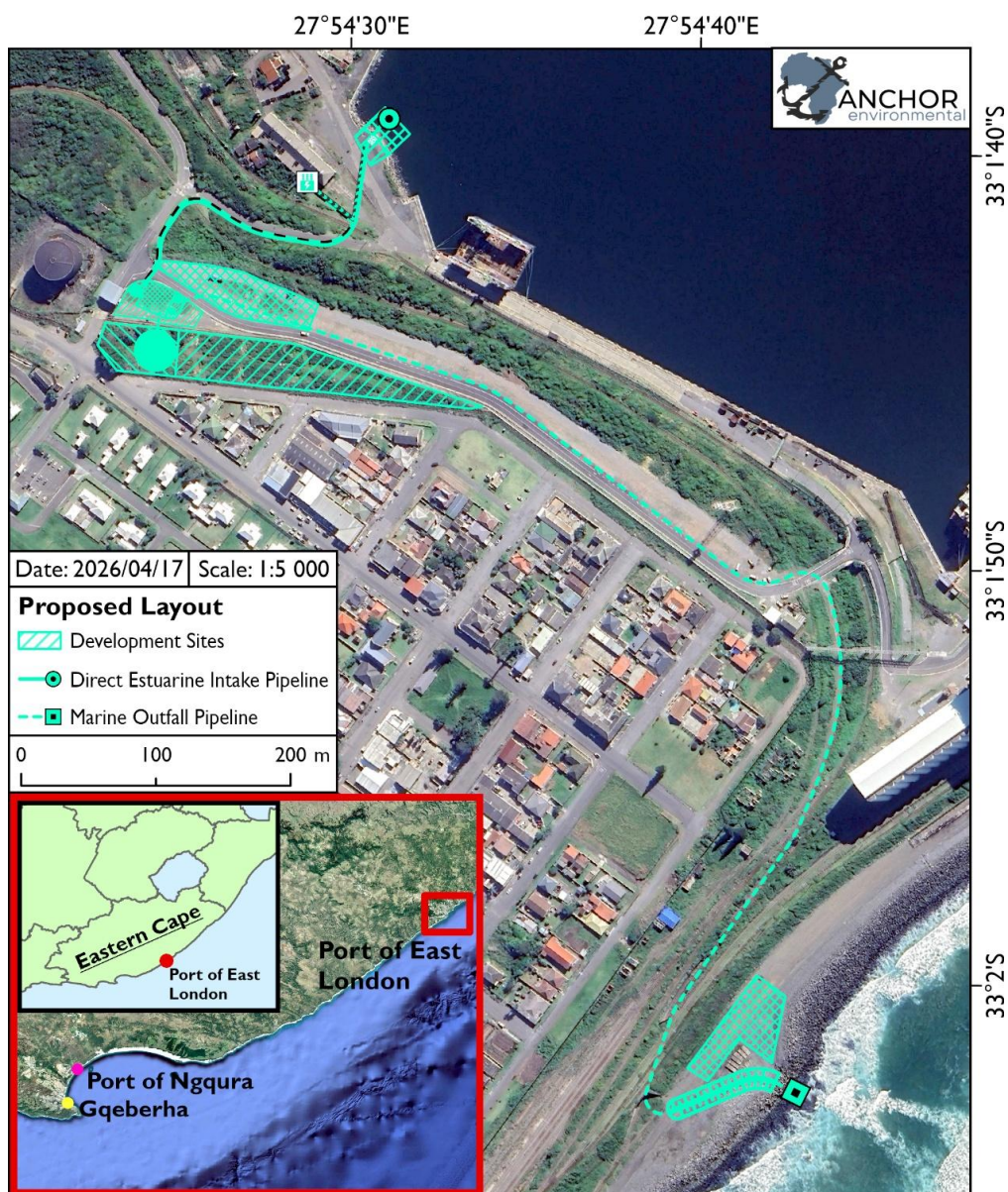


Figure A. Port of East London and the proposed development in relation to the Eastern Cape Coastline and South Africa.

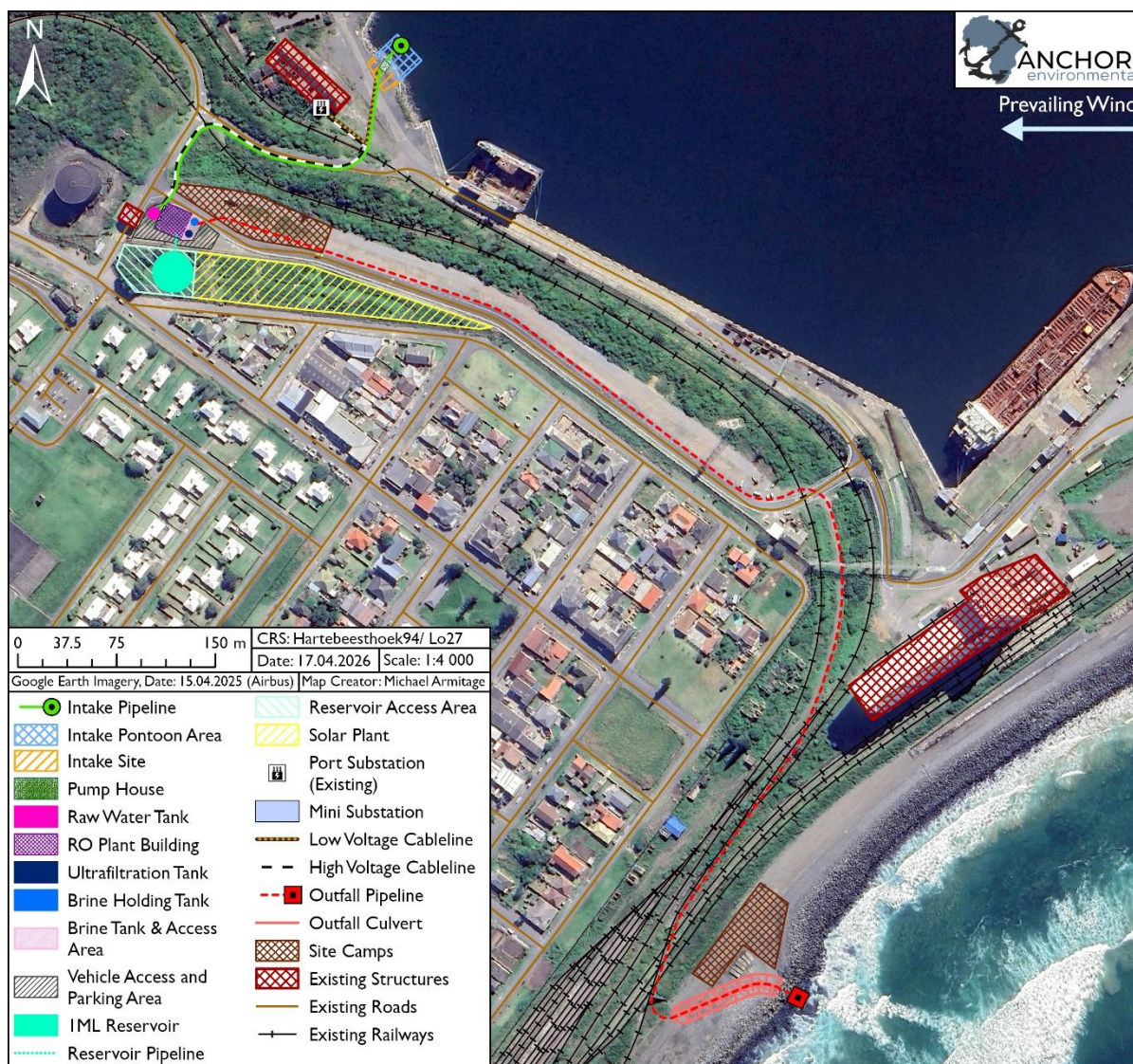


Figure B. All components associated with the proposed development.

The formally gazetted Department of Forestry, Fisheries and the Environment's (DFFE's) Screening Tool Report (STR) identified the site to have Socio-Economic sensitivity, Landscape/Visual sensitivity, and Noise sensitivity. However, the Site Sensitivity Verification (SSV) processes conducted by the Environmental Assessment Practitioner (EAP), disputed the sensitivity ratings for both Landscape Visual and Noise Theme Sensitivities, and disputed the requirement for discrete studies to be conducted for each sensitivity, with both being reduced to a sensitivity rating of "Low". Conversely, the SSV process was in alignment with the STR, with respect to the Socio-Economic Theme, and a discrete report considering both the potential impacts and benefits associated with the development was prescribed (this report).

However, given that potential Landscape/Visual impacts and Noise Impacts are both pertinent to Human/Socio-Economic receptors and are both integral to understanding the potential impacts this development could have on these receptors, they have been considered within this report. **Note: Any ecological considerations relating to noise impacts fall under the ambit of the ecological specialist studies (Terrestrial Ecology, Avifauna, Animal and Plant Species, and Marine and Estuarine). Therefore, noise considerations relating to ecological receptors have not been included within this report.**

This report is the Final Socio-Economic Assessment for the proposed Solar Powered Desalination Plant in the Port of East London. As both Socio-Economic and Landscape/Visual Specialist Studies/Statements do not have their own gazetted protocol, they must follow the protocols prescribed within Appendix 6 of the EIA Regulations (GN R982 of 2014). Conversely, Noise Studies do have their own gazetted protocols, which must be adhered to (GN 320 of 2020). This study has been conducted in accordance with these prescribed protocols.

Applicable Legislation

Relevant national legislation pertaining to this development includes the Constitution of the Republic of South Africa (1996); the National Environmental Management Act (NEMA, Act 107 of 1998); the National Environmental Management: Air Quality Act (Act 39 of 2004); The National Environmental Management: Waste Act (Act 59 of 2008); The Spatial Planning and Land use Management Act (Act 16 of 2013); and the Occupational Health and Safety Act (Act 85 of 1993).

Applicable legislation pertaining to Noise Control and Management includes the Environmental Conservation Act (Act 73 of 1989, which still governs law at a national level); and the Buffalo City Metropolitan Municipality (BCMM) Noise By-Law (2010) and BCMM Final Noise Control By-Law (2024), which govern noise control at a municipal scale. This assessment has largely been informed by the 2024 Draft By-Law. While the 2024 By-Law is still in Draft form, it has a higher level of detail and recency and the likelihood of implementation by the time the proposed development will commence is high.

Other legislation and policy pertaining to socio-economic receptors within the BCMM includes the BCMM Integrated Development Plan (IDP; 2024/2025); the BCMM Spatial Development Framework (SDF; 2024–2025); the BCMM Zoning Scheme Regulations (2007); the BCMM Integrated Waste Management By-Law (2022); and the BCMM Roads and Streets By-Law (2011).

Social and Demographic Context

Information pertaining to the social and demographic context was based on information presented within the 2022 National Census, on data presented within the most up-to-date BCMM IDP and SDF documents, and supplemented/contextualised with additional information from the 2011 National Census data where necessary.

Population Trends

The coastal and port city of East London falls within the Buffalo City District Municipality (BCMM), with the BCMM government overseeing management and governance within the areas broadly falling within the catchment of the Buffalo River. The BCMM is also home to the administrative centre, the “Seat” of the Eastern Cape Provincial Government, in the City of Bhisho, which is located in the upper catchment, approximately 48 km northwest of East London.

East London is the administrative seat of the BCMM, which reflects the key role the city plays in driving governance and the economy within the municipality.

The BCMM had a total population of 975 255 people in 2022, a 24.7% increase from 781 853 people in 2011. This population is divided into a total of 268 438 households with an average household size of 3.6 people, a slight increase from the 3.4 people per household in 2011.

The percentage of the population of working age (between 15 and 64 years of age) remained stable between 2011 and 2022, at 67.4%. The same is true for the age dependency ratio (the ratio

of “dependents” to working age individuals), which was 48.3% in 2022 and 48.4% in 2011: which was very similar to the national average of 48.8% in 2022. However, the relative proportion of this dependent population saw a decrease in the young children cohort, and an increase in the elderly cohort, thus potentially indicating an aging population.

Positively, the BCMM saw progress in education metrics, access to improved sanitation and disposal services, access to improved water sources, and access to electricity for the purposes of lighting. These metrics all improved over the 2011-2022 period, a trend that also occurred in both the Eastern Cape Province, and South Africa as a whole.

Unfortunately, despite the recorded improvement in living conditions, other metrics highlight concerning trends within the BCMM. The most concerning trend is that of unemployment, which has increased significantly at a national, provincial, and municipal level. In fact, the BCMM experienced a higher increase in its unemployment rate than both the provincial and national average, with a rise from 26.5% in 2012, to 45.3% in 2022 (an 80.2% increase). This equates to an increase in the unemployed population from ~80 000 individuals in 2012, to ~185 000 in 2022. While rising unemployment is consistent with other sub-metros, the rate seen in East London was slightly lower than those in the other major sub-metros, such as Macleantown, Sandisiwe, and Qonce.

Economic Context

There have been pronounced changes in Buffalo City's economy in recent years, as demonstrated by fluctuations in its Gross Domestic Product (GDP). A considerable economic decline was experienced between 2019 and 2020, likely due to the onset of the COVID-19 pandemic. This was followed by economic recovery between 2020 and 2021, with growth rates exceeding pre-Covid conditions. However, this was predicted to stabilise to an average growth rate of 1.32% between 2022 and 2027, which is lower than the predicted growth rates for the Eastern Cape (1.47%) and South Africa (1.76%).

BCMMs GDP is further broken down at the sub-metro level, with data indicating that the East London sub-metro contributed the most to the BCMMs GDP, with a 35.93% share as of 2022. This equated to a total city-wide GDP of R26.29 billion in 2022, which was predicted to grow to R48.95 billion in 2027. This further highlights the economic importance of East London within the metro.

Gross Value Added (GVA) is a measure of economic output which tells us how much value an industry or region is contributing to the economy. When broken down by sector, Community Services are the largest contributor to the economy within the BCMM, contributing 37.3% to GVA, followed by Financial Services (19.3%), and Trade (17.0%). Therefore, the BCMM economy is dominated by services of the tertiary sector.

Given that the proposed desalination plant will most likely have an impact on the Trade Sector in East London and BCMM, this sector was the focus of the assessment. As of 2022, the BCMM contributed 1.9% towards South Africa's total Trade Sector value, and 20.4% to the Trade Sector value of the Eastern Cape. This relatively large contribution is a product of the presence of key cities within the BCMM, as well as the influence of the Port of East London as a trade hub.

The BCMM Trade sector experienced a significant 11.5% decline in 2019 during the onset of the COVID-19 pandemic. However, this was followed by an economic rebound in 2020, peaking at 6.6% growth. This growth rate then slowed between 2021 and 2022 (~3% growth), which was predicted to decline further to an average annual growth rate of 1.15% between 2022 and 2027.

Another useful metric is the “location quotient” which is defined as the relative competitive advantage that one regional economy has over other regional economies with respect to producing the same good/service. The BCMMs location quotient indicates that, besides Community Services and Manufacturing, the Trade sector exhibited the highest competitive advantage, relative to the other sectors. This metric was higher than the national average for the Trade sector. This competitive advantage is likely due to the presence of the Port of East London, which enables trade efficiencies and opportunities not available for areas without international port facilities.

The Trade sector contributes significantly to employment in the BCMM providing the second-highest number of jobs in 2022 (after Community Services). Only the Nelson Mandela Bay Metropolitan Municipality (NBMM) supported a higher number of Trade Sector jobs in 2022, than the BCMM which is explained by the combined influence of the Port of Port Elizabeth and the Port of Ngqura, both of which are large international ports. However, when looking at the percentage of total jobs within the Trade sector, the BCMM actually had a slightly higher percentage than the NBMM, which again speaks to the considerable importance of the trade sector within the BCMM. Trade sector jobs within BCMM in 2022, consisted of 60.1% formal jobs, and 39.9% informal jobs. Consequently, most jobs directly resulting from port-related activities likely fall within the “formal trade” cohort.

The trajectory of imports and exports indicates that most trade in the BCMM was derived from imports (bringing goods into the municipality), rather than exports (delivering goods out of the municipality) in 2022.

In summary, the BCMM appears to be in a tenuous state with respect to unemployment, yet the Trade sector plays an important role in maintaining the base of the metro’s economy. Since the proposed Desalination plant will supply fresh water for use within the Port of East London, the resultant improvement in the port’s operational efficiency/capacity could increase the value of the Trade sector and strengthen the metro’s economy as a whole.

Human Uses and Influence within the Coastal and Marine Environment

East London offers a diverse range of marine and estuarine recreational activities that are influenced by its rich aquatic environment. The city’s beaches, including Eastern Beach and Nahoon Beach, are well-suited for bathing, surfing, and a variety of water sports. The warm waters of the Indian Ocean provide favourable conditions for activities such as kayaking, windsurfing, and stand-up paddleboarding, while the consistent waves attract surfers from both local and international communities. Additionally, East London is recognized as a destination for recreational SCUBA diving, with several dive sites in the surrounding waters that feature diverse marine life.

The sheltered environment of the Buffalo River Estuary is ideal for more tranquil activities, including boat cruises, kayaking, recreational fishing, and birdwatching. Furthermore, sailing is a popular activity in both the ocean and estuarine waters, with sailing clubs, such as the Buffalo River Yacht Club, in the area.

Six fisheries were identified to be potentially relevant to this development, and include the Commercial/Traditional Line fishery, the Large Pelagic Longline fishery, the South Coast Rock Lobster fishery, the Small Scale and Recreational Fishers fishery, and Aquaculture/Mariculture. However, only the Commercial/Traditional Line fishery and Small Scall Scale and Recreational fisheries were identified to have perceivable overlap with the development’s area of influence.

These fisheries are assessed in great depth as part of the Marine and Fisheries Impact Assessment (See Bovim *et al.* 2025).

Users of the Area in Close Proximity of the Development

Given the proposed location of the plant within a functional port, which is subject to access control, most of the people exposed to the development during both the construction and operational phases, will be port employees. However, given the proximity of the site to the transparent perimeter fence at the edge of the port's property, residents/workers within the neighbouring West Bank mixed use suburb, located to the south of the site (in addition to users of the supporting road infrastructure), are likely to be exposed to the development.

The properties located along Dale Street, running parallel to the site, are characterised by a mixture of residential and business developments, including two vehicle bodywork shops, a hardware pawn shop, a vehicle finishes/body shop supply store, and at least one small hotel/guesthouse. These commercial/industrial developments are interspersed with residential accommodation/houses.

When looking slightly further away from the site deeper into the West Bank Area, although still within 200–300 metres of the site, along Bank Street and High Street, the property uses becomes more varied. Here, there is a mixture of residential houses, several small supermarkets, a liquor store, a church, a medical practice, a tearoom, a post office, and two additional vehicle bodywork/repair shops.

Finally, in addition to the West Bank Suburb, the area to the southwest of the site, running along the south side of Bank Street, consists of a relatively large, uniform, residential settlement, which likely houses the workers of the East London Department of Correctional Services.

These two areas are discussed in further detail in the following section.

Subplace Statistics (2011 Census)

Given the absence of data available at the suburb (Sub Place) level for the 2022 census, the 2011 data has been used. The two relevant sub places are the West Bank Village and Fort Glamorgan (the area in which the East London Department of Correctional Services falls).

West Bank Village Sub Place:

The West Bank Village had a total population of 2069, and 616 households, as of the 2011 Census. This population was of majority White ethnicity (57%), followed by Black African (36%) and Coloured (6%), with <1% consisting of Indian or Asian and "Other", combined. The most prevalent languages in the area were English (41%), followed by isiXhosa (32%) and Afrikaans (24%). A further ~3% spoke a language besides the prior 3.

The vast majority (in excess of 98%) of dwellings in the area were formal, with only 8 households being considered "informal" (consisting only of the informal brick shacks and "informal" categories).

Positively, all but 8 households had access to formalised running water. Additionally, almost all households had access to flush toilets (96.8%), with the remaining households relying on septic tanks, ventilated improved pit latrines (VIPs), or pit latrines. Only three households were listed as having access to no toilet facilities.

Almost all households had access to regular refuse removal (97.2%), while 1.6% utilised their “own dump”, and 1.1% utilised “irregular” refuse removal. All but 3 households had access to electrical lighting, with the remaining 3 utilising candles. Access to winter heating was more varied, with 320 (51.6%) of households having access to electrical heating, 41 (6.6%) to paraffin, 25 (4.03%) to gas, 3 (0.5%) to animal dung heating, and the remaining 226 (36.5%) had no access to heating. All households had access to some form of heat for cooking, with the majority (563, 90.7%) having access to electrical cooking, 46 (7.4%) having access to gas, and the remaining 12 households utilising either paraffin or wood.

Access to education varied substantially, with the largest number (599, 41.9%) receiving “some secondary” (high school) education, 595 (41.7%) completing secondary school, and 145 (10.2%) having some form of higher education. Only 52 (3.6%) of people only had some amount of primary education, and 23 people (1.6%) had completed primary school but had no secondary education. Finally, 641 individuals (31.0%) of the total population of the sub place had no recorded education data.

West Bank Village had an unemployment rate (defined as the percentage of unemployed working age individuals, relative to the number of employed individuals, but excludes those classified as “discouraged work-seekers”) of 23.0% in 2011, which was similar to the unemployment rate determined for the BCMM in 2012 (of 26.5%). However, it is unclear whether the sub place has seen the same (almost doubling) in unemployment, that the BCMM has seen between 2012 and 2022.

Many households (64.6% of total) had an annual income ranging between R 38 201 – R307 600 in 2011. When adjusted by an estimated inflation of 105% between Jan 2011 and July 2025, this range shifts to between R78 311 – R630 580, although there is no guarantee that annual income increased in proportion with inflation in this area. A total of 16.2% of households had some form of income below this combined cohort, and 11.2% were recorded as having no income. Finally, only 8.1% of households had an income between R307 601 – R614 400 in 2011 (R630 581 – R1 259 520 in 2025), with no households falling into a higher income bracket than this.

In summary, it appears that the West Bank Suburb is well established, with a large degree of household formality; high levels of access to key infrastructure and services (water, sanitation, electricity; and heating); and annual incomes that are largely indicative of “middle income” households.

Fort Glamorgan Sub Place:

The Fort Glamorgan sub place had a similar total population to West Bank as of 2011, with 2511 total residents. However, the distribution in ethnicity contrasted strongly between these two areas, with 86.7% of Fort Glamorgan’s population being classified as Black African, 6.3% coloured, 5.8% White, and the remaining 1.3% as either “Other” or Indian/Asian. This contrasts to the predominantly (57%) White West Bank sub place. Dwellings in the area were almost entirely formal (99.5%), with most residents residing within houses, apartments, and backyard dwellings.

All but 3 households had access to taps within their house or yard, with 247 households relying upon a formal water scheme, 3 on water vendors, and 3 on water tankers. The entire population had access to either flush toilets (77.5%) or septic tanks (22.5%). Besides three households, which were listed as having access to no refuse facilities, 90.3% had access to regular refuse removal and the remaining 8.4% had irregular refuse removal. All households had access to

lighting, with all but three households relying on electricity and the remainder relying on solar lighting.

The area had near-total access to winter heating, with most (96.4%) of households utilising electrical heating, three utilising solar heating, and only three households had no have access to any form of heating. A similar trend was observed with heating for cooking, with 96.8% of households utilising electricity, three (1.2%) utilising solar, and 5 (2.0%) utilising another unspecified heat source.

Most individuals did not disclose their level of education, with data only being available for 450 individuals (17.9%), with the remainder likely consisting of inmates within the correctional centre. Of the recorded group, the majority (54%) had completed secondary school, followed by individuals with some form of higher education (27%), and then 16.4% who had some secondary school education. Finally, only 4 individuals were identified to have only completed primary school, and 7 had only partially completed primary school.

The area had an unemployment rate of only 11.7% (42 unemployed individuals), which was likely due to most of the non-incarcerated residents being employed at the Correctional Services facility. Only 6 individuals were classified as discouraged work seekers, while the vast majority (1899, 82.6%) of individuals were classified as “not economically active”, which is indicative of them being inmates at the facility.

Many households (81.3%) had an annual income ranging between R76 401 – R614 400, in 2011 which, when adjusted by an estimated inflation of 105% between Jan 2011 and July 2025, would shift this range to between R156 621 – R1 259 520, although there is no guarantee that annual income increased in proportion with inflation in this area. Only nine households exceeded this income range and only 25 households earned less (6 of which were recorded as having no income). This distribution indicates higher levels of earning than in the neighbouring West Bank Village, and likely demonstrates the spread in pay between employees of varying ranks within the Department of Correctional Services.

In summary, it is evident that the Fort Glamorgan area is heavily influenced by the presence of the East London Department of Correctional Services, with the census household data largely consisting of worker from the facility, and the remainder of the population likely consisting of inmates within the facility. Consequently, it differs greatly in terms of its demographic distribution, socio-economic context, and urban character, to the neighbouring West Bank Village area.

Impact Assessment

The precautionary approach, given in the National Environmental Management Act, 1998 (NEMA; Act no. 107 of 1998), requires that, if there is a strong suspicion that a certain activity may have environmentally harmful consequences, it is better to control that activity now rather than to wait for incontrovertible scientific evidence.

The assessment and rating procedure described in Appendix 1 of this report were used to assess the effects and consequences (i.e. the impact) on the environment rather than the cause or initial disturbance alone. To reduce negative impacts, precautions referred to as ‘mitigation measures’ are set, and attainable mitigation actions are proposed. Mitigation measures were classified as either:

- Essential: Mandatory measures that must be implemented and are non-negotiable; or
- Best Practice / Recommended: Non-mandatory measures that should be implemented where feasible and appropriate.

In certain cases—to further enhance positive impacts—a set of optimisation measures are proposed. These are best practice broader enhancement measures aimed at optimising potential socio-economic benefits associated with the project and are non-mandatory.

Impacts have been divided into those pertaining to the construction phase (referring to impacts occurring as a result of the construction of the desalination plant, as well as all supporting infrastructure), while operational phase impacts refer to those impacts occurring as a result of the post-construction operation of the plant (the abstraction and desalination of water, discharging of brine, etc.). Finally, cumulative impacts and the assessment of the No-Go/do nothing alternative have also been assessed.

A total of 12 potential impacts (including cumulative impacts and the no-go alternative) were identified within this Impact Assessment (Table A), with all essential mitigation measures and recommended optimisation measures (in the case of positive impacts/benefits) following.

Table A. Summary of potential socio-economic impacts associated with the construction and operation of the proposed solar powered desalination plant.

	Impact identified	Consequence	Probability	Significance	Status	Confidence
Construction Phase	Impact 1: Generation of noise during construction Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Very Low	Probable	VERY LOW	-ve	High
	Impact 2: Air quality impacts during construction Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Low	Possible	INSIGNIFICANT	-ve	High
	Impact 3: Physical health and safety concerns during construction Without mitigation	High	Possible	MEDIUM	-ve	High
	With mitigation	Low	Possible	VERY LOW	-ve	High
	Impact 4: Visual impacts during construction Without mitigation	Very Low	Probable	VERY LOW	-ve	High
	Impact 5: Impacts on fisheries during construction Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 6: Economic benefits during construction Without optimisation measure	Very Low	Probable	VERY LOW	+ve	Medium
	With optimisation measures	Low	Probable	LOW	+ve	Medium
Operational Phase	Impact 7: Visual impacts during operation Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Low	Possible	VERY LOW	-ve	High
	Impact 8: Operational noise impacts Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 9: Operational impacts on fisheries Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 10: Economic benefits during operation Without optimisation measures	Medium	Possible	LOW	+ve	Medium
	With optimisation measures	Medium	Probable	MEDIUM	+ve	Medium
	Impact 11: Cumulative Impacts Without mitigation	High	Possible	MEDIUM	+ve	Low

Impact identified	Consequence	Probability	Significance	Status	Confidence
Impact 12: Assessment of the no-go alternative Without mitigation	Low	Possible	VERY LOW	-ve	Medium

Mitigation/ Optimisation Measures

Impact 1: Generation of Noise During the Construction Phase

Essential Mitigation Measures

- Efforts must be made to limit construction phase noise (including all unnecessary noise production).
- Construction phase noise must comply with any relevant noise legislation, including the BCMM Noise By-Law and Draft BCMM Noise By-Law.

Impact 2: Air Quality Impacts Associated with the Suspension of Dust and Release of Fumes during Construction

Essential Mitigation Measures

- Implement dust suppression techniques such as covering stockpiles with shade netting/geotextile, should they be left exposed for prolonged periods of time.
- Where possible, construction using large volumes of sand should occur during clear weather, and loose sand should be cleared or covered during breaks in construction.
- If dispersal of dust/soil during vehicle transit is unavoidable, then water spraying trucks must be deployed in tandem, in order to keep this dust out of the atmosphere.
- Erosion control measures, such as silt fences, should be employed in areas at risk of erosion/runoff.
- Monitor construction areas post rainfall events and repair any erosion damage that may have occurred.
- Monitor air quality and implementing measures to minimize soil disturbance.
- Workers must be provided with all appropriate Personal Protective Equipment (PPE), such as correctly rated masks, when working in/ around areas where dust pollution/ emissions are unavoidable
- Implementation of a rigorous environmental management and control plan (including procedures for remediation).
- Only vehicles and equipment that are suitably maintained and compliant with emission regulations may be allowed on site.
- Vehicles must be subject to a daily Environmental Health and Safety (EHS) checklist.
- An Environmental Control Officer must monitor the site for vehicle fumes and dust suspension. Additionally, the ECO must monitor all vehicles and equipment transiting the site, in order to identify obviously non-compliant vehicles.

Impact 3: Physical Health and Safety Concerns during Construction

Essential Mitigation Measures

- Construction activities must be conducted in accordance with the Occupational Health and Safety Act (OHSA), and TNPA's own health and safety protocols.

Impact 6: Potential Economic Benefits Associated with Construction

Recommended Optimisation Measures

- Promote local procurement and prioritise the employment of local labour, where feasible, as demonstrated through employment, payroll, procurement, and supplier records. Promote local procurement and prioritise the employment of local labour, where feasible, to enhance economic benefits within surrounding communities.
- Source construction materials, goods and services from local suppliers wherever practical, as demonstrated through procurement documentation and supplier databases. Engage with local authorities and business associations to source construction materials, goods, and services from local suppliers wherever practical.

Impact 7: Visual Impacts Associated with the Presence of New Structures during Operation

Essential Mitigation Measures

- Non-reflecting (matt)/scattering solar panels must be used, to reduce the potential harm or disturbance associated with sunlight reflecting off the panels.
- Buildings must be painted a neutral colour (dark green/grey), so as not to overly reflect sunlight and cause disturbance/harm to observers. This will also help to preserve the overall character and sense of place of the area.

Impact 10: Economic Benefits Associated with Increased Water Supply to the Port during Operation

Recommended Optimisation Measures

- Local Employment Policy: Implement a hiring approach that prioritises employment of suitably qualified local residents and contractors wherever possible.
- Water Resource Management: Use the project's water supply strategically to strengthen the port's resilience against fluctuations or interruptions in municipal water and electricity services. This includes optimising storage, scheduling use during peak demand or supply constraints, and ensuring efficient distribution to reduce reliance on external utilities.

Reasoned Opinion and Recommendations

This assessment has demonstrated that, with the employment of appropriate mitigation measures, all negative construction and operational phase socio-economic impacts can be reduced to a significance of "Very Low" or "Insignificant". Conversely, the potential economic benefits resulting from construction and operation pertaining to job creation, job sustainment and utilising of additional service providers during construction, and the knock-on effects of improved port efficiency/capacity during operation had the highest significance, assuming that certain recommended "optimisation" measures are employed. With optimisation, the construction phase economic benefits were rated as "Low" positive significance, and economic benefits during operation were rated "Medium" positive significance.

Cumulative impacts were also assessed to be positive in nature, with an assessed positive impact significance of “Medium”. This is because this development, as well as other developments in the port with similar objectives, such as the Proposed Replacement of Quay Wall 3 & 4 (Abantu Environmental Consultants (Pty) Ltd. 2023), are anticipated to increase the profitability of the port, hence contributing towards economic development in the area. Furthermore, past developments (including the port and its supporting infrastructure) have been shown to be of substantial importance for East London’s and BCMMs trade economy, which is the second-strongest sector in the BCMM in terms of total employment, and third strongest in terms of GDP and GVA. Consequently, any improvements to the efficiency and capacity of this sector are anticipated to further improve socio-economic conditions within the region. Finally, further intensification of development within already highly-disturbed/developed areas (such as within the highly developed and industrialised port environment), is greatly preferential to developing within less developed areas or in areas surrounded by sensitive communities.

In conclusion, the negative socio-economic, landscape/visual, and noise impacts associated with the proposed development, are anticipated to be largely minor when appropriately mitigated, and greatly outweighed by the potential benefits emanating from the completion of this development (as well as other similar developments) within the Port of East London. It is therefore recommended that this development be permitted from a Socio-Economic, Noise, and Landscape/Visual perspective.

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GLOSSARY

Brine: The highly saline water which is “left behind” after desalination.

Cumulative impacts: Direct and indirect impacts that act together with current or future potential impacts of other activities or proposed activities in the area/region that affect the same resources and/or receptors.

Effluent: Wastewater from sewers or industrial outfalls that flows directly into surface waters either untreated or after being treated at a facility.

Environmental Authorisation (EA): Permission granted by the competent authority for the applicant to undertake listed activities in terms of the NEMA EIA Regulations, 2014.

Environmental Impact Assessment (EIA): A process of evaluating the environmental and socio-economic consequences of a proposed course of action or project.

Fauna: General term for all the animals found in a particular location.

Flora: General term for all the plant life found in a particular location.

Government Gazette (GG): An official Government publication used to publish acts and bills, regulations and notices in terms of acts, changes of names, company registrations and deregistrations, financial statements, land restitution notices, liquor licence applications and transport permits.

Government Notice (GN): A Notice published in a Government Gazette.

Government Notice Regulation (GNR): Regulations published as a Government Notice in a Government Gazette.

Impact: A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.

Mitigation measures: Design or management measures that are intended to minimise or enhance an impact, depending on the desired effect. These measures are ideally incorporated into a design at an early stage.

Operational phase: The stage of the works following the Construction Phase, during which the development will function or be used as anticipated in the Environmental Authorisation.

Outfall: The point where effluent is discharged from a facility into a water body, typically an endpoint of a pipeline.

Reverse Osmosis (RO): A method of desalination and involves forcing water through a semi-permeable membrane under high pressure, leaving the dissolved salts and other solutes behind on the surface of the membrane.

Specialist study: A study into a particular aspect of the environment, undertaken by an expert in that discipline.

ABBREVIATIONS AND ACRONYMS

Anchor	Anchor Environmental Consultants
BA	Basic Assessment
BCMM	Buffalo City Metropolitan Municipality
CA	Competent Authority
CWDP	Coastal Waters Discharge Permit
DFFE	Department of Forestry, Fisheries and the Environment (formerly DEFF, DAFF and DEA)
DEIR	Draft Environmental Impact Report
DSR	Draft Scoping Report
DWAF	Department of Water Affairs and Forestry (former name, now DWS)
DWS	Department of Water and Sanitation (formerly DWAF)
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act (Act 73 of 1989)
ECO	Environmental Control Officer
EFZ	Estuarine Functional Zone
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMPr	Environmental Management Programme Report
FEIR	Final Environmental Impact Report
FSR	Final Scoping Report
GDP	Gross Domestic Product
GG	Government Gazette
GIS	Geographic Information System
GN	Government Notice
GNR	Government Notice Regulation
GVA	Gross Value Added
I&APs	Interested and Affected Parties
ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
IDP	Integrated Development Plan
LN	Listing Notice
NBMM	Nelson Mandela Bay Metropolitan Municipality
NEMA	National Environmental Management Act (Act 107 of 1998)
NEM:AQA	The National Environmental Management: Air Quality Act (Act 39 of 2004)
NEM: WA	The National Environmental Management: Waste Act (Act 59 of 2008)
NWA	National Water Act (Act 36 of 1998)
OHSA	Occupational Health and Safety Act (Act 85 of 1993)
PV	Photovoltaic
RO	Reverse Osmosis
S&EIA	Scoping and Environmental Impact Assessment

SDF	Spatial Development Framework
SE	Stakeholder Engagement
SPLUMA	Spatial Planning and Land Use Management Act (Act 16 of 2013)
SSF	Small Scale Fisheries
SSV	Site Sensitivity Verification
SSVR	Site Sensitivity Verification Report
Sunwater	Sunwater East London Joint Venture (Pty) Ltd
TNPA	Transnet National Ports Authority
VIP	Ventilated Improved Pit Latrines

I DETAILS AND EXPERTISE OF SPECIALIST CONSULTANTS

I.1 DETAILS OF THE SPECIALIST CONSULTANTS WHO PREPARED THIS SPECIALIST ASSESSMENT

Name	Role/ expertise	Key Qualifications and Registrations	Years of experience
Gwyneth Letley	Lead Socio-Economic Specialist	- MSc Conservation Biology - PC Applied Environmental Economics - BSc (Hons) Zoology	17
Cheruscha Swart	Environmental Assessment Practitioner (EAP)	- MSc Zoology - BSc (Hons) Biodiversity and Ecology	14
Michael Armitage	- Candidate EAP - Socio-Economic Specialist	- MSc Environmental and Geographical Science (EGS) - BSc (Hons) EGS	9

I.2 EXPERTISE OF SPECIALIST CONSULTANTS

I.2.1 GWYNETH LETLEY: LEAD SOCIO-ECONOMIC SPECIALIST

Gwyneth Letley has an MSc in Conservation Biology from the University of Cape Town and a postgraduate certificate in Applied Environmental Economics from the University of London. Over the past 15 years Gwyn has worked on the social and economic aspects of natural resource management and conservation, including the quantitative socio-economic aspects of conservation-development problems in South Africa, Namibia, Botswana, Zambia, Zimbabwe, Mozambique, Angola, Kenya, DRC and Sierra Leone. Gwyn is experienced in the economic appraisal of nature-based solutions, natural climate solutions and ecosystem restoration and has recently been involved in designing effective nature-based solutions for achieving water security in Tamale, Ghana; Freetown, Sierra Leone; Mombasa, Kenya and in the Cubango-Okavango River Basin in Angola. Gwyn has been deeply involved in the review and update of South Africa's Ecosystem-Based Adaptation (EbA) Strategy and Plan 2024-2034 and has recently undertaken an assessment of the feasibility of supporting interventions to the key challenges to natural climate solutions in the DRC and Kenya. She has extensive experience in valuing ecosystem services at various spatial scales, from basin-level to sub-national and national level assessments. Gwyn has undertaken several socio-economic impact assessments for both smaller and large-scale development projects, including a Socio-Economic Impact Assessment for the proposed Sasol Offshore Pipeline and FSO, Inhambane Province, Mozambique; Socio-Economic Impact Assessment for the proposed Batoka Gorge Hydropower Facility – Zimbabwe/Zambia; Tourism Assessment for the Kalungwishi River Hydroelectric Power Project in northern Zambia. Gwyn is also experienced in spatial analysis and systematic and integrated conservation and development planning.

A full professional CV has been appended to this report, as Appendix 2.

I.2.2 CHERUSCHA SWART: REGISTERED ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Cheruscha Swart has a MSc (Cum Laude) Zoology and an Honours (BSc Hons) and Bachelor of Science degree (BSc) in Biodiversity and Ecology from the University of Stellenbosch. She is a Registered EAP with twelve years of research and consulting experience in several disciplinary fields, six of which have been spent conducting BAs and S&EIAs. Her training and experience have made her highly competent within a variety of disciplines, including environmental legislation, environmental monitoring and impact assessments, terrestrial and marine biodiversity and ecology, invasion biology, conservation biology, plant and animal sciences and marine invertebrate taxonomy and biology. Within Anchor, her primary role is that of EAP, in addition to being Senior Consultant on several other projects spanning the marine, coastal and terrestrial environment. Cheruscha manages a range of projects including applications for prospecting, ranching and other operational rights, environmental licenses and environmental authorisations; specialist impact assessments and baseline studies; environmental monitoring of important conservation and disturbed habitats; and monitoring environmental compliance of various operations. Projects include, amongst others, land-based and offshore prospecting operations; offshore mining operations; greenhouse agricultural projects; land- and sea-based aquaculture facilities; desalination plant projects; and monitoring the health of bays and ports along the South African Coast. Cheruscha is the author of three peer reviewed scientific publications and numerous scientific reports, with several other projects and publications in preparation. Cheruscha is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA) as a Registered Environmental Assessment Practitioner (EAP), Registration no. 2021/3298; is registered with the South African Council for National Sciences Professions (SACNASP) as a Professional Natural Scientist, Registration no. 155305; and is a full member of the International Association for Impact Assessments South Africa (IAIASa), Registration no. 7398.

A full professional CV has been appended to this report, as Appendix 2.

I.2.3 MICHAEL ARMITAGE: CANDIDATE EAP AND SOCIO-ECONOMIC SPECIALIST

Michael holds MSc and BSc (Hons) degrees in Environmental and Geographical Science (EGS), as well as a BSc in EGS and Archaeology, all from the University of Cape Town. His expertise lies in integrated environmental and water resources management—with a focus on coastal, estuarine, and freshwater systems, as well as nature-based management solutions. He thrives on unpacking the complexities of dynamic systems to develop integrated, practical, and effective management solutions. Michael works as an Environmental Assessment Practitioner (EAP) and Environmental Management Specialist, undertaking Environmental Impact Assessments (EIAs) and preparing a range of environmental management plans. He also has experience in estuarine studies, sediment quality assessment, and GIS mapping. He is a registered Candidate EAP (EAPASA: 2024/7978) and a member of the International Association for Impact Assessment South Africa (IAIASa: 7619).

A full professional CV has been appended to this report, as Appendix 2.

2 DECLARATION BY CONSULTANTS

2.1 BUSINESS DECLARATION OF INDEPENDENCE

Anchor Environmental Consultants (Pty) Ltd is an independent consultant and has no business, financial, personal or other interest in the activity, application or appeal in respect of which the company was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. No circumstances arose during the course of the project that compromised the objectivity of the specialists that performed the work.

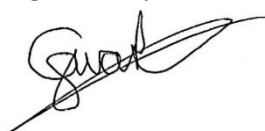
2.2 CONSULTANT DECLARATION

We, Gwyneth Letley, Cheruscha Swart, and Michael Armitage declare that we:

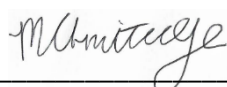
- i. Act as the independent specialists in this application;
- ii. Have performed the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- iii. Declare that there are no circumstances that may compromise our objectivity in performing such work;
- iv. Have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- v. Will comply with the Act, Regulations and all other applicable legislation;
- vi. Have not, and will not engage in, conflicting interests in the undertaking of the activity;
- vii. Undertake to disclose to the applicant and the competent authority all material information in our possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority and the objectivity of any report, plan or document to be prepared by ourselves for submission to the competent authority;
- viii. The particulars furnished in this form are true and correct; and
- ix. Realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the NEMA.



Signed: Gwyneth Letley; Date: 03 June 2026



Signed: Cheruscha Swart; Date: 03 June 2026



Michael Armitage; Date: 03 June 2026

3 INTRODUCTION

3.1 PREAMBLE

Transnet SOC Limited, a division of Transnet National Ports Authority (TNPA), has appointed contractors Sunwater East London Joint Venture (Pty) Ltd (Sunwater) for the construction of a two (2) megalitre per day (MLD) solar-powered Reverse Osmosis (RO) desalination plant within the Port of East London, Buffalo City Metropolitan Municipality, East London (Figure 3.1). Anchor Environmental Consultants (Pty) Ltd (Anchor) has been subcontracted to conduct the EIA prior to the construction and operation of the plant.

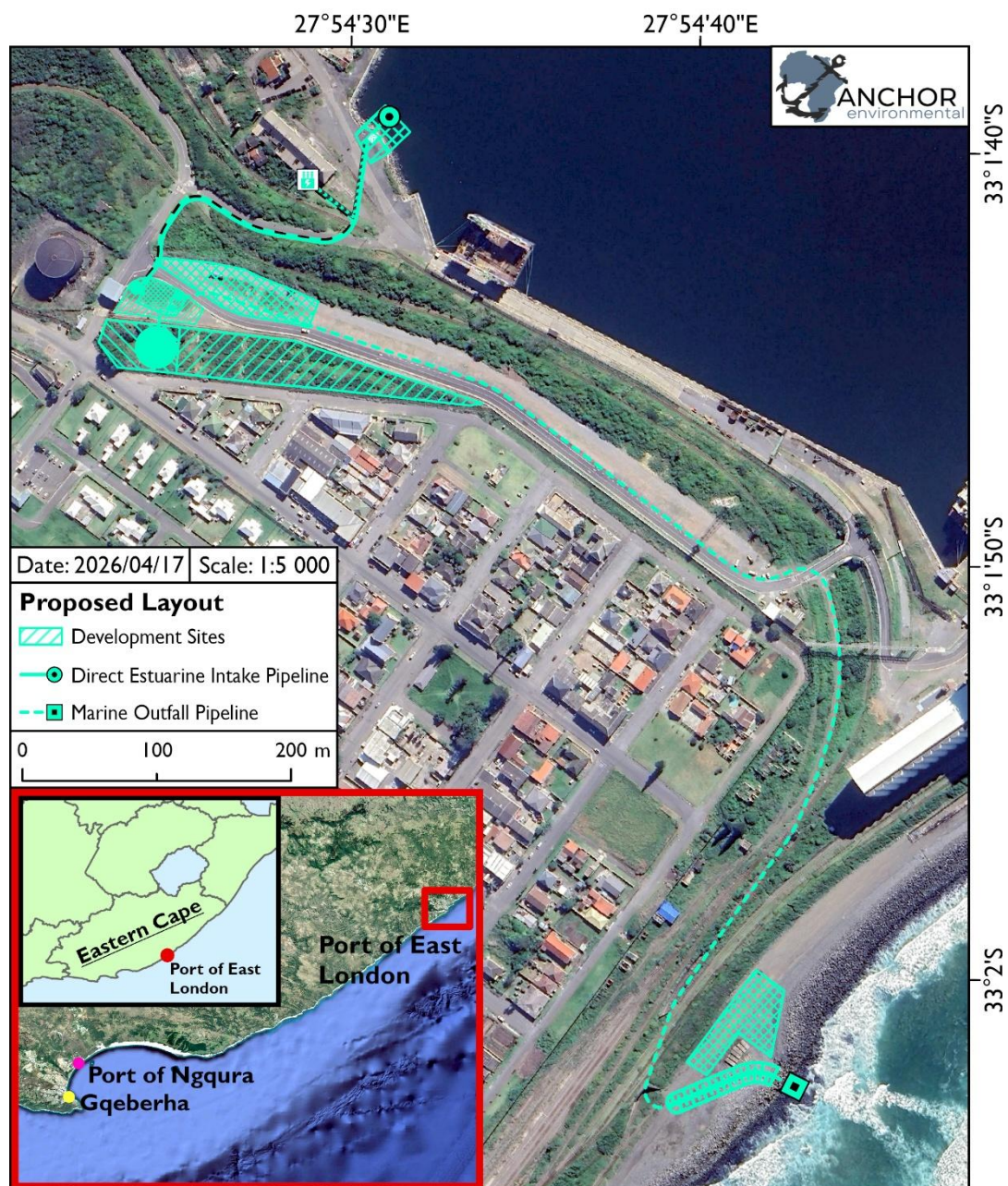


Figure 3.1. Port of East London and the proposed development in relation to the Eastern Cape Coastline and South Africa.

The formally gazetted Department of Forestry, Fisheries and the Environment's (DFFE) Screening Tool Report (STR) identified the site to have Socio-Economic sensitivity, Landscape/ Visual sensitivity, and Noise sensitivity. However, the Site Sensitivity Verification (SSV) processes conducted by the Environmental Assessment Practitioner (EAP), disputed the sensitivity ratings for both Landscape Visual and Noise Theme Sensitivities, and therefore disputed the requirement for discrete studies to be conducted for each sensitivity, with both being reduced to a sensitivity rating of "Low". Conversely, the SSV process was in alignment with the STR, with respect to the Socio-Economic Theme, and a discrete report considering both the potential Impacts and benefits associated with the development (this report) being prescribed.

However, given that the potential Landscape/Visual impacts and Noise Impacts are both pertinent to Human/Socio-Economic receptors, and are both integral to understanding the potential impacts this development could have on these receptors, they have been considered within this report. **Note: Any ecological considerations relating to noise impacts fall under the ambit of the ecological specialist studies (Terrestrial Ecology, Avifauna, Animal and Plant Species, and Marine and Estuarine). Therefore, noise considerations relating to ecological receptors have not been included within this report.**

This report is the Final Socio-Economic Assessment for the proposed Solar Powered Desalination Plant in the Port of East London.

3.2 GAZETTED REPORT REQUIREMENTS

As both Socio-Economic and Landscape/Visual Specialist Studies/Statements do not have their own gazetted protocol, they must follow the protocols prescribed within Appendix 6 of the EIA Regulations (GN R982 of 2014; Table 3.1). Conversely, Noise Studies do have their own gazetted protocols, which must be adhered to (GN 320 of 2020)

Table 3.2). This study has therefore been conducted in accordance with these prescribed protocols.

Table 3.1. Gazetted Specialist Report Contents (applicable to both Socio-Economic and Landscape/Visual Studies), as per Appendix 6 of the EIA Regulations (GN R982 of 2014)

Required Element	Included (Y/N)	Section Numbers/ Motivation
(1) A specialist report prepared in terms of these Regulations must contain-		
• A) details of-		
○ (i) the specialist who prepared the report; and	Y	1.1
○ (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Y	1.2
• (b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Y	2.2
• (c) an indication of the scope of, and the purpose for which, the report was prepared;	Y	3.1

Required Element	Included (Y/N)	Section Numbers/ Motivation
• (cA) an indication of the quality and age of base data used for the specialist report;	Y	6.2–6.4
• (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Y	6
• (d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Y	6.1
• (e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Y	Appendix A
• (f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Y	7
• (g) an identification of any areas to be avoided, including buffers;	N/A	No specific areas to be avoided/ buffers identified
• (h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Y	4.1
• (i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Y	6.2
• (j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Y	7
• (k) any mitigation measures for inclusion in the EMPr;	Y	7.7
• (l) any conditions for inclusion in the environmental authorisation;	Y	7.7
• (m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Y	7.7
• (n) a reasoned opinion-		
○ (i) whether the proposed activity, activities or portions thereof should be authorised; and	Y	8
○ (iA) regarding the acceptability of the proposed activity or activities; and	Y	8
○ (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and the closure plan in the case of a closure activity;	Y	7.7
• (o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A	No specific consultation required.
• (p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A	No specific consultation required.
• (q) any other information requested by the competent authority.	N/A	
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Y	Noise Protocols (GN R320 of 2020) must be followed.

Table 3.2. Gazetted Noise Compliance Statement Contents, as per GN R320 of 2020.

Required Element	Included (Y/N)	Section Numbers
The compliance statement must be prepared by an environmental assessment practitioner or a noise specialist.	Y	1.2.2
The compliance statement must:		
be applicable to the preferred site and the proposed development footprint;	Y	4.1
confirm that the site is of “low” sensitivity for noise impacts; and	Y	7.2.1; 7.3.2
indicate whether or not the proposed development will have an unacceptable impact on the noise receptors of the site.	Y	7.2.1; 7.3.2
The compliance statement must contain, as a minimum, the following information		
contact details of the environmental assessment practitioner or noise specialist, their relevant qualifications and expertise in preparing the statement, and a curriculum vitae;	Y	Appendix 2
a signed statement of independence by the environmental assessment practitioner or noise specialist;	Y	1.2
a map showing the proposed development footprint (including supporting infrastructure) overlaid on the noise sensitivity map generated by the screening tool;	Y	8
confirmation that all reasonable measures have been taken through micro-siting to minimize disturbance to receptors;	Y	7.2.1; 7.3.2
a substantiated statement from the environmental assessment practitioner or noise specialist on the acceptability, or not, of the proposed development and a recommendation on the approval, or not, of the proposed development;	Y	7.2.1; 7.3.2; 8
any conditions to which this statement is subjected;	Y	7.7
where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr; and	Y	7.7
a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations.	Y	6
A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		

4 PROJECT DESCRIPTION

4.1 BRIEF OVERVIEW

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 3.1).

Since the facility will discharge brine into the marine environment, a Coastal Waters Discharge Permit (CWDP) is also required. The proposed development will span multiple erven, all owned by the applicant (Table 4.1 and Figure 4.1).

The entire development is located within the urban edge, except for the section of the outfall pipeline that extends onto the dolosse (Figure 4.1). Note that the area is not situated within a delineated Coastal Public Property (CPP) as no CPP boundary exists within ports as confirmed by the Department of Forestry, Fisheries and the Environment (DFFE): Oceans and Coasts.

Table 4.1. General site information: Erven (Erf) numbers, Surveyor General 21 (SG21) codes and physical location of the proposed development.

PHYSICAL LOCATION	
Province	Eastern Cape Province
Municipality	Buffalo City Metropolitan Municipality
City/ Town	East London
Area/ suburb	Harbour, Port of East London
Postal Code	5201
Ward Number:	Ward 19
Zoning	Transport Zone 1
ERVEN	SG21 ID
63584	C02300040006358400000
38530	C02300040003853000000
63586	C02300040006358600000

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 1000 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.



Figure 4.1. The development falls within Erven 63584, 38530 and 63586 on the South Bank of the Port of East London. Also shown is the Buffalo City Urban Development Edge.

The total development disturbance footprint is estimated at approximately 25 162 m² and includes buffer corridors for linear infrastructure. For the purposes of this estimate, the footprint of the intake pipeline and electrical cables assumes a corridor width of 4 m to accommodate trenching and associated disturbance, while the outfall pipeline assumes a corridor width of 8 m. However, the permanent operational footprint following construction will be smaller.

The main project components are outlined below, with their locations depicted in Figure 4.2.

- **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.

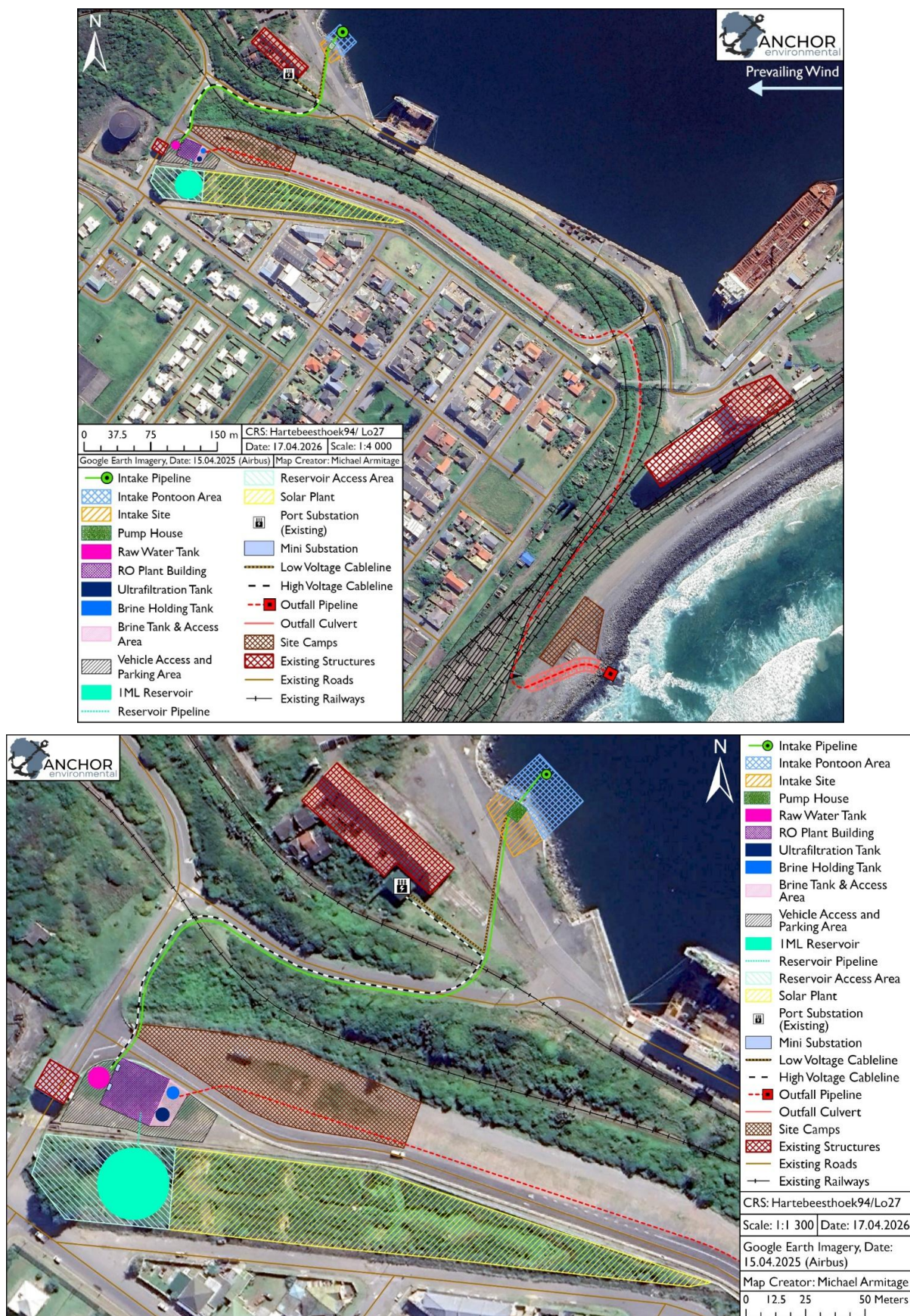


Figure 4.2. Top: The proposed intake, RO Plant, Solar Plant, and all supporting infrastructure. Bottom: Preferred development layout for the Solar & RO Desalination Plant and Intake and Outfall Pipelines and associated Infrastructure/ Structures.

5 APPLICABLE LEGISLATION

5.1 NATIONAL LEGISLATIVE, POLICY, AND GUIDELINE FRAMEWORK

5.1.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996

Numerous regulations govern environmental protection in South Africa. The Constitution of the Republic of South Africa, 1996 (Constitution), serves as the highest legal authority and upholds the right of all South Africans to an environment free from harm to health and well-being. It obligates the protection of this right for the well-being of both present and future generations, achieved through appropriate legislative and other actions. As such, the Constitution forms the fundamental legal basis for environmental management in South Africa, with various laws at the national, provincial, and local levels aligning with its legal principles.

5.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (NEMA) establishes principles for decision making on matters that affect the environment, to provide for cooperative environmental governance. It establishes statutory environmental duty of care obligations, imposing responsibilities to prevent and address pollution or environmental degradation. Activities that have the potential to impact on the environment, socio-economic conditions and the cultural heritage, need to be identified and assessed prior to their implementation. These activities should be reported to the organ of state, known as the CA, and receive EA prior to their commencement. An application for EA is conducted either by means of a BA process or by means of an EIA process.

5.1.3 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (ACT 39 OF 2004)

The National Environmental Management: Air Quality Act (NEM:AQA) established the law regulating the control of air quality, in order to protect the environment. The act provides measures for the prevention of air pollution and associated ecological degradation, whilst still enabling ecologically sustainable development. Environmental and social justice are key informers of this act, with it being acknowledged that the health impacts of air pollution are typically most heavily felt by the poor within South African Society. Consequently, the act established the national norms and standards regulating air quality monitoring, management, and control within South Africa.

5.1.4 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT 59 OF 2008)

The National Environmental Management: Waste Act (NEMWA) makes provision for measures to improve waste management practices, including: (a) minimizing the consumption of natural resources; (b) prevention and minimizing the generation of waste; (c) reducing, re-using, recycling and recovering waste; (d) treating and safely disposing of waste as a last resort; (e) preventing pollution and ecological degradation; (f) promoting and ensuring the effective delivery of waste services; (g) rehabilitating land where contamination presents, or may present, a significant risk of harm to health or the environment; and (h) achieving integrated waste management reporting and planning. To

achieve the objectives of this Act, it requires a national waste management strategy (to be established by the Minister) and the adoption of national norms and standards and waste service standards. Local authorities must also adopt waste management norms and standards. The Act further provides, among other things, for waste collection, licensing of waste management activities, identification and rehabilitation of contaminated land and transport, storage and other handling of hazardous waste.

5.1.5 SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (ACT 16 OF 2013)

The purpose of the SPLUMA is to establish a new framework for managing planning permissions and approvals, setting guidelines for new developments, and defining legal land uses in South Africa. It functions as a foundational law, outlining general principles for provincial laws that will manage planning. Additionally, SPLUMA clarifies how planning law interacts with other legal regulations and policies.

5.1.6 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The Occupational Health and Safety Act (OHSA) establishes the framework for ensuring that workplace health and safety are protected. The act places responsibilities both on employers and employee for ensuring that the act is complied with. For employers, responsibilities include providing a safe working environment, providing sufficient personal protective equipment (PPE) to employees, ensuring that all machinery is maintained and in safe working condition, and pre-emptively putting measures in place to prevent workplace hazards from occurring (such as formulating health and safety protocols, conducting staff training and inductions, only hiring adequately trained individuals, etc.). Employee responsibilities are fewer, and include cooperating with the employer to ensure that the workplace is safe, and complying with the established health and safety procedures, and following instructions from informed relevant individuals during difficult situations.

5.2 LEGISLATION SPECIFICALLY PERTAINING TO NOISE CONTROL AND MANAGEMENT

5.2.1 ENVIRONMENTAL CONSERVATION ACT (ACT 73 OF 1989)

The control and management of environmental noise disturbances and nuisances is one of the few environmental elements still managed nationally under the Environmental Conservation Act (ECA, Act 73 of 1989), with most other ECA elements being repealed and managed under the more recent National Environmental Management Act (NEMA, Act 107 of 1998).

5.2.2 BCMM NOISE BY-LAW (2010) AND BCMM DRAFT NOISE CONTROL BY-LAW (2024)

Noise nuisances within the Buffalo City Metropolitan Municipality (BCMM) were managed under the BCMM Noise By-Law (2010; EC Provincial Gazette Extraordinary, No. 2459 of 2010) at the time of writing. However, BCMM has recently released their Draft Noise Control By-Law, as of December 2024. If gazetted for approval, this by-law will repeal the conditions of the 2010 Noise By-Law, as well as specific sections within Chapter 4 of the BCMM Healthy Services By-Law (2023, EC Provincial Gazette No. 4949 of July 2023).

Given the substantially higher detail, recency, and likelihood of the implementation of the 2024 Draft By-Law by the time the proposed development will commence, specific details pertaining to noise management have been extracted from, and guided, this assessment, rather than the 2010 By-Law.

The purpose of both By-Laws is to control and manage noise impacts within the Municipality, as well as allowing the municipality to exercise certain powers in order to ensure compliance with these pieces of legislation. Broadly speaking, these By-Laws allow for the control of “noise nuisances” and “noise disturbances”, respectively. Definitions of these terms (as per the 2024 Draft By-Law), as well as “noise level”, are provided as follows:

- **Noise Nuisance:** “means any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person.”
- **Noise Disturbance:** “means a noise level which exceeds the zone sound level or, if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more.”
- **Noise Level:** “means the reading on an integrating impulse sound level meter taken at a measuring point in the presence of any alleged disturbing noise at the end of continuous total period of at least 10 minutes, after such meter had been put into operation, and if the alleged disturbing noise has a discernible pitch for example- a whistle, buzz, drone or music- to which 5 dBA is added”.

The By-Law contains a number of general, and specific, prohibitions with respect to noise—most of which are not applicable to this development—yet potentially relevant prohibitions (with a description of their potential relevance) have been detailed in Section 11. **Note:** Failure to comply with the Noise Control by Law, could constitute a legal offense, with potential sanctions including fines and imprisonment.

5.3 BROADER LEGISLATION AND POLICY APPLICABLE TO SOCIO-ECONOMIC RECEPTORS

5.3.1 BUFFALO CITY METROPOLITAN MUNICIPALITY: INTEGRATED DEVELOPMENT PLAN (2024/2025)

The current Buffalo City Metropolitan Municipal (BCMM) Council’s 2021-2026 Integrated Development Plan (IDP) was adopted on 31 May 2021, in accordance with the Municipal Systems Act (MSA), no. 32 of 2000. An IDP is a strategic framework in which local municipalities outline their development objectives and strategies. The IDP utilises a holistic approach which aims to integrate economic, social and environmental aspects into a comprehensive and mutually compatible development plan.

Within the IDP, Strategic Outcome 2, “A Green City”, is of particular relevance to this development, as it speaks to promoting ecologically sustainable development that does not negatively impact on the environment. The use of solar power to run the desalination plant aligns to the goals of this Strategic Outcome as it presents a more environmental-friendly alternative than traditional power sources.

Strategic Outcome 2 also address the need for environmental compliance to be observed by state institutions and individuals, and specifies the need for Environmental Impact Assessments (EIAs) to be conducted for new developments where required. EIAs identify potential risks to sensitive environments and can guide developments to minimize their impact, thereby preserving critical habitat and preventing loss of ecosystem functioning. As the development takes place within the Buffalo Estuarine Functional Zone (EFZ) and within the coastal environment (which are both environmentally sensitive areas) the identification and avoidance/ mitigation of any potential impacts must be occur.

Strategic Outcome 3, “A connected City”, also prioritises the maintenance of a “world class logistics network”, with upgrades to the Port of East London falling under the umbrella of this outcome

5.3.2 BUFFALO CITY MUNICIPALITY: MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK (2019-2024)

Each municipality in South Africa is required to develop a Spatial Development Framework (SDF) which outlines the goals of the municipality in terms of future spatial development. It identifies zones for residential, industrial and commercial development while accounting for factors such as transportation, social equity and environmental concerns. The Framework is guided by SPLUMA and aims to allow for sustainable and equitable growth.

The BCMM SDF aims to ensure that the biophysical environment is protected and wisely managed (Foster & Naidoo 2020). This is done by protecting sensitive habitats and critical ecosystem services by potentially restricting development in areas which contribute to the health and well-being of residents. Sensitive habitats in proximity to the proposed desalination plant include the Buffalo River and its estuary, as well as the adjacent coastal and marine environment. Consequently, in order for this development to align with the City’s development goals, it is critical that the development has minimal impact on these receptors.

5.3.3 BUFFALO CITY METROPOLITAN MUNICIPALITY: LAND USE MANAGEMENT SCHEME REGULATIONS (2020)

The Buffalo City Metropolitan Municipality Land Use Management Scheme governs what types of land use are appropriate for a given area, through the prescription of a series of land zonings.

These regulations were published in terms of Section 9(2) of the Land Use Planning Ordinance 1985 (Cape Ordinance 15 of 1985) which regulate use rights and the utilization of land within the Buffalo City Municipality. These regulations are also in line with SPLUMA, as well as the BCMM IDP and SDF documents.

The port land parcels where this development is proposed are presently zoned “Transport 1”, according to the Land Use Scheme Regulations, which has a defined primary land use of “Transport Usage”, which includes railway lines, harbours, and airports (Figure 5.1).



Figure 5.1. Cadastral boundaries, land zoning, and Buffalo City Urban Edge for the proposed development within the Port of East London. Source: TNPA (property boundaries) and Buffalo City Municipality (zoning data).

5.3.4 BUFFALO CITY METROPOLITAN MUNICIPALITY: INTEGRATED WASTE MANAGEMENT BY-LAW (2022)

The BCMM Integrated Waste Management By-law aligns with NEM:WA and the National Waste Management Strategy, to promote sustainable waste management practices. It regulates waste generation, storage, collection, transportation, recycling, treatment and disposal.

The responsible management of waste generated from both the construction and operation of the proposed desalination plant must therefore be compliant with this by-law. As the desalination plant will be located within an environmentally sensitive area, and is located within a populous city, it is crucial that any waste generated during construction or operation, is handled responsibly and not allowed to cause unnecessary impacts.

5.3.5 BUFFALO CITY MUNICIPALITY: ROADS AND STREETS BY-LAW (2011)

The purpose of the Roads and Streets By-law (2011) is to regulate the management of roads and streets in the BCMM, as well as the development, operation and maintenance of activities within the road reserve.

Given that the development will require the transportation of building materials to the project site, as well as the potential development adjacent to roads within the port itself (such as during the construction of all the necessary pipeline infrastructure), it is possible that the disrupt traffic or interfere with stormwater management alongside these roads.

6 SOCIAL AND DEMOGRAPHIC CONTEXT

6.1 PREAMBLE

The following section describes the socio-economic context of the City of East London, with specific reference to the area surrounding the Port itself. Additional information has also been provided on the coastal, estuarine, and marine user groups in the area, as they also have the potential of being exposed to/be impacted by this development.

This section is largely desktop based yet is substantiated by site visits conducted by the Anchor Team on the 25th of April 2024 and 24th of July 2024. The timing of these site visits with respect to season are not important from the perspective of this assessment. Furthermore, no stakeholder engagement (SE) activities were specifically undertaken for this assessment (beyond the gazetted stakeholder engagement activities required for the Scoping Phase of the S&EIA Process), since they were not deemed necessary.

6.2 DATA SOURCES UTILISED

The most comprehensive assessment of socio-economic data in South Africa is the national census, which is conducted once every 10 years, with the most recent two censuses being conducted in 2022 and 2011, respectively. Each census aims to collect household data from across the country, and considers factors such as age, household size, family structure, race distribution, income, employment etc. The compiled South African Census data is made available through the “Stats SA” Platform, operated by the South African National Department of Statistics (South African National Department of Statistics 2025).

Data is available at several scales: including each of the country’s nine provinces; its 44 large-scale “District Municipalities” (consisting of portions of each province); its 205 smaller scale “Local Municipalities” (consisting of portions of each District); and for each of the eight “Metropolitan Municipalities” which consist of the areas including (and surrounding) the largest cities. Despite governing much smaller areas than District Municipalities, Metropolitan Municipalities operate at the same “level” as districts and thus answer directly to (and fall under) their relevant provincial governing entities.

While the 2022 Census was conducted and partly released by Stats SA, the depth of its undercount, adjustment anomalies, and decision to withhold key thematic data mean its quality is compromised, especially at sub-national levels. This is likely, in part, a result of the COVID-19 pandemic (and its related lockdown measures), which resulted in the census largely being conducted online. This resulted in an unprecedented undercount of about 31% which was significantly higher than previous censuses (Moultrie & Dorrington 2024b a). At the time of writing (mid-2025) most of the statistics (income, employment, mortality, fertility) remained unpublished.

Therefore, the following section was based on information presented within the 2022 Census as far as was available, and supplemented with data presented within the most up-to-date BCMM Integrated Development Plan (IDP) and Spatial Development Framework (SDF) documents, and with additional statistics from the 2011 Census.

6.3 POPULATION TRENDS AT A MUNICIPAL, PROVINCIAL, AND NATIONAL LEVEL

The coastal and port city of East London falls within the Buffalo City Metropolitan Municipality (BCMM), with the BCMM government overseeing management and governance within the areas broadly falling within the catchment of the Buffalo River (Figure 6.1). The BCMM is also home to the administrative centre, the “Seat” of the Eastern Cape Provincial Government, located in the City of Bhisho approximately 48 km northwest of East London.

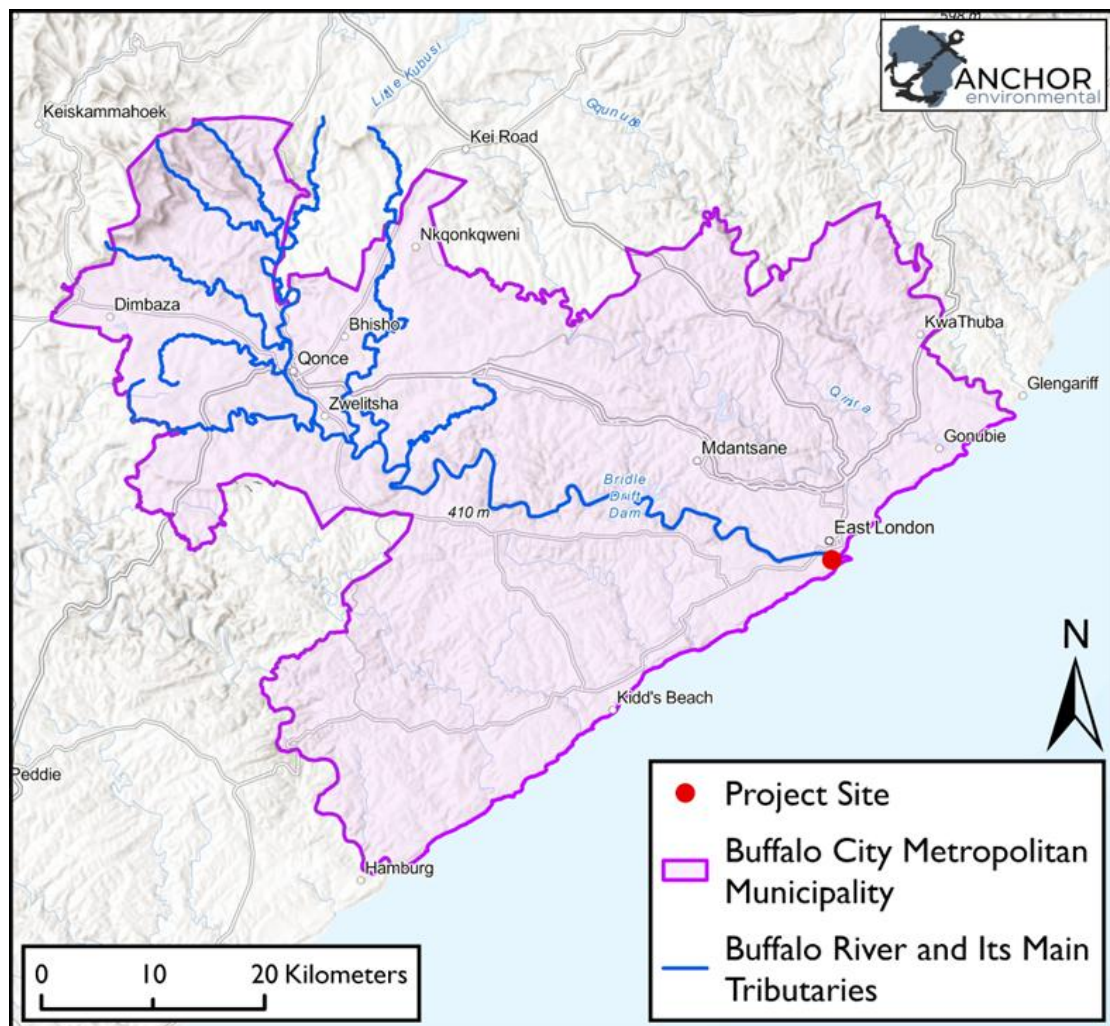


Figure 6.1. The project site, in relation to the Buffalo City Metropolitan Municipality.

East London is the administrative seat of the BCMM, which reflects the key role the city plays in driving governance and the economy within the municipality.

The BCMM had a total population of 975 255 people in 2022, a 24.7% increase from 781 853 people in 2011. This population is divided into a total of 268 438 households with an average household size of 3.6 people, a slight increase from the 3.4 people per household in 2011. Of the 2022 population, 52.7% were classified (by sex) as female, while the remaining 47.3% were classified as male.

The data show that 24.8% of the population were classified as “Young Children” (0–14 years); 67.4% were classified as “Working Age” (15–64 years); and the remaining 7.8% were classified as “Elderly” (65+ years) in 2022 (Table 7.5). This represents a small decrease in the percentage of young children, and a small increase in the percentage of the elderly, since 2011. Interestingly, however, the working age population (in %) remained approximately unchanged over the 11-year period at 67.4% in both surveys. The “Dependency Ratio” which is a ratio of “dependents” to working age individuals, remained effectively unchanged (48.3% in 2022 and 48.4% in 2011). However, the relative proportion of this dependent population saw a decrease in the young children cohort, and an increase in the elderly cohort, thus potentially indicating an ageing population. For reference, the dependency ratio of the BCMM is almost the same as the national average dependency ratio of 48.8%. Positively, the BCMM saw progress in education metrics, access to improved sanitation and disposal services, access to improved water sources, and access to electricity for the purposes of lighting. These metrics all improved over the 2011-2022 period, a trend that also occurred in both the Eastern Cape Province, and South Africa as a whole.

Other important Census metrics, and a comparison between 2022 and 2011, are tabulated in Table 6.1, with green indicating improved conditions, and no green colour indicating that the change is not obviously positive or negative.

Table 6.1. A comparison of Important population metrics between 2011 and 2022, for the Buffalo City Metropolitan Municipality, with reference to both the Eastern Cape and South Africa in general. Source: South African National Department of Statistics 2025.

Criteria	National		Eastern Cape		BCMM	
	2022	2011	2022	2011	2022	2011
Total population	62 027 503	51 770 560	7 230 204	6 562 053	975 255	781 853
Young children (0-14 years)	26,4%	29,2%	29,3%	33,0%	24,8%	26,5%
Working Age Population	67,2%	65,5%	62,5%	60,2%	67,4%	67,4%
Elderly (65+ years)	6,5%	5,3%	8,2%	6,7%	7,8%	6,1%
Dependency ratio	48,8	52,7	60,0	66,0	48,3	48,4
Sex ratio	94,1	94,8	90,0	89,0	89,9	90,4
No schooling (20+ years)	6,9%	8,6%	7,2%	10,5%	4,1%	5,1%
Higher education (20+ years)	12,2%	11,7%	10,0%	8,5%	15,0%	13,2%
Number of households	17 828 778	14 449 664	1 838 960	1 687 343	268 438	230 764
Average household size	3,5	3,6	3,9	3,9	3,6	3,4
Formal dwellings	88,5%	77,6%	83,6%	63,2%	85,6%	71,9%
Flush toilets connected to sewerage	70,8%	60,1%	58,7%	43,0%	80,7%	69,1%
Weekly refuse disposal service	66,3%	62,1%	53,3%	41,0%	71,3%	68,2%
Access to piped water in the dwelling	59,7%	46,3%	49,5%	32,8%	65,7%	51,0%
Electricity for lighting	94,7%	84,7%	94,5%	75,0%	94,6%	80,9%

Unfortunately, despite the recorded improvement in living conditions, other metrics highlight concerning trends within the BCMM. The most concerning trend is that of unemployment, which has increased significantly at a national, provincial, and municipal level (Figure 6.2; BCMM 2024). In fact, the BCMM experienced a higher increase in its unemployment rate than both the provincial and national average, with a rise from 26.5% in 2012, to 45.3% in 2022 (an 80.2% increase, Figure 6.2). This equates to an increase in the unemployed population from ~80 000 individuals in 2012, to ~185 000 in 2022. While rising unemployment is consistent with other sub-metros, the rate seen in East London was slightly lower than those in the other major sub-metros, such as Macleantown, Sandisiwe, and Qonce.

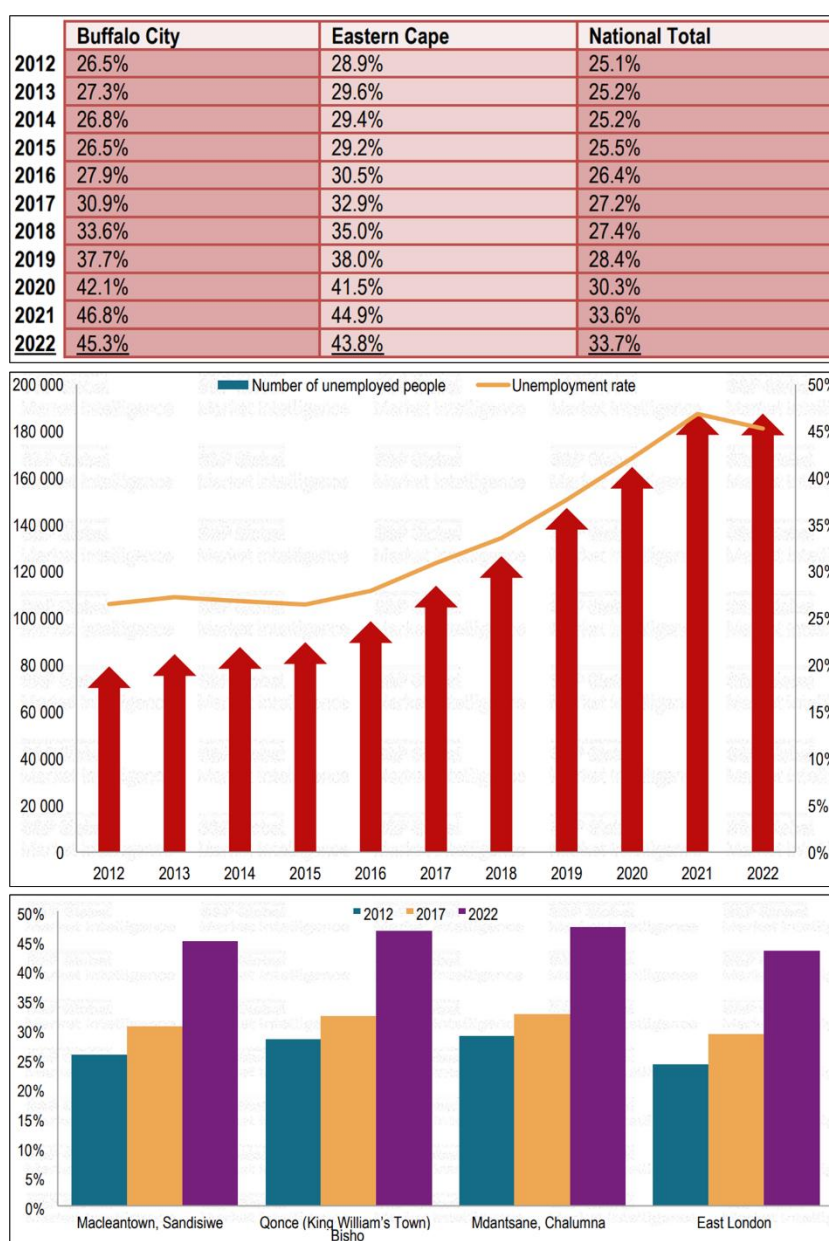


Figure 6.2. Unemployment data for the BCMM in 2022. Top: Unemployment trends from 2012 to 2022 for the BCMM, Eastern Cape, and South Africa. Middle: Trend in the number of unemployed people within BCMM from 2012 to 2022, presented alongside the actual unemployment rate. Bottom: Comparison in the unemployment rates per sub-metro region for 2012, 2017, and 2022. Source: BCMM (2024).

6.4 ECONOMIC CONTEXT

Economic data for the BCMM has largely been drawn from the BCMM Draft Integrated Development Plan (IDP; BCMM 2024). There have been pronounced changes in Buffalo City's economy in recent years, as demonstrated by fluctuations in its Gross Domestic Product (GDP). A considerable economic decline was experienced between 2019 and 2020, likely due to the onset of the COVID-19 pandemic (Figure 6.3). This was followed by subsequent economic recovery between 2020 and 2021, with growth rates exceeding pre-Covid conditions. However, this was predicted to stabilise to an average growth rate of 1.32% between 2022 and 2027—which is lower than the predictions for the Eastern Cape (1.47%) and South Africa (1.76%).

BCMMs GDP is further broken down at the sub-metro level, with data indicating that the East London sub-metro contributed the most to the BCMMs GDP, with a 35.93% share as of 2022 (Figure 6.3). This equated to a total city-wide GDP of R26.29 billion in 2022, which was predicted to grow to R48.95 billion in 2027. This further highlights the economic importance of East London within the metro.

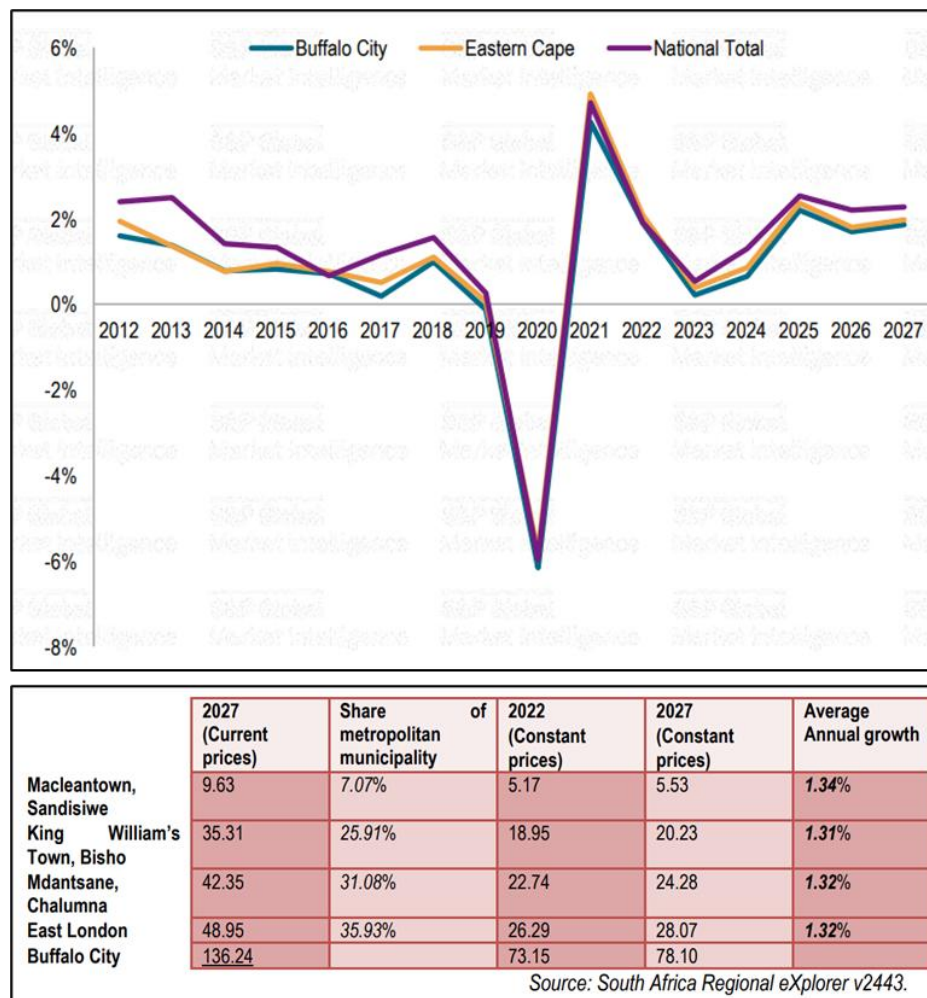


Figure 6.3. Top: Gross Domestic Product (GDP) within Buffalo City, the Eastern Cape Province, and South Africa nationally, in recent years—and forecasted for 2022 onwards (Figure source: BCMM 2024). Bottom: GDP within the sub-metros of the BCMM, with projected GDP also provided for 2027. Source: (BCMM 2024).

Gross Value Added (GVA) is a measure of economic output which tells us how much value an industry or region is contributing to the economy. When broken down by sector, Community Services are the largest contributor to the economy within the BCMM, contributing 37.3% to GVA (Figure 6.4), followed by Financial Services (19.3%), and Trade (17.0%). Therefore, the BCMM economy is dominated by services of the tertiary sector.

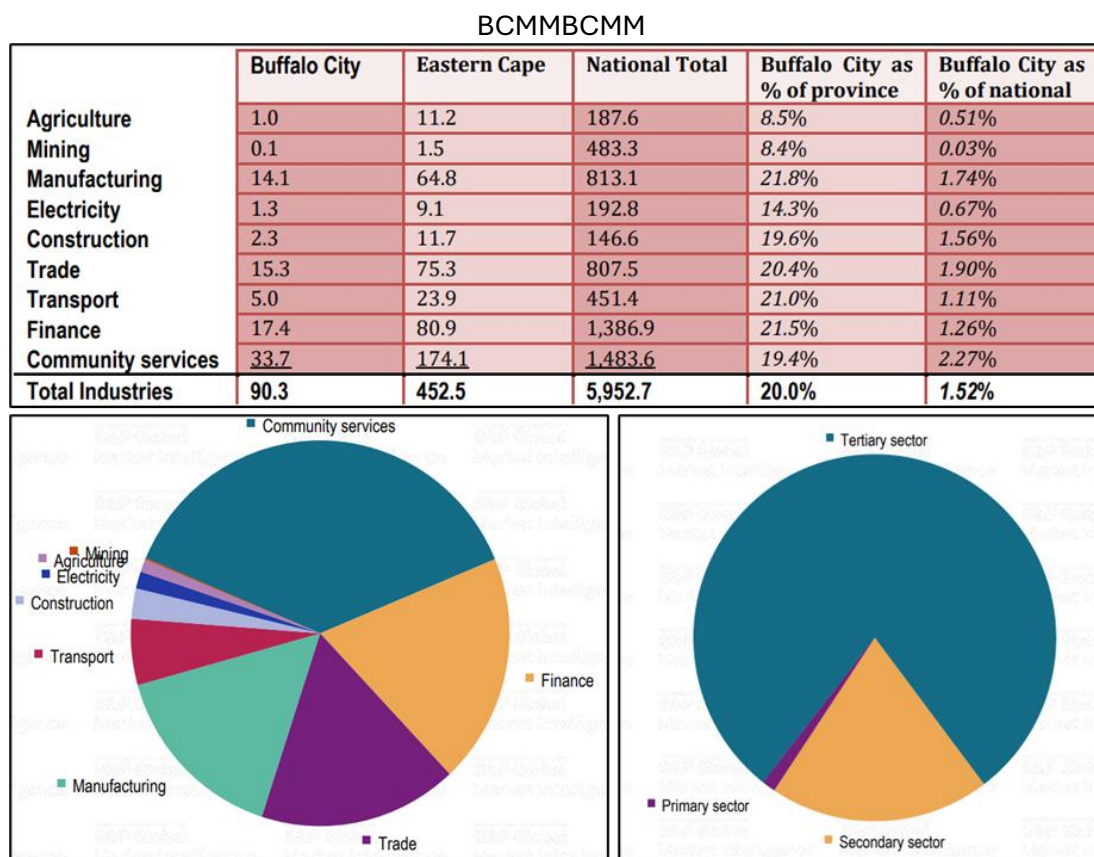


Figure 6.4. Top: Gross Value Added (GVA) by sector in 2022. Bottom-Left: Visual representation of the division in GVA, by sector, in 2022. Bottom-Right: Contribution of GVA by each aggregate economic sector, in 2022. Source: (Buffalo City Metropolitan Municipality 2024).

Given that the proposed desalination plant will most likely have an impact on the Trade Sector in East London and BCMM, this sector was the focus of the assessment.

As of 2022, the BCMM contributed 1.9% towards South Africa's total Trade Sector value, and 20.4% to the Trade Sector value of the Eastern Cape (Figure 6.4). This relatively large contribution is a product of the presence of key cities within the BCMM, as well as the influence of the Port of East London as a trade hub.

The BCMM Trade sector experienced a significant 11.5% decline during the onset of the COVID-19 pandemic (2019). However, this was followed by an economic rebound in 2020 (6.6% growth). This growth rate then slowed between 2021 and 2022 (~3% growth), which was predicted to decline further to an average annual growth rate of 1.15% between 2022 and 2027 (Figure 6.5; Buffalo City 2022).

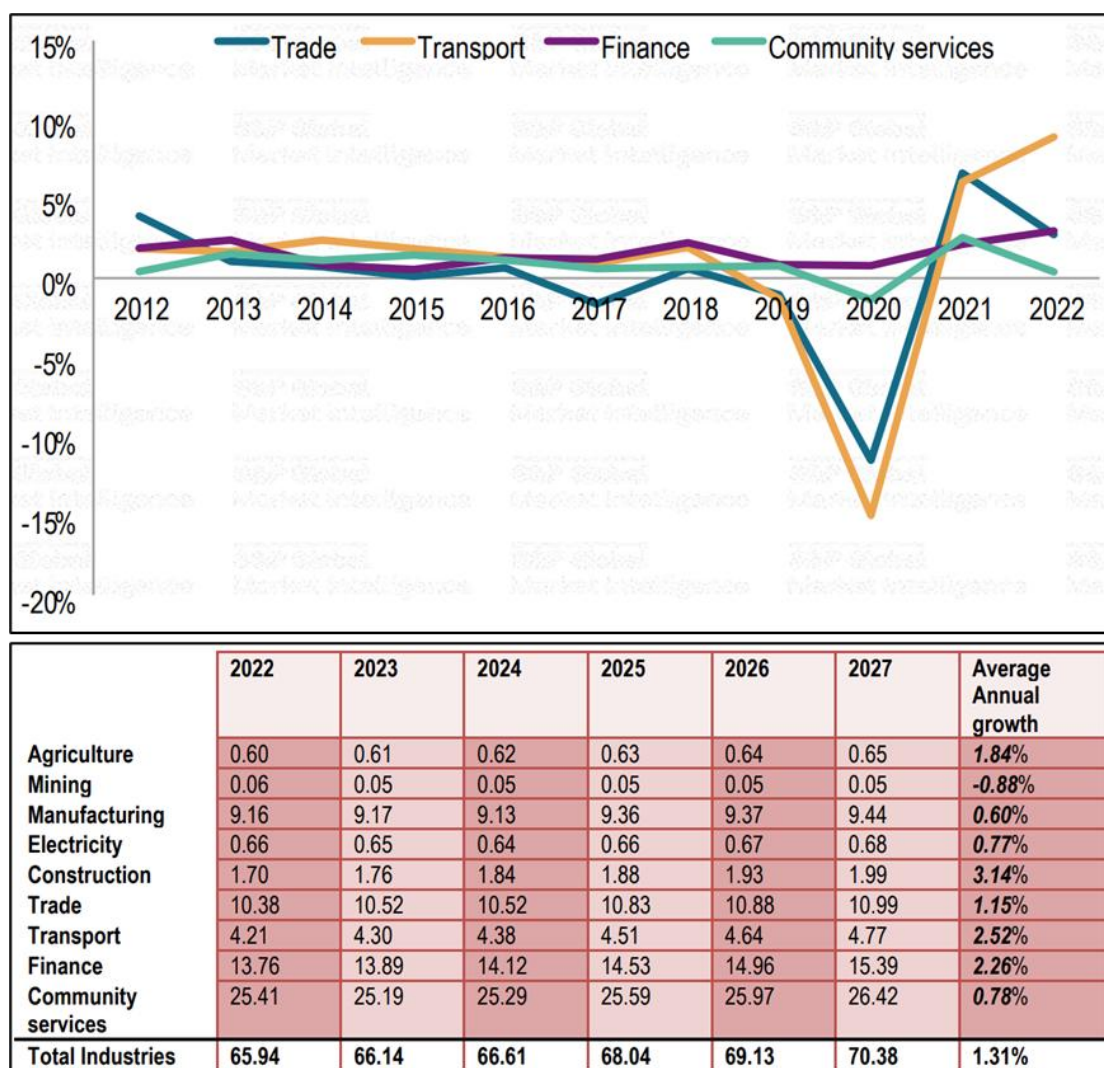


Figure 6.5. Top: Visual representation of GVA growth rate within BCMMs Tertiary Sector from 2012 to 2022. Bottom: GVA per-sector for the BCMM, forecasted from 2022 to 2027. Source: (BCMM 2024).

Another useful metric is the “location quotient” which is defined as the relative competitive advantage that one regional economy has over other regional economies with respect to producing the same good/service. (BCMM 2024).

The BCMMs location quotient indicates that, besides Community Services and Manufacturing, the Trade sector exhibited the highest competitive advantage, relative to the other sectors. (Figure 6.6). This metric was higher than the national average for the Trade sector. This competitive advantage is likely due to the presence of the Port of East London, which enables trade efficiencies and opportunities not available for areas without international port facilities.

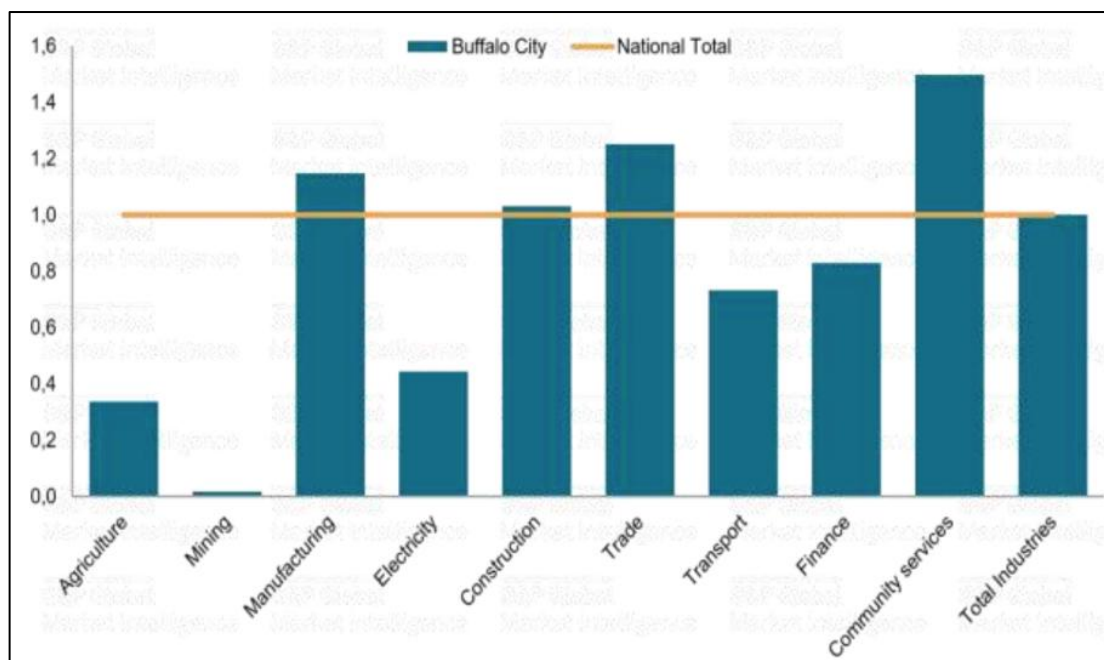


Figure 6.6. Location Quotient within the BCMM in 2022. Source: (BCMM 2024)

The Trade sector contributes significantly to employment in the BCMM providing the second-highest number of jobs in 2022 (after Community Services; Table 6.2, Figure 6.7). Only the Nelson Mandela Bay Metropolitan Municipality (NBMM) supported a higher number of Trade Sector jobs in 2022, than the BCMM which is explained by the combined influence of the Port of Port Elizabeth and the Port of Ngqura, both of which are large international ports. However, when looking at the percentage of total jobs within the Trade sector, the BCMM actually had a slightly higher percentage than the NBMM, which again speaks to the considerable importance of the trade sector within the BCMM.

Table 6.2. Total employment per economic sector within the Eastern Cape. Source: (BCMM 2024)

	Buffalo City	Nelson Mandela Bay	Sarah Baartman	Amatole	Chris Hani	Joe Gqabi	O.R.Tambo	Alfred Nzo	Total Eastern Cape
Agriculture	21,000	12,000	33,600	10,200	12,000	8,740	7,150	4,540	109,289
Mining	319	468	33	65	129	86	198	63	1,359
Manufacturing	18,100	75,500	15,200	6,600	5,980	3,280	5,940	3,150	133,735
Electricity	580	718	318	361	408	209	496	226	3,317
Construction	16,500	28,700	13,100	11,100	13,000	7,570	17,300	11,400	118,766
Trade	46,000	86,300	30,300	27,800	23,400	13,200	40,300	16,900	284,248
Transport	9,340	28,100	7,710	5,720	4,980	2,780	8,640	3,810	71,100
Finance	26,800	62,500	14,500	13,100	11,900	5,900	21,200	8,250	164,295
Community services	59,800	94,600	27,800	42,400	42,800	19,900	66,500	28,600	382,525
Households	16,900	30,800	13,200	9,440	9,800	6,610	12,200	5,580	104,396
Total	215,000	420,000	156,000	127,000	124,000	68,400	180,000	82,600	1,373,030

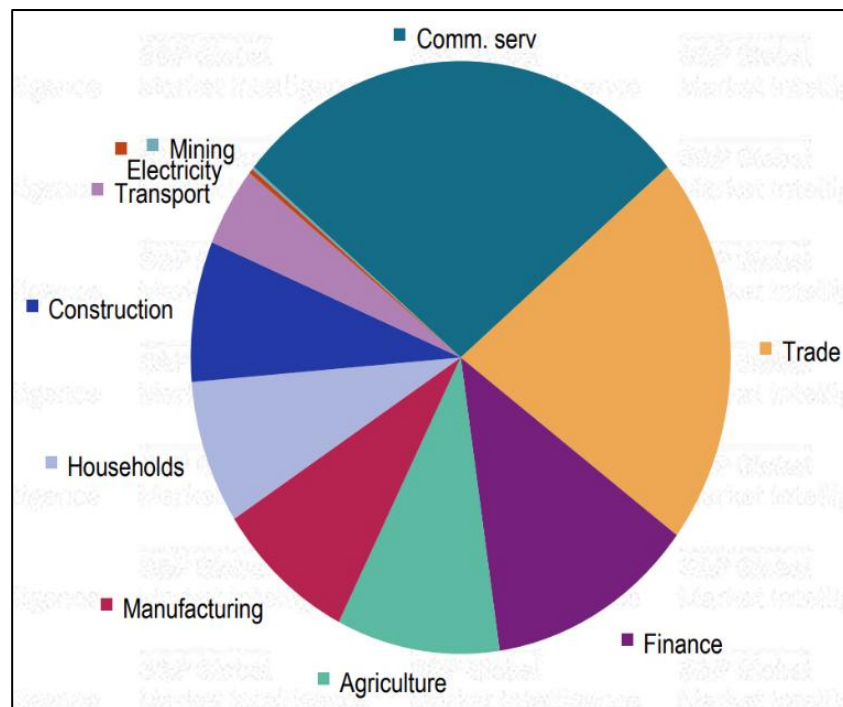


Figure 6.7. Pie chart of total employment per sector. Source: (BCMM 2024).

In the Trade sector in 2022, there were 28 000 formal jobs and 18 000 informal jobs (60.1% formal; Figure 6.8). Most of the jobs directly resulting from port-related activities likely fall within the “formal trade” cohort. While the Trade sector had the highest number of informal jobs compared to other sectors, this was lower than the number of formal jobs, unlike the Transport sector which had a higher proportion of informal jobs than formal jobs (Figure 6.8).

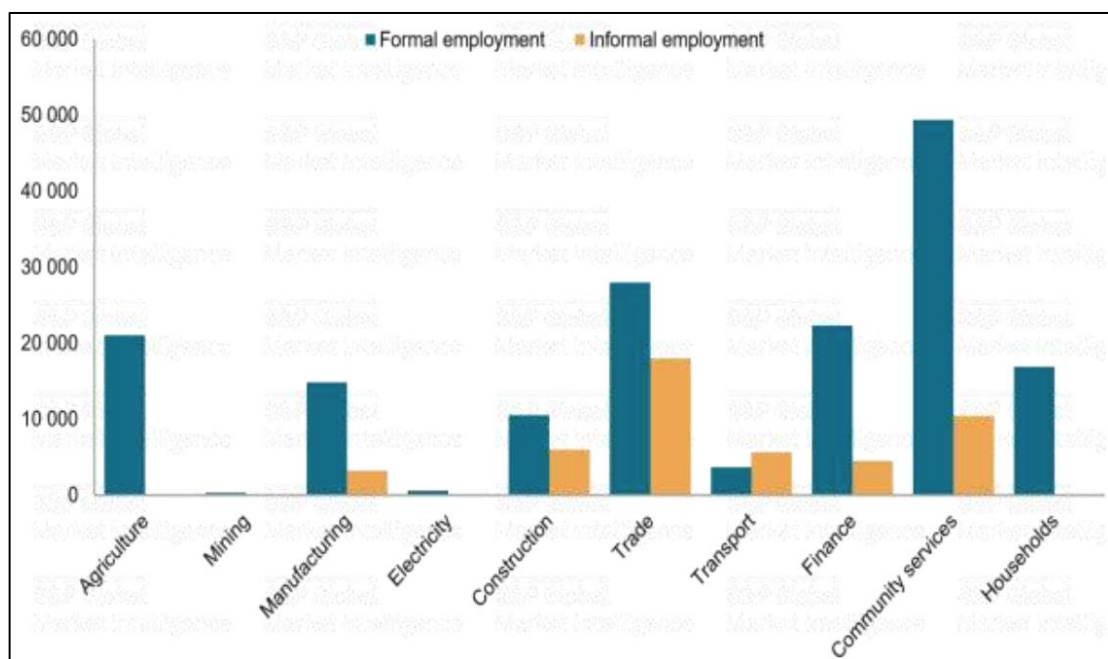


Figure 6.8. Graphical distribution of jobs within the formal and informal sector within the BCMM in 2022. Source: (Buffalo City Metropolitan Municipality 2024).

The trajectory of imports and exports indicates that most trade in the BCMM was derived from imports (bringing goods into the municipality), rather than exports (delivering goods out of the municipality) in 2022. What is notable, is the clear increase in the value of imports from 2021 onwards. The value of exported goods also trended upwards for the 2012 to 2022 period. However, the total value of the export economy remained much lower than that of its import economy, as of 2022.

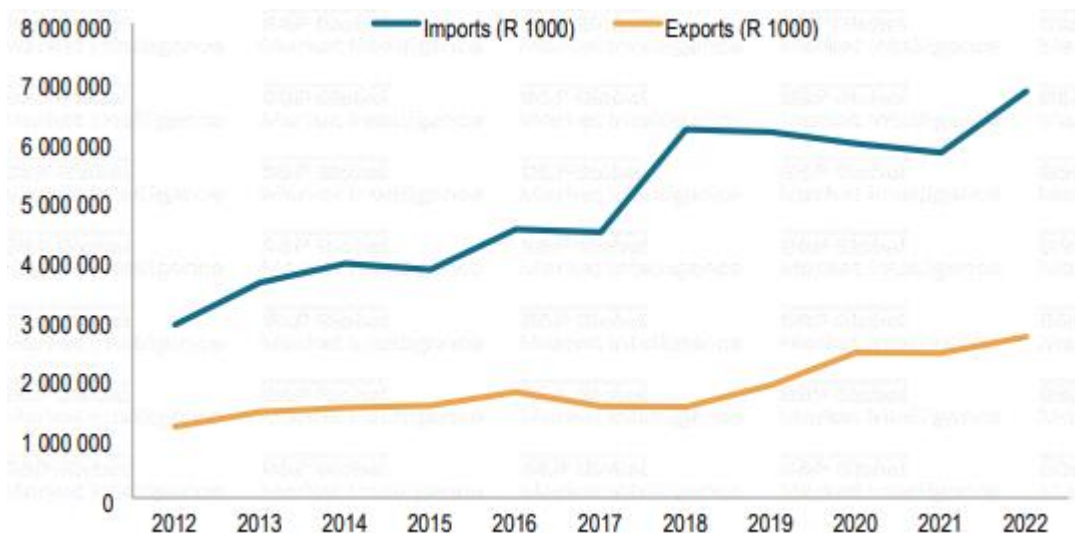


Figure 6.9. Imports and Exports from BCMM between 2012 and 2022. Source: (BCMM 2024).

6.4.1 SUMMARY

In summary, the BCMM appears to be in a tenuous state with respect to unemployment, yet the Trade sector plays an important role in maintaining the base of the metro's economy. Since the proposed Desalination plant will supply fresh water for use within the Port of East London, the resultant improvement in the port's operational efficiency/capacity could increase the value of the Trade sector and strengthen the metro's economy as a whole.

6.5 HUMAN USES AND INFLUENCE WITHIN THE COASTAL AND MARINE ENVIRONMENT

Marine and Coastal user groups can be broadly defined as recreational or commercial. Recreational marine activities occurring in East London include recreational boat (skiboat) fishing, recreational scuba diving and yacht sailing, as well as bathing and water sports.

Several commercial marine activities take place within the broader region. These include shipping, marine ecotourism, and a range of commercial fisheries. The following section is an excerpt from the Marine and Estuarine Specialist study for the proposed development:

6.5.1 RECREATION

East London offers a diverse range of marine and estuarine recreational activities that are influenced by its rich aquatic environment. The city's beaches, including Eastern Beach and Nahoon Beach, are well-suited for bathing, surfing, and a variety of water sports (Figure 6.10). The warm waters of the Indian Ocean provide favourable conditions for activities such as kayaking, windsurfing, and stand-up paddleboarding, while the consistent waves attract surfers from both local and international communities. Additionally, East London is recognized as a destination for recreational SCUBA diving, with several dive sites in the surrounding waters that feature diverse marine life.

The sheltered environment of the Buffalo River Estuary is ideal for more tranquil activities, including boat cruises, kayaking, recreational fishing, and birdwatching. Furthermore, sailing is a popular activity in both the ocean and estuarine waters, with sailing clubs in the area such as the Buffalo River Yacht Club.



Figure 6.10. The beaches and popular recreational areas of East London. Source: (www.sa-venues.com).

6.5.2 FISHERIES

Six fisheries were identified to be potentially relevant to this development, and include the Commercial/Traditional Line fishery, the Large Pelagic Longline fishery, the South Coast Rock Lobster fishery, the Small Scale and Recreational Fishers fishery, and Aquaculture/Mariculture. However, only the Commercial/Traditional Line fishery and Small Scale and Recreational fisheries were identified to have perceivable overlap with the development's area of influence. These fisheries are assessed in great depth as part of the Marine and Fisheries Impact Assessment (Bovim et al. 2025).

COMMERCIAL/TRADITIONAL LINE FISHERY

The South African commercial (or Traditional) line fishery is a boat-based fishery that dates back to the 1500s (Thompson 1913). By the end of the 1990s there were approximately 3 000 fishing boats ranging from 3 m dinghies to 15 m deck boats carrying a total of around 3 000 crew (Griffiths 2000).

The primary target species in the South African commercial line fishery include temperate, reef-associated seabreams (e.g. roman, hottentot seabream, santer and slinger), coastal migrants (e.g. geelbek and dusky kob) and nomads (e.g. snoek and yellowtail) (Parker et al. 2018). Employing an estimated 27% of all fishers, the commercial line fishery has the largest fleet, but its catches make up only 6% of the total value of all commercial marine fisheries

According to the 2018 National Biodiversity Assessment fishing intensity calculations, the commercial linefishery is highly active near to the Port of East London (Figure 6.11) (Sink et al. 2019).

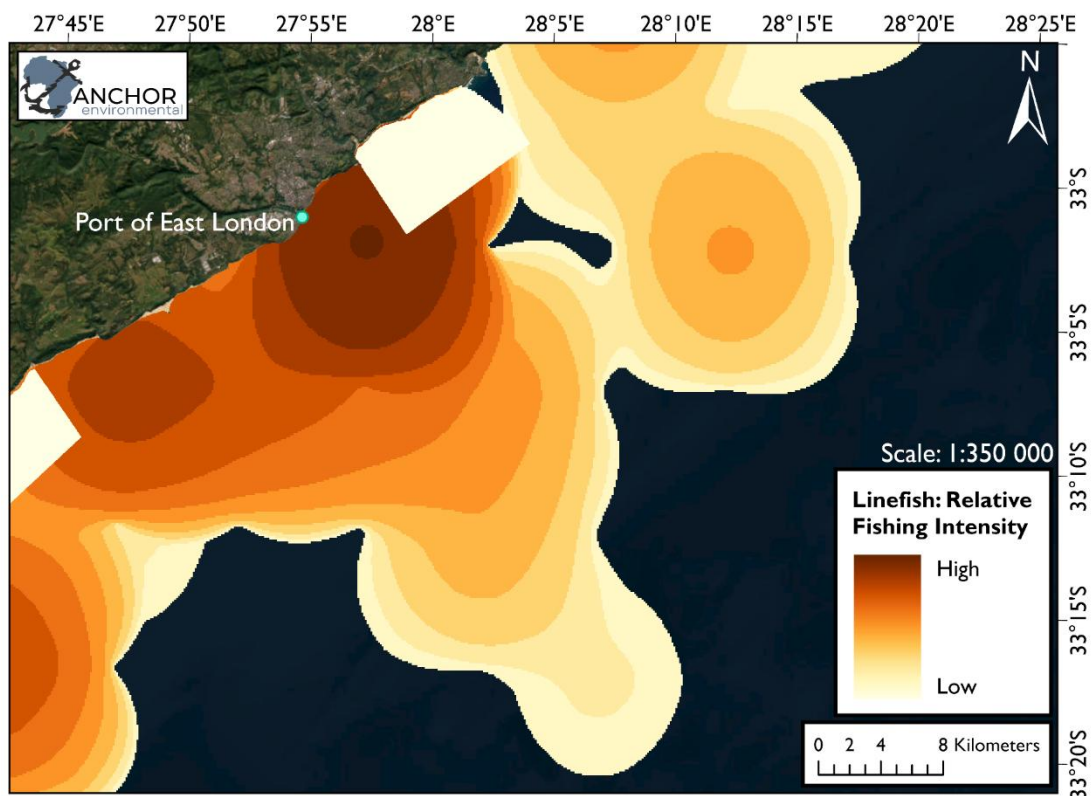


Figure 6.11. Relative fishing intensity of the commercial linefish fishery near East London. Source: (Sink et al. 2019).

LARGE PELAGIC LONGLINE

The pelagic longline fishery targets large, predatory, highly mobile fish including bigeye tuna *Thunnus obesus*, yellowfin tuna *T. albacares*, southern bluefin tuna *T. maccoyii* and swordfish *Xiphias gladius*. The main bycatch species are albacore tuna *T. alalunga*, blue shark *Prionace glauca* and shortfin mako shark *Isurus oxyrinchus* (Sink et al. 2019, DFFE 2023).

The South African large pelagic longline fishery employs a significant number of people, including fishermen, crew members, and workers in associated industries such as processing, marketing, and distribution. The wholesale value of catch landed by the sector during 2017 was R155 Million, or 1.6% of the total value of all fisheries combined, with landings of 2 613 tonnes (The South African Fishing Industry Handbook and Buyers' Guide 2019). The large pelagic longline fishery is highly dependent on export markets, with more than 90% of the catch destined for international markets.

The fishery operates extensively within the South African Exclusive Economic Zone, primarily along the continental shelf break and further offshore (Sink et al. 2019), Figure 6.12). However, the pelagic longline fishery operates outside of the proposed development's area of influence (Figure 6.12).

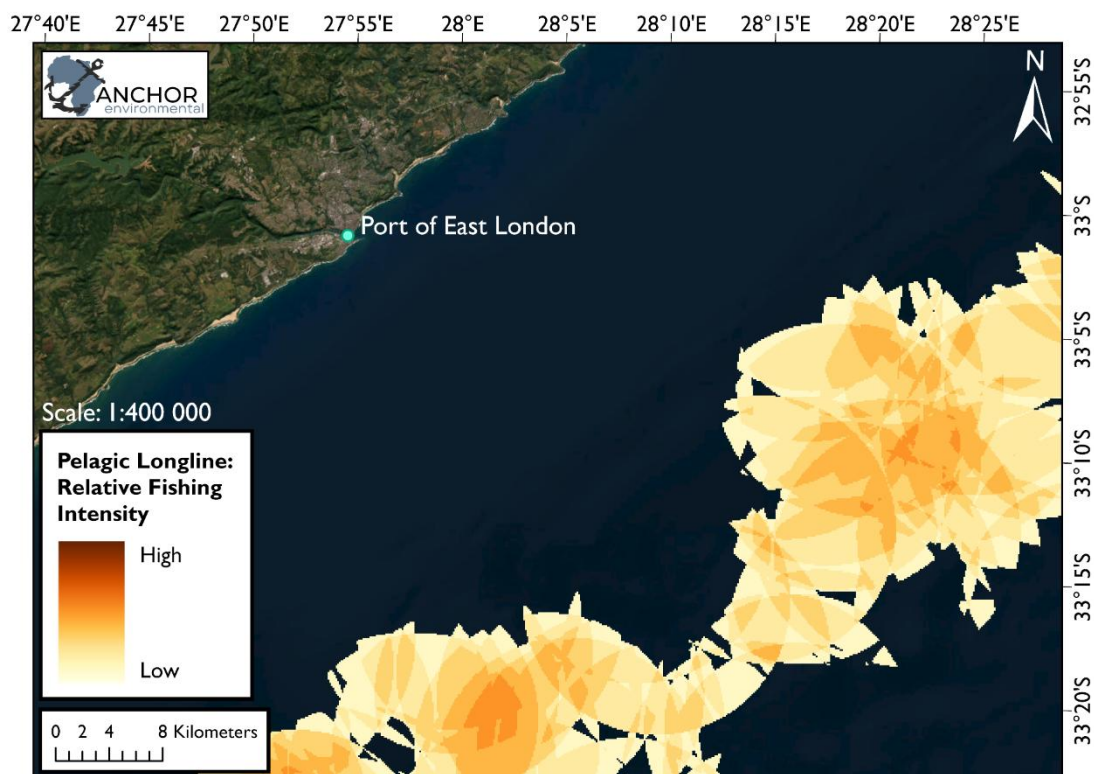


Figure 6.12. Relative fishing intensity of the pelagic longline fishery near to East London. Source: (Sink et al. 2019).

SOUTH COAST ROCK LOBSTER

The South African longline trap fishery targets the endemic South Coast rock lobster (SCRL) *Palinurus gilchristi*.

The SCRL fishery mainly operates in rocky areas 90-200 m deep between Cape Point and East London, with the highest effort recorded off Gqeberha and East London (Pollock 1989, Groeneveld & Branch 2002, Sink et al. 2019). The fishery may extend up to 250 km offshore along the outer edge of the Agulhas Bank (DFFE 2023). There are currently 7 vessels operating from Cape Town and Gqeberha ports (Norman et al. 2018).

This fishery is labour intensive and as a result each vessel employs about 30 officers and crew, with a total of 300 sea-going employees. Additionally, about 100 land-based

processing and administrative personnel are employed. In 2021, the total export value was approximately R353 million (DFFE 2023). In 2022, 15-year fishing rights were allocated to 10 companies. There is no perceived overlap between the proposed development area and South Coast rock lobster fishing effort (Figure 6.13).

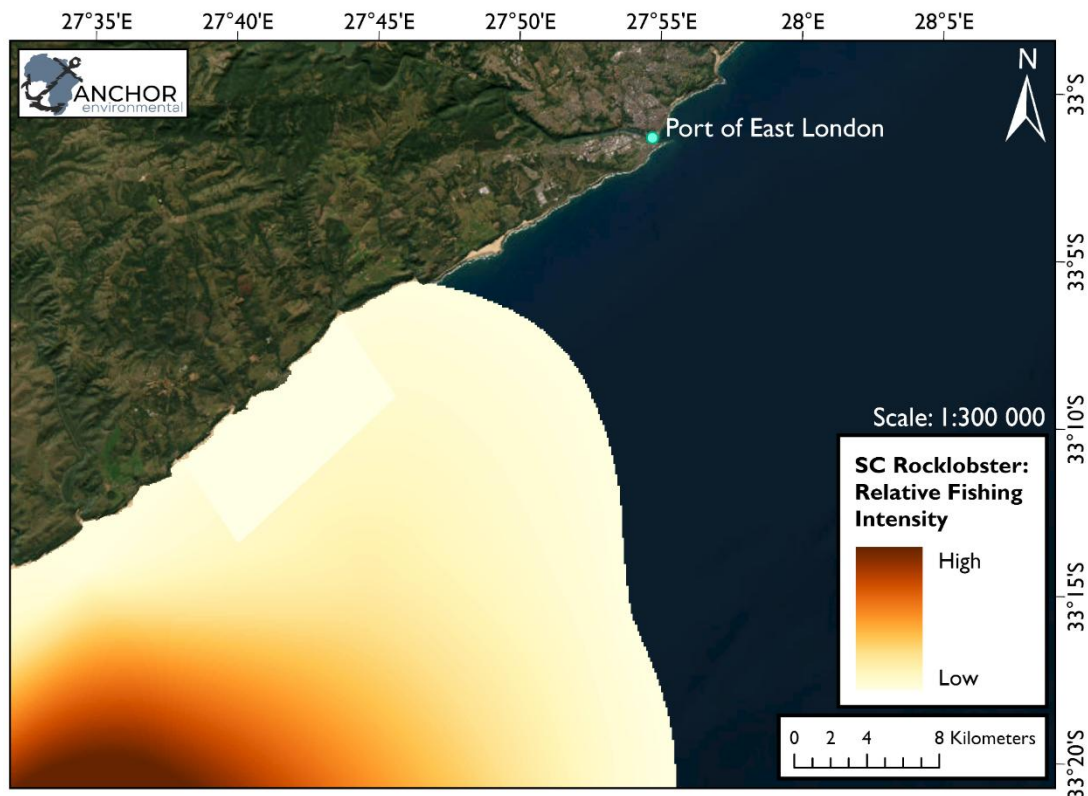


Figure 6.13. Relative fishing intensity of the South Coast rock lobster fishery near to East London. Source: (Sink et al. 2019).

SMALL SCALE AND RECREATIONAL FISHERIES

Small Scale Fishers: Small scale fisheries, both in South Africa and abroad, are an important source of income and food security for many thousands of people, and has been so for generations (Clark et al. 2002, Sowman et al. 2014, Auld & Feris 2022). Small-scale fishing in South Africa has been considered to include various fishing methods targeting more than 30 species from a range of habitats (Griffiths & Branch 1997, Branch et al. 2002, Clark et al. 2002). Although small-scale fisheries contribute less than 1% to South Africa's GDP, they play an important role in the provision of protein and employment for an estimated 136 coastal communities distributed along South Africa's 3 000 km coastline (Figure 6.14). The extent and spread of small-scale fishers covers the four provinces with coastlines, especially the Western Cape, where fishing has been an important source of protein among the coastal communities since the 1700s (Isaacs 2013). Small-scale fishers are found both in urban and rural coastal areas.

Small scale fishery operations have historically not been included in the fisheries policy development in South Africa — the definition of “commercial fishing” as per the 1998 Marine Living Resources Act (MLRA) excluded small-scale and artisanal fishers who catch and sell fish to sustain livelihoods, despite commercial fisheries around South

Africa spanning a wide spectrum, and in 2005, the government adopted long-term fishing policies that made no provision for small-scale fishers.

In response to an Equality Court order in 2007, South Africa's cabinet adopted the Small-Scale Fisheries Policy in June 2012, which sought to address imbalances of the past and ensure that small-scale fishers were accommodated and properly managed. The policy proposed that fishing rights be allocated on a group, rather than an individual, basis. The policy further aimed to support investment in community entities who could take joint responsibility for sustainably managing the fisheries resources and assist in addressing the depletion of critical fisheries stocks.



Figure 6.14. Map of small-scale fishing communities in South Africa. Source: (Isaacs et al. 2022). Black dots represent small-scale fishing communities within each recognised 'basket' area.

The South Coast area of South Africa in which the proposed development area lies has a number of recognised small-scale fishing communities (Figure 6.14). These communities comprise of estuarine fishers (42%) and marine fishers (58%) which target a range of intertidal invertebrates (marine and estuarine) and fish (Figure 6.15).

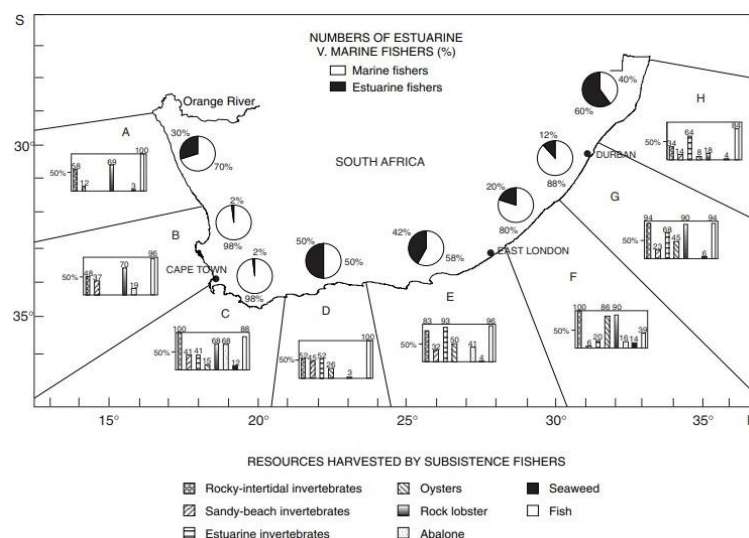


Figure 6.15. Proportions of marine and estuarine fishers, and relative importance of various different resources to 'subsistence' fishers in each of eight regions taken from Clark et al. (2002).

Recreational fishers: Recreational fisheries in South Africa include line fisheries, rock lobster fisheries and harvesting of intertidal resources such as mussels, redbait and oysters (Griffiths et al. 2004, Cooke & Cowx 2006, Lewin et al. 2006, Winker et al. 2014, Maggs et al. 2016, Parker et al. 2016, Kerwath et al. 2019, Steyn et al. 2019). In the MLRA, "recreational fishing" means any fishing done for leisure or sport and not for sale, barter, earnings or gain. The recreational fishing sector is managed by a permitting scheme for entrants and catches are subject to Total Allowable Effort (TAE) like the other fishing sectors. Recreational linefishing is a popular activity in South Africa and takes place along the entire coast. Between 1994 and 1997, the first nation-wide survey was conducted to evaluate participation in South Africa's recreational shore angling fishery, and its management (Brouwer et al. 1997, Mann et al. 2003). Recreational fishing in South Africa includes participation from approximately 1.32 million fishers, of which approximately half are marine, targeting mainly linefish and rock lobster (Potts et al. 2021). The MLRA legally recognises recreational fishers and along South Africa's South Coast there are a number of areas where recreational fishers operate very close to shore, or from the shore, including near to the Port of East London (Figure 6.16).

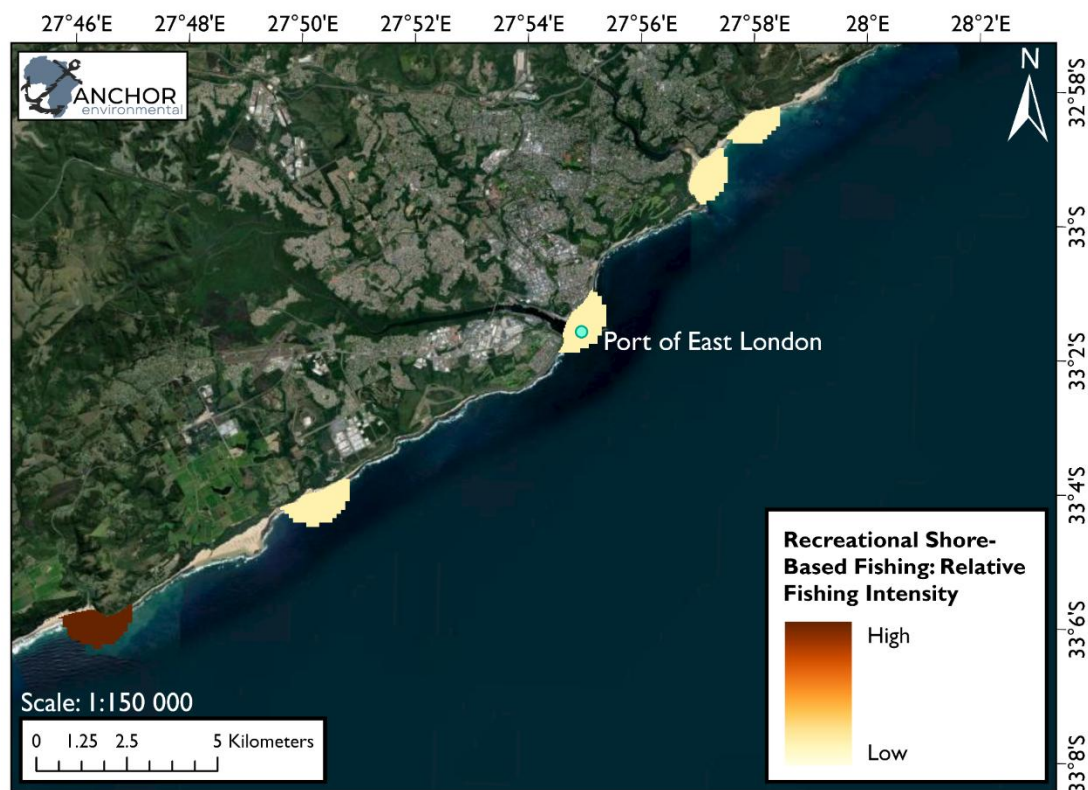


Figure 6.16. Relative fishing intensity of the recreational shore-based fishery near to East London. Source: (Sink et al. 2019).

6.5.3 AQUACULTURE AND MARICULTURE

The proposed development is situated within a Priority Ranching Area for abalone (Figure 6.17). However, there is very little information available on this ranching area, and it is unlikely that it is currently operational.

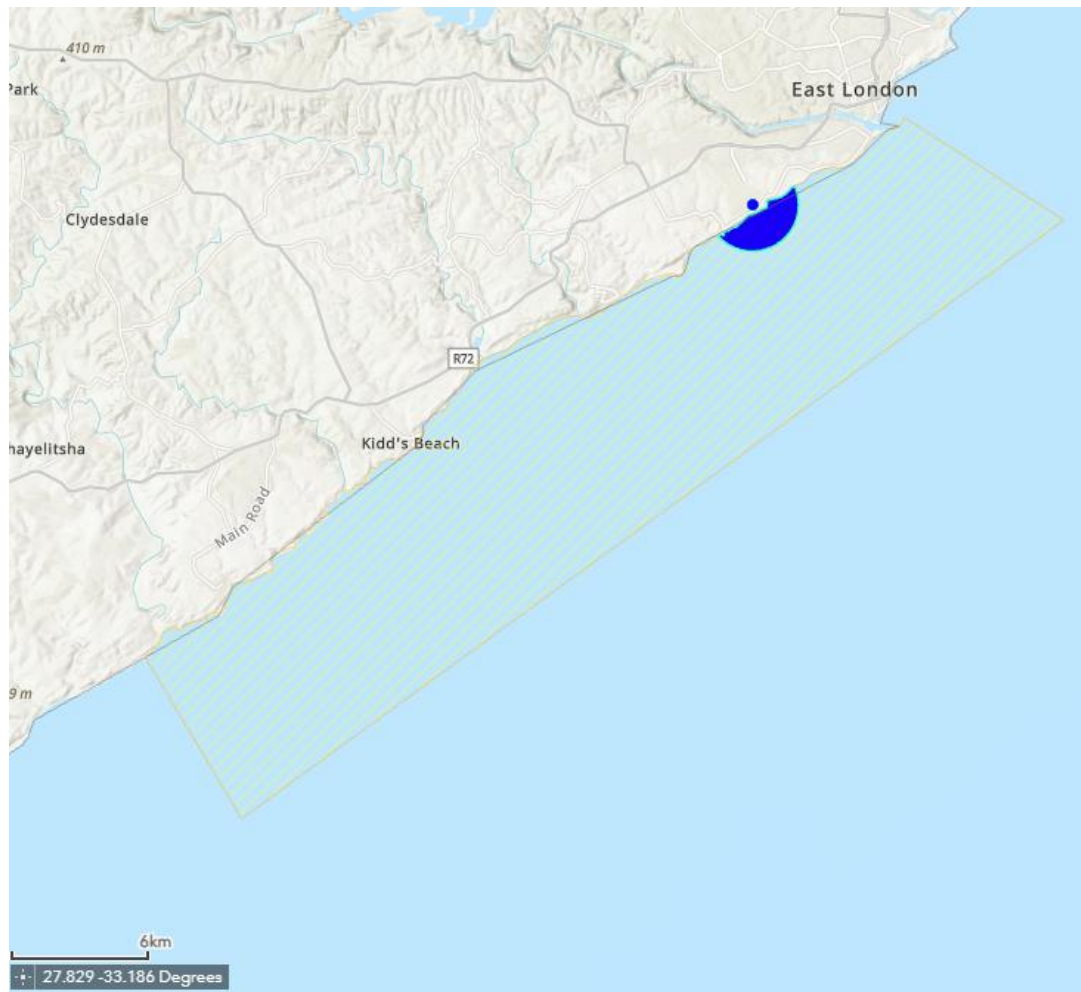


Figure 6.17. Priority Abalone Ranching area in the area of interest. Source: (Operation Phakisa 2020).

6.6 USERS OF THE AREA IN CLOSE PROXIMITY OF THE DEVELOPMENT

In addition to the coastal users described in the prior section, consideration must also be given to other users living or working in proximity of the proposed plant.

Given the proposed location of the plant within a functional port, which is subject to access control, most of the people exposed to the development during both the construction and operational phases, will be port employees. However, given the proximity of the site to the transparent perimeter fence at the edge of the Port Property, residents and workers within the neighbouring West Bank mixed use suburb, located to the south of the site (in addition to users of the supporting road infrastructure), are likely to be exposed to the development in varying ways.

The properties located in the vicinity of the site along Dale Street (running parallel to the site), are characterised by a mixture of residential and business developments, including two vehicle bodywork shops, a hardware pawn shop, a vehicle finishes/ body shop supply store, and at least one small hotel/guesthouse (Figure 6.18). These commercial/industrial developments appear to be interspersed with residential accommodation/ houses.



Figure 6.18. Google Maps views of the mixed use “West Bank” suburb, directly adjacent to the TNPA proposed development site. Top: View looking southeast down Bank Street and Dale Street, with the development site to the left of the image. Row 2: View looking east down Dale Street, with residential properties on the right and the project site on the left. Row 3: View looking west, up Aldred Street and Dale Street, with the project site on the right. Row 4: View looking East Down Dale Street towards several commercial buildings, with the project site on the left. Bottom: View looking west across the Hildyard Street green space, with the project site in the far right of the image. Source: Google Earth.

When looking slightly further away from the site deeper into the West Bank Area, although still within 200–300 metres of the site, along Bank Street and High Street, the property uses becomes more varied. Here, there is a mixture of residential houses, several small supermarkets, a liquor store, a church, a medical practice, a tearoom, a post office, and two additional vehicle bodywork/repair shops (Figure 6.19).



Figure 6.19. Google Maps views of the mixed-use area in West Bank Suburb in vicinity of Bank Street (all located within ~300 m of the proposed site). Top: View looking east down bank Street towards the sea. Row 2: View looking northwards down Bank Street and High Street, in the general direction of the project site. Row 4: View from Hood Street with Bank Street visible to the right, and the St Andrews Presbyterian Church visible in the foreground. Row 5: View looking northeast down Hood Street, with High Street in the foreground. Source: Google Maps.

Finally, in addition to the West Bank Suburb, the area to the southwest of the site, running along the south side of Bank Street, consists of a relatively large, uniform, residential settlement, which likely houses the workers of the East London Department of Correctional Services (Figure 6.20).

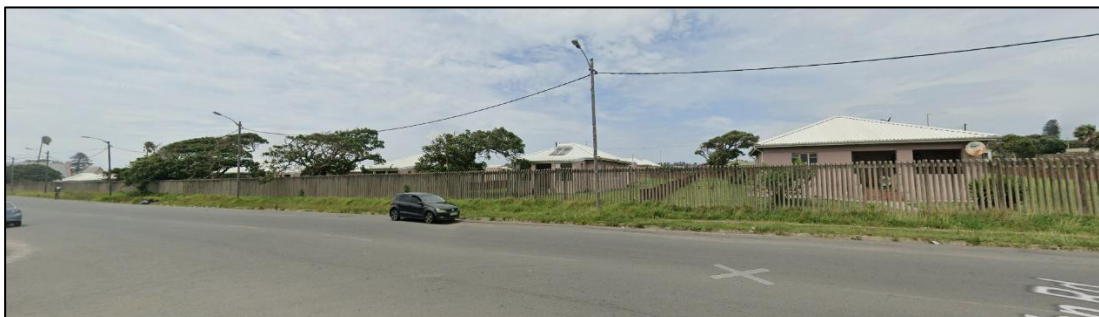


Figure 6.20. View looking away from the development site, in a southwards across Dr Zahn Road/ Bank Street, towards the Department of Correctional Services accommodation. Source: Google Maps.

6.6.1 SUBPLACE STATISTICS (2011 CENSUS)

Given the absence of data available at the suburb (Sub Place) level for the 2022 census, the 2011 data has been used. The two relevant sub places are the West Bank Village and Fort Glamorgan (the area in which the East London Department of Correctional Services falls (Stats SA 2011)).

WEST BANK VILLAGE SUB PLACE

The West Bank Village had a total population of 2069, and 616 households, as of the 2011 Census. This population was of majority White ethnicity (57%), followed by Black African (36%) and Coloured (6%), with <1% consisting of Indian or Asian and “Other”, combined. The most prevalent languages in the area were English (41%), followed by isiXhosa (32%) and Afrikaans (24%). A further ~3% spoke a language besides the prior 3.

The vast majority (in excess of 98%) of dwellings in the area were formal (Table 6.3), with only 8 households being considered “informal” (consisting only of the informal brick shacks and “informal” categories).

Table 6.3. Breakdown of dwelling types within the West Bank Village Sub Place

Dwelling Type	Total	%	Dwelling Type	Total	%
House	382	62.0	Backyard Dwelling	133	21.6
Traditional	3	0.5	Informal Brick Shack	5	0.8
Apartment	36	5.8	Informal	3	0.5
Complex	0	0.0	Room	7	1.1
Townhouse	3	0.5	Caravan/ Tent	0	0.0
Semi-Detached House	44	7.1	Total Households	616	

Positively, all but 8 households had access to formalised running water. Additionally, almost all households had access to flush toilets (96.8%), with the remaining households relying on septic tanks, ventilated improved pit latrines (VIPs), or pit latrines. Only three households were listed as having access to no toilet facilities.

Almost all households had access to regular refuse removal (97.2%), while 1.6% utilised their “own dump”, and 1.1% utilised “irregular” refuse removal. All but 3 households had access to electrical lighting, with the remaining 3 utilising candles. Access to winter heating was more varied, with 320 (51.6%) of households having access to electrical heating, 41 (6.6%) to paraffin, 25 (4.03%) to gas, 3 (0.5%) to animal dung heating, and the remaining 226 (36.5%) had no access to heating. All households had access to some form of heat for cooking, with the majority (563, 90.7%) having access to electrical cooking, 46 (7.4%) having access to gas, and the remaining 12 households utilising either paraffin or wood.

Access to education varied substantially, with the largest number (599, 41.9%) receiving “some secondary” (high school) education, 595 (41.7%) completing secondary school, and 145 (10.2%) having some formal of higher education. Only 52(3.6%) of people only had some amount of primary education, and 23 people (1.6%) had completed primary school but had no secondary education. Finally, 641 individuals (31.0%) of the total population of the sub place had no recorded education data.

West Bank Village had an unemployment rate (defined as the percentage of unemployed working age individuals, relative to the number of employed individuals, but excludes those classified as “discouraged work-seekers”) of 23.0% in 2011, which was similar to the unemployment rate determined for the BCMM in 2012 (26.5%). However, it is unclear whether the sub place has seen the same (almost doubling) in unemployment, that the BCMM has seen between 2012 and 2022.

Many households (64.6% of total) had an annual income ranging between R 38 201 – R307 600 in 2011. When adjusted by an estimated inflation of 105% between Jan 2011 and July 2025, this range shifts to between R78 311 – R630 580 (Table 6.4, Stats SA 2011, InflationCalc.co.za 2025), although there is no guarantee that annual income increased in proportion with inflation in this area. A total of 16.2% of households had some form of income below this combined cohort, and 11.2% were recorded as having no income. Finally, only 8.1% of households had an income between R307 601 – R614 400 in 2011 (R630 581 – R1 259 520 in 2025), with no households falling into a higher income bracket than this.

Table 6.4. Annual household income for the West Bank Village Sub Place as of the 2011 census, with indicative inflationary adjustments provided. Source: (Stats SA 2011)

2011 Income Brackets	Jan 11 – July 25 Inflationary Adjustment: 105% Increase	Households	Cohort Percentage
No household income		69	11.2
R1 – R4800	R1 – R9 840	5	0.8
R4 801 – R 9600	R9 841 – R19 680	9	1.5
R9 601 – R19 600	R19 681 – R40 180	36	5.8
R19 601 – R38 200	R40 181 – R78 310	50	8.1
R38 201 – R76 400	R78 311 – R156 620	115	18.6

2011 Income Brackets	Jan 11 – July 25 Inflationary Adjustment: 105% Increase	Households	Cohort Percentage
R76 401 – R153 800	R156 621 – R315 290	147	23.8
R153 801 – R307 600	R315 291 – R630 580	137	22.2
R307 601 – R614 400	R630 581 – R1 259 520	50	8.1
R614 001 – R1 228 800	R1 259 521 – R2 519 040	0	0.0
R1 228 801 – R2 457 600	R2 519 041 – R5 038 080	0	0.0
R2 457 601 or more	R5 038 080 or more	0	0.0

In summary, it appears that the West Bank Suburb is well established, with a large degree of household formality; high levels of access to key infrastructure and services (water, sanitation, electricity; and heating); and annual incomes that are largely indicative of “middle income” households.

FORT GLAMORGAN SUB PLACE

The Fort Glamorgan sub place had a similar total population to West Bank as of 2011, with 2511 total residents. However, the distribution in ethnicity contrasted strongly between these two areas, with 86.7% of Fort Glamorgan’s population being classified as Black African, 6.3% coloured, 5.8% White, and the remaining 1.3% as either “Other” or Indian/Asian (Stats SA 2011). This contrasts to the predominantly (57%) White West Bank sub place. Dwellings in the area were almost entirely formal (99.5%), with most residents residing within houses, apartments, and backyard dwellings (Table 6.5).

Table 6.5. Breakdown of dwelling types within the Fort Glamorgan Sub Place

Dwelling Type	Total	%	Dwelling Type	Total	%
House	145	59.4	Backyard Dwelling	23	9.4
Traditional	0	0	Informal Brick Shack	0	0
Apartment	64	26.2	Informal	3	1.2
Complex	3	1.2	Room	3	1.2
Townhouse	3	1.2	Caravan/Tent	0	0
Semi Detached House	0	0	Total Households	244	

All but 3 households had access to taps within their house or yard, with 247 households relying upon a formal water scheme, 3 on water vendors, and 3 on water tankers. The entire population had access to either flush toilets (77.5%) or septic tanks (22.5%). Besides three households, which were listed as having access to no refuse facilities, 90.3% had access to regular refuse removal and the remaining 8.4% had irregular refuse removal. All households had access to lighting, with all but three households relying on electricity and the remainder relying on solar lighting.

The area had near-total access to winter heating, with most (96.4%) of households utilising electrical heating, three utilising solar heating, and only three households had no have access to any form of heating. A similar trend was observed with heating for

cooking, with 96.8% of households utilising electricity, three (1.2%) utilising solar, and 5 (2.0%) utilising another unspecified heat source.

Most individuals did not disclose their level of education, with data only being available for 450 individuals (17.9%), with the remainder likely consisting of inmates within the correctional centre. Of the recorded group, the majority (54%) had completed secondary school, followed by individuals with some form of higher education (27%), and then 16.4% who had some secondary school education. Finally, only 4 individuals were identified to have only completed primary school, and 7 had only partially completed primary school.

The area had an unemployment rate of only 11.7% (42 unemployed individuals), which was likely due to most of the non-incarcerated residents being employed at the Correctional Services facility. Only 6 individuals were classified as discouraged work seekers, while the vast majority (1899, 82.6%) of individuals were classified as “not economically active”, which is indicative of them being inmates at the facility.

Many households (81.3%) had an annual income ranging between R76 401 – R614 400, in 2011 which, when adjusted by an estimated inflation of 105% between Jan 2011 and July 2025, would shift this range to between R156 621 – R1 259 520 (Table 6.6), although there is no guarantee that annual income increased in proportion with inflation in this area. Only nine households exceeded this income range and only 25 households earned less (6 of which were recorded as having no income). This distribution indicates higher levels of earning than in the neighbouring West Bank Village, and likely demonstrates the spread in pay between employees of varying ranks within the Department of Correctional Services.

In summary, it is evident that the Fort Glamorgan area is heavily influenced by the presence of the East London Department of Correctional Services, with the census household data largely consisting of worker from the facility, and the remainder of the population likely consisting of inmates within the facility. Consequently, it differs greatly in terms of its demographic distribution, socio-economic context, and urban character, to the neighbouring West Bank Village area.

Table 6.6. Annual household income for the Fort Glamorgan Sub Place, as of the 2011 census, with indicative inflationary adjustments provided. Source: (Stats SA 2011)

2011 Income Brackets	Jan 11 – July 25 Inflationary Adjustment: 105% Increase	Households	Cohort Percentage
No household income		6	2.4
R1 – R4800	R1 – R9 840	4	1.6
R4 801 – R 9600	R9 841 – R19 680	0	0.0
R9 601 – R19 600	R19 681 – R40 180	9	3.7
R19 601 – R38 200	R40 181 – R78 310	6	2.4
R38 201 – R76 400	R78 311 – R156 620	12	4.9
R76 401 – R153 800	R156 621 – R315 290	64	26.0
R153 801 – R307 600	R315 291 – R630 580	99	40.2
R307 601 – R614 400	R630 581 – R1 259 520	37	15.0
R614 001 – R1 228 800	R1 259 521 – R2 519 040	3	1.2
R1 228 801 – R2 457 600	R2 519 041 – R5 038 080	6	2.4
R2 457 601 or more	R5 038 080 or more	0	0

6.6.2 POTENTIAL EFFECTS ON THESE USERS

The people occupying and working within the areas described within this section have the potential to be impacted by this development in a number of ways. These impacts are expected to be relevant to the West Bank Village area, with only minor disruption expected for the Fort Glamorgan area.

During the construction phase, they may be exposed to construction noise; may experience minor disruptions to traffic flows (due to the movement of heavy vehicles into/out of the port); may experience dust dispersion due to the transport of building materials, and may be exposed to emissions from heavy machinery.

Potential negative operational phase impacts are anticipated to be much fewer and less likely than those in the construction phase, yet may include minor visual impacts (owing to the presence of new structures on the site), as well as the generation of small amounts of noise during plant activities.

Additionally, while it is unlikely that this development will result in direct benefits to the people living within the West Bank Village (as the fresh water produced will be utilised by the port), the City will generally benefit from the financial by-products of increased port efficiency/capacity through increased trade revenues and potential job opportunities.

These potential impacts are assessed in greater detail in the following section.

7 IMPACT ASSESSMENT

7.1 PREAMBLE

The assessment and rating procedure described in Appendix 1 of this report were used to assess the socio-economic impact of the proposed development. To reduce negative impacts, precautions referred to as ‘mitigation measures’ are set, and attainable mitigation actions are proposed. Mitigation measures were classified as either:

- Essential: Mandatory measures that must be implemented and are non-negotiable; or
- Best Practice / Recommended: Non-mandatory measures that should be implemented where feasible and appropriate.

In certain cases—to further enhance positive impacts—a set of optimisation measures are proposed. These are best practice broader enhancement measures aimed at optimising potential socio-economic benefits associated with the project and are non-mandatory. Impacts have been divided into those pertaining to the construction phase (referring to impacts occurring as a result of the construction of the desalination plant, as well as all supporting infrastructure), while operational phase impacts refer to those impacts occurring as a result of the post-construction operation of the plant (the abstraction and desalination of water, discharging of brine, etc.). Finally, cumulative impacts and the assessment of the No-Go/ do nothing alternative have also been assessed.

Potential construction phase impacts/ benefits include:

- The generation of construction noise
- Air quality impacts
- Physical health and safety concerns/ impacts
- Impacts on fisheries
- Visual Impacts
- Potential economic benefits

Potential operational phase impacts/ benefits include:

- Visual Impacts
- The generation of operational noise
- Impacts on fisheries
- Potential economic benefits

7.2 CONSTRUCTION PHASE IMPACTS

7.2.1 IMPACT I: GENERATION OF NOISE DURING THE CONSTRUCTION PHASE

Noise impacts pertaining to this development have been broadly grouped into impacts pertaining to ecological receptors (animals/ plants) and those pertaining to socio-economic receptors (people). However, as mentioned prior, any potential noise impacts pertaining to ecological receptors fall under the ambit of the ecological specialists.

Consequently, this assessment does not include any reference to potential noise impacts on ecological receptors, and exclusively handles the minor impacts expected pertaining to socio-economic receptors.

Construction phase activities, including bulk earthworks, the use of heavy machinery and vehicles, the use of hand tools, etc. all have the potential to generate substantial amounts of noise. Such noise therefore has the potential to both be a nuisance, as well as potentially cause physical harm to construction workers, port employees, and people living in the surrounding residential areas. However, given that the proposed development will take place within an active, functional, port environment (which is already subject to a substantial degree of near-continuous noise from equipment such as cranes, heavy vehicles, machinery, etc.), this development is unlikely to increase noise levels much above ambient. Additionally, the neighbouring West Bank suburb already has numerous (potentially noise-producing) businesses, including several vehicle bodywork shops located directly adjacent to the proposed site. Furthermore, the actual desalination plant (where the majority of the construct noise is likely to be generated) will be located further away from the West Bank Area, than the solar farm/reservoir area (which are located adjacent the perimeter fence), which further insulates West Bank residents/ workers from possible noise impacts.

However, noise impacts can be cumulative, and the production of unnecessary noise should be prohibited. Noise levels are expected to be highest for individuals working on/ in immediate vicinity of the development, with construction workers and vehicle operators likely being exposed to the highest noise levels.

As described in Section 5.2, the control of noise within the BCMM is managed in terms of the BCMM Noise By-Law (2010) and will likely be imminently managed in terms of the Draft Noise Control By-Law (2024). Given the substantially higher detail, recency, and likelihood of the implementation of the 2024 Draft By-Law by the time the proposed development will begin, specific details pertaining to noise management have been extracted from this document, rather than the 2010 By-Law.

The key regulations within this by-law have been extracted and tabulated below (Table 7.1), with descriptions provided as to how this development must comply with the law:

Table 7.1. Potentially relevant noise prohibitions within the BCMM, as per the Draft Noise Control By-Law (2024), as well as an explanation of the potential relevance to the current development.

Prohibition (All Prefaced by “No person shall”)	Relevance and Response
Section 7: General Prohibitions	
(c) Make changes to existing facilities or existing uses of land or buildings or erect new buildings , if it shall in the opinion of the Municipality house or cause activities which shall, after such change or erection, cause a disturbing noise , unless precautionary measures to prevent the disturbing noise have been taken to the satisfaction of the Municipality;	The development will involve the erecting of new buildings on land, yet is not anticipated to cause any disturbing noise impacts, assuming that appropriate mitigation measures are employed.
(d) Build a road or change an existing road , or alter the speed limit on a road, if it shall in the opinion of the Municipality cause an increase in noise in or near residential areas, or office, church, hospital or educational buildings, unless noise control measures have been taken in consultation with the Municipality to	The development will not involve the construction of any new road infrastructure, or alter any existing road infrastructure.

Prohibition (All Prefaced by “No person shall”)	Relevance and Response
ensure that the land in the vicinity of such road shall not be designated as a controlled area;	
(f) Fail to comply with a directive, instruction or notice issued by the Municipality in terms of this By-Law	Will only being applicable should the BCMM issue a directive, instruction, or notice prior to (or during) construction and operation of the proposed development, and for the proponent to consequently fail to comply with any of these instruments utilised in terms of the By-Law
(h) Subject to the provisions of sections 4 and 5 (a), operate or play a radio, television set, gramophone, recording device, drum, musical instrument, sound amplifier or similar device producing, reproducing or amplifying sound , or allow it to be operated or played, in a public place, if the noise level, measured at any point which may be occupied by a member of the public, exceeds 95 dBA , unless the following warning [Omitted from quotation] is displayed in at least the Afrikaans, English and Isi-Xhosa languages and in legible form in a conspicuous place at each entrance to such place:	The construction and operational phases of the project should not result in the production of the prohibited noise categories/ volumes. Furthermore, the site is not located on public land. However, this should be addressed through a broad suite of mitigation measures.
(i) Use any power tool or power equipment for construction, earth drilling or demolition works , or allow it to be used, in a residential area during the following periods of time: (i) Before 06:00 and after 18:00 from Monday to Saturday; and (ii) At any time on Sundays, Public Holidays, or any other day as may be determined by the Municipality;	While the proposed construction activities will require the utilisation of power tools, earth moving equipment, etc., this will not occur within a residential area. However, the very close proximity of residential houses to the preferred site indicates that this section must still be accounted for, and broad mitigation measures must be set in place in order to comply with this section.
(j) Drive a vehicle, or allow it to be driven, on a public road , if the sound level at the measuring point measured in accordance with the procedure prescribed in SANS 10181-2003, titled: “The measurement of noise emitted by road vehicles when stationary”, published under General Notice 1373 of 8 November 2002 , exceeds the sound level indicated in the second or third column, as the case may be, of the following table [table omitted in this report] opposite to the type of vehicle indicated in the first column of that table: Type of vehicle Sound level Sound level dBA up to and dBA after Including 1992-01-01 1992-01-01 Two and three-wheeled vehicles 95 95 Vehicles with spark ignition and Page 11 of 17 with four or more wheels used for the conveyance of passengers or goods 99 96 Vehicles with diesel engines and not equipped with an engine brake 109 105 Vehicles with diesel engines and equipped with an engine brake: (i) engine brake switched off 109 105 (ii) engine brake switched on 109 109	The proposed development will require the transport of materials and equipment via the public road network and, as such, this section could be relevant. Consequently, despite it is unlikely that these sounds thresholds will be exceeded, broad mitigation measures must still be assigned to ensure compliance with this section.
(k) If required by the Municipality, install, replace or modify a plant with a total input power exceeding 10 kilowatts on any premises, unless the Municipality has been notified by the owner of the plant in writing at least 14 days before such installation , replacement or modification of - (i) the particulars of the plant; (ii) the number, street address and title deed description of the premises concerned; and (iii) the nature of and the date on which the installation, replacement or modification shall commence: Provided that if an existing plant had	The solar plant will generate electrical power exceeding 10 kilowatts. Consequently, the municipality must be notified, and the required detail provided to the municipality, in accordance with this section.

Prohibition (All Prefaced by “No person shall”)	Relevance and Response
to be replaced by necessity without preceding notification to the Municipality, the Municipality shall be notified thereof by the owner of the plant in writing within 14 days after the replacement of the plant	
(l) Tamper with, remove, put out of action, damage or impair the functioning of a noise monitoring system, noise limiter, noise measuring instrument, acoustic device, road traffic sign or notice, placed in a position by or on behalf of the Municipality;	This is almost-certainly not relevant, as the development is unlikely to impact on any noise monitoring systems. Consequently, this will only be relevant in the unlikely event that any of these activities are conducted in relation to the development and/or operation of the proposed solar powered desalination plant.
(m) For the purposes of this By-Law in respect of a duly authorized employee of the Municipality - (i) fail or refuse to grant admission to such employee to enter and to inspect a premises ; Page 12 of 17 (ii) fail or refuse to give information which may lawfully be required of her to such employee; (iii) hinder or obstruct such employee in the execution of her duties; or (iv) knowingly give false or misleading information to such employee.	This section should not be applicable to the project, assuming that the following is complied with: As it pertains to the determining/ enforcing compliance with the By-Law, the land owner/ developer/ site manager must allow BCMM to have access to the site for the purposes of inspection (despite the land being privately-owned); must furnish BCMM employees with any lawfully required information (as it pertains to the By-Law); must not hinder or obstruct a BCMM employee attempting to exercise powers in terms of the By-Law; and must not knowingly give false or misleading information to a BCMM employee attempting to exercise their duties.
Section 8: Prohibition Specifically Pertaining to Noise Disturbances	
No person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, animal, machine, device or apparatus or any combination thereof	The proposed development will result in the production of noise. However, it is unlikely that any such noise will constitute a “disturbing noise”, yet the proponent/ contractor/ site manager must still ensure that a disturbing noise is not produced throughout all phases of the project.
Section 9: Prohibitions Specifically Pertaining to Noise Nuisances	
(a) Cause a noise nuisance, or allow it to be caused, by operating or playing any radio, television set, drum, musical instrument, sound amplifier, loudspeaker system or similar device producing, reproducing or amplifying sound;	The construction and operational phases of the project should not result in the production of the prohibited noise categories. Additionally, the site is not located on public land. However, this should still be addressed through a suite of broad mitigation measures, given the proximity of the site to a public area.
(b) Offer any article for sale by shouting or ringing a bell , or by allowing shouting or the ringing of a bell, in a manner which may cause a noise nuisance;	It’s possible that shouting will occur over the course of the construction and operation of the plant. However, given the location of the site within a port environment that is already subject to high ambient noise levels, coupled with the distance between the development sites and public areas, it is unlikely that this would result in a noise nuisance. However, the possibility of said nuisances should still be mitigated against.
(c) Allow an animal owned or controlled by him to cause a noise nuisance ;	This shouldn’t be applicable as it is unlikely that any dogs will be present on site during either the construction or operational phases.

Prohibition (All Prefaced by “No person shall”)	Relevance and Response
	However, the main exception would be dogs are utilised for site security. Consequently, despite it being unlikely that dogs will cause any noise nuisances during this project, mitigation measures pertaining to adequate handling of security dogs must be prescribed.
(d) Build, repair, rebuild, modify, operate or test a vehicle, vessel or aircraft on residential premises , or allow it to be built, repaired, rebuilt, modified, operated or tested, if it may cause a noise nuisance;	The site is not a residential premises. However, given the proximity of residential dwellings to the preferred site, this must still be mitigated against, and loud vehicle noises (sufficient to constitute a noise nuisance) must be prohibited.
(e) Use or discharge any explosive, firearm or similar device which emits impulsive sound , or allow it to be used or discharged, if it may cause a noise nuisance, except with the prior consent in writing of the Municipality and subject to such conditions as the Municipality may deem necessary;	This proposed development should not involve the production of said impulsive sound (beyond typical construction noise). However, should the generation of such sound be required, prior consent must be acquired from BCMM.
(f) On a piece of land designated by the Municipality by means of a notice on that piece of land and in the press in at least the Afrikaans, English and Isi Xhosa languages, or in the air-space above that piece of land - (i) move about on or in a recreational vehicle; (ii) exercise control over recreational vehicle ; or Page 13 of 17 (iii) as owner or person in control of the piece of land concerned, allow that on that piece of land, or in the air-space above that piece of land - (aa) is being moved about on or in a recreational vehicle; or (bb) control is being exercised over a recreational vehicle, if it may cause a noise nuisance ;	Vehicles operating on site are expected to be predominantly construction vehicles—and therefore to not be classified as “recreational”. However, it is possible that private cars will be parked on/ in the vicinity of the site, with some potentially being classed as “recreational vehicles” depending on their noise output. Therefore, besides private cars, no recreational vehicles must be allowed on site, and any private cars must only be allowed on site if they do not produce noise nuisances.
(g) Except in an emergency, emit a sound, or allow a sound to be emitted, by means of a bell, carillon, siren, hooter, static alarm, whistle, loudspeaker or similar device, if it may cause a noise nuisance ;	It's possible that these sound sources could be emitted over the course of construction or operation of the proposed plant. However, as stated prior, it is unlikely that these noises will constitute a noise disturbance, yet the avoidance of unnecessary noise originating from any of these sources must still be avoided (where possible), unless the situation constitutes an emergency.
(h) Operate any machinery, saw, sander, drill, grinder, lawnmower, power garden implement or similar device in a residential area, or allow it to be operated, if it may cause a noise nuisance ;	While the site does not fall within a residential area, its proximity to residential dwellings means that this should still be considered. Furthermore, while the proposed development will certainly involve the use of some of the specified pieces of equipment, the noise generated is unlikely to be classified as a noise nuisance, assuming that appropriate mitigation measures are in place.
(i) Load, unload, open, shut or in any other way handle a crate, box, container, building material, rubbish container or similar article , or allow it to be loaded, unloaded, opened, shut or handled, if it may cause a noise nuisance;	The development and operation of the plant will certainly entail the described activities, however, the context of the ports means that these will almost-certainly not constitute a noise nuisance. However, some basic mitigation measures must still be applied to further prevent any such noise nuisances.
(j) Drive a vehicle on a public road in such a manner that it may cause a noise nuisance.	While the necessary construction vehicles will need to travel on public roads within East London, this should not result in any noise nuisances. However, a number of broad

Prohibition (All Prefaced by “No person shall”)	Relevance and Response
	mitigation measures have been prescribed, which should ensure that noise nuisances do not occur.

When assessing potential noise impacts without any necessary mitigation measures applied, the extent is rated as “Local”, the intensity rated as “Medium” (due to the potential noise disturbances/ harm experienced by site workers/ nearby members of the public), and the duration is rated as “Medium Term” (due to the potential impacts of hearing damage potential lasting longer than two years). This results in a potential consequence rating of “Low” which, when combined with a the “Probable” likelihood of this impact occurring, results in a pre-mitigation significance of “Low”.

However, with the employment of appropriate mitigation measures, the intensity of this impact can be reduced to “Low”, and the duration reduced to “Short Term”, which results in a post-mitigation significance of “Very Low”.

Table 7.2. Impact 1: Potential noise impacts on people during the construction phase.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Medium Term 2	Low 5	Probable	LOW	-ve	High
With mitigation	Local 1	Low 1	Short Term 1	Very Low 3	Probable	VERY LOW	-ve	High
Essential mitigation measures:								
- Efforts must be made to limit construction phase noise (including all unnecessary noise production). - Construction phase noise must comply with any relevant noise legislation, including the BCMM Noise By-Law and Draft BCMM Noise By-Law.								

7.2.2 IMPACT 2: AIR QUALITY IMPACTS ASSOCIATED WITH THE SUSPENSION OF DUST AND RELEASE OF FUMES DURING CONSTRUCTION

Any construction activities that involve earthworks and the transport of construction materials, have the potential to cause air quality impacts. In particular, there is a risk that fine sediment/ dust/ soil will become suspended in the air (either during the transport of raw materials on trucks, or during physical earth moving/ construction activities). Suspension of fine particulate matter can also negatively impact human respiratory health. Furthermore, dust can be transported away from the immediate vicinity of the development site, therefore resulting in impacts being experienced a distance away.

Beyond issues of dust suspension, construction activities also have the potential of polluting the nearby atmosphere with fumes from construction vehicles and equipment, if not properly controlled. These fumes can be harmful to the health of individuals in proximity of the activities.

The issue of air pollution is likely to be most emphasized for the construction workers who are physically working with the machinery and conducting the earth moving activities, yet

also has the potential to impact other people working within the port, or in the nearby West Bank Suburb.

Without mitigation, the intensity of this impact is rated as “Medium”, the duration is also rated as “Medium Term” (due to the potential adverse health effects of dust/ emission pollution potentially lasting longer than a 2-year period), which results in an impact significance of “Low” when combined with probable probability of the impact occurring (Table 7.3).

However, with the implementation of rigorous mitigation measures (largely pertaining to stockpile management, dust control, and emissions monitoring) this impact can be reduced to a significance of “Insignificant”.

Table 7.3. Impact 2: Air Quality Impacts Associated with the Suspension of Dust and Release of Fumes into the Air During Construction

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Medium Term 2	Low 5	Probable	LOW	-ve	High
With mitigation	Local 1	Low 1	Short Term 1	Very Low 3	Possible	INSIGNIFICANT	-ve	High

Essential mitigation measures:

- Implement dust suppression techniques such as covering stockpiles with shade netting/ geotextile, should they be left exposed for prolonged periods of time.
- Where possible, construction using large volumes of sand should occur during clear weather, and loose sand should be cleared or covered during breaks in construction.
- If dispersal of dust/ soil during vehicle transit is unavoidable, then water spraying trucks must be deployed in tandem, in order to keep this dust out of the atmosphere.
- Erosion control measures, such as silt fences, should be employed in areas at risk of erosion/runoff.
- Monitor construction areas post rainfall events and repair any erosion damage that may have occurred.
- Monitor air quality and implementing measures to minimize soil disturbance.
- Workers must be provided with all appropriate Personal Protective Equipment (PPE), such as correctly rated masks, when working in/ around areas where dust pollution/ emissions are unavoidable
- Implementation of a rigorous environmental management and control plan (including procedures for remediation).
- Only vehicles and equipment that are suitably maintained and compliant with emission regulations may be allowed on site.
- Vehicles must be subject to a daily Environmental Health and Safety (EHS) checklist.
- An Environmental Control Officer must monitor the site for vehicle fumes and dust suspension. Additionally, the ECO must monitor all vehicles and equipment transiting the site, in order to identify obviously non-compliant vehicles.

7.2.3 IMPACT 3: PHYSICAL HEALTH AND SAFETY CONCERNS DURING THE CONSTRUCTION

Construction operations are fundamentally dangerous processes, with heavy machinery, dangerous equipment, and many other hazards present on the job site.

Despite the risks posed by the Construction Phase Noise and Air Quality, mentioned above, there is also a considerable risk of physical bodily harm during any construction

operation. Consequently, it is considered to be of vital importance that individuals are adequately trained; the development staff consists of members tasked with ensuring that the health and safety of all workers is overseen; and that a rigorous Health and Safety (H&S) plan/ programme, and protocol are drafted; in order to both reduce the chance of an incident occurring, as well as reduce the likely severity of an incident (should it occur). In practical terms, this should involve preventing incidents entirely or, at worst, should ensure that workers only get injured, rather than permanently maimed/ killed, etc., should an unavoidable accident occur. Furthermore, it is considered essential that all workers are sufficiently trained; undergo adequate inductions to both the port environment and the specific project site; and are equipped with all essential Personal Protective Equipment (PPE), such as hard hats, steel-toe shoes, high-visibility equipment, etc.

Furthermore, the construction team must have individuals on-site with adequate first aid training to be a first responder in the event of an incident, and the H&S programme must include a detailed plan for how to treat workers in the event of an emergency.

Despite being of “High” significance before mitigation, it is estimated that this can be reduced to “**Low**” with the employment of suitable mitigation measures.

Table 7.4. Impact 3: Physical health and safety concerns during construction.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	High 3	Long Term (Irreversible) 3	High 7	Possible	MEDIUM	-ve	High
Essential mitigation measures: Construction activities must be conducted in accordance with the Occupational Health and Safety Act (OHSA), and TNPA’s own health and safety protocols.								
With mitigation	Local 1	Medium 2	Medium Term 2	Low 5	Possible	VERY LOW	-ve	High

7.2.4 IMPACT 4: CONSTRUCTION PHASE VISUAL IMPACTS

Construction and related activities can modify the visual characteristics of the area. Construction phase visual disruptions include the presence of construction vehicles and other heavy machinery, scaffolding structures, and laydown areas which would typically be out of place in a “natural” area. However, it is important to note that the port area is highly altered from its natural condition, and normal port operations consist of many activities that closely resemble those on a construction site, such as the use of cranes, heavy vehicles, scaffolding, workers wearing personal protective equipment, etc. Furthermore, any potential construction phase visual impacts will be temporary, and only persist for the duration of the actual activities. Consequently, this impact has been rated as “Very Low” with no mitigation measures required (Table 7.5).

Table 7.5. Impact 4: Potential construction phase visual impacts.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
With and Without mitigation	Local 1	Low 1	Short Term 1	Very Low 3	Probable	VERY LOW	-ve	High
• No mitigation required								

7.2.5 IMPACT 5: POTENTIAL NEGATIVE IMPACTS ON FISHERIES DURING CONSTRUCTION

Given the Buffalo Estuaries' potential role as a nursery for important fishery species, and the small amount of overlap with the recreational shore-based fishery, there is a possibility of this development having negative impacts on the fisheries/ fisheries species. However, given the highly disturbed nature of the port environment, and intensity of existing activities, impacts on fisheries from this development are expected to be negligible, with no specific mitigation measures being required (Table 7.6).

Table 7.6. Impact 5: Potential negative impacts on fisheries during operation

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
No mitigation required	Local 1	Low 1	Short Term 1	Very Low 3	Improbable	INSIGNIFICANT	-ve	High
No mitigation required								

7.2.6 IMPACT 6: POTENTIAL ECONOMIC BENEFITS ASSOCIATED WITH CONSTRUCTION

Given that the construction of the proposed RO/ Solar plant, and all supporting infrastructure, will require a wide variety of workers in order to reach completion, it is anticipated that this will lead to a degree of local economic growth and job creation for the people of East London.

However, it must firstly be noted that the duration of construction activities will be short term (<2 years) and will largely be highly technical in nature. Therefore, the operational technical work requirements will be partially conducted by individuals not located in EL—and thus won't be directly contributing to the local economy. Furthermore, the technical work will largely be completed by individuals who are already employed, which will limit the potential for job creation (yet will provide work for individuals who already have jobs).

That aside, it is anticipated that the proposed development will result in some job creation/ economic benefits, as described in 6.4. This impact has been given a positive significance of "Very Low" without optimisation measures—such as hiring construction workers from East London and sourcing building materials from local suppliers. However, with the implementation of appropriate optimisation measures, the intensity of this positive impact is raised to "Medium" and the duration is increased to "Medium Term" (since the knock-on economic benefits may last longer than two years), thus resulting in a "Low" positive significance (Table 7.7).

Table 7.7. Impact 5: Potential economic benefits associated with construction activities.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without optimisation measures	Local 1	Low 1	Short Term 1	Very Low 3	Probable	VERY LOW	+ve	Medium
Recommended/Best Practice Optimisation Measures - Promote local procurement and prioritise the employment of local labour, where feasible, as demonstrated through employment, payroll, procurement, and supplier records. Promote local procurement and prioritise the employment of local labour, where feasible, to enhance economic benefits within surrounding communities. - Source construction materials, goods and services from local suppliers wherever practical, as demonstrated through procurement documentation and supplier databases. Engage with local authorities and business associations to source construction materials, goods, and services from local suppliers wherever practical.								
With optimisation measures	Local 1	Medium 2	Medium Term 2	Low 5	Probable	LOW	+ve	Medium

7.3 OPERATION PHASE IMPACTS

7.3.1 IMPACT 7: VISUAL IMPACTS ASSOCIATED WITH THE PRESENCE OF NEW STRUCTURES DURING OPERATION

Given that, once constructed, the proposed RO/solar plant (and all supporting infrastructure) will be a permanent feature within the port, it is anticipated to result in a permanent change to the visual landscape of the port. As discussed in the construction phase visual impacts section, the port is already characterised by large industrial structures, large buildings, etc., so the construction of this plant will not substantially change the “character” of the port.

However, It is possible that minor visual impacts will be experienced by individuals living on Dale street, who presently have views across the site, towards signal hill on the north/east bank, as a well as the harbour, through Transnet’s permeated perimeter fence (Figure 7.1, Table 7.8).

The structures with the greatest potential to impact these users visually (the actual RO plant and reservoir) will be located in the far-western portion of the site, in close proximity to the existing large reservoir/silo structure (as well as a stand of dense , relatively tall, vegetation), thus this is unlikely to have a marked effect on the visual landscape. Consequently, these structures will have a negligible impact on existing views/sight lines. The structures most likely to cause a degree of visual disturbance are the solar panels making up the solar plant. These panels will cover most of the central and eastern portions of the site. However, these panels will only be approximately 2 m tall, relative to ground level. Consequently, these panels should fall below the height of the fence itself, and should therefore only obstruct ground-level views across the site. The landscape views of double-story structures (such as the accommodation visible in Figure 7.1) should therefore only be minimally altered. Potential visual impacts are further mitigated by the fact that many of the adjacent properties have high perimeter walls: which already disrupt sight lines for those residents.

Table 7.8. Heights of the various structures within the proposed development, relative to ground level.

Structure	Maximum height above ground level (metres)
Solar Panels	2 m
Storage Reservoir	4.6 m
RO Plant Shipping Containers	2.59 m
Brine Holding Tank	<4.6 m

The development will therefore largely only disrupt views of the existing (rather degraded) vegetated area upon which the site is located, as well as some ground-level disruption to site lines towards the Buffalo Estuary mouth, and signal hill on the far side of the river. The development will also not substantially degrade the character of the site. However, it is important that light absorbent/ matt scattering coatings are used for the solar panels, in order to avoid harmful light reflections. Additionally, all structures must be painted in colours that do not cause these structures to unnecessarily reflect light, or stand out too starkly, relative to the surrounding landscape.

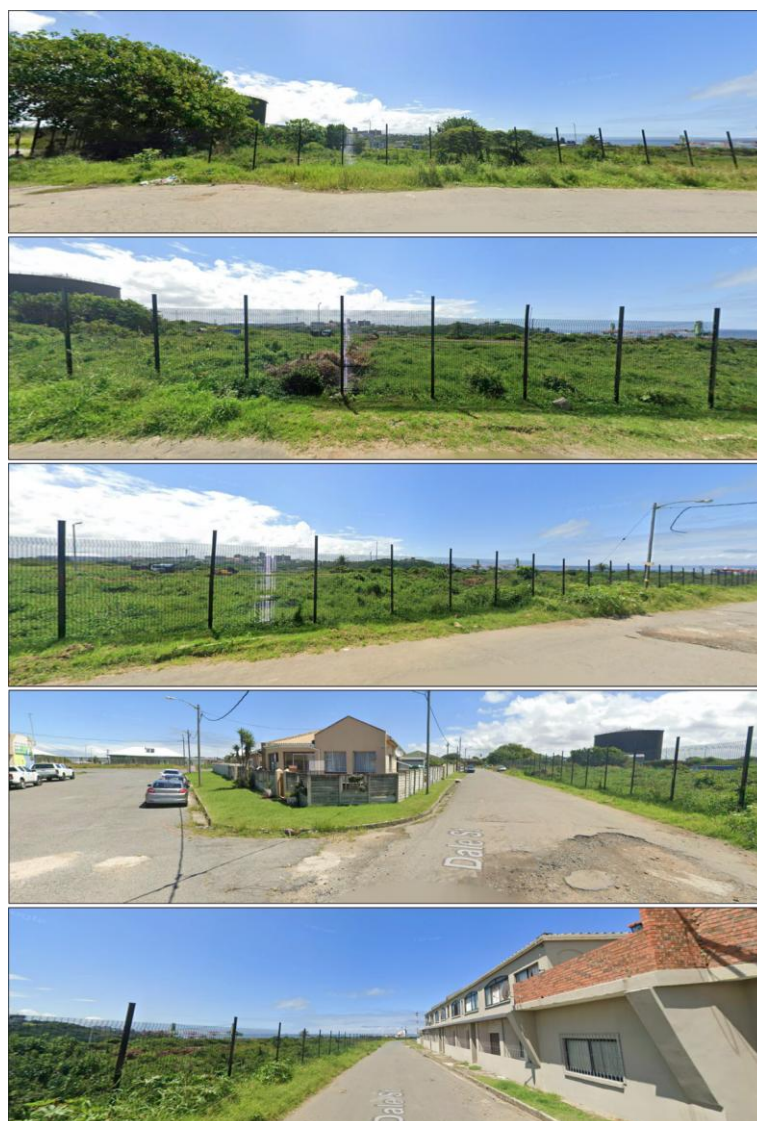


Figure 7.1. Google Streetview images showing the view of the properties adjacent the site, which have the potential of being impacted by the development. Source: Google Maps.

Beyond potential impacts on residents in the West Bank area, there is also the potential for some visual disturbance for people living and working on the elevated areas to the north of the estuary, given the natural intervisibility occurring between these two elevated areas, with the greatest concern being around light reflection. However, this can be effectively mitigated using light absorbent/matt/scattering coatings for the solar panels, and the use of non-reflective and appropriate colours for all proposed buildings. Consequently, this impact has been rated as “Low” significance before mitigation, and “Very Low” following the adoption of suitable mitigation measures (Table 7.9).

Table 7.9. Impact 7: Operational phase visual impacts associated with the presence of structures and solar panels on the local population.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long Term 3	Low 5	Probable	LOW	-ve	High
Essential mitigation measures								
- Non-reflecting (matt)/ scattering solar panels must be used, in order to reduce the potential harm or disturbance associated with sunlight reflecting off the panels. - Buildings must be painted a neutral colour (dark green/ grey), so as not to overly reflect sunlight and cause disturbance/ harm to observers. This will also help to preserve the overall character and sense of place of the area.								
With mitigation measures	Local 1	Low 1	Long Term 3	Low 5	Possible	VERY LOW	-ve	High

7.3.2 IMPACT 8: POTENTIAL OPERATIONAL NOISE IMPACTS

Unlike the construction phase, the operational phase of the proposed plant is likely to result in near-negligible sounds levels. The only anticipated operational phase noise will be derived from the various pumps within the RO plant itself, as well as the pump operating withing the pumphouse at the intake site. However, all pumps and other sound-producing infrastructure, will be located inside closed structures, and are unlikely to produce noise levels equivalent to the ambient noise within the active port environment. Furthermore, the actual RO plant is buffered from the nearest private properties by ~60 metres. The intake pumphouse is located even further from the any private property, with the closest being ~175 m from the pumphouse

Consequently, the operational phase noise impacts associated with this development are rated as “Insignificant”, with no mitigation measures required (Table 7.10).

Table 7.10. Impact 8: Operational phase noise impacts on human receptors

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
No mitigation required	Local 1	Low 1	Short Term 1	Very Low 3	Improbable	INSIGNIFICANT	-ve	High
No mitigation required								

7.3.3 IMPACT 9: POTENTIAL NEGATIVE IMPACTS ON FISHERIES DURING OPERATION

Given that the only potential impact on local fisheries relates to the release of a relatively small volume of brine into the marine environment, and that this brine will disperse very rapidly within the highly active coastal environment adjacent the port, no negative impacts on fisheries are anticipated during operation, despite the small amount of recreational shore-based fishing effort in the area (Table 7.10).

Table 7.11. Impact 9: Potential negative impacts on fisheries during operation

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
No mitigation required	Local 1	Low 1	Short Term 1	Very Low 3	Improbable	INSIGNIFICANT	-ve	High
No mitigation required								

7.3.4 IMPACT 10: ECONOMIC BENEFITS ASSOCIATED WITH INCREASED WATER SUPPLY TO THE PORT DURING OPERATION

Given that the purpose of the project is to supply an additional water supply to the Port of East London, it is logical to assume that there will be knock-on economic benefits. However, it is important to emphasize the ways in which these benefits may be realised. Firstly, it is unlikely that the operating of the plant will lead to the creation of many new jobs as, once operational, few workers will be required. Additionally, the required workers are likely to be highly skilled, and may be based outside of the city (unless they need to be physically present on site).

Furthermore, the water created by the RO plant will not be used to supplement the local municipal system, with the water instead being used in port operations, thus not directly improving the water security of people living in the city.

However, since the water will be used to improve the operational efficiency (and potentially the capacity) of the Port of East London, the primary economic benefits are likely to relate to the knock-on effects of improved port functioning. Since the port (and the trade sector) is one of the major economic drivers in the city (and the BCMM as a whole), the addition of a reliable water supply that is resilient to inconsistencies in municipal water and electricity availability (due to drought, power failures, and infrastructure problems) should improve the port's operational efficiency. This should improve the port's general functionality, and therefore its potential to handle greater volumes of cargo, thus improving trade revenues and profits. Such increases in profitability will, theoretically, result in increased revenues introduced into the city, and SA economy, both in the form of taxation, as well as new job opportunities.

However, it must be stressed that the operating of large, multi-faceted, entities such as ports, is highly complex, and it's difficult to accurately predict how the knock-on effects of a single (relatively small) development will manifest.

Consequently, this positive impact is rated to be of **"Low"** positive significance before optimisation measures, yet this can possibly be raised to a positive significance of **"Medium"** with appropriate optimisation measures (Table 7.12). This earlier sections in

this report have demonstrated the economic challenges facing the BCMM and East London, so developments aimed at improving the efficiency of a sector already known to have natural geographic advantages (i.e. an existing, functional riverine port which has room to expand), will likely lead to socio-economic benefits within East London and the BCMM.

Table 7.12. Impact 10: Economic benefits associated with increased water supply to the port.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without optimisations	Regional 2	Low 1	Long Term 3	Medium 6	Possible	LOW	+ve	Medium
Recommended/Best Practice Optimisation Measures								
- Local Employment Policy: Implement a hiring approach that prioritises employment of suitably qualified local residents and contractors wherever possible. - Water Resource Management: Use the project's water supply strategically to strengthen the port's resilience against fluctuations or interruptions in municipal water and electricity services. This includes optimising storage, scheduling use during peak demand or supply constraints, and ensuring efficient distribution to reduce reliance on external utilities.								
With optimisation measures	Regional 2	Low 1	Long Term 3	Medium 6	Probable	MEDIUM	+ve	Medium

7.4 CUMULATIVE IMPACTS

Anthropogenic activities can result in numerous and complex effects on the natural environment. While many of these are direct and immediate, the environmental effects of individual activities or projects can interact with each other in time and space to cause incremental or aggregate effects. Impacts from unrelated activities may accumulate or interact to cause additional effects that may not be apparent when assessing the activities individually. Cumulative effects are defined as the total impact that a series of developments, either present, past or future, will have on the environment within a specific region over a particular period of time (DEAT IEM Guideline 7, Cumulative effects assessment 2004).

7.4.1 IMPACT 11: CUMULATIVE IMPACTS PERTAINING TO SOCIO-ECONOMIC RECEPTORS

As mentioned in both the Construction Phase and Operational Phase impacts, the proposed development has the potential to lead to economic benefits both in the short-term during construction due to the creation of new jobs, and the provision of work for individuals who already have work. This is in addition to creating several jobs required to keep the plant functional during the Operational phase.

However, as was stressed during the Operational Phase Impact Assessment Section, the most significant socio-economic benefits are likely to emanate from the increased operational efficiency, capacity, and residence of the Port of East London, due to the provision of a water resource that is resilient to fluctuations in municipal water supply, and irregular electricity availability. Consequently, this development, as well as other developments in the port with similar objectives, such as the Proposed Replacement of Quay Wall 3 & 4 (Abantu Environmental Consultants 2023), are anticipated to increase the profitability of the port, hence contributing towards economic development in the area.

Additionally, the pursuit of industrial/infrastructural developments that are “greener” such as the proposed solar development, may also have some positive benefits with respect to the framing of future industrial developments in East London. The successful implementation of renewable infrastructure solutions may encourage future developments of a similar nature in the area, as well as other potential positive impacts.

Furthermore, the negative socio-economic impacts resulting from the intense development/industrialisation of the East London area, such as reduced access to open space, restricted access to the port and adjacent marine/coastal area, water pollution, etc. are all existing issues. Therefore, by pursuing such developments, within an already greatly altered or environmentally degraded area, which is not in close proximity to vulnerable communities or relatively undisturbed areas, minimises the potential socio-economic impacts.

Finally, the demonstrated importance of the Trade sector within the Buffalo City Metropolitan Municipality (and East London in particular), indicates the importance that the port of East London (a major trade driver in the region) is already contributing substantially to the economic success in the region. Consequently, any additional measures to strengthen this sector are likely to lead to improved socio-economic conditions within the region.

Consequently, the cumulative socio-economic impact of the proposed Solar Powered Desalination Plant, has been rated to be of “Medium” positive significance.

Table 7.13. Impact 11: Cumulative Impacts Pertaining to Socio-Economic Receptors.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation/optimisation measures	Regional 2	Medium 2	Long Term 3	High 7	Possible	MEDIUM	+ve	Low

7.5 IMPACT 12: THE NO-GO ALTERNATIVE

The No-Go Alternative refers to the potential impacts associated with not pursuing this development, or “doing nothing”.

7.5.1 AVOIDED NEGATIVE IMPACTS

From a socio-economic perspective, should this development not occur, a few minor negative construction and operation phase impacts would be avoided. Given the “Insignificant” nature of many of the construction phase impacts, when mitigated, the main avoided negative impacts would be minor (“Very Low” significance) noise, health and safety, and visual impacts.

During operation, only one residual negative impact (landscape/visual) would be avoided, however, this impact only had a post-mitigation significance of “Very Low”.

7.5.2 AVOIDED POSITIVE IMPACTS/ BENEFITS

Besides the avoided negative impacts listed above, the do-nothing approach would also lead to several socio-economic benefits not being realised. These would all be lost economic benefits, with potential “Low” positive significance construction phase benefits being lost, and up-to “Medium” significance operational benefits being lost. This would mean that no new jobs are created or sustained during construction and operation, no local service providers can be utilised, and no benefits to the ports operational efficiency would be realised through the provision of a reliable water supply. Likewise, no new job opportunities would arise from this increased efficiency or increased port capacity.

Furthermore, the potential cumulative impacts (benefits) arising from the development of this plant, as well as similar developments such as the Proposed Replacement of Quay Wall 3 & 4 (Abantu Environmental Consultants 2023), would not be fully realised, thus reducing the potential role the port can play in East London’s economy.

7.5.3 IMPACT ASSESSMENT

Should this development not occur, the situation in the port would remain the same, and none of the above-mentioned minor negative impacts, as well as the more significant benefits, would be experienced or realised. Additionally, by not providing this new reliable source of water, the port will continue to be vulnerable to fluctuations in municipal water and electricity supply. This has the potential to worsen with time, as the municipal water and electricity resources are further stressed, and the effects of global climate change threaten to change the regularity of rainfall regimes, and thus potentially increasing the frequency (and intensity) of drought events. The combined impact of doing nothing has been rated to be of “Very Low” negative significance.

Table 7.14. Impact 12: Assessment of the no-go alternative.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long Term 3	Low 5	Possible	VERY LOW	-ve	Medium

7.6 SUMMARY OF POTENTIAL IMPACTS

A summary of all the assessed potential Operational Phase, Construction Phase, and Cumulative Impacts associated with the proposed development, have been included in Table 7.15.

Table 7.15. Summary of potential socio-economic impacts associated with the construction and operation of the proposed solar powered desalination plant.

	Impact identified	Consequence	Probability	Significance	Status	Confidence
Construction Phase	Impact 1: Generation of noise during construction Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Very Low	Probable	VERY LOW	-ve	High
	Impact 2: Air quality impacts during construction Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Low	Possible	INSIGNIFICANT	-ve	High
	Impact 3: Physical health and safety concerns during construction: without mitigation	High	Possible	MEDIUM	-ve	High
	With mitigation	Low	Possible	VERY LOW	-ve	High
	Impact 4: Visual impacts during construction Without mitigation	Very Low	Probable	VERY LOW	-ve	High
	Impact 5: Impacts on fisheries during construction Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 6: Economic benefits during construction Without optimisation measure	Very Low	Probable	VERY LOW	+ve	Medium
	With optimisation measures	Low	Probable	LOW	+ve	Medium
Operational Phase	Impact 7: Visual impacts during operation Without mitigation	Low	Probable	LOW	-ve	High
	With mitigation	Low	Possible	VERY LOW	-ve	High
	Impact 8: Operational noise impacts Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 9: Operational impacts on fisheries Without mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
	Impact 10: Economic benefits during operation Without optimisation measures	Medium	Possible	LOW	+ve	Medium
	With optimisation measures	Medium	Probable	MEDIUM	+ve	Medium
	Impact 11: Cumulative Impacts Without mitigation	High	Possible	MEDIUM	+ve	Low
	Impact 12: Assessment of the no-go alternative Without mitigation	Low	Possible	VERY LOW	-ve	Medium

7.7 SUMMARY OF POTENTIAL MITIGATION/ OPTIMISATION MEASURES

Below follows a list of all proposed mitigation measures associated with the development, which were formulated with the objective of reducing the intensity of a negative impact, or increase the intensity of positive impacts, termed “optimisation measures”.

Mitigation measures have broken down into the Construction Phase and Operational Phase. These have then been further broken down by the individual impact being assessed in order to indicate where the applicability of the proposed mitigation/optimisation measure. **Please note:** Only headings for assessed impacts have been provided below. No mitigation or optimisation measures have been provided for cumulative impacts, due to the high levels of uncertainty associated with ascribing measures to a wide variety of possible projects. Likewise, no mitigation measures have been provided for the “No-Go Alternative”.

7.7.1 CONSTRUCTION PHASE

IMPACT 1: GENERATION OF NOISE DURING THE CONSTRUCTION PHASE

Essential Mitigation Measures

- Efforts must be made to limit construction phase noise (including all unnecessary noise production).
- Construction phase noise must comply with any relevant noise legislation, including the BCMM Noise By-Law and Draft BCMM Noise By-Law.

IMPACT 2: AIR QUALITY IMPACTS ASSOCIATED WITH THE SUSPENSION OF DUST AND RELEASE OF FUMES DURING CONSTRUCTION

Essential Mitigation Measures

- Implement dust suppression techniques such as covering stockpiles with shade netting/geotextile, should they be left exposed for prolonged periods of time.
- Where possible, construction using large volumes of sand should occur during clear weather, and loose sand should be cleared or covered during breaks in construction.
- If dispersal of dust or soil during vehicle transit is unavoidable, then water spraying trucks must be deployed in tandem, in order to keep this dust out of the atmosphere.
- Erosion control measures, such as silt fences, should be employed in areas at risk of erosion/runoff.
- Monitor construction areas post rainfall events and repair any erosion damage that may have occurred.
- Monitor air quality and implementing measures to minimize soil disturbance.
- Workers must be provided with all appropriate Personal Protective Equipment (PPE), such as correctly rated masks, when working in/ around areas where dust pollution/emissions are unavoidable
- Implementation of a rigorous environmental management and control plan (including procedures for remediation).
- Only vehicles and equipment that are suitably maintained and compliant with emission regulations may be allowed on site.

- Vehicles must be subject to a daily Environmental Health and Safety (EHS) checklist.
- An Environmental Control Officer must monitor the site for vehicle fumes and dust suspension. Additionally, the ECO must monitor all vehicles and equipment transiting the site, in order to identify obviously non-compliant vehicles.

IMPACT 3: PHYSICAL HEALTH AND SAFETY CONCERNS DURING CONSTRUCTION

Essential Mitigation Measures

- Construction activities must be conducted in accordance with the Occupational Health and Safety Act (OHSA), and TNPA's own health and safety protocols.

IMPACT 6: POTENTIAL ECONOMIC BENEFITS ASSOCIATED WITH CONSTRUCTION

Recommended Optimisation Measures

- Promote local procurement and prioritise the employment of local labour, where feasible, as demonstrated through employment, payroll, procurement, and supplier records. Promote local procurement and prioritise the employment of local labour, where feasible, to enhance economic benefits within surrounding communities.
- Source construction materials, goods and services from local suppliers wherever practical, as demonstrated through procurement documentation and supplier databases. Engage with local authorities and business associations to source construction materials, goods, and services from local suppliers wherever practical.

7.7.2 OPERATIONAL PHASE

IMPACT 7: VISUAL IMPACTS ASSOCIATED WITH THE PRESENCE OF NEW STRUCTURES DURING OPERATION

Essential Mitigation Measures

- Non-reflecting (matt)/scattering solar panels must be used, in order to reduce the potential harm or disturbance associated with sunlight reflecting off the panels.
- Buildings must be painted a neutral colour (dark green/grey), so as not to overly reflect sunlight and cause disturbance/ harm to observers. This will also help to preserve the overall character and sense of place of the area.

IMPACT 10: ECONOMIC BENEFITS ASSOCIATED WITH INCREASED WATER SUPPLY TO THE PORT DURING OPERATION

Recommended Optimisation Measures

- Local Employment Policy: Implement a hiring approach that prioritises employment of suitably qualified local residents and contractors wherever possible.
- Water Resource Management: Use the project's water supply strategically to strengthen the port's resilience against fluctuations or interruptions in municipal water and electricity services. This includes optimising storage, scheduling use during peak demand or supply constraints, and ensuring efficient distribution to reduce reliance on external utilities.

8 REASONED OPINION AND RECOMMENDATIONS

The precautionary approach, given in the National Environmental Management Act (NEMA), 1998 (Act no. 107 of 1998), requires that, if there is a strong suspicion that a certain activity may have environmentally harmful consequences, it is better to control that activity now rather than to wait for incontrovertible scientific evidence.

A total of 12 potential impacts (including cumulative impacts and the no-go alternative) were identified through this Impact Assessment. This assessment has demonstrated that, with the employment of appropriate mitigation measures, all negative construction and operational phase socio-economic impacts can be reduced to a significance of “Very Low” or “Insignificant”. Conversely, the potential economic benefits resulting from construction and operation pertaining to job creation, job sustainment and utilising of additional service providers during construction, and the knock-on effects of improved port efficiency/capacity during operation had the highest significance, assuming that certain recommended “optimisation” measures are employed. With optimisation, the construction phased economic benefits were rated as “Low” positive significance, and economic benefits during operation were rated to be of “Medium” positive significance.

Cumulative impacts were also assessed to be positive in nature, with an assessed positive impact significance of “Medium”. This is because this development, as well as other developments in the port with similar objectives, such as the Proposed Replacement of Quay Wall 3 & 4 (Abantu Environmental Consultants 2023), are anticipated to increase the profitability of the port, hence contributing towards economic development in the area. Furthermore, past developments (including the port and its supporting infrastructure) have been shown to be of substantial importance for East London’s and BCMs trade economy, which is the second-strongest sector in the BCM in terms of total employment, and third strongest in terms of GDP and GVA. Consequently, any improvements to the efficiency and capacity of this sector are anticipated to further improve socio-economic conditions within the region. Finally, further intensification of development within an already highly disturbed/developed area (such as within the highly developed and industrialised port environment), is greatly preferential to developing within less developed areas/areas surrounded by sensitive communities.

In conclusion, the negative socio-economic, landscape/visual, and noise impacts associated with the proposed development, are anticipated to be largely minor when appropriately mitigated, and greatly outweighed by the potential benefits emanating from the completion of this development (as well as other similar developments) within the Port of East London. It is therefore recommended that this development be permitted from a Socio-Economic, Noise, and Landscape/Visual perspective.

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10 APPENDIX A: ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

IMPACT ASSESSMENT METHODOLOGY

The significance of all potential impacts that would result from the proposed project is determined in order to assist decision-makers. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The significance of each identified impact was thus rated according to the methodology set out below:

Step 1 – Determine the consequence rating for the impact by determining the score for each of the three criteria (A-C) listed below and then adding them. The rationale for assigning a specific rating, and comments on the degree to which the impact may cause irreplaceable loss of resources and be irreversible, must be included in the narrative accompanying the impact rating:

Rating	Definition of Rating	Score
A. Extent – the area over which the impact will be experienced.		
Local	Confined to project or study area or part thereof (e.g. limits of the concession area)	1
Regional	The region (e.g. the whole of Namaqualand coast)	2
(Inter) national	Significantly beyond Saldanha Bay and adjacent land areas	3
B. Intensity – the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources.		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. Duration – the time frame for which the impact will be experienced and its reversibility.		
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years (state whether impact is irreversible)	3

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Combined Score (A+B+C)	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very High

Example 1:

Extent	Intensity	Duration	Consequence
Regional 2	Medium 2	Long-term 3	High 7

Step 2 – Assess the probability of the impact occurring according to the following definitions:

Probability – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

Example 2:

Extent	Intensity	Duration	Consequence	Probability
Regional 2	Medium 2	Long-term 3	High 7	Probable

Step 3 – Determine the overall significance of the impact as a combination of the consequence and probability ratings, as set out below:

PROBABILITY					
CONSEQUENCE		Improbable	Possible	Probable	Definite
	Very Low	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	Low	VERY LOW	VERY LOW	LOW	LOW
	Medium	LOW	LOW	MEDIUM	MEDIUM
	High	MEDIUM	MEDIUM	HIGH	HIGH
	Very High	HIGH	HIGH	VERY HIGH	VERY HIGH

Example 3:

Extent	Intensity	Duration	Consequence	Probability	Significance
Regional 2	Medium 2	Long-term 3	High 7	Probable	HIGH

Step 4 – Note the status of the impact (i.e. will the effect of the impact be negative or positive?)

Example 4:

Extent	Intensity	Duration	Consequence	Probability	Significance	Status
Regional 2	Medium 2	Long-term 3	High 7	Probable	HIGH	-‘ve

Step 5 – State the level of confidence in the assessment of the impact (high, medium or low).

Impacts are also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in the table below. Depending on the data available, a higher level of confidence may be attached to the assessment of some impacts than others. For example, if the assessment is based on extrapolated data, this may reduce the confidence level to low, noting that further ground-truthing is required to improve this.

Confidence rating	
Status of impact	+ ve (beneficial) or – ve (cost)
Confidence of assessment	Low, Medium or High

Example 5:

Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Regional 2	Medium 2	Long-term 3	High 7	Probable	HIGH	-‘ve	High

The significance rating of impacts is considered by decision-makers, as shown below. Note, this method does not apply to minor impacts which can be logically grouped into a single assessment.

INSIGNIFICANT: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity.

VERY LOW: the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity.

LOW: the potential impact may not have any meaningful influence on the decision regarding the proposed activity.

MEDIUM: the potential impact should influence the decision regarding the proposed activity.

HIGH: the potential impact will affect a decision regarding the proposed activity.

VERY HIGH: The proposed activity should only be approved under special circumstances.

Step 6 – Identify and describe practical mitigation and optimisation measures that can be implemented effectively to reduce or enhance the significance of the impact. Mitigation and optimisation measures must be described as either:

- Essential: must be implemented and are non-negotiable; and
- Best Practice: must be shown to have been considered and sound reasons provided by the proponent if not implemented.

Essential mitigation and optimisation measures must be inserted into the completed impact assessment table. The impact should be re-assessed with mitigation, by following Steps 1-5 again to demonstrate how the extent, intensity, duration and/or probability change after implementation of the proposed mitigation measures.

Example 6:

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Medium 2	Long-term 3	High 7	Probable	HIGH	-ve	High
Essential mitigation measures Xxxx Xxxxx								
With mitigation	Local 1	Low 1	Long-term 3	Low 5	Improbable	VERY LOW	-ve	High

Step 7 – Prepare a summary table of all impact significance ratings as follows:

Phase	Impact identified	Severity	Probability	Significance	Status	Confidence
XXXXXX	Impact 1: xxx	Medium	Improbable	LOW	-ve	High
	With mitigation	Low	Improbable	VERY LOW		High
	Impact 1: xxx	Very Low	Definite	VERY LOW	-ve	Medium
	With mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	Medium

Indicate whether the proposed development alternatives are environmentally suitable or unsuitable in terms of the respective impacts assessed by the relevant specialist and the environmentally preferred alternative.

II APPENDIX 2: CVS OF SPECIALIST CONSULTANTS

Curriculum Vitae

GWYNETH KAY LETLEY

Date of Birth: 25 November 1985
Maiden Name: Wilson
Nationality: South African
Present occupation: Senior Associate, Anchor Group of Companies
Academic qualifications: MSc Conservation Biology, PC Environmental Economics
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Summary profile

Gwyn has an MSc in Conservation Biology from the University of Cape Town and a postgraduate certificate in Applied Environmental Economics from the University of London. Over the past 16 years Gwyn has worked on the social and economic aspects of natural resource management and conservation, including the quantitative socio-economic aspects of conservation-development problems in South Africa, Namibia, Botswana, Zambia, Zimbabwe, Mozambique, Angola, Kenya, DRC, Gabon, Liberia and Sierra Leone. Gwyn is experienced in the economic appraisal of nature-based solutions, natural climate solutions and ecosystem restoration and has recently been involved in designing effective nature-based solutions for achieving water security in Tamale, Ghana; Freetown, Sierra Leone; Mombasa, Kenya and in the Cubango-Okavango River Basin in Angola where scenario analyses were undertaken to evaluate the net benefits and return on investment that would be generated through investing in conservation interventions. Gwyn has been deeply involved in the review and update of South Africa's Ecosystem-Based Adaptation (Eba) Strategy and Plan 2024-2034 and has recently undertaken an assessment of the feasibility of supporting interventions to the key challenges to natural climate solutions in the DRC and Kenya. She has extensive experience in valuing ecosystem services at various spatial scales, from basin-level to sub-national and national level assessments. Studies include the valuation of selected ecosystem services for input into a first set of monetary ecosystem accounts for the province of KwaZulu-Natal in South Africa and for Uganda's ecosystem services accounts, national assessments of Namibia and South Africa's ecosystem services, regional assessments of ecosystem services in the Cubango-Okavango River Basin in Botswana and Angola, valuation of wildlife resources in selected transboundary wildlife areas of East Africa, the valuation of selected urban ecosystem services in Durban, Kampala and Dar es Salaam. Gwyn is also experienced in spatial analysis and systematic and integrated conservation and development planning.

Tertiary Education & Qualifications:

- PC Applied Environmental Economics (with Distinction) – University of London, School of Oriental and African Studies (SOAS) 2013-2014
- MSc Conservation Biology - University of Cape Town 2009-2010
- BSc Honours (Zoology) - University of Cape Town 2008
- BSc (Zoology & Marine Biology) – University of Cape Town 2005-2007
- Matriculated in 2003 Pietermaritzburg Girls' High School

Selected projects

Period	Country	Client	Project, Tasks
2026 - ongoing	South Africa	WWF-SA	Project: Valuation of Marine Ecotourism in the southern seascape region: False Bay and Cape Whale Coast. Position and tasks: Project management, environmental economist undertaking the socio-economic assessment of marine ecotourism across the proposed marine Other Effective Area-based Conservation Measures (OECMs) pilot sites in False Bay, Kogelberg, and Dyer Island within the broader Cape Whale Coast region of Cape Town and Overstrand Local

Period	Country	Client	Project, Tasks
2025-2026	Angola	GWPSA	Municipality. The assessment quantifies the economic contributions, social benefits, and non-market ecosystem values associated with key marine wildlife tourism activities, including viewing of the African penguin, boat-based whale watching, shark cage diving and other marine wildlife experiences. Project: Economic valuation of the ecosystem goods and services provided by the Angolan highlands within the Cuvélai and Kunene River Basins. Position and tasks: Environmental economist, undertaking the valuation of ecosystem services, reporting.
2025-2026	Guinea, Cote d'Ivoire & Togo	World Bank	Project: Forest Ecosystem Accounts. Develop Ecosystem Accounts for three countries, build capacity and facilitate national dialogues on the role and mainstreaming of natural capital and biodiversity. Position and tasks: Environmental economist, undertaking the valuation of ecosystem services, accounts and final reporting.
2025 - 2026	Sierra Leone and Liberia	World Bank	Project: Forest Ecosystem Accounts for Sierra Leone and Liberia. Position and tasks: Environmental economist, helping to develop Ecosystem Accounts for two countries, including the valuation of selected forest provisioning, regulating and cultural ecosystem services.
2025-2026	Gabon	The Nature Conservancy	Project: Scoping study for the development of a National Payments for Ecosystem Services Programme. Position and tasks: Environmental economist undertaking the review of PES, ecosystem assessment and scenario analysis for the prioritization of areas for investment in PES.
2025	Zambia	World Bank	Project: Developing a background note on Ecosystem Services for Zambia's Country Climate and Development Report. Position and tasks: Environmental economist undertaking the evaluation of ecosystem services in Zambia and scenario analysis and cost benefit analysis to compare a Green Economy Scenario with a BAU approach. This as input into the Zambia CDDR.
2024-2025	Kenya	World Bank	Project: Catchment-scale mapping and prioritisation of opportunities for land and ecosystem restoration. Position and tasks: Environmental economist and NUS expert. Tasks included review of restoration activities, extent and costing of activities, valuation of ecosystem services, cost-benefit analysis and the development of an excel investment prioritisation tool.
2024 - 2025	Kenya	World Bank	Project: Developing Kenya's CIF Nature People Climate Investment Plan. Position and tasks: Environmental economist, valuation and multicriteria analysis as well as stakeholder consultation to identify priority areas for nature-based solutions and assisting with the development of a financing and investment plan.
2024	Kenya, DRC	The Nature Conservancy	Project: Mapping and costing of solutions to key constraints on Natural Climate Solutions in Kenya and the Democratic Republic of Congo. Position and tasks: Environmental economist and CC specialist. Identification of high-level costing of a feasible integrated suite of near-term supporting actions in DRC and Kenya to address the key constraints to NCS in those areas, taking a range of criteria into account.
2023-2025	Congo Basin 6 countries	World Bank	Project: Congo Basin Forest Accounts. Position and tasks: Environmental economist, helping to develop Ecosystem Accounts for six countries, including the valuation of selected forest provisioning, regulating and cultural ecosystem services.
2023-2024	South Africa	City of Cape Town & GIZ	Project: Green infrastructure options for improved waterway and catchment management for the City of Cape Town. Position and tasks: Environmental economist undertaking the socioeconomic, governance, selection and evaluation of GI interventions and valuation of ecosystem services components.
2022-2025	South Africa	GIZ & DFPE	Project: Biome-level implementation plans for the biodiversity and ecosystems sector climate change adaptation strategy and review of the Ecosystem-Based Adaptation (Eba) Strategy in South Africa.

Period	Country	Client	Project, Tasks
			Position and tasks: Natural resource economics expert responsible for data management, analysis, and report writing as well as the identification and costing of adaptation options and activities, and stakeholder engagement.
2022	Ghana	Catholic Relief Services	Project: Business case development for the Tamale Water Fund, Ghana Position and tasks: Project management, undertook the ecosystem services modelling and economic analysis, report writing
2022	Uganda	World Bank	Project: Development of ecosystem services accounts for Uganda Position and tasks: Assisted in preparing a first set of physical and monetary ecosystem accounts at a national scale, following SEEA EEA guidelines. This included mapping and valuation of selected provisioning, regulating and cultural ecosystem services.
2022-23	Mozambique Zimbabwe	IUCN & GWP-SA, through Southern Waters	Project: An integrated Eflows assessment to facilitate the development and agreement of "objective flows" at key sites in the Pungwe River Basin. Position and tasks: Responsible for the socio-economics aspects, including modelling of ecosystem services, and scenario inputs.
2022 - 2025	South Africa	DWS, through Myra Consulting	Project: Classification of the Limpopo River basin. Position and tasks: Responsible for the socio-economics aspects, including modelling of ecosystem services, water trade-offs and scenarios
2022	South Africa	uMzimkhulu Local Municipality	Project: Map out, value and undertake a complete market study on natural resource opportunities in the uMzimkhulu Local Municipality
2021	Botswana, Angola, Namibia	OKACOM	Position and tasks: Project management, ES valuation Project: Design and Roadmap for the establishment of a transboundary Payment for Ecosystem Services scheme for the Cubango-Okavango River Basin Position and tasks: Resource economist, ecosystem services assessment, review of PES.
2021-23	South Africa	Water Research Commission	Project: A framework to guide investments in hydrological services in South Africa. Development of guidelines for financing the restoration and maintenance of hydrological ecosystem services in different socio-ecological contexts, based on analysis of the South African experience & research on the demand side.
2021	Lesotho, Botswana, South Africa, Namibia	ORASECOM	Position and tasks: Project manager & lead researcher Project: Identification of potential PES projects for addressing environmental degradation in the Orange-Senqu River Basin Position and tasks: Review and analysis of environmental and socio-economic data and ecosystem services modelling to identify potential projects, narrowed down using cost-benefit analysis.
2021	South Africa	V&A Waterfront	Project: An economic analysis of the proposed Granger Bay Marina Position and tasks: Economic analysis, questionnaire development
2021	Kenya	AFD, TNC	Project: Design study for the creation of a Water Fund for Mombasa City Position and tasks: Undertook the ecosystem services modelling and socio-economic analysis
2020-21	East Africa	USAID, Economic Incentives	Project: Natural capital assessment for selected transboundary landscapes of conservation importance Position and tasks: Assisted with the valuation of ecosystem services and modelling BAU and alternative scenarios.
2020	Sierra Leone	GRS, TNC	Project: Business case development for the Western Area Peninsula Water Fund, Sierra Leone Position and tasks: Undertook the ecosystem services modelling and economic analysis
2020	South Africa	ICLEI, CoJ Johannesburg	Project: Economic valuation of ecosystem services for the City of Johannesburg Position and tasks: Assisted with the valuation of ecosystem services and highlighting their importance to the urban environment, enhancing of draft chapters and policy recommendations
2019 - 2020	South Africa	DEA&DP Western Cape Government	Project: Report on the valuation of the estuary in the Berg River Catchment Position and tasks: Assisted with the socio-economics component to assess and update the value of Berg estuary and its ecosystem services

Period	Country	Client	Project, Tasks
			and how these values change under different yield and ecological reserve scenarios. Analysed Bird data and wrote the bird section for the Biodiversity chapter of the report.
2019-2020	Angola	TNC	Project: Economic analysis of returns to investing in Resilient Development interventions in the Angolan catchment areas of the Okavango Delta Position and tasks: Undertook ecosystem services modelling and economic analysis using scenario-based approach.
2019-2020	South Africa	UN Environment	Project: Support to the South African government for the development of monetary ecosystem accounts: Preliminary monetary ecosystem accounts for KwaZulu-Natal. Position and tasks: Assisted in preparing a first set of monetary ecosystem accounts at a regional scale in South Africa, following SEEA EEA guidelines. This included mapping and valuation of selected provisioning, regulating and cultural ecosystem services, with a view to making methodological input to the SEEA-EEA.
2019	Malawi	UNDP, Lilongwe Wildlife Trust	Project: The Case for Banning Single-use Plastic Products in Malawi Position and tasks: Provided a preliminary assessment of plastic pollution and the ban on thin plastic bags in Malawi and advised on a way forward based on a review of available information and information gathering through semi-structured interviews with government and stakeholders, and local and international experience.
2018	South Africa	UNDP, DEA	Project: Scoping and feasibility assessment for a certification scheme for the SA wildlife industry Position and tasks: Assisted with a review of certification schemes and how a scheme could be implemented in SA wildlife industry, carried out a choice experiment study of landowners in the wildlife industry to determine feasibility and buy-in of such a scheme
2018	South Africa	UN Environment	Project: Review of natural capital valuation and accounting in South Africa Position and tasks: Review and design a study to pilot NCA in South Africa
2018	Laos	UN Environment through C4 EcoSolutions	Project: Economic assessment of proposed ecosystem-based adaptation (EBA) strategies for reducing urban flood risk in Lao PDR Position and tasks: Undertook an economic assessment of the proposed set of EBA interventions.
2017	South Africa	TNC & The Cape Town Water Fund	Project: The Cape Town Water Fund: A business case and strategy for clearing of invasive Alien Plants Position and tasks: Undertook ecosystem services modelling and economic analysis
2017-2018	Namibia	GIZ and Namibia MET	Project: Namibia TEEB Study: The development of strategies to maintain and enhance the protection of ecosystem services in Namibia's state, communal and freehold lands Position and tasks: Evaluated the potential of and developed proposals for the introduction of specific policy measures for each of the following four priority sectors: 1. A national assessment of Namibia's Ecosystem Services. 2. Improving state protected area financing through pricing and institutional changes. 3. Potential for the use of a PES system in communal lands. 4. Incentives for sustainable practices and conservation in freehold rangelands.
2017	Zambia	ERM	Project: Tourism Assessment for the Kalungwishi River Hydroelectric Power Project. As part of the Environmental and Social Impact Assessment Position and tasks: Conducted a tourism assessment in Northern Zambia to determine the value of tourism in the study area. Estimated the magnitude of socio-economic impacts of the proposed hydroelectric power project. Involved field work and surveys.
2017	South Africa, Tanzania, Uganda	World Bank	Project: Greening Africa's Cities: Enhancing the relationship between urbanization, environmental assets and ecosystem services

Period	Country	Client	Project, Tasks
2016-2017	South Africa	DWS through Aurecon	Position and tasks: Co-author of a policy document with World Bank on the above topic. Project: Classification of and resource quality objectives for the water resources of the Breede-Gouritz Water Management Area: Economics sub-component Position and tasks: Assisted with the socio-economics component to assess value of ecosystem services and model impacts of different yield and ecological reserve scenarios.
2016-2017	South Africa	DWS through Aurecon	Project: Classification of and resource quality objectives for the water resources of the Berg Water Management Area: Economics sub-component Position and tasks: Assisted with the socio-economics component to assess value of ecosystem services and model impacts of different yield and ecological reserve scenarios.
2016	Mozambique	ERM	Project: Socio-Economic Impact Assessment for the proposed Sasol Offshore Pipeline and FSO, Inhambane Province, Mozambique Position and tasks: Conducted tourism business interviews and surveys in Inhassoro to determine the value of tourism in the study area. Estimated the magnitude of socio-economic impacts of the proposed offshore pipeline and FSO.
2015	Zambia Zimbabwe	ERM	Project: Socio-Economic Impact Assessment for the proposed Batoka Gorge Hydropower Facility – Zimbabwe/Zambia Position and tasks: Conducted tourism business interviews and surveys in Livingstone and Victoria Falls to determine the value of tourism in the study area and the contribution of the Batoka Gorge to this value. Estimated the magnitude of socio-economic impacts of the proposed dam.
2014-2016	South Africa	World Bank through AECOM Washington	Project: Promoting Green Urban Development in Africa: The value of Durban's natural capital and its role in Green Urban Development. Part 2: Evaluating the potential returns to investing in Green Urban Development Position and tasks: Economic analysis – assessing relative costs and benefits of different scenarios using a cost benefit approach.
2014-2016	South Africa	World Bank through AECOM Washington	Project: Promoting Green Urban Development in Africa: The value of Durban's natural capital and its role in Green Urban Development. Part 1: A spatial valuation of the natural and semi-natural open space areas in eThekweni Municipality Position and tasks: Ecosystem services assessment, including the development of water treatment cost models and hedonic analysis of property value.
2014-2016	Tanzania	World Bank through AECOM Washington	Project: Promoting Green Urban Development in Africa: Return on investment in Green Urban Development: amelioration of flood risk in the Msimbazi River catchment, Dar es Salaam, Tanzania Position and tasks: Economic analysis – scenarios were assessed in terms of their return on investment and a life-cycle cost (LCC) to estimate the costs of the flood mitigation measures, and analyse them in relation to the reductions in expected annual losses under each scenario.
2014-2016	Uganda	World Bank through AECOM Washington	Project: Promoting Green Urban Development in Africa: A preliminary investigation of the potential costs and benefits of rehabilitation of the Nakiwubo wetland, Kampala Position and tasks: Economic analysis using CBA to evaluate the viability of restoration interventions
2011	South Africa	G7 Renewable Energies	Project: Preconstruction monitoring of avifauna at two proposed wind energy sites in the Karoo, South Africa Position and tasks: Assisted with ecological surveys conducted on proposed wind farm sites.
2011	Numerous	UNOPS	Project: Aquilhas Somali Current Large Marine Ecosystem Valuation of Marine and Coastal Resources Position and tasks: A desktop study which involved valuing the coastlines of eastern South Africa and Mozambique (within the ASCLME) using available data

Period	Country	Client	Project, Tasks
2011	South Africa	DAFF	Project: Sector Plan for the Department of Agriculture, Forestry and Fisheries Position and tasks: Assisted with the editing of reports and with stakeholder consultation.
2010-2011	South Africa	SANBI	Project: National Biodiversity Assessment: South African National Estuary Conservation Plan Position and tasks: Co-author on a project aimed at developing a conservation plan for the estuaries of South Africa. The study concentrated on the development of an overarching conservation plan that involved using conservation planning techniques (MARXAN and CLUZ) and ArcView GIS
2010-2011	South Africa	CapeNature	Project: Ullikraals Estuary Situation Assessment and Estuary Management Plan Position and tasks: Assisted with writing the situation assessment and development of the EMP. The document formed the basis of the development of a vision and strategy for the management of the estuary in a participatory process involving stakeholders.
2010	Botswana	BirdLife Bots, GEF, DWA	Project: Makgadikgadi Protected Areas Project Position and tasks: Assisted with the desktop valuation of protected areas of the Makgadikgadi Pans: financial/economic models of conservation models involving co-management, and the development of a financing strategy

PUBLICATIONS:

- WEBSTER, K., TURPIE, J.K. & LETLEY, G.K. 2024. Viability of investing in ecological infrastructure in South Africa's water supply areas. *South African Journal of Science*. 2015(6).
- DUPLESSIS, N.S., TURPIE, J.K. & LETLEY, G.K. 2023. Feasibility of financing nature-based solutions for water security through water tariffs: Evidence from South Africa. *AQUA — Water Infrastructure, Ecosystems and Society*. <https://doi.org/10.2166/aqua.2024.221>
- TURPIE, J.K. & LETLEY, G. 2023. Willingness to pay for secure and “green” water supply for Cape Town: a contingent valuation study. *Water SA* 49: 327-337. doi.org/10.17159/wsa/2023.v49.i4.4002
- TURPIE, J.K., LETLEY, G., WEISS, J. & SCHMIDT, K. 2022. Accounting for ecosystem services and asset value: pilot accounts for KwaZulu-Natal, South Africa. *One Ecosystem* 7: e86392. doi: 10.3897/oneco.7.e86392
- TURPIE, J.K. & LETLEY, G.K. 2021. Would areas under community-based natural resource management benefit from external oversight? *World Development* 142: 105442.
- WHITE, R., TURPIE, J. & LETLEY, G. 2017. Greening Africa's Cities: Enhancing the Relationship between Urbanization, Environmental Assets and Ecosystem Services. The World Bank, Washington D.C.
- TURPIE, J.K., FORSYTHE, K.J., LETLEY, G., KNOWLES, A. & BUGNAUT, J. 2017. Mapping and valuation of South Africa's ecosystem services at a national scale using locally-relevant data: a matter of perspective. *Ecosystem Services*.
- LETLEY, G. & TURPIE, J.K. 2016. The contributions of natural and man-made green open space to property value in Durban, South Africa: a hedonic pricing study. *Environment for Development Discussion Paper Series EFD DP forthcoming*.
- WILSON, G. & HOCKEY, P. A. R. 2013. Causes of variable reproductive performance by Southern Ground-hornbill *Bucorvus leadbeateri* and implications for management. *Ibis* 155: 476–484.
- HEIM, C., WILSON, G., MIDDLEY, J., KRUGER, L. & WITKOWSKI, E. T. F. 2011. Investigating the vulnerability of an African savanna tree (*Sclerocarya birrea ssp. caffra*) to fire and herbivory. *Austral Ecology* 36: 964-973.
- WILSON, G., BRANCH, G. M. & DE CORTO, P. 2009. Comparative salinity tolerances of four siphonaid limpets in relation to habitat restriction of the rare and endangered *Siphonaria compressa*. *AFRICAN JOURNAL OF MARINE SCIENCE* 31 (3): 311-318.

SELECTED TECHNICAL REPORTS:

- TURPIE, J., LETLEY, G., NG'OMA, Y. & MOORE, K. 2019. The case for banning single use plastics in Malawi. Report prepared for UNDP on behalf of the Government of Malawi by Anchor Environmental Consultants in collaboration with Lilongwe Wildlife Trust. Anchor Environmental Consultants Report No. AEC/1836/1. 72pp
- TURPIE, J.K., FORSYTHE, K., SEYLER, H., HOWARD, G. & LETLEY, G. 2018. Priority interventions for restoration of Greater Cape Town's water supply catchment areas. Report to The Nature Conservancy.
- TURPIE, J., BRICK, K., LETLEY, G. & MACLAREN, C. 2017. Potential for the use of a Payments-for-Ecosystem Services system in Namibia's Communal Conservancies. Vol III in Turpie, J. (ed). The development of strategies to maintain and enhance the protection of ecosystem services in Namibia's state, communal and freehold lands. Report prepared by Anchor Environmental Consultants and Namibia Nature Foundation on behalf of the GIZ. 34pp.
- FORSYTHE, K., LETLEY, G. & TURPIE, J. 2017. A national assessment of Namibia's Ecosystem Services. Vol I in Turpie, J. (ed). The development of strategies to maintain and enhance the protection of ecosystem services in Namibia's state, communal and freehold lands. Report prepared by Anchor Environmental Consultants and Namibia Nature Foundation on behalf of the GIZ. 87pp.
- TURPIE, J., LETLEY, G., VENTER, R., MCLAREN, C., UNDEQUE, P. & MIDDLETON, A. 2017. Incentives for sustainable practices and conservation in Namibia's freehold rangelands. Vol IV in Turpie, J. (ed). The development of strategies to maintain and enhance the protection of ecosystem services in Namibia's state, communal and freehold lands. Report prepared by Anchor Environmental Consultants and Namibia Nature Foundation on behalf of the GIZ.
- LETLEY, G. & TURPIE, J.K. 2017. Kalungwishi River Hydroelectric Power Project. Environmental and Social Impact Assessment: Tourism Assessment. Anchor Environmental Consultants Report to ERM.
- TURPIE, J.K., LETLEY, G., CHRYSTAL, R., & DAY, L. 2017. Evaluating the potential returns to investing in Green Urban Development in Durban. Case Studies for Promoting Green Urban Development in Africa: Enhancing the relationship between urbanization, environmental assets and ecosystem services: Report to the World Bank.
- TURPIE, J.K., LETLEY, G., CHRYSTAL, R., CORBELLA, S. & STRETCH, D. 2017. A spatial valuation of the natural and semi-natural open space areas in eThekweni Municipality. Case Studies for Promoting Green Urban Development in Africa: Enhancing the relationship between urbanization, environmental assets and ecosystem services: Report to the World Bank.
- TURPIE, J.K., DE RISI, R., KROEGER, T., DE PAOLA, F., DAY, L., LETLEY, G. & FORSYTHE, K. 2016. Catchment-to-coast restoration of the Msimbazi River to ameliorate flood risk in Dar es Salaam, Tanzania. Report to the World Bank.
- LETLEY, G. & TURPIE, J.K. 2016. Environmental Impact Assessment for the Proposed Pipeline from Temane Central Processing Facility to a Floating, Storage & Offloading Unit offshore of Inhambane Province, Mozambique. Tourism Assessment. Anchor Environmental Consultants Report to ERM.
- TURPIE, J.K., KUTELA, D.G., DAY, L., LETLEY, G., ROED, G. & FORSYTHE, K. 2015. A preliminary investigation of the potential costs and benefits of rehabilitation of the Nakivubo wetland, Kampala. Report to the World Bank.
- TURPIE, J., FORSYTHE, K. & LETLEY, G. 2015. Assessment of the impacts of compact versus sprawling urban development on ecosystem services in the Mossel Bay Municipality. Report to Palmer Development Group on behalf of Western Cape Provincial Government.
- TURPIE, J. & LETLEY, G. 2015. Socio-economics impact assessment for the proposed Batoka Gorge Hydropower facility. Anchor Environmental Consultants Report to ERM.
- TURPIE, J.K., WILSON, G. & VAN NIEKERK, L. 2011. Biodiversity plan for South African Estuaries. Report to South African National Biodiversity Institute.

CURRICULUM VITAE

MICHAEL PHILIP ANTHONY ARMITAGE

DATE OF BIRTH: 9 September 1996
NATIONALITY: South African

ACADEMIC QUALIFICATIONS, UNIVERSITY OF CAPE TOWN (UCT):

MSc Environmental and Geographical Science (EGS), 2022—with Distinction.
BSc (Hons) EGS, 2018—First Class Pass (with Distinction).
BSc EGS and Archaeology, 2017.

OTHER TRAINING:

Environmental Impact Assessments Training Course, Cape Town, 2024. Business Success Solutions in association with Janice Tooley Attorneys. SACNASP and EAPASA accredited.
Practical Implementation of Environmental Auditing and Monitoring Training Course, Cape Town, 2024. Business Success Solutions in association with Umhlaba Environmental Consulting. SACNASP and EAPASA accredited.
PCSWMM and EPA SWMM5 Modelling Short Course, 2019. Computational Hydraulics International (CHI).
First Aid Level 1

MEMBERSHIP OF PROFESSIONAL BODIES/ORGANISATIONS:

EAPASA: Candidate EAP. Registration Number: 2024/7978
IAIAsa: Full Member, Registration Number: 7619

COUNTRY EXPERIENCE: South Africa, People's Republic of China

LANGUAGE PROFICIENCY: English (Excellent), Afrikaans (Basic)

POSTAL ADDRESS: 8 Steenberg House, Silverwood Close, Tokai 7945

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EMPLOYMENT HISTORY:

2022-Present: Environmental Consultant: Marine Ecosystems and Resources (Anchor Environmental Consultants)
2021: Research Assistant (South African National Biodiversity Institute and Breede-Gouritz Catchment Management Agency); and University Demonstrator.
2015: Mathematics and Physical Science Tutor (Mastermaths)

SUMMARY PROFILE

Michael holds MSc and BSc (Hons) degrees in Environmental and Geographical Science (EGS), as well as a BSc in EGS and Archaeology, all from the University of Cape Town. His expertise lies in integrated environmental and water resources management—with a focus on coastal, estuarine, and freshwater systems, as well as nature-based management solutions. He thrives on unpacking the complexities of dynamic systems to develop integrated, practical, and effective management solutions. Michael works as an Environmental Assessment Practitioner (EAP) and Environmental Management Specialist, undertaking Environmental Impact Assessments (EIAs) and preparing a range of environmental management plans. He also has experience in estuarine studies, sediment quality assessment, and GIS mapping. He is a registered Candidate EAP (EAPASA: 2024/7978) and a member of the International Association for Impact Assessment South Africa (IAIAsa: 7619).

SELECT PROJECT EXPERIENCE

Environmental Impact Assessments and Related Projects			
Period	Country	Client	Project, Tasks
2026	South Africa	Trans Atlantic Diamonds	Environmental Assessment Practitioner: Resubmission Basic Assessment Process and prospecting rights application for Offshore Sea Concession 11C in the Western Cape.
2024-Ongoing	South Africa	Sunwater East London	Environmental Assessment Practitioner and Estuarine Specialist Scoping and Environmental Impact Assessment (S&EIA) for Transnet Ports Authority (TNPAs) Proposed Solar Powered Desalination Plant in the Port of East London.
2024-Ongoing	South Africa	V&A Waterfront	Environmental Assessment Practitioner and Socio-Economic Specialist Basic Assessment Process for a Mixed-Use Development within the Breakwater Precinct of the, V&A Waterfront, Cape Town.
2024-Ongoing	South Africa	National Sea Rescue Institute (NSRI)	Environmental Assessment Practitioner Environmental Impact Assessment (EIA) for the Proposed Upgrades the NSRI Bakoven Rescue Base.
2024-2025	South Africa	Port Nolloth Sea Farms Ranching (Pty) Ltd	Environmental Assessment Practitioner Off Road Vehicle Driving Permit and Vessel Launching Permit Applications for the PNSF Abalone Ranching Concession Area.
2024-2025	South Africa	Port Nolloth Sea Farms Ranching (Pty) Ltd	Environmental Scientist and GIS Specialist Amendment of the Environmental Authorisation for the Port Nolloth Sea Farms ranching abalone holding and processing facility, south of Kleinsee.
2025	South Africa	Netelek	Environmental Assessment Practitioner Screening study for a proposed Solar-Power Desalination Plant, Ammonium Production Plant, and Associated Infrastructure, Jacobsbaai & Saldanha Area, Western Cape.
2023-2024	South Africa	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) for the City of Cape Town	GIS and Environmental Governance Specialist Green infrastructure options for improved waterway and catchment management for the City of Cape Town. Contributions included: conducting extensive spatial mapping of key socio-economic metrics—and contributing to the interpretation of these results. Was also the lead contributor on the Governance and Regulatory Framework Report pertaining to Cape Town's waterways (and associated green spaces)—which linked closely with the Socio-Economic report, and dealt in depth with topics such as land zoning, local legislative context, etc.
2023	South Africa	Impact Water Solutions (IWS) for Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Environmental Scientist and GIS Specialist (Lead Author) Green Hydrogen Desalination Study Task 7: Environmental and Social Impact Assessment (ESIA) scoping Report. The report formed the basis for the guideline document for Green Hydrogen developments in South Africa.

Period	Country	Client	Project, Tasks
2022	South Africa	Trans Atlantic Diamonds	Co Author of Marine & Fisheries and Socio-Economic Specialist Reports and Contributor to Basic Assessment (BAR) Report. Basic Assessment Process and Application for Prospecting Rights in Offshore Sea Concession 10B in the Northern Cape.
2022	South Africa	Trans Atlantic Diamonds	Co Author of Marine & Fisheries and Socio-Economic Specialist Reports and Contributor to Basic Assessment (BAR) Report. Basic Assessment Process and Application for Prospecting Rights in Offshore Sea Concession 7C in the Northern Cape.
2022	South Africa	Matzikama Kaolin	Environmental Scientist and GIS Specialist Scoping & Environmental Impact Assessment and Application for Prospecting Rights for Kaolin Prospecting in the Western Cape: Preparation of EIA Scoping Report.
2022	South Africa	Xwena kaolin	Environmental Scientist and GIS Specialist Scoping Report for Prospecting Rights for Kaolin and Silica Prospecting in the Western Cape: Preparation of EIA Scoping Report.

Environmental Management Plans and Processes

Period	Country	Client	Project, Tasks
2024- Ongoing	South Africa	Overstrand Local Municipality and United National Environmental Programme (UNEP)	Estuarine Specialist and Environmental Assessment Practitioner Onrus Catchment to Coast (C2C) Programme: Preparing Onrus Ecological Health Assessment (EHA) and Maintenance Management Plan (MMP) Reports for the proposed dredging and future maintenance of the Onrus Estuary; Acquiring approval to rehabilitate the Main Onrus palmiet peat wetland under the Department of Agriculture's Landcare EMP; Conducting a Water Use License (WULA) Application for both the dredging and rehabilitation work. Future works will include the compilation of additional MMPs, an EIA process, and an additional WULA for catchment rehabilitation further upstream.
2025- Ongoing	South Africa	African Marine Solutions (AMSOL)	Environmental Management Specialist Development of an Environmental Management Plan (EMP) for the offshore ship-to-ship bunkering activities in Algoa Bay.
2024- 2025	South Africa	Mossel Bay Local Municipality and Southern Estuarine Rehabilitation Action Group (SERAG)	Estuarine Specialist and Environmental Assessment Practitioner Preparing a Maintenance Management Plan (MMP) for the Groot Brak Estuary.
2024	South Africa	Department of Forestry, Fisheries and the Environment (DFFE)	Environmental Assessment Practitioner and Stakeholder Engagement Support Development of management plans for the South-East Atlantic and South-West Indian Seamounts Marine Protected Areas (Ongoing).

Period	Country	Client	Project, Tasks
2022- 2023	South Africa	Infinity Environmental the City of Cape Town	Estuarine Specialist and Co-Lead Author Situation Assessment and Estuarine Management Plan Reports for the Zandvlei Estuary.
2022- 2023	South Africa	Lukhozi Consulting Engineers	Estuarine Specialist (Lead Author) Mouth Management Plan for the Zandvlei Estuary.

Estuarine, Sediment Quality, and other Scientific Specialist Work

Period	Country	Clients	Project, Tasks
2025	South Africa	Saldanha Bay Water Quality Trust	Sediment Quality Specialist and Chapter Author 2025 State of Saldanha Bay (SOB) Annual Environmental Monitoring Report.
2024	South Africa	Infinity Environmental the City of Cape Town	Estuarine and Ichthyofaunal Specialist (Lead Author) and GIS Specialist Estuarine and Ichthyofaunal Specialist Impact Assessment for the Proposed Fish Ladder Construction and Alterations of Existing Weir and Bridge Infrastructure in the Zeekovlei Estuary.
2024- Ongoing	South Africa	The City of Cape Town (CCT) and Infinity Environmental	Field Scientist Marine microplastics and water quality sampling and compliance monitoring for the City of Cape Town's marine outfalls surrounding the Cape Peninsula.
2023- 2024	South Africa	Dube Tradeport Corporation	Estuarine Specialist and Lead Author Estuarine Specialist Impact Assessment for the Proposed Automotive Supply Park Sewer Line Passing through the aMantzintoti Estuary.
2024	South Africa	ECA Consulting	Field Scientist Updated Marine Specialist Study and Dumping at Sea Permit Application for the Berth 100A Application in the Port of Ngqura.
2023	South Africa	Sharples Environmental Services	Estuarine and GIS Specialist (Lead Author) Assessment of the Impacts of Building a Residential House in the Knysna Estuary, Garden Route Municipality, Western Cape.
2023	South Africa	Enviroworks	Estuarine Specialist and Lead Author Estuarine and Coastal Impact Assessment for the Proposed SANParks Developments in the West Coast National Park, Langebaan.
2023	South Africa	Guillaume Nel Environmental Consultants	Estuarine Specialist and Lead Author Estuarine Specialist Assessment for the proposed upgrade of the TR77/1 (R27), Veldrif.
2023	South Africa	Saldanha Bay Water Quality Forum Trust	Sediment and GIS Specialist and Sediment Chapter Lead Author The State of Saldanha Bay and Langebaan Lagoon; ongoing annual ecological monitoring of Saldanha Bay and Langebaan Lagoon.
2023	South Africa	St. Helena Bay Water Quality Trust	Sediment and GIS Specialist and Sediment Chapter Lead Author The State of St Helena Bay: ongoing semi-annual ecological monitoring of St Helena Bay and the lower Berg Estuary.
2023	South Africa	WSP Group Africa (pty) Ltd	Marine Ecologist Total Energies Block 11b/12b Environmental and Social Impact Assessment (ESIA): Marine Ecology Impact Study.

Period	Country	Clients	Project, Tasks
2023	South Africa	Infinity Environmental for the City of Cape Town (CCT)	Estuarine Specialist Estuarine Specialist Impact Assessment for the Proposed Dredging of the Milnerton Lagoon by the City of Cape Town.
2023	South Africa	Infinity Environmental for the City of Cape Town	Estuarine Ecologist Remediation Plan for the Milnerton Lagoon: Ecological Risks and Benefits associated with the Proposed Remediation Options.
2023	South Africa	Doug Jeffery Environmental Consultants	GIS Specialist Marine Specialist Study for the Residential Development in Oudekraal, Camps Bay: Site sensitivity and Constraints Report.
2022	South Africa	KSEMS Environmental Consulting	Estuarine Specialist and Lead Author Assessment of Impacts of Proposed Upgrade of the N2 Section 25 between the Isipingo Interchange and Umlaas Canal, and Construction of a New Drainage Canal, in the Ethekwini Municipality, KwaZulu-Natal.
2022	South Africa	Nemal Consulting	Estuarine Ecologist and Field Scientist Ecological Water Requirements (EWR) Update and Estuarine Impact Assessment for the uMzimkhulu Estuary, Kwa Zulu Natal.
2022	South Africa	Lukhozi Consulting Engineers for the City of Cape Town	Estuarine Specialist and Lead Author Zandvlei Estuary: Ecological Context and Recommendations Pertaining to Mouth Management.
2022	South Africa	Infinity Environmental for the City of Cape Town	Estuarine Specialist and Lead Author Zandvlei Dredge Assessment: Current Ecological Status Report

THESES

Armitage M.P.A. 2022. An Assessment of the Heavy Metal Concentrations in Surface Sediments from the Knysna Estuary. MSc Thesis, The University of Cape Town, 172 pp.

Armitage M.P.A. 2018. A Current Analysis of the Heavy Metal Load in the Ashmead Channel (Knysna Lagoon) Sediments. BSc (Hons) Thesis, University of Cape Town, 39 pp.

CONFERENCES

- 2021** Joint Society of South African Geographers-Southern African Association of Geomorphologists Conference (Presentation)
- 2021** International Association for Impact Assessment South Africa: Re-Thinking IEM (Integrated Environmental Management) in Pursuit of the Sustainable Development Goals (Attendee)
- 2021** National Research Fund-National Natural Sciences Foundation of China Collaborative Research Closing Symposium with academics from East China Normal University (Presentation)
- 2019** National Research Fund-National Natural Sciences Foundation of China Collaborative Research Symposium hosted in Shanghai with academics from East China Normal University and the University of Cape Town (Presentation)
- 2019** Pollution State of the Knysna Estuary Symposium with members of the Knysna Municipality, Town Council, and stakeholders (Presentation)
- 2018** National Research Fund-National Natural Sciences Foundation of China Collaborative Research Symposium hosted in Shanghai with academics from East China Normal University and the University of Cape Town (Presentation)
- 2018** International Urban Biodiversity & Food Security conference, held in Cape Town (Volunteer & Attendee).





forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

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

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.dffe.gov.za/documents/forms>.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply 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 the act, when applying for environmental authorisation - GN 320/2020', where applicable.

1. SPECIALIST INFORMATION

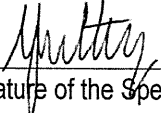
Title of Specialist Assessment	Socio-Economic, Visual and Noise Impact Assessment
Specialist Company Name	Anchor Environmental Consultants
Specialist Name	Gwyneth Kay Letley
Specialist Identity Number	8511250122080
Specialist Qualifications:	MSc Conservation Biology, PC Environmental Economics
Professional affiliation/registration:	Click or tap here to enter text.
Physical address:	Suite 8, Steenberg House, Silverwood Close, Steenberg Office Park, Tokai
Postal address:	Same as above
Postal address	Click or tap here to enter text.
Telephone	021 701 3420
Cell phone	--
E-mail	gwyn@anchorenvironmental.co.za

SPECIALIST DECLARATION FORM – AUGUST 2023

2. DECLARATION BY THE SPECIALIST

I, Gwyneth Kay Letley declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority; and;
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.


Signature of the Specialist

Anchor Environmental Consultants

Name of Company:

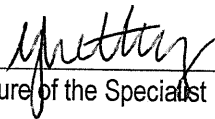
12 Jun 2026

Date

SPECIALIST DECLARATION FORM – AUGUST 2023

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Gwyneth Kay Letley, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.


Signature of the Specialist

Anchor Environmental Consultants

Name of Company

12 June 2026

Date


Signature of the Commissioner of Oaths

12 June 2026

Date

Name

I certify that the deponent has acknowledged that he/she knows and understands the contents of this affidavit, that he/she does not have any objection to taking the oath, and that he/she considers it to be binding on his/hers conscience, and which was sworn to and signed before me at Cape Town on this the 12th day of June 2026 and that the administering oath complied with the regulations contained in government gazette No. R1258 of 21 July 1972, as amended.

COMMISSIONER OF OATHS

Janine van Graan (PA) SA
SAIPA Membership No. 7380
Minter House, 1 Otto Close
Westlake, 7945
Cape Town