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## **ENVIRONMENTAL AND SOCIAL GOVERNANCE REPORT**

Project Name: Upgrade of Port of Cape Town Lightening and  
Infrastructure

Transnet Project Number: TBC

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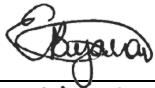
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## **1. Introduction and Background**

The Port of Cape Town is the second biggest port in South Africa and boasts as a busiest multi-operational Port operating under the Port Act of 2005. In terms of the Ports Act, the Transnet National Ports Authority is mandated to provide a range of services and infrastructure to facilitate the transfer of goods in and out of South Africa via its nine proclaimed ports. One of the infrastructure services is the provision of suitable Port lighting vital to the safety and the security of port operations. Good quality, reliable illumination allows successful navigation of people and driven machinery along jetties, docks and terminals based on activities undertaking in the area as required by the environmental regulations for workplaces.

Outdoor lighting installations at the Port of Cape Town date back over 20 years in service within the multi-operations in the Port. These installations service major and artillery roads, general working areas, perimeter and quaysides. While the lighting installations and structure follow a strict maintenance regime, the installations have succumbed to age particularly the luminaire fixtures which have discoloured. Annual lighting surveys were not performed prior. Further, the illumination in the system is currently High Intensity Discharge (HID) and High-Pressure Sodium (HPS) lamps which are technologies far less energy efficient compared to modern technologies available such as LED.

The critical aspects of the lighting installations are to ensure illuminance, uniformity and glare are maintained at safe levels within the areas that the lighting installations service as guided by SANS10389-1&2 and OHS Act-Environmental regulations. Supporting infrastructure including low voltage kiosks and cables should comply with SANS10142-1. Steel high mast light poles shall comply with Transnet High mast specifications

## **2. Project Scope and Objective.**

Internal condition assessments and a lighting lux survey identified the need to upgrade the existing lighting and infrastructure in various parts of the Port

The scope and objective of the project is to provide suitable Port lighting, which is vital for the safety and the security of port operations. Good quality, reliable illumination allows successful navigation of

people and driven machinery along jetties, docks and terminals based on activities undertaken in the area as required by the environmental regulations for work places.

Currently the Port of Cape Town lighting networks consist of High mast, street and perimeter lighting as shown in Table 1.

**Table 1: Port lighting network**

Description	Poles type	Fitting type	Qty
High mast lighting	Galvanized steel - 30m	400w HPS	127
Perimeter lighting	Re-enforced concrete - 6m	70w HPS	185
Quayside lighting	Re-enforced concrete - 6m	150w HPS	500
	Galvanised steel - 15m	250w HPS	
	Galvanised steel - 9m	250w HPS	
	Plinth box mounted	80w HPS	
Road lighting	Galvanised steel - 15m	250w HPS	
	Galvanised steel - 9m	250w HPS	
	Galvanised steel - 15m	150w HPS	
	Fibreglass - 9m	222w LED	

Internal conditions assessments have been conducted by the Engineering team to assess Mast poles and lights which require attention are detailed below.

As per the Civil Works information, the extent of the works is divided up into the following areas within the Port of Cape Town:

**A-Berth high mast lighting**

- 2 no. of new High Mast Lights (HML)
- 100m of trench excavations and pipe bedding
- 100m of 2x 160dia. Electrical sleeves
- 3 no. electrical chambers

**Rail Marshalling yard high mast lighting**

- 2 no. of HML to be removed for refurbishment (electrical scope).
- 2 no. of new HML

- Holes for foundations
- Installation of 4 HML in total.
- 140m of trench excavations and pipe bedding
- 140m of 2x 160dia. Electrical sleeves
- 1 no. electrical chamber

#### **Road lighting along Duncan Road**

- 66 no. of new road lights.
- 29 no of old road lights to be removed.
- Holes for foundations
- 100m of trench excavations and cable bedding
- 3 no. electrical chambers of various sizes

#### **Road lighting along Heerengracht street**

- 3 no. of new road lights.
- no of old road lights to be removed.
- Holes for foundations
- 30m of excavations and pipe bedding

#### **Road lighting along M-berth**

- 6 no. of new road lights.
- 9 no of old road lights to be removed.
- Holes for foundations
- 20m of trench excavations and cable bedding

#### **Road lighting along Tanker basin and Eastern Mole**

- 14 no. of new road lights.
- Holes for foundations
- 200m of trench excavations and cable bedding.
- 40m of 2x 160dia. Electrical sleeves

The Project Area and Scope is indicated in Figure 1 below.



**Figure 1: Port of Cape Town Lighting**

Based on the outcomes for the conditions assessments. The Civil, Electrical and Structural engineering discipline have compiled feasibility conditions assessment per discipline to compile the Design criteria and subsequent scope of work. This is because the TNPA will acquire the services of a suitably qualified and resourced Multidisciplinary Engineering Contractor to produce some structural detailed design aspects (Concrete bases & 50m Light Masts) of the project and to undertake project execution work and all engineering related activities, procure all material and equipment and execute all the works associated with the construction of Cape Town Port Lighting and Infrastructure Upgrade project. The Works will be in accordance with Employers designs requirements

### **3. Purpose of Report**

The purpose of this Feasibility Environmental and Social Governance Report is to:

- Outline environmental design criteria for incorporation in engineering scope of work;
- Outline environmental approval processes that may be required; and
- Identify and outline environmental concerns and specify appropriate mitigation measures for implementation.

## 4. Baseline Data Collection

A Baseline Environmental Review (BER) was undertaken as part of the feasibility Phase of the project and took into consideration the status quo of the area proposed for the upgrade and new light installations in the port, previous Environmental Authorisation processes and specialist investigations undertaken for the Port as well as the Principles and Guidelines for Port Development.

The purpose of the BER was to identify environmental sensitive features, consider current environmental legislative requirements, and identify areas of risk. The review allowed for the identification of environmental impacts as well as determining adequate management and mitigation measures for inclusion in a Project Environmental Specification (PES) should these not be adequately addressed in the Transnet Construction Environmental Management Plan (CEMP) and Standard Environmental Specification (SES).

The findings of the BER allowed for the update and refinement of the prefeasibility environmental and sustainability design criteria.

A summary of the findings of the BER is provided below. The Baseline Environmental Review Report is attached as Annexure A to this report.

### 4.1 Baseline Environmental Review

A Environmental Baseline inspection was carried out on 14 June 2022. The inspection was carried out against the flora, fauna, water, heritage resources, regional climate and the Social aspects of the area. The inspection criteria was derived from the following Environmental Legislation:

- Environmental Impact Assessment regulations, 2014 as amended,
- Publication of lists of Endangered, Vulnerable and Protected Species,
- Section 21 of the National Water Act 36 of 1998,
- National Heritage Resources Act 25 of 1999,
- National Environmental Management Air Quality Act 39 of 2004,
- Section 7, 16, 17 and 71 of the National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008).

Considering the available scope of the project and based on available project information the baseline review concluded that project activities will not require Environmental



approvals in terms of identified relevant Environmental Legislation. TNPA will acquire the services of a suitably qualified and resourced Multidisciplinary Engineering Contractor to produce some structural detailed design aspects (Concrete bases & 50m Light Masts) of the project and to undertake project execution work and all engineering related activities, procure all material and equipment and execute all the works associated with the construction of Cape Town Port Lighting and Infrastructure Upgrade project. Although Engineering criteria has been developed for implementation by the managing agent and no environmental sensitivities could be identified during the baseline review with the information available, the environmental discipline should be consulted during the finalisation of the proposed design and development of project execution plan to advise the project team on the proposed project execution approach and construction management. A SHE officer will be sufficient for the project execution to update the environmental file as well as other monitoring requirements of the port.

## 5. Environmental Design Criteria

The purpose of Environmental Design Criteria (EDC) is to provide an environmental guideline against which engineering design requirements can be aligned and to ensure that potential impacts associated with construction and operational activities are reduced. The EDC further ensures compliance with relevant Environmental Legislation and specifies specific environmental standards for structures and infrastructure development.

Prefeasibility and Feasibility EDC for this project have been identified and aligned with the Principles of the National Environmental Management Act, 1998, Equator Principles, Sustainable principles for Port Development and environmental best practice. The EDC is aligned with the Civil works information for the project as well as the Electrical Engineering design which were captured from the prefeasibility EDC requirements as well as the Environmental Governance Framework.

Due to the nature of the project and the project footprint there is not a lot of opportunity to implement a variety of design criteria. The design criteria has been developed by the engineering team for implementation by the management agent to be appointed to implement the design criteria and execute the project. This EDC will guide the management agent on issues to be considered in the design and execution of the project. The focus of the EDC is mostly centred around climate change including reducing energy consumption and carbon footprint. Visual impacts associated with different types of lighting have also been considered and EDC specified accordingly as per the scope available. Impacts associated with construction have been considered and where

practical and relevant EDC have been specified. These include impacts on storm water and surface water quality, sustainability and ecology.

Design criteria from different engineering disciplines have been developed and refined for implementation at Feasibility, bankable design and execution phase of the project

Annexure B outlines specific environmental design criteria identified for this project.

## **6. Environmental Authorisation**

The refurbishment, upgrading and replacement of high mast, perimeter, quayside and road lighting in various identified areas of the Port where lighting and infrastructure do not currently meet Safety legislative requirements. However, no Environmental Fatal Flaws were identified for the project option. The refurbishment, upgrading and replacement will occur within disturbed brownfields areas within the Operational Port. South African ports have several exemptions for certain listed activities such as for excavation works and new infrastructure development in brownfield areas within Operational Port.

The proposed project options have been evaluated against the requirements of the EIA Regulations, 2017 as amended to identify potential triggers for environmental authorisation. Based on available project information the various project components do not require an environmental authorisation as described by the Regulations. This finding is based on current Regulated Listed Activities and could potentially change should changes to the Regulations be published prior to execution of the project. Should the designs to be developed by the management agent and proposed project execution approach require approvals, the TNPA PDU Executive Manager must be consulted to assign resources to assist the project management agent and advice on Transnet Environmental Management practices.

## **7. Environmental Management Programme (EMPr)**

No legislative requirements were identified for the proposed project therefore the development of an Environmental Management Programme will not be required for the project.

The TNPA Project Delivery Unit implements an Environmental Governance and Control Framework which include a Construction Environmental Management Plan (CEMP) (ENV-STD-001 Rev04) and Standard Environmental Specification (SES) (ENV-STD-002 Rev04) dated November 2017.

The CEMP and SES have been compiled for implementation across all Transnet infrastructure projects in order to avoid and/or manage potential negative impacts. For the Port Lighting project it is recommended that both the CEMP and SES are implemented and must form the basis for compliance during Execution. The Environmental Governance and Control Framework is currently being circulated for signature at Group upon its finalisation the updated version can be utilised to enforce the minimum Environmental Management measures on projects.

The CEMP provides an integrated approach to environmental management. This approach is designed to guide the appropriate allocation of human resources, assign responsibilities, develop procedures and ensure compliance with regulatory and best practice requirements.

The SES describes the minimum acceptable standard for environmental management for a range of environmental aspects commonly encountered on construction projects and sets environmental objectives and targets, with which the Contractor must comply.

## 8. Permitting

A review of environmental legislation, relevant/applicable to the project, has been undertaken, and requirements for permits, authorisations and licenses determined. A summary of applicable legislation are provided below.

### 8.1 National Environmental Management Act (No. 107 Of 1998)

The National Environmental Management Act (No. 107 of 1998) (NEMA) forms the framework for environmental legislation in South Africa, bringing effect to section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996). NEMA sets out the principles for effective environmental management. Table 2 below indicates these principles and the measures put in place for this project to ensure compliance.

**Table 2: Compliance with Environmental Management Principles in terms of NEMA**

Environmental Management Principle	Project Compliance
Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably	<ul style="list-style-type: none"> <li>• Implementation of Procurement Policies and Procedures</li> <li>• Port allows for economic development linked with protection of the environment through implementation of BPEO</li> </ul>

<p>Development must be socially, environmentally and economically sustainable</p>	<ul style="list-style-type: none"> <li>• Implementation of BPEO, environmental &amp; sustainability design criteria</li> </ul>
<p>Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option</p>	<ul style="list-style-type: none"> <li>• Implementation of Environmental Governance &amp; Control Framework</li> <li>• Environmental Design criteria incorporation into engineering designs</li> <li>• Environmental method statements must be reviewed and approved prior to commencing construction</li> <li>• Transnet Environmental Management System</li> </ul>
<p>Environmental justice must be pursued so that the adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons</p>	<ul style="list-style-type: none"> <li>• The project is taking place within an existing Port and will not impact directly on local communities other than through the provision of employment opportunities</li> <li>• Stakeholder Engagement with key stakeholders (port tenants and other users that could potentially be affected during execution)</li> </ul>
<p>Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination</p>	<ul style="list-style-type: none"> <li>• The project is taking place within an existing Port and will as such not prevent equitable access to environmental resources, benefits and services.</li> </ul>
<p>Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle</p>	<ul style="list-style-type: none"> <li>• PLP</li> <li>• Implementation of Environmental Governance &amp; Control Framework</li> <li>• Environmental Method Statements</li> <li>• Contractor's and Employer's Environmental Officers</li> </ul>
<p>The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured</p>	<ul style="list-style-type: none"> <li>• Stakeholder Engagement</li> <li>• Implementation of Communication Plan</li> </ul>
<p>Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge</p>	<ul style="list-style-type: none"> <li>• Continual Stakeholder Engagement</li> </ul>
<p>Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means</p>	<ul style="list-style-type: none"> <li>• Implementation of Communication &amp; Stakeholder Engagement Plan</li> <li>• HSE Awareness and training</li> <li>• Skills development and transfer</li> </ul>
	<ul style="list-style-type: none"> <li>• Implementation of Transnet Capic approved PLP</li> </ul>

<p>The social, economic and environmental impacts of activities including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in light of such consideration and assessment</p>	<ul style="list-style-type: none"> <li>Proposed project option based on socio-economic and environmental factors</li> <li>Implementation of Environmental Governance &amp; Control Framework</li> </ul>
<p>The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected</p>	<ul style="list-style-type: none"> <li>Measures must be in place to reduce the risk of work that is harmful to human health or the environment: <ul style="list-style-type: none"> <li>Environmental Governance Framework</li> <li>Health and Safety Files</li> <li>Environmental Files</li> <li>Environmental Method Statements</li> <li>Health and Safety Officers</li> <li>Environmental Officers</li> </ul> </li> </ul>
<p>Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law</p>	<ul style="list-style-type: none"> <li>Implementation of Communication &amp; Stakeholder Engagement Plan</li> </ul>
<p>There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment</p>	<ul style="list-style-type: none"> <li>Including requirements of permits and licenses into project environmental specification</li> </ul>
<p>Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures</p>	<ul style="list-style-type: none"> <li>Conflict resolution procedures to be implemented where Transnet-DEFF meetings are unable to resolve conflict</li> </ul>
<p>Global and international responsibilities relating to the environment must be discharged in the national interest</p>	<ul style="list-style-type: none"> <li>Taken into consideration in the CEMP and SES</li> </ul>
<p>The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage</p>	<ul style="list-style-type: none"> <li>Implementation of Environmental Governance &amp; Control Framework</li> <li>Implementation of BPEO</li> </ul>
<p>The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment</p>	<ul style="list-style-type: none"> <li>Implementation of Permit, license and EMP requirements where relevant</li> <li>Implementation of Environmental Governance &amp; Control Framework</li> </ul>
<p>The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted</p>	<ul style="list-style-type: none"> <li>Not applicable to the specific project, other than through employment opportunities and environmental awareness training of construction team</li> </ul>
<p>Sensitive, vulnerable, dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures,</p>	<ul style="list-style-type: none"> <li>Implementation of Environmental Governance &amp; Control Framework</li> <li>PLP to ensure environment is considered</li> <li>Medium-term and Long-term Port planning</li> </ul>

especially where they are subject to significant human resource usage and development pressure	<ul style="list-style-type: none"><li>• Environmental Officer to monitor construction and ensure compliance</li></ul>
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## 8.2 National Environmental Management: Biodiversity Act (No. 10 of 2004)

The National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA) provides for the:

- Management and conservation of South Africa's animal and plant biodiversity in accordance with NEMA;
- Protection of species and ecosystems that warrant national protection;
- Sustainable use of indigenous biological resources;
- Implementation of ratified international agreements relating to biodiversity;
- Fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources;
- Co-operative governance in biodiversity management and conservation; and
- Establishment and functions of a South African National Biodiversity Institute.

On the day of the site inspection, no threatened ecosystems listed in Government Notice No. 1002 (9 December 2011) requiring protection in terms of section 52(1)(a) of the NEMBA were present within the Port Project Area. The port is an already disturbed area and most of the work will be executed paved surfaces areas

Based on activities associated with the project as well as the nature of the area in which activities will be undertaken there will not be a need for rescue of threatened and protected plant and animal species. The Civil Works information makes reference to vegetation on site however no vegetation was observed on site of the day of the inspection. The work information requires the contractor to have designated temporary stockpiling areas for the storage of excess material from excavation works. The development of vegetation on these stockpiles must be monitored and removed by the contractor at their cost. The development of alien vegetation is possible as such the development of alien vegetation must be monitored

The Alien and Invasive Species Regulations are relevant to the Port of Cape Town and Port Operations. TNPA is in the process of developing the required Alien and invasive species management plan for the various Ports. Requirements of this Plan must be incorporated into Environmental Specifications where relevant to project activities.

Management of Alien Vegetation has been addressed in the Transnet SES and may become relevant during the execution phase.

### **8.3 National Environmental Management: Waste Act (No. 59 of 2008)**

The National Environmental Management: Waste Act (No. 59 of 2008) (NEMWA) provides for:

- Protection of health, well-being and the environment by providing reasonable measures for
  - Minimising the consumption of natural resources,
  - Avoiding and minimising the generation of waste,
  - Reducing, re-using, recycling and recovering waste,
  - Treating and safely disposing of waste as a last resort,
  - Preventing pollution and ecological degradation,
  - Securing ecologically sustainable development while promoting justifiable economic and social development,
  - Promoting and ensuring the effective delivery of waste services.
- National norms and standards regulating the management of waste by all spheres of government;
- Integrated waste management administration, reporting, planning, monitoring and compliance enforcement (e.g. waste management information systems and waste management licenses);
- Specific waste management measures; and
- Remediation of contaminated land.

Chapter 4 (section 14 to 42) of the NEMWA highlights general and specific waste management measures that must be implemented both during construction and operation. These requirements have been taken into consideration and written into Transnet SES.

As per the civil works information for the project, excavation and trenches will be dug for removal of poles and installation of masts and the installation of cables and pipe bedding respectively were required. The soil material produced from such works will require temporary storage in the port prior to its disposal. Therefore, a designated area for temporary storage of spoil material must be provided to the project execution agent and included in the site layout plan for the project. All areas designated for stockpiling of spoil material will be subject to the requirements of the NEMWA Category C Norms and Standards for the storage of waste, 2013. As per the works information, the appointed contractor will be required to dispose off soil from excavation works as well as other excess material at a registered landfill site and produce evidence of such safe disposal. Prior to

disposal waste management hierarchy must be used before disposal can be considered. Excavated material must be considered for reuse as backfill material. The lights and poles to be removed will require storage and disposal. Some of the lights and poles might contain some hazardous substances or material. All light replacement must be disposed off at a facility authorised to do so. All lights with hazardous components must be stored as hazardous substance and disposed-off at a hazardous waste storage area were applicable. The appointed Management Service provider will also be required to dispose of the lights as well as any other construction remnants at a registered waste disposal site and produce proof of safe disposal. This disposal of excavated material has been incorporated into the works information for provision to be made by the Management Service provider

Waste management of site will be executed in accordance with the requirements of the CEMP and SES.

#### **8.4 National Heritage Resources Act (No. 25 of 1999)**

The National Heritage Resources Act (No. 25 of 1999) (NHRA) provides for:

- General principles for governing heritage resources management;
- An integrated system for the identification, assessment and management of heritage resources;
- The establishment of the South African Heritage Resources Agency together with provincial and local governance systems;
- Norms and standards for the management of heritage resources; and
- Protection of heritage resources.

The NHRA applies to heritage resources considered in terms of section 3 of the NHRA as being of cultural significance or special value for the present community and for future generations. These heritage resources include objects, buildings, landscapes, geological sites, archaeological sites, paleontological sites, graves and burial grounds, and sites of significance.

Considering the scope of the project and nature of the project footprint the presence of archaeological artefacts or paleontological material is not expected. The age of structures and infrastructure to be removed, refurbished or replaced has been confirmed to be less than 20 years therefore no heritage permit required. Heritage resource management must be executed in accordance with the SES and CEMP.

#### **8.5 National Forest Act 84 of 1998**



The National Forests Act (No. 84 of 1998) (NFA) provides for the:

- Promotion of sustainable management and development of forests;
- Creation of conditions necessary to restructure forestry in State forests;
- Provision of special measures for the protection of certain forests and trees;
- Promotion of sustainable use of forests;
- Promotion of community forestry; and
- Promotion of greater participation in all aspects of forestry and the forest products industry.

During the site inspection no natural forest or protected areas as mentioned in Chapter 3 of the NFA were to be present within the boundaries of the Port project footprint. Government Notice No. 716 (7 September 2012) identifies 47 protected trees in terms of section 12(1) (d) of the NFA. As per section 15(1) of the NFA, a protected tree may not be cut, disturbed, damaged or destroyed without a permit issued by the Department of Environment, Forestry and Fisheries (DEFF).

The Project Management agent will be required to manage Flora on site in accordance with the SES and CEMP as well as raise awareness on site on the accordance the requirements of the SES and CEMP. All environmental awareness training tools for construction will be provided by TNPA for use on a continuous basis throughout the duration of the project

## **8.6 Local Workforce and Employment Planning**

Provision must be made for employment of local community members in accordance with requirements of the Transnet Procurement Procedures. An influx of workforce is not expected due to the size and nature of the project.

Supplier Development will be implemented for this project in accordance with the Transnet Supplier Development Plan which is available from Procurement.

Not many employment opportunities are expected to be generated during operations, however job creation during construction will be emphasised throughout the execution phase of the project.

## **9. Screening and Project Feasibility**

Two options were considered for addressing the identified lighting issues at the Port of Cape Town through a pre-feasibility (FEL 2) investigation. The Options included the following:

- Option 1: Continue with existing maintenance regime;
- Option 2: Replacement, rehabilitation and upgrading of lighting and infrastructure.

A Multi Criteria Analysis (MCA) was undertaken for the two options. Each option was assessed against:

- Carbon Footprint reduction;
- Lifespan of Assets;
- Energy efficiency and cost;
- Maintenance effectiveness; and
- Infrastructure compliance;

The MCA identified Option two as the preferred Option to proceed to FEL3. The preferred option is considered to be most feasible from a complexity of implementation and cost perspective. The outcome of the MCA is indicated in Figure 2 below:

Option		Carbon footprint reduction	Life span of assets	Energy efficiency and costs	Maintenance effectiveness	Infrastructure Compliance Illumination levels meeting standards	Total
		5%	10%	20%	15%	50%	
a. Maintenance regime	Score (25)	3	3	2	2	3	<b>10</b>
	Weight (100%)	3	6	8	6	30	<b>53</b>
b. Replacement, rehabilitation & Upgrading	Score (25)	5	4	5	5	5	<b>19</b>
	Weight (100%)	5	8	20	15	50	<b>98</b>

Score Legend:  
1 – Not acceptable  
2 – Poor  
3 – Satisfactory  
4 – Good  
5 – Excellent

Table 2: MCA evaluation of options

### Figure 2: MCA Outcome

In terms of the requirements of the PLP prefeasibility requirements, both options were assessed against the baseline environmental data. Preliminary findings concluded that Option two is most likely to have the least significant environmental and social impact and therefore cost to the environment, in the long run.

Specific impacts identified that require some form of mitigation through design include climate change, water quality and aesthetics. Environmental and sustainability design criteria have been identified and refined in the feasibility study and included in detailed engineering designs criteria. A management agent is to be appointed to produce some structural detailed design aspects (Concrete bases & 50m Light Masts) of the project and to undertake project execution work and all engineering related activities, procure all material and equipment and execute all the works associated with the construction of Cape Town Port Lighting and Infrastructure Upgrade project.

The project will ensure additional illumination is created in the port of Cape Town at key areas within currently insufficient illumination as per the safety illumination requirements of the port system.

### **9.1 Footprint against established Benchmarks, KPI's and Objectives**

A site inspection of the project footprint has been done as part of the Baseline Environmental Review process. The project components associated with the Preferred Option will be mostly restricted to the existing lighting and infrastructure footprint of the Port. The physical project footprint should be restricted to the existing port lighting infrastructure footprint with excavation works were required for the execution of the project activities.

Project is a refurbishment and replacement of mast poles and light as well as the installation of new mast and lights in some area at A - berth. The project is benchmarked against Port of Cape Town LED Lights recently installed in some sections of the port of Cape Town.

Sustainability objectives and key performance indicators (KPI's) have been developed by the project team and are indicated in Table 3 below:

Table 3: Sustainability Objectives and Targets

<u>Objective</u>	<u>Strategy</u>	<u>Measurement</u>
Energy efficient equipment	Modern technology with reduced energy consumption	Lower operational & maintenance costs
Local economy invigoration	Local businesses to undertake the work	Appointment of local businesses
Mentoring of Transnet Trainees and Graduates	Employment of trainees and graduates in the project.	Signed Experiential Training forms
Enrichment of Transnet Institutional Memory	Facilitate a lessons-learnt workshop	Signed Lessons-learnt register
Improved health and safety conditions	Evaluate post implementation lux levels vs existing	Results should yield higher readings of illuminance

## 9.2 Environmental Screening and Sustainability Analysis

Sustainable Development Design for feasibility did not form part of the scope of work mandated to the Environmental Discipline. A detailed sustainability analysis has therefore not been undertaken.

A high level sustainability analysis undertaken indicates that the feasibility option will be more sustainable than Option 1. This is due to the following:

- It proposes investment in infrastructure,
- Replacement of old technology and infrastructure with modern, energy efficient lighting infrastructure.
- The energy efficient infrastructure will result in reduced maintenance costs, specifically reactive maintenance costs,
- Increased lifespan of LED Lights contributes to savings through less reactive repairs.

## 9.3 Project Ecological Footprint

Ecological footprints are assessed in terms of the biologically productive area that is used by people for various purposes, and is calculated as Global Hectares (Gha). Footprint calculations are mostly done on Regional, National and International scales.

Ecological footprints for infrastructure development can be calculated, but is dependent on the availability of different sets of information, some of which only become available after appointment of construction contractors.

The ecological footprint assessment methodology can only effectively be applied to Projects based on the following assumptions:

- It is possible to keep track of most materials to be used for construction;
- It is possible to calculate energy embodied in each material through specific *embodied energy coefficients*;
- Use of fuels and energy during material manufacturing and the construction phase of the project produces an increase of CO2 emissions;
- Embodied energy in building materials can be converted into the biologically productive area required to absorb CO2 emissions or to produce materials.

Considering the above it is not possible to calculate the ecological footprint of the Project in Global Hectares at this stage. The ecological footprint monitoring will be assessed by the appointed Project Management during project execution who would be required to report on a monthly basis on the Environmental Stewardship KPI's for Transnet whichever can be measured. The ecological footprint for the project which can be measures includes avoiding or minimising impacts on amongst others water quality and quantity, air quality and climate change as well as minimising waste generation and disposal to landfill. This can be achieved through setting additional sustainability objectives and KPI's and implementing the CEMP and SES during construction.

## 10. Equator Principles Assessment

Table 4 below indicates Transnet's ability to comply with the Equator Principles. At present all the requirements have and can be met.

Table 4: Ability to meet requirements of Equator Principles

Equator Principle	Description of current compliance with Principle
<b>1: Review and Categorisation</b>	<b>Category B</b> – Project with limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.
<b>2: Environmental and Social Assessment</b>	Environmental authorisation not required. Impacts have been identified and assessed as part of Baseline Environmental Review process. Management and mitigation measures for impacts contained in the CEMP and SES

<p><b>3: Applicable Environmental and Social Standards</b></p>	<p>Transnet Environmental Governance and Control Framework documents</p>
<p><b>4: Environmental and Social Management System and Equator Principles Action Plan</b></p>	<p>Implementation of the Transnet Environmental Governance and Control Framework. This includes ensuring compliance with the SES and CEMP and continual compliance monitoring during project execution phase. Monthly audits will be done to evaluate compliance and to determine the need for amendment of management plans to rectify identified shortcomings during project execution phase.</p> <p>Furthermore, the Port of Cape Town has an existing Environmental Management System which will continue to be implemented where applicable.</p> <p>Taking this into consideration an Equator Principles Action Plan is not considered to be applicable to the project.</p>
<p><b>5: Stakeholder Engagement</b></p>	<p>Project Communications Plan and continual stakeholder engagement</p>
<p><b>6: Grievance Mechanism</b></p>	<p>Public complaints register and record of formal external communication will be kept by Transnet.</p> <p>Stakeholder engagement during project execution phase will also allow affected parties to register their grievances and/or concerns regarding the project.</p>
<p><b>7: Independent Review</b></p>	<p>Independent review of specialist investigations, designs etc. to be confirmed</p>
<p><b>8: Covenants</b></p>	<p>Compliance with environmental requirements is written into the contract documentation and CEMP and SES. All contractors operating on site are required to have an environmental / SHE officer, environmental method statements and keep an environmental file. Method statements must be signed off by Transnet prior to the contractor commencing with work.</p>
<p><b>9: Independent Monitoring and Reporting</b></p>	<p>Transnet Environmental Officer (EO) to be on site. Assurance audits by Assurance Specialist.</p>
<p><b>10: Reporting and Transparency</b></p>	<p>Transnet and the EO reports on environmental compliance. Assurance audits by Assurance Specialist.</p>

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## 11. Conclusion

The feasibility process has served to ensure that environmental and social requirements are identified for in the feasibility phase for implementation throughout bankable feasibility and during execution phase. In line with the Project Lifecycle Process, this report has shown that:

- Environmental design criteria have been identified and incorporated into project designs criteria for implementation by the managing agent that will be responsible for some structural design and execution of the project;
- The Transnet CEMP and SES can be implemented during project execution phase;
- Permit requirements where relevant have been determined;
- Stakeholder engagement requirements for execution has been specified; and
- Screening and Project Sustainability requirements have been identified for consideration.

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## **Annexure A: Environmental Design Criteria**

Environmental Design Criteria (EDC) refers to requirements and criteria that must be taken into consideration during:

- The initial design of the project;
- Any amendments to the design before and during construction; and
- Any changes to the development post construction.

In addition to the standard environmental practices within the Port of Cape Town that has been established, EDC have also been identified through the prefeasibility and feasibility process for the project. As part of this process the potential impacts of the project have been identified based on the environmental status quo of the site.

The EDC outlined in this Section provide the requirements and criteria for design. A management agent will be appointed to design some part of the structural designs and implement the project. EDC The EDC do not specify requirements and criteria for contract planning (e.g. procurement and tender process) or project execution (e.g. construction management).

This section provides a high-level summary of key EDC that must be taken into consideration during bankable design and execution phases

EDC have been developed according to specific environmental aspects and has taken the following into consideration:

- **Ecology/Biodiversity:** design requirements specified for infrastructure that may directly or indirectly impact on biodiversity.
- **Water:** design requirements specified for construction and infrastructure that may impact on surface and storm water quality. These include design criteria for storm water infrastructure, waste management, bunding for storage, handling or use of hazardous substances and bunding for equipment operating with fuels and oils.
- **Aesthetics:** design requirements specified for different types of lighting to minimise visual impact of lights within the project footprint for both temporary and permanent lighting.



- Climate Change: design requirements specified for lighting and associated infrastructure to reduce energy consumption and carbon footprint.

These design requirements will be implemented the execution phase of the project:

**Table 3: Feasibility Environmental Design Criteria**

<b>Environmental Design Criteria</b>	<b>Objectives</b>	<b>Requirements</b>
<b>Water Quality</b>	Prevention of pollution from landside during construction	<ul style="list-style-type: none"> <li>• Bunding to be provided for storage and handling of hazardous substances in works areas and site camps.</li> <li>• Drip trays for equipment operating on fuels and oils.</li> <li>• Impermeable slabs for refuelling with drainage into a sump.</li> <li>• Temporary storm water management controls for storm water from works areas</li> </ul>
	Prevention of pollution from roads and other hard surfaces	<ul style="list-style-type: none"> <li>• As far as reasonably possible, capture and contain "dirty" storm water for appropriate disposal/discharge.</li> <li>• Runoff generated by hard surfaces should be directed into energy dissipation structures, where relevant.</li> </ul>
<b>Aesthetics</b>	Sustainable lighting initiatives	<ul style="list-style-type: none"> <li>• LED lighting (or similar) must be utilized based on their low power consumption rates and low light spill.</li> <li>• Conventional lighting must be avoided as far as reasonably possible.</li> <li>• Street light fittings must contain a cut-off light distribution which reduces any upward light.</li> <li>• Light spill including upward spill must be avoided.</li> <li>• External light fittings must not allow light to shine upward.</li> <li>• Lighting for security and safety must be directed downwards to reduce light spill beyond project footprint.</li> <li>• Lowest possible lumens must be utilised.</li> </ul>
<b>Ecology</b>	Prevent direct or indirect impact in biodiversity	Not applicable, project footprint is the existing port footprint, excavation works will occur within an already disturbed area. Therefore, no direct or indirect impact on biodiversity. Works will be confined on brownfields

		and no work will occur in the sea or quay walls were applicable
<b>Sustainability</b>	Design structures to avoid replacement on a regular basis and to minimise maintenance costs	<ul style="list-style-type: none"> <li>• Confirm longest possible design life for infrastructure</li> </ul>
	Reduce use of pollutants and materials with high waste generation	<ul style="list-style-type: none"> <li>• Incorporate sustainable material into design.</li> </ul>
	Minimise waste disposal	<ul style="list-style-type: none"> <li>• Implementation of the waste management hierarchy</li> <li>• Recover and recycle materials where possible.</li> </ul>
<b>Climate Change</b>	Minimise carbon emissions and reduce energy consumption	<ul style="list-style-type: none"> <li>• Use local suppliers to supply materials as far as possible;</li> <li>• Use energy efficient materials</li> </ul>