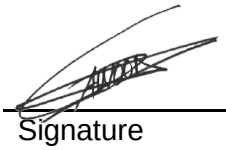
Transnet National Ports Authority

Baseline Risk Assessment

Port Lighting and Infrastructure Upgrade for

Port of Cape Town

Project Number: XCT.E.0025

Compiled by:	Terrence Vilakazi		28/02/2023
	Safety Practitioner	Signature	Date
Approved by:	Ghaalib Dawood		10/03/2023
	Engineer	Signature	Date
Accepted by:	Katleho Lepati		10/03/2023
	Project Manager	Signature	Date

Rev No.	Date	Revision Details
B		Issue for approval
A	28/02/2023	Issue for review

Introduction and Background

Transnet National Port Authority (TNPA) is continually assessing Port Infrastructure in the Port of Cape Town. The assessment is the result of concerns relating to some of the port lights being non-compliant with safety regulations as well as the overall port strategy to increase operational activities. The lights assessed were also identified to be non-compliant with the required minimum illuminance levels and Occupational Health and Safety Act 85 (85 of 1993).

All Ports in South Africa must comply and adhere to the Occupational Health and Safety Act 85 (85 of 1993) and International Standard for Protection of Ships and Shipyards (ISPS) guidelines, by providing a safe operational environment, and not only for their own personnel and associated assets but also for their customers.

The Port of Cape Town is comprised of various roads, parking areas, quays, berths etc. These areas are utilized by Transnet staff and various other stakeholders. It is therefore imperative that TNPA, as the landlord, provide sufficient lighting in all areas that is line with the national codes and health and safety regulations. Ensuring that these areas are up to standard has the potential to reduce the risk of injury and increase productivity, it also reduces the risk of Transnet being held liable for any incidents that may occur due to lighting that does not conform with the requirements.

Risk Assessment Title	Port Lighting and Infrastructure Upgrade for Port of Cape Town

Risk Assessment Team				
	Name	Designation	Contact Number	E-mail
Facilitator	Terrence Vilakazi	Health & Safety Practitioner	021 449 3589	Terrence.vilakazi@transnet.net
Team Member 1	Ghaalib Dawood	Engineer	021 449 5260	Ghaalib.dawood@transnet.net
Team Member 2	Katleho Lepati	Project Manager	021 449 3591	Katleho.lepati@transnet.net

Inherent Risk

- Traffic congestion.
- Working over water.
- Working in an operational area.

Activities Covered

The civil engineering scope which will be covered in this document comprises:

- Site locality planning and setting out.
- Site clearance and earthworks.
- Protection of existing services, and where required, relocation of services.

- Routing of electrical and communications ducts and chambers.

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

Survey control and setting out:

The co-ordinate system is based onHartebeesthoek94 (WGS 84Ellipsoid). Setting out of the works is in accordance with this co-ordinate system.
The Project Manager is to point out landmarks and reference points in the Port Levels are given relative to Mean Sea Level.
The site surveys and plans to be in accordance with the Standard Survey Guidelines: TMH 11 as amended in 2013.

Scope of Risk Assessment
The risks identified are those that will have a direct effect on the contractors during construction but also those that could have a detrimental effect on the project directly or indirectly from a time delay and cost point of view.

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
Access into Port	• **Non-compliance with port rule and National Key point Act.**	• **Port entry denied.**	• **All Contractor employees including visitors, suppliers and deliveries must undergo TNPA safety induction before entering the Port and Construction site.** • **TNPA permits to be requested through TNPA Security at the contractor's expense.**	**MEDIUM**
	• **Driving under the influence of alcohol and drugs.**	• **Injury to persons and property damage.** • **Disruptions to Port operations.** • **Collision with the train.**	• **All employees entering the Port shall subject to an alcohol Breathalyzer or drug test.** • **The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996) and Regulations thereto or otherwise.**	**HIGH**
	• **Speeding.**	• **Injury to persons and property damage.** • **Suspension from the Port.**	• **All drivers shall abide by the speed limit of 20km/h inside the Port.** • **The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996).**	**MEDIUM**

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• Adherence to Vehicle and Transportation Management procedure and the Road Traffic Act.	
	• Parking in areas not designated for parking.	• Obstruction to the road and lead to injury to persons/ property damage. • Disruptions to Port operations.	• Contractor shall ensure that all their drivers' park in designated areas to avoid obstruction on the road due to high vehicle movement. • Contractor's employees must ensure that they use designated routes to get to their respective site. • Contractor must ensure that a traffic management plan is developed and implemented when activities affect road traffic.	**MEDIUM**
Site Establishment	• No ablution facilities.	• Communicable disease due to poor hygiene practices.	• Contractor to adhere to OHSACT ACT 85 of 1993 and Facilities Regulations of 1994, TNPA Health and Safety Project specification and Occupational Health Risk assessment.	**LOW**
	• Using drinking water from un-identified source/connection.	• Sickness of employees resulting from drinking water from unsafe sources.	• Drinking water must only be sourced from a connection identified as safe for drinking.	**MEDIUM**
	• No designated eating area.	• Employees contracting diseases due to eating at hazardous areas on site.	• Contractor to adhere to OHSACT ACT 85 of 1993 and Facilities Regulations of 1994, and TNPA Health and Safety Project specification.	**MEDIUM**

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
	• Temporary electrical connection.	• Electrocution and property damage.	• Electrical connection must be done by a MIE (Master Installation Electrician) who has been authorised.	HIGH
	• Defective tools used (drill, welding machine, grinders, and hand tools)	• Injuries to employees	• Contractor to ensure all electrical and hand tools are inspected before use. • Contractor to comply with TNPA health and safety site specification.	MEDIUM
Transportation of office containers and materials to site.	• Overloading and speeding.	• Containers and materials falling off causing injuries and property damages. • Road accidents.	• Contractor to ensure that loads are not overloaded. • The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996).	MEDIUM
	• Incompetent driver.	• Property damage and injuries.	• Contractor's driver must be competent and appointed in writing.	HIGH
Offloading of office containers and materials.	• Substandard rigging and lifting practices.	• Loads falling causing injuries and property damages. • Loads swinging causing injuries and property damages.	• Contractor must develop and implement a rigging study and lift plan. • Competent rigger to be appointed.	HIGH
	• Possible mechanical failure of lifting equipment (mobile cranes/crane trucks)	• Loads falling causing injuries and property damages. • Loads swinging causing injuries and property damages.	• Valid crane, hook, rope, load, and calibration test to be completed. • Competent Rigging and lifting equipment inspector appointed (LMI). • Pre-use checks to be conducted by the appointed competent person.	HIGH

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• All lifting and rigging equipment tested and certified, proof to be kept on file. • Storage of lifting and rigging equipment to be done in an approved manner.	
	• Poor ground stability	• Crane tipping over causing injuries to employees and damage to property	Contractor to ensure inspection of ground stability before outriggers are extended	HIGH
	• High wind speeds	• Loads falling causing injuries and property damages. • Loads swinging causing injuries and property damages.	• Contractor to take note of the weather prior to any lifting activities. • Contractor to ensure that no lifting must take place when there is inclement weather and or the wind speed is equal or more than 30km/h	HIGH
	• Incompetent rigger and crane operator.	• Loads falling causing injuries and property damages. • Loads swinging causing injuries and property damages.	• Competent operator and riggers with previous experience and competencies must be appointed. • Contractor to comply with Driven Machinery regulations,2015 and 18(11) • Guide ropes to be used to control load.	MEDIUM
	• Employees working under suspended loads	• Loads falling causing injuries and fatalities	• Contractor to ensure that no person walks or works under suspended loads.	HIGH
	• Incorrect manual Handling.	• Back injuries. • Pinch points.	• Contractor to ensure employees are trained on correct manual lifting techniques.	LOW

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• Employees to use appropriate gloves when doing manual handling.	
The supply Delivery, Installation, and commissioning of all the associated works for the lighting upgrade.	• Speeding	• Road accidents • Property damages	• The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996). Contractor to adhere to Traffic Management Plan. • Contractor to ensure that trucks are not overloaded before driving away.	LOW
	• Incompetent truck operator	• Injuries • Property damages • Road accidents	• Only competent truck operators will be appointed and authorised. The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996).	MEDIUM
	• Manual handling of heavy cables • Pulling heavy cables – manual handling • Working close to water • Trip hazards – cables, wire, tools	• Cable roll striking an employee – sever injury • Sprains and strains from pulling the cables by rope • Lacerations and hand injuries from pulling the rope by wire through the sleeves • Hand injuries from pulling cables by rope through the sleeves • Trip and fall injuries	• CR 8.7 Supervisor to monitor offloading and jacking of cable roll • Contractor to comply with safe work procedure for lifting and pulling heavy cables • Gloves compulsory for the use of hand tools and manual handling • Gloves required for pulling wire and ropes. The contractor must submit a	LOW

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• Contractor to appoint an electrician in line with CR 24 electrician to perform tests. • Certificate of Compliance (COC) an Accredited person. • All distribution boards shall comply as a minimum to SANS1180 Electrical Distribution Boards. • PPE to be worn which includes hard hat, safety glasses, high visibility clothing, long trousers, safety footwear • Gloves required for use of manual handling tasks • PFD to be worn when closer than 2m to the water.	
Design, supply and installation of lighting protection and earthing of the structures.	• Open Excavation for laying cables. • Striking unknown underground services during excavation. • Working in Island View Precinct • Exposure to Hazardous chemical • Possible fire • Traffic congestion • Working adjacent to railway lines in shunting yards and	• Injuries if employees fall into open excavation. • Electrocution • property damage • Possible fire • Inhalation of Hazardous chemicals • Injury	• Proving of services prior excavation. • Surge Protection • All Distribution boards shall be equipped with surge protection at Class 1, 2 and 3 at different tiers of distribution. • The surge protection devices shall be protected by back up fuses or suitably selected circuit breakers. • The Contractor must obtain a Cutler entry permit to access. • Contractor must comply with the Transnet E7/1 Safety Instructions" Specification for Works on, Over, Under	HIGH

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
	near High Voltage Equipment.		or Adjacent to Railway Lines and Near High Voltage Equipment"	
The supply delivery and installation of cabling and termination, to power the lighting and associated infrastructure.	• Manual handling and lifting of light poles and fittings • Use of hand tools to secure bolts and nuts • Trip and fall hazards • Light pole falling over onto employees • Light pole not secured to base plate • Winch failing • Man-vehicle interface • Working close to water	• Hand and finger injuries from manual handling • Sprains from manual handling	• Inform NEC3 Supervisor of intended tie-in • Switch of power to the mini-sub • Lock out and tag out procedure to be followed and key to be kept by responsible personnel. • Place a Tag on the breaker "Danger Do not switch on" • Contractor to obtain the Electrical work permit to be and all control in place, singed by CR 8.7 • CR 24 electrician to supervise and perform the termination. • Area to be barricaded to prevent unauthorised access • Full PPE to be worn: hard hat, safety glasses, high visibility clothing, long trousers, safety footwear.	MEDIUM
	• Working on a live Mini-sub station • Manual handling of cables • Pulling cables and ropes	• Electrocution • Severe injury or fatality • Hand and finger injuries from manual handling • Hand and finger injuries from tools	• Inform NEC3 Supervisor of intended tie-in • Switch of power to the mini-sub • Lock out and tag out procedure to be followed and key to be kept by responsible personnel.	LOW

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
	• Use of hand tools to terminate cables	• Sprains and strains from pulling rope and wire	• Place a Tag on the breaker "Danger Do not switch on" • Contractor to obtain the Electrical work permit to be and all control in place, signed by CR 8.7 • CR 24 electrician to supervise and perform the termination. • Area to be barricaded to prevent unauthorised access • Full PPE to be worn: hard hat, safety glasses, high visibility clothing, long trousers, safety footwear.	
Commissioning and testing of the entire installation and hand over to the Employer.	• Working on live electrical circuits • Untrained and unauthorised personnel performing tests • Untrained person switching on incoming power to the mini-sub • Testing isolated circuits • Voltage checks • Performing impedance / PSC tests on kiosk main switch	• Electrocution • Severe injury and fatality to electrician • Severe injury or fatality to other employees • Possible fire • Property damage	• Contractor to appoint an electrician in line with CR 24 electrician to perform tests. • CR 24 electrician to supervise switching on • CR 8.7 to oversee and ensure no unauthorised access • Lock and tag (LOTO) kiosk to ensure no access during switching on of Mini Sub • Earth resistance tests will be conducted • COC will only be issued by CR 24 if all the tests are passed.	HIGH

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
	• Working close to the pipe racks and other structures			
	• Working close to water.	• Risk of falling into the water – injury or drowning	• Contractor to comply with section 9 of Construction Regulations.	**MEDIUM**
Refurbishment of structural elements based on the structural assessment report included in the list of Annexures	• Inadequate lighting	• Injuries due to poor lighting. • Port interruptions • Glare	• Working over water procedure to be complied with. Contractor shall undertake a lighting survey at night to measure and record lighting level in the area.	**LOW**
	• Inhalation of chemicals	• Breathing difficulty	• Contractor to make Safety Data Sheet available on site and train employees on • Correct PPE to be used by the contractor	**Low**
	Exposure to excessive Noise.	• Noise induced hearing loss	• Contractor to comply with Noise induced Hearing Loss regulations,2003 • The contractor must implement engineering control or personal control measures by ensuring that exposure to noise levels is reduced to lower than 85 dB. • Contractor to comply with Occupational Health Risk assessment.	**HIGH**

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
The supply, Delivery, Installation and commission the lighting upgrade at various locations in and around the Port of Cape Town, for the operations of the Transnet National Ports Authority to meet the necessary statutory requirements.	• Machinery knocking employees resulting in injuries • Man-vehicle interface • Driving on a public road. • Traffic congestion • Uncontrolled, swinging load.	• Physical injury if struck by construction vehicle • Road accident • Property damage	• Contractor to comply with Driven Machinery regulations,2015 and 18(11). • Reverse sound to be fitted on moving machinery. • Only competent and experienced operator shall operate machinery. • Contractor to develop and design a traffic management plan that is accepted by TNPA for implementation.	**MEDIUM**
	• Light pole falling over onto employees • Light pole not secured to base plate.	• Injury if struck by light pole. • Property damage	• Contract to adhere to Safe Work Procedure for lifting.	**MEDIUM**
	• Manual handling and carrying of light poles • Nip and pinch points • Manual handling and lifting of light poles and fittings • Use of hand tools to secure bolts and nuts • Trip and fall hazards	• Hand and finger injuries from nip and pinch points • Sprains and strains from manual handling • Trip and fall injuries • Employee injured if falling into the water • Risk of employee drowning if falling into the water	• CR 8.7 to supervise the installation • Plan and clear path and walkway to the installation point • Use correct size ring spanners to tighten nuts • Keep hands away from impact points • Employees to raise the light by winch and hold the light pole until the nuts are secured • No person allowed under a suspended load • Keep hands clear of winch drum • Keep hands and fingers clear of nip & pinch points	**LOW**

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• Full PPE to be worn: hard hat, safety glasses, high visibility clothing, long trousers, safety footwear • Protective gloves required for all manual handling tasks • PFD compulsory close to water 2m	
External environmental conditions not associated with any activities	• Snakes	• Snake bite	• Emergency contact list to be conspicuously displayed on site • Snake catcher contact detail on site. Toolbox talks to be conducted.	MEDIUM
	• Heat	• Heat stroke - hot dry skin, confusion, convulsions and eventual loss of consciousness. This is the most severe disorder and can result in death if not detected at an early stage	• Contractor to compile and implement a heat management procedure, • practices and emergency procedures providing periodic rest breaks and rest facilities in cooler conditions must be implemented. • Contractor to comply with Occupational Health Risk assessment.	HIGH
	• Working in the sun without drinking liquids	• Dehydration	• Provide cool water in the workplace and encourage workers to drink it frequently in small amounts before, during and after working.	HIGH
Handling, Storage & disposal of Hazardous chemical substances.	• Incorrect storage and handling of hazardous waste	• Contamination to environment.	• Waste storage as per project EMP (Environmental Management Plan) requirements • Cradle-to-grave approach to be followed. • Contractor to adhere to the OHS ACT and HCS (Hazardous Chemical	MEDIUM

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			Substance) Regulations, when dealing with Hazardous Chemical Substances. • **Waste storage and separation to be implemented as per project EMP Requirements** • **Waste to be transported and disposed of as per National and Local Regulations** • **Licenced waste contractor to be appointed.** • **Correct PPE (Personal Protective Equipment) to be worn for the task** • **Waste storage as per project EMP** • **Cradle-to-grave approach to be followed when there is a spill on site.** • **MSDS (Material Safety Data Sheet) to be read and adhered to when using Hazardous & Chemical substances**	
Working at night	• **Inadequate lighting**	• **Insufficient light - not enough (too little) light for the need.** • **Glare - too much light for the need.** • **Improper contrast.** • **Poorly distributed light. Flicker.**	• **Contractor must conduct Lighting survey before initiating night work. Contractor to ensure the site is well lit at night as workers should not be allowed to work in the dark.**	**HIGH**
	• **Employees working long hours**	• **Injuries due to fatigue and lack of rest/sleep**	• **Contractor to develop and submit a plan for working at night to TNPA.** • **Contractor to have two teams for day and night work.**	**HIGH**

Hazards, Associated Risks, and Ratings				
Activity, step, or action step	**Hazards**	**Associated risk event**	**Risk controls**	**Risk Rating**
			• **Contractor to adhere to Basic Conditions of Employment Act.**	

Annexure 1 – TNPA Risk Matrix and Descriptions

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Low	Medium

Assessed Risk Level	Description of Risk Level	Action Required
Low	If an incident were to occur, there would be little likelihood that an injury would result	Undertake the activity with the existing controls in place
Medium	If an incident were to occur, there would be some chance that an injury requiring First Aid would result	Additional controls may be needed
High	If an incident were to occur, it will be likely that an injury requiring medical treatment would result	Controls will need to be in place before the activity is undertaken

Extreme	If an incident were to occur it, it would be likely that a permanent or death would result	Consider alternatives to doing the activity. Significant control measures will need to be implemented to ensure safety

Likelihood	Desciption of Likelihood
1. Rare	Will only occur in exceptional circumstances
2. Unlikely	Not likely to occur within the foreseeable future, or withing the project lifecycle
3. Possible	May occur within the foreseeable future, or within the project lifecycle
4. Likely	Likely to occur within the foreseeable future, or within the project lifecycle
5. Almost Certain	Almost certain to occur within the foreseeavle future or within the project lifecycle

Consequence	Description of Consequence
1. Insignificant	No treatment required
2. Minor	Minor injury requiring First Aid treatment (e.g. minor cuts, bruises, bumps)
3. Moderate	Injury requiring medical treatment or lost time
4. Major	Serious injury (injuries) requiring specialist medical treatment or hospitalisation
5. Critical	Loss of life, permanent disability or multiple serious injuries