

BASELINE RISK ASSESSMENT: Port of Richards Bay Road Rehabilitation

PROJECT NAME: Port Operational Roads Rehabilitation: Port of Richards Bay

Project Number: XRB.E.0037

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Owner: Transnet National Port Authority

Client: Transnet National Port Authority

Project Sponsor: Dennis Mqadi

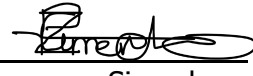
Project Manager: Zinhle Gumede

Revision Number: 00

SIGNATORIES

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00	25/06/2025	Issued for Review
01		Issued for Approval
02		Issued for Review
Rev. No	Date	Revision Details

Risk Assessment Title	Baseline Risk Assessment
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Geographic Location

All the Ports are operated by Transnet National Ports Authority, which provides port infrastructure, Real Estate, Marine, Dredging and Lighthouse services.

All the Ports are 24 hours operational. Work to be carried out will be undertaken in operational areas.

The current Richards Bay Port Road network was rehabilitated in 2015/16, however due to the increase in traffic volumes within the Port in support of Port economic activities, the road network deteriorated due to traffic overloading.

The Port roads rehabilitation project within the Port of Richards Bay seeks to address transportation infrastructure challenges within the Port. The project aims to improve road conditions by upgrading the existing pavements in line with projected traffic volumes up to the year 2040. The project will focus on Port operational roads that are servicing Bayvue Precinct terminals (TPT) and South Dunes precincts terminals (RBCT and BTT).



Fig 1: Layout of Roads to be Rehabilitated

Scope of Risk Assessment

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

The Baseline Risk Assessment is a theoretical assessment before the construction starts to highlight the foreseen hazards, but this is not intended to be seen as an absolute 100% of hazards that may occur.

Activities Covered

This baseline risk assessment focuses on the high-level Health and Safety risks anticipated during construction taking into consideration all construction methods.

The works overall includes but not limited to the following:

Establishment of the Contactor's Camp Site

- Accommodation of traffic
- Clearing and grubbing

Drainage

- Cleaning and effecting repairs to the existing drainage systems (including inlet and outlet structures)
- Diverting of stormwater flow as necessary to effect construction
- Construction of new drainage structures
- Repair or replacement of damaged drainage structures

Roadworks

- Earthworks
- Breaking up existing pavement layers
- Relocation and protection or removal of existing services
- Upgrade of pavements
- Milling road surface where necessary
- Re-surfacing with Asphalt Wearing Course Premix/ Concrete
- Replacement of damaged precast and/or in-situ concrete kerbs

Ancillary Roadworks

- Painting of road markings
- Installation and replacement of road signage
- Installation of Guardrails
- Installation of traffic signals

Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
PRE-CONSTRUCTION	Work commencing prior to file being available and approved. - No valid registration with COID. Expired Documentation (e.g. competencies, equipment load test, medicals, work permits) Documentation not available or approved as per required TNPA Spec and OHS act.	Non-compliance with legislation and TNPA Health & Safety requirements result in injuries, fatalities, property damage	- No Work Commencement until approval has been signed off & site access certificate issued - TNPA Health and Safety Specification. - Baseline Risk Assessment - Site Conditions evaluation	HIGH
	Client not submitting application for Construction Work Permit to the DoEL as required by legal requirement. Application not containing the correct information as required by the DOL.	Delay in site access Work stoppage by DoEL	- Contractor to provide the client with the required documentation for application submission - Required information to be submitted as legislated to prevent work stoppages from DoEL.	MEDIUM

	Method of works not site specific Risk identification not in place or conducted Risk identification not site specific Risk controls not sufficient Risk Assessor not competent Continuous risk evaluation not conducted	Injury, fatalities to persons and property damage	• No Work Commencement until approval has been signed off & site access certificate issued • TNPA Health and Safety Specification. • Baseline Risk Assessment • Method Statement of Tasks • Site conditions Evaluation	HIGH
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	Employees entering site not being inducted. Visitors entering site not being inducted / signing visitors' induction form. Visitors not being provided with the necessary personal protective equipment. Induction being conducted on employees without them being in possession of a valid medical certificate of fitness in the form of an Annexure 3. The medical not conducted by a registered Occupational Health Practitioner. Construction vehicles and mobile plant operators entering the site without being inducted. Driver of delivery vehicles not made aware of the specific site conditions.	Injury, fatalities to persons and property damage	• Site induction can only be done with an employee if the required up to date medical is presented at the induction, and safety file has been approved • Medical fitness certificates must be validated by the principal contractor to ensure adherence to the minimum requirements and validity of the document. • Each person's ID or valid work permit must be inspected before induction can be allowed on site for the individual. • Induction arrangements to be done through TNPA PM	HIGH
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	Employees being inducted without valid work permits / certified ID Copies.			
ACCESS TO SITE	Entering site and driving under the influence of alcohol and drugs	Injury to persons and property damage.	- All employees entering the site shall undergo an alcohol Breathalyzer or drug test if requested to do so. - 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.	MEDIUM
	Speeding (reckless and negligent driving)	Injuries to persons and property damage	All drivers shall abide by speed limit	MEDIUM
	Parking in areas not designated for parking	Obstruction of the roads and possible injuries and damage to property	Contractor must ensure that an approved Traffic Management Plan is implemented.	MEDIUM

	Incompetent drivers Vehicles not in good and serviceable condition Uneven road conditions Speed Fatigue Poor visibility due to dust/sunlight	Injuries resulting in permanent disabilities Fatalities	• The contractor's drivers shall abide by all general road traffic rules found in the National Road Traffic Act (Act 93 of 1996). • Adherence to TNPA Vehicle and Transportation Management procedure and the Road Traffic Act. • Ensure drivers are competent, including random verification. • Strict speed control with use of 24-hour active satellite tracking. • Inspections by competent inspector. • Ensure selection of correct vehicle type for conditions,	MEDIUM
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			including tyre selection • Fatigue management plan to be developed and approved.	
	Congestion caused by contractor trucks and construction	Vehicle incidents which may lead to injuries, fatalities and/or property damage.	• Contractor to develop a Traffic Management Plan. It must be communicated and implemented accordingly.	HIGH
Site establishment	Poor ground stability Substandard rigging and lifting practices Possible mechanical failure of lifting equipment Miscommunication between rigger and driver	Crane tipping over causing property damage and possible injuries Falling of container(s) which may lead to injuries and property damage	• Contractor to conduct ground survey before offloading process. • Operator competency, load test certifies and pre-operative checks. • Competent rigger to be appointed • Adherence to Traffic Management Plan • Clients site induction.	MEDIUM

Incompetent drivers offloading containers/offices. Mobile cranes not in safe and serviceable	Falling of container(s) which may lead to injuries and property damage	• Rigger to use approved rigging signals and rigging safe work procedure. • Contractor to conduct rigging study. • Valid crane, hook, load, and calibration test to be completed.	
No ablution facilities	Infectious diseases due to poor hygiene practices	• Contractor to adhere to Facilities and Construction Regulations under Occupational Health and Safety Act No.85 of 1993 and TNPA Health and Safety Project Specification.	
Using water from unidentified sources/connections	Ill-health resulting from drinking water from unsafe sources.	• Drinking water must only be sourced from connections identified safe for human consumption.	

	No canteen / dining / sheltered eating areas available for employees on site.	Ill-health resulting from eating at hazardous/untidy areas.	Eating areas to be established at a safe and secure location on site as per Facilities Regulations.	
	Excavations for installation of electrical cables and water reticulation	Damage to underground infrastructure Fatality, electrocution, injury	- All services to be identified by means of scanning and isolated - Detection equipment to be used - Proof trenching and services clearly marked, no pegs or stakes shall be driven or any excavation made before the contractor has established that there are no underground services which might be damaged - Permit to work	

Clearing and grubbing	Use of unsafe Heavy Mobile Equipment (HME). Damage of site fence due to site clearing operations. Employees being struck by moving plant working in the area. Construction vehicle and mobile plants reverse hooters not working.	Biological conditions Extreme weather conditions (Cold and Heat) Incompetent person operating Heavy Mobile Equipment (HME) HME not in safe and serviceable condition Injury Noise, dust emissions	• All services on site must be pointed out by the client to the principal contractor. • Safe distance from site fence and services must be established by contractor and must be maintained and marked. • Dust control measures must be implemented by the principal contractor as determined by the environmental requirements. • All construction vehicles on site must be inspected when delivered to site to ensure adherence to the legal requirements before any usage of the plant. • Mobile plants to be in good working	MEDIUM
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			condition and maintained as per maintenance plan.	
	Awkward movement / posture.	Musculoskeletal injury due to awkward body positioning.	• Mechanical lifting devices to be used whenever practicable. • Task-Based Risk Assessments to be conducted and Safe Work Procedures to be in place. • Awareness training to be provided regarding correct manual handling, lifting and carrying techniques	
Interface with Port stakeholders				

Interface with adjacent terminal operations, personnel and equipment	No communication with other operators on premises in close vicinity of work area. Insufficient protection of neighbouring premises by not using safety screens/ hoarding and barricading. No communication with neighbours regarding noise levels, dust levels and working hours. No / insufficient dust control. Services to premises not being protected. Poor communication with tenant regarding work effecting the premises.	Injuries resulting in permanent disabilities Fatalities	Contractor must communicate daily regarding items that may affect 3rd party or site access.	HIGH
	Moving Heavy mobile plant and equipment	Collisions Person on foot struck by or run over by an item of mobile equipment or a light vehicle (construction site).	Designated walkways to be provided for pedestrians wherever reasonably practicable. Rigid barricading to be used (where	

		Injuries, fatalities	possible) to separate pedestrians from moving vehicles / mobile equipment. • Site-specific Traffic Management Plan to be implemented. • Task-Based Risk Assessment to be conducted (prior to work commencing) where a vehicle or item of mobile equipment must be operated in proximity to persons on foot. • Flagmen to be in place whenever a risk assessment determines that flagmen are required. • Each light vehicle that interacts with mobile equipment to be equipped or fitted with a two-way radio (to enable positive	EXTREME
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			communication), and signage facilitating easy and positive identification from a reasonable distance. • Each light vehicle that interacts with mobile equipment to be equipped or fitted with a reversing alarm, an amber flashing light (rotating or strobe), and reflective taping. • Each item of mobile equipment to be fitted with a two-way radio, and signage facilitating easy and positive identification from a reasonable distance. • Each item of mobile equipment to be fitted with adequate lighting (including headlights, tail,	
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			turn and brake lights), an amber flashing light (rotating or strobe), a reversing alarm, a horn, and effective windscreen wipers. • Clear communication procedures to be implemented for interactions between persons on foot and mobile equipment. • High visibility, reflective clothing to be worn by all persons at all times. • Task-Based Risk Assessments to be conducted and Safe Work Procedures to be in place. • All drivers and operators to receive suitable training.	
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			• A permitting and appointment system to be in place to ensure that each light vehicle driver or mobile equipment operator is competent to drive or operate the specific vehicle or equipment that he is required to drive or operate. Each driver / operator to be in possession of a valid licence or certificate of competency. • All persons to receive induction training with regard to road safety and site vehicle hazards.	
Working in vicinity of cargo loading/offloading.	Dust emissions	Lung/eye irritations Limited visibility	• Ensure task-based risk assessments carried out • Appropriate PPE	MEDIUM
Electrical Work				

Installation of Electrical Cables	Exposure to live electricity	Electrocution	• Electrical source to be isolated when conducting installation work. • Competent and registered electrician to conduct the electrical installation work. • Occupational medicals to be available. • SWP, Task Observation, DSTI and training	HIGH
Connecting of electricity to existing systems	Exposure to live electricity	Electrocution	• Electrical source to be isolated when conducting installation work. • Competent and registered electrician to conduct the electrical installation work. • Occupational medicals to be available.	HIGH
	Incompetent person conducting electrical connection	Project interruption		

			SWP, Task Observation, DSTI and training.	
Drainage works				
Cleaning and effecting repairs to the existing drainage systems (including inlet and outlet structures)	High pressure water jetting units. Contact with stagnant and wastewater that harbour viruses, bacteria, fungi, parasites and numerous other micro-organisms (biological agents)	Possible injury to both operators and by-passers due to the pressure of the water jets Drowning	- All works should be undertaken by competent staff. - Safe Work Procedures (including jetting & inspection techniques).	MEDIUM
Construction of new drainage structures	Existing underground services such as gas, water, electric and other utility apparatus.	Injuries resulting in permanent disabilities. Fatalities	- Underground services study. - Road service drawings	MEDIUM
Civil and Earthworks				
Excavations and trenching	Unprotected excavations, unsafe access and egress into and from excavations Underground services being struck/damaged	Injuries and fatalities	Method statement for drainage of excavations, adequate drainage procedure, daily inspections, and inspections after inclement weather, monitor weather forecasts, ensure correct batter	MEDIUM

	Use of defective tools and equipment (spades and forks)		angles, shoring to prevent collapse. • Ensure competent, trained personnel are used. • Contractor to ensure employees are trained on safe use of hand tools. • Pre-inspections of tools by Contractor • Contractor to ensure appropriate PPE is always worn. • Drawings of existing services to be available and communicated. • Adequate supervision to stop all excavation work at the first visible sign of foreign material (e.g., electric cable sheath, PVC piping material) • Appropriate approval/permits.	
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	Dust generated from construction activities and heavy machinery	Regular to dust may result in irritation to eyes and respiratory illnesses such as lung cancer, silicosis, occupational asthma and Chronic Obstructive Pulmonary Disease (COPD).	- Occupational health assessment - Hygiene monitoring - Medical surveillance - Effective ventilation - Dust suppression - Wherever possible, avoid dust-generating activities during windy periods. - Respiratory protective equipment (RPE)	MEDIUM
Earthworks by means of Heavy Mobile Equipment (HME)	Collisions/Man/Machine interface because of operator misconduct, poor visibility conditions (fog, rain, blind spots etc) or mechanical failure of HME. HME not in safe and serviceable condition. Incorrect position and concrete chute not correctly positioned. Danger offload (concrete) falling or	Injuries resulting in permanent disabilities Fatalities	- Ensure operator competency. - Traffic management plan including strictly controlled speed limits. - Contractor emergency management plan. - Occupation certificates must be obtained where there is a potential	HIGH

	rubble bucket hitting people. Overloading of surface with building rubble accumulating.		to come in contact with OHTE. Activity Specific Traffic Management Plan indicated on DSTI's.	
Breaking up existing surface layers	Use of electrical jack hammer Use of compressor jack hammer	Hand and arm vibrations can cause white finger syndrome. Injury to back and joints from manual handling. Damage to hearing from constant noise. Electrocution from faulty equipment or from operating in wet areas. Operator losing control over the tool. -Foreign objects entering and injuring employees' eyes Damage to existing services.	- Work to commence under competent supervision. - Employees must be trained on the equipment procedures to follow. - Material/equipment used for breaking must be inspected before and during use to ensure the safety of employees. - Employees must be provided with the PPE as determined in the task risk assessment	MEDIUM
Handling, Storage & Disposal of Hazardous Chemical Substances				

Removal and disposal of contaminated asphalt	Chemical agents (Polycyclic Aromatic Hydrocarbons)	Fumes emission lung and skin irritation. Leaching of carcinogenic material into soil	• Recycle where possible. • Contractor to adhere to the OHSACT and HCS Regulations, when dealing with Hazardous Chemical Substances. • Waste to be transported and disposed of as per National and Local Regulations • Licenced waste contractor to be appointed.	MEDIUM
Painting of roads (road surface marking)	Chemical agents (toluene, xylene, acetone, ethyl acetate, butyl acetate etc) Ergonomics (working in awkward positions)	Exposure to solvent vapours may result in a number of health effects, e.g., the central nervous system, respiratory system. Skin conditions such as dermatitis	• Maintain good ventilation. • Cradle-to-grave approach to be followed. • Contractor to adhere to the OHSACT and HCS Regulations, when dealing with Hazardous	MEDIUM

	and kneeling for prolonged duration)	Risk of eye injury from exposure to fumes Contamination of receiving environment Musculoskeletal disorders such as backaches	Chemical Substances. - Waste to be transported and disposed of as per National and Local Regulations - Licensed waste contractor to be appointed. - All painters must be trained, and proof of competency and previous experience be provided. - Appropriate PPE to be worn for tasks (specialized protective gloves, masks protective respiratory system, visors covering eyes etc). - MSD's to be read and adhered to when using Hazardous & Chemical substances.	
Diesel storage area, chemical usage and flammable store.	Incorrect storage and handling of hazardous waste	Spillage of chemical product Poor storage of products Fire outbreak and explosions resulting in property damage and injury		MEDIUM

			Rotation of workers and frequent breaks	
Working with concrete	Dust Faulty hand tools Manual handling of steel/ sharp points Cement contact with body Over bending Noise, Vibration.	Lung disease, eye irritation Injury to hands Skeletal injuries NIHL. Muscular pains.	- Adherence to OHS Act and Regulations - Task based risk assessments. - Appropriate PPE	MEDIUM
Manual handling of materials	Awkward postures whilst working Repetitive movements Prolonged standing Constant kneeling Sharp edges Heavy lifting of materials	Musculoskeletal disorders e.g. back injuries Blood pooling which may lead to fainting Cuts/Abrasions and pinch points	- Safe lifting procedures - Contractor to ensure long sleeved clothing and appropriate gloves are worn by all employees handling roof trusses and sheets. - Appropriate PPE including gloves. - Contractor to ensure sufficient labour available for manual lifting	MEDIUM

Working Outdoors	Extreme heat during winter nights and summer days. Adverse weather conditions such as wind, rain or too cold	Overexposure to heat may lead to heat-related conditions such as heat cramps, heat exhaustion and heatstroke which may be caused by dehydration and desalination. Hypothermia, cold stroke, heat colds and flu)	- Occupational hygiene monitoring and medical surveillance. - Scheduling of regular break times - Regular hydration of employees - Specialized PPE (e.g., lined gloves, balaclavas, winter jackets.	HIGH
	Excessive UV radiation	Premature skin ageing, precancerous and cancerous skin conditions, keratitis, weakening of immune system.		
Working in close proximity to the water	Water	Falling into water Drowning	- Always work with a partner or preferably a team when working around or near water - Supervision	LOW

			• Working Near Water Procedure • Appropriate personal protective equipment (PPE) • Rescue plan to be in place.	
Working on/near railway lines	Existing railway lines/ Existing level crossings not protected	Accident between a train and construction vehicles, construction workers and/or pedestrians - Injuries and fatalities. Damage to infrastructure and assets. Damage to construction plan & machinery. Discontinuation of operations; delay in project schedule.	• Ensure protection on level crossing as per Train Working Rules (TWR) requirements. • Protection of employees against moving trains. Fatal Risk Control (FRC) standards to exist for project. FRC to include no rail crossings. Construction footprint should consider this risk. Emergency response plan to include this type of accident. HSMP to address this.	MEDIUM

	Insufficient construction space	Limited construction space. Working next to a railway line. Current structures closer to construction site.	Insufficient space between construction site and Man/machine interface must be managed properly and ensure compliance to project specification.	MEDIUM
	Working between moving trains/on full occupation	Injuries because of accidental hit by moving trains.	- The use of flagman at all times when working on or close to railway line. - Compliance to TWR - Induction by rail operator	
Site Demobilization				
Disconnection of services	Incompetent person disconnecting temporary electrical distribution boards	Electrocution	Competent / registered electrician to conduct the disconnection of temporary electrical installations	MEDIUM

Loading of material, equipment and offices	Employees standing underneath lifting operations	Load falling on employees causing injuries	- Employees to stand clear of lifting operations and no employees allowed underneath suspended loads. - Operators to be competent.	MEDIUM
Loading of Machinery on Trucks	Improper loading of plant and machinery	Plant / machinery falling off trucks causing property damage	- Lifting equipment to be load tested. - Load test certificates to be available.	MEDIUM
		Load falling on employees	- Lifting equipment to be placed on register and inspected on a monthly basis. - Employees to stand clear of lifting operations and no employees allowed underneath suspended loads. - Operators to be competent.	

Annexure 1 – 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	Description of Likelihood	Consequence	Description of Consequence
1. Rare	Will only occur in exceptional circumstances	1. Insignificant	No treatment required
2. Unlikely	Not likely to occur within the foreseeable future, or within the project lifecycle	2. Minor	Minor injury requiring First Aid treatment (e.g. minor cuts, bruises, bumps)
3. Possible	May occur within the foreseeable future, or within the project lifecycle	3. Moderate	Injury requiring medical treatment or lost time
4. Likely	Likely to occur within the foreseeable future, or within the project lifecycle	4. Major	Serious injury (injuries) requiring specialist medical treatment or hospitalisation
5. Almost Certain	Almost certain to occur within the foreseeable future or within the project lifecycle	5. Critical	Loss of life, permanent disability or multiple serious injuries