



Transnet National Ports Authority
Health and Safety Management
The Durban Harbour Entrance: North Groyne
Promenade Terracing and Car Park Upgrade
Baseline Risk Assessment
2128313-RA-0001

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Health and Safety Practitioner Date

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1. Project Scope and Description

1.1 Executive overview

The works that the *Contractor* is to perform are the construction works for The Durban Harbour Entrance: North Groyne Promenade Terracing and Car Park Upgrade which is part of the Durban Harbour Entrance, Port of Durban.

The major activities of the works include:

- Remove existing asphalt
- Rip existing topsoil adjacent to entrance channel
- Construct new concrete seating and two pedestrian concrete ramps with handrail
- Uplift existing storm water manholes to new levels
- Install new manholes & sleeves for electrical installation
- Install new lights in existing light positions situated on breakwater access road
- Install new light poles and lights around NSRI parking area
- Remove existing fencing and install new fence
- Remove existing handrails along harbour and replace with new "Clearvu" handrail
- New road marking and helistop marking on the NSRI site
- De-establishment and closeout

The Contractor shall provide the Works in accordance with the technical, health and safety, environmental, quality, industrial relations and programming requirements as set out in the Works Information.

Risk Assessment Title	North Groyne Promenade Terracing and Car Park Upgrade
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Risk Assessment Team				
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Option/Activities Covered

- Remove existing asphalt
- Rip existing topsoil adjacent to entrance channel
- Construct new concrete seating and two pedestrian concrete ramps with handrail
- Landscaping (area to be grassed)
- Excavate for layer works as per design
- Install new layer works as per design
- Install new asphalt as per design around NSRI car park area
- Install new concrete pavers as per design along area linking Durban promenade to NSRI car park
- Install new kerbing etc.
- Uplift existing storm water manholes to new levels
- Install new manholes & sleeves for electrical installation
- Install new lights in existing light positions situated on breakwater access road
- Install new light poles and lights around NSRI parking area
- Remove existing fencing and install new fence
- Remove existing handrails along harbour and replace with new "Clearvu" handrail
- New road marking and helistop marking on the NSRI site

Scope of Risk Assessment

The risks identified on the Durban Harbour Entrance: North Groyne Promenade Terracing and Car Park Upgrade is based on the option explored by the Transnet (NPA) project team.

The *Employer's* project specific objectives are to achieve Completion of the works by meeting the Completion Date whilst still maintaining the highest environmental, quality and safety standards and whilst minimising any disruptions.

Emphasis is placed on the Employer's commitment to environmental management and safety and their objective of Zero Harm and the Employer's objective of achieving a zero LTI and zero environmental legal contravention during the construction contract.

This is a legal and a live document which will be timeously updated as the study progresses.

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
Access into the North Groyne Promenade	<ul style="list-style-type: none"> Driving under the influence of alcohol and drugs. 	<ul style="list-style-type: none"> Injury to persons and property damage.(Reckless and Negligent driving) 	<ul style="list-style-type: none"> 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
	Non Compliance to the Speed Restrictions	<ul style="list-style-type: none"> Accidents leading to Injury to persons and property damage. 	<ul style="list-style-type: none"> All drivers shall abide by the speed limit of 30km/h whilst inside the site area. 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 Site specific Rules. 	MEDIUM
	Heavy vehicles/Congested roads	<ul style="list-style-type: none"> Incidents/accidents taking place due to inpatients drivers 	<ul style="list-style-type: none"> Trips to be planed ahead of time Adherence to the Road Traffic Act. 	MEDIUM
	<ul style="list-style-type: none"> Parking in areas not designated for parking 	<ul style="list-style-type: none"> Obstruction to the road and lead to injury to persons/ property damage. 	<ul style="list-style-type: none"> 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 they adhere to rules and regulations as per the site and use the respective walkways and routes to minimise /eliminate any incidents or accidents. Contractor must ensure that a traffic management plan is developed and implemented when activities affect road traffic. 	MEDIUM

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
Site Establishment/ Loading and offloading of containers and materials	<ul style="list-style-type: none"> No designated eating area. 	<ul style="list-style-type: none"> Employees contracting diseases due to eating at hazardous areas on site. 	<ul style="list-style-type: none"> Contractor to adhere to OHSACT ACT 85 of 1993 and Facilities Regulations of 1994. 	MEDIUM
	<ul style="list-style-type: none"> Substandard electrical installations 	<ul style="list-style-type: none"> Electrocution and property damage. 	<ul style="list-style-type: none"> Electrical installation must be done as per the Electrical installation regulation. 	HIGH
	<ul style="list-style-type: none"> No ablution facilities. 	<ul style="list-style-type: none"> Communicable disease due to lack of hygiene. 	<ul style="list-style-type: none"> Contractor to adhere to OHSACT ACT 85 of 1993 and Facilities Regulations of 1994, Health and Safety Project specification. 	LOW
	<ul style="list-style-type: none"> Unstable Fencing Condoning the site area 	<ul style="list-style-type: none"> Fencing falling over could lead to incidents/accidents and injuries by moving adjacent vehicles and persons 	<ul style="list-style-type: none"> Layout drawings to be submitted for approval Contractor to ensure solid fencing is installed and proper supports to avoid any falling fencing and Jersey barriers in front of fencing for re enforcement. 	HIGH
	<ul style="list-style-type: none"> Incompetent Drivers transporting containers and equipment to site area 	<ul style="list-style-type: none"> Property Damage and Injuries to employees 	<ul style="list-style-type: none"> Contractors to ensure all drivers are competent prior to them appointing these employees as drivers 	HIGH
	<ul style="list-style-type: none"> Substandard rigging and lifting practices. 	<ul style="list-style-type: none"> Injuries and property damage. Suspended load falling/swinging causing injuries 	<ul style="list-style-type: none"> Contractor must develop the rigging study as per driven machinery regulation. Competent riggers to be appointed, and proof of competency and previous experience be provided 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	• 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.	HIGH
	• Uneven Surfaces and poor ground stability	• Injuries to persons, possible fatalities and property damage	• Contractor to ensure level ground Stability and adhere to geotech studies	MEDIUM
	• Moving plant and equipment	• Accidents • Traffic Congestion • Injury to persons	• Contractor to develop traffic manage plan • Contractor to comply with health and safety site specification.	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 possible fatalities	• Contractor to ensure that no person walks or works under suspended loads at all times. • Contractor to ensure area is barricaded where suspended loads will be moving	HIGH
	• Incorrect manual Handling.	• Back injuries. • Pinch points.	• Contractor to ensure employees are trained on correct manual lifting techniques. • Contractor to ensure ergonomics procedure is in place as per manual handling and employees shall adhere to this procedure when manual handling materials on site	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> High wind speeds 	<ul style="list-style-type: none"> Loads falling causing injuries and property damages. Loads swinging causing injuries and property damages. 	<ul style="list-style-type: none"> 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
Removal and Installation of existing Asphalt and Paving	<ul style="list-style-type: none"> Exposure to noise 	<ul style="list-style-type: none"> Noise induced hearing loss 	<ul style="list-style-type: none"> Contractor to comply with Noise induced Hearing Loss regulations,2003 	MEDIUM
	<ul style="list-style-type: none"> Exposure to dust 	<ul style="list-style-type: none"> Respiratory diseases caused by dust inhalation. 	<ul style="list-style-type: none"> Contractor must comply with Hazardous Chemical Substances Regulations and ensure dust suppression 	LOW
	<ul style="list-style-type: none"> Incompetent jack hammer operators 	<ul style="list-style-type: none"> Injuries Property damage 	<ul style="list-style-type: none"> Only competent operators will operate the jack hammer. 	LOW
	<ul style="list-style-type: none"> Vibration 	<ul style="list-style-type: none"> Hand arm vibration syndrome due to excessive vibration. 	<ul style="list-style-type: none"> Rotation of operators as and when(to reduce exposure time)required. Maintenance and care of equipment Training - ensure that employees are trained to recognise the signs and symptoms of HAVS Appropriate PPE? 	LOW
	<ul style="list-style-type: none"> Defective jack hammer 	<ul style="list-style-type: none"> Injuries to operator or fellow co-workers 	<ul style="list-style-type: none"> Serviced and well-maintained jack hammer must be used. Inspection of jack hammer and other tools must be done before use. Defective jack hammer must be removed from site. 	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Using of plant close to the other existing structures 	<ul style="list-style-type: none"> Possible fire Property damage 	<ul style="list-style-type: none"> The acceptable working distance of the plant must be always monitored closely. 	HIGH
	<ul style="list-style-type: none"> Moving plant and equipment 	<ul style="list-style-type: none"> Accidents Traffic Congestion Injury to persons 	<ul style="list-style-type: none"> Contractor to develop traffic manage plan Contractor to comply with health and safety site specification. 	HIGH
	<ul style="list-style-type: none"> Uneven Surfaces and poor ground stability 	<ul style="list-style-type: none"> Injuries to persons, possible fatalities and property damage 	<ul style="list-style-type: none"> Contractor to ensure level ground Stability and adhere to geotech studies 	MEDIUM
	<ul style="list-style-type: none"> Moving of machinery 	<ul style="list-style-type: none"> Machinery knocking employees resulting in injuries 	<ul style="list-style-type: none"> Employees to be aware and stay clear of moving machinery. Reverse sound to be fitted on moving machinery. Only competent and experienced operator shall operate machinery. Contractor to comply with Driven Machinery regulations,2015 and 18(11) 	MEDIUM
	<ul style="list-style-type: none"> Existing services, Damage to electrical cables, water services, communication cables disruption 	<ul style="list-style-type: none"> Damage to cables and services results in disruption to operations, services and electrocution 	<ul style="list-style-type: none"> Hand excavation mandatory Permit system must be followed Survey Detection equipment Existing undergrounds services plans. 	HIGH
	<ul style="list-style-type: none"> Incorrect use of hand tools 	<ul style="list-style-type: none"> Injuries to employees 	<ul style="list-style-type: none"> Contractor to ensure inspection of all equipment including hand tools 	LOW
	<ul style="list-style-type: none"> Exposure to noise 	<ul style="list-style-type: none"> Noise induced hearing loss 	<ul style="list-style-type: none"> Contractor to comply with Noise induced Hearing Loss regulations,2003 	MEDIUM
Excavations	<ul style="list-style-type: none"> Exposure to dust 	<ul style="list-style-type: none"> Respiratory diseases caused by dust inhalation. 	<ul style="list-style-type: none"> Contractor must comply with Hazardous Chemical Substances Regulations and ensure dust suppression 	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Incompetent jack hammer operators 	<ul style="list-style-type: none"> Injuries Property damage 	<ul style="list-style-type: none"> Only competent operators will operate the jack hammer. 	LOW
	<ul style="list-style-type: none"> Vibration 	<ul style="list-style-type: none"> Hand arm vibration syndrome due to excessive vibration. 	<ul style="list-style-type: none"> Rotation of operators as and when required. Contractor to comply with Occupational Health Risk assessment. 	LOW
	<ul style="list-style-type: none"> Defective jack hammer 	<ul style="list-style-type: none"> Injuries to operator or fellow co-workers 	<ul style="list-style-type: none"> Serviced and well-maintained jack hammer must be used. Inspection of jack hammer and other tools must be done before use. Defective jack hammer must be removed from site. 	LOW
	<ul style="list-style-type: none"> Using of plant close to the other existing structures 	<ul style="list-style-type: none"> Possible fire Property damage 	<ul style="list-style-type: none"> The use of the plant from the barge or berth must not pose a risk to hitting or coming into contact with any structures by ensuring there is a flag man in place to guide the competent operator whilst performing his task at hand The acceptable working distance of the plant must be always monitored closely. 	HIGH
	<ul style="list-style-type: none"> Moving plant and equipment 	<ul style="list-style-type: none"> Accidents Traffic Congestion Injury to persons 	<ul style="list-style-type: none"> Contractor to develop traffic manage plan Contractor to comply with health and safety site specification. 	HIGH
	<ul style="list-style-type: none"> Uneven Surfaces and poor ground stability 	<ul style="list-style-type: none"> Injuries to persons, possible fatalities and property damage 	<ul style="list-style-type: none"> Contractor to ensure level ground Stability and adhere to geotech studies 	MEDIUM

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Moving of machinery 	<ul style="list-style-type: none"> Machinery knocking employees resulting in injuries 	<ul style="list-style-type: none"> Employees to be aware and stay clear of moving machinery. Reverse sound to be fitted on moving machinery. Only competent and experienced operator shall operate machinery. Contractor to comply with Driven Machinery regulations, 2015 and 18(11) 	MEDIUM
	<ul style="list-style-type: none"> Existing services, Damage to electrical cables, water services, communication cables disruption 	<ul style="list-style-type: none"> Damage to cables and services results in disruption to operations, services and electrocution 	<ul style="list-style-type: none"> Hand excavation mandatory Permit system must be followed Survey Detection equipment Existing undergrounds services plans. 	HIGH
	<ul style="list-style-type: none"> Incorrect use of hand tools 	<ul style="list-style-type: none"> Injuries to employees 	<ul style="list-style-type: none"> Contractor to ensure inspection of all equipment including hand tools 	LOW
Rip existing topsoil adjacent to entrance channel	<ul style="list-style-type: none"> Use of unsafe Heavy Mobile Equipment (HME). Damage of site fence due to site clearing operations. Damage to existing services not marked or pointed out to the Principal Contractor. Employees being struck by moving plant working in the area. 	<ul style="list-style-type: none"> Biological conditions Extreme weather conditions (Cold and Heat) Incompetent person operating Heavy Mobile Equipment (HME) HME not in safe and serviceable condition 	<ul style="list-style-type: none"> 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 	MEDIUM

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Construction vehicle and mobile plants reverse hooters not working. Unauthorized removal of indigenous & endangered fauna & flora. 			
	<ul style="list-style-type: none"> Uneven Surfaces and poor ground stability 	<ul style="list-style-type: none"> Injuries to persons, possible fatalities and property damage 	<ul style="list-style-type: none"> Contractor to ensure level ground Stability and adhere to geotech studies 	MEDIUM
	<ul style="list-style-type: none"> Using of plant close to the other existing structures 	<ul style="list-style-type: none"> Possible fire Property damage 	<ul style="list-style-type: none"> The use of the plant from the barge or berth must not pose a risk to hitting or coming into contact with any structures by ensuring there is a flag man in place to guide the competent operator whilst performing his task at hand The acceptable working distance of the plant must be always monitored closely. 	HIGH
New road marking and helistop marking on the NSRI	<ul style="list-style-type: none"> Paint 	<ul style="list-style-type: none"> Skin and eye irritations Tripping Inhalation and respiratory irritations 	<ul style="list-style-type: none"> Contractor to adhere to the OHSACT and HCS Regulations, when dealing with Hazardous Chemical Substances. MSDS's which contains the necessary information pertaining to a specific hazards or used substance, must be present and communicated to employees for all hazardous material stored on site 	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Incompetent Supervisor 	<ul style="list-style-type: none"> injury to personnel and property damage 	<ul style="list-style-type: none"> Contractor to appoint demolition supervisor to supervise all demolition activities. Contractor to ensure that pre inspections are done on the equipment. Maintenance and service records must be available. Contractor to comply with Applicable Construction regulations, 2014 	HIGH
Demolitions of existing /Structures/Concrete Plinths and removal of existing debris works from site.	<ul style="list-style-type: none"> Structure stability 	<ul style="list-style-type: none"> uncontrolled collapse 	<ul style="list-style-type: none"> Structure stability to be assessed as part of the method statement before and during demolition. Area to be barricaded to avoid any employees walking/working in close proximity of the structure Continuous assessment of the structure and monitoring of employees not to work close to unstable structure 	HIGH
	<ul style="list-style-type: none"> Improper disposal of waste materials 	<ul style="list-style-type: none"> Injuries and illness to employees. Work stoppage. 	<ul style="list-style-type: none"> Contractor to ensure they comply to the approved EMP. Contaminated materials must be disposed at an approved disposal site. 	MEDIUM
	<ul style="list-style-type: none"> Open excavations 	<ul style="list-style-type: none"> Injury to people. 	<ul style="list-style-type: none"> Contractor must ensure they comply with the excavation permit. Contractor to comply with geotech controls. 	MEDIUM

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Damage to underground services during excavation 	<ul style="list-style-type: none"> Injury to persons when damaging underground services 	<ul style="list-style-type: none"> Contractor to ensure that underground services are identified and avoided during excavation. Contractor to apply for excavation permit prior to all excavation activities. 	MEDIUM
	<ul style="list-style-type: none"> Poor Ingres & egress to the excavation 	<ul style="list-style-type: none"> Employees sustaining injuries due to poor access to the trench. 	<ul style="list-style-type: none"> For each excavation more than 1.2 metres deep, a safe means of access and egress (e.g. Ladders, steps or ramps) must be provided for persons working in the excavation. Safe entry and exit points must be located i.e. an exit point must not be more than 6 metres away from any person working in the excavation.as per CR 13 	HIGH
	<ul style="list-style-type: none"> Excavation collapsing 	<ul style="list-style-type: none"> Employees being buried in deep excavations 	<ul style="list-style-type: none"> Contractor to ensure that deep excavations are controlled as per cr13. 	HIGH
	<ul style="list-style-type: none"> Contaminated material exposed during excavation 	<ul style="list-style-type: none"> Possible contamination to the environment 	<ul style="list-style-type: none"> Contractor to ensure compliance to geotech risk controls. 	HIGH
	<ul style="list-style-type: none"> Asbestos material uncovered 	<ul style="list-style-type: none"> Diseases such as Mesothelioma and asbestosis. 	<ul style="list-style-type: none"> Contractor to comply with ASBESTOS ABATEMENT REGULATIONS, 2020 and Transnet Asbestos Management Procedure and all applicable legislation. 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Dust generated when back filling with sand. 	<ul style="list-style-type: none"> Respiratory diseases caused by dust inhalation. 	<ul style="list-style-type: none"> Contractor to develop the safe work practices. And to ensure compliance to the Construction Regulations. 	HIGH
	<ul style="list-style-type: none"> Vibration 	<ul style="list-style-type: none"> Collapse of open excavations and could lead to injuries and burying of employees 	<ul style="list-style-type: none"> Contractor to comply to excavation permit conditions and develop method statement and safe work procedure. 	MEDIUM
	<ul style="list-style-type: none"> Erection of temporary works from Unapproved Drawings 	<ul style="list-style-type: none"> Injury to persons and employees Fatilities 	<ul style="list-style-type: none"> Contractor to ensure compliance to CR 12 Adherence to SANS CODE 10085 	MEDIUM
	<ul style="list-style-type: none"> Wind Speeds 	<ul style="list-style-type: none"> Collapse of the existing structures could lead to injuries and fatalities 	<ul style="list-style-type: none"> Contractor to ensure compliance to CR 12 Contactor to develop SWP and implement. 	MEDIUM
	<ul style="list-style-type: none"> Working at Heights. 	<ul style="list-style-type: none"> Falling from heights, sustaining injuries such as loss of limbs and possible fatalities 	<ul style="list-style-type: none"> Fall protection plans to be developed and implemented Demarcation of areas where there is work at heights Access control (implementing permit system). The Contractor must ensure that all employees working at heights undergo Medical Surveillance to ensure fitness for duty. Competency certificate and previous experience to be provided. 	HIGH
Lifting Operations	<ul style="list-style-type: none"> Exposure to dust 	<ul style="list-style-type: none"> Respiratory diseases caused by dust inhalation. 	<ul style="list-style-type: none"> Contractor must comply with Hazardous Chemical Substances Regulations 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
			<ul style="list-style-type: none"> Contractor to implement dust suppression measures. Ensure operator and employees have been trained in safe work practices No employees must work close to the demolition area. 	
	<ul style="list-style-type: none"> Swaying Load 	<ul style="list-style-type: none"> Load Falling 	<ul style="list-style-type: none"> Attach two guide ropes to piles before lifting of control Only Employees who are competent in rigging and certified to rig piles Piles not to be lifted in windy conditions 	HIGH
	<ul style="list-style-type: none"> Employees walking under Suspended Load 	<ul style="list-style-type: none"> Fatal Injuries 	<ul style="list-style-type: none"> Rigger must ensure only his rigging crew is within the area and ensure the crane operator has a clear vision of himself and his crew to receive clear signals from him Prior to lifting the rigger must ensure the area over which the load will be lifted over is clear of any personal 	HIGH
	<ul style="list-style-type: none"> Inclement Weather(High Winds & Rainy conditions) 	<ul style="list-style-type: none"> Property Damage 	<ul style="list-style-type: none"> All lifting operations must stop if wind speed to high and not adherence to OHS Act. Supervision and crane operator must assess and determine if safe to continue with lifting operations. 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
		<ul style="list-style-type: none"> Poor Visibility 	<ul style="list-style-type: none"> Crane operator and rigger must stop all lifting operations immediately if visibility is poor and inform supervisor. No Lifting must take place in rainy conditions. 	HIGH
	<ul style="list-style-type: none"> Defective Lifting Equipment 	<ul style="list-style-type: none"> Loads Falling Fatal Injuries 	<ul style="list-style-type: none"> Only Lifting Tackle and Gear which is certified and on a register will be used Lifting tackle and gear must be colour coded as per specific rules to ensure inspection was done and up to date as per inspection colour coding system. 	HIGH
	<ul style="list-style-type: none"> Moving of machinery 	<ul style="list-style-type: none"> Machinery knocking employees resulting in injuries 	<ul style="list-style-type: none"> Employees to be aware and stay clear of moving machinery. Reverse sound to be fitted on moving machinery. Only competent and experienced operator shall operate machinery. Contractor to comply with Driven Machinery regulations 	HIGH
Layer works	<ul style="list-style-type: none"> Defective tools used to place formwork 	<ul style="list-style-type: none"> Injuries to employees 	<ul style="list-style-type: none"> Contractor to ensure inspection of all equipment including hand tools 	LOW
	<ul style="list-style-type: none"> Incorrect use of hand tools 	<ul style="list-style-type: none"> Injuries to employees 	<ul style="list-style-type: none"> Contractor must ensure that employees are using the correct type of tool for the activity. 	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Manual handling of reinforcement material 	<ul style="list-style-type: none"> Back injuries Musculoskeletal disorders 	<ul style="list-style-type: none"> Employees not to lift material heavier than 20kg alone. 	LOW
	<ul style="list-style-type: none"> Manual handling of formwork material 	<ul style="list-style-type: none"> Injuries to employees when lifting material in awkward position 	<ul style="list-style-type: none"> Contractor to ensure that employees are trained to not handle materials in awkward positions though Risk assessments, DSTI and toolbox talks. (Ergonomics training) Employees not to lift material heavier than 20kg alone. Contractor to ensure usage of appropriate gloves. 	MEDIUM
	<ul style="list-style-type: none"> Incorrect stacking of bricks 	<ul style="list-style-type: none"> Stacking collapsing injuring employees 	<ul style="list-style-type: none"> Contractor to appoint a stacking supervisor to supervise all stacking activities. Bricks must be stacked on a levelled surface 	LOW
	<ul style="list-style-type: none"> Undertaking hot work without a hot work permit in place. 	<ul style="list-style-type: none"> Work stoppages Time Delays 	<ul style="list-style-type: none"> The contractor shall apply for a hot work permit prior to commencement of the task. Permits and warning signs are to be displayed at entry points to hot work areas. Permits must be valid at the time work is being undertaken. 	HIGH
	<ul style="list-style-type: none"> Exposure to UV, IR Radiation and 	<ul style="list-style-type: none"> Arc-eye loss of vision 	<ul style="list-style-type: none"> Contractor to comply with section 9 of General Safety Regulations 	LOW

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	exposure to arc flashes		<ul style="list-style-type: none"> Contractor to ensure operators are trained in safe work practices The contractor shall compile a comprehensive risk assessment prior to commencement of task. Contractor to ensure that welders are trained, competent and experienced. 	
	<ul style="list-style-type: none"> Hot Works 	<ul style="list-style-type: none"> Possible fire Burns to employees 	<ul style="list-style-type: none"> Contractor to comply with section 9 of General Safety Regulations Warning signs shall be posted around and at each level below the area of each overhead welding or burning operation. Fire extinguishers shall be available and fire blankets shall be used for protection. The contractor to ensure appropriate screening is in place to protect the surrounding workspace. Ensure operator has been trained in safe work practices 	MEDIUM
	<ul style="list-style-type: none"> Defective machinery 	<ul style="list-style-type: none"> Injuries to employees and possible property damage 	Contractor to ensure the inspection of welding equipment by a competent person.	LOW
Working in Elevated positions	<ul style="list-style-type: none"> Working at Heights. 	<ul style="list-style-type: none"> Falling from heights, sustaining injuries such as loss of limbs and possible fatalities 	<ul style="list-style-type: none"> Contractor to consider the weather when working at heights. Contractor must ensure that working at heights activities do not take place in 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
			<p>inclement weather and or when the wind speed is high.</p> <ul style="list-style-type: none"> • Fall protection plan to be developed by appointed competent person and implemented • Demarcation of areas where there is work at heights • The Contractor must ensure that all employees working at heights undergo Medical Surveillance to ensure fitness for duty. • Contractor to ensure that employees are trained and found competent to work at heights and proof of training must be provided. • Contractor to ensure that employees are trained and found competent to use double lanyard safety harness. <p>Contractor to comply with section 10 of Construction Regulations, 2014</p>	
	<ul style="list-style-type: none"> • Working on scaffolding 	<ul style="list-style-type: none"> • Scaffolding collapsing causing injuries to employees and possible fatalities 	<ul style="list-style-type: none"> • Contractor to ensure Scaffolds comply with SANS 10085 • Contractor to Comply with Section 16 of Construction Regulations, 2014 • 	HIGH
	<ul style="list-style-type: none"> • Working on suspended platform 	<ul style="list-style-type: none"> • Platform falling causing injuries to employees and possible fatalities 	<ul style="list-style-type: none"> • Contractor to comply with Section 17 of Construction Regulations, 2014. • Maintenance records of suspended platform must be provided. 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> defective ladder used 	<ul style="list-style-type: none"> employee falling from a ladder sustaining injuries 	<ul style="list-style-type: none"> Contractor to ensure ladder inspection is done before use. Contractor to ensure that employees are trained on the safe use of a ladder. 	HIGH
	<ul style="list-style-type: none"> Possible mechanical failure of lifting equipment (mobile cranes/Tower crane /crane trucks) 	<ul style="list-style-type: none"> Loads falling causing injuries and property damages. Loads swinging causing injuries and property damages. 	<ul style="list-style-type: none"> Pre-use checks to be conducted by the appointed competent person. All lifting and rigging equipment tested and certified, proof to be kept on file. Contractor to comply with Driven Machinery regulations, 2015 	HIGH
	<ul style="list-style-type: none"> Incompetent operator and banksman 	<ul style="list-style-type: none"> Making poor/uninformed judgement that may cause injuries and/or property damage 	<ul style="list-style-type: none"> Crane or lifting machine operator must be competent, appointed in writing and authorised to use the equipment. Contractor must ensure that only a trained, competent and experienced banksman communicate with crane operator. 	HIGH
	<ul style="list-style-type: none"> Manual handling 	<ul style="list-style-type: none"> Cuts/Abrasions and pinch points 	<ul style="list-style-type: none"> Contractor to ensure long sleeved clothing and appropriate gloves are worn by all employees handling roof trusses and sheets. 	HIGH
	<ul style="list-style-type: none"> Inclement weather/high wind speed 	<ul style="list-style-type: none"> Material blown by wind resulting in employee injuries and damage to property 	<ul style="list-style-type: none"> Contractor to consider the weather when conducting lifting activities. Contractor must not conduct lifting activities in inclement weather and or when the wind speed is equal or more than 30km/h. 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Dust generated when back filling with sand around pipe. 	<ul style="list-style-type: none"> Respiratory diseases caused by dust inhalation. 	<ul style="list-style-type: none"> Ensure operator and employees have been trained in safe work practices No employees must work close to the backfilling area while excavator is in operation. <p>Contractor must comply with Hazardous Chemical Substances Regulations</p>	HIGH
Working in Close Proximity to the water	<ul style="list-style-type: none"> Marine equipment used not meeting SAMSA requirements. Contractor's Floating Equipment not maintained in a satisfactory and seaworthy condition Non-compliance with Harbour Masters written instruction during towing, placing and sinking of each geobag. Inadequate training on Site specific emergency and rescue procedure Personal flotation devices and life jackets not used within 2 metre of the 	<ul style="list-style-type: none"> Sunken object Drowning Possible fatality 	<ul style="list-style-type: none"> Contractor shall comply with the provisions of the Act, Diving regulations issued in terms of Occupational Health and Safety Act 85 of 1993 and all other relevant legislation. Adherence to South African Maritime Safety Association (SAMSA). Adherence to International Marine Contractor's Association (IMCA) Compliance with the Port rules for commercial ports of the Republic of South Africa adopted in terms of section 80(2) of the Act, Floating contractor's equipment shall be maintained in a satisfactory and seaworthy condition, shall have adequate attendance by competent seamen at all times, shall be fully provided with sound and satisfactory ropes, line and moorings and shall be fully equipped with lights. Contractor to comply with working over water and man over Board procedure. 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	water edge or over water.		<ul style="list-style-type: none"> Site specific emergency and rescue procedure to be approved by project team, communicated to all, displayed on a SMI board. A strictly controlled Man over Board drill shall be conducted. All persons working within 2 metres of the water edge or over water shall be issued with Personal Flotation Devices (PFD) and life jackets and trained on correct use of such devices. Vessels maintenance register to be maintained on site. Vessels to be checked by qualified personnel to ensure that its safety for use and ensure that there are no leaking of oil or diesel. 	
Handling, Storage & disposal of Hazardous chemical substances.	<ul style="list-style-type: none"> Incorrect storage and handling of hazardous waste 	<ul style="list-style-type: none"> Contamination of receiving environment. 	<ul style="list-style-type: none"> Waste storage as per project EMP requirements Cradle-to-grave approach to be followed. 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 Licensed waste contractor to be appointed. All painters must be trained and proof of competency and previous experience be provided. Correct PPE to be worn for the task 	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
			MSD's to be read and adhered to when using Hazardous & Chemical substances	
Working in confined spaces	• Unauthorised entry	• Physical Injuries / death	<ul style="list-style-type: none"> The confined space is to be manned by a competent and trained safety watch preventing unauthorised entry into the area. All employees must be trained and found competent before entering confined space. Air monitoring to be conducted prior to entering the confined space, and throughout the duration of the task. Contractor to apply for confined space entry permit before going inside confined space. 	HIGH
	• Insufficient oxygen levels	• Respiratory illnesses due to suffocation	• Contractor to comply with Section 5 of General safety regulations.	HIGH
Electrical installations	<ul style="list-style-type: none"> Isolation and lock out procedure not followed during installation 	<ul style="list-style-type: none"> Electrocution Possible fatality Physical damage to structures. 	<ul style="list-style-type: none"> Adherence to Electrical Installation Regulations, under the Occupational Health & Safety Act, Act 85 of 1993. Contractor must adhere to SANS 10142 	HIGH
	• Working in awkward positions	• musculoskeletal disorders	• Contractor to ensure that employees do not stay in awkward positions for a long time.	HIGH

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
	<ul style="list-style-type: none"> Manual handling 	<ul style="list-style-type: none"> Hand and back injuries 	<ul style="list-style-type: none"> Contractor to ensure employees are trained on correct manual lifting techniques. Employees to use appropriate gloves when doing manual handling. Employees not to lift material heavier than 20kg alone. 	LOW
Working at night	<ul style="list-style-type: none"> Employees working long hours 	<ul style="list-style-type: none"> Injuries due to fatigue and lack of rest/sleep 	<ul style="list-style-type: none"> Contractor to develop and submit a plan for working at night to TGC. Contractor to have two teams for day and night work. Contractor to adhere to Basic Conditions of Employment Act. 	HIGH
External environmental conditions not associated with any activities	<ul style="list-style-type: none"> Working in the sun without drinking liquids 	<ul style="list-style-type: none"> Dehydration 	<ul style="list-style-type: none"> Provide cool water in the workplace and encourage workers to drink it frequently in small amounts before, during and after working. 	HIGH
	<ul style="list-style-type: none"> Heat 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Contractor to compile and implement a heat management procedure, practices and emergency procedures providing periodic rest breaks and rest facilities in cooler conditions 	HIGH
	<ul style="list-style-type: none"> Inadequate lighting 	<ul style="list-style-type: none"> Insufficient light - not enough (too little) light for the need. Glare - too much light for the need. 	<ul style="list-style-type: none"> 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

Options and activities				
Options and Activity, step or action step	Hazards	Associated risk event	Risk controls	Risk Rating
		<ul style="list-style-type: none"> • Improper contrast. • Poorly distributed light. • Flicker. 		

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