

BASELINE RISK ASSESSMENT

PROJECT: MUTALE RAW & PORTABLE WATER SYSTEM UPGRADES PACKAGE C1: WEIR REHABILITATION, REFURBISHMENT OF PUMP SYSTEM

2024





**PACKAGE C1: WEIR REHABILITATION, REFURBISHMENT OF
PUMP SYSTEM**

DOCUMENT TITLE: PROJECT BASELINE RISK ASSESSMENT

Rev. 01

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1 INTRODUCTION

The **VHEMBE DISTRICT MUNICIPALITY** has proposed a need for an upgrade and refurbishment of the Raw and Portable water system at Mutale. The project objective is to refurbish the system as to ensure compliance with regulatory requirements while providing safe drinkable water to the community. This will also ensure that community is not exposed to risk related to poor water quality and sickness.

The scope covers all aspects of the raw and portable water systems, i.e., mechanical services and equipment, general building, electrical services for buildings and equipment as well as civil and structural aspects of the infrastructure.



The aim of this Baseline Risk Assessment is to highlight the construction health and safety risks and hazards on the Mutale water systems. The Principal Contractor and his or her subcontractors shall identify hazardous and potentially hazardous work operations within their scope of work. The Principal Contractor needs to ensure that the site hazards, the contractor's activity risks and the mitigating measures have been considered in this risk assessments are also addressed on their specific Issue based risk assessment. Emerging risks and hazards shall be managed during construction work.

Activity-based risk assessments must be conducted by an appointed and competent person of the Principal Contractor. This will be verified when reviewing the Contractor SHE file. This Baseline Risk Assessment shall assist the Principal Contractor in conducting preliminary hazard identification prior to work beginning on site. Contractor Baseline Risk Assessments shall be conducted to profile the project risks and shall be approved by the Principal Contractors Competent Person that is, Risk Assessor and the Construction Health and Safety Agent before the construction work commences and shall be updated regularly to ensure its relevance to changing scope.

Risks and hazards associated with the planning and construction stage for the refurbishment of the Mutale raw & portable water system have been identified on the scope of work, design drawings and locality maps of the site. Risks and hazards have also been pointed out based on the anticipated activities that will be conducted throughout the construction period. Mitigation measures have been highlighted to reduce incidents during the planning and construction period.

1.1 Reason for this Risk Assessment

Section 9(1) of the Occupational Health and Safety Act 1993 (Act no. 85 of 1993), requires inter alia that the employer shall establish as far as is reasonably practicable, what the hazards to the health and safety of persons are attached to any work which is performed, further establish what precautionary measures should be taken with respect to such work



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and he shall provide the necessary means to apply such precautionary measures. The Construction Regulations 2014 further requires that a baseline risk assessment for an intended construction work project be compiled and a suitable, sufficiently documented and coherent site-specific health and safety specification for the intended construction work based on the baseline risk assessment to be prepared.

2 DEFINITIONS AND ABBREVIATIONS

Term	Description
Hazard	Source or situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the workplace environment, or a combination of these (exposure to danger = potential source of harm)
Risk	Combination of the frequency (likelihood) and consequence (severity) of a specified hazardous event occurring
Reasonably practicable	The degree of risk created by a particular activity balanced against time, cost and physical difficulty of taking measures to avoid the risk, taking into account current technical knowledge and best industry practices
As Low as Reasonably Practicable	A level risk that is not intolerable, and cannot be reduced further without the expenditure of costs that are grossly disproportionate cost, in relation to the benefit gained.
Acceptable risk	A level of risk that is so low as to not require actions to reduce its magnitude further, but which will be managed and monitored by the site using its own management system.
Competent Person	Person who is qualified because of knowledge, training and experience to organize work and its performance; is familiar with applicable Health and Safety legislation that applies to the work; and has knowledge of any potential or actual danger to or effect on health, or safety in the work place.
Due Diligence	Systematic, comprehensive and demonstrable approach to the management of OH&S issues, which is based on an assessment of the likely risks and potential legal liabilities arising from the issues and is reasonably designed and operated to control and reduce those risks and prevent those liabilities from being incurred.

CR	Construction Regulations, 2014
CHSO	Construction Health and Safety Officer
GDHS	Gauteng Department of Human Settlements
NEMA	National Environmental Management Act
NIHL	Noise Induced Hearing Loss
OHSA	Occupational Health and Safety Act
PPC	Personal protective Clothing, i.e. safety boots, overalls, safety gloves, hard hat/ helmet

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PPE	Personal protective equipment, i.e. ear muffs, safety goggles
SANS	South African National Standards
SHEQ	Safety, Health, Environment, Quality
SSBRA	Site-Specific Baseline Risk Assessment

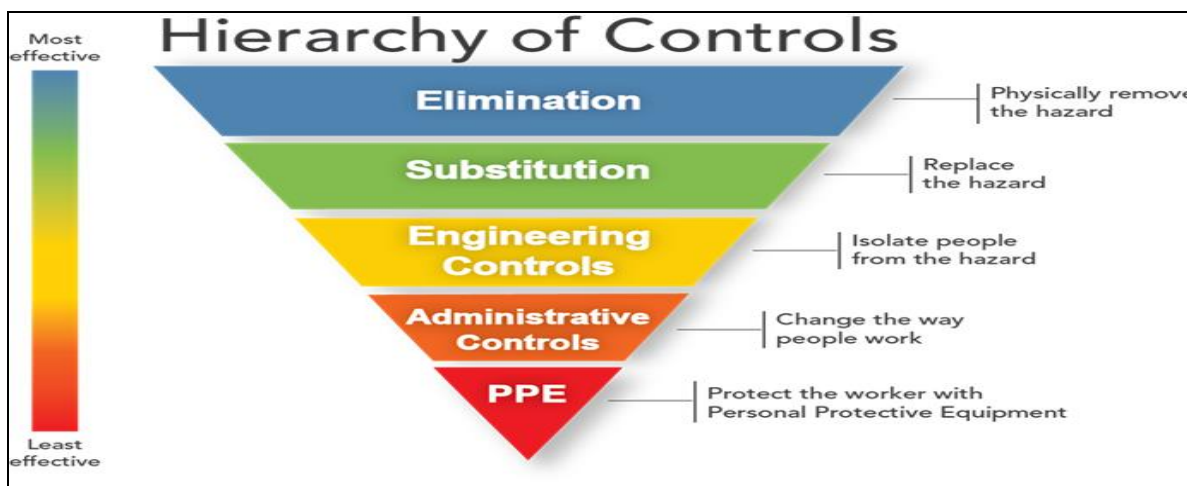




Figure 1: Hierarchy of Control

The various control measures are listed in order of decreasing effectiveness, thus the measures closest to the top should be adopted first wherever possible

The hierarchy of control: is a method of hazard management for the worksite and must always be evaluated during risk assessments. The concept is that higher-level methods are always preferred over lower-level methods. The hierarchy of control for hazards is as below:

- **Elimination** - the work is performed by different means that does not expose the worker to the hazard.
- **Substitution** – substituting or replacing a hazard or hazardous work practice with a less hazardous one.
- **Engineering control** – if the hazard cannot be eliminated, substituted an engineering control is the next preferred measure.
- **Administrative Control** – this includes introducing work practices that reduce the risk, such as implementing measures to ensure that procedures, instruction, training and warning signs are in place to warn and protect workers exposed to hazards. This could also include limiting the amount of time a worker is exposed to a particular hazard. These controls should be used in conjunction with physical controls and appropriate supervision.
- **Personal protective equipment** – this is the very last control used in the hierarchy of controls and must only be considered when all other controls have been considered.

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3 EXECUTIVE SUMMARY

In accordance with Section 9(1) of the Occupational Health and Safety Act 1993, Act No. 85 of 1993 and the associated Construction Regulations 2014, a baseline risk assessment is conducted to identify and evaluate the potential hazards and assess the associated risks for the upgrading and refurbishment of Mutale Raw and Portable water systems.

4 OBJECTIVE

- To conduct a risk assessment to identify the hazards and evaluate the associated risks with regard to the upgrading and refurbishment of Mutale Raw and Portable water systems.
- To provide management with the necessary information to institute reasonably practicable measures to eliminate or minimise the identified significant risks and effectively manage and protect persons against them.



5 SCOPE

This assessment will focus on the potential hazards emanating from the upgrading and refurbishment of Mutale Raw and Portable water systems. The upgrading and refurbishment of Mutale Raw and Portable water systems entails concrete works, electrical works, pipelines, demolishing and building. The work activities include the following:



- Supply and delivery of raw materials: cement, sand and concrete
- Excavation by TLB / Excavator
- Compacting
- Formwork
- Concrete mixing and pouring
- Installation of gabions
- Stone pitching
- Removal of old pump and fitting the new pump
- Connecting pipelines
- Connecting the pump system to the water network





RISK MATRIX				Consequence (C)				
				1	2	3	4	5
				Minor Injuries	Temporary Impairment	Hospitalisation	Permanent Impairment	Fatality
Likelihood (L)	1	Could happen, but probably never will	Rare	01	02	03	04	05
	2	Not likely to occur in normal circumstances	Unlikely	02	04	06	08	10
	3	May occur at some time	Possible	03	06	09	12	15
	4	Expected to occur at some point	Likely	04	08	12	16	20
	5	Expected to occur regularly	Almost Certain	05	10	15	20	25
Level of Risk (R)								
L	0 - 04	Low risk:	Monitor & manage as appropriate					
M	05 – 09	Medium risk:	Proactively manage (define and implement control measures, implement, manage and monitor)					
H	10 – 25	High risk:	Activity manage, eliminate or avoid, implement specific action plans/ procedures to manage & monitor before proceeding with task/activity					

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PROJECT DETAILS <i>Activities involved</i>	HAZARDS/RISKS IDENTIFIED* <i>Relevant details regarding the identified hazards</i>	INHERENT RISK			CONTROL MEASURES (RISK CONTROL) <i>Detailed mitigating or control measures to be implemented</i>	RESIDUAL RISK		
		L	C	R		L	C	R
Contractor process of appointing employees	Fraudulent qualification or false indication of experience	4	4	16 H	<ul style="list-style-type: none"> The Contractor must conduct an in depth vetting and verification system of qualifications of contractor staff. The Contractor must further confirm the competency of the sub-contractor before appointing them. The Contractor's project management and site staff must be proven competent for their specific appointed role and be in position of personnel auditable and verifiable proof of competency. 	2	2	4 L
	Inadequate, absence and poor site supervision	3	5	15 H	<ul style="list-style-type: none"> A competent Supervisory Team including the Construction Manager and Construction Supervisor must be appointed specifically for the project and the Construction Manager be available on a full-time basis during all construction work and his/her alternate Construction Manager with similar qualifications and experience is available when he/she is unavailable. A competent and registered CHSO must be appointed and available on a full-time basis during all construction work. Competent Construction Health and Safety Officers (CHSO) must be appointed in writing and available on a full-time basis on site during all construction work, early works and including that of sub-contractors, in order to assist and monitor OHS compliance on the sites. The CHSO must be fully registered with the South African Council for Project and Construction Management Professions (SACPCMP). 	2	2	4 L
	Construction Plant Operators/ Employees medically unfit and incorrectly placed for job categories.	3	4	12 H	<ul style="list-style-type: none"> All Contractor's employees and Construction Plant Operators on the Project must have valid medical certificates of fitness and an Annexure 3 of the Construction Regulations, 2014 from an Occupational Health Practitioner / Occupational Medical Practitioner, prior to working on site. All persons on site must have undergone an induction program or on the job training prior to their appointment to work on site. Provide relevant PPE, educate employees of the necessity to use particular PPE and enforce use when necessary.. Mobile plant is maintained by a competent mechanic and service records are up to date. 	2	2	4 L

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	Employees medically unfit and incorrectly placed for job categories.	3	4	6 M	<ul style="list-style-type: none"> All Contractor employees on site Project must have valid medical certificates of fitness prior to working on site, as per section 7(1)(g) of the Construction Regulations 	1	2	3 L
	Inadequate Health and Safety File	4	4	16 H	<ul style="list-style-type: none"> The health and safety file must have the contents described in the health and safety specifications. Mandatory documents for compliance with the Construction Regulations will include a signed Appointment as Principal Contractor as per CR 5(1)(k) and a Mandatory Agreement as per Section 37(2) of the OHS Act signed by the Client in the safety file. The final Baseline Risk Assessment and Health and Safety Specifications provided in the tender document must be placed in the health and safety file. The health and safety file must be on site at all times and maintained for inspection by authorities or the safety agent. 	2	2	4 L
	Management has not been trained on site specific SHE awareness	4	3	12 H	<ul style="list-style-type: none"> The Project Manager and Construction Manager are encouraged to have received valid accredited health and safety training on Legal Liability. All employees to be trained on the contents of the SHE File. Relevant method statements must be developed by the Construction Manager and CHSO for all high-risk activities such as delivery and storage of materials (Bins/Trees/Benches/Bins), Construction Plant Site Cleaning, street works (Traffic Management Plan), and illegal dump site cleaning. 	2	2	4 L
Selection of employees/ Staff/ management	Incompetent management employees appointed on the project, criminal profile foreign/local employees	3	5	15 H	<ul style="list-style-type: none"> Contractor's project management team to be competent for their specific appointed role and be in position of auditable and verifiable proof of competency. Contractor to ensure competent staff are employed and appointed for the Project. 	2	2	4 L
Site Establishment (Camp)	Risks relating to delivery of tools, plant, equipment and machinery	3	4	12 H	<ul style="list-style-type: none"> Health and Safety Agreements between the Main Contractor and Suppliers (Containers/Skips/Benches/Bins) must be developed and agreed upon by the parties for safe deliveries, as per the OHS Act 10(4). Ensure designated storage areas are made available and barricaded to prevent the unauthorized entry into the storage areas. Ensure that those involved in this operation are trained, competent in using the plant, tools and machinery involved, and understand the risks and mitigation controls required to be implemented. 	2	4	4 L

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				<ul style="list-style-type: none"> • Ensure that the vehicles, equipment, material and tools are serviced, and certified for the relevant loads they will be used for. • Ensure employees are provided with the appropriate personal protective equipment. 			
Defective lifting machinery or equipment (Mobile Crane/Rigging/ Truck) delivering materials	4	3	12 H	<ul style="list-style-type: none"> • Valid load test certificates of lifting machinery and slings must be retained on site. • A competent driver and operator must be sort. • Flagmen should be available to guide the Operator. • The Containers must meet SANS standards. 	2	2	4 L
Possibility of persons being struck by construction plant causing a man machine interaction, being exposed to vibration or noise.	4	4	16 H	<ul style="list-style-type: none"> • The Contractor must use safe and fit to operate construction plant, and plant will be subjected to inspection before use on sites. • The Operators must be certified competent and medically fit. • Awareness of the noise sources amongst operators and persons working nearby. • Ensure equipment provided is stored safely and performs as intended. • Operators must conduct daily pre-start safety inspections and maintain records of construction plant. 	2	2	4 L
Operating construction plant in bad weather	4	4	16 H	<ul style="list-style-type: none"> • No Operators will be permitted to Operate in inclement weather. • Avoiding work in a lightning storm or high winds. • Operators must park with brakes set, mobile plant barricaded, motors stopped to prevent accidental rolling. • Daily pre-start inspections must be carried out by the Operator and available in the construction plant. 	2	2	4 L
Ergonomics - Work resulting in awkward/poor postures and/or repetitive work	3	3	9 M	<ul style="list-style-type: none"> • Develop an ergonomics procedure. • Provide training, communication, and awareness. • Job breaks and encourage warm-up exercises/stretching. • Job rotation. 	2	1	2 L
Movement of pedestrians and vehicles at the site camp	4	4	16 H	<ul style="list-style-type: none"> • A driving policy must be developed and implemented. • Security guards must be in control of site access. 	2	2	4 L

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				<ul style="list-style-type: none"> • Sufficient barricading of the area using netting, hoarding and fencing approved by the Engineer. • Suitable signs and notices for motorists. • All site visitors must sign the security daily sign-in register at the site camp entrance. • Use of trained flagmen. • Proper site supervision for early works. • Traffic signage inspection records must be retained. • Training, communication, and awareness. 			
Employees using hand tools to dig holes for site camp fencing installation	3	3	9 M	<ul style="list-style-type: none"> • A safe work procedure must be developed and proof of communication retained. • Develop task specific risk assessments and safe working procedures for activities where hand tools may be used in an unsafe manner and communicated to employees. • Practice good housekeeping by storing tools in a safe manner, when tools are not in use. • Conduct weekly toolbox talks and communicate to employees to raise awareness. • Competent Supervision. • Daily inspection of tools and records retained on registers. • Provide employees with overalls, safety shoes, dust masks, goggles and keep a record of issuing in the health and safety file. • Ensure all employees use the personal protective equipment (PPE) provided. 	2	2	4 L
Dust - Inhalation of hazardous chemical agents	3	3	9 M	<ul style="list-style-type: none"> • A dust suppression plan must be developed by a competent person to prevent excessive dust affecting the employees and public, and implemented by Operators, and proof of communication kept. • Safety data sheets of chemicals used (cement) are to be communicated to employees. • Issue suitable PPE to protect the respiratory system of employees exposed to dust from plant, machinery and waste. • Provide training on proper use of PPE - Dust Mask/Respirators. • Competent and appointed supervision. • Provide cement dust awareness in inductions and toolbox talks, and proof of communication kept. • Environmental impact awareness of surrounding communicated to Operators and employees. • Wetting methods implemented to control dust. 	2	2	4 L

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	<p>Damages to services, leading to the disruption of local services. Risk of electrocution, fire, burns, flooding and environmental contamination</p>	3	5	15 H	<ul style="list-style-type: none"> The Contractor must obtain the relevant drawings and plans, and carryout a method to locate and identify and exposing all existing services where excavation work takes place (known and unknown). Once services are exposed, they should be guarded by means of barricading/netting, signage and demarcation from the public and employees. No excavations will be left open overnight / non-working days without sufficient barricading or netting and sufficient traffic warning signs overnight. Loads shall be lifted gently, and the lifting machinery motions operated smoothly to avoid loads swinging. Crane operator must possess a valid certificate in compliance with SAQA US 8039 and supply valid training or license to prove their competency to perform the task prior to the authorization to work on site. Avoid contact or damage to underground or overhead services in activities where lifting with a crane. Housekeeping maintained at all times. Valid load test certificates of lifting machinery and slings must be retained on site. 	2	2	4 L
	Fires and explosions	3	4	12 H	<ul style="list-style-type: none"> Combustible material must be stored separately from flammable material. Provide provisions for appropriate storage facilities. No open flames and fires on site. Adequate fire extinguishing equipment to be available on site. Competent fire fighters, emergency evacuation (fire marshals) and fire equipment inspectors to be appointed for the project. Provide prohibitive, mandatory, information, warning, and emergency signs at the site camp. Ensure an up-to-date list of the local emergency contacts are displayed at the site camp. 	2	2	4 L
	Oil or fuel spills	3	3	9 M	<ul style="list-style-type: none"> Chemical Spill kit and dip trays should be on site. All construction plant and generators must have drip trays to prevent the accidental spill of hydrocarbons. 	2	2	4 L
Site Layout	Placement of ablution facilities	3	3	9 M	<ul style="list-style-type: none"> The location must be on an even surface and the toilet secured to the ground or mobile. 	2	1	2 L

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	Insufficient ablution facilities	3	3	9 M	<ul style="list-style-type: none"> Sufficient mobile toilets must be made available at sites where work is conducted. Means to wash hands, including hand soap and disposable paper towels or similar. 	2	2	4 L
	Insufficient signage around site	4	4	16 H	<ul style="list-style-type: none"> Place sufficient signage for emergency evacuation, drinking water, fire extinguishers, site office, eating areas, unauthorized entry, first aid box & toilets. 	2	2	4 L
Site Access	Sites fencing insufficient	3	5	15 H	<ul style="list-style-type: none"> Engineer approved fencing installed at site camp and parks to be constructed for the community. 	2	2	4 L
	Inadequate hoarding around the site camp and sites at the community park construction	3	3	9 M	<ul style="list-style-type: none"> The activities in the site raise interest from the public, hoarding shields vision of inside the site and prevents unauthorized entry. 	2	1	2 L
	No security at the entrance to the site camp and recreational park sites	4	2	8 H	<ul style="list-style-type: none"> Appoint a security service provider or similar for 24-hour security to prevent unauthorized entry and theft. 	2	2	4 L
Emergency Management	Employees or the public being an emergency situation or injured	4	4	16 H	<ul style="list-style-type: none"> Prominently display emergency contacts list and the evacuation plan at the site camp and sites. Fire extinguishing equipment must be in the vehicles and all employees must be trained on its use. Fully stocked first aid boxes must be in vehicles and a certificated first aider must be available onsite when work is conducted. An emergency management plan and procedure must be developed by the Contractor for various emergency situations and proof of communication to all employees retained. An emergency alarm system (Siren/Whistle) must be in available to raise awareness of any emergency situation at where employees work on sites. Appropriate control measures must be implemented and maintained to minimise third parties' exposure to hazards and risks. Report all incidents including community unrest to the Client or his/her Representatives. An incident management procedure must be included in the health and safety file that is compliant with the section 24 of the Act, Construction Regulations and General Administrative Regulations. Ensure sufficient security is available at the site camp and materials storage. 	2	2	4 L
Working in external environment and adjacent to the river environments with	Exposure to biological agents (i.e. bacteria, viruses, etc.)	4	5	20 H	<ul style="list-style-type: none"> Site employees must undergo health evaluations before starting with site activities. Provide employees with awareness regarding the hazards and protection measures. The Contractor must anticipate the presence of hazardous biological agent hazards and report 	2	2	4 L

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potential presence of biological agents					<ul style="list-style-type: none"> exposure, when its experienced by employees involved in site cleaning. Employee must avoid contact with river water or any accumulated water until the water is tested and safe to have contact with human beings. Maintain safe working distance from the river to prevent drowning related incidents Provide employees taking part in activities with overalls, gloves, safety shoes, dust masks, goggles and reflectors. Ensure all employees use the personal protective equipment provided. 			
Transporting materials and equipment to site	Incident/ accident involving people and/ or vehicles and driven machinery (lifting machinery)	4	5	20 H	<ul style="list-style-type: none"> Make design provisions for traffic movement and accommodation to be observed and manually controlled. Vehicle roadworthiness checking system must be in place for all construction vehicles on the project. Driver competency checking system must be in place for all drivers and operators on the project. Speed limit of 10km/h on site must be communicated to drivers and adhered to. The Contractor must present public liability insurance of at least R 5 million. 	2	2	4 L
	Inhalation of exhaust fumes from plant and vehicles	4	2	8 M	<ul style="list-style-type: none"> Training, communication, and awareness on health effects of inhaling exhaust fumes from plant and machinery used on sites. PPE - Respirators must be worn by employees. 	2	2	4 L
	Defective lifting machinery or equipment (Rigging/Mobile Crane Truck)	3	5	15 H	<ul style="list-style-type: none"> Loads shall be lifted gently, and the lifting machinery motions operated smoothly to avoid loads swinging. Contact or damage to unknown, underground or overhead services. Examine site layout and routes. Housekeeping maintained at all times. Method Statement developed for approval. Competent, authorised and appointed Operators. Valid load test certificates of lifting machinery and slings must be retained on site. Daily pre-start use inspection registers must be completed and retained. Only medically certified fit operators can operate driven machinery. Material handling using rigging and other lifting appliances should be organized such that blind 	2	2	4 L

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					lifts do not occur.			
Delivery of materials with trucks	Difficulty of truck in accessing the construction site resulting in truck hitting employees and road users Materials falling off trucks Damage to property	4	4	16 H	<ul style="list-style-type: none"> Utilise a competent driver to prevent traffic accidents during low or restricted visibility. Use a suitable vehicle in compliance with the national traffic act requirements. Loading and offloading of trucks by using proper lifting techniques or lifting equipment for heavy materials. Use trained flagmen to guide the truck. PPE to be provided for all employees handling materials. Use temporary road traffic signs and speed limit signs to warn truck drivers and road users. Ensure designated storage areas are made available and barricaded to prevent the fall or movement of stored materials. 	2	2	4 L
Traffic Accommodation for road users and pedestrians	Incidents and accidents resulting in fatalities, permanent disabilities and other injuries Poor traffic accommodation. Disruption of traffic flow	4	4	16 H	<ul style="list-style-type: none"> Develop and implement a site-specific Traffic Management Plan to accommodate traffic load. The traffic accommodation plan must be reviewed daily to ensure the safety of the road users. Inspection records must be retained. Ensure an adequate number of trained spotters and flagmen are appointed for all activities along the road. Appropriate traffic warning signage, barricades and flagmen must be positioned to warn road users of road/ lane obstructions. All signage and barricades used for traffic management must be checked and ensured that they are sound and suitable for use. The Contractor must have an effective plan that would detail how the traffic will be managed and not affect the public. A detailed risk assessment and method statement must be developed by the contractor for approval by the Client for all the various work fronts involving works. Suitable drawings must be kept on site. 	2	2	4 L
Illegal Dump Site Cleaning	Multiple fatalities or physical injuries: man-machine interaction with construction plant, motor vehicle accidents, environmental hazards, poor	4	5	20 H	<ul style="list-style-type: none"> All work to be carried out upon the instruction of the appointed and designated Engineer, and according to the Engineers Specifications. All Contractor's employees and Construction Plant Operators on the project must have valid medical certificates of fitness and an Annexure 3 of the Construction Regulations, 2014 from an Occupational Health Practitioner / Occupational Medical Practitioner, prior to working on site. 	2	2	4 L

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	road signage, restricted work areas, etc.				<ul style="list-style-type: none"> • All persons on site must have undergone an induction program or on the job training prior to their appointment to work on site. • Activities will need to be carried out strictly in accordance with the OHS Act and guidelines to ensure safe working procedures and maintain stability of the site. • Employees shall not enter any roadways but remain in the works areas. • All work to be carried out under the supervision of competent persons who have been appointed in writing and aware of all the dangers involved in the operation and conversant with the precautionary measures to be taken in the interest of health and safety. • Safe access and egress provided for all persons those entering and working in sites. • Continuous (Daily) risk assessments must be undertaken prior to any excavations or trenches being opened. • Detailed Work Method Statements and Risk Assessments must be developed and approved prior to commencement of work. • Pre-start site inspections records must be retained. • Proper work coordination is required to protect the health and safety of the public from being affected by plant and machinery. 			
	Slips, Trips and Falls into openings resulting in physical injuries and permanent disabilities	3	3	9 M	<ul style="list-style-type: none"> • The site cleaning work will be undertaken on illegal dumping sites with uneven surfaces. • A competent person is to supervise work and inspect sites for hazards prior to working on each site. • The openings on the site must be enclosed with netting and provided with warning signs in English and the local language. • All tools & materials in a specified area, must at least be stored a metre from the edge of excavations/trenches or openings. • Daily inspection records must be retained. 	2	2	4 L
	Slips, Trips and Falls on the same level resulting in physical injuries, permanent disabilities	3	3	9 M	<ul style="list-style-type: none"> • Only persons with valid medical fitness certificates and an induction record will be permitted to work on sites. • The Contractor must work according to the approved health and safety plan and risk assessments. • The work must be carefully planned to select the most appropriate method, plant and equipment. • Machinery shall be used to collect waste only and not be used to lift/transport employees. 	2	2	4 L

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				<ul style="list-style-type: none"> No work is permitted in inclement weather without employees being issued suitable personal protective clothing and equipment. 				
	Illegal disposal of collected and construction waste	4	4	16 H	<ul style="list-style-type: none"> A site-specific waste management plan & waste management procedure must be developed to ensure the proper storage and disposal of waste at allocated areas. The contractor must implement the measures outlined in the Environmental Management Programme. 	2	2	4 L
	Environmental negative impacts and pollution (dust, noise, odour, visual intrusion, waste management, emissions, pollution, contamination)	4	5	20 H	<ul style="list-style-type: none"> All construction work and activities are to comply with all environmental legal requirements, waste management and dust suppression legal requirements. Work to be undertaken in a manner that will reduce dust, noise, odour, waste and any pollutants arising from construction activities which may also affect the residents, road users and local businesses. Ensure dust, noise, odour, waste and any pollutants arising from construction activities are managed and controlled effectively. Construction waste is to be removed off site on a regular basis, and the contractor shall provide all waste disposal/ recycling slips. The sites must be kept tidy and unused materials, tools and equipment is to be stored safely or removed off site. 	2	2	4 L
Working with hand tools and portable electrical tools	Multiple injuries, electric shock, Lacerations Damage to utilities	4	3	12 H	<ul style="list-style-type: none"> Ensure every person using hand tools/ portable electrical equipment are trained and competent to use that tool. Daily hand and portable electrical tool safety checking system must be in place for all tools and equipment utilized on site. Ensure employees are provided with the appropriate personal protective equipment for the type of tool used. Hand and portable electrical tools inspectors should be appointed in writing. Daily inspection records must be retained in the health and safety site file. Maintenance of the tools shall only be undertaken by authorised personnel. Where generators are used, fire prevention measures shall be in place where refuelling takes place. No sparks must be allowed near generators. All tools used must be non-conductive where there is risk of electrical shock. 	2	2	4 L

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				16 H	<ul style="list-style-type: none"> NIHL must be prevented when using noisy tools by providing employees with hearing protection equipment. 			
Hand excavation work	Accidental damage to existing underground utilities. Traffic accidents due to road closures or diversions	4	4	16 H	<ul style="list-style-type: none"> All work to be carried out upon the instruction of the appointed and designated Engineer, and according to the Engineers Specifications. Earthwork activities will need to be carried out strictly in accordance with the current SANS 1200 guidelines to ensure safe working procedures and maintain stability of the site. Adequate drainage measures and dewatering measures need to be implemented to prevent any ponding occurring within the excavations. Stockpiles are to be kept less than 2 meters high & have signs prohibiting persons from entry & enclose with netting to prevent entry. Provide employees with suitable overalls, gloves, dust masks, goggles, reflectors and safety shoes. The materials, equipment, tools and plant must be a metre away from the edge at minimum. A permit system must be developed for all excavations to take place on the project. Loose soil approximately 500mm from the top, must be removed to prevent dislodging of the material. A competent person to supervise work and inspect excavations. The entire site must be adequately fenced and barricaded to prevent access. All excavations to be backfilled or adequately barricaded and demarcated with visible marking and signage. 	2	2	4 L
	Striking underground utilities with construction plant or hand tools	5	4	20 H	<ul style="list-style-type: none"> Proper underground utilities investigation must be completed and an emergency underground utility strike procedure developed. Daily excavation inspections must be conducted by an appointed person. 	2	2	4 L
Housekeeping on site	Trips and falls resulting from equipment, material and waste material left lying around.	3	3	9 M	<ul style="list-style-type: none"> The site must be kept tidy, and all unused material is to be stored safely or removed off site. All construction waste must be removed off site in a suitable manner and on a regular basis. Adequate waste bins/skips must be provided and adequately labelled. A site-specific waste management plan must be developed and implemented. Inspection records must be retained. 	2	1	2 L

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Excavation Works:	Soft Soil Material walls and ground water seepage causing collapsing of walls resulting in injuries and fatalities	5	4	20 H	<ul style="list-style-type: none"> Excavation wall supporting through battering is required where ground is soft and wet. 	2	2	4 L
	Solid Bed Rock – Exposure to blasting requirements in some areas resulting in injuries and fatalities	5	4	20 H	<ul style="list-style-type: none"> Ensure competent Blasting Contractor is employed to blast encountered rocks. 	2	2	4 L
	Exposure to asbestos pipe materials resulting in respiratory diseases (asbestosis)	5	4	20 H	<ul style="list-style-type: none"> Employ the services of competent and experienced Survey Specialist and Asbestos Removal Contractor 	2	2	4 L
Demolition Works: Buildings	Exposure to asbestos roofing and cladding materials resulting in respiratory diseases (asbestosis)	5	4	20 H	<ul style="list-style-type: none"> Employ the services of competent and experienced Survey Specialist and Asbestos Removal Contractor 	2	2	4 L
Construction Works: Working at heights	Falling from heights resulting in serious injuries and fatalities	5	4	20 H	<ul style="list-style-type: none"> Task Specific Method statements and Risk Assessments required as per CR 9. All work to be done under supervision. Compliance with the approved Fall. Protection Plan. All Work at height Activities to controlled with a Permit To Work system 	2	2	4 L
Construction Works: Lifting Works	Falling suspended loads resulting in serious injuries and fatalities	5	4	20 H	<ul style="list-style-type: none"> Task Specific Method statements and Risk Assessments required. All work to be done under supervision. Compliance with the approved Fall. Protection Plan. All Work at height Activities to controlled with a Permit To Work system 	2	2	4 L
Construction Works: Electrical Installations	Injuries/ Fatalities due to electrocution, even fatal.	5	4	20 H	<ul style="list-style-type: none"> Approved Lifting Plan/ Task Specific Method statements and Risk Assessments required Competent contractor to be appointed. Application of Permit to Work System (Lock Out Tag Out) 	2	2	4 L
Pouring concrete	Chemical exposure resulting in skin irritation, eye injuries, respiratory disease and cumulative disorders	4	4	16 H	<ul style="list-style-type: none"> Communication of safety data sheet (cement) Provide employees with awareness, education and training regarding this hazards and protection measures. Ensure cement bag waste are stored and disposed correctly. Provide employees with overalls, safety shoes, gum boots, dust masks, goggles and gloves. 			
	Incidents and accidents resulting in physical injuries,	4	4	16 H	<ul style="list-style-type: none"> Communication of ergonomics procedures Provide employees with overalls, safety shoes, dust masks, goggles, reflectors and gloves and 			

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	permanent disabilities or fatalities			20	<ul style="list-style-type: none"> require they use the PPE. • Provide an induction to staff to avoid rebar and trip hazards. 			4
Use of construction vehicles and construction plant along the work area	Incidents and accidents resulting in damages, fatalities, injuries of property and persons.	5	4	20	<ul style="list-style-type: none"> • The construction site must be organized in such a way that pedestrians and vehicles can move safely and without risk to their health. • All construction vehicles and driven machinery travelling, working or operating on public roads comply with the requirements of the National Road traffic Act, 1996. • All vehicles and driven machinery are to be parked in such a way that they do not pose a risk to any other road users and they do not cause any nuisance to the neighbours. • Traffic movement to be observed and manually controlled by competent persons. • Appropriate signage must be displayed to warn of road/ lane obstructions. • Vehicle roadworthiness checking system must be in place for all construction vehicles on the project. • Driver fitness and competency checking system must be in place for all drivers and operators on the project. • Speed limit of 20km/h must be communicated adhered to. • Operators must conduct daily pre-start safety inspections and keep them in construction plant. 	2	2	4
Provision of welfare facilities	Unavailability of ablution facilities for employees on sites.	3	3	9	<ul style="list-style-type: none"> • Ablution facilities must be provided for this Project by the Contractor for both genders. • The Contractor must ensure these facilities are always left in a state of good hygiene, as required in terms of the OHS Act, the Facilities Regulations and the project's SHE Requirements. • The Contractor must ensure that the ablution facilities and safe drinking water are available along the various work fronts. • All ablution facilities must have toilet paper, soap, water and disposable paper towels or similar for wiping hands. 	2	2	4
	Unavailability of sheltered eating facilities and safe potable water for employees on sites	3	4	12	<ul style="list-style-type: none"> • Eating facilities must be provided in terms of the OHS Act, the Facilities Regulations and the Site-Specific Health and Safety Specification. • Clean water should be readily available for drinking and washing hands or utensils 	2	2	4