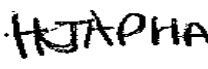





ETHEKWINI MUNICIPALITY

Occupational Health & Safety Unit

BASELINE RISK ASSESSMENT

Document Title	Baseline Risk Assessment
Client	EThekweni Municipality – Water and Sanitation
Project	Veralum and Mhloti Wastewater Treatment Works: Storm Damaged Repairs
Contract Number	30976-5W
Compiled by (Safety Officer)	<p>Name and Surname: Hlengiwe Njapha</p> <p>Signature: </p> <p>Date: 18/05/2023</p>
Approved by (Safety and Risk Manager)	<p>Name and Surname: Arty Zondi</p> <p>Signature: </p> <p>Date: 18/05/2023</p>
Revision Number+	BRA105/05/2023

BASELINE RISK ASSESSMENT

1. INTRODUCTION: In accordance with the Occupational Health and Safety Act, (Act 85 of 1993) the Legislator places specific requirements on an Employer. One of these is prescribed in Section 8(i) of the Act where it requires the Employer to ascertain the risks and dangers which may occur within the workplace or section of the workplace and then goes on to establish working procedures or practices.

2. PURPOSE: This is conducted to create a benchmark of the potential risks that apply to the whole project or business operation.

3. SCOPE: This assessment could be approached on a site, regional or national level concerning any facet of the business operation or process or activity.

4. REVIEW AND MONITORING PLAN

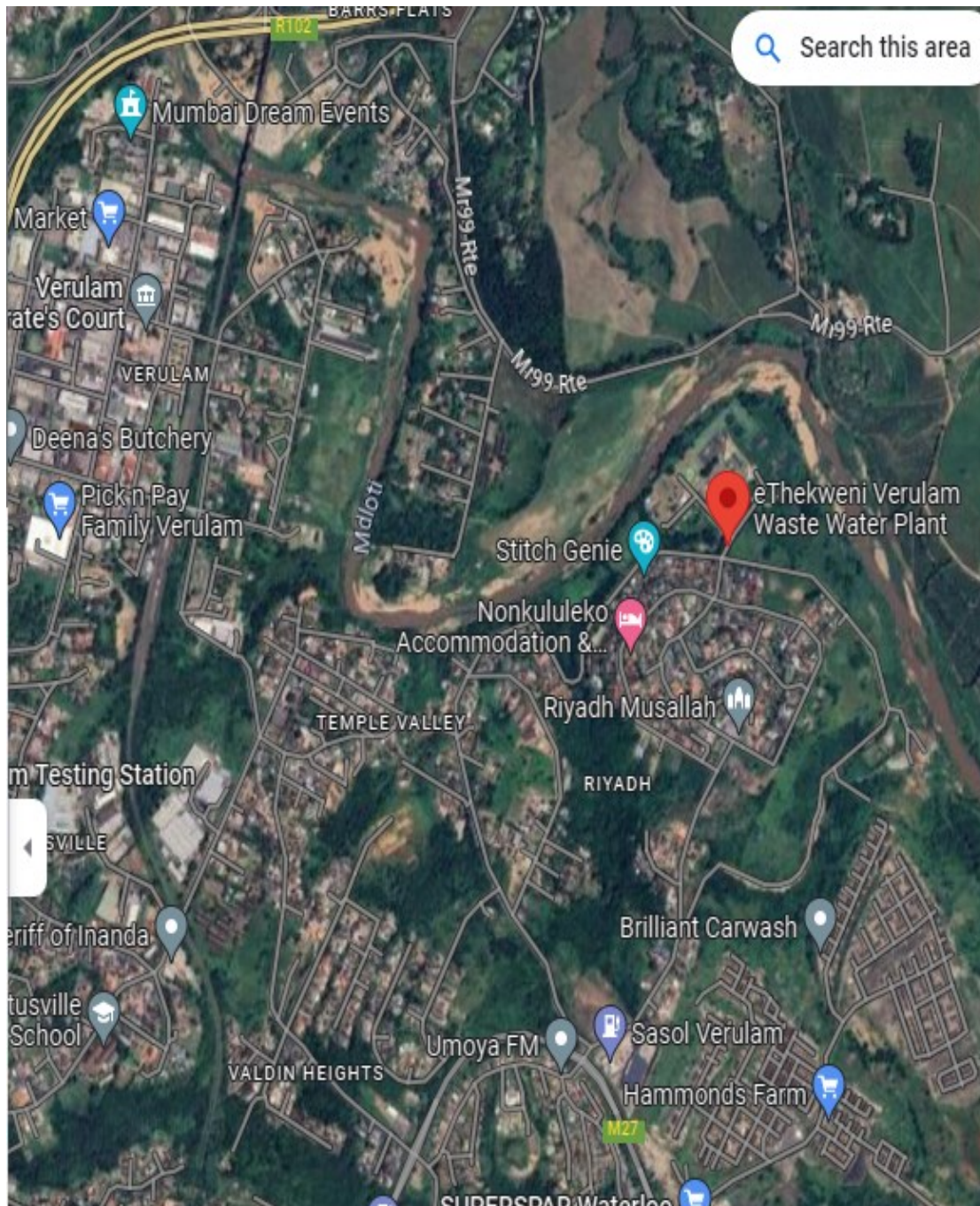
The risk assessment form part of the health and safety plan to be applied on the site and must include the following:

- (a) The identification of the risk and hazards to which persons may be exposed.
- (b) An analysis and evaluation of the risks and hazards identified based on a documented method

5. REFERENCES

- (a) Occupational Health & Safety Act and its Regulation
- (b) Tender document 30976-5W

6. LOCALITY PLAN



7. SCOPE OF WORK

a) Head of Works

- supply, install, test and commission the following mechanical equipment:
 - new stainless-steel plate / stop log with frame for flow diversion into existing channel
 - complete new grit / stone removal spiral conveyor
 - full service of existing mechanical screen including replacement of motors, gearboxes and all bearings, clean and lubricate all sprockets and chains
 - full service of two (2) existing Pista degritters including replacement of motors, gearboxes and all bearings
 - full service of two (2) existing grit classifiers including replacement of motors, gearboxes and all bearings

b) Primary Settling Tanks (5 No.)

- Removal of sludge and silt from the PSTs and disposal of same at the Hammersdale solid waste disposal site (\pm 50 km distance)
- Removal of existing asbestos pipework in PSTs and replacement with mPVC pipework. AC pipework to be disposed of at Hammersdale solid waste disposal site
- Grit blasting, preparation and corrosion protection coating to central stilling wells and all other steel work in the PSTs

c) 4Ml/d Biological Reactor and Clarifier

- Removal and disposal of any water and sludge / silt from the reactor
- Replacement of centre bearing and electrical slip ring complete with all electrical connections
- Grit blasting, preparation and corrosion protection coating to central stilling well, scraper support system and all other steelwork in the reactor but excluding the bridge structure
- Replacement of scraper blades

d) Secondary Settling Tanks (2 No.)

- Removal and disposal of any water and sludge / silt from SSTs
- Replacement of centre bearings and electrical slip rings complete with all electrical connections
- Grit blasting, preparation and corrosion protection coating to central stilling wells, scraper support systems and all other steelwork in the SSTs but excluding the bridge structures
- Replacement of scraper blades

e) Sludge Digesters

- Provision of forced ventilation and all safety measures to allow work on and in the sludge digesters
- Remove approximately 50m³ of sludge from the primary digester and dispose of at the Hammersdale solid waste disposal site (± 50 km distance)
- Remove approximately 10m³ of sludge from the secondary digester and dispose of at the Hammersdale solid waste disposal site
- High pressure clean both digesters
- Supply, install, test and commission 1 x T10 Gorman-Rupp sludge pump complete with motor, baseplate, controls and 300mm diameter x 2,000mm long coated mild steel goose neck bend

f) Pumps and Pipework

- Supply, install, test and commission 2 x 11kW Hidrosta SNL pumps complete with motors, baseplates and controls

- Supply, install, test and commission 2 x 11kW Hidrosta raw sludge pumps complete with motors, baseplates and controls

g) Sludge Drying Beds

- Remove sand and sludge from existing damaged drying beds and dispose of at the Hammersdale solid waste disposal site
- Construct approximately 62m long x 1m high x 220mm wide brick walls
- Remove existing inlet valves, supply and install new knife-gate valves at existing inlet pipework (40 No.)
- Construct concrete slabs around the drying beds

h) Civil and Earthworks

- Underpin and stabilise blower room foundations
- Reinstall approximately 60m long x 20m wide x 10m high earth embankment
- Reinstall existing and provide additional new gabion protection
- Cut into existing 600mm diameter clarified effluent pipe, construct manhole complete with 2 x hand sluice gates, lay, bed and test approximately 20m long x 600mm diameter mPVC CI 34 pipeline complete with outlet headwall
- Supply and install chlorine dosing pipework to and in the new manhole
- Clean and shape existing stormwater channels
- Construct inlet and outlet headwalls to stormwater channels
- Reinstall damage fences
- Re-gravelling of the Mhloti WWTW access road

1. RISK ESTIMATION AND EVALUATION

RISK CLASSIFICATION USING A RISK SCORE TECHNIQUE

Exposure (E) How frequently does the hazardous event occur		Risk classification
Continuously		10
Frequently (daily)		6
Occasionally (weekly)		3
Unusually (monthly)		2
Rarely (few a year)		1
Probability (P) The probability of a loss when the hazardous event does occur		Risk classification
Frequent (happens often)		10
Probable (quite possible)		6
Occasional (unusual, but possible)		3
Remotely possible (has happened somewhere)		1
Improbable (practically impossible)		0.5
Severity (S) Consequences of the hazardous event		Risk classification
Catastrophic many fatalities; or interruption of longer than 2 weeks; or asset or environmental damage (or both) exceeding R100m		100
Disaster (few fatalities; or interruption between one and 2 weeks; or asset or environmental damage (or both) exceeding R10m)		40
Very serious (one fatality; or interruption of 6 days; or asset or environmental damage (or both) exceeding R100,000		7
Important (temporary disability; or interruption between 6 and 24 hours; or damage exceeding R10,000		3
Noticeable (first aid needed; or interruption of less than 6 hours; damage exceeding R1000)		1
Risk classification (Risk score = E x P x S)		
Risk score	Risk classification	
Over 400-----5	Very high risk – discontinue operation or activity	
200 to 400 ----- 4	High risk – immediate correction needed	
70 to 200----- 3	Substantial risk – correction needed	
20 to 70----- 2	Possible risk – attention needed	
Under 20 ----- 1	Risk accepted	

BASELINE RISK ASSESSMENT WORKSHEET: IDENTIFYING EXISTING & POTENTIAL RISKS

1	Site Access								
	Activity	Hazard	Risk	Risk Evaluation			Risk Score	Risk level	Risk Rank
				E	P	S			
	Accessing the site using construction vehicles or walking to site. Delivering of equipment and material to the site	Excessive speed, head on collusion, employees knocked by moving vehicles. Road blocked off due to community protest. Manual Handling and excessive lifting.	Accidents, damage to equipment or severe injuries or death. Back injuries,	6	6	7	252		4
2	Site Establishment								
	Manual and mechanical clearing of the land. Off-loading and positioning of offices by mobile crane. Fencing. Installation of temporary water supply, electricity, ablution facilities	Dust, Snakes, Bees & Wasps. Incompetent operator. Poor connection of temporary services.	Poisoned and death. Collision/impacts of mobile lifting equipment loads and dropped loads with process plant, pipe work, electrical cables and people. Water leaks, Electrocution, improper connection	6	6	7	252		4

3	Site Fencing								
	Clearing bush using bush knives Digging holes using pick and spade	Manual handling of material Dust Moving vehicles	Manual handling injuries Dust being inhaled/getting in eyes Vehicle collision and damage	3	6	7	126		3
4	Existing Services								
	Identify the existing services	Snakes Unforeseen hazards Unknown/ Unidentified underground services	Poisoned and death. Personal injuries. Electrocution	6	6	7	252		4
5	Working at height								
	Erection of Scaffolding by a Competent person	Unsafe scaffolding/ trestle scaffolds	Unsafe scaffolding could collapse resulting in critical injuries	6	6	7	252		4
6	Traffic Accommodation								
	Installation of temporally signs Traffic diverting/ Management	Knocked down by moving vehicles, poor demarcation/ displaying of misleading signs. Poor traffic management plan.	Personal injuries or death. Road Accident	6	6	7	252		4

		Incompetent traffic controllers							
7	Working within roadways, properties and restricted areas								
	Provide access to the property owners driveways	Struck by vehicles Hijack Snakes bite Sting by Bees	Injuries/Death Bee & Wasp Stings causing Anaphylaxis (allergic reaction) reaction)	6	6	7	252		4
8	Construction on Manholes								
	Manhole access Mechanical lifting of concrete manhole rings and roof slabs. Backfilling around the manhole.	Unsafe access. Unsafe lifting. Incompetent lifting operator.	Fall risks. Personal injuries. Damage to property	6	6	7	252		4
9	Tie Ins to existing manholes								
	Blank off all pipelines connected to the manhole	Improper lifting manhole covers Falling in a manhole Oxygen deficient	Personal injuries/death	6	6	7	252		4
10	Road work construction and asphaltting								
	Layer works Compaction Asphaltting	Nose, dust	Rain causing slippery conditions and	6	6	7	252		4

		Inclement weather, including localized flooding Smoking/open fires Vibration (rolling compaction) Asphalt emulsion	localised flooding causing property damage, injury and possible death Heat stroke from being exposed to the sun for too long and sunburn Bush fires caused by cigarette/open fires causing smoke, inhalation possible death						
11	Excavation Work								
	Mechanical and manual excavation. Back filling mechanical and manual	Incompetent operator. Machine running out of control. Open excavation. Dust. Operating mobile plant next to open excavation.	Personal injury/possible disabling injuries. Property to damage Respiratory problem.	6	6	7	252		4
12	Bedding and Pipe Laying								

	Accessing trenches Mechanical lifting of pipes	Trench collapse, falling objects/material Incorrect lifting of pipes	Personal injuries/death Injury to muscle	6	6	7	252		
13	Backfilling and Compaction								
	Lay the soil and weathered rock Operating a Bomag, Roller and a Wacker	Dust Incompetent operator. Noise. Vibration.	Respiratory problem Personal injuries and damage to property. Noise Induce. Hearing loss. Kidney problem. Body pain.	3	6	7	126		3
14	Removal of rubble								
	Mechanical and manual loading of rubble Mechanical removal of trees Removal of rubble and trees to damp site	Dust, Mobile plant came into contact with trucks. Incompetent operator and lack of planning. Reckless driving.	Respiratory problem. Damage to equipment. Damage to property. Motor Vehicle Accident.	3	6	7	126		3
15	Construction of Pedestrian Walkways								
	Pouring of concrete by ready mix truck. Excavations for walkways. Manual and Mechanical	Reckless driving. Incompetent operator. Unsafe hand tools.	Motor Vehicle Accident. Personal injuries.	3	3	7	63		2

	Excavation.								
16	Construction Mobile Plant and Equipment								
	Use of Plant & Equipment on site	Incompetent operator Unsafe plant & equipment. Collusion with other vehicles. Petrol and oil spillages.	Personal injuries. Motor vehicle accident. Environmental contamination.	6	6	7	252		4
17	Emergency Management								
	Development and Implementation of an Emergency Management Plan	Failure to have a basic, site specific emergency management plan. Workers not trained in the Emergency Plan. Insufficient or no emergency equipment or personnel.	Injury or damage to property. Inability to respond to emergencies. Insufficient or no emergency equipment.	6	6	3	108		3
18	Community Risk Management								
	Managing community risk	Failure to adequately monitor and manage the multi-faced social issues.	Violent protests. Injury to employees and property damage.	6	6	3	108		3

19	Subcontractor Management								
	Managing subcontractors	Failure to adequately assess subcontractors S.H.E Management System before work commences and at regular intervals. Inadequate Supervision. Utilizing incompetent Subcontractors.	Injury and non-compliance to legislation. High level of employee unsafe behavior. Accidents and property damage.	6	6	3	108		3