ETHEKWINI MUNICIPALITY
Occupational Health & Safety Unit

BASELINE RISK ASSESSMENT

Document Title	Baseline Risk Assessment
Client	EThekwini Municipality – Water and Sanitation
Project	Design, supply and installation of alternative on-site sanitation technology to replace pit toilets within the eThekwini Municipal area
Contract Number	34026-5W
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Reference Number	BRA 462/11/2025

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 34026-5W

6. LOCALITY PLAN

NIL

SCOPE OF WORK

PSLD SEWERS

PSLD-1 SCOPE

This Specification shall be expanded to cover the installation of all pipes, valves and structures (manholes etc) as well as other effluent and water reticulation system works. The cleaning by jetting of existing pipelines and the provision of a new 100kl tank are also covered.

PSLD-3 MATERIALS

PSLD-3.1 Pipes, Filling & Pipe Joints

PSLD-3.1.5 uPVC pipes shall be heavy duty class 34 pipes

- ***Add the following:***

PSLD-3.1.8 HDPE Pipes

High density Polyethylene pipes and fittings shall be of High Density Polyethylene (HDPE) and comply with the relevant requirements of SABS ISO 4427.

All piping shall be **HDPE PE 100** of the class specified unless otherwise approved by the Engineer. The connection system between pipe lengths shall be compression fittings, butt fusion welds or electro fusion couplings meeting with the approval of the Engineer. Couplings and pipes shall be by the same manufacturer. The Contractor shall include the cost of these joints in the pipework item.

Storage and handling of the pipe shall be in accordance with the Manufacturer's recommendation. Care is to be taken that pipes are not dragged across the ground and damaged.

PE100 shall be black and shall contain the necessary density of pigmentation to provide protection against ultra violet radiation.

Unless stated otherwise on the drawings, all pipe flanges, including black finish hexagon bolted polyethylene flanges shall be protected by Denso paste, Denso mastic or Denso tape, or equivalent, or shall be stainless steel.

No metal whatsoever shall be used below ground without the Engineer's specific approval.

PSLD-8 MEASUREMENT AND PAYMENT

PSLD 8.2.1 **Supply, Lay and Bed Pipes Complete with Couplings** Unit: m.

In addition to the requirements of Clause LD.8.2.1 the rate tendered shall include for any joints, welding, bends and special fittings (excluding valves) required and their jointing and bedding.

An allowance is to be included in the rate tendered for each billed item of pipework to supply and install the pipework system, as required by the Engineer. Fittings in excess of those specified would be paid for separately.

Connection into any existing pipework is to be included in the rate.

PSLD.8.2.14 **Cleaning of existing sewers by pressure jetting** Unit: m^2

The rate tendered shall include for all plant, labour and materials to clean existing sewer (leachate and sewage) piping of between 110mm to 305mm nominal diameter inclusive, primarily using approved pressure jetting equipment or other approved means, including emptying / de silting etc at the manholes. The rate shall include for all removed material to be disposed of on the landfill as indicated.

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
	Installation of temporally signs Traffic diverting/ Management								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	**Construction on Manholes**								
	Manhole access Mechanical lifting of	Unsafe access. Unsafe lifting.	Fall risks. Personal injuries.	6	6	7	252		4

	concrete manhole rings and roof slabs. Backfilling around the manhole.	Incompetent lifting operator.	Damage to property						
7	**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
8	**Road work construction and asphalting**								
	Layer works Compaction Asphalting	Nose, dust Inclement weather, including localized flooding Smoking/open fires Vibration (rolling compaction) Asphalt emulsion	Rain causing slippery conditions and 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	6	6	7	252		4

			fires causing smoke, inhalation possible death						
9	**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
10	**Bedding using sandy material and Pipe Laying**								
	Accessing trenches Mechanical lifting of 34 HDuPVC Sewer Pipe	Trench collapse, falling objects/material Incorrect lifting of pipes	Personal injuries/death Injury to muscle	6	6	7	252		
11	**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

12	**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
13	**Construction of Pedestrian Walkways**								
	Pouring of concrete by ready mix truck. Excavations for walkways. Manual and Mechanical Excavation.	Reckless driving. Incompetent operator. Unsafe hand tools.	Motor Vehicle Accident. Personal injuries.	3	3	7	63		2
14	**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
15	**Emergency Management**								
	Development and Implementation of an Emergency	Failure to have a basic, site specific emergency management plan.	Injury or damage to property. Inability to respond to	6	6	3	108		3

	Management Plan	Workers not trained in the Emergency Plan. Insufficient or no emergency equipment or personnel.	emergencies. Insufficient or no emergency equipment.						
16	**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
17	**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