



# ETHEKWINI MUNICIPALITY

## Occupational Health & Safety Unit

### BASELINE RISK ASSESSMENT

Document Title	Baseline Risk Assessment
Client	eThekwini Municipality – Water and Sanitation
Project	Hammarsdale Reservoir Inlet Phase 2: Construction of Approximately 2.7km Long 500mm Ø Steel Watermain from Existing Phase 1 Pipeline to Hammarsdale High Level Reservoir: Wards No. 04 &103
Contract Number	WS7837
Compiled by (Safety Officer)	Name and Surname: Hlengiwe Njapha Signature:  Date: 12/04/2023
Approved by (Safety and Risk Manager)	Name and Surname: Arty Zondi Signature:  Date: 12/04/2023
Reference Number	BR93/04/2023

## **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

### **5. REFERENCES**

- (a) Tender document number-WS7837
- (b) Occupational Health & Safety Act and its Regulation

## 6. LOCALITY PLAN

NIL

## SCOPE OF WORK

- General clearing along pipeline route.
- Conventional open trench excavation along the pipeline route, allowing for shoring and bracing if necessary, bedding, pipe laying, welding, wrapping and backfilling;
- Collection, protection, transporting and off-loading of 500mm Ø, Grade X42, cement mortar lined 3LPE coated x 9.14m lengths plain ended steel pipes, 4.5mm/6mm/8mm thick plate steel pipes from Hammarsdale reservoir pipe-yard ± 5km from site.
- Collection, protection, transporting and off-loading of ± 65m of 200mm Ø mPVC class 12/25 pipeline from Hammarsdale reservoir pipe-yard ± 5km from site.
- Five pipe jacking along Keystone Park roads, 1117mm Ø concrete sleeves.
- Construction of 5 No. Scour valves chambers;
- Construction of 5 No. Air valves chambers;
- Construction of 4 No. Butterfly valve chambers; • Supply and installation of ± 7m long x 500mm wide gabion baskets;
- Testing of new and existing trunk water mains;
- Connections of the new 500mm diameter steel pipe to the existing 500mm diameter steel pipe at the reservoir site as well as at the ends of the phase 1 contract. • Connections of the new 500mm diameter steel pipe to the existing 1600mm diameter Western Aqueduct pipeline;
- Reinstatement along pipeline route;
- Grassing along pipeline route;
- Barricading all earthworks and trenches;
- Accommodation of traffic where works is required in existing roads;
- Such other works as may be deemed necessary by the Engineer for the completion of the project.

# 1. RISK ESTIMATION AND EVALUATION

## RISK CLASSIFICATION USING A RISK SCORE TECHNIQUE

<b>Exposure (E) How frequently does the hazardous event occur</b>		<b>Risk classification</b>
Continuously .....		10
Frequently (daily) .....		6
Occasionally (weekly) .....		3
Unusually (monthly) .....		2
Rarely (few a year) .....		1

  

<b>Probability (P) The probability of a loss when the hazardous event does occur</b>		<b>Risk classification</b>
Frequent (happens often) .....		10
Probable (quite possible) .....		6
Occasional (unusual, but possible) .....		3
Remotely possible (has happened somewhere) .....		1
Improbable (practically impossible) .....		0.5

  

<b>Severity (S) Consequences of the hazardous event</b>		<b>Risk classification</b>
<b>Catastrophic</b> many fatalities; or interruption of longer than 2 weeks; or asset or environmental damage (or both) exceeding R100m .....		100
<b>Disaster</b> (few fatalities; or interruption between one and 2 weeks; or asset or environmental damage (or both) exceeding R10m) .....		40
<b>Very serious</b> (one fatality; or interruption of 6 days; or asset or environmental damage (or both) exceeding R100,000 .....		7
<b>Important</b> (temporary disability; or interruption between 6 and 24 hours; or damage exceeding R10,000 .....		3
<b>Noticeable</b> (first aid needed; or interruption of less than 6 hours; damage exceeding R1000) .....		1

  

<b>Risk classification (Risk score = E x P x S )</b>		
<b>Risk score</b>	<b>Risk classification</b>	
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**

<b>1 Site Access</b>									
	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
<b>2 Site Establishment</b>									
	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
<b>3 Traffic Accommodation</b>									
	Installation of temporally	Knocked down by	Personal injuries or	6	6	7	252		4

	signs Traffic diverting/ Management	moving vehicles, poor demarcation/ displaying of signs. Poor traffic management plan. Incompetent traffic controllers	death. Road Accident						
<b>4</b>	<b>Bulk Earthwork</b>								
	Mechanical excavation Stockpiling	Incompetent operator. Machine running out of control. Open excavation. Dust Poor stockpiling. Operating mobile plant next to open excavation	Personal injury/amputations Property damage. Respiratory problem. Obstruction of walkways	6	6	3	108		3
<b>5</b>	<b>Drainage/Storm water</b>								
	Lay, bed and joint of pipes	Unsafe access to excavation Manual handling of pipes Possible pinch of fingers Engulfment of excavation	Personal injuries. Possible pinch Death/ body injury	6	6	3	108		3
<b>6</b>	<b>Excavation Work &amp; Back Filling</b>								
	Mechanical and manual excavation. Back filling mechanical	Incompetent operator. Machine running out	Personal injury/possible disabling injuries. Property to damage	6	6	7	252		4

	and manual	of control. Open excavation. Dust. Operating mobile plant next to open excavation. Unsafe tools, damage of pipes by stone Back fill material.	Respiratory problem.						
<b>7</b>	<b>Existing Services</b>								
	Identify the existing services	Snakes Unforeseen hazards	Poisoned and death. Personal injuries.	6	6	7	252		4
<b>8</b>	<b>Removal of rubble and large trees</b>								
	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
<b>9</b>	<b>Compaction</b>								
	Operating a bomag roller, wacker etc.	Incompetent operator. Noise. Vibration.	Personal injuries and damage to property. Noise Induce. Hearing loss. Kidney problem. Body pain.	6	6	3	108		3
<b>10</b>	<b>Construction of Pedestrian Walkways</b>								
	Pouring of concrete by	Reckless driving.	Motor Vehicle Accident.	3	3	7	63		2

	ready mix truck. Excavations for walkways. Manual and Mechanical Excavation.	Incompetent operator. Unsafe hand tools.	Personal injuries.						
<b>11</b>	<b>Pipejacking (Wetland crossing)</b>								
	Setting up Hydraulic machinery	Unauthorized operator. Noise Vibration	Personal injuries Fatal	3	6	7	252		4
<b>12</b>	<b>Pipe testing</b>								
	Pipe testing using pressure equipment.	Improper connecting of pressure equipment.	Hand injuries	3	3	3	27		2
<b>13</b>	<b>Construction Mobile Plant and Equipment</b>								
	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
<b>14</b>	<b>Emergency Management</b>								
	Development and Implementation of an Emergency Management Plan	Failure to have a basic, site specific emergency management plan. Workers not trained	Injury or damage to property. Inability to respond to emergencies. Insufficient or no	6	6	3	108		3

		in the Emergency Plan. Insufficient or no emergency equipment or personnel.	emergency equipment.						
<b>15</b>	<b>Community Risk Management</b>								
	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
<b>16</b>	<b>Subcontractor Management</b>								
	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
<b>17</b>	<b>Block work</b>								

	Block work and mixing mortar.	Manual handling of blocks. Mortar inhalation. Mortar contact with body.	Injury to hands. Respiratory problem. Skin problems.	6	6	3	108		3
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**RISK PROFILE:** WS7837

