# ETHEKWINI MUNICIPALITY
## Occupational Health & Safety Unit

# BASELINE RISK ASSESSMENT

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| Document Title | Baseline Risk Assessment |
| Client | eThekwini Municipality – Water and Sanitation |
| Project | Blackburn to Phoenix 1: Construction of a 6.6km, 4.5mm Thick, Grade X42, Continuously Welded Steel Gravity Main Load Shift Pipeline: Ward 102, 35 & 48. |
| Contract Number | 30583-5W |
| Reference Number | BRA 296/08/2024 |
| Compiled by (Safety Officer) | Name and Surname: Hlengiwe Njapha<br>Signature: HNJAPHA<br>Date: 12/08/2024 |
| Approved by (Safety and Risk Manager | Name and Surname: Arty Zondi<br>Signature: Arty Zondi<br>Date: 12/08/2024 |

# 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 to which persons may be exposed.
(b) An analysis

**5. REFERENCES**

(a) Tender document number – 30583-5W

(b) Occupational Health & Safety Act and its Regulation

## 6. LOCALITY PLAN

# SCOPE OF WORK

- General clearing along the pipeline route.
- Conventional open trench excavation along the greenfield, gravel, and tarred roads, allowing for shoring and bracing if necessary, bedding, pipe laying, welding, wrapping, and backfilling;
- Collection from Hammarsdale Reservoir pipe yard ± 45km from the site or purchase of grade X42 x 4.5mm thick plate x 9.144m long steel pipes, should they not be available from the pipe yard. Purchase of 4.5mm thick plates x 500mm, 400mm, and 300mm Ø grade X42 steel pipes, protection, transporting, and off-loading to site.
- Two pipe jacks along Department of Transport roads, 1117mm Ø concrete sleeves.
- Construction of 10 No. scour valves
- Construction of 11 No. air valves
- Construction of 5 No. isolation gate valve chambers.
- Testing of water main.
- Tie-in of the existing DN500 Steel outlet from Blackburn Reservoir and pipeline reconfiguration along the route for supply rezoning purposes.
- Reinstatement along pipeline route.
- Such other works as may be deemed necessary by the Engineer for the completion of the project.
- Installation of Cathodic Protection.

## 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 (quiet 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.<br>Delivering of equipment and material to the site | Excessive speed, head on collusion, employees knocked by moving vehicles.<br>Road blocked off due to community protest.<br>Manual Handling and excessive lifting. | Accidents, damage to equipment or severe injuries or death.<br>Back injuries, | 6 | 6 | 7 | 252 | | 4 |
| **2** | **Site Establishment** | | | | | | | | |
| | Manual and mechanical clearing of the land.<br>Off-loading and positioning of offices by mobile crane.<br>Fencing.<br>Installation of temporary water supply, electricity, ablution facilities, | Dust, Snakes, Bees & Wasps.<br>Incompetent operator.<br>Poor connection of temporary services. | Poisoned and death.<br>Collision/impacts of mobile lifting equipment loads and dropped loads with process plant, pipe work, electrical cables and people.<br>Water leaks, Electrocution, improper connection | 6 | 6 | 7 | 252 | | 4 |
| **3** | **Traffic Accommodation** | | | | | | | | |
| | Installation of temporally | Knocked down by | Personal injuries or | 6 | 6 | 7 | 252 | | 4 |

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

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|---|---|---|---|---|---|---|---|---|---|
| | and manual | of control.<br>Open excavation.<br>Dust.<br>Operating mobile plant next to open excavation.<br>Unsafe tools, damage of pipes by stone<br>Back fill material. | Respiratory problem. | | | | | | |
| **7** | **Existing Services** | | | | | | | | |
| | Identify the existing services | Snakes<br>Unforeseen hazards | Poisoned and death.<br>Personal injuries. | 6 | 6 | 7 | 252 | | 4 |
| **8** | **Removal of rubble and large trees** | | | | | | | | |
| | Mechanical and manual loading of rubble<br>Mechanical removal of trees<br>Removal of rubble and trees to damp site | Dust,<br>Mobile plant came into contact with trucks.<br>Incompetent operator and lack of planning.<br>Reckless driving. | Respiratory problem.<br>Damage to equipment.<br>Damage to property.<br>Motor Vehicle Accident. | 3 | 6 | 7 | 126 | | 3 |
| **9** | **Compaction** | | | | | | | | |
| | Operating a bomag roller, wacker etc. | Incompetent operator.<br>Noise.<br>Vibration. | Personal injuries and damage to property.<br>Noise Induce. Hearing loss.<br>Kidney problem.<br>Body pain. | 6 | 6 | 3 | 108 | | 3 |
| **10** | **Construction of Pedestrian Walkways** | | | | | | | | |
| | Pouring of concrete by | Reckless driving. | Motor Vehicle Accident. | 3 | 3 | 7 | 63 | | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ready mix truck.<br>Excavations for walkways.<br>Manual and Mechanical Excavation. | Incompetent operator.<br>Unsafe hand tools. | Personal injuries. | | | | | | |
| **11** | **Pipejacking** | | | | | | | | |
| | Setting up Hydraulic machinery | Unauthorized operator.<br>Noise<br>Vibration | Personal injuries<br>Fatal | 3 | 6 | 7 | 252 | | 4 |
| **12** | **Pipe testing** | | | | | | | | |
| | Pipe testing using pressure equipment. | Improper connecting of pressure equipment. | Hand injuries | 3 | 3 | 3 | 27 | | 2 |
| **13** | **Construction Mobile Plant and Equipment** | | | | | | | | |
| | Use of Plant & Equipment on site | Incompetent operator<br>Unsafe plant & equipment.<br>Collusion with other vehicles.<br>Petrol and oil spillages. | Personal injuries.<br>Motor vehicle accident.<br>Environmental contamination. | 6 | 6 | 7 | 252 | | 4 |
| 14 | **Emergency Management** | | | | | | | | |
| | Development and Implementation of an Emergency Management Plan | Failure to have a basic, site specific emergency management plan.<br>Workers not trained | Injury or damage to property.<br>Inability to respond to emergencies.<br>Insufficient or no | 6 | 6 | 3 | 108 | | 3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | in the Emergency Plan.<br>Insufficient or no emergency equipment or personnel. | emergency equipment. | | | | | | |
| **15** | **Community Risk Management** | | | | | | | | |
| | Managing community risk | Failure to adequately monitor and manage the multi-faced social issues. | Violent protests.<br>Injury to employees and property damage. | 6 | 6 | 3 | 108 | | 3 |
| **16** | **Subcontractor Management** | | | | | | | | |
| | Managing subcontractors | Failure to adequately assess subcontractors S.H.E Management System before work commences and at regular intervals.<br>Inadequate Supervision.<br>Utilizing incompetent Subcontractors. | Injury and non-compliance to legislation.<br>High level of employee unsafe behavior.<br>Accidents and property damage. | 6 | 6 | 3 | 108 | | 3 |

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| **17** | **Block work** | | | | | | | | |
| | Block work and mixing mortar. | Manual handling of blocks.<br>Mortar inhalation.<br>Mortar contact with body. | Injury to hands.<br>Respiratory problem.<br>Skin problems. | 6 | 6 | 3 | 108 | | 3 |

## RISK PROFILE: WS7459