ETHEKWINI MUNICIPALITY
Occupational Health & Safety Unit

BASELINE RISK ASSESSMENT

Document Title	Baseline Risk Assessment
Client	eThekwini Municipality – Water and Sanitation
Project	Southern Wastewater Treatment Works: Concrete Contract Title: Rehabilitation of the Low-Level Storage Tank 1 and Construction of an Electrical Substation and Meter Room
Contract Number	WS7711
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Reference Number	BRA 137/06/2023

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:

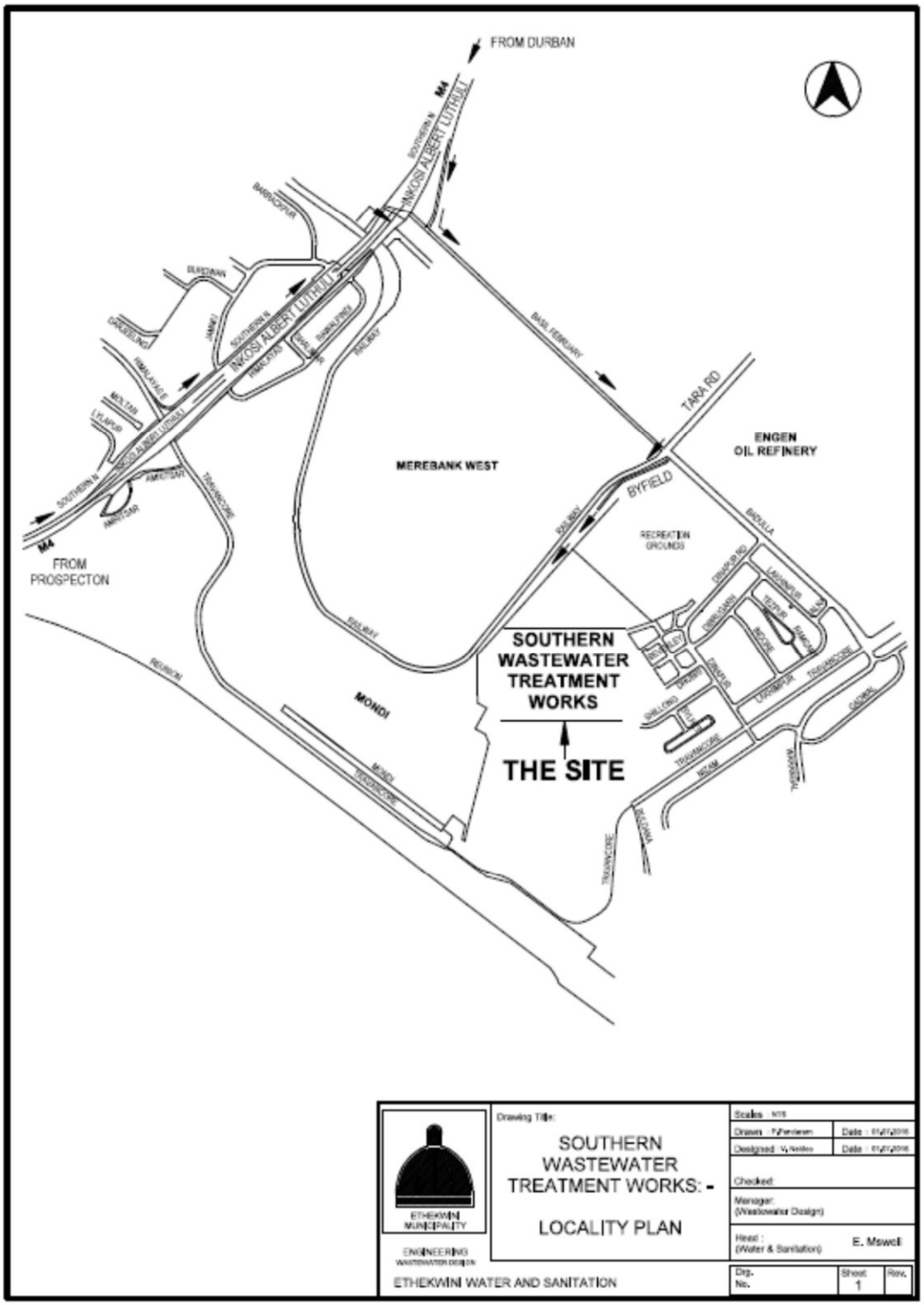
(a) The identification of the risk and hazards to which persons may be exposed.
(b) An analysis and evaluation of the risk and hazards identified based on a documented method.

5. REFERENCES

(a) Tender document number WS7711

(b) Occupational Health & Safety Act and its Regulation

LOCALITY PLAN



RISK ASSESSMENTS SCOPE OF WORK

The Contract covers the supply of all materials, labour, plant and equipment for:

A. Concrete Rehabilitation of Low Level Tank 1:

- Provide temporary access into the tank.
- De-sludge, clean the tank of all debris and disinfect the tank surfaces internally.
- Dispose of all debris from tank clean-up to the approved tip / hazardous landfill site.
- Excavate and backfill around top perimeter of tank for working space.
- Strip and remove all existing sealant and backing material from walls and floor movement joints.
- High pressure jet the entire internal surfaces of the tank and remove excess water.
- Test and remove de-bonded cementitious layer from walls and wall foundations.
- Prepare and apply sprayed repair mortar to de-bonded areas of wall and float flush and cure.
- Prepare and apply moisture barrier coating and high chemical resistant coating to walls and outlet / overflow boxes and cure.
- Prepare and apply crack bridging slurry waterproofing to top of tank walls (internal and earth face) around perimeter and cure.
- Place narrow formwork and joint former and apply sprayed repair mortar to tank floor and outlets and cure.
- Ream out existing wall movement joints, prepare, prime and re-seal.
- Prepare, prime and seal floor movement joints.
- Any other work deemed necessary by the Engineer for completion of the contract.

B. Construction of Electrical Substation

- Break out and remove existing barrier kerb and dispose at the approved tip.
- Clear and strip site of all vegetation and grassing.
- Excavate overburden material, stockpiled on the site, down to natural ground level.
- Excavate topsoil for stockpile and disposal.
- Excavate foundation trenches and place and compact stone layer.
- Construct R.C foundation strip footings and cable trench foundation.
- Construct foundation brickwork in NFX bricks for the building and cable trench.
- Lay stormwater pipe from cable trench and construct soak pit.
- Backfill under floor slab and form earth fill and embankment externally around building.
- Apply soil poison and place and compact stone layer under floor slab.
- Lay pvc waterproof sheet and place R.C floor slab.
- Construct all brickwork to roof level in NFP bricks internally and facebrick externally.
- Construct R.C. roof slab with screed to falls and apply torch-on waterproofing.
- Install gms doors.
- Install electrical sleeves, conduits, wiring, lighting, power points, earth bars and DB.
- Modify existing stormwater inlet to receive C.I grating.
- Construct P.C kerbing and lay P.C pavers.
- Construct layer works for roadways and lay asphalt paving.
- Reinstatement of topsoil.
- Any other work deemed necessary by the Engineer for completion of the contract.

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

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	**Demolition Work (strip/remove)**								
	Striping of existing sealant using tools	Manual handling of equipment and materials Noise Flying objects Defective tools	Manual handling injuries Dust being inhaled/getting into eyes	6	6	3	108		3
4	**Working at height**								
	Erection of Scaffolding by a Competent person 0r the Use of ladders	Unsafe scaffolding/ trestle scaffolds/ ladders Falling from height	Unsafe scaffolding /trestle/ ladder could collapse resulting in critical injuries Fatalities	6	6	7	252		4
5	**Excavation**								
	Mechanical and manual excavation. Back filling mechanical and manual	Unauthorized 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

6	**Pipelaying**								
	Accessing trenches Mechanical lifting of Pipe and	Trench collapse, falling objects/material Incorrect lifting of pipes	Personal injuries/death Injury to muscle	6	6	7	252		4
7	**Backfilling and Compaction**								
	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	7			
8	**Drainage/Storm water**								
	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	7	252		4
	Block work								
	Block work and mixing mortar.	Manual handling of blocks. Mortar inhalation. Mortar contact with body.	Injury to hands. Respiratory problem. Skin problems	6	6	7	252		4
9	**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
10	**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
11	**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
12	**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