
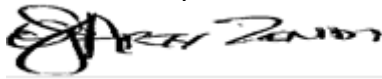




ETHEKWINI MUNICIPALITY Occupational Health & Safety Unit

SITE BASED BASELINE RISK ASSESSMENT

Construction Regulations 5.1(a)

Document Title	Baseline Risk Assessment
Client	EThekwini Municipality-Engineering Unit: Roads and Stormwater Maintenance.
Project	Re-gravelling of existing gravel roads and the preparation of gravel roads to be upgraded to blacktop in the North region of EThekwini Municipality for 36 months.
Contract Number	1M-30678
Revision	00
Date	04 October 2024
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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 to.
- (b) An analysis and evaluation of the risk and hazards identified based on a documented method.

5. REFERENCES

- (a) Tender document number 1M-30678
- (b) Occupational Health & Safety Act and its Regulation

PLEASE NOTE THAT THIS IS A BASELINE RISK ASSESSMENT AND NOT A DETAILED RISK ASSESSMENT OF ALL ANTICIPATED ACTIVITIES ON SITE.

SCOPE OF WORK

The scope under this enquiry covers the re-gravelling of existing gravel roads at a rate of approximately 70km per annum and the preparation of gravel roads to be upgraded to black top standards under the department's Low Volume Gravel Road Upgrade Programme (LVGRUP), at a rate of 12 to 20km over 6 months, in the North maintenance region of the EThekweni Municipality, covering the wards as listed as part of this Enquiry.

The work to be undertaken includes the following main activities:

- a) Clearing of the worksite
- b) Maintenance and construction of side, earth, mitre and subsoil drains
- c) Re-gravelling of unpaved roads
- d) Roadbed preparation for roads to be upgraded (LVGRUP)
- e) Bulk earthworks and pavement layers (where required)
- f) Construction of minor drainage structures
- g) Erosion protection works

The following activities were assessed:

- (a) Access to the site
- (b) Material delivery to the site
- (c) Traffic management on site.
- (d) Clearing and grubbing.
- (e) Site establishment.
- (f) Excavation, earthworks and backfilling.
- (g) Construction of protection works.
- (h) Removal of sand, silt and clearing/unblocking of stormwater pipes and inlets.
- (i) Sourcing, transportation and processing of imported material from borrow pits.
- (j) Busy residential/commercial/Industrial areas.
- (k) Concrete pavements.
- (l) Manual moving of precast products.
- (m) Protection of existing services.
- (n) Construction mobile plant and machinery.
- (o) Concrete work.

- (p) Stabilisation of gravel base.
- (r) Removal of dumped material off site.

1. RISK ESTIMATION AND EVALUATION

RISK CLASSIFICATION USING A RISK SCORE TECHNIQUE

Exposure (E) How frequently does the hazardous event occur		Risk level
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 level
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 level
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 level
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

	Activity	Hazard	Risk	Risk Evaluation			Risk Score	Risk level
				E	P	S		
1	Access to the site.							
	<ul style="list-style-type: none">Traveling to and from site in a vehicle.	<ul style="list-style-type: none">Safety belts not worn when traveling in, or operating a vehicle.Vehicle not equipped with safety belts for all passengers.Over speeding of vehicles.Driving on public roads.	<ul style="list-style-type: none">Injuries caused when in vehicle accident.Fatalities when in vehicle accidentRisk of personnel being injured by over speeding vehicles.Involved in accident.	6	6	7	252	4
2	Material and equipment delivery to the site.							
	<ul style="list-style-type: none">Loading and offloading of heavy equipment manually/mechanically.	<ul style="list-style-type: none">Risk assessment not communicated to the employees involved in the task.	<ul style="list-style-type: none">Negligent which may lead to injuries.Accident.Fine.Multiple body injuries/fatality.Back strain	6	6	7	252	4

		<ul style="list-style-type: none"> • Condition of mobile cranes or other means of mechanical loading/offloading. • Overhead obstructions and underground services. • Faulty crane/lifting tackles. • Incompetent/unauthorized operator. • Movement of machinery and people at the same time. • Lack of supervision. • Overloading. • Over speeding. • Unsecured load. • Failure to 	<ul style="list-style-type: none"> • Skeletal damage • Head, hand, and foot injuries. • Serious injury. • Fatality. 						
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		<p>notify the necessary authorities about the movement of an abnormal load.</p> <ul style="list-style-type: none"> Employee being struck by the load. 						
3	Traffic management on site.							
	<ul style="list-style-type: none"> The use of construction vehicle on the public and streets Execution of activities on the road in line with the scope of work. Exposed group/employees Placing of temporary traffic warning signs. 	<ul style="list-style-type: none"> Poor/ no traffic management plan in place Lack of traffic management training Unroadworthy plant and vehicle Collision with other vehicles Workers exposed to high traffic volume. Personnel movement 	<ul style="list-style-type: none"> Accidents, death, broken bones, damage to property Noncompliance with the National Road Traffic Act, Council Road Traffic bi-laws and other applicable Regulations Blockage/ inconvenient access to industrial/ commercial areas 	6	6	7	252	4

		<ul style="list-style-type: none"> and vehicles • Signs not visible to the road users. • Signs being placed at an unreasonable distance. • Personnel in charge of traffic control not familiar with the traffic management plan. 	<ul style="list-style-type: none"> • Personnel are at risk of being bumped by a vehicle or an Accident • It may cause injuries possibility of fatalities. 					
4	Clearing and grubbing.							
	<ul style="list-style-type: none"> • Clearing of the site using construction mobile plant/labourer. • Removal and re-instatement of boundary hedging along the road being upgraded. • Removal and re-instatement of fence along the road being 	<ul style="list-style-type: none"> • Overgrown vegetation • Rubble existing on site • Snakes bites. • Bees • Incompetent driver/operator • Unsafe construction mobile plant • Petrol and oil spillages • Dust 	<ul style="list-style-type: none"> • Nuisance, poisonous • Environmental contamination • Death, poison • Accident/property damage. Collision with other vehicles • Noise • Respiratory problems. • Back strain. • NIHL. 	6	6	7	252	4

	upgraded.	accumulation. <ul style="list-style-type: none"> • Bending. • Noise. • Exposure to vibration. 	<ul style="list-style-type: none"> • Blood circulation problems. 					
5	Site establishment.							
	<ul style="list-style-type: none"> • Manual and mechanical clearing of the land • Off-loading and positioning of containers by mobile crane • Fencing off the site • Installation of temporary water supply, electricity, ablution facilities, 	<ul style="list-style-type: none"> • Incompetent construction mobile plant operator. • Sharp protruding objects. • Manual Handling of equipment and materials. • Uneven surfaces • Driving on dangerous and undulating terrain. • Reckless driving. • Electrocution • Incorrect/ poor connection of temporary services 	<ul style="list-style-type: none"> • Injuries, Accidents • Hand injuries. • Skeletal injuries • Destruction of services • Death, burns 	6	6	7	252	4
6	Excavation, earthworks and backfilling.							

	<ul style="list-style-type: none"> Manual and mechanical excavation using construction mobile plants and hand tools. 	<ul style="list-style-type: none"> Faulty hand tools Hitting underground services Unsafe machinery/ hand tools Incompetent operator Dust accumulation Too much bending. Vibration. 	<ul style="list-style-type: none"> Hand injuries. Lack of service delivery which may result in community protest injuries to hands, Severe injuries. Back strain. Blood circulation problem. 	6	6	3	108	6
7	Construction of protection works.							
	<ul style="list-style-type: none"> Retaining structure using wire baskets and stones Working with wire mesh Laying of stones/rocks/blocks. Stone pitching. 	<ul style="list-style-type: none"> Manual handling of stones/rocks. Pinch point, sharp and protruding edges Too much bending. Faulty hand tools. Cold temperatures. Hidden underwater 	<ul style="list-style-type: none"> Ergonomic risks Hand injuries. Fingers crushed or trapped by adjacent rock pieces Backaches. Illness. Drowning. Skin irritation. Falling and drowning. Community protests due to service delivery 	6	6	3	108	3

		<p>currents.</p> <ul style="list-style-type: none"> • Exposure to deep depth of the stream. • Hidden debris or underwater hazards including weeds and plants which can entangled people under the water. • Exposure to polluted water. • Steep slimmy banks. • Sharp protruding ends during installation and aligning of guardrails. • Damage to underground services during digging for guardrails posts. 	interruprion.					
8	Removal of sand, silt and clearing/unblocking of stormwater pipes and inlets.							

	<ul style="list-style-type: none"> Use of hand tools during work execution. 	<ul style="list-style-type: none"> Dust accumulation. Bending when removing hard objects/weeds Repetitive movement. Pointed objects e.g., wires, nails, and glasses. Bees. Snakes. Insufficient hand tools on site Unserviceable/ broken/modifi ed tools. Wrong tool for the job. 	<ul style="list-style-type: none"> Chest pains. Backache. Body strain/muscle pain Carpal tunnel syndrome. Injury to hands. Bee stings. Snake bites. Injuries caused by use of hand tools. 	10	6	3	180	3
9	Sourcing, transportation and processing of imported material from borrow pits.							
	<ul style="list-style-type: none"> Excavation Levelling Compaction Transportation of imported material 	<ul style="list-style-type: none"> Traffic accidents on site when transporting materials. Reversing of trucks and mobile plant. 	<ul style="list-style-type: none"> Damage to Property. Respiratory failure Fatigue. Kidney damage. Muscle/ body/ joint pain Noise induced 	6	6	7	252	4

		<ul style="list-style-type: none"> • Dust inhalation. • Incompetent driver/ operator • Dust • Vibration • Noise • Faulty hand tools • Unsafe borrow pits. • Stagnant and contaminated water. • Roaming animals falling into the pit. • Risk of drowning into a water filled tip. 	<ul style="list-style-type: none"> • hearing loss • Skin irritation • Breathing/ respiratory diseases • Hand Injuries. • Diseases due to exposure to contaminated water. • Malaria from stagnant. • Possible death due to drowning. 					
10	Busy residential/ commercial/ industrial areas.							
	<ul style="list-style-type: none"> • Working next to residential, commercial, industrial areas 	<ul style="list-style-type: none"> • Public exposure to construction activities. • Destruction of 	<ul style="list-style-type: none"> • Injuries public and employees, broken bones, damage to property, death, 	6	6	7	252	4

		businesses and services in the area. • Other activities in the areas • Strikes in the area	• Production loss, disturbance of personnel activities • Fights, lawsuits, disagreement • Damage to property, injuries to employees					
11	Concrete Pavements.							
	• Lifting of heavy objects by hands. • Concrete precast products repairs. • Mixing cement on site for infrastructure repairs. • Saw cutting during repairs. • Breaking of the precast product to be repaired. • Compacting. • Floating of the concrete.	• Unsafe lifting methodology. • Damage to underground services • Cement dust inhalation. • Dust. • Faulty machine. • Unguarded blade. • Roller operated by an incompetent person • Skin contact.	• Feet and finger crushed. • Service delivery interruption. • Respiratory problems. • Injuries. • Lung disease, eye irritation.	6	6	3	108	3
12	Manual moving of precast product.							
	• Manual handling and moving of	• Unsafe wheelbarrows,	• Injury to hands/ toes	3	3	3	27	2

	precast product using wheelbarrows,	<ul style="list-style-type: none"> Manual handling of precast product Lifting of excess/ heavy load Ergonomics hazards 	<ul style="list-style-type: none"> Skeletal injuries Slippery surface Tripping hazards Ergonomic risks 					
13	Protection of existing services.							
	<ul style="list-style-type: none"> Working in the presence of watermain, sewer, stormwater, electrical cables, telkom/ neotel cables, gas/petroleum pipeline. 	<ul style="list-style-type: none"> Disturbance of the services, Sewer spillage, Blockage of sewer and stormwater lines Exposure to biological agents Electrocution Damage to Telkom/ neotel cables, stormwater, sewer 	<ul style="list-style-type: none"> No water and electricity, community strikes, Health hazards Environmental hazards Burns, death Financial costs for replacing damaged cables 	6	6	7	252	4
14	Construction mobile plant and machinery.							
	<ul style="list-style-type: none"> Use of construction vehicles and mobile plants and 	<ul style="list-style-type: none"> Unsafe construction plants and equipment 	<ul style="list-style-type: none"> Accidents. Property damage. Noncompliance 	6	6	7	252	4

	equipment.	<ul style="list-style-type: none"> • Incompetent drivers/operators • Uneven surface • Equipment/machinery failure • Running out of control • Noise • Vibration • Fuel spillage due to refueling on site. • Dust 	<p>with DMR. Noncompliance with stipulated safe working load.</p> <ul style="list-style-type: none"> • Capsizing of mobile construction plants. Jammed construction mobile plants, death • Injury to employees and community, death, loss of limb/disablement • Damage to property • Noise induced hearing loss • Muscular pains, kidney damage, • Environmental contamination • Lung disease 					
15	Concrete work.							
	<ul style="list-style-type: none"> • Pre-leveling the area and formwork 	<ul style="list-style-type: none"> • Noise. • Vibration. 	<ul style="list-style-type: none"> • Injury to employees and 	6	6	3	108	3

	<ul style="list-style-type: none"> preparation. Working with steel reinforcement wire mesh. Hand mixing of cement. Pouring of ready-mix concrete. Floating of the concrete. 	<ul style="list-style-type: none"> Pinch point, sharp and protruding edges. Dust. Defective hand tools. Cement contact with body. Over bending. 	<ul style="list-style-type: none"> community, loss of limb/ disablement. Hand injuries. Noise induced hearing loss Lung disease, eye irritation. Hand injuries. Backache. 					
16	Stabilisation of gravel base.							
	<ul style="list-style-type: none"> Levelling. Compaction. Transportation of imported material. 	<ul style="list-style-type: none"> Traffic accidents on site when transporting materials. Reversing of trucks and mobile plant. Dust inhalation. Incompetent driver/ operator Dust Vibration Noise 	<ul style="list-style-type: none"> Damage to Property. Respiratory failure Fatigue. Kidney damage. Muscle/ body/ joint pain Noise induced hearing loss Skin irritation Breathing/ respiratory diseases Hand Injuries. 	3	3	3	27	2

		Faulty hand tools						
17	Removal of dumped material off site.							
	<ul style="list-style-type: none"> Manual clearing of the site. 	<ul style="list-style-type: none"> Rubble existing on site Manual handling of heavy objects Illegal dumping. 	<ul style="list-style-type: none"> Backache. Fine 	6	6	3	108	3