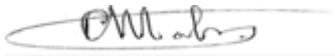
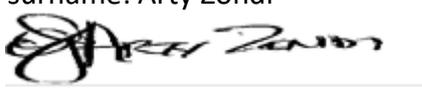




## ETHEKWINI MUNICIPALITY Occupational Health & Safety Unit

### SITE BASED BASELINE RISK ASSESSMENT

#### Construction Regulations 5.1(a)

Document Title	Baseline Risk Assessment
Client	EThekweni Municipality–Development engineering
Project title	The Provision of Incremental Services to Informal Settlements within the Western Region: Construction of Footpaths in Mpola PH3-Ward 15.
Contract Number	2V-28705
Revision	00
Date	09/02/2024
Internal Reference no.	BRA 236/02/2024
Compiled by (Safety officer)	Name and surname: Phumlani Mabaso Signature:  Date: 09/02/2024
Reviewed by (Manager: Safety & Risk)	Name and surname: Arty Zondi Signature:  Date: 09/02/2024

## **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 and evaluation of the risk and hazards identified based on a documented method.

### **5. REFERENCES**

- (a) Tender document number 2V-28705
- (b) Occupational Health & Safety Act and its Regulation

## **6. LOCALITY PLAN**

Contractor will be taken to site prior to tender closing.

## **7.SCOPE OF WORK**

### **Description of Works**

This will include the upgrade of a footpath from gravel to a hardened surface. The upgrade of this footpath would be supplemented with the installation of stormwater control measures. There would also be water and sewer infrastructure installed nearby the footpath.

### **The following activities were assessed:**

- (a) Access to the site
- (b) Material delivery to the site
- (c) Site establishment
- (d) Site clearance and grubbing
- (e) Busy residential/industrial area
- (f) Traffic management
- (g) Excavation/ earthworks
- (h) Manual moving of precast products
- (i) Protection works.
- (j) Importing of material.
- (k) Concrete works.
- (l) Road signs.
- (m) Road markings.
- (n) Construction of stormwater system.
- (o) Construction of appurtenant works.
- (p) Protection of existing services.
- (q) Construction mobile plant and machinery.
- (r) Steel Guardrails & Con. Median Barriers.
- (s) Site security.

# 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 level</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 level</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 level</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 level</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**

	Activity	Hazard	Risk	Risk Evaluation			Risk Score	Risk level
				E	P	S		
<b>1</b>	<b>Access to the site.</b>							
	<ul style="list-style-type: none"> <li>Traveling to and from site in a vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>Safety belts not worn when traveling in or operating a vehicle.</li> <li>Vehicle not equipped with safety belts for all passengers.</li> <li>Over speeding of vehicles.</li> <li>Driving on public roads.</li> </ul>	<ul style="list-style-type: none"> <li>Injuries caused when in vehicle accident.</li> <li>Fatalities when in vehicle accident</li> <li>Risk of personnel being injured by over speeding vehicles.</li> <li>Involved in accident.</li> </ul>	6	6	7	252	4
<b>2</b>	<b>Material delivery to the site.</b>							
	<ul style="list-style-type: none"> <li>Loading and offloading of equipment manually.</li> <li>Mechanical handling.</li> </ul>	<ul style="list-style-type: none"> <li>Employee being struck by the load.</li> </ul>	<ul style="list-style-type: none"> <li>Back strain</li> <li>Skeletal damage</li> <li>Head, hand, and foot injuries.</li> <li>Serious injury</li> <li>Fatality</li> </ul>	3	6	7	126	3
<b>3</b>	<b>Site establishment.</b>							
	<ul style="list-style-type: none"> <li>Manual and mechanical clearing of the</li> </ul>	<ul style="list-style-type: none"> <li>Incompetent construction mobile plant</li> </ul>	<ul style="list-style-type: none"> <li>Injuries, Accidents</li> <li>Skeletal injuries</li> </ul>	6	6	7	252	4

	<p>land</p> <ul style="list-style-type: none"> <li>• Off-loading and positioning of containers by mobile crane</li> <li>• Fencing off the site</li> <li>• Installation of temporary water supply, electricity, ablution facilities,</li> </ul>	<p>operator</p> <ul style="list-style-type: none"> <li>• Manual Handling of equipment and materials.</li> <li>• Uneven surfaces</li> <li>• Driving on dangerous and undulating terrain.</li> <li>• Reckless driving.</li> <li>• Electrocutation</li> <li>• Incorrect/ poor connection of temporary services</li> </ul>	<ul style="list-style-type: none"> <li>• Destruction of services</li> <li>• Death, burns</li> </ul>						
<b>4</b>	<b>Site clearance and grubbing.</b>								
	<ul style="list-style-type: none"> <li>• Clearing of the site using construction mobile plant.</li> <li>• Manual clearing of the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Overgrown vegetation</li> <li>• Rubble existing on site</li> <li>• Snakes</li> <li>• Bees</li> <li>• Incompetent driver/ operator</li> <li>• Unsafe</li> </ul>	<ul style="list-style-type: none"> <li>• Nuisance, poisonous</li> <li>• Environmental contamination</li> <li>• Death, poison</li> <li>• Accident/ property damage. Collision with other vehicles</li> <li>• Noise induced</li> </ul>	6	6	7	252	4	

		<p>construction mobile plant</p> <ul style="list-style-type: none"> <li>• Sharp edges and pointed ends.</li> <li>• Petrol and oil spillages</li> <li>• Underground services.</li> <li>• Pointed objects e.g. wires, nails, crusher and glasses.</li> <li>• Noise.</li> </ul>	<p>hearing loss</p> <ul style="list-style-type: none"> <li>• Electrocution</li> <li>• Delay in service delivery.</li> </ul>					
<b>5</b>	<b>Busy residential/industrial areas.</b>							
	<ul style="list-style-type: none"> <li>• Working next to residential/industrial areas</li> </ul>	<ul style="list-style-type: none"> <li>• Public exposure to construction activities.</li> <li>• Destruction of services in the area.</li> <li>• Other activities in the areas</li> <li>• Strikes in the area</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries public and employees, broken bones, damage to property, death,</li> <li>• Disturbance of personnel activities</li> <li>• Fights, lawsuits, disagreement</li> <li>• Damage to property, injuries to employees</li> </ul>	6	6	7	252	4
<b>6</b>	<b>Traffic management.</b>							

	<ul style="list-style-type: none"> <li>The use of construction vehicle and mobile plant in the public and next to public roads/ streets</li> </ul>	<ul style="list-style-type: none"> <li>Poor/ no traffic management plan in place</li> <li>Lack of traffic management training</li> <li>Unroadworthy plant and vehicle</li> <li>Collision with other vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Accidents, death, broken bones, damage to property</li> <li>Noncompliance with the National Road Traffic Act, Council Road Traffic bi-laws and other applicable Regulations</li> <li>Blockage/ inconvenient access to industrial/ commercial areas</li> </ul>	6	6	7	252	4
<b>7</b>	<b>Excavation/Earthworks.</b>							
	<ul style="list-style-type: none"> <li>Manual and mechanical excavation using construction mobile plants and hand tools</li> </ul>	<ul style="list-style-type: none"> <li>Faulty hand tools</li> <li>Hitting underground services</li> <li>Unsafe machinery/ hand tools</li> <li>Dust accumulation</li> </ul>	<ul style="list-style-type: none"> <li>Hand injuries.</li> <li>Lack of service delivery which may result in community protest</li> <li>injuries to hands,</li> <li>Severe injuries.</li> </ul>	6	6	3	108	6
<b>8</b>	<b>Manual moving of precast product.</b>							

	<ul style="list-style-type: none"> <li>Manual handling and moving of precast product using wheelbarrows,</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe wheelbarrows,</li> <li>Manual handling of precast product</li> <li>Lifting of excess/ heavy load</li> <li>Ergonomics hazards</li> </ul>	<ul style="list-style-type: none"> <li>Injury to hands/ toes</li> <li>Skeletal injuries</li> <li>Slippery surface</li> <li>Tripping hazards</li> <li>Ergonomic risks</li> <li></li> </ul>	3	3	3	27	2
<b>9</b>	<b>Protection works.</b>							
	<ul style="list-style-type: none"> <li>Pre-levelling the area and placing of bedding before grass planting.</li> <li>Laying of retaining bricks.</li> <li>Working with wires during the installation of reno mattresses with rock fill.</li> <li>Packing of stones within the basket.</li> </ul>	<ul style="list-style-type: none"> <li>Injury due the use of hand tools.</li> <li>Bricks and working equipment.</li> <li>Carelessness and working without wearing the proper PPE</li> <li>Pinch point, sharp and protruding edges, substandard working methodology, lack of</li> </ul>	<ul style="list-style-type: none"> <li>Disabling injury</li> <li>Fingers crushed or trapped by adjacent rock pieces</li> <li>Unsafe body posture, Multiple injuries, Skin irritation and back strains.</li> <li>Hand injury.</li> </ul>	3	3	3	27	2

		<p>supervision.</p> <ul style="list-style-type: none"> <li>• Knife or a pair of Scissor may cause injury.</li> <li>• Carelessness and working without wearing the proper PPE</li> </ul>						
<b>10</b>	<b>Importing of material.</b>							
	<ul style="list-style-type: none"> <li>• Levelling</li> <li>• Compaction</li> <li>• Transportation of imported material</li> </ul>	<ul style="list-style-type: none"> <li>• Traffic accidents on site when transporting materials.</li> <li>• Reversing of trucks and mobile plant.</li> <li>• Dust inhalation.</li> <li>• Incompetent driver/operator</li> <li>• Dust</li> <li>• Vibration</li> <li>• Noise</li> <li>• Faulty hand tools</li> </ul>	<ul style="list-style-type: none"> <li>• Damage to Property.</li> <li>• Respiratory failure</li> <li>• Fatigue. Kidney damage. Muscle/body/ joint pain</li> <li>• Noise induced hearing loss</li> <li>• Skin irritation</li> <li>• Breathing/respiratory diseases</li> <li>• Hand Injuries.</li> </ul>	3	3	3	27	2
<b>11</b>	<b>Concrete works.</b>							

	<ul style="list-style-type: none"> <li>• Pre-leveling the ground surface prior to the construction of footpaths, channel and v-drain.</li> <li>• Compacting the imported material using a Bomag/Wacker.</li> <li>• Installing reinforcement.</li> <li>• Formwork for footpaths, channel and v-drain.</li> <li>• Exposure to ready mixed cement during construction of footpaths, channel and v-drain.</li> <li>• Pouring and casting of concrete.</li> </ul>	<ul style="list-style-type: none"> <li>• Flying debris and crusher particles.</li> <li>• Compactor operated by an incompetent person.</li> <li>• Pinch point, sharp and protruding edges, substandard working methodology, lack of supervision.</li> <li>• Substandard methodology of installing formwork.</li> <li>• Lack of supervision.</li> <li>• Skin contact.</li> <li>• High levels of noise from the trucks, Hand vibration on vibrator needles.</li> </ul>	<ul style="list-style-type: none"> <li>• Injury to eyes.</li> <li>• Accidents.</li> <li>• Unsafe body posture, Multiple injuries, Skin irritation and back strains.</li> <li>• Hand injury.</li> <li>• Injuries due to unsafe acts or condition.</li> <li>• Skin irritation.</li> <li>• Poor blood circulation, noise induced hearing loss.</li> </ul>	3	3	3	27	2
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<b>12</b>	<b>Road signs</b>							
	<ul style="list-style-type: none"> <li>Manual digging for sign posts using picks and shovel.</li> <li>Mixing cement for erecting sign posts.</li> </ul>	<ul style="list-style-type: none"> <li>Picks and shovels.</li> <li>Damaged to underground services.</li> <li>Inhalation of cement dust.</li> <li>Skin contact.</li> </ul>	<ul style="list-style-type: none"> <li>Injury may be caused by picks when digging holes.</li> <li>Electric shock.</li> <li>Lung infection.</li> <li>Skin irritation.</li> </ul>	6	6	3	108	3
<b>13</b>	<b>Road markings</b>							
	<ul style="list-style-type: none"> <li>Marking and painting the road surface using retro reflective paint and brush.</li> </ul>	<ul style="list-style-type: none"> <li>Inhalation of paint fumes and paint in contact with the skin.</li> </ul>	<ul style="list-style-type: none"> <li>Chest pains caused by fumes and skin problems.</li> </ul>	6	6	3	108	3
<b>14</b>	<b>Construction of stormwater system.</b>							
	<ul style="list-style-type: none"> <li>Formwork preparation using timber.</li> <li>Pouring and floating of concrete during construction of stormwater drainage system.</li> <li>Excavation above 1m deep using and excavator and TLB</li> <li>Preparation and</li> </ul>	<ul style="list-style-type: none"> <li>Collapsing of trenches.</li> <li>Unsafe access to trench</li> <li>Unprotected trenches</li> <li>People exposure to excavations</li> <li>Unsafe lifting devices</li> <li>Incompetent lifting machinery</li> </ul>	<ul style="list-style-type: none"> <li>Collapsing of trench walls</li> <li>Death, dislocation, trauma/ panic attack</li> <li>Broken bone, dislocation,</li> <li>Falling into excavation.</li> <li>Injury to body. Accidents. Property Damage.</li> </ul>	6	6	7	252	4

	laying of concrete pipes using a lifting equipment <ul style="list-style-type: none"> <li>• Construction of above 1m deep manhole using cement, blocks, handtools and concrete manhole rings/ cover</li> <li>• Connection of the stormwater pipes into the existing stormwater drainage system</li> </ul>	operator <ul style="list-style-type: none"> <li>• Equipment failure</li> <li>• Overloading of equipment/ machinery</li> <li>• Working/ operating equipment too close to the excavation</li> <li>• Contact with and inhalation of cement dust</li> <li>• Manual handling of heavy manhole rings and covers</li> <li>• Incorrect connection of stormwater pipes</li> </ul>	Noncompliance with DMR. Noncompliance with stipulated safe working load. <ul style="list-style-type: none"> <li>• Falling into excavation. Property damage.</li> <li>• Respiratory diseases. Skin disease/ irritation</li> <li>• Back/ spine problems. Possible of pinch. Skeletal injuries. Injury to hands and toes.</li> <li>• Destruction/ blockage of stormwater drainage system</li> </ul>						
<b>15</b>	<b>Construction of appurtenant works.</b>								
	<ul style="list-style-type: none"> <li>• Concrete kerbs and staircases installation.</li> </ul>	<ul style="list-style-type: none"> <li>• Manual handling of concrete kerbs and staircases</li> <li>• Unsafe tools</li> <li>• Ergonomic</li> </ul>	<ul style="list-style-type: none"> <li>• Skeletal injuries. Injuries to hands and toes</li> <li>• Ergonomic risks</li> </ul>	3	3	3	27	2	

		hazards							
<b>16</b>	<b>Protection of existing services.</b>								
	<ul style="list-style-type: none"> <li>Maintenance of watermains, sewer, stormwater, electrical etc.</li> </ul>	<ul style="list-style-type: none"> <li>Disturbance of the services,</li> <li>Improper connection,</li> <li>Sewer spillage,</li> <li>Blockage of sewer and stormwater lines</li> <li>Exposure to biological agents</li> <li>Electrocution.</li> </ul>	<ul style="list-style-type: none"> <li>No water and electricity, community strikes,</li> <li>Health hazards</li> <li>Environmental hazards</li> <li>Burns, death</li> <li>Financial costs for replacing damaged cables</li> </ul>	6	6	7	252	4	
<b>17</b>	<b>Construction mobile plant and machinery.</b>								
	<ul style="list-style-type: none"> <li>Use of construction vehicles and mobile plants and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe construction plants and equipment</li> <li>Incompetent drivers/operators</li> <li>Uneven surface</li> <li>Equipment/machinery failure</li> </ul>	<ul style="list-style-type: none"> <li>Accidents. Property damage. Noncompliance with DMR. Noncompliance with stipulated safe working load.</li> <li>Capsizing of mobile construction</li> </ul>	6	6	7	252	4	

		<ul style="list-style-type: none"> <li>• Running out of control</li> <li>• Noise</li> <li>• Vibration</li> <li>• Oil Spillage</li> <li>• Dust</li> </ul>	<ul style="list-style-type: none"> <li>plants. Jammed construction mobile plants, death</li> <li>• Injury to employees and community, death, loss of limb/ disablement</li> <li>• Damage to property</li> <li>• Noise induced hearing loss</li> <li>• Muscular pains, kidney damage,</li> <li>• Environmental contamination</li> <li>• Lung disease</li> </ul>						
<b>18</b>	<b>Steel Guardrails &amp; Con. Median Barriers</b>								
	<ul style="list-style-type: none"> <li>• Manual digging for guardrail concrete/timber posts using picks and shovel.</li> <li>• Supply and fitting of guardrails and handrails.</li> </ul>	<ul style="list-style-type: none"> <li>• Picks and shovels.</li> <li>• Damaged to underground services.</li> <li>• Cutting using grinder.</li> <li>• Noise.</li> <li>• Manual lifting of guardrail</li> </ul>	<ul style="list-style-type: none"> <li>• Injury may be caused by picks when digging holes.</li> <li>• Electric shock.</li> <li>• Multiple body injury.</li> <li>• NIHL.</li> <li>• Back pain.</li> <li>• Hand injuries</li> </ul>	6	6	7	252	4	

		posts and panels. <ul style="list-style-type: none"> <li>Faulty hand tools.</li> </ul>	due to sharp edges. <ul style="list-style-type: none"> <li>Hand injuries.</li> </ul>					
<b>19</b>	<b>Site security.</b>							
	<ul style="list-style-type: none"> <li>Provision of security to staff and property</li> </ul>	<ul style="list-style-type: none"> <li>Incompetent security personnel</li> <li>Unguided property</li> <li>Unprotected/fenced site camp</li> <li>Working in a high risk zone</li> </ul>	<ul style="list-style-type: none"> <li>Loss of property</li> <li>Theft,</li> <li>Financial risk</li> <li>Uncontrolled entry</li> <li>Hijacking/Mugging</li> </ul>	6	6	3	108	3