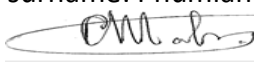
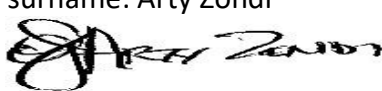




ETHEKWINI MUNICIPALITY Occupational Health & Safety Unit

SITE BASED BASELINE RISK ASSESSMENT

Construction Regulations 5.1(a)

Document Title	Baseline Risk Assessment.
Client	EThekweni Municipality–Development engineering-West.
Project title	The construction of a multiple celled precast concrete portal culvert,earthworks,layerworks,earth retaining structures and drainage for the access roads to electricity pylons.
Contract Number	2V-32201
Revision	00
Date	23/06/2025
Internal Reference no.	BRA 414/06/2025
Compiled by (Safety officer)	Name and surname: Phumlani Mabaso Signature:  Date: 23/06/2025
Reviewed by (Manager: Safety& Risk)	Name and surname: Arty Zondi Signature:  Date: 23/06/2025

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

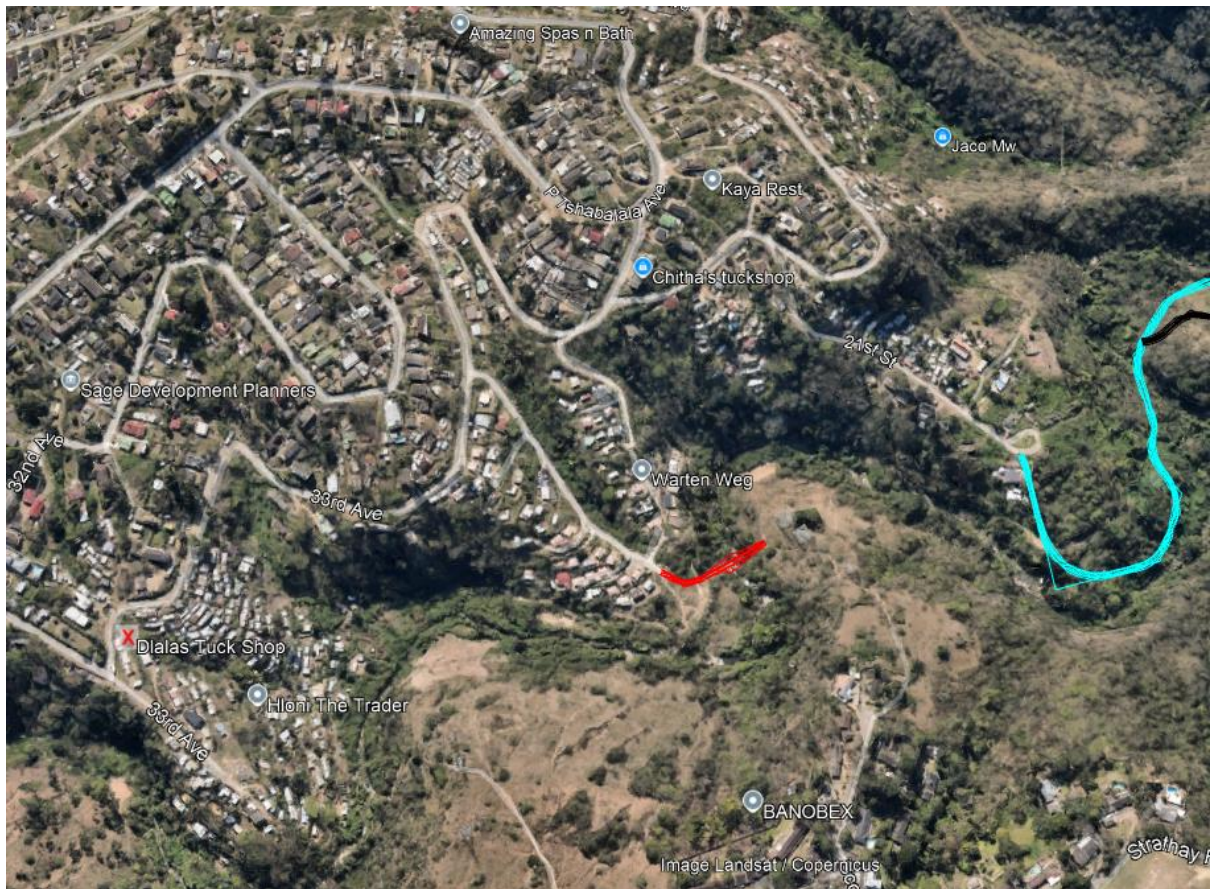
The risk assessment form part of the health and safety plan to be applied on the site and must include the following:

- (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–32201
- (b) Occupational Health & Safety Act and its Regulation

6. LOCALITY PLAN



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

7. SCOPE OF WORK

Description of Works

The Works to be carried out include the following main activities:

- (a) Establishment on site and clearing and grubbing.
- (b) Construction of temporary bypass using 900mm diameter concrete pipes and imported material
- (c) Demolition of the existing structure.
- (d) Provision of drainage to divert the streambed where necessary and to dewater the Foundation excavations for the culvert.
- (e) Design, construction and removal on completion of all the temporary works required to access and support the excavations, substructure of the culvert.
- (f) Excavation and blasting where necessary, construction of foundation fill where necessary, And construction of the culvert foundation.
- (g) Installation of the 24 (2210 x 1220 x 175mm) precast culvert slabs to portal culverts.
- (h) Installation of 24 (1.8m x 1.8m) precast portal culverts
- (i) Fixing of reinforcement for the earwings / wingwalls
- (j) Formwork for the earwings / wingwalls
- (k) Cast insitu concrete for the earwings / wingwalls
- (l) Construction of cast insitu roof slab
- (m) Construction of cast insitu concrete bollards
- (n) Construction of top slab drainage facilities.
- (o) Construction of gabions to protect the embankment toe line of the road where necessary.
- (p) Mass earthworks for the road approaches construction
- (q) Construction of road from the lower layers to the final level in order to tie in the newly constructed roadwork to the existing gravel road.
- (r) Supply and installation of honeycombed cells
- (s) Construction of cast insitu concrete road surface
- (t) Continuous quality control over materials and works, and compliance with the Particular Specifications with regard to environmental management and occupational health and safety, during all the above construction activities.
- (u) Finishing off, removal of site establishment and 12 months defects liability.

The following activities were assessed:

- (a) Access to the site.
- (b) Material delivery to the site.
- (c) Site establishment.
- (d) Survey.
- (e) Site clearance and grubbing.
- (f) Busy residential/industrial area.
- (g) Traffic management.
- (h) Excavation/ earthworks.
- (i) Manual moving of precast products.
- (j) Construction of appurtenant works.
- (k) Provision of pipe bedding, laying of pipe and backfilling.
- (l) Proving/relocation of existing services.
- (m) Construction mobile plant and machinery.
- (n) Construction of protection works.
- (o) Concrete works.
- (p) Construction of manholes and appurtenant drainage works.
- (q) Installation of guardrails.
- (s) Non pressure pipelines and pc culverts.
- (t) Manual and mechanical demolition.
- (u) Site security.

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.							
	Traveling to and from site in a vehicle.	- 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.	- Injuries caused when in vehicle accident. - Fatalities when in vehicle accident - Risk of personnel being injured by over speeding vehicles. - Involved in accident.	6	6	7	252	4
2	Material delivery to the site.							
	- Loading and offloading of equipment manually. - Mechanical handling.	- Employee being struck by the load. - Manual lifting of heavy objects. - Bending.	- Serious injury. - Back strain. - Skeletal damage - Head, hand, and foot injuries. - Backache.	3	6	7	126	3
3	Site establishment.							
	Manual and	Incompetent	Injuries,	6	6	7	252	4

	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,	construction mobile plant operator. • Sharp protruding objects. • Manual Handling of equipment and materials. • Uneven surfaces • Driving on dangerous and undulating terrain. • Reckless driving. • Electrocutation • Incorrect/ poor connection of temporary services	Accidents • Hand injuries. • Skeletal injuries • Destruction of services • Death, burns					
4	Site survey.							
	• Surveys and preparation.	• Environmental hazards due to overgrown vegetation. • Rubble existing on	• Snake/tick/spider bites. • Bee sting. • Environmental contamination • Death, poison	6	6	7	252	4

		site. • Snakes bites. • Bees. • Dust accumulation. • Bending. • Heat exposure.	• Respiratory problems. • Back strain. • Sun stroke or heat exhaustion.					
5	Site clearance and grubbing.							
	• Clearing of the site using construction mobile plant/labourer • Proving of existing services. • Removal of trees of girth exceeding 1.5m.	• Overgrown vegetation • Rubble existing on site • Snakes bites. • Bees • Incompetent driver/operator • Unsafe construction mobile plant • Petrol and oil spillages • Dust accumulation. • Bending. • Noise. • Exposure to vibration. • Working in the vicinity of	• Nuisance, poisonous • Environmental contamination • Death, poison • Accident/property damage. Collision with other vehicles • Noise • Respiratory problems. • Back strain. • NIHL. • Blood circulation problems. • Burns from electrocution. • Hand injuries.	6	6	7	252	4

		illegal connections (Electrical cables and water pipes) Faulty hand tools.						
6	Busy residential/industrial areas.							
	Working next to residential/industrial areas	- Public exposure to construction activities. - Destruction of services in the area. - Other activities in the areas - Strikes in the area	- Injuries public and employees, broken bones, damage to property, death, - Disturbance of personnel activities - Fights, lawsuits, disagreement - Damage to property, injuries to employees	6	6	7	252	4
7	Traffic management.							

	The use of construction vehicle and mobile plant in the public and next to public roads/ streets	- Poor/ no traffic management plan in place - Lack of traffic management training - Unroadworthy plant and vehicle - Collision with other vehicles	- 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
8	Excavation/Earthworks.							
	- Manual and mechanical excavation using construction mobile plants and hand tools. - Excavation in soft material. - Removal of topsoil and spoil in an approved dumpsite.	- Faulty hand tools - Hitting underground services - Unsafe machinery/ hand tools - Dust accumulation - Improper barricading or	- Hand injuries. - Lack of service delivery which may result in community protest - injuries to hands, - Severe injuries or even fatalities. - Damage to equipment.	6	6	7	252	4

	• Importation of material from commercial source. • Compaction of imported material to various % Mod. AASHTO. • Trimming of embankment. • Formation. • Excavation for pipe trenches. • Manual digging for guardrails posts.	warning signs to indicate location of an excavation. • Excavation collapsing. • Excavated material stacked too close to the edge of the excavation which may results to the fall back into the excavation. • Illegal dumping. • Traffic accidents on site when transporting materials. • Reversing of trucks and mobile plant. • Incompetent driver/ operator • Vibration	• Fine from EThekweni authorities. • Damage to Property. • Respiratory failure • Fatigue. Kidney damage. Muscle/ body/ joint pain • Noise induced hearing loss • Skin irritation • Breathing/ respiratory diseases • Hand Injuries.						
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		- Noise - Faulty hand tools						
9	Manual moving of precast product.							
	- Manual handling and moving of precast product using wheelbarrows, - Mechanical handling and moving of precast product using lifting equipment,	- Unsafe wheelbarrows, - Manual handling of precast product - Lifting of excess/ heavy load - Ergonomics hazards - Faulty lifting equipment. - Incompetent operator.	- Injury to hands/ toes - Skeletal injuries - Slippery surface - Tripping hazards - Ergonomic risks - Feet/body crush - Noncompliance with DMR. - Noncompliance with stipulated safe working load.	3	3	3	27	2
10	Construction of appurtenant works.							
	- Kerbs, haunching and channel. - Handling and floating of concrete during construction of channel. - Casting and	- Manual handling of concrete kerbs. - Unsafe tools - Ergonomic hazards. - Noise.	- Collapsing of trench walls - Death, dislocation, trauma/ panic attack - Broken bone, dislocation,	6	6	7	252	4

	floating of concrete during construction of stormwater systems. • Excavation above 1m deep using mobile plant. • Preparation and laying of concrete pipes and manhole cover using a lifting equipment • Construction of above 1m deep manhole using cement, blocks, hand tools and concrete manhole rings/ cover.	• Dust. • Cutting • Collapsing of trenches. • Unsafe access to trench • Unprotected trenches • People exposure to excavations • Unsafe lifting devices • Incompetent lifting machinery operator • Equipment failure • Overloading of equipment/ machinery • Working/ operating equipment too close to the excavation • Contact with and inhalation of cement dust	• Falling into excavation. • Injury to body. Accidents. Property Damage. Noncompliance with DMR. Noncompliance with stipulated safe working load. • Falling into excavation. Property damage. • Respiratory diseases. Skin disease/ irritation • Back/ spine problems. Possible of pinch. Skeletal injuries. Injury to hands and toes. • Destruction/ blockage of stormwater drainage system.						
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		- Manual handling of heavy manhole covers - Incorrect connection of stormwater pipes.						
11	Provision of pipe bedding, laying of pipe and backfilling.							
	- Levelling - Compaction - Transportation of imported material - Provision of clean coarse sand for pipe trench bedding from commercial source. - Offloading and laying of 450mm pipe.	- Traffic accidents on site when transporting materials. - Reversing of trucks and mobile plant. - Dust inhalation. - Incompetent driver/operator - Dust - Vibration - Noise - Faulty hand tools - Bending and	- Damage to Property. - Respiratory failure - Fatigue. Kidney damage. Muscle/body/ joint pain - Noise induced hearing loss - Skin irritation - Breathing/respiratory diseases - Hand Injuries. - Backache.	3	3	3	27	2

		lifting.						
12	Proving/relocation of existing services.							
	Maintenance of watermains, sewer, stormwater, electrical etc.	- Disturbance of the services, - Improper connection, - Sewer spillage, - Blockage of sewer and stormwater lines - Exposure to biological agents - Electrocution.	- No water and electricity, community strikes, - Health hazards - Environmental hazards - Burns, death - Financial costs for replacing damaged cables	6	6	7	252	4
13	Construction mobile plant and machinery.							
	Use of construction vehicles and mobile plants and equipment	- Unsafe construction plants and equipment - Incompetent drivers/operators - Uneven surface - Equipment/machinery failure - Running out of	- Accidents. Property damage. Noncompliance with DMR. Noncompliance with stipulated safe working load. - Capsizing of mobile construction plants. Jammed	6	6	7	252	4

		control - Noise - Vibration - Oil Spillage - Dust	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					
14	Construction of protection works.							
	- Pre-levelling the area and placing of bedding before grass planting. - Retaining structure using wire baskets and stones - Working with wire mesh - Laying of	- Injury due the use of hand tools. - Manual handling of stones/rocks - Pinch point, sharp and protruding edges - Too much	- Disabling injury - Ergonomic risks - Hand injuries. - Fingers crushed or trapped by adjacent rock pieces - Backaches. - Illness. - Skin irritation.	6	6	3	108	3

	stones/rocks/blocks.	- bending. - Faulty hand tools. - Exposure to polluted water. - Steep slimy banks.						
15	Concrete works.							
	- Pre-leveling the area. - Shuttering and formwork preparation for floor slabs, concrete paving and wingwalls, retaining wall bases. - Working with steel reinforcement for floor slabs and wingwalls. - Exposure to cement. - Hand mixing of cement. - Pouring of ready-mix concrete.	- Noise. - Vibration. - Dust accumulation. - Defective hand tools. - Pinch point, sharp and protruding edges. - Cement contact with body. - Over bending.	- Injury to employees and community, death, loss of limb/ disablement - Noise induced hearing loss - Lung disease, eye irritation. - Hand injuries. - Backache.	6	6	3	108	3

	Floating of the concrete.							
16	Construction of manholes and appurtenant drainage works.							
	- Casting and floating of concrete during construction of stormwater systems. - Excavation above 1m deep using mobile plant - Preparation and laying of concrete pipes using a lifting equipment - Construction of above 1m deep manhole and headwall using cement, blocks, hand tools and concrete manhole rings/ cover - Construction of guide blocks. - Connection of the stormwater pipes into the existing	- Collapsing of trenches. - Unsafe access to trench - Unprotected trenches - People exposure to excavations - Unsafe lifting devices - Incompetent lifting machinery operator - Equipment failure - Overloading of equipment/ machinery - Working/ operating equipment too close to the excavation - Contact with and inhalation	- Collapsing of trench walls - Death, dislocation, trauma/ panic attack - Broken bone, dislocation, - Falling into excavation. - Injury to body. Accidents. Property Damage. Noncompliance with DMR. Noncompliance with stipulated safe working load. - Falling into excavation. Property damage. - Respiratory diseases. Skin disease/ irritation	6	6	7	252	4

	stormwater drainage system	- of cement dust • Manual handling of heavy manhole rings and covers • Incorrect connection of stormwater pipes	• Back/ spine problems. Possible of pinch. Skeletal injuries. Injury to hands and toes. • Destruction/ blockage of stormwater drainage system					
17	Installation of guardrails.							
	• Manual digging for guardrails and sign posts • Installation of guardrails and sign posts • Mixing and floating of cement. • Installation of signage and guardrail panels. • Drilling and aligning.	• Faulty hand tools. • Handling and lifting of heavy objects. • Skin contacts with cement. • Dust • Unsafe drilling machine • Bending. • Working on a stepladder.	• Hand injuries. • Environmental contamination • Lung disease, eye irritation. • Noise induced hearing loss • Burns, skin infections • Breathing/ respiratory diseases. • Backache. • Trip and fall.	6	6	3	108	3
18	Non pressure pipelines and pc culverts.							
	• Manual handling and moving of precast product,	• Manual handling of precast	• Injury to hands/ toes	3	3	3	27	2

	Mechanical installation of concrete portals and rectangular culverts handling and using lifting equipment,	- product - Lifting of excess/ heavy load - Ergonomics hazards - Faulty lifting equipment. - Incompetent operator.	- Skeletal injuries - Slippery surface - Tripping hazards - Ergonomic risks - Feet/body crush - Noncompliance with DMR. - Noncompliance with stipulated safe working load.					
19	Laying of paving bricks.							
	- Levelling the ground surface - Laying of sand bedding - Compacting - Cutting paving bricks using a grinder. - Grouting.	- Unsafe tools - Ergonomic hazards - Manual handling of paving brick - Defective grinder machine. - Dust. - Noise. - Vibration	- Backache. - Injuries to hands and toes - Ergonomic risks - Injury to employees. - Severe cuts. - Respiratory problems. - NIHL. - Blood circulation problems. - Silicosis	6	6	3	108	3
20	Manual and mechanical demolition.							
	Demolition of existing structure.	Falling debris onto employees.	Debris could fall through openings onto employees	6	6	3	108	3

			causing multiple injuries.					
21	Site security.							
	• Provision of security to staff and property. • Robbery/hijacking/mugging on site.	• Incompetent security personnel • Unguided property • Unprotected/fenced site camp • Working in a high risk zone. • Employees being attacked by robbers with dangerous weapons.	• Loss of property • Theft, • Financial risk • Uncontrolled entry • Serious injuries or death.	6	6	7	252	4