



Harry-K Engineering

Building A Sustainable Future!

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**RISK ASSESSMENT
FOR
HARRY K ENGINEERING**

APPROVAL

Name	Designation	Legal appoint	Date	Signature
DANIEL MNGUNI	RISK ASSESSOR	CR 9.1		
	SITE MANAGER	CR 8.1		
	SITE FOREMAN	CR 8.7		
	SHE REPRESENTATIVE	SECTION 17		

ACTIVITY	POTENTIAL HAZARDS	POTENTIAL RISKS	Risk rating	MITIGATING FACTORS	Residual Risk rate	ACTION BY
1. Security	Aggrieved members of the public; Uncontrolled people	Protest Riots Theft	H	Trained security personnel, PSIRA registration, 2 way communication radios, emergency contact numbers, Adequate fencing; Notifying management and law enforcement; adequate para-meter fencing, sufficient lighting, lockable gates, patrolling system.	M	-Constr manager -Sec manager -Law enforcement
2. Loading / Unloading of materials / plant & equipment from trucks	Lifting equipment; Inexperience operators; Inexperienced workers;	Material/ plant falling from height; Operator losing control; Employees Under/close to suspended loads.	H	Pre work Inspection, appointment of competent lifting machinery and tackle inspector, method statement; Competent plant operator, Pre-work inspection, coaching, reverse hooter; Notification signage, Solid barriers to prevent person entry, access control, coaching, toolbox talk, DSTI.	M	-Constr manager -Constr supervisor -Safety officer - Lifting tackle insp - Plant operator - Plant inspector
3. Transportation of personnel / materials	Overloaded vehicles; Transportation of workers in vehicles not	Operator losing control of vehicle;	M	Transportation policy, no overloading, pre use Inspection, experiences driver, driver's license, speed governing/limit,		-Constr manager -Constr supervisor -Constr Saf officer

	<p>designed to transport people;</p> <p>Transporting vehicle defective / not roadworthy</p>	<p>Vehicle overturning;</p> <p>Vehicle accidents;</p> <p>Fatality;</p> <p>Serious injuries</p>		<p>driver assistant, a mini bus to be used to transport workers, ;</p> <p>Pre work approval of the bus, pre work inspection, road worthiness;</p> <p>Competent driver, speed limit govern;</p> <p>Transportation policy, buckle up;</p> <p>Transportation policy, buckle up;</p>	L	
4. Erection of site camp/ office	<p>Extreme temperatures;</p> <p>Pesticides, herbicides, dust, cement;</p> <p>Snakes, bees, spiders, vermin (rats & mice);</p> <p>Portable electrical equipment;</p> <p>Electrical hand tools;</p> <p>Lifting equipment;</p> <p>Temporary works;</p> <p>Aggrieved members of the public.</p>	<p>Heat exhaustion;</p> <p>Poisoning;</p> <p>Fatality / Serious health effect;</p> <p>Silicosis; Electrical shock;</p> <p>Personal Injuries; Falling objects;</p> <p>Strikes / riots</p>	M	<p>Issue workers with sun hats, drinking of water to keep hydrated;</p> <p>Clearing of the ground, pest control, snake and reptile repellent; Use of arm length gloves;</p> <p>Appointment of elect tools inspector, Pre-work inspection, DSTI;</p> <p>Appointment of hand tool inspector, pre-work inspection, DSTI;</p> <p>Appointment of rigger, construction vehicle operator & inspector, pre-work inspection of lifting gears;</p> <p>HR, CLO, management involvement, BCE Act of 1997</p>	L	<p>-Constr manager</p> <p>-Constr supervisor</p> <p>-Constr Saf officer</p> <p>-P.E.T inspector</p> <p>-Constr manager</p> <p>-HR</p> <p>-CLO</p> <p>-Law enforce</p>
5. Working with and handling of hazardous	<p>Hazardous, flammable and toxic substances</p>	<p>Chemical burns;</p>	M	<p>Information, instruction and training;</p> <p>Assessment of exposure, air monitoring, relevant medical surveillance, record</p>	L	<p>-Constr manager</p> <p>-Constr supervisor</p> <p>-Safety officer</p>

/ flammable / toxic materials		Fire; Serious injuries; Fatalities		<p>keeping, control of exposure, personal protective equipment, safety data sheet, identification & labeling, classification of waste, MSDS, method statement, toolbox talk, DSTI.</p> <p>Control and limiting the quantities of flammable material, controlled access, safe handling and storage, have sufficient fire fighting equipment, competent fire fighting personnel; no smoking/ fire restrictions, competent fire fighting personnel, toolbox talk, DSTI;</p> <p>Communicate and demonstrate use of PPE.</p>		<ul style="list-style-type: none"> -Haz chem co-ord -Stack & store sup -Fire fighters
6. Disposal of waste materials	Hazardous waste	Environmental pollution Re-use of containers can have serious health effect on people or fatal.	M	Waste placed in containers, wrap in industrial plastic, registered waste disposable contractor, disposal certificate, registered hazardous waste landfill, disposal certification.	L	<ul style="list-style-type: none"> -Constr manager -Constr supervisor -Safety officer -Haz chem co-ord -waste disposal contractor
7. Traffic accommodation / Control	Public vehicles;	Employees run over by public vehicles – serious injuries / fatalities	H	Approved road traffic drawings, approval of modifications (lane reduction, pedestrian crossing etc) Competent traffic safety personnel, engineer approval certificate for road deviation/ detour, wayleave, traffic management system, reflective road works temporary traffic signage 1500mm, Hi visibility, method statement ;	M	<ul style="list-style-type: none"> -Local municipal -Road traff Engineer -Constr manager -Constr supervisor -Traffic saf officer -Constr saf officer -Flag persons -Members of the community

	<p>Extreme temperatures Stop & Go</p>	<p>Heat exhaustion Public not adhering to stop & go signals / try to bypass stop & go – fatality / serious injuries / vehicle accidents.</p>	H	<p>Advance warning signage, transition areas, bufferzones, work zone, termination zone;</p> <p>Reduction of traffic delays were possible, flag persons, pedestrian walkway, pedestrian crossing;</p> <p>Rotation of flag persons, supply of drinking water, supply of reflective hats.</p>		
<p>8. Working in elevated positions - Working at heights, on slopes, next to excavations, on trucks, on bridge.</p>	<p>Defective / Inadequate equipment;</p> <p>Improper use or non- use of fall protection equipment;</p> <p>Environmental conditions – rain / strong wind, lighting;</p>	<p>Inadequate protection of employees against falls;</p> <p>Slippery work surfaces; Fatality / serious injuries;</p> <p>Electrical Shock;</p>	H	<p>Fall ptotection developer, Fall protection plan & FP risk assessment, Medical fitness to WAH, WAH training certificate, protection of openings, barriers, toe-boards & guardrails, competent erectors, control access, SANS compliance, method statement;</p> <p>Training and demonstration on use of fall protection, proof of test and inspection of fall protection equipment;</p> <p>Weather forecast, work stops before, during and after rain, strong wind, lighting. Induction training;</p>	M	<ul style="list-style-type: none"> -Constr manager -Constr supervisor -Constr Saf officer -Temp works sup -Temp works des -Temp works erc -Scaffolding sup -Scaffolding insp -Scaffolding erc

	Live electrical power lines; Suspension trauma.	Electrical arching;		Lock-out tag out & permit system and procedure, competent personnel, authorized personnel; Fall rescue plan, emergency procedure, suspension emergency rescue equipment, competent suspension rescue personnel. Competent excavation supervisor, daily excavation inspections, Barricading of excavation, warning signage, use of a ladder for access and exit, slope the sides, shoring, Lifeline, guardrails, safe access and exit.		
9. Loading/ offloading water pump	Fall of a suspended water pump	Serious personal injuries, fatality, damage to property,	H	Competent lifting operator, load test certificate of lifting machinery, load test certificate of lifting tackles, safe working load, method statement, planned task observation, barricade loading/ offloading areas, warning signage, supervision, rigging processes, guide rope.	M	-Operator -Rigger -Constr saf officer -Constr supervisor
10. Installation of water pump	Major pump leakage	Damage to property	H	Competent technicians, drawings, specification, inspection and approval by the client, pressure test, lock out system, access control, method statement, planned task observation.	M	-technician -Engineer -Constr supervisor
11. Loading/offloading of HDPE pipes	Fall of suspended HDPE pipe	Serious personal injuries, fatality, damage to property.	H	Competent lifting operator, load test certificate of lifting machinery, load test certificate of lifting tackles, safe working load, method statement, planned task	M	-Operator -Rigger -Constr saf officer -Constr supervisor

				observation, barricade loading area, barricade loading/ offloading areas, method statement, planned task observation.		
12. Laying of HDPE pipes	Caught in between	Hands, fingers, feet etc. serious injuries.	M	Competent technician, method statement, enough man power, use of gloves, manual handling practices, supervision, planned task observation.	L	-technician -Constr supervisor -Constr saf officer
13. HDPE pipe bud welding	Hot surfaces	Serious burns injuries	H	Competent technician, method statement, use of gloves, manual handling practices, supervision, planned task observation.	M	-technician -Constr supervisor -Constr saf officer
14. Stockpiling	Material falling from stockpile	Serious personal injuries; Material damage	M	Authorised designated area, Relevant warning signage, solid barriers, height angle restrictions of stockpile, create drainage channels, daily inspection by competent person, adequate storage area, visibility, access control, loads record keeping, method statement; Safe loading and offloading, designated loading and offloading zones, spotters to assist when loading/ offloading	L	-Constr manager -Constr supervisor -Constr Saf officer -Stack & store sup -Spotter
15. Operations involving Noise	Noise	Noise induced hearing loss	M	Occupational hygiene survey report, Assessment of potential noise exposure, monitoring of noise, medical surveillance, identify and designate noise zones, control of noise exposure, record keeping, hearing protective	L	-Constr manager -Constr supervisor -Constr Saf officer -Occupational hygienist -Occupational health practitioner

				equipment, induction training, DSTI, toolbox talk, suitable hearing protection.		
16. Operations involving Vibration	Vibration	Damage to joints, muscles, circulation and sensory nerves.	M	Occupational hygiene survey report, medical surveillance, use of anti-vibration tools and equipment, anti-vibration gloves, monitoring exposure limit, isolation of vibrating source, mechanical control, employee education, hearing protective equipment.	L	-Constr manager -Constr supervisor -Safety officer -Occupational hygienist -Occupational Health practitioner
17. Working above / near water environments	Working at heights Water environment	Drowning	M	Fencing the area to prevent persons falling inside water, rescue plan, warning signage, rescue equipment, tests and inspections, issuing all workers in the area with life jackets, rescue personnel readily available	L	-Constr manager -Constr supervisor -Constr Saf officer -Emergency rescuers
18. Working near existing services – overhead/underground power cables; telecommunication cables	Electricity	Electrical Shock; Electrical arching; Fire; Burns Fatality	H	Create no-go buffer zone, were possible a request to put barriers from the municipal, Wayleaves, work permit system, updated drawings, high visibility warning signs, land surveying, lock out tag out system, were possible – live underground services to be temporarily turned off until a certain construction work is complete, personal protective equipment, solid barricade the area.	M	-Constr manager -Constr supervisor -Constr Saf officer -Excavation super -electrical engine -electrician -members of the community

		Serious injury			
19. Working with portable electrical equipment – grinders, circular saws, generators	Electricity Electrical tools Portable electrical equipment	Electrical shock Cuts Personal injuries	H	Equipment user manual, Compete person to be appointed, pre-work daily inspection, electrician to assist on faulty equipment, proper storage, labeling, on the job training. Personal protective equipment.	M -Constr manager -Constr supervisor -Constr Saf officer -Port elect inspect -User
20. Lifting / Lowering operations	Elevated objects Lifting machines Improper rigging Electrical cables	Lifting machine / crane overturning; Falling objects Dropped loads Strong winds Loads striking personnel, vehicles or equipment. People working underneath High voltage power lines may arch onto crane boom.	H	Lifting equipment inspection, valid load test, lifting equipment certificates, pre- work inspection, SWL to be applied before lifting work, rigger to coordinate and supervise operations medical fitness certificate; Pre work inspection, method statement, proper rigging tying methods Wind speed fitted ; solid barricading, visible warning signs, pre-work mobile plant inspection, Visible warning signage, toolbox talk, DSTI, method statement, access control; restriction of underneath work; Restriction of lifting/ lowering operations in high risk areas. Permission, compliance to permit conditions	M -Constr manager -Constr supervisor -Constr Saf officer -Electrical engineer -Rigger -Operator

21. Driving and operation of construction vehicles and mobile plant	<p>Distracted drivers;</p> <p>Recklessness;</p> <p>Impaired driving;</p> <p>Poor visibility;</p> <p>Poor road conditions; Unsecured loads;</p> <p>Uncontrolled vehicle entry;</p> <p>Equipment failure;</p> <p>Public vehicles; Uneven ground surfaces</p>	<p>Fatalities;</p> <p>Serious injuries;</p> <p>Crashes;</p> <p>Vehicles, plant and equipment damage;</p> <p>Workers not seen by operators;</p> <p>Workers working too close to mobile plant and vehicles;</p> <p>Construction vehicles & mobile plant not road worthy / defective; Roll over of construction vehicles / plant.</p>	H	<p>Transportation policy, toolbox talk, DSTI, pre-work inspection, speed governing;</p> <p>Construction vehicle/ mobile plant to be of acceptable design and construction toolbox talk, DSTI, disciplinary measures;</p> <p>to be used according to their design, operator competency, medical fitness to operate;</p> <p>vehicle spotter to assist operator when he can't see beyond;</p> <p>restrict works close to the movement of mobile plant,</p> <p>ensure all vehicles and plant road worthiness;</p> <p>use of stoppers on vehicles and plant, access control.;</p> <p>Pre work inspection, on site mechanic</p> <p>All vehicle and plant to be tested for road worthiness;</p> <p>Transportation policy, speed limit govern device, toolbox talk , DSTI.</p>	M	<p>-Constr manager</p> <p>-Constr supervisor</p> <p>-Constr safety off</p> <p>-Constr veh oper</p> <p>-Constr plant oper</p>
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<p>22. Excavation work</p>	<p>Unstable ground Underground electrical cables;</p> <p>Underground pipelines; Excavation equipment, construction vehicles & plant.</p>	<p>Cave-ins; People falling into excavation; Workers buried in excavation due to cave-ins;</p> <p>Construction vehicles / plant falling into excavation; Fatalities; Serious injuries</p>	<p>H</p>	<p>GPR scanning, Pre-work inspection by competent person, Pre-work information – GPR scanning, updated drawings, wayleave, work permit, lock out tag out system; municipal electrical department to provide further information, sloping and shoring, removing of excavated material on the edges, compliance to permit conditions, permission to work, method statement, sufficient warning signage, barricade with orange barricading net, use ladder/ safe access and exit;</p> <p>Sewer/ water department to provide further info, competent person to be present during operations, plant and tools pre-work inspection, barricading the work area, high visibility of warning signage, access control, wayleave, method stamen, ;</p>	<p>M</p>	<ul style="list-style-type: none"> -Constr manager -Constr supervisor -Constr Saf officer -Excavation supupervisor -Electrical engineer
<p>23. Work adjacent or near traffic</p>	<p>Public vehicles</p>	<p>Workers not attentive to approaching vehicles.</p> <p>Drivers not slowing down to indicated speed limit. Drivers losing control of their vehicles.</p>	<p>H</p>	<p>Approved drawings, toolbox talk, DSTI, traffic safety personnel, TORT liability, approved method statement & traffic management plan, , wayleave,</p> <p>Make members of the community aware of the risks, High visibility clothing, temporary traffic signage flag person, speed reduction devices, reduction of traffic delays, pedestrian walkways, pedestrian crossing</p>	<p>M</p>	<ul style="list-style-type: none"> -Constr manager -Constr supervisor -Constr saf officer -Traffic saf officer -Local traffic dept

19. Work adjacent to public property	Construction plant and equipment; Excavation activities; Demolition activities;	Injury to public persons; Damage to public property and assets;	M	Public awareness and education, Pre- work information - updated drawings, GPS scanning, Wayleave, safe guarding of public property, barricading the work area, high visibility of warning signage, access control.	L	-Constr manager -Constr supervisor -Constr saf officer
20. Protection of public H&S	Unprotected temporary works; Stockpiles; Incomplete structures.	Public persons accessing construction area, stockpiles and incomplete structures. Fatality / Serious injury to public persons	H	Public awareness and education, High visibility clothing, Safeguarding of work areas, day/ night access control, work areas restriction, Solid barricade of pedestrian walkways, pedestrian crossing, stop and go were necessary, speed reduction, temporary road signage,	M	-Constr manager -Constr supervisor -Constr saf officer -traffic safety off -flag persons
21. Welfare facilities – drinking water; eating facilities; sanitary facilities	Water not suitable for human consumption; Shortage of water; Hazardous substances; Environmental impact.	Serious health effects; Dehydration Environmental pollution	M	Water sampling treatment test results, permit to water and sanitation connection, proof of water quality as per water services Act 108 of 1997; Suitable Eating areas will be created as per construction regulations 30, sanitary facilities to be provided as per construction regulations 30.	L	-Assigned person -Constr manager -Constr supervisor -Constr saf officer -Dept of water and sanitation
22. Working in the environment	Bees Snakes Spiders Lighting Strong winds Heavy rain Hot/cold conditions	Poisoning; Fatality / Serious health effect; Electrical shock / burns; Personal Injuries; Slips; Drowning; Heat exhaustion; Dehydration;	M	Clearing of the work areas with plant, approved and authorized contractors to perform routine insect and reptile repellent chemicals, pest control, trained snake and reptile catchers; Safeguarding of work environment; Reflective hats to be issued to all workers, Issuing of life jackets, DSTI, on-	L	-Constr manager -Constr supervisor -Constr saf officer

				the job training, water distribution stations in work stations.		
23. Unforeseen/ acts of nature/ pandemic	Hazardous biological agents	Serious health effects; Fatality; Pandemic; Epidemic	H	Pre work medical tests, routine tests on hazardous biological agents – micro-organism, cell or organic material with plant, animal or human origin; Information and training; Monitoring exposure, control of exposure, handling, storage and disposal of HBA to be in accordance with regulations of HBA.	M	-Constr manager -Constr supervisor -Constr saf officer

RISK ASSESSMENT RISK RATING

Evaluation – Risk ranking / matrix

PROBABILITY & FREQUENCY	SCORE
NEGLIGEABLE	1
LOW	2
MEDIUM	3
HIGH	4
MAJOR	5

A. Probability

SERVERITY	SCORE
NEGLIGEABLE	1

LOW	2
MEDIUM	3
HIGH	4
DEFINITE	5

A. Severity

PROBABILITY	DEFINITE	5	5	10	15	20	25
	HIGH	4	4	8	12	16	20
	MEDIUM	3	3	6	9	12	15
	LOW	2	2	4	6	8	10
	NEGLIGEABLE	1	1	2	3	4	5
RISK ASSESSMENT MATRIX			1	2	3	4	5
			NEGLIGEABLE	LOW	MEDIUM	HIGH	MAJOR
			SERVERITY				

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