

**HEALTH, SAFETY & ENVIRONMENT
CONSTRUCTION BASELINE RISK ASSESSMENT**



GA Environment

BASELINE SAFETY, HEALTH & ENVIRONMENTAL (SHE) RISK PROFILE FOR CoCT- CLEANING OF SEWER INFRASTRUCTURE BY MECHANICAL MEANS

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
			LOW	MEDIUM	HIGH
Site establishment	Off-site transportation accidents	Project completion, disruption, fatalities and property damage			
	No notice of arrivals on-site	Delays, resulting with loss of production time		9	
	Incorrect loading & off-loading	Injuries / Unsafe work practices		6	
	Use of unsafe lifting equipment resulting to equipment failure	Death, injury and damage to property			12
	Unsafe stacking and storage practices	Damage to property, injury to people	5		
	Conducting work activities on poor ground conditions	Damage to property, injury to people	3		
	Hoarding and Barricading public access	Public Liability		10	
	Speeding and movement of vehicles on poor ground conditions	Damage to property, injury to people		8	
	Vehicles in substandard conditions	Property damage, damage to surroundings and personnel injuries			12
	Unsafe/Unsecured storage of equipment and materials	Property damage, disruption		6	
	Provision of inadequate/substandard ablution facilities and disposal of sewerage	Spillages, unhygienic conditions resulting in disease	5		
Provision of inadequate facilities (sheltered eating areas, lockers, etc.)	Poor facility management		6		
Boundary & Access Control / Public Liability Exposure	Unauthorized access of kids to construction site	Fatality, Injury to people			15
	Unaccompanied visitors/persons moving on construction site	Fatality, Injury to people			15
Excavations Trenching & Working in Trenches	Employees not visible to operators/moving machinery	Accidents resulting in death or injury			16
	Excavations conducted without supervision of competent person	Injury to people, damage to property		10	
	Inadequate shoring or bracing of excavation works	Sliding of ground resulting in death or injury			15
	Unsafe usage of hand tools (picks, shovels) when conducting excavation work	Injury to other workers as a result of overcrowding		6	
	Access in and out of trenches not provided with ladders, etc.	Escape routes not available in the event of an emergency		10	
	Presence of overhanging rocks or poor soil conditions	Collapsing of walls, falling objects resulting in injury to people			12
	Presence and/or operation of vibrating machinery close to trenches	Collapsing of walls resulting in injury to people		9	
	Overcrowding of workers in trenches	Injury to other workers as a result of overcrowding		8	
	Excavations not adequately barricaded	Employees falling and vehicles driving into excavations resulting in injury or damage to property		8	
	Failure to comply with SHE specifications	Damage to property and rework		6	
	Confined space	inundation, Fatality			16
	Spoil and back fill ground.	Injury to workers. Slipping and Falling	4		
	Slippery, uneven surfaces and tripping hazards	Injury to workers. Slipping and Falling	5		
	Inadequate barricading of excavations, unauthorized access to excavations	Injury to people		8	
Backfilling in Trenches	Wearing of inadequate and incorrect PPE during operations	Injury to people	4		
	Collapsing of trenches during backfilling operations	Death, falling, injury to people			16
	Trenches not cleared and unmanned before backfilling commences	Death, injury to people as a result of being buried			20
	Presence and/or operation of vibrating machinery close to trenches	Collapsing of walls resulting in injury to people		8	
	Presence of overhanging rocks or poor soil conditions	Collapsing of walls, falling objects resulting in injury to people		8	
	Access in and out of trenches not provided with ladders, etc.	Escape routes not available in the event of an emergency		6	

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
	Hand tools damaged, splintered, unmaintained and not inspected	Injury to hands, e.g. splinters and body as a result of damaged hand tools	5		
	Overcrowding of workers in trenches	Injury to other workers as a result of overcrowding		6	
	Employee census not conducted when working in trenches	Not extracting buried persons in time due to not knowing where they worked.			16
Dealing with and identification of existing services	Major power/water services failure	Loss of production time		9	
	Unidentified existing infrastructure	Injuries and damage to property		9	
	Bursting pipe	Flooding		10	
	Electrical cables	Electrocutions, Power outage, Public interference,			15
	Subsiding surfaces	Injury to people and damage to property		8	
	Opening/Damage to sewage pipes and exposure to raw sewage	Exposure to employees and public			12
Work in the vicinity of neighbouring buildings and structures	Damage to surrounding property as a result of construction activities	Injury to people and damage to property		8	
	Ecological disturbance as a result of dust and other Total Solid Particle emissions depositing on adjacent properties	Air & Soil pollution		6	
	Noise pollution as a result of construction activities	Noise pollution		6	
	Contaminated storm-water runoff from site onto adjacent properties	Surface water and soil pollution		6	
	Dumping of wastes and other materials on surrounding land uses. Visual disturbances.	Waste generation & disposal	5		
	Uncontrolled access of other parties to construction premises	Injury to people		10	
Movement of and working with construction vehicles	Usage of unsafe, unmaintained vehicles	Injury to people, damage to property		9	
	Pedestrian accidents and collisions of vehicles	Injury to people, damage to property		9	
	Plant colliding into co workers working on site	Injury to employees, damage to plant			12
	Speeding of construction vehicles on school	Injury to people, damage to property , fatality			20
	Passengers falling from truck	Injury to people		9	
	Unauthorized driving / operating of vehicles	Accidents, collisions, injury to people, damage to property		10	
	Unskilled/ trained operators	Accidents, collisions, injury to people, damage to property		10	
	Overloading of vehicles	Accidents, collisions, injury to people, damage to property		8	
Confined spaces	Entering manholes and pipes	Injury to employees			12
	Failure of equipment	Exposure to fumes or gases.			12
	Insufficient emergency assistance	Exposure to dust and low oxygen levels			12
		Exposure to animals living in confined space			12
		Failure in equipment resulting in injury to people and damage to property			15
	Insufficient emergency equipment			15	
Fuel storage & supply	Fuelling of engines while running	Sparks, explosion causing injury to people		9	
	Spillages of fuel during refuelling operations	Environmental pollution		6	
	Smoking or fires during refuelling operations or at fuel storage tanks	Open flames, explosion causing injury to people & damage to property		10	
Health hazards Hazardous Chemicals Hydro Carbons Paints, thinners etc.	Exposure to insects, bees, snakes, rats etc.	Bites, stings, etc.		10	
	Exposure to raw sewage and hazardous biological agents	Exposure to employees and public			12
	Exposure to gases and fumes in working environment	Inhalation resulting in breathing problems		6	
	Exposure to extreme temperatures in working environment	Dehydration, cold		8	
	Exposure to noise	Noise induced hearing loss		6	
	Exposure to dust and total solid particles	Inhalation resulting in breathing problems	5		
	Exposure to vapours or explosions	Inhalation resulting in breathing problems. Explosions resulting in death, injury to people & excessive damage to Property.		10	
	Exposure to vibration	Injury to people		6	
	Ergonomic hazards from manual handling & mechanical operations	Back strains, backaches, spasms, etc.		8	
Night work	Inadequate illumination to perform work activities	Injury to people, damage to property		6	

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
	Fatigue	Injury to people, damage to property		6	
	Lack of supervision	Injury to people, damage to property		8	
	Security	Security uncontrolled access. Theft, Sabotage, Damage to property. Personal injury. Liability claims		8	
Use of hand tools	Use of substandard/broken hand tools	Injuries and damage to property		8	
	Misuse of hand tools by untrained personnel	Injuries and damage to property		6	
	Tools falling from heights as a result of not being adequately secured	Injuries and damage to property			12
Emergencies Fire fighting and Fire prevention	Inadequate fire fighting equipment provided of suitable capacity and located at suitable locations	Fires burning out of control resulting in injury to people and/or damage to property		8	
	Fire fighting equipment not maintained and serviced	Death and/or injury to people due to failure of fire fighting equipment		9	
	Fire fighting equipment not accessible and unobstructed	Death and/or injury to people due to inaccessibility of fire fighting equipment		9	
	Application of incorrect type of fire fighting equipment on various type of fires	Electrocution, increased spreading of fires, explosions, etc.			12
	Misuse or damaging of fire fighting equipment by employees	Death and/or injury to people due to failure of fire fighting equipment		6	
	Fire team members untrained, unfamiliar with emergency procedures and alert	Slow response from fire fighting team resulting in deaths, injury to people and excessive damage to property		9	
	Excessive smoke emissions from fires	Smoke inhalation resulting in suffocation			12
	Excessive smoke emissions from fires	Air pollution		6	
	Excessive heat emissions from fires	Death, burns, injury to people & damage to property			12
	Disposal of waste, ash and coal after fire is extinguished	Waste generation & disposal		5	
	Usage of water from hydrant during fire fighting operations	Depletion / Use of natural resources		3	
	Contaminated water runoff from emergency scene	Surface water & soil pollution		3	
	Fire fighting done without or with incorrect PPE	Death, burns, injury to people		8	
	Stress, trauma during fire fighting operations	Psychological effect on fire fighters, e.g. depression		8	
	Explosion of combustible or flammable materials during emergency situations	Explosions, deaths, injury to people & excessive damage to property			15
Smoking and burning cigarette butts on site	Starting of fires as a result of poor smoking management		5		
Hysteria due to panic state during fire emergency situation as a result of lack of emergency drills	Long-term psychological effects on employees, e.g.. depression, fear as a result of emergency situation			6	
Flanges	Burns			6	
Adjacent land users & Surrounding property exposures	Damage to surrounding property as a result of construction activities	Injury to people and damage to property		8	
	Ecological disturbance as a result of dust and other Total Solid Particle emissions depositing on adjacent properties	Air & Soil pollution		4	
	Noise pollution as a result of construction activities	Noise pollution		5	
	Contaminated storm-water runoff from site onto adjacent properties	Surface water and soil pollution		5	
	Dumping of wastes and other materials on surrounding land uses	Waste generation & disposal		5	
	No rehabilitation of area	Legal action against company		5	
Loading & Off-loading of trucks - Aggregate/sand and other materials delivery	Movement of vehicles and pedestrians on construction site	Accidents, injury to people as a result of moving traffic onsite		6	
	Inadequate directional and traffic signs	Accidents, injury to people and damage to property as a result of inadequate directional and traffic signs		6	
	Inadequate warning systems in place when reversing and off-loading	Accidents, injury to people and damage to property as a result of poor warning systems		9	
	Collision with skips and other equipment	Injury to people, damage to property		8	
	Load throws as a result of poor driving	Injury to people, damage to property and loss of raw materials		5	
	Load throws as a result of poor road conditions	Injury to people, damage to property and loss of raw materials		5	
	Unsafe Stacking and Storage	Accidents, injury to people and damage to property as a result of poor stacking and storage discipline systems		6	
	Spillages from materials	Waste generation & disposal		5	

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
Use of portable electrical equipment: Electrical drilling machine	Portable electrical equipment damaged or electrical wiring exposed	Injury to people due to failure in portable electrical equipment		9	
	Plug and electrical cord damaged, uncovered or incorrectly wired	Electrical shock		9	
	Connecting portable electrical equipment to electricity supply while switched on	Uncontrolled operation of portable electrical equipment resulting in injury to people and/or damage to property		6	
	Operating portable electrical equipment close to water or other conducting environments	Electrical shock from electrical current		9	
	Usage of wrong drill bits/discs for the type of material	Breaking of drill bits resulting in uncontrolled flying objects resulting in injury to people and/or damage to property		6	
	Long extension cords lying around operator while using portable electrical equipment	Cluttered working environment causing tripping or falling		5	
	Dust and other solid particles emitted/flying into surrounding atmosphere	Inhalation of excessive dust, particle emissions by operator		6	
	Noise generated	Excessive noise emissions resulting in decline of hearing ability (Noise induced hearing loss)		9	
	Operator operating portable electrical equipment without or with wrong PPE.	Injury to eyes, hands and feet		9	
	Working in hard to reach (narrow, high) places requiring crouching or stretching	Excessive repetitive crouching and stretching resulting in permanent back muscle injury		8	
Flammable liquid, oil & paint storage areas					
	Storage and transportation of flammable/hazardous chemicals & products	Fire risk, injury to people & damage to property		8	
	Accumulation of waste and debris in areas	Waste generation & disposal		4	
	Provision of inadequate ventilation system	Fire risk, injury to people & damage to property		9	
	Inadequate Symbolic safety signs & notices	Ensure adequate symbolic safety signs & notices are displayed		8	
	Fire fighting equipment, systems, etc. not inspected and maintained	Fire fighting equipment, systems, etc. not inspected and maintained		10	
	Spillages from paints, chemicals & wastes	Surface water pollution		8	
	Chemical gas and fume emissions from chemicals, oils & paints	Respiratory injuries and diseases		8	
	Incorrect usage of Personal Protective Equipment. No MSDS.	Injury to people		9	
	Poor housekeeping practices in area	Fire risk, injury to people & damage to property		6	
	No provision made to prevent any means of fire, flame or naked light or anything which may generate static electricity or anything which may ignite a flammable liquid or its vapour, to be used or taken into storage area	Fire risk, injury to people & damage to property		10	
	No prevention of smoking in areas where flammable liquids are stored	Fire risk, injury to people & damage to property		9	
	No provision made for the prevention of the accumulation of combustible materials	Fire risk, injury to people & damage to property		8	
All containers and drums containing flammable liquids are not tightly sealed when not in use	Fire risk, injury to people & damage to property		6		
Lifting equipment.	Failure in lifting equipment due to poor maintenance and inspections	Failure in equipment resulting in injury to people and damage to property			16
	Wrong lifting equipment used	Injury to people, damage to property		8	
	Rigger not competent	Injury to people, damage to property		10	
	Not wearing correct P PE	Injury to people.		6	
Fabricate and modifying piping	Nip points.	Injury to people		5	
	Incorrect and unsafe material handling.	Damage to property, injuries to people		6	
	Poor communication.	Damage to property, injuries to people		5	
	Restricted access.	Damage to property, injuries to people		8	
	Substandard house keeping, tripping and slipping hazard.	Injury to people		5	
	Unsafe stacking of material.	Injury to people		5	
Exposure to Raw sewage	No pipe supports (Trestles)	Damage to property, injuries to people		6	
	Damage to sewer pipes	Exposure to employees and public. Employees to wear personal samplers, respirators, goggles, elbow rubber gloves and specilized overall and rubber gumboots			12

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
	Blockages	Exposure to employees and public. Employees to wear personal samplers, respirators, goggles, elbow rubber gloves and specilized overall and rubber gumboots			12
	Entering sewer manhole	Injuries and exposure. Employees to wear personal samplers, respirators, goggles, elbow rubber gloves and specilized overall and rubber gumboots			12
	Spillages during pumping	Injuries and exposure to employees and public. Employees to wear personal samplers, respirators, goggles, elbow rubber gloves and specilized overall and rubber gumboots			12
Install piping	Unsafe material handling practices.	Damage to property, injury to people		6	
	Nip points	Injury to people	5		
	Poor communication between workers.	Damage to property, injury to people		8	
	Pipes falling from position (not secured)	Damage to property, injury to people		9	
	Overhead work	Damage to property, injury to people		9	
	Substandard, incorrect and faulty lifting tackle and equipment.	Damage to property, injury to people		10	
	Incorrect use of lifting tackle and equipment	Damage to property, injury to people		10	
	Incompetent people performing task	Damage to property, injury to people		8	
Unsafe lifting practices.	Damage to property, injury to people		10		
Tie into existing services	No permit to work	Damage to property, injury to people		10	
	No lock out procedures followed	Damage to property, injury to people			12
	Unsafe material handling practices	Damage to property, injury to people		6	
	Nip Points	Injury to people		6	
	Poor communication between workers.	Damage to property, injury to people		8	
	Pipes falling from position (not secured)	Damage to property, injury to people		9	
	Contaminating liquid leaks out of existing (old) services Lines not perched	Injury to people, environmental		8	
	Tie in into wrong services	Damage to property, injury to people		8	
	Not wearing proper P PE	Injury to people		6	
Commissioning, Clean area and equipment	Working on live pipe lines, valves, pumps and machinery	Damage to equipment, injury to people		9	
	Lock out procedures not followed	Damage to equipment, injury to people			16
	Incompetent workers	Damage to equipment, injury to people		6	
	Not wearing proper P PE	Injury to people		6	
Pressure Testing.	Incompetent workers	Damage to property, injury to people		6	
	No safe work procedure and method statement	Damage to property, injury to people		6	
	Faulty pressure testing equipment	Damage to property, injury to people		8	
	Not wearing proper P PE	Injury to people		6	
Water Management	Incompetent person to identify potential drowning areas (No Plan)	Drowning		10	
	Working in water without assistance	Drowning		8	
	People working in water that can not swim	Drowning			15
	Slip, trip and fall on slippery surfaces when working in or near water	Drowning		6	
	Confined spaces containing water	Drowning			15
	Vehicle accidents into water	Drowning		8	
	No life savings equipment, life jackets etc.	Drowning		9	
	Wrong PPE	Drowning		10	
	Storms, floods	Drowning		10	
	Mud/Slurry	Suffocate		8	
	In rushes	Drowning, Suffocate		10	
	Electricity	Electrocution			15
Pressure vessels / Compressors	Incompetent workers	Injury to people		10	
	Not wearing proper P PE	Injury to people		10	

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
	No valid test certificate	Explosion, Fatalities		10	
	Max pressure not marked on gauge	Explosion, Fatalities			15
	Hoses/Pipes in poor condition	Burst, injury to people		8	
	No fire extinguisher	Fire, injury to people		8	
	Substandard equipment	Injury to people		8	
	Vibration	Injury to people	5		
	Ergonomics / wrong body position	Injury to people		6	
	Noise	Possible deaf		8	
	No per-use inspection	Injury to people			12
	No whiplash slings attached to hoses	Injury to people			
Transporting of employees with company vehicles	Unroadworthy vehicle	Damage to property, injuries to people and multiple fatalities		10	
	Driver driving under the influence	Damage to property, injuries to people and multiple fatalities		10	
	Driver driving negligently	Damage to property, injuries to people and multiple fatalities		10	
	Driver speeding	Damage to property, injuries to people and multiple fatalities		10	
	Accident with third party	Damage to property, injuries to people and multiple fatalities		10	
	Unauthorized use of vehicle	Damage to property, injuries to people and multiple fatalities		10	
	Driver fatigue	Damage to property, injuries to people and multiple fatalities			
Stacking & Storage of materials	Base is not level and not capable of sustaining the weight exerted on it by the load	Unbalanced materials could fall onto employees		6	
	Pallets and containers are in a poor condition that the weight of the load is exerted on	Unbalanced and materials stacked to high could fall onto employees		6	
	Employees climbing onto an unstable stack	Employees falling from heights and incurring serious injuries		10	
	Stacks that are in danger of collapsing are not dismantled immediately	Unbalanced and materials stacked to high could fall onto employees		10	
	Stacks are placed in the direct travel path of vehicles and plant and are not placed within a demarcated area	Damage to property, injuries to people and fatalities		8	
	The height of the stack exceeds three times the width of the base	Loads falling over and falling onto employees, serious injuries and fatalities		10	
Use of step ladders and extension ladders	Ladders not constructed of sound material and not suitable for the purpose it is to be used	Serious injuries to people and fatalities		10	
	Ladders are not lashed, held or secured whilst being used to ensure the stability of the ladder	Serious injuries to people and fatalities		10	
	Ladders not fitted with non skid devices at the bottom ends and hooks at the upper ends	Serious injuries to people and fatalities		8	
	Utilizing ladders in excess of 9 meters which is leaned against a structure or object	Serious injuries to people and fatalities			12
	Wooden ladders are painted, obscuring possible defects and damage	Serious injuries to people and fatalities		8	
	A ladder in excess of 5 meters is set up against a vertical structure with an inclination to the horizontal level of 75 degrees has its rungs placed less than 150mm away from the structure	Serious injuries to people and fatalities			12
	Does not protrude 900 mm above a landing and is not suitably fixed to ensure stability	Serious injuries to people and fatalities		10	
Shoring Erecting, Dismantling and the access thereof	Shoring collapsing are a result of inadequate design/erection	Fatalities, serious injuries and damage to property			20
	Using substandard shoring,bracing and untrained personnel falling from heights(excavation deeper than 1m)	Fatalities and damage to property			20
	Unskilled erectors, inspectors. Lack of planning.	Fatalities, serious injuries and damage to property			15
	Faulty, damaged and poor quality material	Fatalities, serious injuries and damage to property			15
	Unsafe inadequate access.	Fatalities, serious injuries and damage to property			15
	Equipment, material falling from edge	Fatalities, serious injuries and damage to property			16
	Inadequate/ unsafe edge protection	Fatalities, serious injuries and damage to property			20
	Inadequate safety signs and notices	Injuries and damage to property		10	
Work in fall risk position	Unsafe access resulting in personnel falling from heights	Fatalities and property damage			20

ACTIVITY	HAZARD / SOURCE	RISK	ASSESSMENT OF RISK		
	No fall protection plan	Non Conformance. Legal action.		9	
	Personnel falling from heights due to unprotected edges. Unsafe barriers, barricading and edge protection	Fatalities and property damage			16
	Inadequate emergency , recovery plan.	Fatalities and property damage			15
	Personnel not using safety equipment (Untrained, poor quality, wrong application, negligent, fall arrest equipment, not inspected)	Fatalities and property damage			15
Welding operations	Operating of welding machinery by untrained personnel	Injury to people, damage to property		6	
	Welding machinery not inspected and maintained	Injury to people, damage to property		8	
	Operator not in visual contact with welding equipment at all times	Electrocution, fire, injury to people & damage to property		9	
	Usage of unapproved/insulated welding cables	Burns, injury to people		10	
	Welding machinery not earthed	Shocks			12
	Welding area not secured and well ventilated	Exposure to gases and fumes, exposure to other workers resulting in injuries		9	
	No use or use of inadequate/wrong PPE	Injury to people		6	
	Welding machinery not manned while in operation	Explosions, deaths, injury to people & excessive damage to property		8	
Use of angle grinders.	Inadequate inspection on grinder.	Damage to equipment, injury to people		10	
	Incompetent employee	Damage to equipment, injury to people			12
	Incorrect disc	Injury to people			15
	Defective or inadequate tools / guards.	Injury to people			15
	No dead man switch	Injury to people		10	
	Not wearing proper PPE.	Injury to people		10	
	No screens.	Radiation		9	
	Electric cables not routed correctly.	Injury to people		8	
	Sub-standard working conditions - Wet, slippery, windy, dusty work conditions.	Injury to people		9	
	Poor lighting.	Injury to people		6	
Contractor interface	No communication	Damage to property, injuries to people and fatalities		6	
	Overhead work	Damage to property, injuries to people and fatalities		6	
	No safety documentation submitted for approval prior to work commencing	Injury to people		10	
	Lifting and slewing	Damage to property, injuries to people and fatalities			12
	Portable electric equipment	Electrocution			12
	No handover and acceptance documentation in place	Damage to property, injuries to people and fatalities		6	