

Enterprises Division: Hazard Identification and Risk Assessment (HIRA)

Project / Dept:		Various Municipalities					Scope of Risk Assessment:	REPAIRS AND EXTENSION OF EXISTING RIPPLE SYSTEMS (HOT WATER LOAD CONTROL) IN SELECTED MUNICIPALITIES SYSTEMS GUIDE					Next Review Date:											
Date:		12.05.2021					Prepared by:	Thembinkosi Mbolekwa			Accountable Manager:		Thobela Lelibana & T Lekalakala											
1: Identify Hazards			2: Identify Risks					3: Analyse Risks							4: Evaluate Risks									
Hazard nr	Status	Hazard Identification	Risk Nr	Risk Owner	Associated risk	Abnormal Conditions	Cause(s) of the risk	What are the Consequences?	Existing Controls			Likelihood of the event and Consequence of each SHE element				Risk Priority Rating	Additional Controls		Likelihood of the event and Consequence of each SHE element				Risk Priority Rating	Monitoring Mechanisms
	Active / Closed / Draft	A hazard is anything that is likely to lead to an event that will have an adverse impact on achieving an objective. A hazard can pose more than one risk.		Who is accountable for making sure the controls and monitors are: - in place, - implemented, - regularly reviewed for effectiveness.	A physical event occurs in relation to the hazard	Indicate Yes or No. These short-term changes to conditions that could not be reasonably anticipated.	What causes the risk to come into effect?	What is the unexpected adverse impact on the objective?	Include: - Preventative Controls (actions taken to eliminate hazards or reduce the likelihood of the hazard occurring), and - Reactive Controls (action taken to reduce the immediate impact of the hazard occurring)	RCE Risk Control Effectiveness	LIKELIHOOD	Safety	Health	Environmental	LIKELIHOOD		Safety	Health	Environmental	How we know if we are succeeding. Include comments on effectiveness. This may include Health Risk Assessments where necessary.				
1		Moving Machinery, Trackless Mobile Equipment & Transportation		Construction Manager	Mechanical Failure	Yes	Inadequate Maintenance, Misuse, Inferior parts & components, No inspections	Fatality, LTI, Medical treatment, Damage, Financial & Production loss	Planned Maintenance Program, Inspections, Legislation, Competent Personnel, Standards & Procedures, Training, Risk Assessments,	P	D	6	4	4	I	Legal Compliance Audits - (Internal & External), SHE Awareness Campaigns, Random Inspections, Driver Evaluation, Issue Vehicle Compliance Disks, Tagging	A	6	4	4	III	Audits, Assessments & Reports		
				Construction Manager	Traffic Violations	Yes	Recklessness, Ignorance, Emergencies, Substance abuse, Stress, Fatigue, etc	Fatality, LTI, Medical treatment, Damage, Financial & Production loss	Legislation, Competent Drivers / Operators, Standards & Procedures, Training, Risk Assessments,	I	E	5	4	4	I	SHE Awareness Campaigns, Driver Re-evaluation,Life Saving Rules, De-merit System, Speed Trapping	A	5	4	4	III	SHE Observations & Reports		
				Construction Manager	Adverse Weather Conditions	Yes	Natural Causes	Fatality, LTI, Medical treatment, Damage, Financial & Production loss	Weather Stations, FDI Communication	P	D	4	2	1	I	SHE Awareness Campaigns, Communication, Work Stop Rules, EPP	B	4	2	1	III	Observations & Maintenance of Weather Stations		
				Construction Manager	Road & Ground Conditions	Yes	Overuse, Poor Construction & Maintenance, Adverse Weather	Fatality, LTI, Medical treatment, Damage, Financial & Production loss	Training, Medical Surveillance, Access Control, Inspections & Maintenance, Dust Suppression, PPE	P	B	5	5	1	II	Silica Monitoring	A	5	5	1	III	Audit Results		
				Construction Manager	Overloading	Yes	Production Pressure, Time delays, Inadequate planning, Poor supervision	Fatality, LTI, Medical treatment, Damage, Financial & Production loss, Environmental Pollution, Spillage	Weighbridge, Standards & Procedures, Supervision, Manufacturers Specifications, Training	P	E	4	1	1	I	Training, Inspections & Observations, Non conformance penalties, Load containment, Maintenance of	C	4	1	1	III	Planned inspections, PTO's,		
				Construction Manager	Accidents	Yes	Traffic Violations, Reckless Driving, Use of poorly maintained machinery/equipment/transportatio	Fatality, LTI, Medical treatment, Damage, Financial loss	Legislation, Competent Drivers / Operators, Standards & Procedures, Training, Risk Assessments, Traffic rules, Planned maintenance	P	D	5	1	4	I	Life Saving Rules,Training, Inspections &	B	5	1	4	II	Planned inspections, PTO's		
				Construction Manager	Loading & Offloading	Yes	Incorrect methods, Inadequate equipment	Fatality, LTI, Medical treatment, Damage, Financial & Production loss, Environmental Pollution, Spillage, Product losses	Legislation, Competent Drivers / Operators, Standards & Procedures, Training, Risk Assessments, Traffic rules, Supervision	P	D	4	1	1	I	PTO's, Revisions of Procedures and Standard, Inspections, Making use of Mechanical Equipment	B	4	1	1	III	Planned inspections, PTO's, Constant Supervision.		
				Construction Manager	Fatigue	Yes	Extended work hours, Over exertion, Intoxication & Physically unfit	Fatality, LTI, Medical treatment, Damage, Financial & Production loss	Legislation, Alcohol testing, Supervision, Shift work	P	D	4	2	1	I	Employee and Mangemen,t Close Monitoring and Time Management, Work Rest Periods, Management	B	4	2	1	III	Planned inspections, PTO's, Constant Supervision.		
				Construction Manager	Competency & Training	Yes	Inferior training provider, New Employees	Fatality, LTI, Medical treatment, Damage, Financial loss	Legislation, Standards & Procedures, Supervision, HR processes, Competency evaluation, Registration bodies, Vendor listing & evaluation, Medical Surveillance	P	B	5	5	5	II	Revision of training Programmes, Experienced Employees, Critical Task Inventories & Analysis, Training Needs & Analysis	A	5	5	5	III	Appropriate Training Needs Analysis, Skills Audits & Frequent Spot Checks		
				Construction Manager	Substance Abuse	Yes	Addictions, Lack of Stress Management, Social Behaviour, Indaquate Control Measures	Fatality, LTI, Medical treatment, Damage, Financial loss, Production loss	Legislation, Standards & Procedures, Supervision, HR processes, Medical screening, Alcohol testing, Security Control(Access and Random Surveillance)	P	B	5	3	1	II	Life Saving Rules, Employee Assistance programmes (EAP) Inspections & Observations	A	5	3	1	III	Audits, Inspection, Observation, Assessments & Reports		
				Construction Manager	Health Risks - (noise, vibration, dust, temperature, fumes, etc)	Yes	Not wearing PPE, Uneven road surfaces, Confined spaces, Poor ventilation	Hearing Loss, Occupational Diseases, Fatality, LTI, Medical treatment, Damage, Financial loss, Production loss	Legislation, Standards & Procedures, Supervision, HR processes, Competency evaluation, Medical screening, Alcohol testing, External & internal Auditing, Occupational Health & Hygiene surveys, Risk assessments & Training	P	B	2	4	4	III	Planned Maintenance Schedule, Dust Suppression, Road Maintenance	A	2	4	4	IV	Surveys, Audits, Inspections & Reporting		
				Construction Manager	Environmental Risk - (contamination)	Yes	Load Spillages, Oil & Fuel Leakages	Financial loss, Production loss, Legislation contravention, Damage to the environment	Legislation, Standards & Procedures, Supervision, Inspections, Environmental monitoring, Training, Environmental Management Plan, Planned Maintenance Schedule	P	C	5	5	5	II	Introduction & implementation of a penalty / fine system. Constant review of maintenance programs	A	5	5	5	III	Surveys, Audits, Inspections & Reporting		
9		Season Changes & Inclement Weather		Construction Manager	Inappropriate PPE	Yes	Inadequate PPE, Misuse or abuse of PPE, Insufficient Finance	Fatality, LTI, Medical treatment, Financial loss, Production loss, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Emergency preparedness, Inspections & observations, PPE Matrix	P	C	1	4	1	IV	Implementation of a PPE Matrix taking into account Inclement Weather & Thermal Variations in the Weather	B	1	4	1	IV	Inspections, Supervision, Weather Monitoring		

Risk Assessment Matrix									
Consequences	6	5	4	3	2	1	A	B	C
Likelihood	I	II	III	IV	V	VI	D	E	F

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				Construction Manager	Thermal Variations	Yes	Natural causes	Fatality, LTI, Medical treatment, Financial loss, Production loss	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Emergency preparedness	P	B	1	4	1	IV	Implement & Document an Emergency Preparedness Procedure	B	1	4	1	IV	Observations, Weather Monitoring
				Construction Manager	Inadequate Emergency Preparedness	Yes	No or insufficient training or communication	Fatality, LTI, Medical treatment, Financial loss, Production loss, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Emergency Preparedness Plan & Drills	P	B	5	2	4	II	Implement & Document an Emergency Preparedness Procedure	B	5	2	4	II	Monitoring, Supervision, Audits, Inspections, Emergency Drills
				Construction Manager	Inadequate Training & Awareness	Yes	No or insufficient training or communication, Language barriers	Fatality, LTI, Medical treatment, Financial loss, Production loss	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Emergency Preparedness Plan & Drills, Inductions	P	B	4	1	1	III	Implement & Document an Emergency Preparedness Procedure	B	4	1	1	III	Monitoring, Supervision, Audits
10		HCS & Gasses		Construction Manager	Inadequate & Inappropriate Storage, Handling & Transportation	Yes	Incompetent personnel, Incorrect or insufficient storage facilities, No or inadequate training & awareness	Fatality, LTI, Medical treatment, Financial loss, Production loss, Environmental , contamination, Product Loss , Explosions, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Surveys and Monitoring, Environmental Management Programme, Material Safety Data Sheets, Spill Kits	P	C	2	2	2	III	None Required	C	2	2	2	III	Inspections, Audits, Supervision
				Construction Manager	Inadequate Training & Awareness	Yes	Illiterate personnel, Language barriers, Inferior training provider, No MSDS's	Fatality, LTI, Medical treatment, Financial loss, Production loss, Environmental contamination, Product loss, Explosions, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Posters, Inductions, Inspections, Internal & External Audits	P	B	3	2	4	III	To implement & Training Needs & Analysis Procedure	A	3	2	4	IV	Inspections, Audits, Supervision
				Construction Manager	Inadequate Access Control	Yes	No or inadequate barricading & signage, No/Inadequate or inappropriate training & awareness, No security control, Inadequate lock out procedures	Fatality, LTI, Medical treatment, Financial loss, Production loss, Product loss due to theft & sabotage, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Signage, Security surveillance	P	C	4	4	4	II	None Required	B	4	4	4	III	Inspections, Audits, Supervision
				Construction Manager	Inadequate Emergency Preparedness	Yes	No risk assessment, Incompetent personnel, No or inadequate medical facilities, No or inadequate training, No Procedure	Fatality, LTI, Medical treatment, Financial loss, Production loss, Inability to cope with an emergency, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Emergency Preparedness Procedure & Drills	P	B	4	3	3	III	None Required	B	4	3	3	III	Inspections, Audits, Supervision, Emergency Drills
				Construction Manager	Fires, Explosions, Gas Emissions & Accumulations	Yes	Sabotage, Unauthorised access, No or inadequate signage/training & awareness, Incorrect storage methods, Insufficient monitoring	Fatality, LTI, Medical treatment, Financial loss, Production loss, Product loss, Environmental contamination, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Emergency Preparedness Drills, MSDS's, Gas monitoring, Internal & Extrenal Audits	P	B	4	4	3	III	None Required	B	4	4	3	III	Inspections, Audits, Supervision, Monitoring
11		Health & Hygiene		Construction Manager	Pest Infestations	Yes	No or inadequate hygiene, Poor housekeeping, No or inadequate fumigation	Fatality, LTI, Medical treatment, Financial loss, Production loss	Legislation, Supervision, Training & awareness, Occupational Hygiene & Safety inspections & assessments	P	C	1	2	1	III	Implement a Pest Control Porcedure	A	1	2	1	IV	Inspections, Supervision, Communication of Sitings
				Construction Manager	Inadequate Training & Awareness	Yes	Language barriers, Inadequate training materials, No or inadequate communication, Ineffective medical surveillance	Fatality, LTI, Medical treatment, Financial loss, Production loss	Legislation, Standards & Procedures, Supervision, HR processes, Vendor listing & evaluation, Inductions, Posters, Cleaning Staff	P	B	1	2	1	IV	None Required	B	1	2	1	IV	Inspections, Audits, Supervision, Monitoring
				Construction Manager	Noise, Dust, Excessive Vibration, Fumes, Poor Illumination	Yes	Mobile machinery, Adjacent farming activities, Gravel roads, No or inadequate dust suppression, No or inappropriate PPE usage	Fatality, LTI, Medical treatment, Financial loss, Production loss, Occupational diseases & disabilities, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Occupational Hygiene & safety inspections & assessments, Dust Suppression, PPE	P	B	4	5	3	III	None Required	B	4	5	3	III	Inspections, Audits, Supervision, Monitoring
				Construction Manager	Inadequate Monitoring	Yes	No or Incometent personnel, No/inadequate or faulty equipment, No Medical Facilities	Fatality, LTI, Medical treatment, Financial loss, Production loss, Occupational diseases & disabilities, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Calibration testing & maintenance, Risk Assessments, Occupational Hygiene Monitoring, Skilled Employees	P	B	4	4	2	III	None Required	B	4	4	2	III	Inspections, Audits, Supervision, Monitoring
				Construction Manager	Occupational Health Diseases	Yes	Noise, Dust, Vibration, Fumes, Illumination, No or inappropriate PPE, No or inadequate monitoring	Fatality, LTI, Medical treatment, Financial loss, Production loss, Terminal illnesses & disabilities, Legal Liabilities	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Occupational Hygiene Monitoring, Safety inspections & assessments, Dust PPE, Skilled Employees	P	B	2	5	1	IV	None Required	B	2	5	1	IV	Inspections, Audits, Supervision, Monitoring
12		Fires		Construction Manager	Smoke & Airborne Pollutants	Yes	Combustion of Materials & Natural elements, Poor Ventilation	Fatality, LTI, Medical treatment, Financial loss, Production loss, Pollution, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, PPE, Emergency Preparedness & Drills, Fire Fighting Teams, Fire Fighting Equipment & Vehicles, Fire Breaks, Skilled Fire Master, 3rd Party Fire Fighting Association Agreement	P	B	4	5	1	III	None Required	B	4	1	3	III	Inspections, Audits, Supervision, Monitoring, Fire Drills
				Construction Manager	Excessive Heat	Yes	Combustion of Materials & Natural elements	Environmental Damage, Fatality, LTI, Medical treatment, Financial loss, Production loss, Heat exhuation, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, PPE, Emergency Preparedness & Drills, Fire Fighting Teams, Fire Fighting Equipment & Vehicles, Fire Breaks, Skilled Fire Master, 3rd Party Fire Fighting Association Agreement	P	B	4	2	1	III	None Required	B	4	2	1	III	Inspections, Audits, Supervision, Monitoring, Fire Drills
				Construction Manager	Gas & Fuel Explosions	Yes	No or inadequate maintenance on equipment & machinery, Open cast mining activities, Destruction of old explosives, No or Inadequate Gas Monitoring & Gas Monitoring Devices, Lightning strikes	Environmental Damage, Fatality, LTI, Medical treatment, contamination, Damage, Power failures, Production loss, Financial loss, Legal Liability	Legislation, Standards & Procedures, Supervision, Training & awareness, Risk assessments, Fire breaks, Planned maintenance, Emergency Preparedness & Drills, Gas Monitoring Devices & Instruments, Inspections, Audits, Fire Fighting Teams, Fire Fighting Equipment & Vehicles, Fire Breaks, Skilled Fire Master, 3rd Party Fire Fighting Association Agreement	P	B	5	4	4	II	Implement a Fire Prevention Procedure	A	5	4	4	III	Inspections, Audits, Supervision, Monitoring, Fire Drills

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1	A	I	F	Active
2	B	II	P	Closed
3	C	III	I	Draft
4	D	IV	Ti	
5	E		N	
6				