Electrical Works
SHEQ Plan

KAMATECH
PROJECTS

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ELECTRICAL WORKS SHEQ PLAN

PRESENTED FOR

KAMATECH PROJECTS PVT LTD

COMPANY NAME	KAMATECH PROJECTS
CLIENT NAME	
SITE/ WORK LOCATION	
DESCRIPTION OF WORK	ELECTRICAL WORKS

	NAME	DESIGNATION	SIGNATURE	DATE
SHE Plan prepared by	P. S. Matira	SHEQ Consultant		30 May 2018
SHE Plan Approved by	N. Kanjanda	Managing Director		31 May 2018

CONTENTS

1.0 SAFETY, HEALTH & ENVIRONMENT POLICY STATEMENT

This is a written policy statement for KAMATECH PROJECTS with regard to its safety and health at work and environmental management as required by the Zimbabwe National Health and Safety Policy, ISO 45001:2018 and ISO 14001:2015 *(standards in which the policy manual was designed)* and is relevant to ALL company workers, customers and other stakeholders.

KAMATECH PROJECTS fully recognises its obligation to ensure that every reasonably practicable measure is taken in order to ensure health and safety of ALL its workers.

KAMATECH PROJECTS fully recognises its duties and responsibilities with regard to worker health and safety and environmental management therefore, it pledges commitment to;

a) Identifying ALL hazards and risks associated with KAMATECH PROJECTS operations.

b) Identifying ALL business aspects likely to impact the environment

c) Preventing work related injuries and ill-health.

d) Continual improvement, ensuring prevention of incident recurrence and guaranteeing that all nonconformities are corrected timely.

e) Comply with ALL current and applicable SHE legislation and other requirements to which the company subscribes to. The company is committed to continuous review of such legislation and update of its legal register.

f) Review the policy after every twelve months and making changes wherever necessary.

g) Ensure health & safety training is provided for ALL workers and promote health and safety awareness to KAMATECH PROJECTS stakeholders.

The Managing Director is responsible for health and safety of workers within the company. The Managing Director is also responsible for making sure resources are made available for workers to ensure effective safety health and environment management. The SHE officer is the appointed SHE personnel, responsible for caretaking ALL SHE concerns at the company and site and reports directly to the Managing Director.

SIGNATURE: ..... **DATE:** 30 MAY 2018

NAME IN PRINT: ENG. NISBERT KANJANDA

DESIGNATION: MANAGING DIRECTOR

POLICY REVIEW DATE: 01 APRIL 2019

2.0 INTRODUCTION

The SHE Plan is prepared to provide KAMATECH PROJECTS workers with a comprehensive guideline document which incorporates simple instructions related to the implementation of SHEQ rules and correct workmanship practices corresponding to the contractual requirements.

3.0 SCOPE OF WORK

This plan applies to ALL proposed electrical works commencing onsite for the whole proposed project.

4.0 MANAGEMENT AND SUPERVISION ORGANISATIONAL CHART

KAMATECH PROJECTS, as an employer is fully aware of its duties and responsibilities in regard to worker health and safety. Amongst the company's responsibility to its workers are:

a) Providing safe working conditions through creating health and safety measures and procedures for its workers

b) Training and competency building of workers

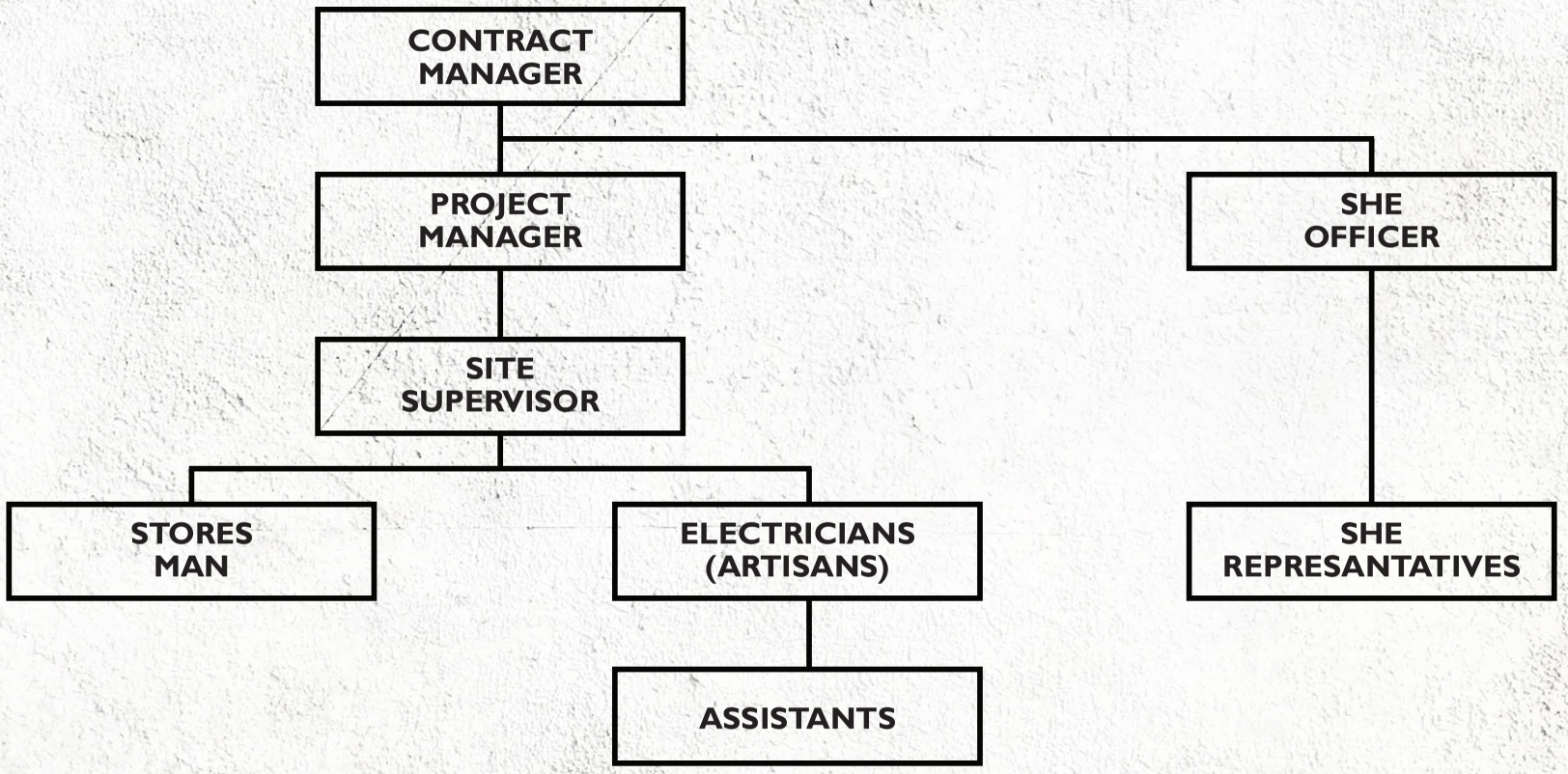
c) Ensuring the provision of personal protective equipment to ALL its workers

d) Ensuring that the issued personal protective equipment is maintained in safe working condition

e) Complying with ALL Safety and Health legislation and standards

f) Keep records and report to relevant authority workplace accidents and exposures

KAMATECH PROJECTS shall include an organisational chart of the site hierarchy.
The Site organisational chart shall run from the Projects Manager down to an assistant.



5.0 LEGAL AND OTHER REQUIREMENTS APPOINTMENTS

REGULATION	APPOINTMENT DESCRIPTION	DETAILS OF APPOINTED PERSONS	
		NAME	QUALIFICA-TION
	General Manager/ Project Manager		
S.I 68 of 1990 Third schedule	Site Foreman		
Zimbabwe OHS Policy 2015	Safety Officer/ Practitioner		
SI 109:1990 Sec 7	She Committee Chairperson		
	Project She Reps		
SI 109 sec 174, 176	Mobile Equipment Operator		
Factories & Works Act RGN 302	Machine & Hand Tools Inspector *Appointed By The Project Manager*		
Factories & Works Act RGN 264	Scaffold Inspector		
NSSA (Accident Prevention & Workers Compensation scheme) SI 68 RGN 263 sec 10	First Aider/s		
Factories & Works Act RGN 262 sec 13	Fire Fighter/s		

6.0 AUTHORITY, LEADERSHIP AND COMMITMENT

NO.	TITLE	COMMITMENT
1	Contracts Manager	✓ Develop a culture in which health and safety is integral. ✓ Maintain adherence to the standards at all times ✓ Ensure health and safety responsibility is an integral part of all management systems and processes ✓ Ensure systems are in place to guarantee the health and safety of employees, sub-contractors and visitors. ✓ Provide resources and ensure that actions to address health and safety issues are implemented. ✓ Monitor Occupational Health and Safety performance to determine trends and to provide for Safety Health and Environmental Management Plan and safety standards into business.
2	Project manager	✓ Promote a culture in which health and safety are the prime concern that will never be compromised ✓ Ensure that adequate safety, health and environmental hazard evaluations are made throughout the implementation of the project ✓ Prepare project plans that comply with Factories and works Act and other occupational health and safety standards ✓ Ensure that safe systems of work are defined and documented, and that hazards analysis and risk control methods have been incorporated. ✓ To ensure that drills and exercises are aligned with the client in order to test the effectiveness of Emergency Response Plans.

3	General Foreman	✓ Ensure hazards and risks are identified in the design stage. ✓ Participate in and contribute to the Management Team Health and Safety Plan ✓ Define and document safe systems of work and through consultation ensure there are applied. ✓ Ensure safe management of sub-contractors on-site ✓ Ensuring that ALL involved personnel prior to commencement of any work complete a Risk Assessment. Then by a review process, verifying that the development process is appropriate, communicated and understood by the users and subsequently compiled with. ✓ Focus on the elimination of unsafe acts and rectify unsafe conditions.
4	Site Supervisor	✓ Shall be responsible for ensuring compliance with and enforcing the requirements of the regulations and any lawful order given by a Safety officer in the interests of safety, health and discipline, ensuring that there are observed by every person employed in his section ✓ Taking ALL reasonable measures to provide for safety and proper discipline of persons employed in his section ✓ Ensuring as soon as is practicable after the occurrence of a breach of any provision of the regulation a) Report such breaches to the site supervisor b) Take such other disciplinary steps as the Site supervisor may have directed or approved. ✓ Wherever necessary, providing and maintaining in working order, adequate and suitable firefighting equipment on plant. ✓ Not permitting any incompetent or inexperienced workman to be employed on dangerous work, or work upon the proper performance of which the safety of a person depends.

5	SHE Officer	✓ Site SHE Officer will provide a service and act as an advisor to the project management team. ✓ Promote a culture in which Safety is the prime concern and will never be compromised ✓ Implement the site SHE Management Plan ✓ Conduct full SHE audits to evaluate compliance with the SHE management plan and system as per the audit/ inspection protocol and frequency schedule. ✓ The SHE Officer will ensure that the project Management team is informed of all their legal and contractual SHE obligations to comply to the client's requirements ✓ Monitor the attendance by Management/ Supervisors of all site required SHE meetings, SHE visits, surveillance and inspections. ✓ Co-ordinating that all new employees attend the client site SHE Induction Training ✓ Ensure Issue Based Risk Assessments are understood.
6	Project SHE Representa-tives	✓ To be elected and appointed per work area and discipline ✓ Promote a culture in which health and safety are the prime concerns and will never be compromised ✓ Promote the involvement of all employees in improving health and safety ✓ Focus on the elimination of unsafe acts and rectify unsafe conditions ✓ Ensure self and others health and safety awareness at all times. ✓ Participation in accident/ incident investigations ✓ Participate in and contribute to the Management Team Health and Safety Plan. ✓ Ensuring that all involved personnel, prior to the commencement of any work, complete a Risk Assessment or a Daily Safety Task Instruction. Then, by a review process, verified that the development process is appropriate, communicated and understood by the users and subsequently complied with. ✓ Ensure that all incidents are thoroughly investigated to avoid reoccurrence.

7.0 KAMATECH ELECTRICAL WORKS RISK ASSESSMENT

KAMATECH PROJECTS has established and maintains a Risk Assessment procedure for the ongoing identification of hazardous activities, the assessment of risks and the implementation of necessary control measures.

In carrying out its hazard identification and risks assessment, KAMATECH PROJECTS shall take into consideration changes in working environment, equipment, and machinery or process materials.

No task shall be carried out by a KAMATECH PROJECTS worker without carrying out a pre-task risk assessment. The pre-task risk assessments should be verified by the appointed SHE caretaker prior commencement of a task.

All identified hazards and risks shall be documented in the company's Hazard/ Risk Register. The register shall be reviewed every time a hazard identification and risk assessment process is done. Hazard/ Risk Register shall be maintained electronically and easily retrieved when required.

Controls will then be instigated. In addressing the identified risks the company shall make use of the code of controls. Wherever it is reasonably practicable hazards and risks shall be eliminated, or bring into practice reasonably practicable control measures to partially eliminate the apparent risks and hazards.

One of the paramount objective of KAMATECH PROJECTS with regard to identified hazards and risks is to ensure that ALL workers who will be exposed to such risks and hazards have received the following;

a) Adequate information with regard to the nature of the identified hazards and risks, their effects and possible consequence to the worker.

b) Received clear precise instructions with regard to how the identified hazards and risks are to be approached and how to deal with them.

c) Received demonstrational instructions through training and ensuring that the trained workers are fully capable of undertaking required tasks safely, without imposing danger on themselves and others.

A qualitative Risk Analysis of the project operations will be carried out prior to electrical engineering activities starting and will conform to or exceed the client's requirements, in a systematic approach.

RISK ASSESSMENT TEAM			
Name & Surname	Designation	Signature	Date

SEVERITY INDEX

Probability/ Likelihood		Impact/ Severity	
A	Certain / Risk will occur	3	INTOLERABLE
B	Possible / Risk will likely occur	2	UNDESIRABLE
C	Improbable/ Unlikely to occur	1	**TOLERABLE**
		0	**ACCEPTABLE**

SI Index		**Probability**		
	A certain	**B possible**	**C unlikely**	
IMPACT	3			
	2			
	1			
	0			

	LOW	**MEDIUM**	**HIGH**	**EXTREME**
	0	1	2	3
	ACCEPTABLE	**ALARP** *(As low as reasonably practicable)*	**GENERALLY UNACCEPT-ABLE**	**INTOLERA-BLE**
RISK RATING KEY	Okay to proceed Training required to control/ mitigate risk. Should consider Engineering and Safe Work Procedures	Procedures and Training required to control/mitigate risk. Should consider Engineering.	Engineering, Procedures, and Training required to control/mitigate risk.	Stop activity and make immediate improvements

GENERAL NOTES ABOUT REGISTER

- ✓ Register is for the operational phase of electrical engineering works.
- ✓ Additional items may be added to each section by the end user. The list of items in the register is not exhaustive and will change with time as additional hazards are identified.

ACTIVITY	HAZARD	STIMULUS	RISK	CONTROL MEASURES /PROCEDURES /METHODS TO MANAGE THE RISK	SI INDEX
EXCAVATION AND TRENCHING	Cave-ins/ trench collapse	Operatives getting in contact with	Fatalities Serious injuries	- An experienced Site Supervisor to supervise the progress of the excavation work - The use of adequate designed shoring, benching and battering is essential to control the risk of a collapse or failure of a trench or open excavation. - Anyone managing excavation or trenching work as a construction activity must ensure that all legal requirements for construction work are addressed. ***REF: EXCAVATION & TRENCHING PROCEDURE attached in the appendix***	
	Contact with utility lines i.e. electric, water, sewer, natural	In contact with pipes and cables	- Electrocution - Drowning - Respiratory	- At all stages of the excavation, a competent person must supervise the work and the workers given clear instructions on working safely in the excavation. If plant is being used	

	gas or other types of utility lines	Exposure to gases	- ailments - Serious injuries	above the trench then no operatives should be in the trench when the machine is in use. - Area must be scanned for underground services - Permit to excavate issued before work commences - Electric cables adjacent to excavation, should be isolated. - Area of dig shall be secured/ barricaded.	
	Lone working	In contact with working environment, equipment , tools	- Ergonomic Risks	- Excavation work is a minimum two man operation. Out of hours working is still a two man operation by competent personnel.	
	Crushing	In contact with		- Shoring should be in place if depth of trench warrants it along with extended poling boards & ladders for safe access/egress. - Operative should ensure that shoring has been done to his/her satisfaction before descending into trench & gain access only by suitable access equipment. - Excavations must not be adjacent to buildings and heavy plant kept away from edges. - Stop blocks should be placed behind wheels of vehicles tipping	

				into excavation. - Materials and waste materials or plant shall not be stored adjacent to excavation.	
WALL CHASING	Silica Dust - *containing materials like concrete, mortar and sandstone* Wood dust – *created when working on softwood, hardwood and wood-based products like plywood*	Exposure to	- Respiratory ailments - Asthma - Chronic Obstructive Pulmonary Disease (COPD) - Silicosis	- Wall chasing using on-tool extraction – *removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool.* - Reducing exposure time; - Rotating those doing the task; - Enclosing the work to stop dust escaping. Use of temporary screens; - General mechanical ventilation to remove dusty air from the work area (e.g. in enclosed spaces such as indoors) - Disposable mas	
	Noise	Exposure to	- Headaches - Noise induced hearing loss for prolonged noise exposure - Hypertension	- Kamatech Projects through its Safety Officer have identified ALL sound sources at the site - Furthermore, the path of the noise from the source to the worker has been identified - Using the rule of thumb it has been estimated that the use of earplugs will reduce the noise emissions making the working	

			- Ischemic heart disease - Annoyance - Sleep disturbance	environment safe - Reduce exposure time to workers	
	Chasing hand tools	Contact with hand tools such as chisels	- Cuts - Abrasion	- Work to be carried out with the worker wearing leather gloves - Supervision and monitoring is necessary to ensure right work methods are excised - Cuts using chisel should always be done with the blade pointing away from the body and hands behind the cutting edge -	
	Petrol-powered chasing saw	Exposure to carbon monoxide	- Delayed reaction times - Headaches - Difficulty thinking - Nausea - Disorientation - Personality	- Only petrol powered saw with local (or direct) fume extraction to the outside of the building should be used - Electric grinder vac system can be used if the operator wears a dust-mask respirator	

			changes - Hearing problems - Nerve damage - Heart and lung damage		
TUBING, WIRING,	Live electrical cables Electrical equipment and wiring	In contact with electrical current	✓ Burns ✓ Electrocution ✓ Shocks	- Only qualified and competent persons to work on electrical equipment. - All work on electrical equipment only to be carried out following isolation	
CABLE INSTALLATION, TRAY INSTALLATIONS, GLANDING, TERMINATING	Sharp edges from existing tray cables	In contact with	- Cuts - Abrasions	- Extra care to be taken while pulling the cable on cable trays - Use leather hand gloves	
	Fall from height i.e. ladders	In contact with	- Body injuries	- Inspect ladder before use - Assign an assistant to hold the ladder whilst it is in use - Do not carry tools and equipment whilst climbing the ladder - All workers working at height to wear their full body harness and maintain a 100% tie off -	
	Fall of materials	In contact with	- Head and body injuries	- Condon the work area to avoid unauthorised entry - Provide applicable warning safety signboards	

				- Do not keep unwanted materials on top of scaffolds and ladders	
	Manual handling hazards	Contact with loads	- Back injuries and strains - Headaches - Hand and foot injuries	- Ensure proper and safe lifting techniques are exercised whilst lifting loads - Morning talks to encourage safe lifting of loads	
	Access and Egress	Contact with the environment	-	- Access and egress to each working area will be by roadways, fixed walkways and platforms at each site - All jobs that involve confined spaces to be done after permit issuance.	
	Electricity - components causing, burns or electrocution.	Contact with 'live' electrical cables	- electrical shock - Electrocution - Burns	- Only qualified and competent persons to work on electrical equipment. - All work on electrical equipment only to be carried out following isolation. - Isolation Permits to be taken out prior to any work commencing. - Under NO circumstances must any electrical installation or maintenance be carried out on 'live' equipment.	
EARTHING, GROUNDING	Electric cables	In contact with	- electric shock - electrocution	- Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about	

AND BOUNDING			- Burns	electrical hazards - Barricades shall be used in conjunction with safety signs -	
DISTRIBUTION BOX INSTALLATION	Falling of tools and objects	In contact with	- Head and Body injuries - Damage to property	- Always ensure good housekeeping, clear work environments off clutter - Ensure to see over the load when carrying it	
	Heavy loads	In contact with	work related upper body disorder due to: - Using incorrect handling techniques - Poor workstation layout and insufficient working space resulting in poor posture.	- Examine the load to make sure it is not too heavy or awkward - Always get close to the object to lift or carry it. - Exercise safe lifting techniques of loads - Heavy loads should be shared. Workers to lift loads they can safely carry without putting their safety at risk - Use proper hand gloves and foot protection	

	Poor housekeeping Fall, trip and slip hazards	In contact with	Injuries e.g. sprains and fractures if they trip and fall as a result of: - Obstructions, trailing cables, spillages	- Maintain proper housekeeping at all times - Foreman/ Site supervisor to conduct daily morning talks prior start of daily activities - Walkway and gangways to be clear of obstructions	
	Use of damaged step ladders	In contact with	- Injuries from falls	- Inspect step ladder before use - No worker should use a ladder alone. An assistant should always hold the ladder for the worker working at height	
	Damaged power hand tools and drilling machines	In contact with	- Electrocution	- Competent operator to use power tools - Inspection should be done prior use of a power hand tool. Where colour codes apply inspect if there are the correct colour codes.	
	Drilling machines	In contact with	- Electrocution		
TESTING AND COMMISSIONI	Arcing, explosion or fire	Contact with	- Burns	- Wear adequate personal protective equipment i.e. Rubber sole shoes, helmet,	

NG OF BUILDING	Electric fault resulting in fire Toxic gases	electrical cables Exposure to toxic gases from burns		- Switch off power supply – Lockout and tag out system in place - Never keep any inflammable item near electrical installation - Use proper signage	
	Environment		- Waste disposal	- Responsibly dispose of all generated waste by using licensed contractors to remove all waste such as electrical cables, equipment	

8.0 ELECTRICAL WORKS HAZARDS – METHOD STATEMENTS

- Hazards may arise from various electrical equipment and works such as:
- The design, construction, installation, maintenance and testing of electrical equipment or electrical installations
- Design change or modification
- Inadequate or inactive electrical protection
- Where and how electrical equipment is used. Electrical equipment may be subject to operating conditions that are likely to result in damage to the equipment or a reduction in its expected life span. For example, equipment may be at greater risk of damage if used outdoors or in a factory or workshop environment.
- Electrical equipment being used in an area in which the atmosphere presents a risk to health and safety from fire or explosion, for example confined spaces
- Type of electrical equipment. For example, 'plug in' electrical equipment that may be moved around from site to site, including extension leads, are particularly liable to damage
- The age of electrical equipment and electrical installations
- Work carried out on or near electrical equipment or electrical installations, including electric overhead lines or underground electric services, for example work carried out in a confined space connected to plant or services.

DESCRIPTION OF HAZARDOUS WORK ACTIVITY	**SAFE WORK METHOD TO BE FOLLOWED/USED TO SAFELY CARRY OUT THE HAZARDOUS ACTIVITY**
Excavation and Trenching ***- Trench collapse*** ***- Contact with underground essential services including gas, water, sewerage, electricity, telecommunications, chemicals and fuel in pipes or lines*** ***- The fall or dislodgement of earth or rock***	- A risk assessment has been produced by KAMATECH PROJECTS, which has controls implemented to prevent persons being injured by collapse or failure of all or part of a trench or open excavation. - Procedures for excavation and trenching has been put in place and explained to all workers performing such task. - Additional attention has been given to adjacent properties that may be affected during the excavation process. - The following has been considered: o Depth of the excavation o The nature of the Strata o The presence of Moisture or Water o Loads close to the edge or in the zone of influence to the excavation o Vibration o Exposure Time o Previous disturbance of the ground, EG: Previous Excavations o Adjoining buildings or structures o Structural propping of walls - An experience Site Supervisor to supervise the progress of the excavation work - Use of adequate designed shoring, benching and battering is essential for control of risks - Where necessary, all trenches and excavations will be adequately shored or supported to prevent a fall or dislodgement of earth, rock or other material forming the side of any excavation - When removing the shoring/formwork the support system will be extracted / dismantled in the reverse order of its installation. - Workers performing the work in the excavation will not work outside the protection of the ground support system - Where battering is implemented, it will commence from the bottom of the excavation. When benching or battering the walls of an excavation, an angle of repose of 45 degrees will not be exceeded. - ALL excavations areas will be fenced or barricaded by a barricade tape.

Working at height during wall chasing, tubing, wiring, installation of DBs ***Use of ladders and scaffolds***	- Fall risk have been identified and adequate appropriate measures put in place to prevent falling of workers working on elevated platforms - Ladders will be used for access and the following provisions have been made: o All ladders will be inspected prior use o Ladders will have non-slip feet and whenever practicable will be set up at an angle of 1:4 (75degrees) - KAMATECH PROJECTS, through its Site Supervisor, will ensure that all ladders are of good construction, and wield adequate strength for safe use - No ladder shall be used under any circumstance which has a missing or defective rung or any rung which depends for its support solely on nails, spikes or other similar fixings. - No wooden ladder shall be used by KAMATECH PROJECTS workers at any site for any project unless made of uprights of adequate strength and made of straight-grain wood free from defects. - Scaffolding will be used to provide workers with a safe temporary work platform. It will be planned, erected, inspected and tagged by competent persons and will be regularly inspected to ensure there are no risks to safety and will comply with the requirements of **Factories and Works Act 14:08 RGN 264 Section 3-5**
Noise from wall chasing activities and power tools such as drilling machines, grinder and powered hacksaws	- Noise Management provisions have been carried out and provisions have been made to ensure that noise levels from machinery or equipment being used do not become a risk to hearing or health. - Where noise levels exceed 90dBA as stipulated by Factories and Works RGN 263, sec 6 KAMATECH PROJECTS shall instigate engineering controls. Where this cannot be achieved or work cannot be organized to minimize exposure, appropriate hearing protection equipment, hearing protectors, will be provided to all persons in the vicinity of the noise. - Exposure periods should be monitored as well

Electricity and power risks from electrical works such as cable installation, tray installations, tubing, wiring, ***- Contact with 'live' electrical components causing electrical shock, burns or electrocution.***	- Only qualified and competent persons to work on electrical equipment. - All work on electrical equipment only to be carried out following isolation - Before commencing any work the competent person must isolate the circuit to be worked on by; - Switching off the circuit breaker feeding the appliances to be worked on and the main circuit breaker at the main electrical distribution box. - Test the circuit to ensure it is safe to work on. - Lock distribution box and place warning signs on the outside of the box. - If unable to lock the distribution box, disconnect cable on the outgoing side of the circuit breaker feeding the circuit to be worked on. - Test the circuit to ensure that the power has been isolated. - Tape the bare wires with insulation tape to prevent accidental contact with live power source. Ref: ISOLATION AND LOCKOUT PROCEDURES FOR ELECTRICAL EQUIPMENT - KAMATECH PROJECTS SHE POLICY - On completion of work the competent person must reconnect the cable to the circuit breaker. - Test circuit for correct operation. - Remove any lockouts and warning signs
Work on cables (including cutting cables)	- Where work is to be carried out on a cable, the cable should be de- energised - Cables must be treated as energised and the procedures for working on energised electrical equipment followed until positive tests can be made that prove the cable is de-energised. - If the cable's connections are exposed the connections and attached live parts should be proved to be de-energised and identified before work starts. - Cutting cables presents particular risks. Both ends of the cable should be checked for isolation prior to cutting.

Manual Handling activities posing risk such as: - ***Back injuries and strains*** - ***Headaches*** - ***Hand and foot injuries***	- Manual Handling Risks have been assessed and the following control measures have been put in place: o Powered mechanical equipment has been hired to lift and move heavy material. o Site-specific training has been provided to employees on safe handling techniques. o Weights that are normally manually handled will be minimized. o Persons will not lift, lower or carry loads above 25kg, unless mechanical assistance and/or team lifting arrangements are provided to lower the risk of injury. o Where manual handling involves repetitive bending, twisting, over-reaching, work overhead or where persons have pre-existing injuries, these loads will be further decreased. o Rotation of work duties has been implemented after consultation with employees. o Strict supervision of work areas and passageways to ensure that they are kept clean and clear of debris. o Slippery floors and surfaces and trip hazards will be controlled.
Poor housekeeping ***Fall, trip and slip hazards***	- Poor housekeeping enhances the causes of injury to workers through tripping, falling and slipping. ALL KAMATECH PROJECTS workers have a responsibility for ensuring that general housekeeping standards on site are maintained and uplifted. - All waste, rags, oils, grease, wood, plastics, scraps of metal etc. are immediately disposed of in the correct manner and in correct disposal bins. - Materials must be stacked and stored in a tidy and safe manner on sites of operation. Materials must not be stacked nor stored in areas where they could impede safe access or egress, or impede safe working of other workers. - Tools and other equipment must not be left in any area where they could possibly become a hazard.

Restoring Power may involve hazards such as explosion or fire, electric fault resulting in fire, toxic gases from burning cables	- All reasonable steps must be taken to ensure that restoring electricity supply following isolation does not pose risks to health and safety at the workplace. For example: o appropriately terminating all conductors o carrying out appropriate testing on any new, altered or repaired electrical equipment, for example tests for insulation resistance, earth continuity, polarity, correct connection and function testing o Removing safeguards, including temporary bonds and short-circuiting devices o Notifying all workers working on the electrical equipment and other affected workers at the workplace that electricity is to be restored o Taking precautions as appropriate to ensure that other electrical equipment is not inadvertently energised o Following procedures for removing any locks (or other control mechanisms), tags, notices and safety signs o Carrying out a visual inspection to ensure that all tools, surplus material and waste has been removed from the workplace.
Testing and commissioning of building may pose the following hazards - ***Explosion or fire*** - ***Electric fault resulting in fire*** - ***Toxic gases from burnt cables***	- The tools, testing equipment and PPE for testing and fault finding must be suitable for the work, properly tested and maintained in good working order. - Workers carrying out electrical testing must be appropriately trained and competent in test - procedures and in the use of testing instruments and equipment, including: o Being able to use the device safely and in the manner for which it was intended o Being able to determine, by inspection, that the device is safe for use, for example the o Device is not damaged and is fit for purpose o understanding the limitations of the equipment, for example when testing to prove an alternating current circuit is de-energised, whether the device indicates the presence of hazardous levels of direct current o Being aware of the electrical safety implications for others when the device is being used, for example whether the device causes the electric potential of the earthing system to rise to a hazardous level o Knowing what to do to ensure electrical safety when an inconclusive or incorrect result is obtained.

9.0 CONTROL & SAFETY MEASURES FOR HAZARDOUS CHEMICAL SUBSTANCES

HCS NO.	NAME OF HCS	MSDS	TO BE USED FOR	HAZARDS/ RISKS	SAFETY MEASURES TO BE TAKEN DURING STORAGE & USE OF THE HCS ON SITE	RESPONSIBLE PERSON
HCS 1	PVC SOLVENT CEMENT GLUE	YES/ NO	In assembling PVC conduit and fittings	- Ingestion may cause irritation, nausea, vomiting, diarrhoea, kidney or liver disorders. - Skin contact may cause sensitization - Eye contact may irritate eyes - Inhalation may cause mild respiratory irritation	- Keep Away from Sources of Heat and Open Flames - Work in a well-ventilated environment - Wear leather/ rubber gloves during handling and use - Wear Safety Goggles during Use	Site Supervisor

10.0 PERSONAL PROTECTIVE EQUIPMENT REGISTER

PPE for electrical work, including testing and fault finding, must be suitable for the work, properly tested and maintained in good working order. The PPE must be able to withstand the energy at the point of work when working energised.

Training must be provided in how to select and fit the correct type of equipment, as well as training on the use and care of the equipment so that it works effectively.

Depending on the type of work and the risks involved, the following PPE should be considered:

PPE	USE
Face Protection	use of a suitably arc rated full face shield may be appropriate when working where there is potential for high current and arcing
Eye Protection	metal spectacle frames should not be worn
Gloves	Use gloves insulated to the highest potential voltage expected for the work being undertaken. Leather gloves may be considered for de-energised electrical work.
Clothing	Use non-synthetic clothing of non-fusible material and flame resistant. Clothing made from conductive material or containing metal threads should not be worn.
Footwear	Use non-conductive footwear, for example steel toe capped boots or shoes manufactured to a suitable standard
Safety Belt/Harness	Safety belts and harnesses should be checked and inspected each time before use with particular attention being paid to buckles, rings, hooks, clips and webbing.

11.0 EMERGENCY AND RESCUE PROCEDURES

In the event of an emergency, adequate arrangements have been made to ensure the safety of workers and other persons on site.

The emergency may result from an accident or injury, landslip or other potentially dangerous occurrence.

Site Supervisor is trained to carry out the evacuation and rescue procedures and maintain the site safety until the emergency authorities arrive.

Any person who is involved in an electrical incident involving an electric shock should receive medical attention.

Special consideration must also be given in relation to other higher-risk workplaces including confined spaces, working at heights (e.g. elevating work platforms), workplaces with hazardous atmospheres which present a risk to health or safety from fire or explosion, and trenches, shafts and tunnels.

11.1 FIRST AID

KAMATECH PROJECTS have trained First Aiders at site ready to address emergency situations prompting first aid.

Provision of first aid kit and access to the facilities for the administration of first aid is made available for everyone.

NAME OF FIRST AIDER	CONTACT DETAILS

12.0 HEALTH AND SAFETY PERFORMANCE INDICATOR TABLE

The following statistics were recorded from period 2017 to June 2018

They are a clear indication of KAMATECH PROJECT'S Health and Safety performance on sites they carry out operations.

PERFORMANCE INDICATOR	RECORDED NUMBER
Lost Time Injury	0
Medical Treatment Case	0
First Aid Case	1
Fire/ Explosion	0
Property/ Equipment Damage	0
Near Miss	2
Unsafe Act/ Unsafe Condition	9

First aid case recorded was a cut from operation involving use of chisel. Adequate control measures were instigated to prevent accident recurrence. Workers were trained on the importance of wearing provided PPE.

Every unsafe condition that was reported at site was promptly addressed. All the unsafe conditions recorded were risks posed by the environment and tasks that were modified without a continuous risk assessment done.

13.0 SAFETY RULES OF CONDUCT

All personnel are required to conform to the following rules of conduct relating to safety while on site. The following are prohibited:

1) Selling of possessing drugs or intoxicants and alcoholic beverages on the site. An employee whose actions and demeanour show symptoms of possible narcosis or drunkenness, shall be removed from the site;

2) Indulgence in practical jokes, horseplay, scuffing, wrestling, fighting or gambling;

3) Destroying/Tampering with safety devices, signs and signals, or the wilful and unnecessary discharging of fire extinguishers;

4) Bringing onto site or possession of firearms, lethal weapons, cameras or explosive powered tools. Upon written request, explosive powered tools may be authorised for use on site;

5) Sleeping on site;

6) Assault, intimidation or abuse of any person;

7) Unauthorised operation of powered construction equipment. Equipment operators shall demonstrate competency to operate the equipment e.g. by providing appropriate certification and records of experience

8) Insubordination towards any Supervisor or Manager in respect to the carrying out of properly and legally binding issued instructions or orders for safety and health purposes;

9) Entry into any area where they have no business, unless authorised to do so by the person in charge;

10) Negligently, carelessly or wilfully causing damage to property of others;

11) Refusing to give evidence or deliberately making false statements during investigations connected with safety aspects;

12) Bringing animals onto site;

13) Running on site.

Any of the above actions could lead to removal from site and/or dismissal and/or prosecution. The decision of the Site Supervisor shall be final and binding irrespective of any dispute that may arise from the interpretation of these rules.

APPENDIX A

Original Date: 30 May 2018 Revised Date: 30 May 2018 REV No: 01	**KAMATECH PROJECTS** **STANDARD JOB PROCEDURE** **EXCAVATION & TRENCHING PROCEDURE**	

A. **PURPOSE AND IMPORTANCE OF THIS STANDARD JOB PROCEDURE**

The objective of this procedure is to set up guidelines for excavation work ensuring that ALL risks associated with excavation work are identified and managed before the work commences.

This Procedure relates to excavation work if the work includes a trench, tunnel or shaft.

This Procedure does not apply to the following:
- A mine; or
- A well

B. **PERSONAL PROTECTIVE EQUIPMENT (PPE)**	HAZARD	CONTROL MEASURES
1. Head Protection - Hard hats 2. Eye and Face Protection - Safety goggles, Face Shields, 3. Hearing Protection 4. Body Protection – High Visibility Safety Apparel, Fall Protection, Full body harness, 5. Foot Protection – Steel toe shoes, gumboots,	Cave-ins/ trench collapse Contact with utility lines i.e. electric, water, sewer, natural gas or other types of utility lines Lone working Hazardous manual tasks	Shoring, benching and battering is essential to control the risk of a collapse. A competent person to supervise work and the workers given clear instructions on working safely in the excavation. Area must be scanned for underground services Permit to excavate issued before work commences Electric cables adjacent to excavation, should be isolated. Area of dig shall be secured/ barricaded.

C. **TOOLS AND EQUIPMENT REQUIRED FOR THE TASK**

TOOL	QTY	USED FOR
Trenching shovel		Removes soil wide enough for pipe work

Spade		Cut trenches in existing lawn, as they have a sharp blade
Pick axe		Cut through existing roots or hard ground to create trenches
Rake		to clear rocky or uneven ground prior to excavation
Excavators		Track driven machine, which operates by scooping the soil and depositing it beside the trench. Used for large commercial irrigation jobs where large pipes will be laid or multiple pipes will be installed in the same trench

D.	TECHNICAL & QUALITY SPECIFICATIONS

GENERAL PROCEDURE

1. Excavation permit must be issued by a person competent to issue such permits, prior to work commencing e.g. Work at Height Permit, Confined Space Entry permit

2. Do thorough risk assessment

Risks to health and safety associated with excavation work are managed before the work commences, including the risk of:

a) A person falling into an excavation
b) A person being trapped by the collapse of an excavation
c) A person working in an excavation being struck by a falling thing
d) A person working in an excavation being exposed to an airborne contaminant

To manage the risks, all relevant matters must be considered including:

a) The nature of the excavation.
b) The nature of the excavation work, including the range of possible methods of carrying out the work.
c) The means of entry into and exit from the excavation

Risk controls should be implemented to eliminate, so far as is reasonably practicable, identified risks to health and safety.

Risk controls to be instigated in descending order from the Hierarchy of Control

3. PUT ON ALL THE REQUIRED PPE BEFORE COMMENCEMENT OF WORK

4. ENSURE THAT ALL LEGAL REQUIREMENTS FOR CONSTRUCTION WORK ARE ADDRESSED

5. TRAINING

KAMATECH PROJECTS training needs analysis should identify the training needs for those persons required to:

a) Carry out excavation and trenching work
b) Undertake a risk assessment for excavation and trenching work
c) Manage or supervise persons working in or with excavations and trenches
d) First Aiders

The training needs analysis should have regard to:

a) The nature of the work carried out by the worker
b) The nature of the risks associated with the work
c) The control measures implemented

6. RECORDS

The following records should be maintained:

a) Contract documentation
b) Permit processes
c) Plant and equipment inspection, testing and maintenance records
d) Plant and equipment registers
e) Statutory notifications
f) Training records, licences and other competency records
g) Underground essential services information

APENDIX B

Original Date: 30 May 2018 Revised Date: 30 May 2018 REV No: 01	**KAMATECH PROJECTS** **STANDARD JOB PROCEDURE** **ELECTRICAL SAFETY & WORK PROCEDURE**	

A. **PURPOSE AND IMPORTANCE OF THIS STANDARD JOB PROCEDURE**

This Procedure will provide safety guidelines for ALL electrical works carried out by Kamatech Projects in compliance to *Factories and Works Act (Electrical) Regulations, RGN 304*.

The requirements detailed in this Procedure apply to ALL Kamatech Projects (workforce and contractors) who carry out electrical activities at or for the organisation.

B. **PERSONAL PROTECTIVE EQUIPMENT (PPE)**	**HAZARD**	
1. Safety glasses 2. Face shields 3. Insulating (rubber) gloves with leather protectors, 4. Hard hats 5. Safety shoes 6. Rubber mats 7. Gauntlets 8. Insulating sleeves 9. Flame-resistant (FR) clothing	High voltage power - Electrocution - Burns - Fires Static electricity	

TECHNICAL SPECIFICATIONS

GENERAL PROCEDURE

SAFETY PRECAUTIONS

Kamatech Projects shall ensure all electrical machinery, apparatus and conductors to be installed, worked and maintained are identified and processes made safe through hazard identification and risk assessment. It is the organisation's responsibility to prevent danger to persons carrying out electrical works thereof.

PORTABLE ELECTRIC TOOLS AND LIGHTS *(RGN 305: 1976)*

No person working with a portable electric tool that has an operating voltage which exceeds 50 volts shall do so unless the following safety measures are put in place:

a) The portable electric tool is connected to a source of electricity supply incorporating an earth leakage protection device of a type and construction approved by the Chief Inspector

b) It is connected to the source of electricity supply through the interposition between each tool and the source, of an individual double wound isolating trans-former, the secondary winding of which is not earthed at any point and which is construed in accordance with a code approved by the Chief Inspector, and the screen or core earthed

c) It is connected to a source of high frequency electricity supply derived from a generator which is used solely for supplying power to such portable electric tool

d) It is constructed with double insulation in accordance with a code approved by the Chief Inspector

No Kamatech Projects worker shall use a portable electric light unless;

a) It is fitted with a handle which is robust and made of non-hygroscopic, non-conducting material;

b) All live metal parts or parts which may become alive due to a circuit fault are completely guarded so as to prevent danger through accidental contact;

c) The lamp is protected by means of a substantial guard firmly fixed to the insulated handle;

d) The cable lead-in is such that usage can be withstood without failure or damage to the insulation.

e) In wet or damp situations in closely confined spaces, inside metal vessels or in general in contact with large masses of metal, no portable electric light shall be used unless, the operating voltage of the lamp does not exceed 30 volts and where the power supply is derived from a transformer such transformer shall have separate windings, and the extra low voltage winding must not be earthed but the transformer screen or core must be earthed.

MAINTENANCE

EXAMINATION AND REPAIRS

No worker shall examine, repair, alter, or handle electrical apparatus while such apparatus is alive, unless such work is done by or under the constant supervision of a competent person.

Kamatech Projects will provide free of charge and maintain in good condition suitable rubber mats, gloves or gauntlets, safety belts and such other protective equipment as may be necessary to prevent accidents, for the use of persons engaged in examination, repairs or alterations necessitating the dangerous approach to, or the handling of live mains or electrical apparatus

TEMPORARY EARTHING AND ISOLATION

Whenever work is be carried on any electrical apparatus which has been disconnected from all sources of supply but which is liable to acquire or retain an electrical charge, the user shall cause adequate precautions to be taken, earthing or other means, to discharge electrically such electrical apparatus or any adjacent electrical apparatus if there is any danger therefrom, before it is handled, and to prevent any conductor or electrical apparatus from being charged while person are working thereon.

No electrical apparatus shall be reconnected to a supply of electrical energy after examination, adjustment, repair or alteration has been undertaken unless such work has been carried out or inspected and approved by a qualified or competent person.

TRANSFORMER- OR SWITCH-ROOMS AND HOUSES

ALL transformer and switch houses

(a) to be of a size sufficient to provide clear working space for operating or maintenance personnel and to be sufficiently ventilated so as to maintain the equipment at a safe temperature;

(b) to be so constructed as to be proof against vermin, leakage, seepage and flooding;

(c) to be supplied with natural light where possible and with artificial light, the intensity whereof shall not be less than 300 lux, which shall be controlled by a switch adjacent to the entrance as to prevent danger to persons and to enable all equipment to be clearly distinguished, and all instruments, labels and notices to be easily read; to be so constructed that no windows are within easy reach of bare conductors or exposed live parts of electrical apparatus;

(d) To have doors opening outwards and which can be readily opened from the inside

(e) To be provided with adequate fire extinguishing appliances suitable for use on electrical equipment, which shall be maintained in good working order.

A user shall cause all cable ducts in transformer and switch houses to be covered with suitable non-slip material.

No person other than a competent person shall enter or be required or permitted by the user to enter a transformer or switch house unless all live conductors which are not adequately insulated against inadvertent contact are screened off: provided that the competent person may be assisted by any other person acting under his immediate supervision.

APPENDIX C

Original Date: 30 May 2018	**KAMATECH PROJECTS**	
Revised Date: 30 May 2018	**STANDARD JOB PROCEDURE**	
REV No: 01	**WORKING NEAR OVERHEAD POWER LINES**	

A. **PURPOSE AND IMPORTANCE OF THIS STANDARD JOB PROCEDURE**

The objective of this procedure is to ensure safety for ALL workers working near or under overhead power lines.

B. **PERSONAL PROTECTIVE EQUIPMENT (PPE)**	**HAZARD**
1. Head Protection - *Hard hats* 2. Eye and Face Protection - *Safety goggles,* 3. Body Protection – *High Visibility Safety Apparel, Fall Protection, Full body harness,* 4. Foot Protection – *Steel toe shoes, gumboots,* 5. Hand protection – rubber glooves	High voltage electricity - Electrocution - Burns - Fires Static electricity

GENERAL PROCEDURE

Before work begins, conduct a hazard assessment and examine the work area

to identify and correct hazards and to establish that the safe limits of approach distances to overhead power lines contained in table A can be maintained

Contact the electrical utility to determine the operating voltage of the line and confirm the safe limits of approach distances;

Also, request assistance from the electrical utility if the work must be performed at a distance that is less than those specified in table 1. In this situation have the electrical utility disconnect or relocate the line if needed. If this isn't practical or feasible to do so, carry out the following:

- Keep an eye out overhead at all times; take time to examine the hazard;
- Before operating equipment, make a safety plan that prevents contact with lines;
- Take extra care and precautions;
- Check the height of your equipment or load;
- Plan your moves – are there power lines to pass under or avoid?
- Look out for uneven ground that may cause your vehicle to weave, bob or bounce;
- Think about wind and temperature – they may affect the power line's height;
- Never ride or climb on equipment or a load when near a power line;
- Work around power lines to be done only during daylight hours;
- Don't ground your equipment around a power line;
- Do not allow equipment or objects to approach the overhead power line closer than the safe limit of approach specified;
- If work is being carried out near the safe limit of approach, use a trained signaller to act as an observer to ensure that the required distance is maintained.
- (Communication by radio or air horn);
- Do not place materials under or adjacent to the overhead power line if it reduces the clearance above ground required by O.H & S regulations. Contact the electrical utility for assistance to determine the required clearance between the power line and the ground;
- Do not allow excavations to reduce the support required for power poles. Contact the electrical utility to determine support required. Request line locates in case of grounding girds buried at the base of power poles;
- Remember electricity is invisible, don't take chances;
- Keep a safe working distance between your equipment and power lines – follow O. H. & S Regulations which require you to stay clear of power lines. Don't go too close with people or equipment.

OSHA STANDARD

1926.1408 - POWER LINE SAFETY (UP TO 350 KV)--EQUIPMENT OPERATIONS

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	*(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).*

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

APPENDIX D

*** Please see document titled "*DATA Statistics - LTIFR Kamatech Projects 2016-2018*" for information relating hereto.**

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