| | AL JAZEERAH DRILLING LLC | Form # | HSEMSP-06 |
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| Al Jazeerah Drilling | PROJECT: WATER TRANSMISSION LINE FROM IC-07 to FALAJ PS AND AL RIFFA AREA | Rev. | 0 |
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## Risk Register

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| **ABRASIVE WHEELS** | | | | | | | | | | | |
| 1 | Using an abrasive wheel | Contact with the disc during use | a) Fatalities/ Total<br>b) Permanent Disability (TPD) | Machine guards<br>Fully trained and experienced operators only carry out this work | 4 | 2 | 8 | A check of equipment guards etc., need to be carried out before works starts.<br>Excludes those not involved in the operation from the hazardous area, Try to reduce the likelihood of injury | 3 | 1 | 3 |
| 2 | Using an abrasive wheel | Disc shattering due to incorrect mounting | Fatalities/ Total Permanent Disability (TPD) | The correct abrasive wheel is selected for the particular application | 4 | 2 | 8 | Disc speed shall be always greater than the tools speed | 3 | 1 | 3 |
| 3 | Using an abrasive wheel | Disc shattering due to incorrect mounting | Fatalities/ Total Permanent Disability (TPD) | Only fully trained and experienced person shall change the disc | 5 | 2 | 10 | Workers need to carry out a check of equipment before work starts | 4 | 1 | 4 |
| 4 | Using an abrasive wheel | Flying debris during a grinding process | Serious eye injuries | a) Only fully trained and experienced person must carry out this work<br>b) Exclusion zones are set up as required | 2 | 2 | 4 | PPE including eye protection worn | 1 | 1 | 1 |
| 5 | Using an abrasive wheel | Fire | a) Burns<br>b) Fatality<br>c) Property damages | Fire Extinguishers are provide at the location of works and operators are trained in their use | 4 | 2 | 8 | Implementation of Emergency preparedness and response procedures | 3 | 1 | 3 |
| 6 | Using an abrasive wheel | Hand arm vibration syndrome | Body pain | Only blades of correct type and in good condition are used | 2 | 2 | 4 | Gloves will keep operators hands warm and dry, which shall reduce the risk | 1 | 1 | 1 |
| 7 | Using an abrasive wheel | Fire And Explosion | Fatalities / TPD | Hot works permit system is adhered to | 4 | 3 | 12 | Trained operators shall be aware of the risk involved | 3 | 2 | 6 |
| **BLOCK WORKS** | | | | | | | | | | | |
| 1 | Lifting And Lying Bricks | Manual Handling | a) Muscular-skeletal injuries<br>b) Cuts and lacerations | a) Isolation of the lifting area<br>b) Manual Handling assessment is carried out | 2 | 2 | 4 | Barricade the area | 1 | 1 | 1 |
| 2 | Using / mixing mortars | Contact with hazardous substances- such as Cement | a) Cement burns<br>b) Respiratory disorders | Assessment of the hazardous materials to be used shall be done | 1 | 2 | 2 | Usage of relevant and appropriate PPE | 1 | 1 | 1 |
| 3 | Working in an area where pedestrians are existing | Public walking into the works | Fatalities / TPD | Work area cordoned off using rigid barriers and warning signs | 4 | 2 | 8 | Cordoned off area adequately lit at night | 3 | 1 | 3 |
| 4 | Works on the footpath / pavement | Public walking into the works | Fatalities / TPD | Alternative safe route established around the works using rigid barriers and appropriate warning signs | 3 | 2 | 6 | Alternate route lit at night | 2 | 1 | 2 |
| | | | | | | | | | | | |
| **CONCRETE WORKS** | | | | | | | | | | | |
| 1 | Placing concrete | All hazards associated with this work | Major life threatening / TPD (Total Permanent Disability) | All workers involved will be trained in hazards recognition and control measures necessary especially in safe manual handling techniques and the need to keep all access clear to work areas always | 3 | 2 | 6 | Tool Box talks prior to start of job | 2 | 1 | 2 |

**E- Extreme, H - High, M - Moderate, L - Low**

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| 2 | Pouring slab | Manual handling Hazard | Back injuries | Safe manual handling techniques must be carried out | 4 | 2 | 8 | Competent person to supervise the job | 3 | 1 | 3 |
| 3 | Pouring slab | Heat stress from wearing protective clothing | Serious injury | a) Safe system / method of work covering receipt of concrete and placing it on site<br>b) Pouring operations<br>c) Temporary works schemes<br>d) Leading edge protection will be established by member of management team | 4 | 2 | 8 | Washing facilities should be provided | 3 | 1 | 3 |
| 4 | Pouring slab | Moving Machinery | Death / TPD | Traffic management schemes are formalized, regardless of the size or perceived complexity of the concreting operations | 5 | 2 | 10 | Banks man to direct moving equipments | 4 | 1 | 4 |
| 5 | Pouring slab | Contact with cement | a) Dermatitis<br>b) Concrete burns | a) Appropriate personal protective equipment (PPE) should be worn.<br>b) The accumulation of concrete spillage should be prevented | 2 | 2 | 4 | | 1 | 1 | 1 |
| 6 | Pouring slab | Poor house keeping | a) Fall from height<br>b) Injury to the worker | Removal of all excess concrete | 1 | 2 | 2 | Adequate supervisions | 1 | 1 | 1 |
| 7 | Using pump / Hoists | Pneumatic failure | Serious injury | All areas under Hoist and Pump should be cleared of all workers | 4 | 2 | 8 | Fence the specified area where machine sited | 3 | 1 | 3 |
| 8 | Pump operation and hoist operation | Fall of materials | Death / TPD (Total Permanent Disability) | Only qualified / certified operatives of hoisting equipment (Crane operators / Banks man / slingers) will be authorized to hoist materials | 4 | 2 | 8 | a) If it is night provision of adequate light,<br>b) All slinging equipments / materials/ slinging belts shall be checked for fitness regularly before usage | 3 | 1 | 3 |
| **DRIVING** | | | | | | | | | | | |
| 1 | Movement of vehicles | Unsafe vehicle | a) Injury to employee.<br>b) Damage to property.<br>c) Air emission<br>d) Fuel Spill | Daily check log sheet to be issued to driver / operator and Supervisor to control | 1 | 2 | 2 | a) Regular maintenance of the vehicle<br>b) Provision of Spill kits<br>c) Proper management of the vehicular movement | 1 | 1 | 1 |
| 2 | Movement of vehicles | Vehicle might hit people or other vehicle and plant | a) Injury to body<br>b) Damage to property | a) All persons not involved with the works will be kept out of the area<br>b) Induction to the driver<br>C) Supervisor to control and monitor on ongoing basis | 4 | 2 | 8 | Banks man will control works from ground level | 3 | 1 | 3 |
| 3 | Movement of vehicles | Speeding vehicles can hit people and other vehicles and plant | a) Injury to people and also may lead to fatality.<br>b) Damage to property.<br>c) Dust | Supervisor to control | 4 | 3 | 12 | Speed limits signs to be clearly displayed | 3 | 2 | 6 |
| 4 | Movement of vehicles | Collision | a) Fatalities /Major injuries<br>b) Damage to property. | a) Driver to be inducted.<br>b) Supervisor to control | 5 | 3 | 15 | Supervisor to make sure that all drivers are appointed | 4 | 2 | 8 |
| 5 | Movement of vehicles | Passengers falling from truck | Serious injuries and fatality | a) Induction to driver. b) Driver to warn the passengers of the danger.<br>c) No passenger on tractor, trailers, dumper, mobile cranes, etc.<br>d) Supervisor and driver to check and control | 2 | 2 | 4 | a) Driver to be inducted.<br>b) Only two persons in front of the truck.<br>c) Supervisor to control and monitor | 1 | 1 | 1 |
| 6 | Movement of vehicles | Hydraulic jacks loosing pressure and collapsing | Crush injury / fatalities | a) Vehicle to be supported on blocks or trestles designed for this purpose.<br>b) Supervisor to check and monitor | 3 | 2 | 6 | Supervisor to control and monitor | 2 | 1 | 2 |

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| 7 | Movement of vehicles | Falling asleep | a) Injuries to the personnel<br>b) Property damage | a) Restrict driver from driving for more than 10 hours per day.<br>b) No long distance trips at night.<br>c) Site Agent to control long distance trips.<br>d) Restrict night driving | 4 | 3 | 12 | Transport supervisor to make sure that the drivers not driving more than 10 hours and no log distance trips | 3 | 2 | 6 |
| 8 | Refueling on site | Explosion | Severe burns / death | Smoking prohibited and signage clearly displayed | 3 | 3 | 9 | All non essential personnel to be excluded from the area | 2 | 2 | 4 |
| | | | | **ELECTRICAL GENERATOR** | | | | | | | |
| 1 | Generator operation | Exposure to excessive noise | Long term hearing disorders | Keep away from the workforce | 1 | 2 | 2 | Abnormal noise shall be monitored and reduced through proper preventive maintenance | 1 | 1 | 1 |
| 2 | Diesel, petrol generators operating in an enclosed work area | Exposure to exhaust fumes / gases | Asphyxiation, poisoning | Exhaust fumes and gases vented to outside | 2 | 2 | 4 | | 1 | 1 | 1 |
| 3 | Diesel, petrol generators operating in an enclosed work area | Fire due to fuel leakage | Severe burns / death | Equipment checked regularly | 1 | 2 | 2 | Fire extinguishers appropriate to the work and materials, will be to hand | 1 | 1 | 1 |
| 4 | Using electrical supply | Contact with live electrical services as a result of incomplete or fault installation leakage | Electrocution / severe burns / death | All systems tested and certificate issued before use | 3 | 2 | 6 | All temporary cables will be on height | 2 | 1 | 2 |
| 5 | Working on temporary electrical system | Contact with live electrical services | Electrocution / severe burns / death | No works on live electrical equipment without approval of project manager | 4 | 2 | 8 | Permit to work for all works to supply system | 3 | 1 | 3 |
| 6 | Working on temporary electrical system | Contact with live electrical services | Electrocution / severe burns / death | Only competent electrical contractors will install electrical systems | 4 | 2 | 8 | Correct PPE should be worn and rubber mats placed on ground for all live work | 3 | 1 | 3 |
| 7 | Working on temporary electrical system | Contact with live electrical services | Electrocution / severe burns / death | Temporary switch rooms and DB switch boxes will be locked and lock in and out permit system instigated | 3 | 2 | 6 | Barriers to prevent 3rd party access will be erected around the object while they are being worked on | 2 | 1 | 2 |
| 8 | All work activities | Insufficient light in work place | Fall, trip, serious injuries | Suitable and sufficient temporary lighting in place | 2 | 2 | 4 | | 1 | 1 | 1 |
| 9 | Setting up site lighting | Contact with live electrical services | Severe burns / death | Only competent electrical will install or dismantle site lighting | 3 | 2 | 6 | Reduced voltage equipment used where practicable | 2 | 1 | 2 |
| 10 | Setting portable lighting equipment | Fire as result of portable lighting being knocked over | Severe burns / death | Fixed lighting used where possible, portable lighting and cables sited in safe positions | 3 | 2 | 6 | Portable lighting secured wherever possible, cables removed when not in use | 2 | 1 | 2 |
| 11 | Working in a pedestrian area | Public walking into the works | Fatalities due to electrocution | Work area cordoned off using rigid barriers and warning signs | 5 | 2 | 10 | Cordoned off area adequately lit at night | 4 | 1 | 4 |
| | | | | **ELECTRICAL POWER TOOLS** | | | | | | | |
| 1 | Electrical power tools | Electrocution | a) Muscular skeletal injuries<br>b) Fatalities | a) Only electrical systems conforming to UAE laws and regulations will be used<br>b) All tools will be physically inspected before usage<br>c) All appropriate PPE's and protective clothing shall be worn | 4 | 2 | 8 | All temporary electrical cable should be checked and elevated where possible, otherwise an acceptable alternative method should be found and approved by a qualified person from the management team | 3 | 1 | 3 |
| 2 | Electrical power tools | Electrocution | a) Burns<br>b) Lacerations<br>c) Fatalities | All electrically operated tools must be used on a reduced voltage of 110 volts system where practicable or used with and other associated protection | 4 | 2 | 8 | Only qualified electricians will install, maintain and repair electrical supplies | 3 | 1 | 3 |

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| 3 | Electrical power tools | Misuse electrical tools | Fatalities/TPD | a) Power must be turned off before plugging in any electric tools, Toolbox talks training on the safe usage of hand tools will be conducted as often as necessary.<br>b) No machine shall be used other than its intended purpose<br>c) Never pull electric tool from plug by the cord | 5 | 2 | 10 | a) Never alter or remove safeguards from tools<br>b) All portable electrical equipment will be tested, tagged and inspected at regular intervals dependent on frequency of use | 4 | 1 | 4 |
| **EQUIPMENT HANDLING** | | | | | | | | | | | |
| 1 | Using gardening, landscaping machinery | Contact with existing live electrical services | Death by electrocution / TPD | Existing services identified and clearly marked, isolated | 4 | 2 | 8 | Strict supervision is required | 3 | 1 | 3 |
| 2 | Using gardening, landscaping machinery | Entrapment of clothing, parts of the body in machinery | a) Life threatening<br>b) Cuts<br>c) Lacerations / loss of limb | Operator not wear loose clothing | 1 | 2 | 2 | | 1 | 1 | 1 |
| 3 | Using gardening, landscaping machinery | Exposure to flying objects | a) Loss of sight<br>b) Damages to eye | PPE-eye protection | 2 | 1 | 2 | | 1 | 1 | 1 |
| 4 | Using gardening, landscaping machinery | Exposure to noise | Long term hearing disorder | Refer to specific noise assessment | 2 | 2 | 4 | | 1 | 1 | 1 |
| 5 | Using machinery fitted with a cutting edge | Contact with cutting edge | a) Life threatening<br>b) Cuts<br>c) Lacerations / loss of limb | Machine guard in place | 3 | 2 | 6 | Usage of PPE (Safety footwear) | 2 | 1 | 2 |
| 6 | Operating drilling | Damage to the cord might cause a short or electrocution of person | Burns to body | Employees to be inducted how to check cords, Supervisor to monitor on an ongoing basis | 1 | 1 | 1 | | 1 | 1 | 1 |
| 7 | Operating drilling | Incorrect drill bit being used | Damage to drill bit | Employees to be taught how to choose the correct drill bit | 1 | 2 | 2 | | 1 | 1 | 1 |
| **FIRE AND EXPLOSION** | | | | | | | | | | | |
| 1 | Fire/Explosion | Contact with hazards items | Serious badly burns or death | All Chemical substances will be received, stored and handled according to the UAE Federal laws and Ministerial orders. | 4 | 2 | 8 | All general safety guidelines and persuasions will be strictly followed. | 3 | 1 | 3 |
| 2 | Fire/Explosion | Shortage of fire fighting equipment in the case of fire. | Severe burns, Death / TPD (Total Permanent Disability) | Emergency evacuation plan will be in place and necessary training will be conducted to all workers and subcontractors | 3 | 2 | 6 | Adequate fire equipment to be provided and placed at suitable locations.<br><br>Visual and physical inspections | 2 | 1 | 2 |
| 3 | Fire/Explosion | Electrocution. Increased spread of fire. Explosions | Injury to employees. Damage to property | In case of fire in any electric circuit NEVER use water as a means of extinguishing | 2 | 3 | 6 | All temporary electrical system will comply with legal standards and any changes made necessary by contract conditions. A competent technician will carry out practical requirements. | 1 | 2 | 2 |
| 4 | Fire/Explosion | Hot work activities | Death / TPD (Total Permanent Disability) | Hot work and the use of naked flame appliances must be controlled as necessary. Hot work permit must be obtained. | 4 | 3 | 12 | Adequate supervisions will be done | 3 | 2 | 6 |
| 5 | Unsafe storage | Fire / explosion | Severe burns, Death / TPD | Induct workers on usage and storage of combustible | 4 | 3 | 12 | Workers must be trained. All employees on the site will be trained on how to use fire extinguishers to fight small fire if safe to do so and what type of Fire Extinguisher to use for different types of fire | 3 | 2 | 6 |
| **HAND TOOLS** | | | | | | | | | | | |
| 1 | Using Hand tools | Contact with hand tools | Injuries | In order to prevent / eliminate tripping over hazards, no tools shall be left lying around on site | 2 | 2 | 4 | All hand tools return to store after its use, Hand tools will only be used for it's intended purpose. | 1 | 1 | 1 |

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| 2 | General use | Damaged or in appropriate tool | Major cuts / bruise | Only trained person to use the equipments | 1 | 2 | 2 | The correct tool for job is used, tools are maintained regularly ,damaged tools are not used | 1 | 1 | 1 |
| 3 | General use | Damaged or in appropriate tool | Major cuts / bruise | All hand tools good condition and checked regularly. | 2 | 2 | 4 | Toolbox talks training on the safe usage of hand tools will conducted as often as necessary. | 1 | 1 | 1 |
| 4 | Using Hand tools | Broken Handles of tools | Cuts ,buries | Prior to start job check the damaged tools ,avoid all home made tools | 2 | 2 | 4 | Ensure proper inspection. Conduct daily checks before start of activity. Conduct Toolbox Talks | 1 | 1 | 1 |
| 5 | Using Hand tools | Use of incorrect (wrong) tools | Electrocution, cuts ,serious injury | Use the right type of tools for the right job. Conduct Tool Box Talks to highlight the hazard. | 3 | 2 | 6 | Store keeper have to inform management regarding the damaged tools | 2 | 1 | 2 |
| 6 | Using Hand tools | Breaking of, hacksaw blades/Chisels etc. | Eye injuries, personnel injuries | Make regular inspection of hand tools. Proper PPE must be used. Conduct Tool Box talks. Supervision. | 3 | 2 | 6 | | 2 | 1 | 2 |
| | | | | **HEAVY PLANT** | | | | | | | |
| 1 | Loading and off loading | Equipment failing off transporter | Major life threatening / TPD (Total Permanent Disability) | All traffic and pedestrians must be stopped at safe distance away until operations are complete | 4 | 2 | 8 | Strict supervision is required | 3 | 1 | 3 |
| 2 | Operating earth moving plant | Contact with existing live services | Death by electrocution/TPD (Total Permanent Disability) | Existing services identified and clearly marked, isolated | 5 | 2 | 10 | Competent person to supervise | 4 | 1 | 4 |
| 3 | Operating earth moving plant | Fall/spillage of material | Serious injury | Only trained and authorized personnel will operate equipment | 8 | 2 | 16 | Access to the work area restricted by physical barriers, warning signs displayed | 7 | 1 | 7 |
| 4 | Operating earth moving plant | Struck by plant due to operators visibility restricted | Death / TPD | All unauthorized person are excluded from work area | 5 | 2 | 10 | Banks man to direct vehicles/equipment | 4 | 1 | 4 |
| 5 | Operating earth moving plant | Struck by plant due to operators visibility restricted | Death / TPD | Highly visible jackets will be worn | 6 | 2 | 12 | HSE Representative will monitor and ensure usage of PPE | 5 | 1 | 5 |
| 6 | Operating/driving vehicles / plant on site | Collision between plant/vehicles and site personnel | Major life threatening / TPD (Total Permanent Disability) | Only competent ,trained persons to operate plant, | 4 | 2 | 8 | | 3 | 1 | 3 |
| 7 | Operating/driving vehicles / plant on site | Exposure to noise | Long term hearing disorder | Refer to specific noise assessment | 3 | 2 | 6 | | 2 | 1 | 2 |
| 8 | Operating/driving vehicles / plant on site | Operating vehicles / plant near excavations | Death/TPD | Provide stop boards / soil heap etc. to prevent plant and vehicles over running into excavation | 4 | 2 | 8 | If it is night provide adequate light | 3 | 1 | 3 |
| 9 | Using petrol, diesel for refueling on site | Exposure to exhaust fumes /gases, contact with fuel / oils | Long term lung damage, skin irritation,dermatits | Assessment of hazardous substances has to be made | 4 | 2 | 8 | Provisions of suitable gloves and overalls are required | 3 | 1 | 3 |
| 10 | Using petrol, diesel for refueling on site | Explosion | Severe burns/death | Smoking prohibited and signage clearly displayed | 4 | 2 | 8 | All non essential personnel to be excluded from the immediate area | 3 | 1 | 3 |
| | | | | **HOT WORK OPERATIONS** | | | | | | | |
| 1 | Electric Arc welding | Electric shock | TPD / fatalities by electrocution | Only competent, trained persons to carry out this work<br>Competent person must be certified by third party | 4 | 2 | 8 | Allow only authorized must perform, Reduced time exposure should be considered. Effective fume control equipment should be provided.<br>Avoid unauthorized entry, Fire resisting sheets should be used to protect the surroundings from flame and spatter | 3 | 1 | 3 |
| 2 | Electric Arc welding | Ultra violet radiation | Loss of sight / TPD | Use appropriate PPE while at work | 5 | 2 | 10 | PPE usage will be ensured through frequent monitoring and tool box talks | 4 | 1 | 4 |

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| 3 | Gas welding | Fire and explosion from ignition of gas bottles | Severe burn / fatalities, major damage | Only competent, trained persons to carry out this work | 5 | 3 | 15 | Gas cylinders stored and handled correctly, Ensure prior to start hot work activities all combustible material must be remove, all Fire extinguishers and a fire watch ,all hoses must be in good condition and restricted to a maximum of 5m in length. Must be maintained during work | 4 | 2 | 8 |
| 4 | Gas welding | Infra red and visible light given off by welding gas | Loss of sight / TPD | Use of goggles | 4 | 2 | 8 | Screen will be placed around the work to protect 3rd parties Use flash back arrestor ,all Fire extinguishers and a fire watch must be maintained during work. | 3 | 1 | 3 |
| 5 | Using Gas cutting torch | Fire and explosion from ignition of gas bottles | Severe burn / fatalities, major damage | Fully trained and experienced operatives only carry out this work | 4 | 3 | 12 | Gas cylinders stored and handled correctly ,All cylinders will be kept away from heat sources such as direct exposure to sunlight or smoking area. | 3 | 2 | 6 |
| 6 | Using Gas cutting torch | Gas and fumes given off by process | Poisoning by toxic gases and fumes | Elimination of the process or reduction in the usage of gas cutting torch | 2 | 2 | 4 | Person not required for the works prohibited from the area | 1 | 1 | 1 |
| 7 | Using Gas cutting torch | Hot metal | Severe burns | PPE : Cover hauls, gloves and boots | 2 | 1 | 2 | Barricade the area | 1 | 1 | 1 |
| 8 | Using Gas cutting torch | Metal spanner | Severe burns | PPE : Operatives covering for full body, arms, hands, legs and feet | 2 | 1 | 2 | Person not required for the works prohibited from the area | 1 | 1 | 1 |
| **HOUSE KEEPING** | | | | | | | | | | | |
| 1 | House keeping | Trips and falls due to hidden hazards | Major life threatening, Serious bodily injury | All work areas should be kept clean always | 1 | 2 | 2 | Ensure daily monitoring the access | 1 | 1 | 1 |
| 2 | House keeping | Chemicals improper storage or handling | Serious bodily burns due to chemicals | All chemicals must be received, stored and handled according prescribed procedures in the MSDS's | 2 | 2 | 4 | MSDS must be recorded | 1 | 1 | 1 |
| 3 | House keeping | Manual handling | Serious back injury | All workers must be trained for proper manual handling | 1 | 2 | 2 | Avoid improper postures | 1 | 1 | 1 |
| 4 | House keeping | Blocking the Access | Slips, trips and falls | Walkways always must be clear | 4 | 2 | 8 | Ensure daily monitoring the access | 3 | 1 | 3 |
| 5 | House keeping | Eating area | Health problem | Keep eating areas clean and tide Provide drinking water | 1 | 2 | 2 | Daily monitoring all welfare facilities | 1 | 1 | 1 |
| 6 | House keeping | Disposal of waste | Serious spread of epidemic or health problem | Waste food should not be mixed with dry refuse. Food bins should have tightly fitting lids and be emptied at least twice a day | 3 | 2 | 6 | All food waste must be dispose separate | 2 | 1 | 2 |
| **LADDERS** | | | | | | | | | | | |
| 1 | Climbing Ladders | Fall of person | Major life threatening, Fatality | Ladders will be set at the correct angle (1in 4rule) and footed or tied | 4 | 2 | 8 | One man only on a ladder at a time, never climb to very top of ladder/steps | 3 | 1 | 3 |
| 2 | Climbing a ladder carrying equipment | Fall of materials, equipments and tools | Serious injury | Mechanical means of lifting equipment to the work place used when practicable | 2 | 2 | 4 | Operatives will only carry small items ,tools or equipments normally in shoulder bag or similar | 1 | 1 | 1 |
| 3 | Climbing a step Ladder | Fall of person from | Serious injury/fatalities | Leg of steps positioned as far as retaining cord, hinge allows, four legs squarely on ground | 4 | 2 | 8 | Knees to be within stiles and below the top step, All damaged ladders will be removed from site | 3 | 1 | 3 |
| 4 | Working at height from a ladder | Fall of materials, equipments and tools | Major life threatening, Fatality | The area below the work cordoned off | 4 | 2 | 8 | Signage warning of works overhead displayed | 3 | 1 | 3 |
| 5 | Working at height from a ladder | Falling from height | Serious injuries | Ladders will only be used for light, short term work, which can be completed with one hand on the ladder for support | 2 | 2 | 4 | Ladders positioned to avoid necessity for operative to overreach, All ladders checked for any damages before use | 1 | 1 | 1 |
| 6 | Climbing ladders | Ladder collapse | Serious injuries | All ladders/steps will only be used on firm base | 2 | 2 | 4 | No hand made ladders or tools will be allowed on site | 1 | 1 | 1 |
| **LIFTING OPERATIONS** | | | | | | | | | | | |
| 1 | Lifting Operations | Lifting, fall of materials | Fatality, serious injuries | All work/ operation will be undertaken and supervised by qualified Personnel and brief those involved | 4 | 2 | 8 | Works controlled by a banks man, All needed/ necessary PPE's will be worn by employees involve in work activities | 3 | 1 | 3 |
| 2 | Lifting Operations | Failure of equipment | Fatality, serious injuries | Crane test and lifting certificate have been checked | 4 | 2 | 8 | Before lifting all loads are checked to ensure they are within the safe working load of the equipment | 3 | 1 | 3 |

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| 3 | Lifting Operations | Equipment failure or collapse of load | Fatality, serious injuries | Produce a lifting plan detailing the load ,equipment, duration and route of operation and responsible parties | 3 | 3 | 9 | All involved will be aware of the procedures to be followed, helps to ensure equipment is in good working order | 2 | 2 | 4 |
| 4 | Lifting operations | Struck by materials / equipment | Fatality, serious injuries | A safety method of statement is produced for all complicated lifts, should prevent the crane and load from striking any fixed object or trapping persons in the area | 4 | 2 | 8 | Safe load and the load radius indicators will be checked periodically for accuracy | 3 | 1 | 3 |
| 5 | Lifting Operations | Collapse of load | Serious bodily harm and damage to property | Site survey will be undertaken to establish ground good conditions suitability.<br>Ensure materials being lifted are properly packaged and slung | 2 | 1 | 2 | Qualified Banks man/ slingers will be provided where appropriate, will reduce the likelihood of material falling | 1 | 1 | 1 |
| 6 | Lifting Operations | Hand injuries to slinger | Injury | Only trained slinger/banks man and crane operator to be used | 1 | 1 | 1 | Should ensure awareness of the risks involved ,but will not eliminate human error | 1 | 1 | 1 |
| 7 | Lifting Operations | Wrong communications | Fatality, serious injuries, and property damages | The carne driver and banks man to ensure that signal or instructions given are clear and understood | 4 | 2 | 8 | Will reduce the likelihood of misunderstanding signals which could lead to dangerous situations | 3 | 1 | 3 |
| | | | | **LOADING AND UNLOADING** | | | | | | | |
| 1 | Trucks movement | Truck struck personnel, property | Fatality, Property damages | All traffic movement shall be controlled by banksmen, avoid pedestrian crossing and designated the area for crossing | 4 | 3 | 12 | Barricaded the area, isolated from workforce | 3 | 2 | |
| 2 | Loading stores onto ground or at height | Collapse of load, | Fatality, serious injuries | Site management have to monitor all lifting activities | 4 | 3 | 12 | Ensure all hazard awareness and equipment is operated in a safe manner | 3 | 2 | |
| 3 | Operating Fork lift Truck on site | Collision between plant/vehicles and site personnel | Fatality, serious injuries | Trained and competent drivers only ,Access to the work area restricted by physical barriers. Warning signs displayed | 4 | 2 | 8 | Should reduce the risk of the truck colliding with other plant hazardous plant Safe route or traffic system will be implemented | 3 | 1 | |
| 4 | Lifting equipments | Failure of Equipment | Serious injuries, Property damages | Certificate of thorough examination to be available on site, Schedule of maintenance to be followed.<br>A safety method of statement is produced for all complicated lifts, Plant test and certificate have checked | 2 | 2 | 4 | To ensure equipment remains good working order, thus reducing likelihood of equipment failure Safe load and the load radius indicators will be checked periodically for accuracy | 1 | 1 | |
| 5 | Operating Fork lift Truck on site | Dropping materials from Truck | Fatality, property damages, Crush injury-life threatening | Proof of load test certificate have been checked | 4 | 2 | 8 | Warns any passer by and others in the area of the presence of hazardous plant ,Exclude all non workers from premises | 3 | 1 | 3 |
| 6 | Movement of truck in the site | Overturning of fork lift truck | Crush injury-life threatening, property damages | Only those who trained and competent person operate the plant, Drivers to adhere to all speed limits | 3 | 2 | 6 | Reduce the likelihood of Collison, overturning and impact with other vehicles, structures and personnel. Before any lift check weather forecast | 2 | 1 | 2 |
| 7 | Person working in the vicinity of fork lift truck operations | Operator unable to see those persons | Serious bodily injuries, trapped between forklift, crushing, death | Banks man used where operators view is restricted | 3 | 2 | 6 | Highly visible jackets will be worn | 2 | 1 | 2 |
| 8 | Placing loads using the extended lift facility of telescopic fork lift truck | Fall of materials, equipments, tools, uneven ground | Crush injury-life threatening, property damages | Truck not to be used on an incline or unstable or uneven ground<br>Operator is required to ensure load is suitable to extended lift | 2 | 2 | 4 | Banks man to assist in positioning high loads, Reduce the risk of overturning | 1 | 1 | 1 |
| 9 | Refueling on site | Contact with fuel, oil | Skin irritation, dermatitis | Assessment for the usage o of hazardous chemicals and other items to be prepared | 1 | 2 | 2 | Provision of suitable gloves and overalls are required | 1 | 1 | 1 |
| 10 | Refueling on site | Explosion | Severe burns/death | Refueling only to be carried out by competent persons.<br>Smoking prohibited and signage clearly displayed | 4 | 3 | 12 | It will prevent fuel spillages or leaks, and risk of fire occurring<br><br>All non personnel excluded from immediate area | 3 | 2 | 6 |
| | | | | **MACHINERY** | | | | | | | |
| 1 | Using Air powered hand tools | Working with compressed air | Death /TPD | All hose connections checked daily | 5 | 2 | 10 | Hoses are routed so as to reduce the risk of damage | 4 | 1 | 4 |
| 2 | Using a compressor | All hazard associated with this work | Major life threatening, death | Only competent ,trained persons to operate this machine | 3 | 2 | 6 | Adequate supervision provided<br>Appropriate PPE used | 2 | 1 | 2 |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| 3 | Using a compressor | Contact with rotating machinery working with compressed air | Major life threatening | Machine guards in place | 1 | 2 | 2 | | 1 | 1 | 1 |
| 4 | Using compressor | Exposure to noise | Long term hearing disorders | Refer to specific noise assessment | 1 | 2 | 2 | | 1 | 1 | 1 |
| 5 | Using petrol, diesel | Exposure to exhaust fumes /gases | Long term lung damage | Engine will run in a well ventilated area | 1 | 2 | 2 | Exhaust gases directed away from areas likely to put persons at risk | 1 | 1 | 1 |
| 6 | Using pneumatic tools | Exposure to vibration | Vibration whole body | Equipments fitted with anti-vibration components | 2 | 1 | 2 | Exposure time is reduced by rotating people through works | 1 | 1 | 1 |
| 7 | Using pneumatic tools | Unauthorized use of tools | Major life threatening | Only competent ,trained and authorized personnel will operate tools | 2 | 2 | 4 | Air supplies to all tools to be turned off when tools are left unattended | 1 | 1 | 1 |
| | | | | **MAINTAINING SECURITY** | | | | | | | |
| 1 | Public gaining uncontrolled / unauthorized access to site | All hazards associated this project | Bruises, broken ,life threatening | Site secured in order to prevent unauthorized access, Security shall be monitor | 1 | 2 | 2 | Guard provided out of hours if unauthorized entry becomes a problem | 1 | 1 | 1 |
| 2 | Public passing adjacent to site | Public unaware of hazards / dangers | Bruises, broken ,life threatening | Site signage to clearly inform and warn the public of the works | 1 | 2 | 2 | Appropriate site boundary fencing installed | 1 | 1 | 1 |
| 3 | Receiving deliveries/removing waste across pedestrian routes | Trips, struck by materials etc. | Cuts,bruises,sprains | Wherever possible ,deliveries arranged out of peak hours | 1 | 2 | 2 | Unloading will be supervised, deliveries not left so as to cause an obstruction | 1 | 1 | 1 |
| 4 | Pedestrian crossing | Personnel strike by vehicle | Fatality, serious injury | Isolate the area where workforce are crossing, during entry into site and exit time security shall be monitor and stop the vehicle | 4 | 2 | 8 | To avoid unauthorized entry implement ID card system | 3 | 1 | 3 |
| 5 | Electrical power | Fire / Explosion | Death, severe burns | Set up emergency procedures, and fire plan, Check the site/office any equipments or generators are working during peak hours | 4 | 2 | 8 | Sufficient numbers of appropriate fire extinguishers | 3 | 1 | 3 |
| 6 | Office generator/site generator | Fire / Explosion | Death, severe burns, property damages | Prior to stop generator check /inspect any office equipments switched off or not , | 3 | 2 | 6 | Inform concerned authorities regarding system | 2 | 1 | 2 |
| 7 | Vehicle movements on site | Person struck by moving vehicle | Fatal | Speed restrictions established, Security will inform all operators, third party people regarding speed limit in the site as well as office premises | 4 | 2 | 8 | Pedestrian and vehicles segregated where possible | 3 | 1 | 3 |
| 8 | Security | Third party visit / Fall | Serious injury | Security will inform all third party visit to concerned authorities. Assist the visitor during peak time as well as working hours | 3 | 2 | 6 | To avoid unauthorized entry implement ID card system, visitors log book | 2 | 1 | 2 |
| | | | | **MANUAL HANDLING** | | | | | | | |
| 1 | Manual handling | Muscular skeletal injuries if load is too heavy or awkward | Muscular skeletal injuries | Manual handling assessment carried out | 1 | 3 | 3 | Avoid improper manual lifting | 1 | 2 | 2 |
| 2 | Manual handling | Operator falling or tripping | Cuts / lacerations | Safe methods of manual handling shall be briefed to workforce prior to work through TBT | 2 | 2 | 4 | Reduce the amount of manual lifting required | 1 | 1 | 1 |
| 3 | Manual handling | Contamination from substance being carried | Burns / Respiratory disorders | Provision of sufficient and relevant equipments for manual handling | 2 | 2 | 4 | Materials shall be stored properly, Ensure good house keeping | 1 | 1 | 1 |
| 4 | Manual handling | Manual lifting / Fall of materials | Property damages, cuts buries | Utilize mechanical lifting and carrying aids where possible | 2 | 2 | 4 | Operative involved in handling to be assessed for physical capability prior to lifting and carrying | 1 | 1 | 1 |
| 5 | Manual lifting | Improper manual lifting | Muscular skeletal injuries | Operative to get assistance if load too heavy | 2 | 1 | 2 | Team lifting will help reduce strains | 1 | 1 | 1 |
| 6 | Manual handling | No PPE | Injury to all parts of the body. | Operative to wear correct PPE to protect against substance/material being carried | 2 | 1 | 2 | PPE-Appropriate shall be worn | 1 | 1 | 1 |
| 7 | Manual handling | Impact injury from fall of material being carried | Cuts, injuries and lacerations | Ensure loads being carried are secure and are not likely to move during the lift | 2 | 1 | 2 | Will help prevent load topping over and or Operator falling | 1 | 1 | 1 |
| 8 | Manual handling | Operative falling or tripping | Injury to all parts of the body. | Ensure good house keeping standards that is site kept tidy/waste build up minimized | 2 | 2 | 4 | Helps to ensure clear / safe routes for carrying load ,thus reducing potential for trips / falls | 1 | 1 | 1 |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| **MOBILIZATION AND DEMOBILIZATION** | | | | | | | | | | | |
| 1 | Access and egress to site | Serious injury to persons other than workers | Bruises, broken ,life threatening | The site perimeter will be fenced to height of at least 2 meters. Gate security will be assigned and only authorized operatives / personnel will be allowed within the working area. Visitors must be met at gate/reception and escorted at all times whilst on site and provided with appropriate safety clothing | 1 | 2 | 2 | Perimeter lighting to be installed and notices displayed, declaring that the site is a project site. Provide ID card to the workforce, separate walk way shall be identified | 1 | 1 | 1 |
| 2 | Public passing adjacent to site | public unaware of hazards/dangers | Bruises, broken ,life threatening | Site signage to clearly inform and warn the public of the works | 1 | 2 | 2 | Separate walk way shall be provided | 1 | 1 | 1 |
| 3 | Receiving deliveries/removing waste across pedestrian routes | Trips, struck by materials etc. | Cuts,bruises,sprains | Wherever possible ,deliveries arranged out of peak hours | 1 | 2 | 2 | Unloading will be supervised, deliveries not left so as to cause an obstruction | 1 | 1 | 1 |
| 4 | Working adjacent to an occupied building | Dust/fumes | Stress/anxiety | Controls already in place for activity creating the dust/fumes | 2 | 2 | 4 | works programmed to reduce the number of people exposed | 1 | 1 | 1 |
| 5 | Working adjacent to an occupied building | Fire as a result of work/nature of materials | Death, severe burns | Set up emergency procedures, and fire plan | 4 | 2 | 8 | Sufficient numbers of appropriate fire extinguishers | 3 | 1 | 3 |
| 6 | Working adjacent to an occupied building | Noise | Stress/anxiety | Noise assessment carried out | 2 | 2 | 4 | Works programmed to reduce the number of people exposed | 1 | 1 | 1 |
| 7 | Vehicle movements on site | Person struck by moving vehicle | Fatal | Speed restrictions established | 4 | 2 | 8 | Pedestrian and vehicles segregated where possible | 3 | 1 | 3 |
| 8 | Temporary power supply | Electricity power supplies can cause electric shock, burns, blindness, fire / death | Electrocution | All temporary connection will as per industrial standards | 4 | 2 | 8 | Deploy certified electrician for the special work, isolate all temporary power from common area | 3 | 1 | 3 |
| 9 | Lifting activities | Fall of load ,Personnel strike by load | Fatality, property damages | Cordoned the area where lifting activities carried out | 4 | 2 | 8 | All lifting activities must carried out under proper supervisions, banksmen provided for any lifting | 3 | 1 | 3 |
| 10 | Use of crane | Collapse and collision | Fatality, property damages | All lifting activities must carried out under proper supervision | 4 | 3 | 12 | Lifting equipment and lifting tools must be certified | 3 | 2 | 6 |
| **NIGHT DUTY** | | | | | | | | | | | |
| 1 | Welfare Facility | Inadequate welfare facility | Heat related illness | Cool drinking water, frequent breaks, shaded rest area, eating area proper toilets must be provided on site, Night shift personnel shall have access to clean ,adequately illuminated toilets near to the work area | 4 | 2 | 8 | Adequate and regular rest breaks and pauses are essential during at night. Trained first aid facility, while to attend emergency, if any must be available on site at all times | 3 | 1 | 3 |
| 2 | Plant /Vehicle movement at night | Plant / vehicle struck personnel | Serious injury Death / TPD (Total permanent disability) | All plant /vehicle movement shall be directed by banks man ,Identify special route for plant/vehicle, vehicle headlights should be always on low beam while used at night shift | 4 | 2 | 8 | All access will be well lit, identify specific pedestrian routes | 3 | 1 | 3 |
| 3 | Plant /Vehicle movement at night | Collision with other plant/equipment | Property damages/Serious injury | The speed limit will as per site HSE rules and in addition provide one way traffic route due to low visibility, reverse alarm shall be provided | 2 | 1 | 2 | Signage prominently displayed warning of speed limit, flashing beacons / revolving emergency lights fitted for display | 1 | 1 | 1 |
| 4 | Personnel | Low visibility | Serious injury,TPD (Total permanent disability) | All night shift personnel shall be required to wear high visibility/reflective vests over working clothe | 3 | 2 | 6 | Barriers and signage will be positioned. The use of color such as yellow - green for personnel apparel may help to differentiate personnel | 2 | 1 | 2 |
| 5 | Illumination During Night works | Inadequate Lighting | Fall ,Slips, Fatality | All access & Egress , working Platforms Shall be maintain well lit, there shall be provision of adequate battery back up emergency lighting arrangements | 4 | 3 | 12 | Supervisor shall coordinate with light arrangements for contractors and subcontractors | 3 | 2 | 6 |
| 6 | Traffic during night works | Person struck by moving vehicles | Serious injury/Fatality, property damages | All personnel working at night shall wear appropriate high-visibility dress, Minimize or prevent the flow of construction vehicles, equipment and personnel operating in close proximity to the activity area | 3 | 2 | 6 | Speed restrictions established. All mobile plant used at night shall be fitted with audible back up alarms and reversing light | 2 | 1 | 2 |
| 7 | Working at night | Isolated work can be dangerous | Stress/Anxiety | No personnel are permitted to work at night or during late hours alone | 2 | 1 | 2 | | 1 | 1 | 1 |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| 8 | Medical and Emergency services | Working at night | Serious accident | Emergency numbers shall be displayed and teach the people about emergency numbers, each sub contractors shall provide trained first aid person with transportation and communication on all night works | 3 | 1 | 3 | First Aid and Emergency support shall be available to night or out of hour's, Emergency drills shall be conducted to ensure that emergency response systems are in place | 2 | 1 | 2 |
| 9 | Transportation | Sleep difficulties | Serious injury,Fatality,property damages | Separate transportation arrangements for night /out of hours works | 4 | 2 | 8 | Workers shall not be engaged any work at day time | 3 | 1 | 3 |
| 10 | Supervision | Inadequate Supervision | Serious accident | All night shift works and extended hours works shall have adequate supervision during the length of the shift, Supervisors shall be responsible to establish recordable ,efficient and safe hand over systems between two shifts | 2 | 1 | 2 | Conduct TBT to night shift, Monitoring lifting ,carrying ,plant operation | 1 | 1 | 1 |
| 11 | Public gaining unauthorized access to site | All hazards associated this project | PTW,life threatening two shifts | Appropriate site boundary fencing installed to avoid unauthorized access | 3 | 1 | 3 | Security provided during out of hours | 2 | 1 | 2 |
| | | | | **OFFICE WORKS** | | | | | | | |
| 1 | Walking/crossing close proximity to road traffic | Being struck by road traffic | Fatal/TPD | Follow the traffic management system, and use safe alternative route to office | 4 | 2 | 8 | Any additional control measures as directed by local authority and police | 3 | 1 | 3 |
| 2 | Access /egress to office/Stair cases | Fall ,trips, fall from height | Death/TPD | Access should always free from obstacles, ensure the walkways always kept clean | 4 | 2 | 8 | Always mind our steps, avoid mobile phone whilst use of stair cases | 3 | 1 | 3 |
| 3 | Use of lift | All hazards associated with this operation | Major life threatening | Lift doors to be closed/securely off and operating system isolated when work not in progress | 3 | 2 | 6 | In case of fire do not use lift | 2 | 1 | 2 |
| 4 | Limited ventilation | unknown possibly hazardous | Long term lung damage, headache | Provide adequate ventilation | 3 | 2 | 6 | Local exhaust ventilation will be provided | 2 | 1 | 2 |
| 5 | Use the machine like computers, Xerox machine ,printer | Contact with live electrical | Electrocution | Power cables kept away from work area | 4 | 2 | 8 | Only use low power electrical equipments | 3 | 1 | 3 |
| 6 | Using LPG,Electric stove | Fire or Explosion | Major life threatening | Cylinders will be kept outside and the gas supply piped in using rigid copper pipe | 2 | 2 | 4 | Adequate ventilation provided,siwcth off burner if not in use | 1 | 1 | 1 |
| 7 | Computer work | Bad posture | Eye and neck strains | Provide adequate ventilation,lit,adjustable chair | 2 | 1 | 2 | | 1 | 1 | 1 |
| 8 | Disposal of waste | Used cartridge | Water and soil contaminating | Dispose waste as per legislation | 4 | 2 | 8 | Used cartridges are stored separately and disposed proper or return to suppliers | 3 | 1 | 3 |
| 9 | Driving | Unsafe driving | Accident, damages/serious injuries/fatal | Check oil, fuel water and tyre pressure prior to start the vehicle Traffic speed limits and signals must be followed, Using mobile phone while driving is serious offence | 4 | 2 | 8 | Report immediately if any accident to police department as soon as possible | 3 | 1 | 3 |
| 10 | Office work | Electrocution, fire | Severe burns, fatal | In case of fire/electrocution follow safe evacuation procedure and gather in assembly point, do not use elevators | 4 | 2 | 8 | Designate the area for assembly point | 3 | 1 | 3 |
| | | | | **OVERHEAD SERVICES** | | | | | | | |
| 1 | Exposing Buried Electrical Services | Contact with Electrical Cables | Death by electrocution | Permit to work system in operation | 4 | 2 | 8 | Locations clearly marked before commencement of the work | 3 | 1 | 3 |
| 2 | Exposing Buried Electrical Services | Contact with Electrical Cables | Death by electrocution | Plans/drawings of services obtained ,hand digging to confirm location | 4 | 2 | 8 | Competent person to supervise | 3 | 1 | 3 |
| 3 | Exposing Buried Water supply pipes | Damaged pipe causing leakage | Flooding possible drowning | Plans/drawings of services obtained ,hand digging to confirm location, Assessment of likelihood of flooding made before works starts | 1 | 2 | 2 | | 1 | 1 | 1 |
| 4 | Exposing buried waste/foul water drainage | Damaged pipe causing leakage | Infection hazardous substances | Plans/drawings of services obtained ,hand digging to confirm location | 2 | 2 | 4 | PPE-Water proof gloves, water protective suits | 1 | 1 | 1 |
| 5 | Works on/connection to existing services | Contact with Electrical Cables | Death by electrocution | Assessment and method of statement produced prior to works starting, to include details of permit to work system | 4 | 2 | 8 | All live services to be isolated/terminated before work starts | 3 | 1 | 3 |
| 6 | Works on/connection to existing services | Damaged pipe causing leakage | Flooding possible drowning | Assessment of likelihood of flooding made before works starts | 1 | 2 | 2 | All live services to be isolated/terminated before work starts | 1 | 1 | 1 |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| 7 | Works on/connection to existing services | Contaminants from sewage/decaying matter | Infections, disease death | Assessment and method of statement produced prior to works starting, to include details of permit to work system, Additional hygiene and washing facilities established | 4 | 2 | 8 | All live services to be isolated/terminated before work starts, PPE-Water proof gloves, water protective suits | 3 | 1 | 3 |
| 8 | Works on a site with overhead power lines | Contact with overhead services | Death by electrocution | Hazard of overhead services explained at site induction | 4 | 2 | 8 | Barriers with warning signs erected at the safe distance recommended by service provider | 3 | 1 | 3 |
| | | | | **PLASTERING** | | | | | | | |
| 1 | Cutting plasterboard | Using sharp tools | Cuts / lacerations | Only safety knives used | 2 | 2 | 4 | All knives kept sharp to aid smooth cutting | 1 | 1 | 1 |
| 2 | Handling plastering/rendering materials | Contact with hazardous substances | Minor health effects | Assessment to be prepared for the materials used | 1 | 2 | 2 | | 1 | 1 | 1 |
| 3 | Handling plastering/rendering materials | Manual handling | Muscular skeletal injuries | Manual handling assessment carried out | 2 | 2 | 4 | | 1 | 1 | 1 |
| 4 | Jointing | Contact with mastic jointing materials | Minor health effects | Assessment to be prepared for the materials used | 1 | 2 | 2 | | 1 | 1 | 1 |
| 5 | Lifting/placing plaster board and associated materials | Manual handling | Muscular skeletal injuries | Manual handling assessment carried out | 2 | 2 | 4 | Permit to work for all works to supply system | 1 | 1 | 1 |
| 6 | Using electrical mixer | Contact with live electrical shock | Electrocution/severe burns/death | Care will be taken to ensure water does not come into contact with electrical equipment | 4 | 2 | 8 | Correct PPE should be worn | 3 | 1 | 3 |
| 7 | Using electrical mixer | Contact with live electrical services | Electrocution/severe burns/death | All electrical equipment on site will have evidence of a recent inspection record | 4 | 2 | 8 | All electrical equipment on site will be checked prior to use ,damaged equipment will not be used | 3 | 1 | 3 |
| 8 | Working at height | Fall of person,materials,tools, debris | Major life threatening | Refer to risk assessment for working at height | 3 | 2 | 6 | Use proper access and egress/safe scaffolding | 2 | 1 | 2 |
| | | | | **PLUMBING** | | | | | | | |
| 1 | Commissioning /testing water supplied system | Fire or explosion due to oil leaks | Death by electrocution/TPD | Electrical services to be isolated during testing | 4 | 3 | 12 | Services to be identified prior to works command location to be clearly marked | 3 | 2 | 6 |
| 2 | Handling plumbing system components | Poor handling technique | Muscular skeletal injuries | Manual handling assessment carried out | 1 | 1 | 1 | | 1 | 1 | 1 |
| 3 | Installing pipe work in open floors | Fall of materials/debris | Major life threatening | Barriers and signage will be positioned to exclude persons from the area below the works | 2 | 1 | 2 | Loose materials and equipment will be cleared regularly | 1 | 1 | 1 |
| 4 | Installing pipe work in open floors | Fall of materials/debris | Major life threatening | Catchers will be provided underneath openings | 2 | 1 | 2 | | 1 | 1 | 1 |
| 5 | Installing pipe work in open floors | Fall of person through/into open floors | Major cuts/bruises etc. | Openings boarded over to provide a working platform/walkway | 1 | 2 | 2 | Use PPE-full body harness whilst working near to opening areas | 1 | 1 | 1 |
| 6 | Installing pipe work under flooring | Trips from openings in flooring | Major cuts/bruises etc. | Persons not required for the works excluded from the area | 1 | 2 | 2 | Openings covered when not in use | 1 | 1 | 1 |
| 7 | Soldering pipe connections | Burn from hot materials | Severe burns | Hot work will be strictly controlled by a permit to work as part of the safe system of work | 2 | 2 | 4 | PPE-body arms and legs covered ,gloves and suitable footwear worn | 1 | 1 | 1 |
| 8 | Soldering pipe connections | Exposure to fumes and gases from using solder and flux | Poisoning by toxic gases and fumes | Assessments on the usage of solder and flux | 3 | 2 | 6 | | 2 | 1 | 2 |
| 9 | Soldering pipe connections | Fire due to soldering process | Severe burns, death | Hot work will be strictly controlled by a permit to work as part of the safe system of work | 4 | 2 | 8 | PPE-body arms and legs covered ,gloves and suitable footwear worn | 3 | 1 | 3 |
| | | | | **POWER TOOLS** | | | | | | | |
| 1 | Electrical power tools | Electrocution | Muscular skeletal ,fatalities | Only electrical systems conforming to UAE laws and regulations will be used ,All tools will be physically inspected before usage. All appropriate PPE's and protective clothing shall be worn. | 3 | 2 | 6 | All temporary electrical cable should be checked and elevated where possible, otherwise an acceptable alternative method should be found and approved by a qualified person from the | 2 | 1 | 2 |
| 2 | Electrical power tools | Electrocution | Burns,lacerations,Fatalites | All electrically operated tools must be used on a reduced voltage of 110 volts system where practicable or used with and other associated protection | 4 | 2 | 8 | Only qualified electricians will install, maintain and repair electrical supplies | 3 | 1 | 3 |

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| 3 | Electrical power tools | Misuse electrical tools | Fatalities/TPD | Power must be turned off before plugging in any electric tools, Toolbox talks training on the safe usage of hand tools will be conducted as often as necessary. No machine shall be used other than its intended purpose. Never pull electric tool from plug by the cord | 4 | 2 | 8 | Never alter or remove safeguards from tools. All portable electrical equipment will be tested, tagged and inspected at regular intervals dependent on frequency of use | 3 | 1 | 3 |
| | | | | **ROAD WORKS** | | | | | | | |
| 1 | Work on or along live traffic | Struck by traffic | Serious injury, fatality , TPD | Site vehicles are conspicuous in color with roof mounted beacons. All operatives informed at site induction of danger of working with plant and vehicles. Operators must be certified by third party | 2 | 3 | 6 | Barriers to separate site personnel and vehicle / plant, where practicable, identify the place for pedestrians crossing | 1 | 2 | 2 |
| 2 | Work on or along live traffic<br>Work on or along live traffic | Being struck by road traffic | TPD / fatalities, Major damage | Traffic management plan must be complied with<br>Provided banks men for traffic control | 4 | 2 | 8 | Any additional control measures as directed by local authority / police | 3 | 1 | 8 |
| 3 | Work on or along live traffic | Public walking into the works | TPD / fatalities, Major damage | Adequate work zone and warning signs should be posted considering transition from advance to actual work area. | 4 | 2 | 8 | Alternate route at night | 3 | 1 | 3 |
| 4 | Work on or along live traffic | Flying debris from work area, affecting traffic | TPD / fatalities, Major damage | Adequate safety buffer should be provided as indicated in NOC between the traffic and work area | 4 | 2 | 8 | Proper housekeeping & buffer zone | 3 | 1 | 3 |
| 5 | Work on or along live traffic | Inadequate lighting | TPD / fatalities, Major damage | Use of flashing lights on barriers. Adequate lighting if working in dark hours. | 4 | 2 | 8 | Where feasible, schedule works during non-peak hours | 3 | 1 | 3 |
| 6 | Work on or along live traffic | Unintended entry of public vehicles into work area | TPD / fatalities, Major damage | Access and exit control points shall be established. Adequate "No Entry" signs should be placed. | 4 | 2 | 8 | | 3 | 1 | 3 |
| 7 | Work on or along live traffic | Fall of barriers onto workers due to impact/ no impact with vehicular traffic | TPD / fatalities, Major damage | Appropriate rigid barriers to be placed at least 1.5 m buffer from excavation for depths less than 1.2 m, but consideration of traffic speed. For excavations greater than 1.2m, add the depth and 1.5 m for the buffer. However, in case of shored excavations, this can be changed considering traffic loading conditions. | 4 | 2 | 8 | | 3 | 1 | 3 |
| 8 | Work on or along live traffic | Slippery conditions on public roads due to work | TPD / fatalities, Major damage | In non-peak hours clear debris, after obtaining NOC and flagmen control, barricades, warning signage. | 4 | 2 | 8 | | 3 | 1 | 3 |
| 9 | Work on or along live traffic | Public walking into the works | TPD / fatalities, Major damage | Provide , diversions as per NOC, which by design should not force pedestrians onto live traffic. | 4 | 2 | 8 | Alternate route at night | 3 | 1 | 3 |
| 10 | Work on or along live traffic | Blind Spots | | Hoardings should not present bling spot to pedestrians or workers | 4 | 2 | 8 | | 3 | 1 | 3 |
| 11 | Work on or along live traffic | Falling barriers when placing barriers | | Follow safe lifting procedures, appropriate equipment | 4 | 2 | 8 | Work as per traffic management plan and NOC | 3 | 1 | 3 |
| | | | | **WORK AT HEIGHT** | | | | | | | |
| 1 | Working next to excavation | Unprotected excavation, fall onto excavation | Fatality, Major Injuries, Property Damage | Provide rigid barriers that are interlocked where fall hazard exists > 1.2 m or where interface with public could occur. Adequate warning signage . | 4 | 2 | 8 | Inspection by competent personnel, Permit System | 3 | 1 | 3 |
| 2 | Erecting/ dismantling scaffold | Fall from height<br>Falling/dropped objects | Fatality, Major Injuries | Competent scaffolders only allowed to erect/ dismantle<br>Safe sequence of erecting/ dismantling<br>Where possible, tool tethering<br>Cordon off the work area<br>Mandatory use of double lanyard. | 2 | 2 | 4 | | | | |
| 3 | Formwork erection | Fall from height<br>Falling/dropped objects | Fatality, Major Injuries | Open edges to be protected by top, mid and bottom rail and toe board where applicable.<br>Competent supervision to be present.<br>Mandatory use of double lanyard. | 2 | 2 | 4 | | | | |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| 4 | General/ Overall working at height | Fall from height<br>Falling/dropped objects | Fatality, Major Injuries | Where feasible work at ground level instead of heights<br>Provide top,mid and bottom rail and toe boards (where applicable)<br>Working platform to be erected and certified by competent person where applicable<br>Collective fall protection system should be preferred<br>Double lanyard to be used. | 4 | 2 | 8 | Work permits to be used for work at heights<br>Competent supervision should be at location<br>Periodic Inspection of working platform<br>Lifelines to be erected and inspected by competent person<br>Full body harness should be periodically inspected. | 3 | 1 | 3 |
| **EXCAVATION WORKS** | | | | | | | | | | | |
| 1 | Movement of Earth moving equipment | Struck by moving object | Fatalities, Injuries, Property damage | Ensure workers away from the swing radius of excavator.<br>Workers can be within swing radius only if the bucket is down and equipment operation isolated.<br>Competent operators<br>Movement as per traffic management plan, and authorization<br>Cordon off the area of movement if it is in public area<br>Spotters/ Flagmen | 4 | 2 | 8 | Ensure Excavation surplus material stacked at safe distance (1.5 times the depth of the excavation) away from the edge. Ensure stoppers are being installed for reversing vehicles at the safe distance away from the edge. Suitable means of access/egress to/from the excavation (every 8 meters lateral travel distance) to be provided. | 2 | 2 | 4 |
| 2 | UG services | Electrocution/ impact from pressured pipelines/ Fire | Fatalities, Injuries, Property damage | NOCs from regulatory authorities & Excavation permit.<br>Trial pits<br>Use of cable detectors Manual excavation near live UG lines<br>Appointment of Competent operators.<br>Lay out of existing UG services.<br>Sufficient shoring or benching / sloping for excavation.<br>Provide appropriate barrier along edges & safe access / egress<br>Supervision of excavated area<br>Dewatering of UG water. | 4 | 2 | 8 | Ensure Excavation surplus material stacked at safe distance (1.5 times the depth of the excavation) away from the edge. Ensure stoppers are being installed for reversing vehicles at the safe distance away from the edge. Suitable means of access/egress to/from the excavation (every 8 meters lateral travel distance) to be provided. | 2 | 2 | 4 |
| 3 | Collapse of soil due to overburden pressure, traffic load, unstable soil profile, vibration | Asphyxiation, getting buried | Fatalities, Injuries, Property damage | | 4 | 2 | 8 | | 2 | 2 | 4 |
| 4 | Underground water / flooding | Drowning, disruption of traffic nearby | Fatalities, Injuries, Property damage | | 4 | 2 | 8 | | 2 | 2 | 4 |
| 5 | Unprotected excavation | Fall into the excavation, falling objects | Fatalities, Injuries, Property damage | | 4 | 2 | 8 | | 2 | 2 | 4 |
| 6 | Handling of material/ tools | Poor ergonomics | Muscular-skeletal injuries | Use appropriate tools<br>Ergonomic handling awareness to be provided | 4 | 2 | 8 | Supervision to ensure breaks where necessary | 2 | 2 | 4 |
| **WORKING IN PUBLIC AREAS** | | | | | | | | | | | |
| | | Hazards for children | Fatalities, Major injuries | Secure sites adequately when finishing work for the day.<br>Barrier off or cover over excavations and pits.<br>Isolate and immobilize vehicles and plant and if possible lock them in a compound.<br>Store building materials (such as pipes, manhole rings, and cement bags) so that they cannot topple or roll over.<br>Remove access ladders from excavations and scaffolds.<br>Lock away hazardous substances. | 2 | 2 | 4 | | | | |
| | | Openings and excavations | Fatalities, Major injuries | put up barriers or covers. | 2 | 2 | 4 | | | | |
| | | Stacked materials | Fatalities, Major injuries | Store materials within the site perimeter, preferably in secure compounds or away from the perimeter fencing. | 2 | 2 | 4 | | | | |

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| | | Scaffolding and other access equipment | Fatalities, Major injuries | Prevent people outside the boundary being struck while they are erecting, dismantling and using scaffolding and other access equipment<br>Exclude the public from the work area whenever possible;<br>Fence off the area and provide alternative routes which are clearly signposted<br>and avoid additional crossing of the road wherever possible;<br>Erect, modify and dismantle equipment when there will be fewer members of<br>the public in the area and always use warning notices;<br>Fans, tunnels and sheeting are a useful means of protection. Make sure the<br>scaffold is designed to take the extra loading and wind resistance;<br>Ask for protective measures to be put in place at an early stage during erection<br>and have them removed as late as possible during dismantling;<br>Use brick guards, netting or other suitable protection to prevent materials falling;<br>Do not drop or throw components during erection or dismantling;<br>Make sure the working platform is constructed to<br>prevent materials falling through it, eg double board scaffold platforms and<br>insert a layer of strong polythene between the two sets of boards (a few small<br>punctures will allow rainwater to drain away);<br>Make sure scaffold components do not project where there is a risk to people or vehicles;<br>Bolts on couplings should face away from the public or be wrapped;<br>Consider enclosing the base of the scaffolding to prevent climbing, especially<br>on or near occupied residential premises and schools. Consider the use of anticlimbing paint; | 2 | 2 | 4 | | | | |
| | | Site vehicles/ Plant & Equipment | Fatalities, Major injuries | Segregate pedestrians and vehicles wherever possible;<br>Avoid crossing traffic flow. Divert site traffic away from pedestrianised areas and built-up housing estates, if possible;<br>Make sure there are adequate control measures to prevent people falling from vehicles;<br>Minimize reversing on to roads or public areas;<br>Control stocks to make sure you have the right materials at the right time;<br>Wherever possible, provide adequate space on site for offloading vehicles;<br>Allow sufficient clearance around mobile loading arms;<br>Choose delivery times which avoid busy pedestrian or traffic periods;<br>Use a banksman to direct vehicles and to assist with loading and unloading;<br>Give delivery companies advance notice of routes to follow or avoid, and loading/unloading arrangements etc.;<br>Discourage drivers from bringing children on to site. If this is unavoidable, prohibit children leaving the cab, at all times, unless they can go to a safer place;<br>Make sure loads are properly secured;<br>Provide wheel washers and make sure drivers use them before leaving<br>contaminated sites; and<br>Secure vehicles and plant when not in use. If possible, leave them in a secure area overnight and immobilize them. | 2 | 2 | 4 | | | | |

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| | Excavation, pipelaying and other works in public areas | Falling objects | Fatalities, Major injuries | Always plan how materials will be raised and lowered;<br>Do not throw materials into an uncontrolled area ;<br>If possible, avoid working above a public area;<br>Ensure there are safe systems of work when dismantling equipment, egg striking formwork or dismantling scaffolds to prevent components and timbers falling into public areas;<br>Provide debris netting to trap small pieces of ejected material;<br>Keep material storage to a minimum – provide brick guards and never store materials above the height of the brick guards;<br>Protected walkways may be needed in some circumstances<br>Where it is not possible to eliminate the risk of materials falling or being ejected, the area should be fenced off or at least demarcated. Only authorized people should enter and even their access should be controlled to avoid times when<br>there is a risk of them being struck; Identify areas of risk and put up warning signs. | 2 | 2 | 4 | | | | |
| | | Slips, trips and falls within pedestrian areas | Fatalities, Major injuries | Segregate or control access to the work area by physical barriers or warning signs. If tape is used ensure it does not become a tripping hazard itself;<br>Work during hours when the public is less likely to be in the area;<br>Provide clear signs and proper protection at obstructions;<br>Use temporary flooring material, eg plywood or steel plates, to cover uneven ground or potholes;<br>Avoid trailing cables (especially on stairways). Cover or fix any which need to cross pedestrian areas;<br>Provide lighting at night and in dark areas;<br>Remove waste and rubbish as it arises;<br>Reinstate surfaces properly and as soon as work is complete;<br>Clear all spillages and obstructions from public routes as soon as possible and always before the public are allowed access to the area again. | 2 | 2 | 4 | | | | |
| | | Plant, machinery and equipment | Fatalities, Major injuries | All plant should be immobilized out of hours;<br>Remove keys and starting handles and try to store them in a compound or<br>similar secure area;<br>Cab covers also make vehicles more difficult to enter;<br>Place excavator buckets, lift-truck forks etc. on the ground at the end of the day;<br>Do not drive plant along public roads with the boom/ forks raised too much.<br>The driver should have a clear view;<br>Avoid lifting across public areas if possible;<br>Properly support and chock bowsers to prevent accidental displacement;<br>Check that all plant and equipment operatives are competent; and<br>Remove cartridge guns and cartridges from site where possible, or lock them<br>up at the end of the day. Clear up all used and misfired cartridges at least daily | 2 | 2 | 4 | | | | |

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |
| | | Hazardous substances | Fatalities, Major injuries | Use less hazardous materials if possible, eg water rather than solvent-based paints;<br>Change the way work is done, eg use water suppression or local exhaust<br>ventilation where dusts are created;<br>Apply solvent-based paints or adhesives by brush rather than spraying;<br>Exclude everyone not directly involved in the work from the vicinity – this can be particularly necessary during woodworm and damp-proof chemical treatments;<br>Plan and control the amounts ordered and delivered;<br>Limit the amount of flammable or hazardous substances handled or used on site at any one time;<br>Only decant hazardous materials into suitable, properly marked containers;<br>Collect and dispose of empty containers; and<br>Store all hazardous substances in suitable containers or in secure compounds when not in use. | 2 | 2 | 4 | | | | |
| | | Electricity and other energy sources | Fatalities, Major injuries | Use a suitably protected supply, cordless tools or reduced voltage equipment, eg 110 V center tapped. For other purposes, such as lighting, it may be possible to use even lower voltages; Where not feasible, use higher volts with ELCB<br>Place lights out of reach and away from other parts of the electrical system which may expose people to danger;<br>Ensure gas cylinders and appliances are fitted with valves which require special tools to turn on the supply;<br>Isolate gas cylinders when not in use and lock them in a secure cage out of ours;<br>Secure cylinders to prevent them toppling;<br>Secure bowsers in a stable frame and padlock them off; and<br>Avoid lighting fires. Remember, some substances give off toxic fumes when burned.<br>Ensure that any fires which are lit are properly extinguished well before the end of the day. | 2 | 2 | 4 | | | | |
| | | Dust, noise and vibration | Environmental Contamination<br>Respiratory Issues<br>Temporary hearing loss<br>HAVS | Use noise suppression on equipment;<br>Adopt different work methods, eg when cutting paving slabs consider the use of guillotines rather than disc cutters;<br>Use stacks of materials or existing features as temporary noise barriers;<br>Use low-dust products;<br>Use water suppression or exhaust ventilation;<br>Carry out the work off site;<br>Work at times when the public are less likely to be in the area; and<br>Provide solid barriers adjacent to public areas. | 2 | 2 | 4 | | | | |

**E- Extreme, H - High, M - Moderate, L - Low**

| S.No | Activity | Hazard | Consequences | Existing Control Measures | Risk Level | | | Additional Control Measures | Residual Risk Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P | S | R | | P | S | RR |

| | Severity | | | | |
|---|---|---|---|---|---|
| Likelihood | Negligible | Marginal | Serious | Critical | Catastrophic |
| Highly Probable | 5 | 10 | 15 | 20 | 25 |
| Probable | 4 | 8 | 12 | 16 | 20 |
| Occasional | 3 | 6 | 9 | 12 | 15 |
| Remote | 2 | 4 | 6 | 8 | 10 |

**SEVERITY SCALE**

| Category | Generic Description | | Rank | Value |
|---|---|---|---|---|
| | Environment | Reputation | | |
| Catastrophic | Violation of legal requirements. Massive effect, severe environmental damage extending over a large area. Causing irreversible damage to one or more components (land, water & air.) | Internal Impact, extensive adverse attention in international media. | High | 5 |
| Critical | Almost near to legal violation. Major effect, serious impacts to habitat or environments. Extensive measures required to restore damage. | National impact, extensive adverse attention in national media | Medium High | 4 |
| Serious | Localized effect, limited discharges. Affecting only closed proximity. Small-scale measures required to restore damages. | Community public concern. Adverse stance of local government and action groups. | Medium | 3 |
| Marginal | Minor effect contained release of pollutant. Spontaneous recovery of effect. | Limited impact, some local public/media with limited unpleasant impact on operations. | Medium Low | 2 |
| Negligible | Insignificant effect, transitory impact on environment. Causing temporary nuisance. | Minor impact, public alertness may exist, but no public concern. | Low | 1 |

| Category | Generic Description | Rank | Probability | Value |
|---|---|---|---|---|
| Highly Probable | Almost sure to occur during routine activities. A monthly or more frequent occurrence would fall in this category. | High | ≥75% | 5 |
| Probable | A high chance of occurrence. Could occur once in six months. | Medium High | ≥50% ≤75% | 4 |
| Occasional | Medium chance of occurrence. Could occur once a year | Medium High | ≥25% ≤75% | 3 |
| Remote | The chance of ocurence is low and could happen with a probability of once every 2-5 years. | Medium Low | ≥5% ≤50% | 2 |
| Improbable | The chances of occurrence are very unlikely. Not heard of it in past five to ten years. | Low | ≤5% | 1 |

E- Extreme, H - High, M - Moderate, L - Low