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| <p>Client</p>  <p>قطر تستحق الأفضل Qatar Deserves The Best</p> |  | <p>CONSTRUCTION OF TERMINAL SEWAGE PUMPING STATION AT DOHA NORTH STW PACKAGE 3 –C823/3.</p> <p>RISK ASSESSMENT Installation of HDPE pipes and fittings.</p> |  |
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| Activities | Potential Hazard | Risk Rating | | | | Hazards Control | Responsible Person | Final Residual Risk Rating | | | |
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| | | S | L | RR | Category | | | S | L | R R | Category |
| 1. Work Permit (PTW) | Unauthorized commencement of works may result in exposing people to potential harm and property damage | 3 | 2 | 6 | Medium | <ul style="list-style-type: none"> Authorized PTW holders shall ensure obtaining and maintaining valid work permits. Appropriate and relevant permit will be obtained from Ashghal/Traffic department/Municipality/Environmental/Kahramaa etc. PTW holder/Site Engineer will ensure that all the precautions/rules and regulations of Ashghal/Traffic department/Kahramaa will be complied. Inform all the people regarding permit conditions before work starts. | Construction Manager/Site Engineer/Permit coordinator | 1 | 2 | 2 | Low |
| 2. Materials delivery | Incompetent Operator or Signaler. | 3 | 4 | 12 | High | <ul style="list-style-type: none"> Proper planning before loading and unloading shall be done. Follow approved lifting MS/RA. | CM Site Engineer Supervisor | 1 | 4 | 4 | Low |

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| <p>loading / unloading / installation of electrical equipment (a) Lifting operation with heavy equipment's.</p> | <p>Incompetent lifting team.</p> <p>Lack of planning.</p> <p>Lack of supervision.</p> <p>Collision with other equipment</p> <p>Caught in between equipment</p> <p>Failure of lifting equipment & gears</p> <p>Load slipping / falling / dropping during the operation.</p> <p>Crane Overturn Working & crossing</p> | | | | | <ul style="list-style-type: none"> • Ensure an approved Lifting plan is available for any lifting activity. • Ensure all the lifting team members are competent and trained. • Ensure the presence of a Competent Supervisor with Ashghal approved 3rd party trained and certified. • The area shall be barricaded or guarded to prevent the entry of un authorized people and equipment. • Display safety signage for additional information and precautionary measures. • Ensure that crane used for lifting is inspected and with TPC compliance certificate. • Make sure driver and operators have valid Qatari license and authorized to operate crane. • Certified riggers with valid 3rd party certificate from the Ashghal approved agency must be present when lifting. | <p>Foreman OHS INSPECTOR</p> | | | | |
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| | <p>under suspended loads.</p> <p>Environmental factors such as high wind, rain, lightning, unstable ground conditions etc. leading to overturning, fall of equipment.</p> <p>Lack of proper communication between rigger and the operator.</p> <p>Contact with Overhead services.</p> | | | | | <ul style="list-style-type: none"> • Operators cab cleared of sight obstruction. • All lifting equipment/accessories shall be pre-inspected. • Make sure proper communication systems are in place. • Crane must have valid TPC. • Lifting accessories shall be inspected and certified (every 6 months) from the ASHGHAL approved certifying body. • Operator shall be conduct the pre use inspection thoroughly before use and ensure the safe condition of the Equipment. • Adequate base or Outrigger pad must be placed. • Tag-lines will be used to control the load. • Ensure the load weight is less than SWL. • All involved people shall wear appropriate PPE. | | | | | |
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| | | | | | | <ul style="list-style-type: none"> Internal Lift Permit shall be obtained prior start any lifting. Ensure the wind speed limit is below that 25knotns. | | | | | |
| (b) Storage of Materials / Accessories | <p>Improper storage methods.</p> <p>Shortage / lack of proper storage facilities.</p> <p>Un protected area.</p> <p>Chances for sun light and rain.</p> <p>Over stacking / stacking with exceeded height.</p> <p>Stacking dis orderly.</p> | 3 | 2 | 6 | Medium | <ul style="list-style-type: none"> Designated storage facilities at site shall be established and ensure that floor is even and properly compacted / concerted. Materials shall be placed on the wooden/ metal pallet. Wooden timbers / planks / spacers shall be placed between materials Materials shall be secured properly. Safe stacking height limit shall be maintained Exclusion zone shall be established around the storage area. Do not over stock the Materials and stock orderly. Ensure the provision of proper | <p>CM Site Engineer Supervisor Foreman OHS INSPECTOR</p> | 1 | 2 | 2 | Low |

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| | Stacking in the access and egress. Slip & trips | | | | | | access and egress. | | | | | |
| 3. Working inside the Excavation / trenches | Unfamiliar with site Lack / shortage of access. Exposure to underground services. Edge collapse. Fall of boulders /loose materials, from the edges of the excavation. Chances for flooding. | 4 | 3 | 12 | High | <ul style="list-style-type: none"> Ensure all the mandatory Permits are obtained. Ensure all the Employees were completed the safety induction/ Required mandatory training. Make sure a proper access is available to entre in to the excavation. Ensure the regular excavation inspection has been completed by the competent. Ensure all the confined space precautions has been taken. Daily briefing shall be conducted by the competent Supervisor. TBT Shall be conducted prior to start the activity. | CM Project / Site Engineer Foreman Supervisor OHS Inspector | 1 | 3 | 3 | Low | |

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| | <p>Works together md</p> <p>Fall from scaffolding</p> <p>Not wearing mandatory PPE</p> | | | | | <ul style="list-style-type: none"> • Ensure all the Employees are wear mandatory PPEs. • Ensure the loose boulders are cleared from the edges of the excavation. | | | | | |
| <p>4. Installation of HDPE pipes & fittings. (a) Trench preparation & Sand bedding</p> | <p>Exposure to sand & dust, Decrease workers comfort efficiency and damage to health, Eye injury</p> <p>Edge collapse</p> <p>Lack of proper Access and egress.</p> <p>Availability of reptiles.</p> | 2 | 3 | 6 | Medium | <ul style="list-style-type: none"> • Ensure a competent supervisor monitoring the activity. • The workers shall be trained and aware about the particular activity. • Ensure adequate access & egress are provided. • Edges of the trenches shall be protected. • Supervisor shall be checked the trenches and make sure the safe situation prior start the activity. • Conduct pre task briefing / TBT before start the activity. • Workers who are handling materials manually wear dust mask, safety goggles and other mandatory PPEs. | <p>Site Engineer Supervisor Foreman OHS INSPECTOR</p> | 1 | 3 | 3 | Low |

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| | | | | | | <ul style="list-style-type: none"> • Ensure all hand tools are safe and free from any damage. • Compacter are inspected and safe to use. | | | | | |
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| (b) Welding of HDPE pipes | <p>Electric shock.</p> <p>Burn injury.</p> <p>Cuts or wounds while positioning the machine.</p> <p>Fall & trip hazard</p> <p>Fumes</p> | 3 | 3 | 9 | High | <ul style="list-style-type: none"> • The Electro fusion welding equipment must be in good condition. • Only trained and competent personnel shall operate the machine. • The Butt fusion welding machines shall be inspected and certified by an Aashghal approved 3rd party. • Ensure the but fusion welder trained and certified by an Ashghal approved 3rd party. • Welding operation shall be carried out by only qualified and experienced HDPE pipe fitters and welders • Barricade the area around the butt and electro fusion welding works. • Continuous supervision shall be maintained at site • Proper PPE shall have worn by everyone. • Proper care shall be taken while handling the sharp blades of | <p>CM</p> <p>Site Engineer</p> <p>Supervisor</p> <p>Foreman</p> <p>OHS INSPECTOR</p> | 1 | 3 | 3 | Low |
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| <p>(c) Pipe laying to trench Manual Handling</p> | <p>Incompetent people. Improper manual handling methods. Lack of awareness. Lack of adequate supervision. Lack of necessary PPEs. Shortage of adequate employees. Rushing from the superiors. Stress, physical tiredness, mood swing etc...</p> | <p>2</p> | <p>3</p> | <p>6</p> | <p>Medium</p> | <ul style="list-style-type: none"> • Only competent person will be assigned for manual handling materials. • Ensure the people are trained internally and aware about the particular activity. • Ensure adequate supervision has been in place. • Adequate lighting arrangements shall be provided. • Access and egress shall be provided and clear from any obstruction. • Sharp edges / corners of the load shall be protected properly. • Ensure all the team members are wear mandatory PPEs. • The supervisor / Foreman shall ensure adequate number people are available for the particular activity. • Job rotation system shall be implemented if required. • Provide alternative rest breaks. • Ensure adequate welfare facilities. | <p>CM Site Engineer Supervisor Foreman OHS INSPECTOR</p> | <p>1</p> | <p>3</p> | <p>3</p> | <p>Low</p> |
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| | <p>Slip trip and fall</p> <p>Lifting of the weight beyond the capacity</p> <p>Long carrying distance</p> <p>Improper body posture</p> <p>Awkward and bulky loads</p> <p>Damage materials, hand injury, back pains, materials falling, failure of crane and lifting tackles.</p> | | | | | <ul style="list-style-type: none"> Supervisor shall conduct Pre task briefing / TBT prior start the activity. | | | | | |
| 5. Use of Power tools | Electrocution / Electric shock | 3 | 3 | 9 | High | <ul style="list-style-type: none"> Inspection for damage/defects to tools, cables, plugs - defective tools to | CM Site Engineer | 1 | 3 | 3 | Low |

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| (Grinder / Cutter) | <p>Human error</p> <p>Short circuit.</p> <p>Fire and explosion.</p> <p>Lack of machine guard / Handle.</p> <p>Use of damaged / faulty disk.</p> | | | | | <p>be taken out of use immediately</p> <ul style="list-style-type: none"> • Proper use of PPE for all workers (gloves, hearing protection, defenders/plugs, dust masks) • Cables to be routed away from aisles and walkways where they could create trip hazards to other persons and/or expose cables to potential damage. • All the power tool's cables shall be double insulated type. • Trained workers can only operate power tools • Periodically check tools for damage/defects and where necessary take out of action and label "Do not use" • Improvised electrical connections are not allowed. | <p>Supervisor Foreman OHS INSPECTOR ELECTRICIAN</p> | | | | |
| 6.Man and Equipment interface | <p>Unauthorized / Incompetent Operator</p> <p>Poor maintenance of plant &</p> | 4 | 3 | 12 | HIGH | <ul style="list-style-type: none"> • The working area shall barricaded / protected from un authorized entry. • Only authorized and Trained Persons must be allowed to operate Plant & Equipment | <p>CM Site Engineer Supervisor Foreman OHS INSPECTOR</p> | 1 | 3 | 3 | low |

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| | | | | | | <p>available and visible at site</p> <ul style="list-style-type: none"> • Banksmen shall be trained from approved PWA institute • Proper daily task talks to workforce prior to commence activity • No one should be allowed to work in the danger zone of the equipment | | | | | |
| 7.Access & Egress to Work Site | No adequate access / egress for construction vehicle into and out to work zone | 3 | 2 | 6 | Medium | <ul style="list-style-type: none"> • Provide adequate safe access / egress to work zone • Ensure adequate ROW is secured and obstacles are identified to allow for safe vehicle/ equipment operations into and out of the work zone • Access restrictions, such as barriers, are required for hazardous work areas. • Access and egress should be controlled, safe, suitably constructed, kept free of obstructions and well maintained • Maintain the speed limits of the vehicles • Install the warning signage's | Site Engineer Supervisor Foreman OHS INSPECTOR | 1 | 2 | 2 | low |

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| | | | | | | <ul style="list-style-type: none"> • If necessary, construct the speed humps to control the speed limits • Provide appropriate information to construction vehicle / equipment drivers so that they know the safe location to enter or exit the work zone • Provide boom gate and assigned site security to prevent unauthorized entry • Provision of sufficient illumination on the access & egress point | | | | | |
| 10. Works during night. | <p>Lack of light /vision. Poor illumination.</p> <p>Lack of getting attention of others in case of emergency.</p> <p>Equipment / Vehicle accidents, personnel</p> | 2 | 3 | 6 | Medium | <ul style="list-style-type: none"> • Enough lightings and reflective sign boards will be placed at required locations. • Signalmen / watch persons will be posted at strategic locations. • Lonely works will not be allowed during night. Continuous supervision will be provided for jobs. • Area will be cordon off to avoid heavy equipment passing or stuck. | CM Site Engineer Supervisor Foreman OHS INSPECTOR | 1 | 3 | 3 | Low |

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| | accidents, injury. | | | | | | | | | | | |
| 11.Working in Hot Weather Conditions | Hot weather environment | 3 | 3 | 9 | High |  | <ul style="list-style-type: none"> • Proper tool box talk • Cold drinking water and use electrolyte drinks. • Lone working should not be allowed. • Take regular breaks in the shade • If you start feeling ill, stop what you are doing immediately and take steps to cool down. Tell your supervisor. • Wear light-weight, loose-fitting, light-colored, breathable (cotton) clothing with long sleeve and hat/Face cover. • Heat stress awareness training, buddy system, work rest cycles, • During the period from June 1st until 15th September , work under direct sun rays is prohibited from 10am to 3:30 pm as per MADLSA No 17 of the year 2021 Article 2 | CM Site Engineer Supervisor Foreman OHS INSPECTOR | 1 | 3 | 3 | low |
| 12.1Working in Cold Weather Conditions | Cold weather environment | 3 | 2 | 6 | medium | | <ul style="list-style-type: none"> • Proper toolbox talk • Wear warm and suitable clothes. • Frequent rest break in warm room or | CM Site Engineer Supervisor | 1 | 2 | 2 | Low |

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| | | | | | | <ul style="list-style-type: none"> shelter. Warm up exercises during activities in the cold. Drink tea /coffee Wear warm head covering Wear layered clothing Protect feet and hands | Foreman OHS INSPECTOR | | | | |
| 13. Environmental | <p>Spillage of chemical / diesel or petrol etc...</p> <p>Poor housekeeping.</p> <p>Dust , fumes etc...</p> | 3 | 2 | 6 | Medium | <ul style="list-style-type: none"> Maintain High standard of housekeeping Provide drip tarry under any container handling the chemical. All container/CAN shall be disposed as per MSDS/manufacturer recommendation. Ensure proper dust control measures are in practice. Ensure all the employees are wearing mandatory PPEs. | CM Site Engineer Supervisor Foreman OHS INSPECTOR ENVIRONMENTAL SPECIALIST | 1 | 2 | 2 | Low |
| 14. Working in confined space | <p>Breathing suffocation.</p> <p>Lack / shortage of access and egress.</p> | 3 | 4 | 12 | High | <ul style="list-style-type: none"> Obtain confined space PTW Confined space activity shall be only permitted when under supervision by supervisor who has third party training certificate from the Ashghal approved | CM Site Engineer Supervisor Foreman OHS INSPECTOR | 1 | 4 | 4 | Low |

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| | <p>Falling from height.</p> <p>Lack of communication</p> <p>Heat</p> <p>Stress, nausea, mood swing and head ache.</p> | | | | | <p>training centre.</p> <ul style="list-style-type: none"> • Entry attendant must have third party training certificate • All entrants shall undergo approved internal confined space training • All competent/trained person who finished the confined space training shall be issued with CS stickers on their hard hat for identification • Maintain log sheet • Entry attendant shall not leave his post and shall ensure continuous communication with entrants • Gas test if required. AGT shall only be the person who will do the gas test. • Remove all hazardous material inside the confined space. • Provide all hazard material inside confined space • Provision of adequate ventilation by mechanical means • No generator and any equipment that will generate smoke/emission to kept | | | | | |
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| | | | | | | <p>in nearby confined space</p> <ul style="list-style-type: none"> • Provision of safe access/egress. Isolation of access with suitable signs to avoid unauthorized entry. • Restrict unauthorized entry into confined space by barricading and providing safety signs. • Ensure the Provision of proper communication system. • Provision of illumination with low voltage (54 lux) • All entrant must wear full body harness and attached to rescue equipment • Rescue plan. rescue persons and Rescue equipment's are on standby to retrieve any person requiring assistance. • TBT to be conducted and before start entry • Full supervision | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|

Likelihood of Risk

| Likelihood | Description | Rating |
|-------------|--|--------|
| Unlikely | Occurrence close to zero | 1 |
| May happen | Capable of taking place | 2 |
| Likely | Tends or inclined to occur | 3 |
| Very likely | High inclination of occurrence | 4 |
| Certain | Most definitely happen - not "if but when" | 5 |

Severity of Risk

| Severity | Description | Rating |
|--------------|----------------------|--------|
| Minor injury | First-aid on site | 1 |
| Minor injury | Treatment off site | 2 |
| RWC | Between 1 and 7 days | 3 |
| LTI | 7 or More days | 4 |
| Fatal | Death | 5 |

| | | |
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Classification:

- 1 - 4 Attention Required – Low Risk
- 5 - 9 Corrective Measures Required – Medium Risk
- 10 - 16 Corrective Action Required – High Risk
- 20 - 25 Serious Risk – Elimination of hazard required.

Risk Rating Table

| | | Likelihood | | | | |
|----------|---|------------|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 |
| Severity | 1 | 1 | 2 | 3 | 4 | 5 |
| | 2 | 2 | 4 | 6 | 8 | 10 |
| | 3 | 3 | 6 | 9 | 12 | 15 |
| | 4 | 4 | 8 | 12 | 16 | 20 |
| | 5 | 5 | 10 | 15 | 20 | 25 |

| | | | |
|---|---|--|---|
| <p>Client</p>  <p>قطر تستحق الأفضل Qatar Deserves The Best</p> |  <p>KHATIB & ALAMI</p> | <p>CONSTRUCTION OF TERMINAL SEWAGE PUMPING STATION AT DOHA NORTH STW PACKAGE 3 –C823/3.</p> <p>RISK ASSESSMENT Installation of HDPE pipes and fittings.</p> |  <p>ALJABER ENGINEERING هندسة الجابر</p> |
|---|---|--|---|

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|-------------------------|------------|-------------------------|-------------------|-----------------|-------------|
| Prepared by: | Daud Ahmed | Reviewed by: | Ravi Ranjan Gupta | Approved by: | Muin Alawna |
| Project OHS Engineer | | Construction Manager | | Project Manager | |

| | |
|---|--------------------------|
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