TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
190707	RA-2026-dEoMkq4u	15.08.2026	A

PROJECT 132 kv cable works

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
Taqa	Green	El Sewdy	Heliopolis

ACTIVITY Cable laying

ASSESSORS	— PROJECT MANAGER *signature*	— HSE ENGINEER *signature*	— PROJECT MANAGER *signature*	— CIVIL ENGINEER *signature*	— HSE ENGINEER *signature*

SN	Activity	Hazard / Aspect	Consequence	Groups Exposed	Existing Controls	Initial Risk P × S = R	Additional Controls	Residual Risk P × S = R
1	**Complete HDPE Duct Infill**	1. Vehicle movement and traffic hazards 2. Manual handling during loading/unloading 3. Uneven ground conditions	Personal injury, property damage	Site Personnel, Subcontractors, Public	1. Implement traffic management plan 2. Designated walkways 3. Mandatory PPE 4. Speed limit enforcement	**P 3 × S 3** **9**	1. Comply with ADOSH SF CoP 27.0 2. Daily vehicle inspection 3. Toolbox talk	**P 2 × S 2** **4**
2	**Site mobilization and setup of temporary**	Passing high-speed public traffic and moving site vehicles	Personal injury, property damage	Site Personnel, Subcontractors, Public	Approved TTM plan, high-visibility clothing (Class 3), physical water-filled/concrete barriers, advanced warning signs, and trained flagmen.	**P 3 × S 3** **9**	Deployment of Truck Mounted Attenuators (TMA) and enforcement of reduced speed limit zone in coordination with local traffic authorities.	**P 2 × S 2** **4**
3	**Trench excavation and sub-surface ground preparation**	Accidental strike on existing buried live electrical cables or gas utilities	Personal injury, property damage	Site Personnel, Subcontractors, Public	Utility mapping review, CAT & Genny cable avoidance scanning, and manual trial pits (pot-holing) prior to mechanical excavation.	**P 3 × S 3** **9**	Mandatory Permit to Dig system, use of insulated hand tools near identified utilities, and continuous competent supervision.	**P 2 × S 2** **4**
4	**Uncoiling, handling, and positioning HDPE pipe**	Sudden release of stored mechanical spring energy in coiled HDPE pipe	Personal injury, property damage	Site Personnel, Subcontractors, Public	Use of specialized pipe reeler/uncoiler frame, controlled strap cutting procedures, and establishing exclusion zones.	**P 3 × S 3** **9**	Mandatory deployment of safety restraints/bands before unstrapping and wearing high-impact resistant safety glasses and gloves.	**P 2 × S 2** **4**
5	**HDPE pipe jointing via electrofusion and**	High-temperature heating elements, hot molten plastic, and portable electrical generators	Personal injury, property damage	Site Personnel, Subcontractors, Public	Certified welding equipment, RCD-protected generators, heat-resistant safety gloves, and portable fire extinguishers nearby.	**P 3 × S 3** **9**	Hot Work Permit implementation, provision of localized exhaust ventilation or respiratory protection (FFP3) in confined areas.	**P 2 × S 2** **4**
6	**Entry into underground chambers and manholes**	Hazardous atmosphere (oxygen deficiency, toxic gases like H2S/methane), engulfment, or fall from height	Personal injury, property damage	Site Personnel, Subcontractors, Public	Confined Space Entry Permit, pre-entry 4-gas atmospheric testing, forced air ventilation, and tripod rescue system with harness.	**P 3 × S 3** **9**	Continuous multi-gas monitoring during entry, dedicated trained top-person/standby monitor, and verified emergency rescue plan.	**P 2 × S 2** **4**

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7	**Mechanical winch pulling of HDPE sub-ducts**	High-tension winch wire snap, rotating capstans, and pinch/nip points	Personal injury, property damage	Site Personnel, Subcontractors, Public	Properly rated winching wire with calibrated weak-link swivel, emergency stop switches, and safety guards over rotating parts.	**P 3 × S 3** **9**	Integrated load monitoring with automatic shut-off at peak tension limits and strict exclusion zones along the tension line.	**P 2 × S 2** **4**
8	**Duct proving (mandrel testing) and air**	Uncontrolled high-pressure compressed air release and projectile ejection of foam pig or mandrel	Personal injury, property damage	Site Personnel, Subcontractors, Public	Calibrated pressure relief valves, secure containment/catcher cage at receiving duct end, clear exclusion zone enforcement.	**P 3 × S 3** **9**	Mandatory Pressure Testing Permit, full-face protection shields for operators, and calibrated double-gauge manifolds.	**P 2 × S 2** **4**
9	**Mobilization, Site Route Survey, and Pre-work Inspection in Live Substation/Trench Environment**	1. Working in close proximity to live high-voltage (132kV/400kV) energized equipment 2. Presence of underground live utilities and buried service cables 3. Slips, trips, and falls due to uneven ground, open trenches, and clutter 4. Unauthorized entry into restricted substation zones 5. Ambient thermal stress / extreme heat conditions	Electrocution, electrical flashover burns, severe shock, utility strike leading to power outages, musculoskeletal injuries, fractures, heat exhaustion, or heat stroke.	Surveyors, Site Engineers, HSE Officers, Riggers, and Substation Operational Staff.	1. Obtain valid TRANSCO Limited Access Permit (LAP) and PTW (System Safety Rules - SSR) prior to site entry. 2. Conduct mandatory Substation Safety Induction and daily Task Safety Briefing (TBT) for all personnel. 3. Utilize calibrated Underground Cable Detectors / Ground Penetrating Radar (GPR) and cross-reference with approved As-Built/IFC utility drawings. 4. Demarcate safe walking corridors and barrier-off energized switchyard/GIS zones with rigid safety barriers and high-visibility warning signage. 5. Implement UAE/OSHAD Heat Stress Management: provide shaded rest areas, cool drinking water, oral electrolyte rehydration solutions, and adhere strictly to mandatory Midday Break regulations. 6. Wear mandatory Cal/cm² arc-rated PPE, safety helmet, high-visibility vest, and safety boots (ESR rated).	**P 4 × S 4** **16**	1. Continuous supervision by TRANSCO Approved Competent Person / Safety Officer. 2. Deploy portable gas detectors and non-conductive measuring tapes/survey poles. 3. Install lockouts and physical restrictors at unauthorized substation access gates.	**P 2 × S 2** **4**

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10	**Delivery, Offloading, Rigging, and Positioning of 132kV Heavy Cable Drums (15-25 Tonnes)**	1. Heavy mobile crane failure, outrigger sinking, or crane overturning 2. Rigging gear failure (slings, shackles, spreader beams) under dynamic load 3. Uncontrolled rolling or shifting of heavy cylindrical cable drums 4. Personnel trapped in crush zones or pinch points between drum and trailer 5. Overhead obstruction contact (energized overhead lines or gantry)	Fatalities, catastrophic crushing injuries, severe bodily trauma, permanent disability, equipment destruction, and structural damage.	Rigging crews, Crane Operators, Banksmen/Flagmen, Trailer Drivers, and nearby personnel.	1. Formulate and approve a 3rd-party certified Critical Lifting Plan for loads exceeding standard thresholds. 2. Ensure all mobile cranes, rigging hardware (spreader beams, steel wire slings, D-shackles), and crane operators hold valid third-party inspection certifications approved by UAE/TRANSCO authorities. 3. Inspect ground bearing capacity; fully extend crane outriggers on heavy-duty steel spreader pads/mats. 4. Chock and wedge cable drums securely at all times before releasing trailer tie-down lashing chains. 5. Designate certified Banksman to control the lifting zone; establish a 360-degree barricaded drop zone prohibiting entry of non-essential personnel. 6. Maintain strict minimum clearance distances from live overhead conductors in accordance with TRANSCO SSR.	**P 4 × S 5** **20**	1. Conduct pre-lift safety briefing and physical inspection of lifting tackle prior to every single lift. 2. Utilize double taglines controlled from a safe distance outside the swing radius to orient loads. 3. Enforce wind speed monitoring with anemometer (halt lifting if wind speed exceeds 25 knots / 10 m/s or manufacturer limit).	**P 2 × S 2** **4**
11	**Mounting Cable Drums on Heavy-Duty Hydraulic Jacks and Shaft Setting**	1. Structural collapse or slippage of hydraulic/mechanical cable drum jacks 2. Uneven jack settlement on soft or sloping ground 3. Spindle/mandrel shaft bending or snapping under heavy drum weight 4. Crushing of hands/feet during shaft insertion and jacking operations 5. Premature drum rotation without braking control	Crush injuries, limb amputation, bone fractures, foot entrapment, and heavy mechanical impacts.	Cable Laying Technicians, Riggers, Mechanical Foremen, and Helpers.	1. Deploy engineer-rated, certified hydraulic cable drum jacks matching or exceeding the gross drum weight. 2. Position jacks on level, compacted concrete slabs or engineered heavy hardwood/steel load-distribution sole plates. 3. Use certified high-tensile solid steel drum spindles/shafts inspected for cracks, deformation, and wear. 4. Install mechanical locking collars/bushings on both ends of the shaft to prevent lateral drum movement. 5. Ensure drum is lifted evenly on both sides using synchronized hydraulic pumps and secure with mechanical safety lock collars. 6. Fit effective mechanical drum friction brake systems to prevent uncontrolled freewheeling during pulling.	**P 4 × S 4** **16**	1. Keep hands clear of pinch points between jack saddle and drum flange; use alignment bars. 2. Maintain minimum safe clearance of 100mm between drum flange and ground once elevated. 3. 100% safety footwear with metatarsal protection and heavy-duty impact-resistant gloves mandatory.	**P 2 × S 2** **4**
12	**Preparation of Cable Trenches, Basements, and Confined Space Shafts (Cleaning, Rollers, and Dewatering)**	1. Hazardous atmospheric conditions in cable basements/shafts (toxic gases, H2S, O2 deficiency) 2. Trench wall collapse or soil cave-in 3. Ingress of groundwater / water accumulation in trenches 4. Falls from height into open cable shafts or deep basement pits 5. Biological hazards (snakes, scorpions, stagnant water pathogens)	Asphyxiation, toxic poisoning, entrapment/burial under soil, drowning, severe multiple trauma from height falls, and systemic infections.	Civil laborers, Cable installation crew, Confined space entrants, and Standby Men.	1. Implement TRANSCO / OSHAD Confined Space Entry Permit procedure prior to basement/shaft entry. 2. Perform continuous atmospheric 4-gas testing (O2, LEL, CO, H2S) with calibrated multi-gas monitors; log readings every 2 hours. 3. Provide continuous forced-air mechanical ventilation (blowers) throughout entry duration. 4. Install certified trench shoring/shielding systems for trenches deeper than 1.2 meters. 5. Erect rigid handrail edge protection (top-rail, mid-rail, toe-board) around all open shafts and basement drop-offs. 6. Station a dedicated, trained Confined Space Standby Man at the entrance with an emergency rescue retrieval kit (tripod, winch, SCBA/EEBD).	**P 4 × S 5** **20**	1. Deploy intrinsically safe 24V low-voltage task lighting inside dark basement corridors. 2. Provide secure ladder access/egress every 7.5 meters of trench length with ladders extending 1m above landing. 3. Conduct pre-entry animal/reptile visual inspections and pest clearing.	**P 1 × S 2** **2**

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13	**Setting Up Motorized Cable Winch, Corner Rollers, Guide Pulleys, and Winch Wire Rerouting**	1. Winch anchor point pull-out or failure under high tension loads 2. Snapping/parting of high-tension steel winch pulling wire rope (whiplash hazard) 3. Dislodging of corner / quadrant rollers under lateral tension forces 4. Entanglement of clothing or limbs into winch drum, sheaves, and rotating capstans 5. High noise exposure from motorized diesel winch units	Fatal blunt-force trauma from whiplash, amputations, severe lacerations, crush injuries, and occupational hearing loss.	Winch Operators, Riggers, Cable Pulling Technicians, and General Helpers.	1. Secure winch machine to engineer-certified deadman anchors, ballast weights, or structural civil pillars verified for maximum rated line pull. 2. Inspect pulling wire ropes, pulling eyes, anti-twist swivels, and heavy-duty pulling stockings (cable grips) for wear, broken strands, or defects. 3. Bolt or brace corner/quadrant rollers firmly to trench walls or concrete floor structures to withstand vector forces. 4. Fit mechanical emergency stop (E-stop) buttons within immediate reach of winch operators and at strategic points along the route. 5. Install physical mesh machine guards over moving winch drums, drive shafts, and rotating capstans. 6. Enforce mandatory hearing protection (earmuffs/earplugs) in the vicinity of operating winches and power units.	**P 4 × S 4** **16**	1. Maintain clear exclusion zones ('Snap-Back Zones') demarcated with warning tape along the tensioned winch wire path. 2. Install dynamometer/load-cell tensiometers with automated pull-force cutoff limits to avoid cable over-tensioning. 3. Prohibit standing in the bight of the rope or stepping over tensioned cables.	**P 2 × S 2** **4**
14	**132kV HV Cable Pulling and Laying via Winch, Rollers, and Guides inside Substation Ducts/Trenches**	1. Cable getting stuck, pinched, or exceeding permissible pulling tension / minimum bending radius 2. Crushing of hands/feet under moving heavy cable or rolling guides 3. Communication breakdown between winch operator, drum controller, and route marshals 4. Dynamic displacement of cable inside duct entries or riser bends 5. Physical fatigue and ergonomic strain from pushing/guiding heavy cable	Severe crush injuries, hand/finger trapping, spinal/musculoskeletal strain, catastrophic cable sheath/insulation damage leading to future dielectric breakdown.	Cable Pulling Team, Winch Operators, Drum Stand Operators, Route Marshals, and Engineers.	1. Maintain continuous, dedicated two-way VHF radio communication protocol between Winch Operator, Drum Brake Operator, and Route Observers with clear 'STOP' commands. 2. Ensure cable pulling speed is maintained at a safe, steady rate (typically 5-10 meters/minute) with constant line-tension monitoring. 3. Space calibrated straight rollers at max 2.0m intervals and corner/guide rollers at max 1.0m intervals ensuring no cable ground drag. 4. Apply approved biodegradable cable pulling lubricant (e.g., Polywater) at duct entries to reduce friction coefficient. 5. Strictly adhere to the manufacturer's specified Minimum Bending Radius (MBR) under tension and install quadrant curved rollers accordingly. 6. Strictly prohibit touching or guiding the moving cable by hand; use designated guiding sticks/ropes.	**P 4 × S 4** **16**	1. Station dedicated marshals at every bend, wall penetration, duct entrance, and transition point. 2. Install smooth entry bellmouths on all pipe/duct entries to eliminate sharp edge contact. 3. Conduct mandatory ergonomic and manual handling toolbox talk prior to commencement.	**P 2 × S 2** **4**
15	**Laying, Pulling, and Looping of Fiber Optic (FO) Communication and Pilot Cables**	1. Micro-fracture / snapping of delicate glass optical fibers due to over-bending or excessive tension 2. Working inside congested cable tray networks at elevated levels 3. Laser radiation exposure to eyes from active fiber optic cores during live testing 4. Tripping over uncoiled flexible fiber optic tubes and pilot cables 5. Skin puncture from broken glass fiber shards	Permanent eye retinal damage, puncture wounds/foreign body in skin, falls from height, signal transmission failure, and structural damage.	Telecom/FO Technicians, Electrical Fitters, and Instrument Technicians.	1. Pull FO cables strictly within manufacturer tensile limits using calibrated manual pull or breakaway swivel links. 2. Ensure FO cable bend radius never falls below 20 times the cable outside diameter during installation. 3. Prohibit looking directly into bare fiber ends or optical connectors; verify active optical ports with safe power meters. 4. Store spare fiber loops in approved sealed Fiber Optic Patch Panels (FODF) or weather-resistant Slack Storage Enclosures. 5. Collect and dispose of all cleaved optical fiber scrap in dedicated, puncture-proof sharps containers immediately. 6. Use certified step platforms or mobile scaffold towers with guardrails when accessing overhead cable trays.	**P 3 × S 3** **9**	1. Wear safety glasses with side shields during fiber preparation, cleaving, and splicing. 2. Use non-conductive cable ties to bundle FO cables cleanly without over-tightening or pinching the outer jacket. 3. Clearly label FO conduits with high-visibility warning stickers.	**P 1 × S 2** **2**

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LIKELIHOOD / FREQUENCY

Descriptor	Likely Frequency	Probability
Frequent	Occurs frequently	5
Often	Occurs several times per year	4
Likely	Has occurred more than once	3
Possible	Has occurred	2
Rare	Never occurred	1

RISK MATRIX — PROBABILITY × CONSEQUENCE

Probability	Consequence				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Rare (1)	1	2	3	4	5
Possible (2)	2	4	6	8	10
Likely (3)	3	6	9	12	15
Often (4)	4	8	12	16	20
Frequent / Almost Certain (5)	5	10	15	20	25

15 - 25	Extreme Risk	Activity or industry should not proceed in current form.
8 - 12	High Risk	Activity or industry should be modified to include remedial planning and action and be subject to detailed EHS assessment.
4 - 6	Moderate Risk	Activity or industry can operate subject to management and/or modification.
1 - 3	Low Risk	No action required, unless escalation of risk is possible.