CLIENT	CONSULTANT	CONTRACTOR	SUB-CONTRACTOR

TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
—	RA-2026-vAsAVn1D	04.09.2026	A

PROJECT —

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
—	—	—	—

ACTIVITY **Excvation**

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	**Pre-Excavation Underground Utility Survey, CAT Scanning, and Trial Potholing**	1. Strike against live high-voltage (11kV/33kV) electrical cables 2. Strike against pressurized water, gas, or sewage pipelines 3. Inaccurate as-built drawings or uncharted legacy utilities 4. Manual handling injuries during trial pit hand digging	Catastrophic electrical arc flash, electrocution, fatal burns, pipeline burst, toxic gas release, major urban infrastructure disruption, and severe regulatory penalties under ADOSH-SF CoP 29.0.	Surveyors, civil excavation crew, electrical technicians, machine operators, and third-party utility inspectors.	1. Obtain valid No Objection Certificates (NOCs) and Work Permits from ADDC/AADC, Etisalat, Du, ADSSC, and local municipalities. 2. Conduct comprehensive underground cable and pipe detection using calibrated Cable Avoidance Tools (CAT) and Signal Generators (Genny) operated by certified personnel. 3. Execute manual trial trenches (potholing) strictly using insulated hand tools (BS 8020 certified) to physically verify utility depth and routing. 4. Mark identified underground utilities with high-visibility spray paint, warning flags, and offset line posts. 5. Implement a strict Permit to Dig / Permit to Work (PTW) system signed off by the HSE Manager and Site Engineer.	**P 4 × S 5** **20**	1. Implement Ground Penetrating Radar (GPR) scans for congested urban corridors prior to intrusive digging. 2. Provide dedicated utility spotters with air horns during all initial exploratory works.	**P 2 × S 3** **6**
2	**Mechanical Trench Excavation for Electrical Ducts and Cables Using Heavy Equipment**	1. Excavator overturning on unstable ground or trench edge collapse 2. Blind spots causing collision with ground personnel or site structures 3. Contact between excavator boom/bucket and overhead powerlines 4. Excessive vibration, noise, and airborne respirable crystalline silica dust	Fatal crushing injuries, plant overturn fatalities, structural collapse of adjacent buildings, noise-induced hearing loss, and silicosis.	Excavator operators, banksmen, electrical trenching operatives, and surrounding traffic.	1. Ensure plant and machinery hold valid third-party inspection certificates and operator possesses a valid UAE driving license and third-party competency card. 2. Maintain minimum safe clearance distances from overhead power lines as mandated by ADOSH CoP 15.0 and ADDC regulations, deploying goalposts and bunting. 3. Station a certified, high-visibility-clad Banksman/Flagman with two-way radio communication to direct plant movement. 4. Establish a 1.5-meter plant exclusion zone from trench edges, reinforced with physical wheel-stop berms. 5. Apply continuous water-misting systems for dust suppression.	**P 4 × S 4** **16**	1. Equip excavators with 360-degree cameras and ultrasonic proximity radar detection systems. 2. Conduct daily pre-use plant inspection checklists verified by plant fitters.	**P 2 × S 2** **4**
3	**Manual Excavation and Trench Trimming in Vicinity of Existing Live Assets**	1. Accidental puncture of energized electrical conduits by pickaxes or crowbars 2. Ergonomic strain from awkward posture and repetitive manual digging 3. Trench wall slumping onto working personnel 4. Sharp debris, rebar, or biological hazards in unmade ground	Arc flash burns, fatal electric shock, acute musculoskeletal disorders, crush asphyxiation, and puncture wounds.	Manual laborers, groundworkers, and electrical helpers.	1. Prohibit the use of pointed tools (pickaxes, breaker bars) within 1.0 meter of confirmed live electrical cables; mandate rounded, insulated non-conductive shovels. 2. Implement a safe digging protocol: scrape soil in thin layers parallel to the cable line rather than digging vertically. 3. Conduct mandatory task-rotation cycles (20 minutes digging, 10 minutes resting) under ADOSH-SF Heat Stress Management. 4. Enforce mandatory PPE: EN 388 cut-resistant gloves, steel-toecap non-conductive safety boots, safety helmets, and eye protection.	**P 4 × S 4** **16**	1. Utilize non-destructive vacuum excavation (soft excavation) systems when exposing ultra-critical 33kV/132kV networks. 2. Ensure continuous supervision by a dedicated electrical-competent safety supervisor.	**P 2 × S 2** **4**

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4	**Trench Shoring, Benching, and Soil Support Installation (Depth > 1.2 Meters)**	1. Sudden collapse/cave-in of unsupported vertical trench walls 2. Shoring box or trench sheet collapse during installation 3. Dynamic surcharge loading from vehicular traffic or stored spoil piles 4. Failure of pneumatic/hydraulic struts under high hydrostatic pressure	Crush asphyxiation, multi-casualty entrapment, severe blunt force trauma, and trench destabilization.	Groundworkers, shoring installation crew, and structural inspectors.	1. Mandate proprietary aluminum/steel trench boxes or hydraulic shoring designed and certified by a structural engineer for excavations deeper than 1.2 meters per ADOSH CoP 29.0. 2. When space permits, bench or batter trench walls back to a safe angle of repose (minimum 1:1 or 1:1.5 in typical UAE loose desert sand). 3. Keep excavated spoil piles, materials, and heavy equipment at a minimum setback distance of 1.5 meters from trench crests. 4. Inspect shoring systems daily before shift commencement, after any rain event, or post-blasting/vibratory operations by a Competent Excavation Safety Assessor.	**P 4 × S 5** **20**	1. Install wireless earth-pressure monitoring transducers on high-risk deep shoring setups adjacent to active roads. 2. Prohibit workers from entering un-shored portions of trenches to connect hydraulic bracing.	**P 1 × S 3** **3**
5	**Installation of Trench Access, Egress, and Perimeter Edge Protection**	1. Falls from height into open cable trenches 2. Lack of emergency escape routes during cave-ins or flooding 3. Trips and falls while traversing across open excavations 4. Loose ladders slipping or structural failure of makeshift crossings	Fatal impact injuries, spinal fractures, head trauma, and delayed evacuation during emergency scenarios.	All site personnel, subcontractors, and pedestrian public (in roadside/urban projects).	1. Install rigid, double-rail edge protection (top rail at 1100mm, mid-rail at 600mm, and 150mm toe-board) around the entire excavation perimeter per ADOSH-SF CoP 34.0. 2. Provide heavy-duty secured access ladders extending at least 1 meter above the trench landing surface, secured against displacement. 3. Position access/egress points every 7.5 meters of trench length so workers are never further than 7.5 meters from a safe exit. 4. Construct engineered pedestrian walkways with toe-boards and mesh guards across trench crossings; prohibit makeshift timber planks.	**P 4 × S 4** **16**	1. Secure the entire jobsite perimeter with 2.0-meter anti-climb continuous hoarding with retro-reflective hazard bands and warning signage. 2. Install battery-powered LED boundary illumination for night security and visibility.	**P 1 × S 2** **2**
6	**Dewatering Operations and Sump Pumping in High-Water-Table Trenches**	1. Electrocution from submersible pump cables immersed in water 2. Undermining and erosion of trench subbase and wall foundations 3. Trench flooding trapping operatives 4. Contaminated groundwater exposure containing hydrocarbons or saline sewage	Electrocution, trench collapse due to hydraulic scour, drowning, and chemical dermatitis.	Dewatering mechanics, electrical technicians, and groundworkers.	1. Power submersible dewatering pumps via low-voltage supplies (110V center-tapped) or 30mA Residual Current Devices (RCDs) tested weekly with push-to-trip logs. 2. Direct discharge water into municipal storm networks or retention lagoons in accordance with Abu Dhabi Environment Agency (EAD) permits, avoiding ground discharge near excavation banks. 3. Position well-point systems and sumps with geotextile-wrapped aggregate to prevent soil fines washout and trench toe degradation. 4. Mandate impermeable rubber safety waders and chemical-resistant nitrile gauntlets for pump maintenance staff.	**P 3 × S 4** **12**	1. Deploy float-actuated automatic cut-off pumps to prevent dry-run overheating and surge failures. 2. Provide continuous hydrocarbon oil-spill absorbent booms around dewatering pump discharge points.	**P 1 × S 2** **2**

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7	**Bedding Preparation, Cable Sand Placement, and Compaction Along Trench Floor**	1. Inversion/entrapment from moving mechanical compaction plant (plate compactors, trench rollers) 2. High hand-arm vibration (HAVS) from prolonged plate compactor operation 3. Airborne silica dust generation during bedding aggregate/sand dumping 4. Reversal of delivery tipper trucks into open trench beds	Crush injuries to feet/limbs, Hand-Arm Vibration Syndrome (white finger), eye abrasions, and tipper rollover into trench.	Compaction operators, civil banksmen, and tipper drivers.	1. Deploy trained Banksmen to control aggregate/sand delivery tipper trucks; utilize concrete wheel-stoppers situated 2 meters away from the excavation edge. 2. Establish HAVS daily exposure limit values (ELVs) for vibrating plate operators, rotating tasks every 45 minutes. 3. Wet down bedding sand to prevent particulate dust suspension; supply FFP3 respiratory masks. 4. Prohibit groundworkers from working directly down-gradient or within the direct swing/fall path of excavator buckets tipping thermal bedding sand.	**P 3 × S 3** **9**	1. Utilize low-vibration, remote-controlled trench trench rollers for deep, narrow cable paths, completely removing personnel from the trench.	**P 1 × S 2** **2**
8	**Laying of Electrical Power Cables, Concrete Protection Tiles, and Warning Tapes**	1. Manual handling strains from pulling heavy-gauge cross-linked polyethylene (XLPE) power cables 2. Crushing of hands/fingers in motorized cable winch rollers and pulling eyes 3. Heavy precast concrete cable cover tiles dropped on feet or hands 4. Cable drum runaway or tipping during spooling operations	Lumbar disc herniation, hand amputations, fractured metatarsals, and projectile injuries from high-tension cable snapping.	Electrical pulling crew, winch operators, cable riggers, and civil labor.	1. Mount cable drums on calibrated, rated hydraulic drum jacks sitting on level, reinforced timber soleplates with active axle locking collars. 2. Position mechanical pulling winches outside the trench line, fitted with calibrated dynamometers to monitor pulling tension against cable manufacturer tolerances. 3. Install certified cable rollers every 2 to 3 meters along the trench bed to minimize friction and prevent heavy manual dragging. 4. Mandate two-man lift techniques or mechanical vacuum lifters for precast concrete warning tiles (>20kg) per ADOSH manual handling guidelines.	**P 4 × S 4** **16**	1. Establish a dedicated continuous radio link between the cable drum brake tender, lead trench observers, and the winch operator. 2. Install steel mesh deflector shields over pulling winches to protect operators from potential cable tensile rupture.	**P 2 × S 2** **4**

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

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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.