CLIENT	CONSULTANT	CONTRACTOR	SUB-CONTRACTOR

TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
—	RA-2026-RjCfc5vF	15.08.2026	A

PROJECT —

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
—	—	—	—

ACTIVITY **Water Proofing**

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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SN	Activity	Hazard / Aspect	Consequence	Groups Exposed	Existing Controls	Initial Risk P × S = R	Additional Controls	Residual Risk P × S = R
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	**Pre-work site inspection and electrical isolation (LOTO) in areas requiring waterproofing**	Presence of energized electrical panels, switchgear, or exposed cables in damp environments	Electrocution, electric shock, arc flash, fatal injury, secondary trauma from falls	Waterproofing technicians, electrical technicians, site supervisors	Verify Lockout/Tagout (LOTO) and de-energization with a multi-meter; issue Permit to Work (PTW); install physical insulated barriers and IP-rated temporary covers over adjacent live components; use intrinsically safe portable lighting (24V/battery-operated).	P 4 × S 5 **20**	Continuous supervision by a qualified electrical safety observer; mandatory daily safety briefing on dead-work boundaries.	P 1 × S 4 **4**
10	**Mechanical surface preparation (grinding/wire brushing) near electrical penetrations and switchgear**	Conductive dust ingress into electrical assemblies, flying debris, hand-arm vibration, high noise	Short circuit, equipment failure, eye injury, lacerations, noise-induced hearing loss	Applicators, nearby electrical operators	Use HEPA-filtered vacuum-attached shrouded grinders; seal all electrical panels and bus ducts with heavy-duty polyethylene sheeting and fire-retardant duct tape; mandate safety goggles, cut-level 5 gloves, and hearing protection.	P 4 × S 3 **12**	Implement rotation schedule to limit vibration exposure; conduct thermal imaging / dust checks before unsealing electrical equipment.	P 2 × S 2 **4**
11	**Torch-applied bituminous waterproofing membrane on substation roof/plinth**	Open flame from LPG torches near combustible electrical insulation, cables, and cable trays	Major fire outbreak, explosion of nearby gas/transformer oil, structural damage, burn injuries	Waterproofing crew, substation operators, site personnel	Obtain Hot Work Permit; ensure 2x 9kg DCP and 1x CO2 fire extinguishers on hand; maintain minimum 1.5m clearance from cable penetrations; deploy fire-resistant ceramic blankets over exposed cable trays.	P 4 × S 5 **20**	Designate a dedicated trained fire watch during work and for a minimum 60-minute post-work cool-down period; enforce combustible gas monitoring.	P 1 × S 4 **4**
12	**High-pressure chemical injection polyurethane grouting to seal leaking cable ducts and conduits**	High injection pressure (up to 200 bar), hose burst, chemical splash of isocyanate/polyurethane resins	High-pressure injection injury, severe chemical eye damage, skin sensitization, acute respiratory irritation	Grouting operators, helpers	Inspect pump, hoses, and mechanical packers prior to pressurization; equip pump with calibrated pressure relief valves; mandate full-face shield, chemical safety goggles, chemical-resistant nitrile gauntlets, and chemical coveralls.	P 3 × S 4 **12**	Install whip-checks on all high-pressure hose couplings; keep emergency eyewash station within 10 meters of application zone.	P 1 × S 3 **3**

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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.