CLIENT	CONSULTANT	CONTRACTOR	SUB-CONTRACTOR

TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
—	RA-2026-I2Vdt96G	17.10.2026	A

PROJECT —

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
—	—	—	—

ACTIVITY **Lifting Operation**

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	**Mobilization and Site Access of Heavy Mobile Cranes into High-Voltage Substation Yard**	- Subsurface collapse of unverified backfilled utility corridors - Overhead encroachment with energized 132kV/400kV transmission lines - Collision with existing live substation infrastructure, cable risers, and perimeter fencing - Soft shoulder roll-over on unpaved substation perimeter haul roads - Tail-swing entrapment of site personnel against blast walls or switchgear buildings - Brake or steering failure during steep ramp descent into GIS basement bays	- Fatal crush injuries and catastrophic poly-trauma - Uncontrolled electrical flashover and third-degree arc-flash burns - Severe structural and equipment damage exceeding millions of dollars - Complete electrical blackout to adjacent distribution grids - Total crane overturn leading to operator entrapment and death	Crane Operator, Rigging Supervisor, Banksman, Substation Commissioning Engineers, Civil Subcontractors	- Implement ADOSH-compliant Electrical Isolation and Access Permit to Work (PTW) prior to crane entry - Conduct Ground Penetrating Radar (GPR) scan and verify civil compaction test reports (CBR > 15%, compaction >= 95% MDD) - Enforce physical goalposts and non-conductive height limiters set at minimum 10m clearance from energized overhead lines - Provide dedicated, ADOSH-certified banksman with high-visibility red vest and whistle for constant guiding - Establish exclusion zones with rigid orange plastic water-filled barriers along the mobilization corridor - Mandatory pre-entry mechanical inspection by Plant Inspector including brake, steering, and pneumatic lines - Limit mobilization speed inside the electrical yard strictly to a maximum of 10 km/h - Ensure 3rd-party calibration and inspection certificate (EIAC/DAC approved) is verified for crane and driver	**P 4 × S 5** **20**	- Install proximity warning radar and 360-degree blind-spot camera systems on mobile cranes - Conduct dedicated pre-mobilization toolbox talk (TBT) highlighting live equipment boundaries - Assign a dedicated Senior Electrical Safety Escort Officer for all movements inside the compound - Comply with ISO 45001:2018 – Occupational Health and Safety Management Systems - Comply with ILO Convention C155 – Occupational Safety and Health	**P 2 × S 3** **6**
2	**Ground-Bearing Capacity Assessment & Outrigger Pad Setup on Compacted Substation Yard**	- Punch-through of crane outrigger jacks through concealed electrical duct banks - Outrigger placement on uncompacted backfill or void pockets near basement retaining walls - Asymmetrical leveling causing outrigger cylinder seal blow-out - Structural rupture of buried water drainage or fire deluge pipeline networks - Inadequate footprint area of outrigger wooden/steel spreader mats - Subsidence due to subterranean water table fluctuations or soil liquifaction	- Crane destabilization leading to sudden structural overturn - Destruction of critical sub-surface medium and high-voltage feeder cables - Fatal crushing of banksman or riggers stationed within outrigger slew zone - Extensive crane structural boom buckling and torsional collapse - Prolonged project delay and environmental contamination from hydraulic oil spills	Crane Operator, Riggers, Appointed Lifting Supervisor, Geotechnical Field Technicians	- Conduct comprehensive plate load testing to verify minimum allowable ground bearing capacity (minimum 250 kPa) - Cross-reference updated As-Built utility drawings and complete electro-magnetic underground pipe/cable locator scans - Ensure outrigger spreaders are engineered steel mats or certified hardwood timber mats sized >= 3 times the outrigger shoe area - Verify all outriggers are 100% fully extended and locked with mechanical retaining pins before lifting - Maintain a minimum set-back clearance distance equal to 1.5 times the trench depth from any open excavation or trench - Verify crane chassis levelness using the internal electronic spirit level ensuring zero-degree incline (< 0.5% tolerance) - Deploy ultrasonic or calibrated load cells under each outrigger pad to monitor reaction forces in real time - Stop all positioning works immediately if soil settlement exceeds 5mm during dry-run functional test	**P 4 × S 5** **20**	- Utilize engineered modular interlocking composite outrigger pads with non-slip surfaces - Perform multi-stage test lift with a 110% dummy test load to confirm ground reaction before actual pick - Issue documented Lift Plan signed off by an ADOSH-registered Class-A Lifting Engineer - Comply with ISO 45001:2018 – Occupational Health and Safety Management Systems - Comply with ILO Convention C155 – Occupational Safety and Health	**P 2 × S 3** **6**

CLIENT	CONSULTANT	CONTRACTOR	SUB-CONTRACTOR

TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
—	RA-2026-I2Vdt96G	17.10.2026	A

PROJECT —

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
—	—	—	—

ACTIVITY **Lifting Operation**

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
3	**Crane Telescopic Boom Assembly and Heavy Jib Rigging near Live Transmission Lines**	- Induction of high-voltage static charge into crane boom structure - Accidental boom extension entering safe clearance envelope of 400kV lines (less than 8 meters) - Pinch point and crushing hazards during insertion of jib locking pins - Dropped rigging accessories, tools, or pin hammers from elevated boom sections - Uncontrolled pivoting of fly-jib section during manual pin unlatching - Structural failure of boom extension cylinders due to hydraulic air entrapment	- Electrocution of riggers on ground touching crane chassis - Severe finger/hand amputations and crush fractures during pin insertion - Fatal impact injuries from dropped pins or structural boom elements from height - Catastrophic flashover causing major electrical explosion on national grid - Boom buckling leading to complete structural failure	Rigging Crew, Mobile Crane Operator, Banksman, Electrical Safety Observer	- Secure Electrical Outage Clearance (Sanction for Test / Sanction to Work) where practicable or maintain 8m absolute clearance - Ground crane chassis directly to substation grounding grid via minimum 70mm² copper bonding jumpers - Riggers must utilize 100% tie-off safety harnesses attached to engineered lifelines during high boom work - Establish an exclusion perimeter of 1.5 times boom length demarcated with red warning tape and warning signage - Utilize pneumatic/hydraulic pin pushers to insert locking pins instead of manual sledgehammers - All tools must be 100% tethered using certified elastic tool lanyards to prevent dropped objects - Employ an independent, dedicated Electrical Observer with air horn and authority to stop works immediately - Perform boom extension functions at low operating throttle under direct oversight of Lifting Supervisor	**P 4 × S 5** **20**	- Install automated 3D virtual wall limiters (RCI/LMI) programmed to prohibit boom rotation toward live overhead bays - Provide boom-tip electro-static field detectors with audible cab alarms to notify operator of field buildup - Pre-rig all fly-jib elements on ground level before elevation using dedicated auxiliary mobile crane - Comply with ISO 45001:2018 – Occupational Health and Safety Management Systems - Comply with ILO Convention C155 – Occupational Safety and Health	**P 1 × S 3** **3**

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

CLIENT	CONSULTANT	CONTRACTOR	SUB-CONTRACTOR

TASK RISK ASSESSMENT WORKSHEET

CONTRACT NO	REF	DATE	REV
—	RA-2026-I2Vdt96G	17.10.2026	A

PROJECT —

CLIENT	CONSULTANT	MAIN CONTRACTOR	SUBCONTRACTOR
—	—	—	—

ACTIVITY **Lifting Operation**

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

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.