

RAMSPROZONE	RISK ASSESSMENT — Structural Failure & Slope Stability Assessment
Company / Contractor Name: [ENTER COMPANY / CONTRACTOR NAME]	Doc No: [DOC NO.] Rev: 00

DOCUMENT DETAILS			
Document No.	[ENTER DOCUMENT NUMBER]	Revision	00
Project Location	[ENTER PROJECT LOCATION]	Project Name	[ENTER PROJECT NAME]
Project No.	[ENTER PROJECT NUMBER]	Assessment Date	[DD/MM/YYYY]
Review Date	[DD/MM/YYYY]	Prepared By	[ENTER NAME / DESIGNATION]
Reviewed By	[ENTER NAME / DESIGNATION]	Approved By	[ENTER NAME / DESIGNATION]
Client / Owner	[ENTER CLIENT / OWNER NAME]	Main Contractor	[ENTER MAIN CONTRACTOR NAME]
Sub-Contractor / Team	[ENTER SUB-CONTRACTOR / TEAM NAME]	Applicable Standards	ISO 45001:2018 ISO 31000:2018 ILO-OSH 2001
Task / Activity Description	Structural Failure & Slope Stability Assessment — Civil Engineering Works		
TEMPLATE NOTE: All fields shown in [RED ITALIC BRACKETS] are placeholders. Replace each with your project-specific information before issue or use. Provided free of charge by RAMSPROZONE for global HSE professionals.			

Risk Matrix Key

Rating	Score Range	Likelihood	Severity	Action Required
VERY LOW (VL)	1 – 4	1 = Rare	1 = Negligible	No immediate action. Review periodically.
LOW (L)	5 – 8	2 = Unlikely	2 = Minor	Monitor. Maintain existing controls.
MEDIUM (M)	9 – 12	3 = Possible	3 = Moderate	Implement additional controls. Supervise closely.
HIGH (H)	13 – 16	4 = Likely	4 = Major	Immediate corrective action required. Works to be halted if controls not in place.
CRITICAL (C)	17 – 25	5 = Almost Certain	5 = Catastrophic	STOP WORK. Do not proceed. Senior management escalation required.

Risk Score = Likelihood (1–5) × Severity (1–5). Initial risk is assessed prior to controls; Residual risk is assessed after all controls are applied.

Risk Assessment Register — 12 Hazard Rows

#	Work Activity / Task	Hazard Identified	Who May Be Harmed	iL	iS	Init Score	Init Rating	Control Measures	rL	rS	Res Score	Res Rating	Responsible
1	Site Mobilisation & Access to Slope Area	Uncontrolled vehicle movements causing collision with personnel during plant and equipment mobilisation to steep or remote slope access routes	Geotechnical engineers, groundworkers, surveyors, site visitors	4	4	16	HIGH	1. Develop and enforce a Site Traffic Management Plan (TMP) prior to mobilisation. 2. Establish clearly defined pedestrian exclusion zones around all vehicle movement areas using physical barriers and signage. 3. Appoint a banksman for all reversing plant movements; no reversing without banksman present. 4. Conduct a site-specific induction covering vehicle/pedestrian segregation for all personnel before site access. 5. All vehicles to display amber beacons; all personnel to wear EN ISO 20471 Class 2 hi-vis at all times. 6. Daily briefing on plant movements and access route conditions before commencement each day.	2	4	8	LOW	[ENTER NAME / DESIGNATION]
2	Trial Pit Excavation for Geotechnical Investigation	Collapse of unsupported trial pit walls resulting in burial of operative below ground level	Groundworkers, geotechnical engineers conducting logging, supervisors	4	5	20	CRITICAL	1. Pre-excavation ground investigation to identify soil type, groundwater level, and buried services before any works. 2. No personnel to enter trial pit unless shored, battered, or confirmed self-stable in competent rock; adopt remote surface logging where practicable. 3. Install proprietary hydraulic or approved timber shoring for all pits exceeding 1.2 m depth prior to any entry. 4. Appoint a competent Excavation Supervisor to inspect pit walls at start of each shift and after any rainfall or vibration event. 5. Spoil heaps to be kept minimum 1.0 m back from pit edge at all times; no plant to operate within safe setback distance. 6. Issue Confined Space / Excavation Permit to Work before entry; ensure emergency retrieval equipment is on standby.	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]
3	Rotary Borehole Drilling Operations	Uncontrolled rotation of drilling rods causing entanglement of operative's clothing or limbs in rotating drill string	Drill rig operators, assistant drillers, geotechnical engineers on-site	3	5	15	HIGH	1. All drill rig operators must hold recognised drilling competency certification (e.g. CITB / equivalent national qualification). 2. Fit physical guarding to all rotating drill string components; guarding to be inspected before each drilling shift. 3. Strict no-loose-clothing policy on drill rig; no scarves, untucked shirts, or loose PPE within 2 m of rotating equipment.	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]

								4. Emergency stop button to be tested at start of each shift; location communicated to all rig personnel. 5. Conduct toolbox talk on entanglement hazards specific to drilling operations before commencement of works. 6. Minimum 2-person team on drill rig at all times; lone working on operating drill rig is prohibited.					
4	Slope Access & Manual Traversal of Steep Embankments	Personnel falling from height on steep or unstable slope face during access, inspection, or instrumentation installation activities	Geotechnical engineers, surveyors, instrumentation technicians	4	4	16	HIGH	1. Prepare a site-specific Slope Access Risk Assessment and Safe Access Plan before any personnel traverse slopes steeper than 20°. 2. Install fixed rope lines and anchor points on all approach routes where gradient exceeds 30°; use certified rope access techniques (EN 1891 / IRATA standard). 3. Mandatory full-body harness (EN 361) with short-lanyards clipped to fixed anchors on all slopes exceeding 30°. 4. Weather hold procedure: prohibit slope access in wet, icy, or high-wind conditions (wind speeds exceeding 50 km/h or as specified in project weather protocol). 5. Deploy drone survey as primary inspection tool for inaccessible or high-risk slope faces wherever technically feasible. 6. Buddy system enforced: no solo traversal of slopes; emergency communication device (radio/satellite phone) carried by all slope access personnel.	2	4	8	LOW	[ENTER NAME / DESIGNATION]
5	Instrumentation Installation (Inclinometers & Piezometers)	Collapse or sudden movement of pre-existing unstable slope during borehole grouting and instrumentation casing installation, burying personnel or equipment	Instrumentation technicians, geotechnical engineers, drill rig operators	3	5	15	HIGH	1. Obtain and review all available historical movement data for the slope; do not proceed if active movement rates exceed project-defined threshold. 2. Establish a real-time slope movement monitoring protocol using surface survey targets or automated total stations; define trigger levels for work suspension. 3. Establish a clearly marked exclusion zone around the installation borehole; restrict access to essential personnel only. 4. Develop and communicate an emergency evacuation route from the slope zone before works commence each day; route to be kept clear at all times. 5. Pre-install temporary slope drainage measures to reduce pore water pressure in slope ahead of instrumentation works where hydrological risk is identified. 6. Works to be suspended immediately if tension cracks, bulging, or audible movement is detected; all personnel to evacuate to pre-defined assembly point.	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]

6	Inspection of Existing Retaining Walls & Structural Elements	Sudden and unforeseeable partial collapse of a deteriorated masonry or concrete retaining wall during close-proximity visual and structural inspection	Structural engineers, geotechnical engineers, safety personnel, members of the public in adjacent areas	3	5	15	HIGH	1. Conduct a remote preliminary assessment (visual from safe distance, drone survey, photogrammetry) before any close inspection to evaluate structural stability. 2. Erect physical exclusion barriers (Heras fencing or equivalent) on both sides of the retaining wall for the full inspection zone length. 3. Issue a Structural Inspection Permit to Work signed by the Structural Engineer of Record before any personnel approach within 3 m of the structure. 4. Limit inspection personnel to minimum number required; all non-essential personnel to remain outside exclusion zone. 5. Use extendable inspection poles, borescopes, and UAV drones to eliminate direct contact with the structure wherever possible. 6. Notify relevant authorities and adjacent occupiers if the structure is assessed as posing imminent public risk; implement public exclusion as necessary.	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]
7	Striking Buried Utilities During Excavation / Drilling	Mechanical damage to buried electricity cables, gas mains, or pressurised water pipes during trial pit excavation or borehole drilling, causing electrocution, explosion, or flooding	Groundworkers, drill rig operators, adjacent workers, members of the public	3	5	15	HIGH	1. Obtain and review all available utility records (utility owners, national mapping services) prior to any ground-breaking works; mark up utilities on site plan. 2. Conduct Cable Avoidance Tool (CAT) and Genny survey of all investigation locations immediately before commencement of any excavation or drilling. 3. Hand-dig trial pits using insulated hand tools within 0.5 m tolerance zones of all known buried services before machine excavation commences. 4. All excavation machine operators to be informed of utility locations; Geotechnical Supervisor to inspect pit spoil continuously during excavation. 5. Emergency isolation procedures for electricity and gas to be confirmed before works begin; post emergency contact numbers on site board. 6. In event of utility strike: stop works immediately, evacuate area, call emergency services and utility owner; do not attempt to repair.	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]
8	Soil & Rock Sampling — Manual Handling of Core Boxes	Musculoskeletal injury resulting from manual handling of heavy core boxes, sample bags, and borehole equipment during sampling and laboratory despatch	Groundworkers, drill assistants, geotechnical engineers, laboratory technicians	4	3	12	MEDIUM	1. Conduct a Manual Handling Assessment for all activities and loads; identify and eliminate manual handling risks wherever practicable using mechanical aids. 2. Use mechanical lifting aids (trolleys, core box carriers, small hoists) for core boxes exceeding 15 kg; no single-person lift of core boxes exceeding project threshold. 3. Provide manual handling training including safe lifting techniques and team lifts to all sampling personnel prior to commencement. 4. Rotate manual handling tasks to limit cumulative exposure; introduce work-rest ratios for intensive sampling operations.	2	2	4	V.LOW	[ENTER NAME / DESIGNATION]

								5. Ensure adequate housekeeping on drill rig platform to prevent slipping hazards when carrying samples. 6. Report any musculoskeletal discomfort or pain immediately to the supervisor; do not continue to work through pain.					
9	Groundwater Monitoring & Water Table Assessment	Sudden inrush of groundwater into open borehole or trial pit causing rapid flooding, engulfment, or equipment loss	Groundworkers, drill operators, geotechnical engineers present at investigation point	3	4	12	MEDIUM	1. Review available hydrogeological data and previous borehole logs for the site area to identify anticipated groundwater conditions prior to investigation. 2. Use temporary steel casing in all boreholes from surface level to anticipated groundwater level; advance casing ahead of drilling bit in sensitive zones. 3. Monitor groundwater recovery rate in all standpipes/piezometers daily; report unexpected changes to the Geotechnical Engineer of Record. 4. Install groundwater pumping and de-watering equipment on standby at all trial pit locations where groundwater is anticipated within 1.5 m of formation level. 5. Prohibit entry into trial pits where water is present on floor without appropriate dewatering and ground support. 6. Conduct water quality testing where contaminated groundwater is suspected; refer to site-specific COSHH assessment before exposure.	2	4	8	LOW	[ENTER NAME / DESIGNATION]
10	Topographic Survey & Slope Profile Measurement	Personnel struck by moving traffic or plant when carrying out topographic survey works along or adjacent to active carriageways, access roads, or haul routes	Surveyors, survey assistants, geotechnical inspection staff	4	4	16	HIGH	1. Obtain all required road occupancy permits, traffic management authorisations, and regulatory approvals before survey works adjacent to live roads begin. 2. Implement an approved Traffic Management Scheme (lane closure, contraflow, or rolling road block) designed and installed by a certified TM contractor. 3. All personnel in highway survey zone to wear EN ISO 20471 Class 3 (minimum) high-visibility garments; safety helmets with chin straps in proximity to moving traffic. 4. Station a dedicated Safety Observer at the survey location to monitor incoming traffic and communicate hazards to the survey team at all times. 5. Limit survey works in live traffic environments to off-peak or low-traffic periods where operationally feasible. 6. Define a clear escape route from the survey zone and brief all personnel on its use before commencement each day.	2	4	8	LOW	[ENTER NAME / DESIGNATION]
11	Assessment Works in Adverse	Slope failure or debris flow triggered by heavy rainfall event during active field	All field personnel on slope, geotechnical engineers, drill crew, survey team	3	5	15	HIGH	1. Establish a Weather Monitoring Protocol using a site-based weather station; define rainfall intensity thresholds that trigger work suspension (e.g. sustained >10 mm/hour).	2	5	10	MEDIUM	[ENTER NAME / DESIGNATION]

	Weather Conditions	investigation, sweeping personnel from the slope or engulfing equipment						2. Conduct a pre-shift slope condition assessment by a competent geotechnician each morning and after any significant rainfall event; do not resume if conditions are deteriorated. 3. Monitor slope surface for tension cracks, bulging, seepage increases, or audible stress indicators during all field operations; appoint a dedicated slope safety observer. 4. Establish and clearly mark safe refuge/evacuation zones below debris flow run-out path; personnel must be able to reach safety within 60 seconds; conduct evacuation drills. 5. Issue satellite communication devices to all slope personnel working beyond mobile phone coverage; implement scheduled radio check-in every 30 minutes. 6. Activate emergency procedures immediately upon triggering event detection; do not delay evacuation to recover equipment.					
12	Contact with Contaminated Ground During Investigation	Dermal absorption, ingestion, or inhalation of soil or groundwater contaminants (heavy metals, hydrocarbons, asbestos fibres, biological pathogens) during trial pit logging and sampling on brownfield or previously developed sites	Groundworkers, geotechnical engineers, drill operators, sample handlers, laboratory technicians	3	4	12	MEDIUM	1. Obtain and review all available historical land use records, Phase I Desk Study, and regulatory data for the site; identify suspected contamination types and locations. 2. Prepare and implement a site-specific COSHH Risk Assessment for all identified or suspected contaminants; review and sign-off by all personnel before commencement. 3. Implement a contamination exposure monitoring programme (air monitoring for VOCs and asbestos fibres) for all investigation locations where contamination is confirmed or suspected. 4. Enforce a strict no-eat, no-drink, no-smoke policy in all investigation areas; provide decontamination facilities (washbasins, wipes, changing facilities) at site access points. 5. Chemical-resistant nitrile or neoprene gloves (EN ISO 374), safety glasses, and P3 filter respirator (EN 143) mandatory for all personnel handling visibly contaminated soil or water. 6. Segregate contaminated spoil from clean arisings, clearly label, and dispose via a licensed waste carrier; maintain waste transfer records in accordance with applicable waste regulations.	2	4	8	LOW	[ENTER NAME / DESIGNATION]

iL = Initial Likelihood | iS = Initial Severity | rL = Residual Likelihood | rS = Residual Severity

Rev.	Date	Description of Change	Approved By
00	[DD/MM/YYYY]	Initial Issue	[ENTER NAME / DESIGNATION]
01	[DD/MM/YYYY]	[ENTER DESCRIPTION OF CHANGES]	[ENTER NAME / DESIGNATION]

Prepared By	Reviewed By	Approved By	Client / Owner Representative
Prepared By Name: [ENTER NAME] Designation: [ENTER DESIGNATION] Signature: Date: [DD/MM/YYYY]	Reviewed By Name: [ENTER NAME] Designation: [ENTER DESIGNATION] Signature: Date: [DD/MM/YYYY]	Approved By Name: [ENTER NAME] Designation: [ENTER DESIGNATION] Signature: Date: [DD/MM/YYYY]	Client / Owner Representative Name: [ENTER NAME] Designation: [ENTER DESIGNATION] Signature: Date: [DD/MM/YYYY]

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