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Locate Underground Utilities Checklist – GPR, Marking

Locate underground utilities with an interactive checklist that is commentable and export as PDF/Excel, guiding GPR, marking, stand-offs, and protection to prevent strikes and delays.

Project:
Date:
Filled by:

Pre-Planning & Records Review	
1	Retrieve latest utility records (as-builts, GIS, one-call responses) for the work area; confirm issue dates within 3 months; upload PDFs to the checklist as evidence.
2	Compile utility owner contacts and emergency numbers; record ticket/reference numbers and validity periods; screenshot confirmations for the file.
3	Conduct a walkover to identify surface clues (covers, valves, pedestals, markers); geotag at least 10 photos covering the work zone edges and centreline.
4	Draft a utility risk plan defining high-risk corridors, proposed stand-offs, and confirmation points; obtain supervisor approval; attach signed plan.

Notifications & Permits	
5	Notify relevant utility owners of planned works and request locating assistance where required; log responses and conditions; attach email thread or portal receipts.
6	Obtain ground penetration/excavation permits covering the exact grid extents and dates; record permit numbers; attach scans before fieldwork.
7	Brief crew with a toolbox talk on utility hazards, GPR/EM safety, and exclusion zones; capture attendance signatures and photos of briefing board.

GPR & Locating Survey	
8	Calibrate GPR on a known target to set time-zero; record antenna model and centre frequency; photograph calibration screen with timestamp.
9	Scan a grid at 0.5 m transects in orthogonal directions; log GNSS/total station tracks; achieve ≥95% coverage over the work footprint; export track map.
10	Use EM locator in passive (50/60 Hz, radio) and active modes; apply peak–null method; record signal strengths and frequencies; store screenshots for each line.
11	Sweep with a ferrous magnetometer around suspected steel pipes/cables; flag anomalies; log coordinates with horizontal accuracy ≤0.20 m.
12	Estimate depths from GPR hyperbola fits using measured dielectric; note depth to nearest 0.1 m; mark confidence level; validate at test holes where feasible.
13	Cross-check GPR/EM results against records; highlight conflicts or unknowns on a layered plan; add comments tagging responsible reviewers.

Marking & Stand-Offs	
14	Mark surface alignments with durable paint and flagged pins per approved project specifications and authority requirements; ensure marks are visible from 10 m; photograph every 5 m.
15	Stencil or tag each mark with utility owner, service type, depth (m), date, and initials; include a scale in photos (0.1 m increments).
16	Install stand-off barriers at a minimum 1.5 m from marked alignments for heavy plant; verify offsets with tape to ±0.05 m; tag barriers with date.
17	Update site layout to show no-go corridors at least 1.0 m either side of marked services; issue to operators; obtain acknowledgement signatures.

Protection Measures & Controls	
18	Place load-spreading mats or timber road over utilities with cover <1.0 m where plant traffic is unavoidable; document mat type and bearing capacity; photo before/after.
19	Schedule vacuum excavation or hand-dig test holes at critical crossings to confirm depth and type; record actual depth to 0.01 m; restore per approved specifications.
20	Implement vibration/compaction monitoring near sensitive utilities; set alert limits per approved project specifications; log PPV or compaction readings with location and time.

Documentation & Handover	
21	Compile a utility avoidance plan with coordinates (E/N in metres), depths, confidence ratings, and photos; export GIS/PDF; include revision number and date.
22	Complete digital sign-off by supervisor and, where applicable, utility representative; export PDF/Excel with QR authentication; archive to project document control.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Locate underground utilities is the first safeguard against costly strikes, delays, and service outages. This checklist guides teams through utility detection using records review, electromagnetic locating, and ground-penetrating radar, then marking services, establishing stand-offs, and implementing protection. It focuses on avoidance and verification only—no new utility construction is included. You will plan from as-builts and GIS, validate with GPR and EM methods, reconcile conflicts, and confirm critical depths with safe potholing or vacuum excavation. The workflow aligns with subsurface utility engineering practices to improve accuracy and reduce excavation risk. Acceptance cues, tolerances, and photo evidence are specified to ensure consistent results and defensible documentation across shifts and contractors. Use this interactive tool on live projects to brief crews, control plant movement, and maintain exclusion zones as conditions change. Start in interactive mode to tick items, add comments, and export as PDF/Excel with a QR-secured record.	1. Preparation: Gather latest records (as-builts, GIS, one-call), calibrate GPR/EM locators, confirm permits, and brief the crew on hazards, stand-offs, and documentation requirements. 2. Preparation: Set up the project in the app, define the survey grid boundaries, invite stakeholders, and enable location services for geotagged photos and track logging. 3. Using the Interactive Checklist: Start interactive mode, tick items as completed, and attach photos, PDFs, and screenshots as evidence at each step. 4. Using the Interactive Checklist: Use comments to flag conflicts or unknown utilities, tag responsible parties, and assign follow-up actions with due dates. 5. Using the Interactive Checklist: Monitor completion status, verify acceptance criteria (coverage, depths, stand-offs), and adjust the plan based on findings. 6. Sign-Off: Generate an export as PDF/Excel with embedded photos, maps, and readings; enable QR authentication to lock revisions. 7. Sign-Off: Collect digital signatures from the supervisor and relevant utility representatives, distribute the export, and archive in project document control.