CASE STUDY

TDR FOUNDATION INTEGRITY ASSESSMENT

PROJECT TYPE
Transmission Line Uprating & Foundation Assessment

SERVICES
TDR, Foundation testing

ASSET OWNER
Transmission Utility

WORKS SUBCONTRACTED
All works completed in-house

CHALLENGE

Transmission line uprating adds significant new mechanical and electrical loads to foundations originally designed for lower stress, but replacing every foundation without evidence is costly and unnecessary

As networks uprate and reconductor existing lines to support grid expansion and renewable integration, the structural adequacy of existing foundations comes into question. Foundations designed for original loading conditions may or may not be capable of handling revised requirements under current design codes, but without objective condition data, asset owners face a choice between blanket replacement programs that overspend or proceeding without confidence in the foundations supporting their upgraded infrastructure.

SOLUTION

Groundline deploys TDR testing to assess foundation integrity, depth, and stiffness in the field, then combines findings with structure-specific structural analysis to determine exactly which foundations require intervention, and what form that intervention should take.

Field crews test selected foundations using TDR, identifying anomalies in embedment depth, stiffness, and potential degradation across drilled pier and direct-embed concrete foundations. Engineers then assess each tested foundation's capacity against the new loads introduced by uprating, using structure-specific modelling aligned to the applicable design code. Design packages are delivered based on findings, covering reuse of the existing foundation where compliant, retrofit or stabilization where targeted intervention is sufficient, or full foundation replacement with drawings where required. Environmental and permitting support documentation is available where needed.

IMPACT

Asset owners can prioritize only deficient foundations for replacement or reinforcement, reducing civil works scope, cutting unnecessary cost, and making capital investment decisions on the basis of verified structural evidence rather than assumption

TDR-informed foundation assessment transforms uprating projects from programs of blanket replacement into targeted, risk-informed interventions. Foundations confirmed as structurally sound under higher loads are retained with confidence, while those requiring action are clearly identified and designed for. The result is a more efficient, defensible capital program that supports grid expansion and renewable integration goals without unnecessary expenditure on civil works.