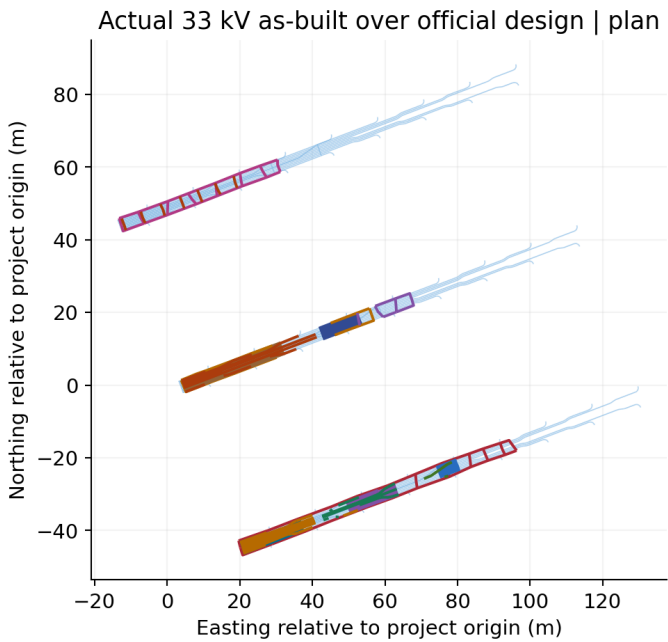


CURRENT MODEL + PROPOSED DEVELOPMENT

A connected construction control platform

Updated model, 33 kV weekly QS reporting and a practical roadmap for a Windows project application.



Actual source geometry: dated 33 kV as-built lines over the official design. Point symbols are not used for progress reporting.

30.4%

dated design coverage
provisional

4

survey weeks
available

24

pages of capabilities
and development scope

Prepared for Karol Krysiak. This edition incorporates line-based measurement, straight/bend/curve quantities, automatic design coverage, the new foundation and landscape drawings, QC image export and the requested construction-management use cases.

Read the status labels

CURRENT means implemented in the updated viewer. PROPOSED means a development requirement. ILLUSTRATIVE examples are not site production, cost, permit or acceptance records.

[Open the interactive model](#)

[Open the 33 kV QS report](#)

CURRENT / PROPOSED CAPABILITY MATRIX

What is available, and what is planned

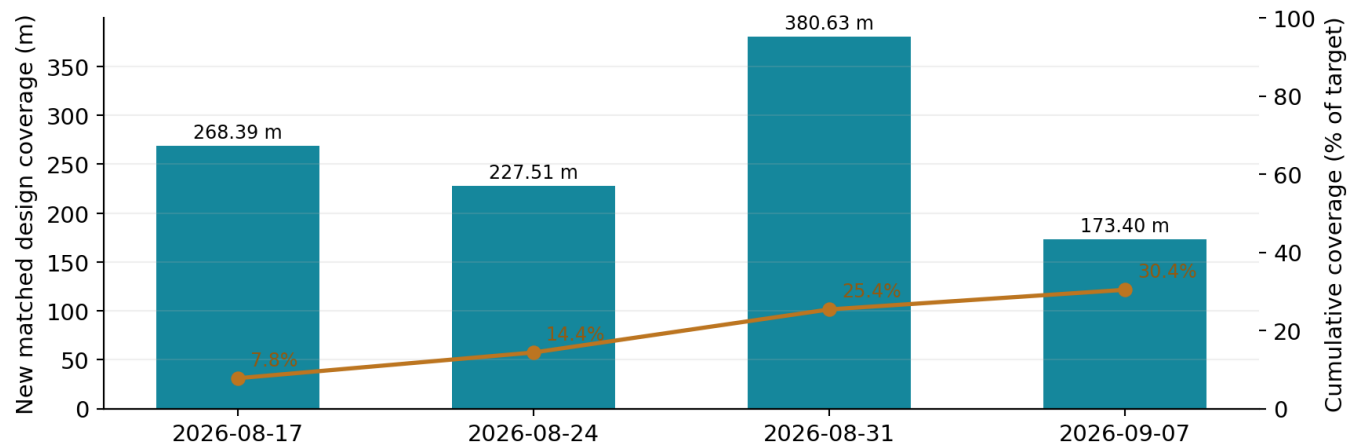
A clear boundary between the delivered model and the future project-management system.

Function	Current delivery	Next development
3D model	Pan, orbit, walk, levels, source selection and layer visibility.	Saved shared viewpoints; role-based workspaces.
33 kV as-built	Lines only; day/week filters; straight/bend/spline schedules.	Repeated imports, confirmed installation dates and acceptance history.
Progress	Automatic same-tier XY design coverage; weekly increment and remaining %.	Approved route matching; work-package and physical-completion rules.
QS	Measured line CSV; weekly printable report.	BoQ mapping, rates, approvals, variations and valuation controls.
New site context	GA, foundation and 0751 linework; temporary terrain levels; illustrative massing.	Approved founding levels, tree survey heights and missing external references.
QC evidence	Current-view JPG with date/context; source properties and CSV.	Annotations, evidence IDs, signed inspection packs and controlled archives.
Coordination	Existing geometric clash checks and measurements.	Issue lifecycle, clearance rules and 4D work-space clashes.
Programme / resources	No scheduling or resource database yet.	Tasks, gangs, plant, daily records and forecast dashboards.
TQ / permits / H&S;	No approval or permit-issuing workflow yet.	Controlled registers and authorised human review.
Windows integration	Current product is a browser viewer.	Installer, watched folders, import staging, version history and offline sync.

CURRENT | ACTUAL SOURCE DATA

33 kV: measured weekly coverage

Actual calculations from the supplied as-built and official design; no invented target length.



Blue bars: newly covered design length. Gold line: cumulative coverage as a percentage of the complete official 33 kV duct target.

Week starting	New coverage m	New % of target	Cumulative %
2026-08-17	268.39	7.77%	7.77%
2026-08-24	227.51	6.59%	14.36%
2026-08-31	380.63	11.02%	25.38%
2026-09-07	173.40	5.02%	30.40%

Automatic location	Design m	Covered m	Covered %
North trench	1151.18	0.00	0.00%
Central trench	1151.35	504.25	43.80%
South trench	1151.25	545.69	47.40%

Automatic names identify spatial design corridors. Zero coverage means no eligible dated matching evidence, not proof that nothing was built.

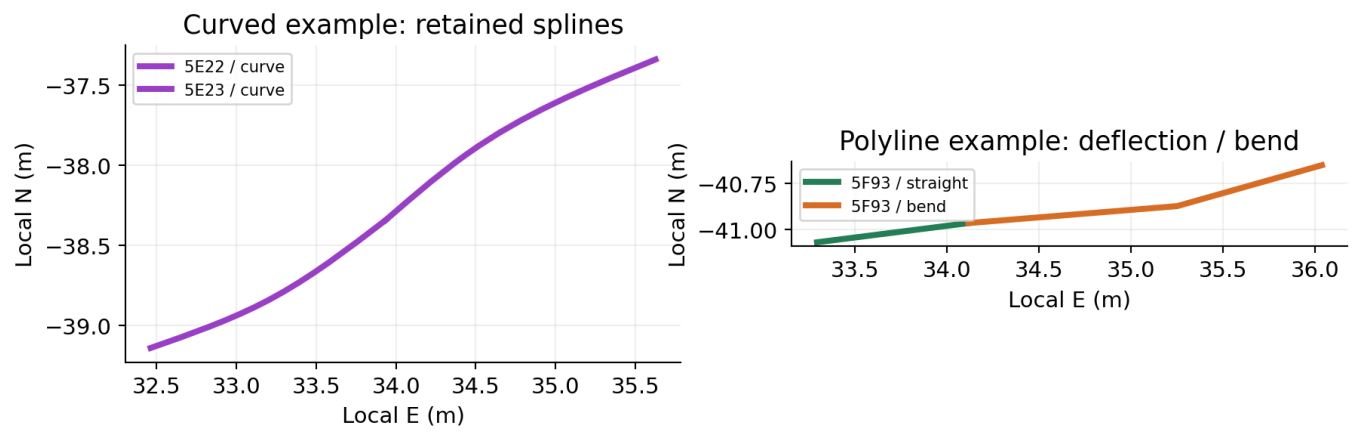
Design target: **3453.79 m** of individual lower and upper ducts. Dated, unambiguously matched coverage: **1049.93 m**. Remaining without that evidence: **2403.86 m**.

What this percentage means

It is provisional survey coverage, not approved installed cable progress. Parallel ducts count separately. Mixed-day and undated lines are excluded. The 19/08 and 24/08 layer dates conflict with identifier prefixes.

Straight sections, bends and curved lines

The supplied screenshot was traced back to source geometry, not approximated from the image.



Actual examples: splines 5E22 / 5E23 and polyline 5F93. Lines retain the measured coordinates and elevations.

Upper ducts: week of 24/08/2026	Sections	3D length m
Straight / low deflection	23	220.923
Polyline bend	3	7.672
Spline curve	2	3.669
Measured total	28	232.264

Plan turns of at least 10 degrees mark the two incident edges as a bend section. Smaller deflections stay in the straight class. This automatic rule needs QS review; it does not establish the number of manufactured fittings or their tangent limits.

Two chord polylines describe the same surveyed fragments as the splines. Their 3.664 m of alternate geometry is removed from totals. The splines remain, sampled at a 1 mm flattening setting. Six zero-length edges are excluded.

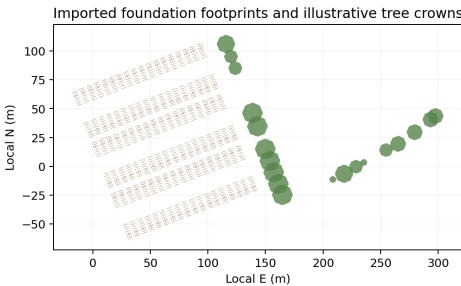
Do not equate two different quantities

Measured as-built metres follow the surveyed path. Progress metres follow matched intervals of the design route. They differ where geometry deviates, observations overlap, or matching is unresolved.

New foundations, greenery and site context

Three additional drawings are integrated with explicit provenance and temporary-level flags.

Drawing	Coordinate handling	Height treatment
BESS SO FOUNDATION.dxf	Already in site metres; block scales preserved.	Temporary ground interpolation. Footing / upstand heights interpreted from block names.
3001816-BMC-CS-XX-DR-CV-07 51.dxf	Already in site metres despite the unit header.	Explicit source elevations retained.
X- OVERALL SITE GA - 2026-08-06.dxf	Millimetre coordinates scaled by 0.001.	Missing / near-zero plan Z uses temporary terrain interpolation.



Actual imported plan footprints; crown massing is illustrative and positioned only within the terrain-control extent.

3456

foundation / upstand
massing blocks

29

illustrative tree crowns
within terrain-control extent

Original Final terrain Level3 triangles are used first. Gaps use temporary Delaunay interpolation inside the same control-point convex hull. Nothing is extrapolated beyond that hull. Source plan linework remains available in separate layers.

Tree crown forms and heights are illustrative. The source contains 137 canopy outlines; only 29 centres can be positioned within the available terrain-control extent. Remaining unresolved graphics are retained in hidden QA layers, not assigned fabricated site heights.

Limits of this addition

The model includes foundation massing with 300 mm footing thickness and 1.15 m upstand interpreted from block names. These are not approved founding levels or valuation volumes. Nine proxy entities and one empty external block cannot be reconstructed from these files.

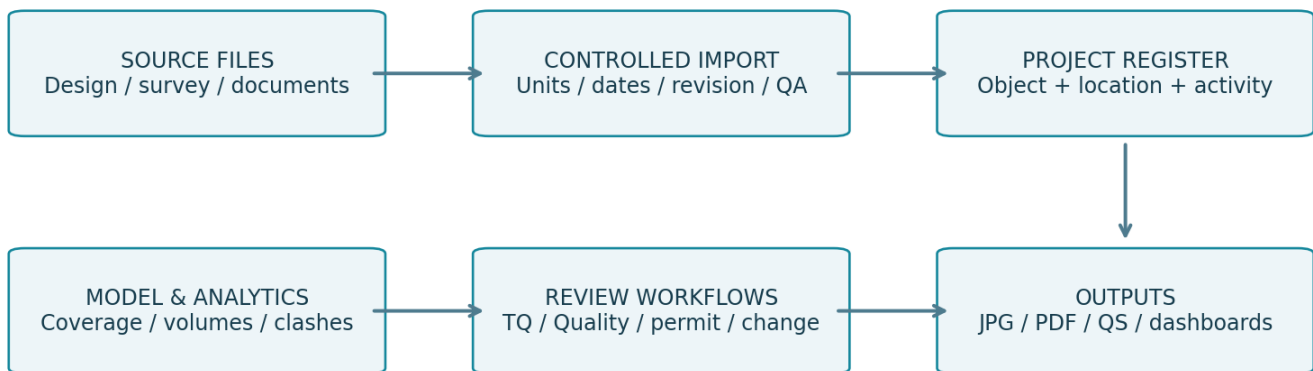
[Download the detailed landscape / foundation import audit](#)

PROPOSED | NOT AN INSTALLED APPLICATION YET

Target: a Windows project application

An installed, project-based tool that automatically prepares new data and exposes controlled review.

PROPOSED Windows project system



Proposed information flow. Imports and analyses create reviewable results; approval remains a separate controlled action.

- Watch selected folders for new design, survey and as-built files; recognise file replacements and retain prior revisions.
- Maintain a local project database and a source-file archive. Keep units, grid, datum, file hash, revision, author and import date.
- Stage every import: preview added/changed/deleted objects, unmatched routes and uncertain dates before accepting the new baseline.
- Allow offline model review and draft field records, then reconcile changes when a shared connection is available.

Desktop and collaboration are separate decisions

The current viewer can inform the interface. A production Windows installer, secure shared storage, accounts, backups and multi-user change handling still need to be built and validated.

PROPOSED | DATA MODEL

Give every record a construction context

A shared work-breakdown and location structure connects geometry to real work.

Record	Required relationships
Location / trench	Stable location ID; boundary or chainage limits; datum; responsible team.
Physical object	Asset ID; discipline; design revision; layer / source handle; geometry history.
Activity	Work package; phase; planned dates; predecessors; method; quantity unit.
Survey observation	Object / location; survey date; source file; measured geometry; quality flags.
Production record	Actual work date; gang; plant; output; constraints; supporting evidence.
Inspection / acceptance	ITP item; inspector; result; hold-point status; photos; sign-off.
Query / change	TQ or change ID; affected objects; owner; due date; approved response.
Permit	Boundary; activity; evidence; competent reviewer; validity; suspension / closure.

Do not use a layer name as the permanent identity of an asset. A replacement file can rename layers or split a line while still describing the same physical trench. Keep measured geometry and derived line/surface objects separate from the raw survey archive.

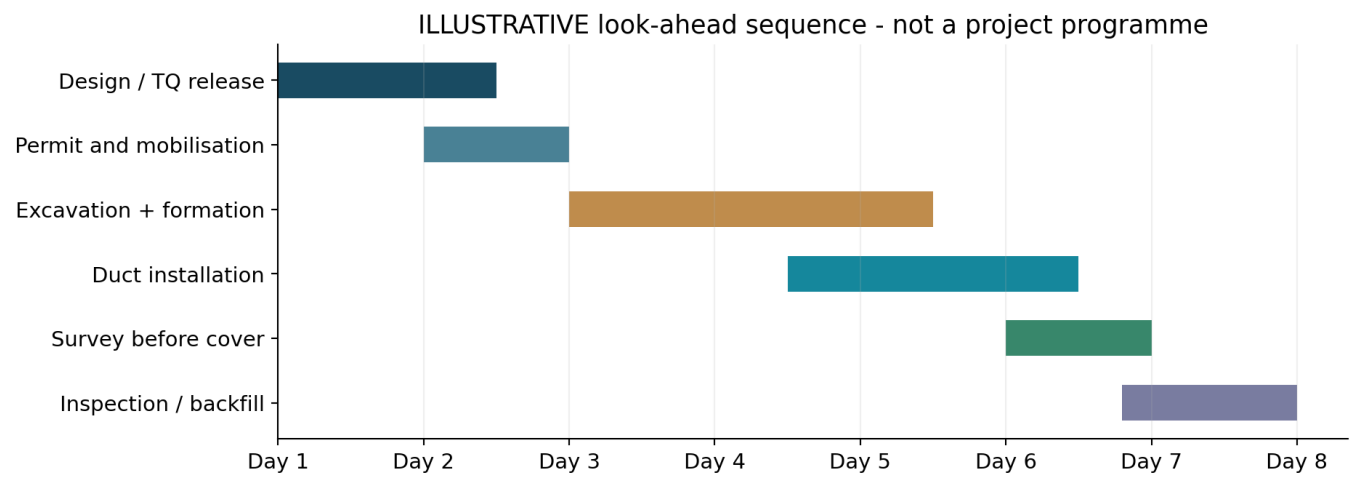
Current location tool

The viewer offers automatic North / Central / South corridors and clips measured linework and the design target to a named E/N rectangle. Custom names are saved locally; report links carry the boundary. Approved trench polygons, chainages and a shared location register are the next step.

PROPOSED | PLANNING EXAMPLE

Plan work in space and time

A 4D view should explain what can be built, where and when - and what is preventing it.



Illustrative task sequence only. Actual programme dates, durations and construction methods have not been supplied.

- Link activities to trench sections, slabs, foundations, drainage runs and work areas.
- Display planned, ready, active, blocked, surveyed and accepted states separately.
- Show two- and six-week look-aheads, access constraints, material availability and unresolved TQs.
- Play the programme by day or week; compare a saved baseline with a proposed resequence.
- Check whether excavation, survey, inspection, backfill and subsequent activities overlap incorrectly.

Useful planning alert

A backfill task is due tomorrow, but its pre-cover survey and inspection are incomplete. The system flags the affected section and owner; it does not automatically release the hold point.

PROPOSED | RESOURCE AND PRODUCTIVITY MODULE

Allocate gangs, excavators and equipment

Resource planning needs work type, output basis and site constraints, not just a headcount.

Resource record	Example fields
Excavator	Plant ID; type / size; attachment; operator; availability; productive / idle hours.
Other equipment	Dumper, compactor, vacuum excavator, crane, pump, generator, survey kit.
Gang	Supervisor; operators; groundworkers; banksman; competencies; shift.
Assignment	Location + activity + date; planned hours; actual hours; reason for downtime.
Productivity	m of duct / gang-hour, m3 excavated / productive plant-hour, foundations / shift.
Readiness	Access, material, inspection, permit, temporary works and utilities status.

Illustrative planning calculation

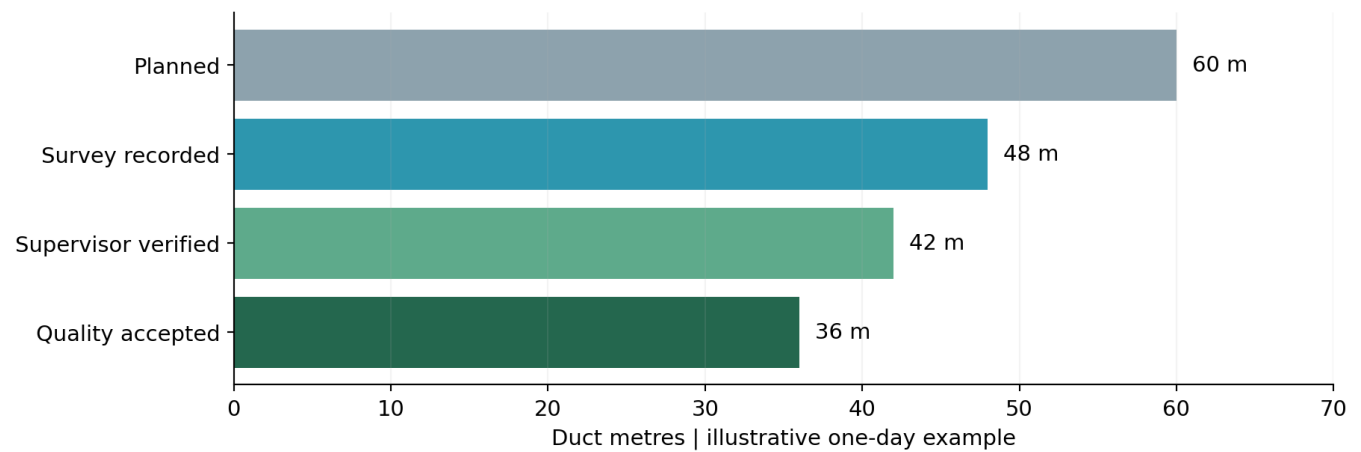
One excavator operating productively for 5 hours at an assumed 24 m3/hour gives a planning output of 120 m3. Two machines do not automatically double output: loading, haul capacity, space, segregation and inspection availability may govern the result. These are scenario inputs, not measured Cellarhead rates.

- Compare planned versus actual utilisation and distinguish breakdown, access delay, material delay and waiting for inspection.
- Suggest feasible alternative assignments with explicit assumptions; show resulting time and cost impacts.
- Require a planner to accept changes. Equipment suitability and safe operation remain subject to the approved method and competent review.

PROPOSED | ILLUSTRATIVE DAILY REPORT

A daily report generated from evidence

One report can serve the site team, planner, QS and quality engineer while retaining distinct statuses.



Example values for one day only. None of these figures is an actual project production record.

Daily report block	Content
Where / when	Date, shift, weather record, work area, activity and design revision.
People / plant	Gang attendance, equipment allocation, operating hours and downtime.
Production	Planned output; supervisor-declared output; surveyed quantity; accepted quantity.
Constraints	TQ, permit, material, access, defect or inspection preventing progress.
Quality / H&S;	Inspections, test results, hold points, observations and required actions.
Evidence / next shift	Dated model view, photos, survey file, handover notes and next-day plan.

The 48 m survey quantity can support a production claim, but it does not prove 48 m was installed that day or accepted. Keep the 36 m accepted quantity separate until the remaining evidence is reviewed.

CURRENT METHOD / PROPOSED STAGE MANAGEMENT

Weekly progress without double counting

Report each stage independently before creating any overall completion score.

- Current: union matched design intervals, so a later survey of an already covered length does not create new progress.
- Next: retain excavation, formation, blinding, duct installation, inspection, backfill, reinstatement and testing as separate stage records.
- Track survey-recorded, supervisor-verified and quality-accepted quantities separately.
- Reconcile the change in cumulative progress with the weekly increment. Flag negative changes caused by rejection, redesign or scope removal.
- Report both quantity-based progress and programme performance. A high installed percentage can coexist with a critical-path delay.

Indicator	Definition / control
Weekly quantity	New eligible quantity in the defined period and work area.
Cumulative %	Unique eligible completed quantity / approved target quantity.
Remaining	Approved target minus eligible cumulative quantity; show scope changes.
Stage-weighted %	Only use approved stage weights with a common physical scope.
Forecast finish	Remaining quantity / a reviewed productive rate; show assumptions and constraints.
Plan reliability	Completed promised activities / activities promised for the week.

Future drainage and buildings

Use phase-specific records for drainage and buildings. Do not add metres of excavation, pipe, concrete and backfill together to create a false overall quantity.

QS measurement and valuation support

Keep geometric evidence, contractual measurement rules and commercial approval separate.

Output	Data and controls
Weekly quantity schedule	Location, period, feature, straight / bend / spline, 3D and plan length, source references.
BoQ mapping	Item code, unit, measurement rule, inclusions, exclusions and approved rates.
Valuation evidence	Previously assessed, this period, cumulative, remaining and acceptance status.
Change / variation	Instruction reference, baseline quantity, revised quantity, delta and assessment state.
Reconciliation	Drawing quantity vs measured geometry vs claimed quantity vs accepted quantity.
Audit pack	File revisions, calculation version, method settings, reviewer and linked evidence.

Important measurement distinctions

- Duct metres are not trench metres; parallel ducts and lower/upper tiers require explicit quantity rules.
- Straight/bent survey sections are not automatically priced fittings. Agree tangent limits, fitting schedules and contractual measurement rules.
- Temporary foundation massing and unverified tree geometry must not feed concrete volumes or paid quantities.
- A partial survey must not silently reduce the design denominator. Keep the full approved scope inside the chosen location.

PROPOSED | VOLUME ENGINE - NOT CURRENTLY IMPLEMENTED

Earthworks, formation and volume differences

Surface-to-surface quantities are a valuable next analytical module.

Compare existing ground, stripped ground, excavation formation, installed layers and final levels on a common, explicit boundary. Preserve holes, breaklines and the independent status of road, cable, drainage and earthworks formation.

Calculation	Required basis
Cut / fill	Common valid footprint; compatible grid and datum; triangulation overlay or reviewed integration method.
Stockpile	Measured top surface and an approved basal surface / boundary.
Embankment	Stage surfaces with survey dates; compaction and bulking factors applied separately.
Layer quantity	Top-minus-bottom volume with explicit side boundary; no invented thickness.
Change over time	Previous accepted surface vs latest accepted surface, not just design vs latest.
Uncertainty	Coverage gaps, temporary interpolations, survey accuracy and unresolved breaklines.

Illustrative result

A comparison might show 180 m3 cut and 260 m3 fill, giving a net 80 m3 fill. Report cut and fill separately; the net figure alone hides handling requirements. This is a teaching example, not a result for this project.

Exclude the new temporary terrain gap interpolation from approved earthworks or formation valuation until the survey / design basis is accepted. A visually continuous surface is not evidence that the ground was measured everywhere.

CURRENT XY COVERAGE / PROPOSED DEVIATION ANALYSIS

Design deviations and coordination

Current automatic coverage matching is a starting point, not a tolerance certificate.

- Match object identity, duct tier, direction, chainage and revision before measuring offsets.
- Compare like with like: crown, centre, invert, slab top, founding level or finished level.
- Calculate lateral offset, vertical residual, 3D separation, gradient and cover only where their references are established.
- Store the approved tolerance and its source for each feature; use pass / review / fail / insufficient evidence.
- Keep unmatched, ambiguous and missing-coverage records visible in the report.

Level conversion example

If the design is an invert and the survey is a crown, a comparison requires the verified outside diameter and the intended level convention. A nominal 200 mm rendering is insufficient to certify a 200 mm conversion. The current coverage percentage uses XY alignment and does not make a vertical acceptance judgement.

Clash development

Existing model intersection checks can support coordination. The next step is to link results to issue ownership, required clearances, approved wall openings, construction sequence and closure evidence. Add temporary works, plant operating envelopes and access conflicts only with a defined geometry and method.

PROPOSED | TQ / CHANGE WORKFLOW

TQ, corrections and design-change control

A query should identify the exact geometry and lead to a traceable response.

Step	Required information
Raise	TQ ID, location, selected objects, source revision, question, impact and required response date.
Attach	JPG viewpoint, survey lines, dimension / level evidence, drawing extract and calculation note.
Review	Discipline owner, proposed response, affected activities, permit / procurement / quantity impact.
Approve	Authorised response and linked instruction; separate from an informal comment.
Implement	New model / drawing revision; object mapping; superseded information retained.
Verify / close	Field verification, updated quantities and evidence that the response was implemented.

Project-specific draft queries

- Confirm whether the 19/08 layer should be assigned to 14/08 and whether 24/08 should be 22/08; keep current figures provisional until resolved.
- Confirm the official 33 kV design revision and the lower/upper tier correspondence used by automatic matching.
- Confirm footing top, underside and upstand levels before replacing the temporary foundation massing.

Correction principle

Redlines and proposed geometry belong in a review overlay. Do not overwrite raw measurements, approved design or historical permit evidence without a recorded revision and authorised action.

QC views, inspections and quality packs

A reproducible viewpoint is more useful than an isolated screenshot.

Available in the updated viewer

- Frame the relevant section or selected element, select the visible layers and choose QC JPG.
- The JPEG captures the current model view with a timestamp, view context and a temporary-level warning. A selected object adds its source reference.
- Use the line schedule CSV and printable weekly QS report alongside the image. Keep source files available for checking.

Proposed evidence package

Evidence item	Recommended metadata
Model view / JPG	Evidence ID; location; camera; layer visibility; displayed revisions; date; author.
Inspection	ITP stage; checklist; hold/witness point; inspector; result; signatures.
Test record	Method; sample / batch; lab certificate; specification limit; acceptance.
Defect / NCR	Affected object; description; action; owner; due date; verification and closure.
Document pack	Linked source files and checksums; revision-pinned calculations; approval trail.

Status today

QC JPG is an image export, not a signed inspection record. Shared markups, controlled approvals, evidence numbering and automatic quality-document assembly remain proposed modules.

PROPOSED | HUMAN AUTHORISATION REQUIRED

Permit to Dig: controlled preparation

The application should help assemble and check evidence, while preserving site authority.

Use a defined work boundary, excavation activity, validity period, current service information, survey records and responsible people. Highlight incomplete evidence or changed conditions before a permit is reviewed.

Control	Application behaviour
Boundary and scope	Show the requested work area, affected services and approved design versions.
Evidence readiness	Link service searches, detection records, trial-hole evidence, RAMS and temporary works as applicable.
Authorisation	Named competent reviewer and issuer; issue / suspend / revoke / close with an audit trail.
Change trigger	A revised utility model, changed method or altered work boundary flags the permit for review.
Field use	Display current status and expiry; show offline/stale-data warnings; prevent an unreviewed draft appearing issued.

Safety boundary

A model does not prove the absence of services and must not automatically authorise excavation. HSE HSG47 describes planning, locating/identifying buried services and safe excavation as the three components of a safe system. [H1]

HSE also describes competent-person inspections at the start of shifts and after relevant events, with findings and actions recorded. A proposed inspection module should support that record and escalation process. [H2]

[H1 - HSE: Avoiding danger from underground services \(HSG47\)](#)

[H2 - HSE: Excavations](#)

PROPOSED | H&S SUPPORT TOOLS

Health, safety and temporary works

Use spatial information to improve preparation, communication and follow-up.

- Display approved exclusion zones, pedestrian routes, plant routes and work-area boundaries by shift.
- Link excavations to support details, inspection status, water observations and access arrangements.
- Associate temporary works with a design/check record, loading conditions and inspection requirements.
- Attach briefings, observations, near misses and corrective actions to a precise location and activity.
- Track plant and operator document expiry and required competencies before assigning resources.
- Record health-related exposure information such as dust, noise and vibration when measured or supplied; do not infer exposure from the model alone.
- Flag incompatible activities sharing a work area and prompt a coordinated review.
- Keep emergency access, assembly areas and relevant response information visible to site teams.

Use approved inputs

The system should not invent safe stand-off distances, excavation slopes, lifting capacities or electrical clearances. Store the applicable approved method and responsible reviewer. Automated alerts support decisions; they do not replace inspections or competent judgement. [H2]

HSE excavation guidance identifies collapse, falling materials, people or plant entering excavations, nearby structures, services and water as relevant risks. The proposed tools above organise evidence and actions around those risks; they are not a complete site safety assessment. [H2]

PROPOSED | ADDITIONAL CONSTRUCTION USE CASES

Logistics, materials and environmental control

Connect the work sequence to the practical constraints that often determine production.

Area	High-value use cases
Materials	Delivery slots; storage locations; batch / certificate traceability; shortages against look-ahead demand.
Access / logistics	Haul routes; gate bookings; crane / unloading areas; temporary diversions; emergency access checks.
Water	Pump and sump records; observed water levels; drainage readiness; rain-related review triggers.
Environment	Protected areas; approved tree/root constraints; silt-control inspections; waste and disposal records.
Concrete	Pour cards; release-to-pour status; batch tickets; testing; curing and strike records.
Cable works	Duct proving; draw ropes; drum allocation; pulling records; jointing and test documents.
Drainage	Excavation, bedding, pipe, chamber, testing, backfill and reinstatement tracked as separate phases.
Buildings	Formation, blinding, reinforcement, formwork, concrete, waterproofing and handover by zone.

Tree canopy massing in the current model is visual context. It is not an arboricultural survey or an approved root-protection boundary. Environmental restrictions must be imported from the applicable approved information.

PROPOSED | PERFORMANCE AND OPTIMISATION

Continuous monitoring and useful improvements

Start with dependable evidence and small decisions that reduce avoidable waiting.

Question	Useful signal	Possible reviewed action
Why is a gang waiting?	Downtime coded by access, design, material, inspection or plant.	Resolve the constraint or move work to a ready location.
Where is work being buried without evidence?	Backfill activity ahead of survey / ITP status.	Schedule survey and inspection before closure.
Which change affects production?	Revised design intersects active tasks or issued permits.	Review scope, sequence and affected authorisations.
Is progress improving?	Accepted output per productive hour by comparable work type.	Investigate differences; update realistic planning rates.
Where will a shortage occur?	Look-ahead quantities vs stock and confirmed deliveries.	Resequence or adjust procurement.
What is overdue?	Age of TQs, NCRs, inspections, permits and material approvals.	Assign ownership and escalate unresolved constraints.

Near-real-time dashboards require fresh field inputs or connected systems. The current static model does not receive live plant, survey or site events automatically. Show the last update time and the age of every feed.

Measure benefit

Track rework, repeat visits, waiting hours, evidence completeness and time to close queries. Agree the baseline before claiming a productivity saving.

PROPOSED REPORT CATALOGUE

A practical family of reports

Generate different views from one controlled dataset without hiding their approval status.

Report	Frequency / audience	Core content
Daily site report	Each shift / site manager	Activities, gangs, equipment, outputs, delays and next shift.
Weekly progress	Weekly / planner and client	Baseline vs current; new/cumulative/remaining quantities; blockers.
QS measurement	Weekly or valuation period / QS	Section lengths, surfaces, volumes, BoQ rules, evidence and changes.
Quality pack	By lot or stage / quality team	ITP, tests, source revisions, model JPGs, acceptance and NCR status.
Survey deviations	Each accepted survey / engineer	Matched features, offsets, levels, tolerances and unresolved records.
Earthworks balance	Each surface revision / civils	Cut/fill, stockpiles, common footprint, factors and uncertainty.
Plant / resource	Daily/weekly / construction manager	Allocation, utilisation, productive hours, downtime and rates.
Permit readiness	Before issue / authorised issuer	Work boundary, valid evidence, dependencies and review flags.
Change / TQ register	Live / design and site team	Affected objects, owners, responses, approvals and implementation.
Handover dossier	By system / commissioning	Approved as-built, tests, asset data, residual issues and completion.

Current deliverables are the 33 kV line schedule, daily/weekly printable QS report, automatic coverage comparison and JPG model views. The other reports need the additional registers and workflows described in this document.

PROPOSED | SYSTEM INTEGRATION

Integration, revision history and exports

Automatic file handling must preserve identity and make changes reviewable.

- Imports: DXF and structured survey exports first; add validated LandXML, IFC and supported native CAD adapters when needed. Preserve the original files.
- Scheduling: import activity IDs, dates and logic from the agreed programme system; retain a frozen baseline.
- Commercial: link approved BoQ codes, measurement rules and cost records without silently replacing financial approvals.
- Quality: link document IDs, revision status, inspections and certificates from the chosen document system.
- Exports: PDF, CSV/XLSX, JPG/PNG, scoped DXF and machine-readable project data with provenance.
- Synchronisation: record last successful import, failures, changed files and conflicts. Never silently replace accepted survey history.

Minimum replacement-file checks

Confirm file identity, revision, grid, units and level datum. Detect added, deleted, split, merged and moved objects. Separate formatting changes from geometry changes. Recalculate affected quantities and identify linked permits, tasks, TQs and quality records requiring review.

Protect the project record

Use named roles, audit events, backups, restore testing and controlled sharing. Keep local drafts distinguishable from accepted shared records. Do not place account credentials in model files or image exports.

PROPOSED | PRIORITISED IMPLEMENTATION

Development sequence and acceptance gates

Build the next release around a reliable 33 kV pilot, then extend the same data model.

Stage	Deliverable	Acceptance gate
1. Reliable import	Windows shell; watched folders; source archive; unit/date/geometry checks.	Repeat import creates no duplicate progress; rollback restores the prior state.
2. 33 kV pilot	Approved trench IDs, matching rules, daily/weekly QS and revision history.	Independent check agrees on scope, unique lengths, bends and dated coverage.
3. Quality and changes	TQ, markups, NCR, evidence packs and approval states.	Every accepted change and inspection has source, owner and history.
4. Planning / resources	Programme links, gangs, plant, daily records and look-aheads.	Actual outputs reconcile to evidence; resource double-bookings are visible.
5. Surfaces / disciplines	Validated earthworks engine; drainage and building stage workflows.	Independent volume benchmark and stage-specific measurement rules pass.
6. Shared operational use	Offline sync, role controls, reporting service and controlled integrations.	Conflict handling, restore, access and stale-data tests pass.

No programme, budget, equipment register or approved measurement specification has been supplied. Delivery dates and implementation costs should be estimated after a pilot scope and acceptance criteria are agreed.

Best next inputs
Approved 33 kV design revision; confirmed survey-date convention; trench boundaries / chainages; quantity rules for bends; verified level references; one sample daily report, ITP, TQ and Permit to Dig form.

SOURCE REGISTER / DEVELOPMENT BACKLOG

Evidence, limitations and further opportunities

A transparent foundation for the next project-control release.

Current evidence

Actual figures in this report come from BESS DUCTING 33KV ASBUILT.dxf and BESS 33KV DUCTING OFFICIAL SO.dxf, the updated model datasets and the import audits. New context comes from the foundation, 0751 and overall GA drawings named on page 5. The interactive report exposes the selected scope and source hash.

Key exclusions: undated / mixed-day lines from dated progress; ambiguous spatial matches from coverage; duplicate spline/chord alternatives; zero-length edges; unresolved terrain levels; unavailable proxies / external references; illustrative massing from QS volumes and clashes.

Further useful additions

- Survey-before-cover reminders and missing-evidence maps; QR links from an asset to its latest accepted records.
- Temporary access and lifting-space conflict reviews; delivery and laydown planning.
- Duct proving, pressure/CCTV test registers, commissioning boundaries and system handover readiness.
- Rework and change-impact tracking; material batch traceability; snag closure verification.
- Uncertainty maps, stale-survey warnings, revision comparisons and repeat-measurement detection.
- Forecast scenarios with visible assumptions; lessons learned by work type; reusable activity and quality templates.

Safety references reviewed 18 September 2026

[H1 - HSE HSG47: Avoiding danger from underground services](#)

[H2 - HSE: Excavations](#)

This is a current-capability report and development brief. It does not issue a permit, approve a design, certify installed quantities or replace the project safety and quality procedures.