WaiMAP · Spatial Intelligence

FOR ORGANISATIONS · ENERGY · INFRASTRUCTURE · CONSTRUCTION · LOGISTICS

From a point on the map to a decision-ready dossier

WaiMAP is the engineering platform that turns terrain, satellite, survey and open data into designs, quantities, costs, risks and reports your team, your client and your lender can check — in one browser workspace.

Energy & grid

PV, wind, BESS, hydro, lines, substations

Construction

Earthworks, roads, pipelines, revisions, drones

Real estate

Parcels, masterplans, district twins

Logistics

HGV routes, tolls, cost, CO2e, abnormal loads

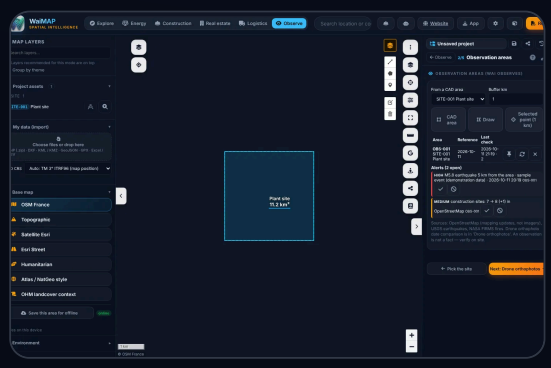
Observations

Change, progress, hazards, monitoring

Trust

Sources, validation, verifiable reports





Early project work is slow, scattered and hard to check

Today

- A feasibility study needs GIS, terrain, soil, climate, hazards, design tools, Excel and a finance model — separate tools, separate people.
- Classic GIS shows data on a map; someone still has to engineer it.
- Detailed design tools need survey data that does not exist yet at bid or investment stage.
- Bids, investment decisions and public programmes are made on thin numbers that nobody can trace back to a source.
- Every revision means doing the chain again.

With WaiMAP

- ✓ One workspace: the site, the data, the engineering engines and the report.
- ✓ The map engineers: draw or import a site, a route or a district and WaiMAP designs, checks, quantifies and prices it.
- ✓ Every number carries its source, method, date and confidence; uncertainty is stated as P50 – P90.
- ✓ Reports in your format — PDF, Excel, DXF / DWG, IFC, GIS — with a verification QR.
- ✓ Change an input, rerun, compare revisions.

5
industry solutions on one platform

27
published validation comparisons against named reference tools and projects

360+
automated end-to-end checks before every release

14
output formats: PDF, Excel, DXF, IFC, KML, GeoTIFF, LAS ...

Who buys WaiMAP

EPC contractors · Developers and IPPs · Engineering and design offices · Utilities and grid operators · Investors, lenders, technical advisers · Municipalities and public owners · Logistics and project-cargo companies · Asset owners and O&M teams

Honest scope: WaiMAP works at concept, feasibility and early-design level. Issued-for-construction design still follows survey and detailed engineering — WaiMAP prepares and checks it, and hands it over in CAD / BIM formats.

How WaiMAP works

A map that engineers — with WAI as its brain.

1
Site — a point, a route, a boundary, Excel corners, CAD / GIS files or a copied district

2
Data — terrain, OpenStreetMap, soil, climate, hazards, satellite: loaded automatically; your survey replaces open data

3
Engines — design, yield, load flow, hydraulics, earthworks, routing, cost and finance

4
Checks — W-ENG engineering checks, Data Trust, independent tools, Monte Carlo

5
Deliverables — dossier, Excel, CAD / BIM, GIS, video, verification QR

The map

Terrain and bathymetry, OpenStreetMap, soil, climate and hazard catalogues, Sentinel-2 imagery and WaiMAP's own map server. Draw, import (Shapefile, KML, DXF / DWG, IFC, GeoTIFF, LAS, Excel) or paste coordinates in any common system.

The engines

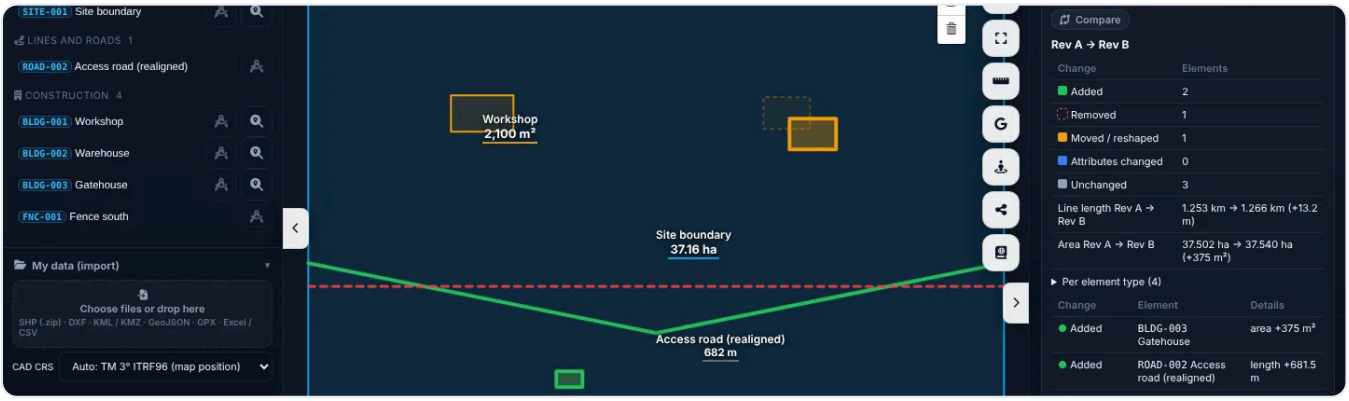
Real engineering, validated against named tools: hourly PV and wind yield with wakes, BESS dispatch, IEC 60909 short circuit, sag-tension and tower spotting, water and sewer networks, mass haul, truck routing, project finance.

WAI Brain

An AI agent that uses WaiMAP's own tools to reach a goal stated in plain language — "find 200 ha for 100 MW PV near Konya and price it". Numbers come from tools, not from the language model; anything that spends credit waits for a click.

The dossier

From a one-page screening to a full feasibility dossier with an official cover, revision table, drawings, schedules, risks, BoQ, schedule and cash flow — with the sources and assumptions written out.



Construction mode: named drawing revisions compared on the map — added, removed, moved, with deviations in metres.

Energy & grid

Renewables, Power Infrastructure & Energy Storage

Renewable developers and IPPs | EPC contractors and owner's engineers | Utilities and transmission operators | Investors, lenders and technical advisers



Use cases

- **Solar PV and wind** — Hourly yield with P50–P99, layouts, stringing and cabling for PV; NASA POWER or met-mast wind with long-term correction, wakes and layout optimisation.
- **Battery storage (BESS)** — Market dispatch, revenue stack, degradation and augmentation, LCOS, finance and economic analysis.
- **Hydropower** — Run-of-river: flow duration curve, design flow, waterway hydraulics, turbines, energy, BoQ and finance.
- **Transmission lines and substations** — Least-cost routes, sag-tension and clearances, optimum tower spotting, substation configuration, SLD and CAPEX.
- **Terrain, access roads and site preparation** — Platforms and cut / fill alternatives, drainage, mass haul, abnormal-load access for blades and transformers.
- **Construction progress and operational monitoring** — Drone orthophotos and point clouds, progress against plan, observation areas around operating sites.

Available today

- ✓ Solar PV yield, layout, stringing, cabling and PVsyst hand-over
- ✓ Wind yield, wakes (Jensen / Gaussian), layout optimisation, P50–P99
- ✓ BESS dispatch, revenue stack, finance and economics
- ✓ Run-of-river hydropower
- ✓ Grid connection screening, load flow, IEC 60909 short circuit, N-1
- ✓ Line routing, sag-tension, clearances, optimum tower spotting
- ✓ Substation estimator with SLD and BoQ
- ✓ Energy hub, green hydrogen, CSP, combined cycle
- ✓ Terrain Design Studio, drainage and mass haul for platforms and roads
- ✓ Drone orthophotos, point clouds, progress and payments
- ✓ PV defect screening on drone orthophotos (with WAI)

Reports

Solar yield report | Wind yield report | BESS report | Hydropower report | Energy hub report | Electrical studies | Line routing & mechanics | Substation estimator | Transmission line dossier | Data Trust & Evidence | Bankability Assessment

Construction & real estate

From site selection to construction, handover and development potential.

Construction

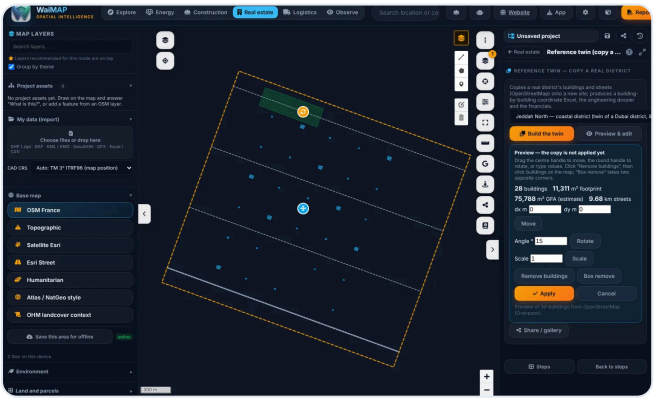
- General and EPC contractors
- Engineering consultants and designers
- Project owners and project management offices
- Surveyors and site teams

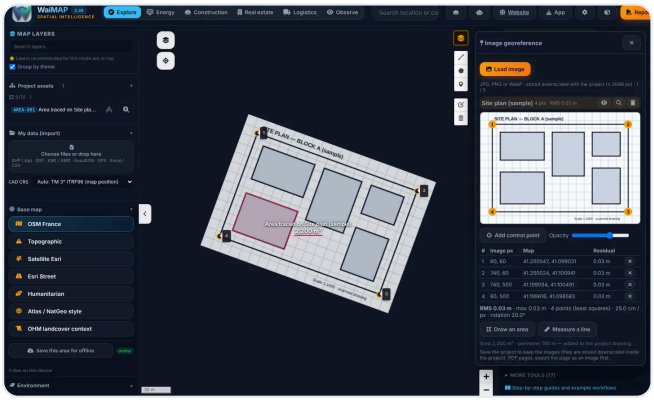
- **Terrain modelling, excavation and filling** — Your survey DEM or the global DEM, platform level alternatives, batters, retaining walls, swell / shrink and haul cost.
- **Roads, highways, railways and pipelines** — Least-cost corridors, elevation profiles, pipeline hydraulics, hazards along the route, crossings.
- **Industrial facilities, buildings and infrastructure** — Mini CAD with typed assets, site drainage, water and fire-water networks, storm sewers, ground model.
- **Drone surveys and progress tracking** — Orthophotos and point clouds, DTM / DSM, stockpile and progress volumes, survey accuracy QA, site photo log.
- **Planned versus actual** — Named revisions Rev A, B, C … compared on the map: added, removed, moved, with deviations in metres and length / area changes.
- **Georeferenced documentation** — Scanned plans and photos placed on the map by control points (RMS shown), then traced and measured into the project drawing.

Real estate

- Land and property developers
- Investors and fund managers
- Municipal and regional planners
- Valuers, brokers and advisers

- **Parcel assessment** — Buildable area from your zoning inputs, setbacks, slope classes, access and constraints with buffers.
- **Residential and commercial** — Masterplans from targets with a land budget; copy a real district onto a new site and edit it before it is applied.
- **Agricultural and rural land** — Terrain, soil, climate, water and protected areas around the parcel; land → capacity for solar or wind.
- **Terrain, slope, access and environmental constraints** — Slope and aspect, flood and natural hazards, protected areas, wetlands and forests on the map.
- **Nearby infrastructure and land use** — Roads, power lines and substations, schools, hospitals and services around the site from OpenStreetMap.
- **Development scenarios and investment screening** — Building schedules, GFA, residents and jobs, coordinate Excel and a financial appendix per scenario.





Left: a real district copied onto a new site, edited before it is applied. Right: a scanned plan placed on the map by control points and traced into the project drawing.

Reports

Terrain Design Studio · Mass haul optimisation · Terrain data & drainage · Ground model & excavatability · Water & fire-water networks · Point cloud & survey · Site intelligence · Parcel & buildable area · Masterplan dossier

Logistics & observations

Move heavy loads safely and at a known cost — and see what changes on the ground.

Logistics

Transport and logistics companies

Project cargo and heavy-lift planners

EPC logistics teams

Fleet operators

- **HGV / TIR routing** — Truck routes with height, width, length, weight, axle load and hazmat parameters; up to 10 stops; avoid tolls, motorways or ferries.
- **Vehicle dimensions, weight and load restrictions** — Saved vehicle profiles; mapped maxheight, maxwidth, maxweight, tunnels and bridges within 30 m of the route.
- **Oversized and special loads** — Abnormal-load check: curve radii from the route geometry, grades from the DEM, presets for blades, tower sections, nacelles and transformers.
- **Distance and journey planning** — Distance, time and arrival per leg, departure-time comparison and trip conditions with hourly weather.
- **Project cargo for energy and construction sites** — Access routes into the project as line assets; reach areas (isochrones) from a site or a port.

HGV report (benchmarked against leading truck-routing products): at a glance, trip cost per country with your own cost workbook (fuel, tolls, driver, maintenance, expenses, margin → quote price), CO2e per ISO 14083, country and border tables, EU 561 / AETR driving time with double-crew option, road risks and weather at travel time.

Observations

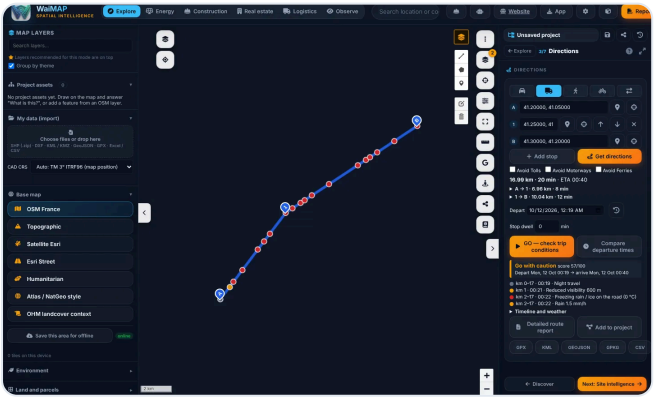
Asset owners and O&M teams

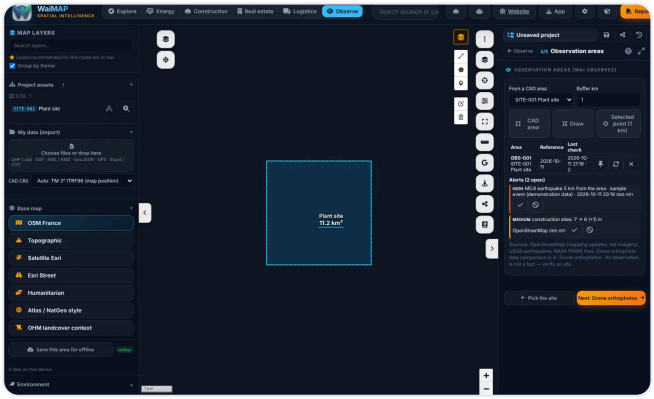
Environmental and permitting teams

Construction managers and lenders' monitors

Public bodies and planners

- **Environmental and forest monitoring** — Protected areas (Natura 2000), forests and wetlands around the site; ESA WorldCover land cover and a Sentinel-2 cloudless background.
- **Floods, fires and hazards** — Active fires (NASA FIRMS, last 2 days when a key is set), earthquakes (USGS), flood screening along routes and at sites from the JRC 100-year flood depth atlas and a rain indicator (largest 1-/3-day NASA POWER rainfall).
- **Construction progress** — Design vs as-built: cut / fill between the design surface and drone or survey epochs, progress per element, deviation map and the S-curve against the schedule.
- **City growth and land use** — Built-up area per epoch 1975–2030 (GHS-BUILT-S), growth per decade, growth direction and new built-up patches; new buildings and roads in OpenStreetMap.
- **Energy asset inspections and O&M** — Vegetation in line corridors by span, PV-table anomaly screening on orthophotos, work orders; thermal O&M and predictive maintenance are rolling out.
- **Disaster and infrastructure resilience (civil)** — Before / after comparison for damaged buildings, roads and utilities and for humanitarian access — civil scope only: no military-operation tracking and no military object identification.

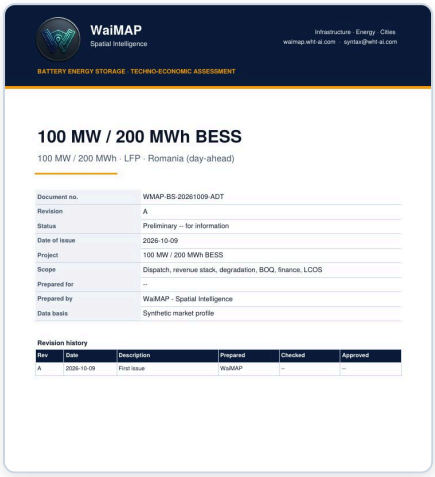




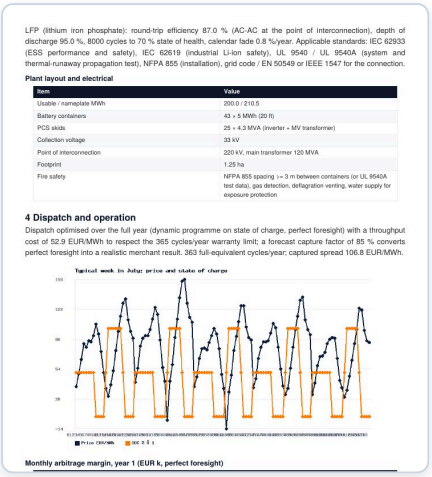
Civil scope only for observations: no military-operation tracking or object identification; people are counted only with the site operator's consent and never identified.

What you receive

Real pages from WaiMAP sample reports — produced by the program itself.



BESS techno-economic assessment — official cover, document no., revision table



BESS — dispatch, plant layout and electrical data



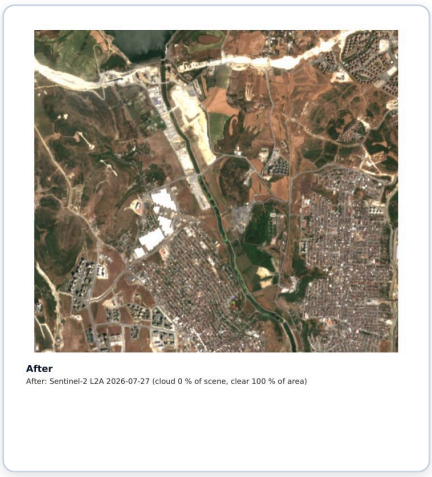
ESIA screening & scoping — lender category, IFC PS / EP framework



ESIA — impact register and significance before / after mitigation



Observations report — sources by role, detected changes with confidence



Observations — Sentinel-2 before / after with the change outlines

Files in

Shapefile · KML / KMZ · GeoJSON · GPX · DXF · DWG (via worker) · Excel .xlsx · CSV · GeoTIFF · ASCII grid · XYZ · LandXML · LAS · LAZ (via worker) · JPEG + EXIF GPS · Boreholes CSV · Solargis / PVsyst / SAM / PVGIS TMY · Met-mast CSV · Hourly price CSV · ArcGIS layer link · GeoPackage · WFS / OGC API Features · Field forms (offline)

Files out

PDF dossier · PowerPoint · HTML · Excel .xlsx · CSV · DXF · KML · GeoJSON · Shapefile · GeoPackage · Esri JSON · PDF map layout · GPX · GeoTIFF · LAS · PVsyst / SAM TMY · SVG / PNG · DWG · IFC 4.3 · WHT Exchange JSON

Numbers you can defend

Your team, your client and your lender can follow every figure back to its source.

Data Trust

An evidence register for every module result — source, licence, period, resolution, class (measured, modelled, user, assumed) — with checks, contradictions and a trust level. Not a certification; a reviewer's map.

Verifiable reports

Each issued report gets a serial and a QR code. Anyone can check on WaiMAP that the document is genuine, unchanged, who issued it and under which licence.

Bankability readiness

Readiness level, checklist, gaps and next studies per sector, with a disclaimer — what a lender's technical adviser will ask for, before they ask.

Validation — same inputs, named reference tools

What	Reference	Result
Short circuit (IEC 60909)	pandapower and a hand calculation, 154 / 33 kV test network	Ik'' max 13.85 kA — identical
Sag-tension (state change)	Independent exact-catenary calculation, ACSR conductor, 300 m span	Sag at 75 °C 8.530 m — identical
Water network solver (GGA)	EPANET 2.2 (via WNTR), two-loop benchmark network	Max head difference 0.0003 m
Storm sewer routing	SWMM 5 (via PySWMM), same network	Outfall peak 862 vs 860 L/s
Project finance model	Published feasibility study of a 400 MW wind farm	IRR 10.7 vs 10.3 %; LCOE 88.00 vs 88.06 USD/MWh
Hydropower study method	Replication of a feasibility study; EPC bill of quantities	Energy 48.7 vs 49.3 GWh; cost within 7 % of the BoQ
Substation estimator	Awarded tender for a 154 / 33 kV GIS substation; turnkey offer for a 400 kV GIS	53.7 vs 53 k USD/MVA; within 13 %
PV energy yield (same inputs)	NREL PySAM Pvwattsv8 7.1 and pvlib 0.16 ModelChain; 10 MWp fixed tilt and tracker on one typical year	Specific yield 1.8–3.3 % below the two tools (WaiMAP adds row and diffuse shading, IAM, own inverter model)
Wind wake losses (same inputs)	PyWake 2.6 NOJ / Jensen, 5 turbines, same hourly series, curves and layout	Gross AEP identical; wake loss 3.11 vs 3.11 %, net AEP within 0.004 %

Full list (27 comparisons, tool versions and dates): waimap.wht-ai.com/validation. What WaiMAP does not replace: construction drawings and issued-for-construction design; structural finite-element analysis of towers, foundations and buildings; pv shading and stringing studies for financing — yield is an hourly simulation for feasibility; solving cfd over complex terrain inside waimap: waimap runs a linear terrain-flow model and takes the flow field of any external cfd or wasp run into the yield.

Fits into how your company works

Integration

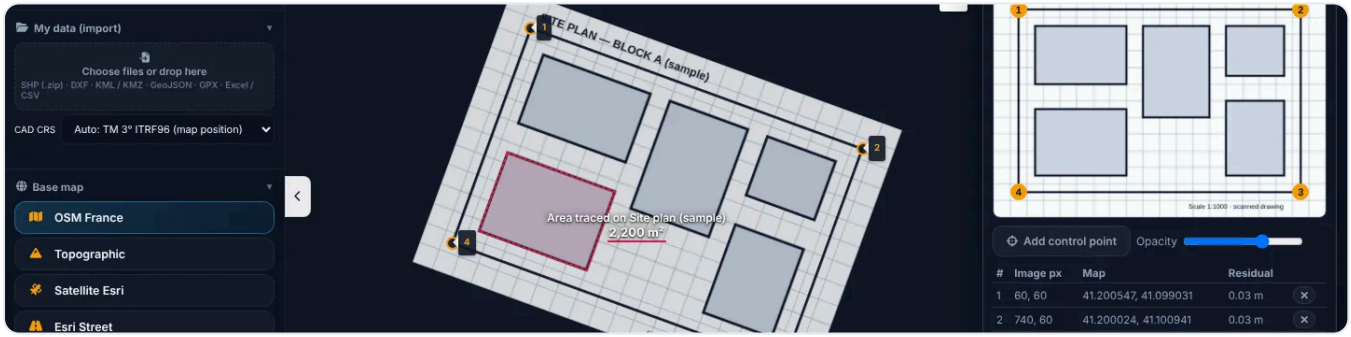
- **API and MCP server** (Business and Enterprise): your systems — or WAI, Claude or any AI client — call WaiMAP's engines directly.
- **CAD / BIM exchange:** georeferenced DXF / DWG with layers, blocks and attributes; IFC 4.3 in and out (Revit-ready); WHT Exchange JSON.
- **Your data first:** survey terrain, boreholes, met-mast and solar time series, price series and BoQ replace open data; your unit rates and cost workbooks drive the numbers.
- **wm-Digamma extensions** (Team and above): your own calculations inside WaiMAP.
- **White-label reports** with your logo (Team and above).

Data and security

- Projects live in your organisation's WaiMAP account; team plans manage users and seats.
- Large file processing (CAD, IFC, rasters) runs as a job and keeps nothing after it ends.
- Logistics cost workbooks are read in the user's browser and stay there.
- Licensed data you bring stays yours and is never redistributed; reports name every source and licence.
- Enterprise: data region or on-premise option and custom data integration by agreement; single sign-on is rolling out.
- GDPR-minded by design: people are never identified in imagery.

WAI — the assistant beside every user

WAI explains results, standards and next steps in the app, and the WAI Brain carries out multi-step work with WaiMAP's tools, with step and cost limits per job. Answers that contain a number no tool produced are flagged.



Plans for organisations

Yearly plans — ask for the Plans & Terms edition or see waimap.wht-ai.com/pricing.

Pro

The engineer or consultant

1 user · 25 projects

- Projects up to 50 MW / 36 kV
- 25 projects
- Feasibility-grade client reports (WaiMAP-branded)
- CAD + DXF
- W-ENG engineering checks
- Brain agent
- Routing
- Drone & Observe

Team

Engineering offices and project teams

3 users included · 150 projects

Everything in Pro, plus:

- All Pro tools for every user
- WaiMAP Logistics included (truck routes, tolls, trip plan, multi-stop)
- Stress test & weak links, FEM, harmonics, surge and protection studies
- 3D sections, clearance display and stress overlay in Project 3D
- Dynamic studies: modal, response spectrum, time history, turbine, conductor, transient stability and foundations
- White-label reports with your logo
- Team projects & user management (company seats; self-service rolling out)
- wm-Digamma extensions

Business

Companies with several teams

10 users included · 500 projects

Everything in Team, plus:

- API / MCP access for your systems
- Bankability-readiness reports
- Projects up to 1 GW / 400 kV
- 500 projects
- Account manager
- File processing: up to 4 GB per job, 3,000 processing jobs a month

Enterprise / O&M

Groups, utilities, public owners

Unlimited users · unlimited projects

Everything in Business, plus:

- Single sign-on (OpenID Connect: Microsoft Entra ID, Google Workspace, Okta, Keycloak ...)
- Data region / on-premise option (by agreement)
- O&M & predictive maintenance (rolling out)
- Custom data integration
- SLA
- Unlimited users, projects and project size
- File processing: up to 6 GB per job, processing jobs on fair use (larger files from your own server by link)

Project sizes: Pro up to 50 MW / 36 kV · Team up to 300 MW / 154 kV · Business up to 1 GW / 400 kV · Enterprise unlimited. Features marked "rolling out" are being released and are included when live. WaiMAP Logistics for fleets is also sold on its own, per driver or per vehicle.

Getting started

1
Demo — 45 minutes on one of your own sites or routes

2
Pilot — one real project of yours, run with your team

3
Rollout — users, templates, your logo and unit rates, training

4
Scale — API / MCP, data integration, more teams

Support by plan

- **Pro:** help centre, WAI assistant, e-mail support
- **Team:** priority support
- **Business:** an account manager
- **Enterprise:** SLA, custom data integration and onboarding by agreement

Local delivery — Partner Network

Need someone on the ground? WaiMAP partner offices — survey, engineering and owner offices, country and local dealers — deliver studies, surveys and training on WaiMAP in their countries. Every report they issue is verifiable and names the partner.

A value example — illustrative, replace with your own figures

Assumption	Value
Feasibility / screening studies a year	20
Engineer-days per study, separate tools	10
Engineer-days per study with WaiMAP (data, engines, report in one place)	3
Cost of an engineer-day	$400
Time saved	**140 engineer-days ≈ $56,000 a year**

The example is a calculation on stated assumptions, not a measured result. Ask us to run it with your numbers during the demo.

Book a demo or a pilot

waimap.wht-ai.com

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