High-Rise Building — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#01 · Construction

1 Site Screening

- Earthquake, flood, slope, land use
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Piles, pad footings, settlement
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Neighbours with heights, sun and shadows
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Excavation pit, dewatering
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Structural Checks

- Wind, snow and seismic loads
- Beams, columns, bolted joints
- Retaining walls and slopes

▶ **Engineering calculators**

6 Concrete & Materials

- Mix, quantities, formwork
- Maturity and pour planning
- Rebar laps and steel weights

▶ **Concrete & materials**

7 Services

- Fire-water mains, hydrants, pumps
- Power supply, short circuit, cables
- Storm sewers

▶ **Water & fire · Electrical**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 Lifting & Site Safety

- Crane capacity and lifting checks
- Construction noise at neighbours
- Drone progress by floor

▶ **Lifting · Noise · Orthophotos**

10 3D & Hand-over

- Project 3D with sections
- IFC exchange with the design team
- As-built records

▶ **Project 3D · CAD/BIM**

Questions WaiMAP answers on the map

1. How deep is the rock — piles or raft?
2. How much shadow on the neighbours?
3. Which wind and seismic loads govern?
4. How many m³ of concrete, how many t of rebar?
5. Is the crane right for the heaviest lift?
6. Are we on schedule and on cash?

Honest limits & coming

- Engineering checks support, not replace, the structural designer
- Coming: building energy model
- Screening level on open data and your inputs

Hospital — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#02 · Construction

1 Site Screening

- Earthquake, flood, slope, land use — and access for ambulances
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Foundations for a high importance class
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Buildings, roads, contours in your CRS
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Platform levels, cut / fill
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Resilience Loads

- Seismic and wind loads, higher importance
- Flood level and site drainage
- Hard-hazard stress test

▶ **Calculators · Stress test**

6 Fire & Water

- Fire main, hydrants, fire pumps
- Water demand and storage
- Storm sewers

▶ **Water & fire-water networks**

7 Power Security

- Load flow and N-1
- Short circuit and cable sizing
- On-site generation and battery backup

▶ **Electrical · Energy hub · BESS**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone orthophotos by date, swipe
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Permits & ESIA

- Permits, noise, traffic of works
- Monitoring plan
- Bankability readiness

▶ **ESIA · Bankability**

Questions WaiMAP answers on the map

1. Is the site out of the flood zone?
2. Does the structure meet a higher importance class?
3. Can the hospital run if one supply fails (N-1)?
4. Is fire-water pressure enough at every hydrant?
5. What does backup power cost?
6. Is construction on schedule?

Honest limits & coming

- Medical equipment and HVAC design are outside WaiMAP
- Coming: building energy model
- Screening level on open data and your inputs

Shopping Mall — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#03 · Construction

1 Site Screening

- Earthquake, flood, slope, land use — catchment population nearby
- Road access and public transport
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Foundation and excavation classes
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Parcel, neighbours, sun and shadows
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Large platforms, parking grades
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Structure & Roof

- Long-span beams and columns
- Snow and wind on the roof
- Pad footings and settlement

▶ **Engineering calculators**

6 Fire, Water & Storm

- Fire mains, hydrants, pumps
- Storm water from roofs and parking
- Detention basins

▶ **Water & fire · Drainage**

7 Energy & Rooftop PV

- Power supply and cables
- Rooftop PV yield and finance
- Battery for peak shaving

▶ **Electrical · Roof PV · BESS**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone orthophotos by date, swipe
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Observations

- Sentinel-2 old map / new map
- Footprint and parking growth over time
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Is the parcel the area the title says?
2. How much storm water must the site hold?
3. Will the long-span roof carry snow?
4. How much can rooftop PV save?
5. What do the earthworks cost?
6. Is the mall built as planned?

Honest limits & coming

- Retail demand studies are outside WaiMAP
- Coming: traffic and parking simulation
- Screening level on open data and your inputs

Industrial Park & Large Sites — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#04 · Construction

1 Site Screening

- Earthquake, flood, slope, land use — on hundreds of hectares
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Excavation: common / ripping / blasting
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- DTM / DSM over the whole site
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Terraces and platforms by plot
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Mass Haul

- Balance cut and fill across the site
- Borrow and spoil areas
- Fleet, haul distance, CO_2

▶ **Mass haul optimisation**

6 Roads & Pavements

- Road geometry: curves, sight distance
- Pavement design (ESAL), asphalt
- Culverts and channels

▶ **Road & hydraulic calculators**

7 Utilities

- Water and fire-water network
- Substation and MV network
- Energy hub: PV, wind, BESS, H_2

▶ **Water · Substation · Energy hub**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone orthophotos by date, swipe
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Observations

- Sentinel-2 old map / new map
- Plot-by-plot change records
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Where can we build without blasting?
2. Does cut balance fill?
3. Where does the storm water go?
4. How big must the substation be?
5. Can on-site PV and storage power the park?
6. Which plots changed this month?

Honest limits & coming

- Screening level on open data and your survey
- Coming: plot sales and tenancy tracker
- Screening level on open data and your inputs

New City & Masterplan — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#05 · Construction

1 Site Screening

- Earthquake, flood, slope, land use over the whole district
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Foundation and excavation classes
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Existing buildings, roads, water, trees
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Grading by district
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Masterplan

- Plots, blocks and land uses
- Density and building heights
- Sun and shadow studies

▶ **Masterplan · Base map**

6 Water & Sewer

- Water network hydraulics
- Sewers and storm drains
- Detention and flood paths

▶ **Water networks · Drainage**

7 Energy

- Load estimate and substations
- Rooftop and utility PV
- Energy hub with storage

▶ **Electrical · Solar · Energy hub**

8 Cost, Schedule & Cash

- Quantities by phase
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 Phased Construction

- Drone progress by district
- Earthworks volumes
- Count on site

▶ **Orthophotos · Point cloud**

10 Observations

- Sentinel-2 old map / new map
- Urban growth over the years
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Where is it safe to build?
2. How much earth moves per phase?
3. Where does the rain go?
4. How many substations, how much PV?
5. What does phase 1 cost?
6. How fast is the city growing?

Honest limits & coming

- Planning law and zoning approvals stay with the authority
- Coming: traffic model
- Screening level on open data and your inputs

Highway — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#06 · Construction

1 Site Screening

- Earthquake, flood, slope, land use along the corridor
- Crossings: rivers, rail, roads, utilities
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Excavation classes along the route
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Strip map along the route
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Road Geometry

- Horizontal and vertical curves
- Stopping sight distance
- Profile on the terrain

▶ **Road geometry calculators**

5 Pavement

- Traffic loading (ESAL)
- Pavement layers
- Asphalt quantities

▶ **Pavement calculators**

6 Earthworks & Mass Haul

- Cut / fill along the profile
- Balance and haul distance
- Borrow pits and spoil

▶ **Terrain · Mass haul**

7 Drainage & Culverts

- Catchments and peak flows
- Culverts and channels (Manning)
- Pumps where needed

▶ **Drainage · Hydraulics**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone orthophotos by date, swipe
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Observations

- Sentinel-2 old map / new map
- Corridor change, landslides, flooding
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Where are the deep cuts and high fills?
2. Does the haul balance?
3. Which culvert size at each stream?
4. Does the curve meet sight distance?
5. How thick must the pavement be?
6. What is the progress per km?

Honest limits & coming

- Screening; the national road design standard governs
- Coming: full alignment design and cross-sections
- Screening level on open data and your inputs

Railway — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#07 · Construction

1 Site Screening

- Earthquake, flood, slope, land use along the corridor
- Crossings: rivers, roads, utilities
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Tunnelling and cutting ground
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Strip map along the route
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Profile & Gradients

- Ground profile along the line
- Gradient check against the limit
- Bridges and tunnels as candidates

▶ **Profile · Terrain**

5 Earthworks & Mass Haul

- Cut / fill per km
- Balance and haul
- Borrow and spoil areas

▶ **Terrain · Mass haul**

6 Drainage & Culverts

- Catchments and peak flows
- Culverts and channels
- Flood paths across the line

▶ **Drainage · Hydraulics**

7 Power Supply

- Traction substations
- Grid connection and load flow
- Line to the substation

▶ **Substation · Electrical · Line**

8 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone orthophotos by date, swipe
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Observations

- Sentinel-2 old map / new map
- Corridor change, landslides, flooding
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Can the terrain hold the gradient?
2. How much earth moves per km?
3. Where does water cross the line?
4. Where do traction substations go?
5. What does it cost per km?
6. Is the corridor stable over time?

Honest limits & coming

- Screening; railway standards govern
- Coming: rail alignment and track design
- Screening level on open data and your inputs

Oil & Gas Pipeline — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#08 · Construction

1 Site Screening

- Earthquake, flood, slope, land use along 1–150 km
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Trenching classes along the route
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Strip map along the route
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Route Selection

- Least-cost corridors, 3–5 alternatives
- Side-hill vs fall-line terrain rules
- Protected areas and settlements

▶ **Corridor routing**

5 Crossings

- Roads, rivers, rail, power lines
- HDD candidates
- Block valve positions

▶ **Corridor routing**

6 Earthworks & Trench

- Trench and backfill volumes
- Steep sections
- Haul and spoil

▶ **Terrain · Mass haul**

7 Hazards

- Landslide and erosion
- Flood and scour at crossings
- Seismic zones

▶ **Hazards · Stress test**

8 Cost, Schedule & Cash

- Quantities by km
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone progress along the right of way
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Observations

- Sentinel-2 old map / new map
- Right-of-way watch, encroachments
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Which corridor is cheapest and least sensitive?
2. Where do we need HDD?
3. Where are the block valves?
4. Which km are steep or unstable?
5. How much trench excavation?
6. Is anyone building on the right of way?

Honest limits & coming

- Quantities only — no invented prices
- Coming: hydraulic and stress analysis of the pipe
- Screening level on open data and your inputs

Water & Wastewater Networks — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#09 · Construction

1 Site Screening

- Earthquake, flood, slope, land use for the service area
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Trench excavation classes
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Streets, buildings, levels
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Trenching and reinstatement
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Water Network

- EPANET-style hydraulics
- Pressures and velocities
- Demand and storage

▶ **Water networks**

6 Fire Water

- Fire mains and hydrants
- Fire pumps
- Pressure at the worst hydrant

▶ **Fire-water networks**

7 Sewers & Storm

- Gravity sewers downhill
- Storm drains and peak flows
- Pumping stations

▶ **Drainage · Hydraulics**

8 Routing

- Mains and sewers on a cost surface
- Crossings and HDD
- Alternatives ranked

▶ **Corridor routing**

9 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

10 Observations

- Sentinel-2 old map / new map
- Flood events and new settlements
- Sentinel-1 radar flood mapping

▶ **Observations · Area watch**

Questions WaiMAP answers on the map

1. Is pressure enough at every node?
2. Can the fire main deliver at the worst hydrant?
3. Do the sewers fall by gravity?
4. Where are pumps needed?
5. Which route for the main?
6. Where is the city growing next?

Honest limits & coming

- Screening hydraulics; detailed design follows the utility standard
- Coming: leak detection from meter data
- Screening level on open data and your inputs

Data Centre — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#10 · Construction

1 Site Screening

- Earthquake, flood, slope, land use — and grid capacity
- Fibre, water and grid nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Foundation and excavation classes
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Buildings, roads, contours in your CRS
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Earthworks & Drainage

- Platform levels, cut / fill
- Mass haul: borrow, spoil, fleet, CO_2
- Catchments, peak flows, culverts

▶ **Terrain Studio · Mass haul · Drainage**

5 Power

- Grid connection, load flow, N-1
- Substation and SLD
- Short circuit and cables

▶ **Electrical · Substation**

6 On-Site Energy

- PV, wind, BESS, H_2 with the IT load
- Hourly dispatch and sizing
- LCOE / LCOH

▶ **Energy hub**

7 Cooling & Water

- Chiller COP, psychrometrics
- Water demand and storage
- Fire water

▶ **Thermo calculator · Water**

8 Resilience

- Seismic, wind, flood loads
- Stress test of key elements
- Weakest links

▶ **Stress test · Calculators**

9 Cost, Schedule & Cash

- BoQ, CPM schedule, crews
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

10 Finance & Bankability

- Energy cost and price stress
- Monte Carlo futures, SWOT
- Lender due-diligence checklist

▶ **Financial Burn · Bankability**

Questions WaiMAP answers on the map

1. Is there grid capacity for the IT load?
2. Can on-site PV and storage cut the energy bill?
3. How much cooling water?
4. Does the site pass N-1?
5. Which hazard is the weakest link?
6. What does the power cost over 10 years?

Honest limits & coming

- IT and network design are outside WaiMAP
- Coming: PUE model
- Screening level on open data and your inputs

Mining & Quarry — What WaiMAP Does at Every Stage

From empty site to operation · the modules behind each step

What WaiMAP does
#11 · Construction

1 Site Screening

- Earthquake, flood, slope, land use
- Grid, roads and services nearby
- Satellite history and data trust level

▶ **Project Brain · Data Trust**

2 Ground & Hazards

- Rock head, groundwater, boreholes
- Excavation: common / ripping / blasting
- Seismic, flood and climate loads

▶ **Ground model · Hazards**

3 Survey & Base Map

- Repeat surveys by date
- Field GPS, drone orthophoto, LiDAR
- DXF / DWG / IFC in and out

▶ **Base map · Point cloud · CAD/BIM**

4 Volumes

- DTM / DSM from point clouds
- Stockpile volumes
- Pit volumes by date

▶ **Point cloud & survey**

5 Haul

- Haul distances and fleet
- Swell and compaction
- CO_2 of the fleet

▶ **Mass haul · Productivity**

6 Slopes & Water

- Slope stability checks
- Dewatering
- Drainage and settling ponds

▶ **Geotechnics · Drainage**

7 Rehabilitation

- Final landform
- Topsoil and vegetation
- Change records over years

▶ **Terrain · Observations**

8 Cost, Schedule & Cash

- Quantities and productivity
- Earned value, cash flow, payments
- Technical due diligence

▶ **BoQ · Schedule · EVM · TDD**

9 During Construction

- Drone surveys by date
- Stockpile volumes, count on site
- Progress and photo log

▶ **Orthophotos · Point cloud · Progress**

10 Permits & ESIA

- Permit, dust, noise, water
- Monitoring plan
- Bankability readiness

▶ **ESIA · Bankability**

Questions WaiMAP answers on the map

1. How much was mined this month?
2. How big is the stockpile?
3. Rip or blast?
4. Is the pit slope stable?
5. Where does the water go?
6. Is rehabilitation progressing?

Honest limits & coming

- Mine planning and reserves are outside WaiMAP
- Coming: blast design
- Screening level on open data and your inputs

Energy & Infrastructure Construction — From Mobilisation to Handover

Step-by-step construction sequence (with the points that matter most)

Right data
Right criteria
Checked results

1 Design Freeze & Permits

- Issued-for-construction drawings
- Permits and conditions
- Interfaces between packages
- Change control from day one

Late design changes cost the most.

2 Mobilisation & Site Setup

- Site survey and benchmarks
- Access roads and laydown
- Temporary power and water
- HSE plan and induction

A good laydown saves months.

3 Earthworks

- Cut / fill to the design surface
- Compaction tests
- Drainage before the rains
- Drone volumes vs design

Measure volumes, don't estimate them.

4 Foundations & Piling

- Pile test programme
- Pile log: depth, refusal, position
- Load tests and coating checks
- Concrete cube tests

The pile log is evidence.

5 Structures & Erection

- Steel delivery and inspection
- Erection sequence and cranes
- Torque and alignment checks
- Weather windows

Inspect at delivery, not at erection.

6 Electrical Installation

- Cable pulling and terminations
- Earthing and bonding
- Transformers and switchgear
- Test sheets per circuit

Every circuit gets a test sheet.

7 Quality Control

- Inspection and test plan (ITP)
- Hold and witness points
- Non-conformity reports
- Third-party inspection

Close every NCR before handover.

8 Progress & Cost Control

- S-curve: planned vs actual
- Progress by drone, per element
- Earned value
- Claims and variations

Measure progress weekly.

9 Testing & Commissioning

- Cold and hot commissioning
- Performance tests
- Grid compliance tests
- Punch list

Test against the contract, not opinion.

10 As-Built & Handover

- As-built vs design comparison
- As-built drawings and records
- O&M manuals and training
- Warranty and defects period

Built as designed — with evidence.

Top 10 checks before handover

1. IFC drawings & permits
2. Laydown & access
3. Measured earthworks
4. Pile log & load tests
5. Delivery inspection
6. Circuit test sheets
7. ITP & NCRs closed
8. Weekly S-curve
9. Contract performance tests
10. As-built evidence

💡 Pro tips

- ✓ Fly the site every week
- ✓ Log every pile digitally
- ✓ Compare as-built with design before handover

Screening sequence for knowledge sharing — national codes and project specifications govern.