

Civil and Structural Installation Scope Maqhashiya Solar PV Project

16 September 2026



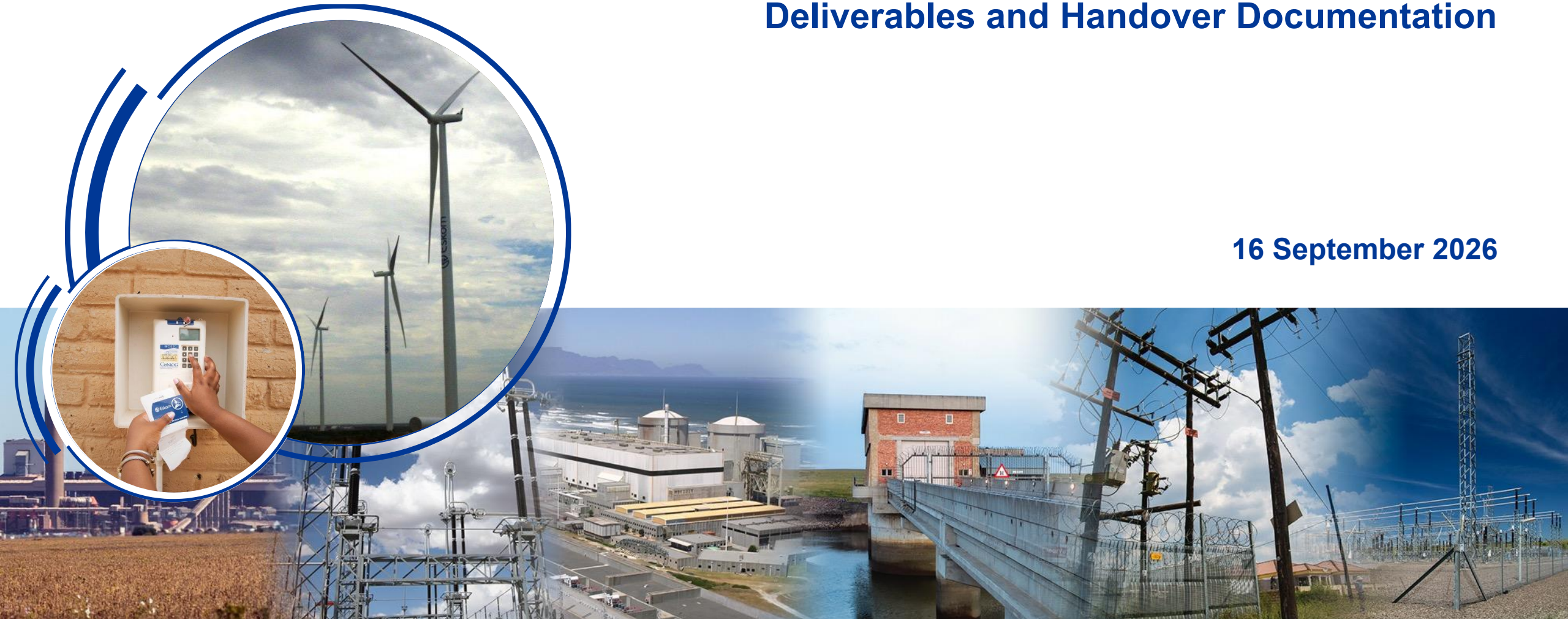
Civil and structural installation scope

- Clear and grub all vegetation and organic material within 1.5 m of the foundation footprint.
- Strip topsoil to a minimum depth of 150 mm in areas to be excavated. Stripped topsoil shall not be used as backfill unless approved for later use by the Environmental Control Officer where applicable.
- Prepare excavations for new foundations so that the bottom is flat, level and horizontal. Where solid rock is encountered at founding depth, clean and dry the surface and implement stepping or dowelling where required to prevent lateral movement.
- Place all backfill in 150 mm layers and compact to 93% Modified AASHTO density. Backfill within 500 mm of the foundation footprint shall not contain organic matter or stones larger than the lesser of 150 mm or two-thirds of the layer thickness.
- Install a 50 mm thick Grade 15 concrete blinding layer before placing reinforcement.
- Prepare suitable steel shuttering / formwork for foundation concrete pouring in accordance with the applicable foundation drawing.
- Accommodate structure earthing within the foundations, in line with the electrical specification and applicable foundation drawings.
- Protect newly placed concrete from rapid drying and extreme temperature changes and cure for at least seven days using accepted curing methods such as water spray, plastic sheeting or approved curing compounds.
- Ensure all structural foundations match the dimensions, positions and engineering details shown on the foundation design drawings.
- Erect all structural load bearing elements in strict accordance with the engineering documentation and structural design drawings.
- Install all structural members and connection systems in accordance with the structural connection design drawings.
- Mount and place Solar PV panels in accordance with the engineer's provided design and drawing specifications.

- Undertake a high-level site survey to determine the most suitable installation site for each Solar Home System in conjunction with the design engineer's studies and approved design information.
- Identify, set out and confirm the final location of each Solar PV support structure and associated pole top equipment in accordance with the approved design drawings and site-specific constraints.
- Orientate each Solar PV array to face True North to optimise solar energy yield, unless site-specific conditions or written instruction by the Engineer require otherwise.
- Use an approved surveying method, GPS device or suitable compass corrected for magnetic declination to establish True North.
- Verify the final position and orientation before foundation construction and panel installation.
- Report obstructions, shading concerns or site conditions that may affect the required orientation to the Engineer for review and approval before installation proceeds.
- Position the associated pole-top box to fulfil its operational requirements, integrate with relevant system infrastructure, facilitate maintenance access and maintain compliance with the required Solar PV array orientation and electrical design requirements.

Mashaqiya SHS Testing, Commissioning, Quality, Deliverables and Handover Documentation

16 September 2026



- Install and commission one complete Solar Home System as a pilot installation before commencing the remaining installations.
- Perform all specified inspections, tests and measurements on the pilot installation, including earth resistance testing. Where required earth resistance or other performance criteria are not achieved, install additional earth electrodes or implement other corrective measures and retest until compliance is demonstrated.
- Perform testing and commissioning of the earthing and lightning protection system, including earth continuity testing, bonding verification, earth resistance measurements and verification of overall system functionality.
- Undertake preliminary testing of cables to prove correct installation.
- Ensure final testing and commissioning of installed electrical equipment is performed by the manufacturer, Eskom, or an Eskom appointed contractor where specified.
- Verify successful operation of all GPRS communication equipment.
- Verify connectivity between field equipment and the inverter monitoring platform.
- Verify functionality of alarms, status reporting and communication interfaces.
- Verify reliable transmission of operational data from each SHS to the monitoring platform.
- Complete concrete cube testing in compliance with SANS 5860, SANS 5861 and SANS 5863 where applicable to the concrete works.
- Submit all relevant test results for materials, workmanship and commissioning to the Engineer / Project Manager for review and acceptance.
- The earthing system may only be buried after acceptance of the earthmat jointing and testing by the Design Engineer and/or Clerk of Works.

- The Contractor shall be solely responsible for producing work that complies with the specifications to the satisfaction of the Engineer and shall implement an appropriate quality assurance system on site.
- The Contractor shall provide regular feedback on quality control as a prerequisite to final handover / takeover.
- All hold points shall be observed. No further work shall continue beyond a hold point until inspection and approval is obtained from the Design Engineer and/or Clerk of Works.
- The Contractor shall give suitable notice to the Design Engineer and Clerk of Works for inspection.
- Upon completion and submission of each portion of the Works for examination, the Contractor shall provide the Engineer with relevant tests, measurements and levels to confirm compliance.
- The latest revision of Eskom document 240-87605434, Quality Checklist for Distribution Substation
- Primary Plant Prior to Handing Over for Commercial Operation, shall be completed for the applicable civil and electrical portions and returned with the as-built documentation.

- Approved Health and Safety Plan and risk assessments.
- Written appointments and authorisations, including construction supervisor, Responsible Person and authorised testing / commissioning personnel.
- Method statements for project activities and critical tasks.
- Material delivery records, receiving inspections, inventory records and storage records.
- Quality assurance records, hold point sign-offs and Clerk of Works / Design Engineer inspection records.
- Concrete test results, compaction records, survey/setting-out records and foundation alignment verification records.
- Earthmat sample joint approval, earthmat inspection records, earth continuity results, bonding verification records and earth resistance measurements.
- Pilot installation commissioning results and records of any corrective measures implemented.
- Commissioning test records for primary and control plant equipment and all relevant SHS equipment.
- Marked-up drawings and as-built package, including all relevant primary and control plant marked-up drawings. All documents and drawings shall be submitted in their editable format as well as PDF file format's.
- Certificates of Compliance for LV installation where applicable.
- Operation and Maintenance manuals for Solar PV modules, inverter systems, battery systems, telecommunications equipment and ancillary equipment.
- Telecommunications commissioning reports, including GPRS communication verification records.
- Monitoring platform configuration records and communication interface test records.
- Remote monitoring, alarming and reporting system acceptance records.
- Confirmation that each completed SHS installation is functional and ready for handover to Eskom.
- Completed applicable sections of the Eskom quality / handover checklist and final handover package.