BULFRO

AQUASCAN MOBILE APPLICATION

(OCR-BASED METER DIGITISATION)

Turning Existing Mechanical Water Meters into Live, Auditable Digital Assets — Without Replacing a Single Meter

AquaScan is the smartphone data-capture application of the Bulfro Water Management System (WMS). It converts the mechanical and non-digital flow meters already installed across your plant into a live digital data stream — using nothing more than the operator's phone, a QR tag on each meter, and on-device optical character recognition.

The operator scans the QR tag to identify the meter, points the camera at the dial, and the totaliser value is read automatically, verified on screen and transmitted securely to the Bulfro Cloud. From there the reading enters the same database that serves IoT-instrumented meters, and flows straight into water balance, consumption analytics and ESG reporting on the WMS platform.

The result is digitisation of the entire meter population at a fraction of the cost of instrumenting it — no new hardware at the meter, no cabling, no shutdown, no capital approval cycle.

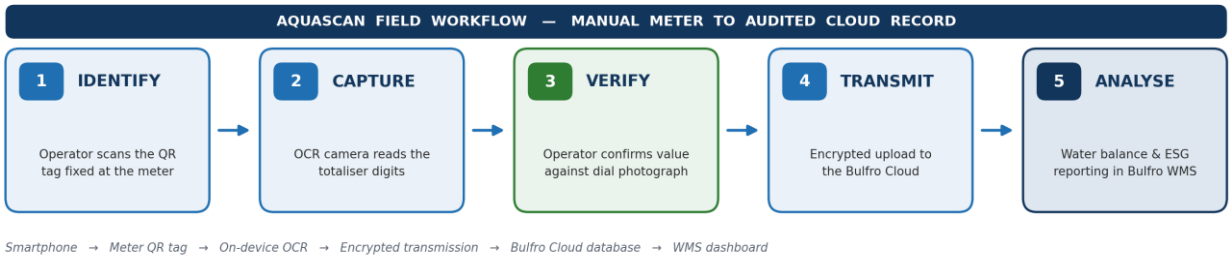
WHY CHOOSE BULFRO AQUASCAN?

- **Digitise What You Already Own** – Every existing mechanical or analogue meter becomes a cloud-connected data point without replacement, rewiring or plant downtime.
- **Eliminate Manual Transcription Error** – The reading is captured by OCR at the meter and photographed as evidence — no register, no re-typing, no spreadsheet errors carried into the water balance.
- **Lowest-CapEx Route to Water Digitisation** – A software-led deployment that spreads the cost of digital transformation over time and delivers reporting-grade data from day one.

KEY FEATURES

- **Automatic OCR Digit Recognition** – On-device optical character recognition reads the totaliser directly from the dial, with live preview before capture.
- **QR-Based Meter Identification** – Each meter carries a unique QR tag, so the reading is bound to the correct asset automatically — removing the commonest field error.
- **Photographic Audit Evidence** – The dial image is retained against every reading, giving an auditable, tamper-evident record for BRSR, GRI 303 and CDP Water submissions.
- **Built-In Validation** – Previous reading, new reading and computed consumption are displayed together; regressive or implausible values are challenged before submission.
- **Secure Encrypted Transmission** – Readings are transmitted over an encrypted channel and stored against the authenticated user who captured them.
- **Automatic Water Balance** – Consumption is computed server-side across all meters — the manual Excel or CSV consolidation step is eliminated entirely.
- **Manual Entry Fallback** – Damaged, fogged or partially obscured dials can be entered by hand and are flagged in the platform for follow-up.
- **Single Unified Database** – Manually read and IoT-instrumented meters populate the same WMS database, dashboards and reports.

HOW IT WORKS



AquaScan field workflow — from smartphone at the meter to water balance on the Bulfro WMS platform

CONVENTIONAL METER READING vs. AQUASCAN

The conventional practice — register in hand, meter by meter, followed by re-entry into a spreadsheet and manual water balance calculation — introduces error and delay at every handover. AquaScan removes the handovers.

Stage	Conventional Practice	With AquaScan
Meter identification	Operator identifies the meter by memory or a written list	QR tag scanned — asset identified automatically
Reading capture	Value written into a paper register	OCR reads the dial; photograph retained as evidence
Verification	None until the data is questioned, often weeks later	Previous reading and consumption shown on screen before submission
Data entry	Re-typed into Excel or CSV back at the office	Eliminated — the reading is already in the database
Water balance	Calculated manually in a spreadsheet	Computed automatically on the WMS platform
Audit trail	Handwriting in a register; no timestamp, no evidence	Time-stamped, user-attributed, photograph-backed record
Data availability	Days to weeks after the reading round	Immediate — visible on the dashboard on submission

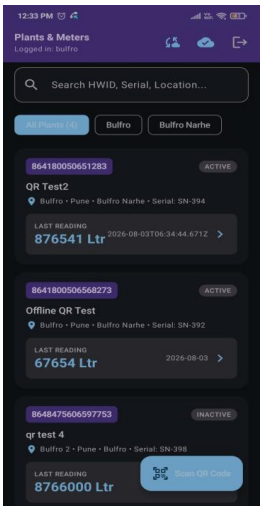
> **Where the time goes:** In conventional practice, roughly half the total effort of a meter reading round is spent not at the meter but afterwards — transcribing the register into a spreadsheet and reconciling the water balance. AquaScan removes that half of the cycle completely, and with it the error rate that comes from double handling.

THE COMMERCIAL CASE

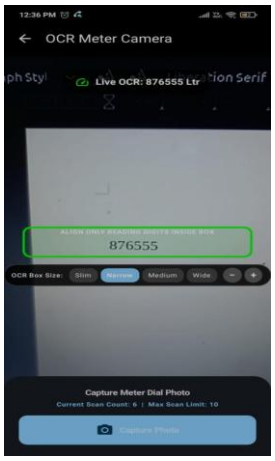
- **Minimal Capital Expenditure** – Digitisation is achieved through software and a QR tag per meter. There is no sensor, no RTU, no panel and no cabling at the meter point.
- **Phased Digital Transformation** – The entire meter population can be brought online immediately, with IoT retrofitting then targeted meter by meter where consumption volumes justify the investment — spreading capital expenditure across financial years rather than concentrating it.
- **Rapid Deployment** – A site can be surveyed, QR-tagged, configured and live within days. No shutdown, no civil work, no process interruption.

- **Operator Productivity** – The reading round is shortened and the office data-entry cycle disappears, releasing utility staff for higher-value work.
- **Reporting-Grade Data from Day One** – Water consumption data becomes defensible under audit immediately, supporting water-neutrality and water-positivity programmes without waiting for full instrumentation.
- **Scales Without Marginal Cost** – Adding meters to the system is a configuration exercise, not a procurement exercise.

THE APPLICATION



Meter list & QR identification



OCR capture of the dial

Verification before upload

SYSTEM SPECIFICATION

Parameter	Details
Platform	Android smartphone (rear camera and data connectivity required)
Reading capture	On-device OCR of meter totaliser, with adjustable recognition window
Meter identification	QR tag scan, or search by meter name, hardware ID, serial number or location
Verification	Previous reading, new reading and consumption difference displayed prior to submission
Evidence	Dial photograph stored against every reading
Data transmission	Encrypted upload to the Bulfro Cloud over mobile data or Wi-Fi
User management	Individual credentialed accounts; every reading attributed to the submitting user
Meter compatibility	Any mechanical, analogue or digital-display meter with a legible totaliser
Platform integration	Native integration with Bulfro Water Management System (WMS) dashboards and reports
Reporting outputs	Consumption trends, water balance, exportable records for GRI 303, BRSR and CDP Water

TYPICAL APPLICATIONS

- **Manufacturing & Process Plants** – Sub-meter populations across utilities, production blocks, canteens, cooling towers and ETP / STP / WTP inlets and outlets.

- **Multi-Site Corporates** – Standardised consumption reporting across plants and offices under a single ESG reporting framework.
- **Townships, Campuses & Commercial Estates** – Tenant and block-level meters where individual IoT instrumentation is not commercially viable.
- **Municipal & Utility Bodies** – Bulk and consumer meters read on a route basis, digitised without meter replacement.
- **Interim Digitisation Programmes** – Sites planning phased IoT retrofitting that require credible water data in the meantime.

PART OF THE BULFRO WATER MANAGEMENT SYSTEM

AquaScan is not a stand-alone reading tool. Every value it captures lands in the same Bulfro WMS database that serves our IoT-instrumented hardware, so a site can begin with manual capture and instrument progressively without ever migrating its data or rebuilding its reports.

- **Electromagnetic, Ultrasonic & Paddle Flow Meters** – Continuous, automatic flow measurement where volumes justify permanent instrumentation.
- **Digital Water Level Recorder (DWLR / DWLQR)** – CGWA-compliant groundwater level and quality monitoring.
- **Tank Level Monitoring System (BTLMS)** – Non-contact ultrasonic level monitoring for storage and process tanks.
- **Pump Health Monitoring & Control (PHMC)** – Motor protection, monitoring and predictive analytics.
- **Rainwater Harvesting Monitoring (BRWHMS)** – Verified recharge and harvesting volumes for water-positivity reporting.

> **In short:** AquaScan lets an organisation digitise its entire water metering estate now, at software cost, and then invest in permanent instrumentation where the data proves it pays — turning water digitisation from a single large capital decision into a managed, evidence-led programme.

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