

Nicky Hardy & Ella Knox, Dam Safety Intelligence Limited

The Problem of Asset Management and Dam Safety Monitoring

Good data management is imperative for asset management to support effective decision making.

The world of data management has come a long way from the days of hand written field sheets, that were difficult to read and susceptible to loss and damage from the elements. Often this data would be manually entered into spreadsheets with the potential for data entry errors and limited opportunity for meaningful evaluation of long term dam performance.

Data management for dams is complex and requires a team, and a system, to capture the data in an efficient manner that will allow for improved understanding of asset performance and overall asset management.

Modernising dam monitoring systems is becoming increasingly important for dam owners and practitioners to support compliance with the NZ Dam Safety Regulations due to commence in 2024.

A successful dam safety monitoring system will outlast the employees and stakeholder, providing dam safety for our future generations.

Dam Owner Monitoring Objectives

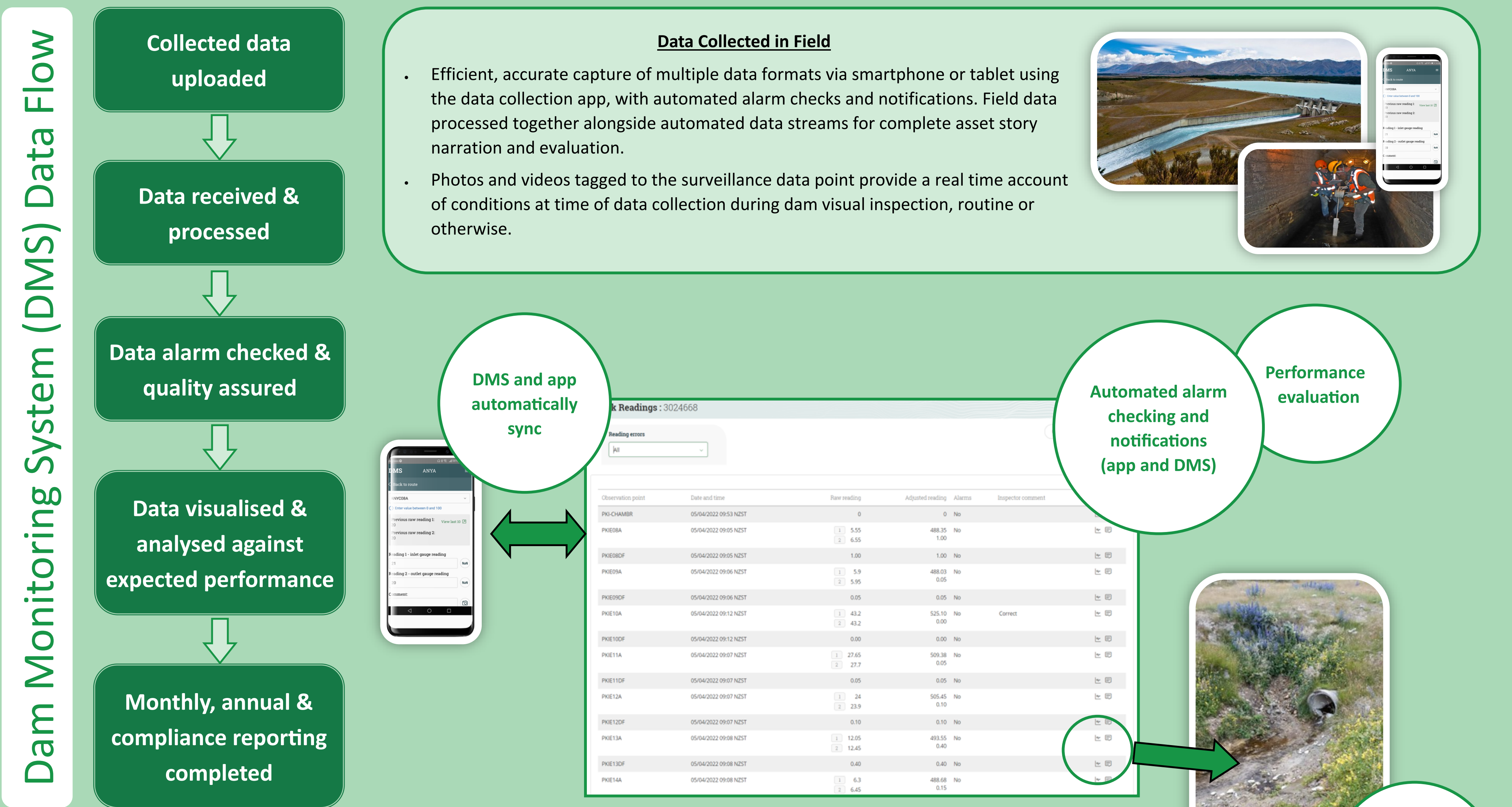
The NZ Dam Safety Guidelines (2015) states that "A robust surveillance process is the Owner's 'front line of defence' for the safe operation of their dams and reservoirs." Capturing good quality surveillance data is only one piece of the puzzle to effective management of dam safety and operational risks. Surveillance data management procedures and systems should include:

- Quality assurance checks
- Safe storage of data
- Flexibility/adaptability of system
- Baseline performance information for which future changes can be assessed
- Alarm/alert levels to inform of deviation from expected behaviour
- Visual presentation of time and spatially based data
- Accessible reporting outputs for multiple stakeholders

Benefits of Using a Modern System

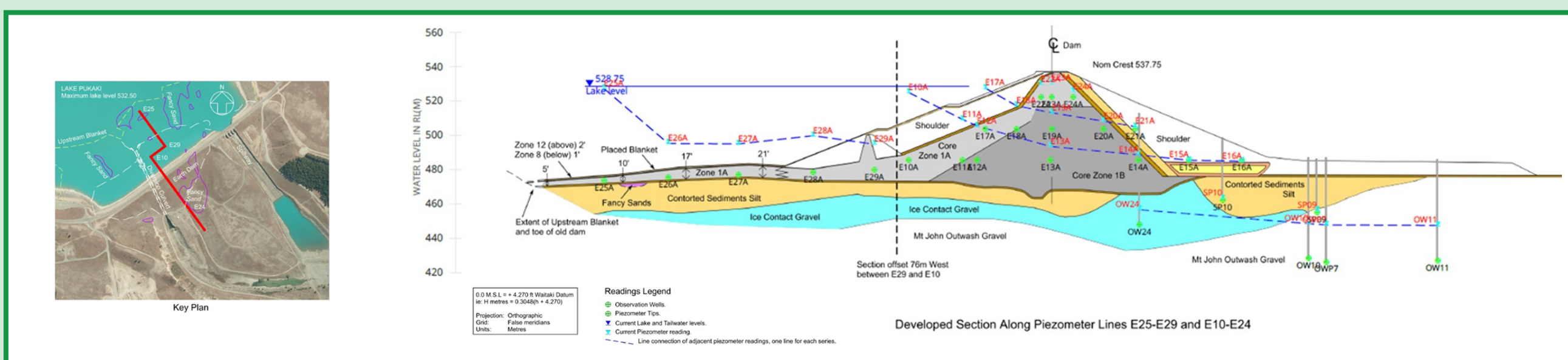
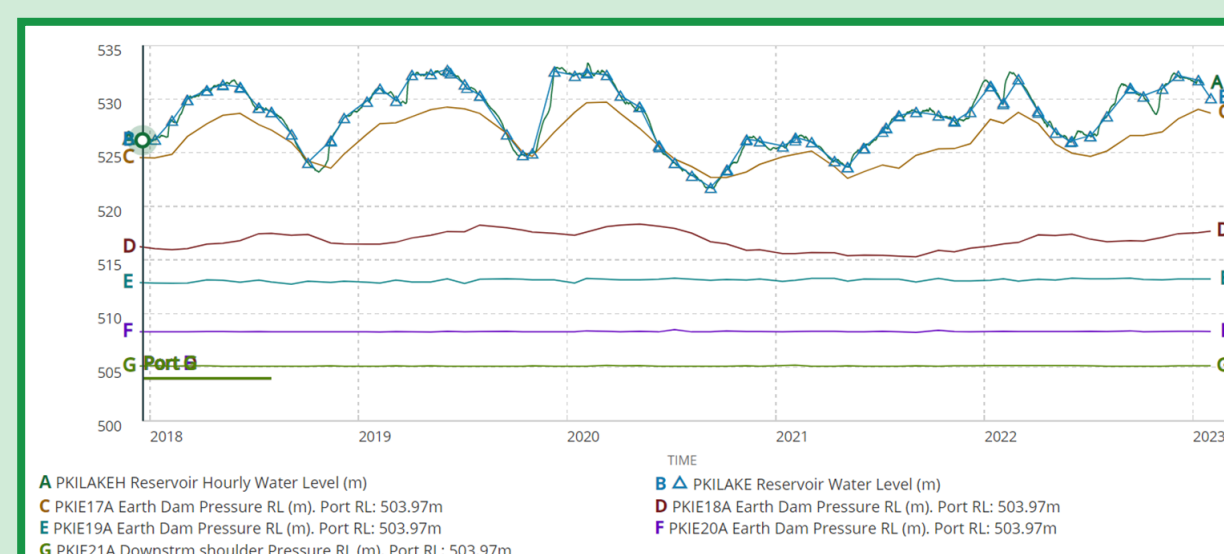
- Helps dam owners comply with NZ Dam Safety Guidelines 2015 and incoming Regulations (2024).
- Improves data capture and accuracy - single source of data truth.
- Improves understanding of asset performance - changes are identified and documented, allowing assessment by others and remedial works, if needed, to be undertaken in a timely manner.
- Allows unique dam potential failure modes to be embedded into the dam monitoring system; key performance indicators can be shared with onsite inspection and dam safety team and monitored closely.
- Allows customisation of outputs to suit needs and easy sharing of knowledge.
- Increases resilience against data loss.
- Provides a single system to facilitate assessment of safe dam performance in a timely manner to multiple stakeholders.
- Provides preservation of knowledge in an easy to access system that will outlast current users and be 'the constant' for future generations assessing dam performance.

DEVELOPING IMPROVEMENTS IN DAM MONITORING SYSTEMS



Flexible Formats for Visualisation and Assessment of Dam Performance

The single source system of the dam's historical data provides flexibility in permissions to allow management of data visibility. Customisation of reporting output formats for multiple stakeholders, including councils, owners, engineers and reviewers means each stakeholder can see real time and historic data in a way that makes sense for them.



Conclusions

Modern dam monitoring systems ensure data accuracy, quality, security and functionality to support dam owner and practitioner asset management and compliance needs.

Thank you to the DSI, Meridian and Catalyst teams who worked to complete this redevelopment.

