



# HydroTerra

Environmental Monitoring Specialists

# Monitoring Services

Tailings Storage Facilities

*Advanced integrated real-time monitoring  
for tailings storage facilities*

# About us



'If you can't measure it,  
you can't manage it'



Marketplace & Rental



Field Services



Monitoring Systems



Workshop, Support & Training

**HydroTerra** is a trusted provider of comprehensive and innovative solutions for integrated real-time monitoring and management of tailings storage facilities (TSFs), including effluent ponds and tailings dam seepage, ensuring optimal water and tailings management, operational insights and environmental compliance. Our services and products are designed to meet the unique challenges of tailings and wastewater management, and at the core of our service offering is DataStream™, a powerful platform purpose-built for managing the complex data needs of TSFs across their entire lifecycle and delivering end-to-end solutions, providing reliable and efficient monitoring, control systems, service support, data management and visualisation.

We assist facility site operators to meet their auditable tailings dam monitoring and management requirements using a performance-based approach, as specified in the Global Industry Standard for Tailings Management (GISTM). When the GISTM was published in August 2020 the International Council on Mining and Metals (ICMM) members, representing one third of the global mining industry, committed that all facilities with 'extreme' or 'very high' potential consequences will be in conformance with the GISTM by August 2023, and all other facilities by August 2025.



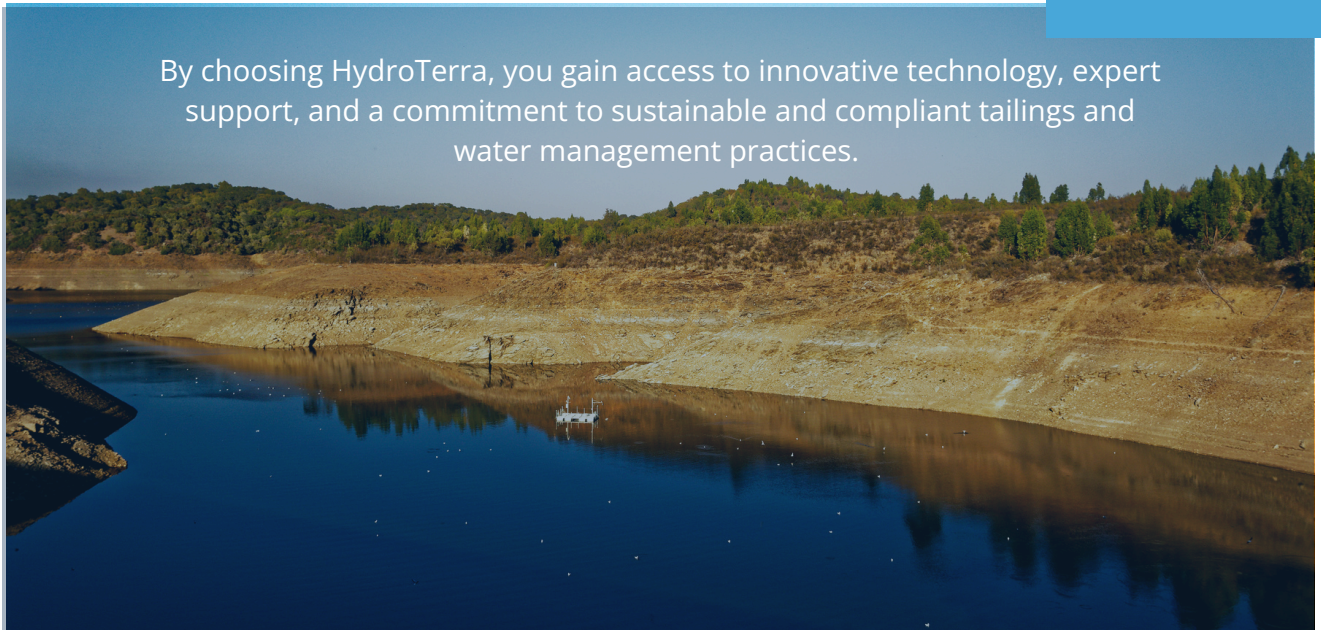
**Richard Campbell**  
Managing Director



**Annette Nolan**  
Technical Director

# Whole of Site Services

By choosing HydroTerra, you gain access to innovative technology, expert support, and a commitment to sustainable and compliant tailings and water management practices.



## Advanced Monitoring Technologies

HydroTerra utilises state-of-the-art sensor and telemetry hardware to provide real-time data on water quality and seepage levels. Our integrated DataStream™ networks offer bespoke reporting and analysis, ensuring you have accurate and actionable insights at your fingertips.

## Comprehensive Service Offering

Whether you are managing a large-scale tailings dam or a smaller effluent pond, HydroTerra offers tailored solutions to meet your specific requirements. Our extensive range of sampling and monitoring technologies, geophysical mapping and spatial data analysis tools, ensure that you have the right resources for effective tailings and water management.

## Environmental Compliance and Optimisation

Our services support the automation of operational and environmental compliance, helping you meet regulatory requirements efficiently. We also focus on the reuse of recycled water and the optimisation of effluent irrigation, promoting sustainable practices.

## Proven Expertise and Quality

With an impressive track record of delivering successful projects for more than 20 years and a commitment to quality, HydroTerra is a trusted partner in environmental monitoring. Our mature quality systems, including ISO 45001, ISO 9001 and ISO 14001 accreditations, reflect our dedication to excellence.

## Tailored Solutions for Diverse Needs

From the design and installation of long-term monitoring systems to ongoing technology support and environmental monitoring, HydroTerra delivers end-to-end solutions. Our experienced team of scientists, engineers and technicians ensure that every aspect of your tailings and water management needs is covered.

# DataStream™ in Action



**DataStream™**  
by HydroTerra

### 1 Design – Risk-Responsive, Site-Specific System Planning

Our monitoring systems are engineered through close consultation with site operators to identify monitoring requirements for both the tailings facility and the broader site, ensuring system design reflects operational priorities and environmental risks. Every Monitoring plan includes design documents that define measurement parameters, sensor placement, data integrity requirements and system thresholds, all managed under HydroTerra's ISO-accredited quality system.

### 3 Operate – Service Support & System Reliability

HydroTerra ensures ongoing system performance through structured Service Level Agreements (SLAs). Our technicians perform preventative diagnostics and respond to system issues guided by our ISO-accredited processes. Each SLA is tailored to client needs, ensuring that support levels, response times and routine health checks are aligned with monitoring goals.

### 5 Manage – Centralised Data Access & Configuration

DataStream™ consolidates all environmental data - real-time, manual and historical - into a secure, customisable web platform. Depending on scoped requirements, users gain access to tailored dashboards, GIS mapping tools, metadata management and role-based permissions, all designed to streamline access and support seamless reporting.

### 2 Supply – Equipment, Installation & Integration

We draw from our extensive partner network to source the most suitable sensor and telemetry technologies (e.g. water pressure transducers, vibrating wire piezometers, soil moisture, rain gauges, pH, salinity, temperature and buoy-based water quality sondes). Systems are fully configured, tested and integrated before delivery, ensuring a streamlined deployment process even in remote or harsh environments. Our experienced technicians can install onsite.

### 4 Monitor – Real-Time System Feedback & Network Visibility

DataStream™ enables ongoing visibility across all connected monitoring systems, providing real-time feedback, alarm notifications, and system tracking to ensure continuous awareness of site conditions. HydroTerra's internal monitoring prowess empowers our technicians with full oversight of DataStream™ platforms and services, enabling proactive monitoring, diagnostics and rapid issue resolution.

### 6 Reporting – Compliance-Ready Reporting Framework

DataStream™ transforms raw data into meaningful insights through scheduled, automated, distribution-ready reporting templates. Whether for compliance, OH&S or operational review, each report is tailored to summarise key metrics to ensure decision-makers receive targeted insights on operational or compliance performance.

# Technology Options

## Real-Time Monitoring Systems

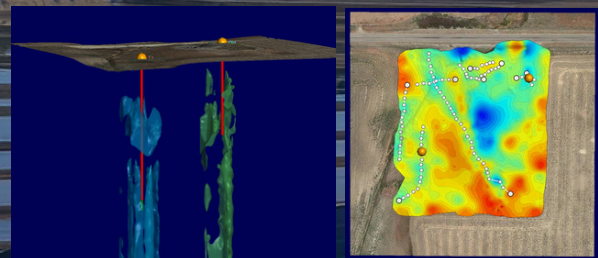
HydroTerra's DataStream™ network integrates various sensors and hardware, including the HydroTerra Stygo telemetry range, to provide real-time data on water quality and seepage levels. This technology ensures continuous monitoring and immediate alerts for any anomalies, helping to maintain environmental compliance and operational efficiency, including:

- In pipe flow meters
- Pumping system performance monitoring
- Tailings decant ponds: level and water quality
- Seepage through embankments: porewater pressure (vibrating wire piezometers)
- Preventative maintenance: pumping systems, drain blockages
- Integrated weather monitoring

## Geophysical Mapping and Spatial Data Analysis

Willowstick's advanced geophysical mapping tools and spatial data analysis techniques are used to assess and monitor the structural integrity of tailings dams and effluent ponds.

HydroTerra leverages this technology to help identifying potential seepage migration pathways, paleo channels and areas of concern, enabling proactive management and mitigation strategies. Accurate mapping and analysis are crucial for maintaining the safety and stability of dam structures.



## Remote sampling and surveys

HydroTerra uses drones and unmanned boats like the Surfbee Flowseeker for sampling and bathymetric surveys of tailings dams. These technologies are equipped with single-beam echo sounders and high-performance RTK GPS, allowing for precise mapping and sampling without the need for human operators in hazardous conditions.



## Water Recovery and Reuse Systems

HydroTerra offers services to support the recovery and reuse of water from tailings. This includes technologies for monitoring the dewatering of tailings and recovered water for reuse in mining operations, which are crucial for sustainable water management in arid regions.

## ➤ Data and Information Management Services

HydroTerra provides a service for establishing quality systems for clients and outsource options for assisting with day-to-day use (on site and remote) of these systems. In combination, this service delivers searchable information retention and efficient data management.

Services include:

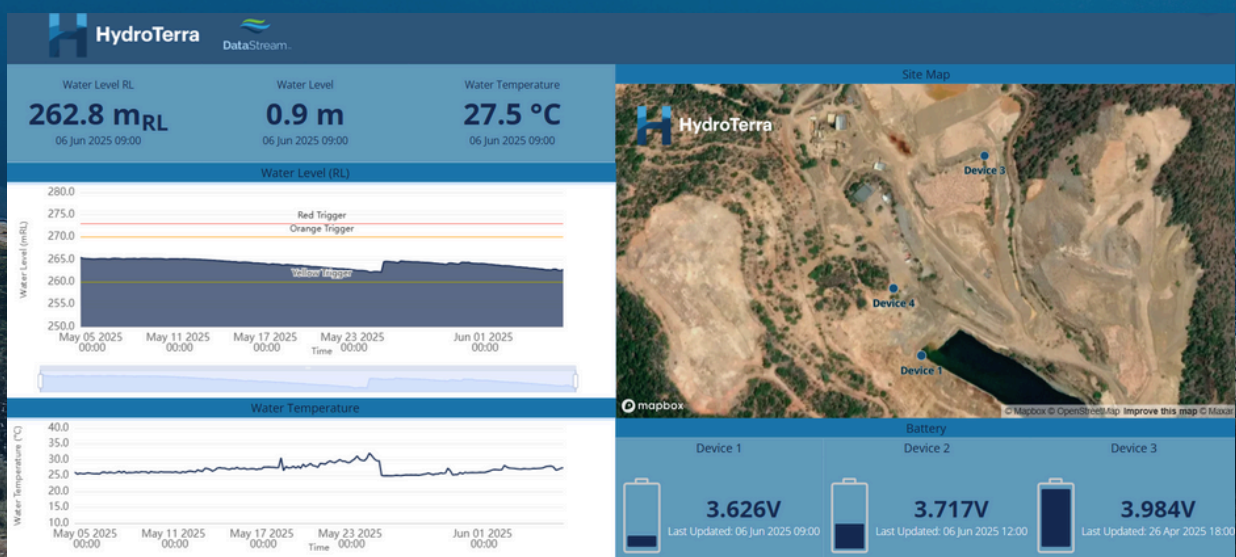
- Design and operation of integrated monitoring and data management systems
- Tablet or smart phone based field forms
- Document retention systems
- Database management
- Time series federated data management across multiple cloud platforms
- Data integration through API and custom scripting
- Continuous monitoring and data management platforms for alarms, data display and data reporting utilising DataStream™ systems
- Automated QA/QC reports for monitoring

## ➤ Automated Compliance Reporting

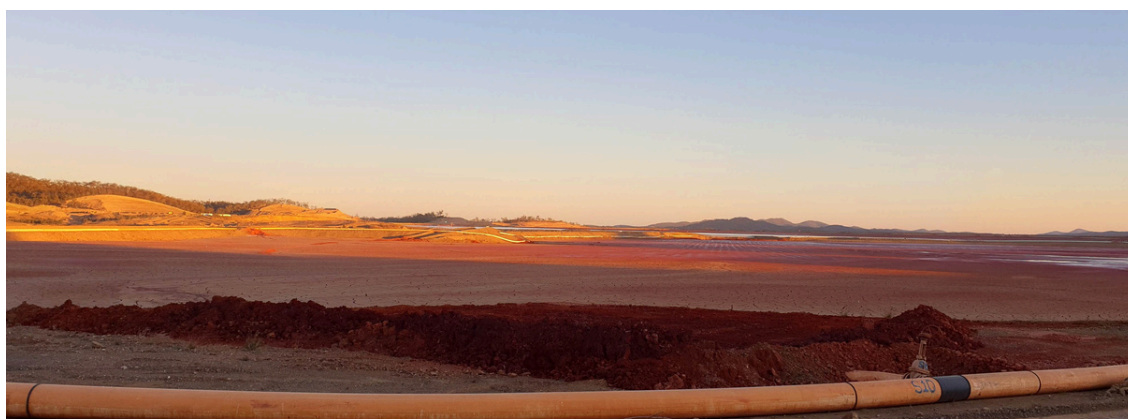
HydroTerra integrates automated reporting systems to maintain regulatory compliance. These systems generate detailed reports on water quality and seepage levels, streamlining the compliance process and ensuring accurate data recording and reporting.

Automated compliance reporting reduces the administrative burden and ensures that all necessary information is readily available for regulatory review.

The integration of automated reporting systems helps in maintaining regulatory compliance by generating detailed reports on water quality and seepage levels. These technologies collectively enhance the efficiency, safety and sustainability of tailings and water management practices in mining and industrial operations.



# Our multi-discipline approach



HydroTerra specialises in the geochemical characterisation of tailings and substrates, aligning with the GISTM standard to assess ore variability and inform risk profiles.

Key services include:

- Total and leachable metal concentrations (static and kinetic leachability)
- Seepage and water quality analysis
- Salinity and acid generation potential
- Acid mine drainage (AMD) kinetic leach testing

Understanding water balance and phreatic surface dynamics, within and around the TSF, is vital, particularly in response to rainfall and seasonal variation.

While TSF management often emphasises geotechnical aspects, geochemical processes are equally critical covering factors like weathering, contaminant load, leachability, oxygen diffusion, tracer studies and isotope analysis. Long-term monitoring, supported by sensors, telemetry, drones and autosamplers, captures essential data trends.

Tailings and seepage characterisation and management demand a multidisciplinary approach. HydroTerra partners with the *University of Queensland's Sustainable Minerals Institute* and other experts to deliver integrated, end-to-end solutions and data interpretation.



# Why HydroTerra?



## **Tailings Storage Facilities-Focused Experience:**

Strong track record supporting tailings monitoring projects across Australia.

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## **Total Project Delivery:**

From design to deployment, maintenance to reporting.

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## **Flexible & Technology-Agnostic:**

Seamless integration with any sensor or telemetry system.

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## **ISO-Accredited Quality:**

Systems built and managed under rigorous operating procedures.

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## **DataStream™ Services:**

Secure, scalable and built for insight-driven decisions.

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## **Expertise You Can Trust:**

A team of scientists, engineers and project managers with deep industry knowledge.

HydroTerra's advanced technologies for managing TSFs provide comprehensive solutions for efficient water and tailings management and environmental compliance. By leveraging integrated monitoring systems, geophysical mapping, water recovery technologies, and automated reporting, HydroTerra ensures clients can achieve their environmental goals with confidence and precision.





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## Contact Us



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