



barron river case study

Barron River Environmental Flows and Ecological Monitoring

July 2005 – November 2008

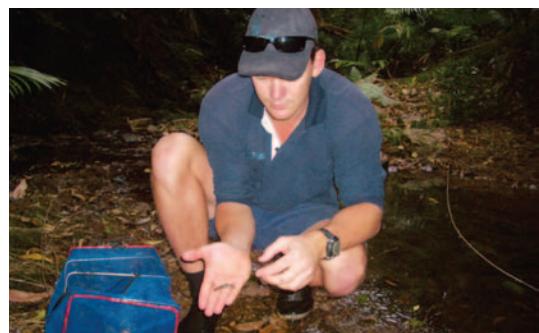
Stanwell Corporation Limited (SCL) are required under the Barron River ROP to conduct monitoring that supports an assessment of the adequacy of the ‘environmental release’ from Kuranda Weir to the Barron Falls. To conduct the monitoring, SCL commissioned frc environmental to undertake a suite of ecosystem health monitoring events over time, which would build on a ‘baseline’ survey that was conducted by frc environmental in September 2004.

Project requirements overview

This unique project required **frc environmental** to undertake ecological monitoring and environmental flow assessments during different seasons over a number of years in order to build upon the baseline data set, and enable changes to instream ecology to be monitored over time, and the adequacy of environmental releases to be assessed.



All survey gear must be carried into the gorge – our ecologists are up to the task



Bait-trapping supplements electrofishing to provide a rigorous assessment of both fishes and crustaceans

Project Performance

- Consistency in key project staff over more than a decade
- Field teams respectful of SCL’s OH&S requirements
- Field team leaders empowered to respond to evolving issues – and get the job done
- Monitoring plan and methodologies underpinned by innovation and responsiveness
- Substantial data sets translated into a concise, yet insightful report
- Ready agency acceptance of methodologies, results and conclusions effectively support SCL’s interests with respect to the Barron River Operations Plan
- Pro-active communication with SCL’s project managers underpin a mutually respectful, ‘values-based’ relationship



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Surber-sampling supports rigorous statistical analysis of data - essential for monitoring

Our tailored approach and methodology

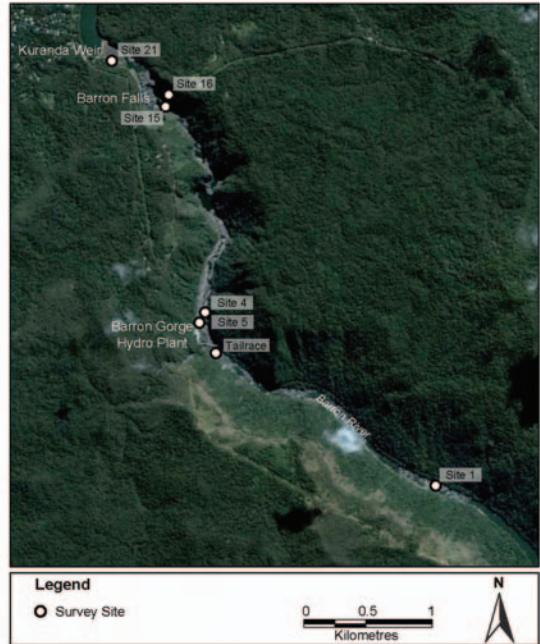
Building on a baseline survey undertaken by **frc environmental** in 2004, the monitoring events focused on surveying the instream habitat (including physical water quality parameters) and biological diversity of the Barron River; assessing and reporting on the current ecological condition of the Barron River; and providing recommendations for improvement to the monitoring regime, whilst maintaining the comparability of data between survey events.

With a clear focus on desired outcomes, **frc environmental** has encouraged the iterative evolution of methodology to both respond to emerging results and ensure optimal use of finite resources. The suite of study sites for any given monitoring event has been tailored to meet contemporary interests, whilst methodology has been refined to increasingly support quantitative assessment of change.

Surveys, involving accessing remote sites within the Barron Gorge, were timed to enable the characterisation of inter-seasonal changes in communities over time and thus enable a far more reliable interpretation of temporal patterns in community composition. Survey methods were selected to ensure that robust statistical analysis of data could be undertaken (including univariate analyses and multivariate analyses to determine differences in community composition and the influence of environmental variables on biological communities).

Recently, more robust quantitative sampling methods (such as collection of replicate invertebrate samples and the use of electrofishing) have enabled a more accurate detection of change in aquatic communities over time, as well as correlations to be made between the structure and health of aquatic communities and flow conditions. This has allowed for the selection of 'indicator' species and determination of trigger values. Experienced, specialised scientific staff undertook all statistical analysis and interpretation.

frc environmental present the results of monitoring as concise, readable reports that effectively support SCL's understanding of the state of the river and the effects of its operations on river ecosystem health.



Barron Gorge presents a diverse array of habitat types and significant logistic challenges

"**frc environmental** produces timely, highly credible and professional reports backed by a high level of technical expertise and analysis. **frc environmental** incorporates a high level of understanding, of both scientific competence and the broader policy context which underpins the applicability of their reports and recommendations."

Ian Bridge,

Principal Environmental Scientist
(Stanwell Corporation Limited)

industry experience

- Ports & Maritime Operations
- Mining, Oil & Gas
- Linear Infrastructure
- Power Generation & Distribution
- Waste Management
- Water Infrastructure
- Effluent Infrastructure
- Urban, Industrial & Agricultural Development
- Government
- International Development & Aid
- Fisheries & Aquaculture
- Wetland Construction & Rehabilitation
- Tourism
- Defence
- Forensic & Legal