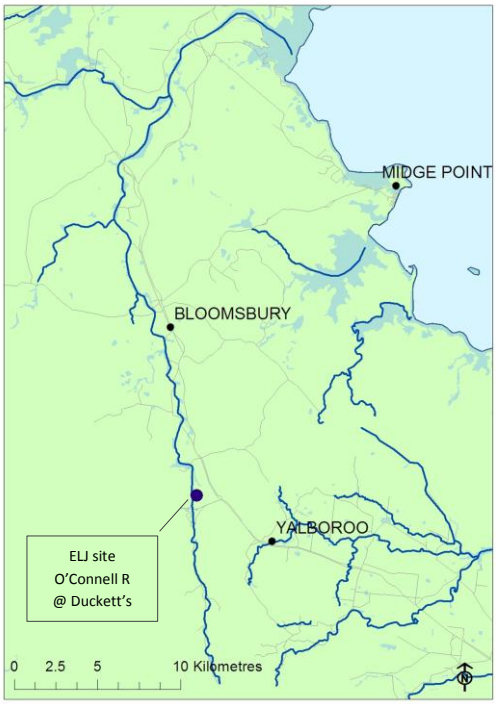
O'Connell River Demonstration Site
A Streambank Stability Solution Using Engineered Log Jams (ELJ's)

Ecological, Geomorphological and Economic Analysis of ELJ Use In Tropical Streams

Site Background

The O'Connell River drains one of the largest catchments in the Mackay Whitsunday region. It is characterised by steep ranges, fertile coastal plains, and high rainfall. Agriculture is the main industry of the area where sugar cane is the predominant crop cultivated. This is confined to the coastal plains. The upper ranges of the basin are moderately vegetated whilst slopes at the foot of the ranges have been cleared to support cattle grazing. There are no major water storages or reticulated water systems in this catchment and very little (or no) development. A Water Resource Plan presently defines water allocation and sustainable management.

With a rainfall averaging 1121mm per year, large volumes of water exit the catchment into the Great Barrier Reef Lagoon during the summer rainfall period. It is one of the 10 priority catchments under the Reef Water Quality Protection Plan. The total catchment area upstream of the tidal influence is 83358ha.



Project Aim

To determine the structural effectiveness and cost benefit of Engineered Log Jams (ELJ's) as an engineering solution to streambank instablility and their contribution to ecological and geomorphological enhancement of high velocity tropical stream systems.

Project Outcomes

- ✓ Construction and implementation analysis of ELJ's in high velocity tropical streams
- ✓ Ecological analysis of effects of ELJ's on
  - **Condition of instream ecological communities**
  - **Abundance, diversity and function of aquatic instream communities**
  - **Restoration of 'original' flow/channel and protection from flow/channel changes**
  - **Varying flow conditions and resulting morphology (and dynamics), physical habitat, hydraulic habitat, reach/waterhole persistence**
- ✓ Economic analysis of cost effectiveness of ELJ's as a bank stabilisation method compared with other engineered solutions
- ✓ Authoring of detailed collaborative research paper documenting the monitoring and analysis findings
- ✓ Generation of resource and catchment stewardship via land manager involvement and leadership across project

Healthy Waterways Alliance | Caring for our Country | Queensland Government | Q2 Coasts and Country | Reef Catchments

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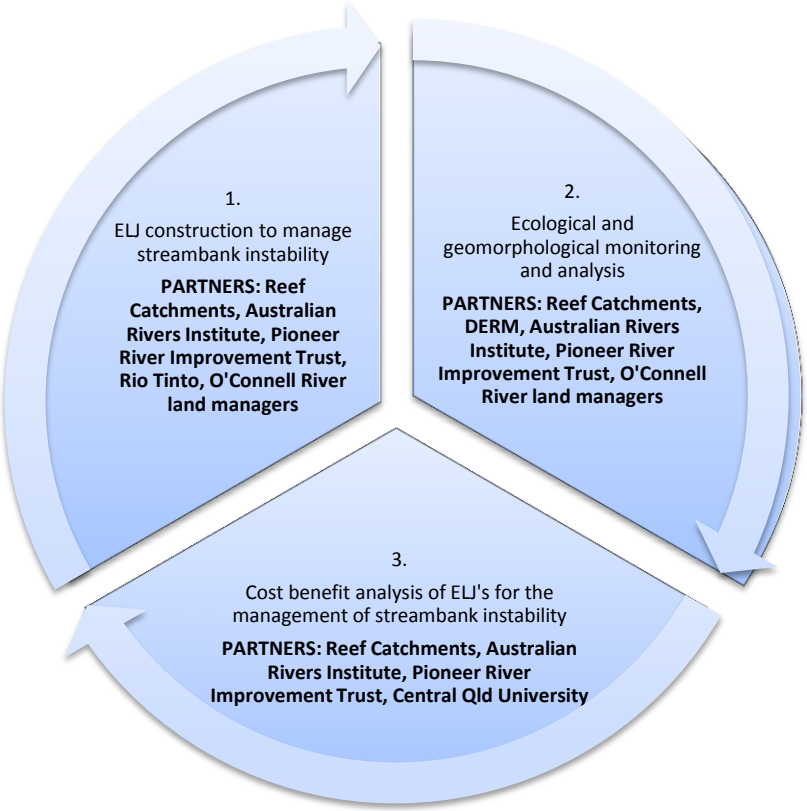
Project Partnerships



Project Timeline and Monitoring Outline

Site	Monitoring Program	Timing
1. Site ELJ Constructions (Streambank failure O'Connell @ Duckett's)	Trip 1 : Baseline - 2011 dry season	Sept 2011
	Trip 2 : Baseline - 2011 dry season	Oct 2011
	Trip 3 : Baseline – 2012 post wet season	April 2012
2. Control Reach (alternative engineering solution – channelisation, rock revetment, upstream Duckett's)	Trip 4 : Baseline – 2012 post wet season	May 2012
	ELJ CONSTRUCTION POST WET MAY/JUNE 2012 **Interim Baseline Report**	
3. Control Reach (stable banks, remnant riparian vegetation, downstream Duckett's)	Trip 5 : Post ELJ construction – 2012 dry season	Aug 2012
	Trip 6 : Post ELJ construction – 2012 dry season	Oct 2012
	Trip 7 : Post ELJ construction – 2013 wet season	April 2013
4. Control Reach (streambank failure – no remediation works, site tbc)	Economic, geomorphic and ecological data analysis	July – Dec 2013
	Generation of collaborative research paper describing findings	2014