

## **School of Engineering and Physical Sciences**

## **University Creek Solander Road pipe culvert fishway**

**PS01** 







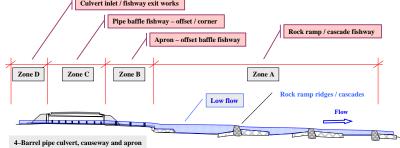
(Photo: Ross Kapitzke 09/04/06)

(Photo: Ross Kapitzke 11/04/06)

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- Solander Road prototype pipe culvert fishway is located on University Creek on James Cook University campus in Townsville
- University Creek has 13 native freshwater fish species the crossing has been a barrier to migration to upstream habitat areas
- the fishway was developed in 2005 at least 9 native fish species have moved upstream through the crossing since 2006
- collaborative funding support for the project was provided through the University and industry and community partners

CLIENT AND PARTNERS  PROJECT OBJECTIVES  • provide for upstream fish passage at crossing of develop remediation measures for culvert and creek  • concept design of fishway facilities of design and development of prototype fishways  • concept design of fishway facilities of design and development of prototype fishways  • detailed design and construction of fishway facility of hydraulic and biological monitoring and evaluation  • downstream apron 6.3 m long – slope 1 in 20 (5%)  • pipe culvert slope 1 in 50 (2%)  • MIGRATION BARRIERS  • Water surface drop downstream of culvert of shallow water depths on downstream apron  • MITIGATION MEASURES  • A – rock ramp / cascade fishway of the pipe culvert fishway of the pipe culverts  • Department of Main Roads  • develop and test prototype fishway of propeculverts  • detailed design and construction of fishway facility  • hydraulic and biological monitoring and evaluation  • downstream apron 6.3 m long – slope 1 in 20 (5%)  • road causeway – crest 1.9 m above culvert invert  • high velocity and turbulence in culvert barrel  • regular culvert cross section and lack of rest place  • Zone C – offset baffle fishway for pipe culverts  • Zone C – corner "Quad" baffle fishway for pipes  • provisions for adaptation and testing  • see <a href="http://www.jcu.edu.au/fishpassagedesign/">http://www.jcu.edu.au/fishpassagedesign/</a> • see <a href="http://www.jcu.edu.au/fishpassagedesign/">http://www.jcu.edu.au/fishpassagedesign/</a>			
OBJECTIVES  • develop remediation measures for culvert and creek  • provide demonstration site for community  SCOPE OF WORK  • concept design of fishway facilities • design and development of prototype fishways  • design and development of prototype fishways  • 4-barrel 1200 mm diameter pipe culvert 7.2 m long • pipe culvert slope 1 in 50 (2%)  MIGRATION BARRIERS  • water surface drop downstream of culvert • shallow water depths on downstream apron  MITIGATION MEASURES  • Zone A – rock ramp / cascade fishway • Zone B – apron offset baffle fishway  OTHER FEATURES  • hydraulic and biological monitoring facilities (gauge boards, flow control boards)  REFERENCES  • Kapitzke 2007, Solander Road pipe culvert fishway  • see <a href="http://www.jcu.edu.au/fishpassagedesign/">http://www.jcu.edu.au/fishpassagedesign/</a>		Queensland Government of Main Roads Superment of Main Roads	Markwell G R O U P
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Culvert inlet / fishway exit works	REFERENCES	(Prototype Fishway # 3) – Case study report	• see <a href="http://www.jcu.edu.au/fishpassagedesign/">http://www.jcu.edu.au/fishpassagedesign/</a>





## Fish passage planning and design for small waterway structures

**JCU School of Engineering and Physical Sciences** provides consulting and R & D services in fish passage planning and design, and development of fishway technology for small waterway structures (e.g. road culverts). Fish passage facilities (e.g. baffles, ramps) are designed to meet multipurpose requirements, overcome hydraulic barriers (e.g. high velocities, water drop), and mitigate connectivity impacts. Scope of services includes catchment prioritisation, corridor scale planning, site design and evaluation, product development.

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