

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



Department of Main Roads



PROJECT OBJECTIVES

- provide for upstream fish passage at crossing
- develop remediation measures for culvert and creek
- develop and test prototype fishway for pipe culverts
- provide demonstration site for community

SCOPE OF WORK

- concept design of fishway facilities
- design and development of prototype fishways
- detailed design and construction of fishway facility
- hydraulic and biological monitoring and evaluation

CROSSING DESCRIPTION

- 4-barrel 1200 mm diameter pipe culvert 7.2 m long
- pipe culvert slope 1 in 50 (2%)
- downstream apron 6.3 m long – slope 1 in 20 (5%)
- road causeway – crest 1.9 m above culvert invert

MIGRATION BARRIERS

- water surface drop downstream of culvert
- shallow water depths on downstream apron
- high velocity and turbulence in culvert barrel
- regular culvert cross section and lack of rest place

MITIGATION MEASURES

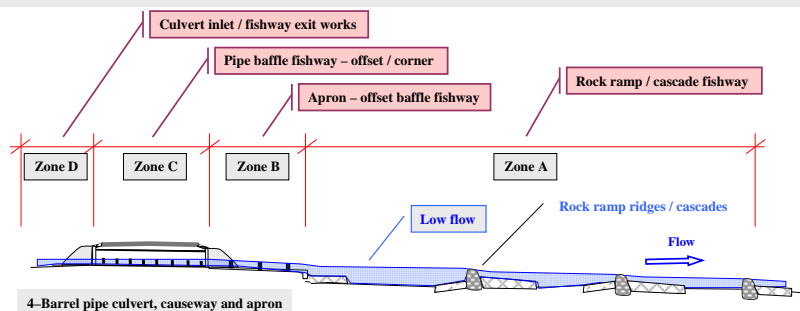
- Zone A – rock ramp / cascade fishway
- Zone B – apron offset baffle fishway
- Zone C – offset baffle fishway for pipe culverts
- Zone C – corner “Quad” baffle fishway for pipes

OTHER FEATURES

- hydraulic and biological monitoring facilities (gauge boards, flow control boards)
- provisions for adaptation and testing

REFERENCES

- Kapitzke 2007, *Solander Road pipe culvert fishway (Prototype Fishway # 3) – Case study report*
- see <http://www.jcu.edu.au/fishpassagedesign/>



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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