

Building Catchment Resilience

Advanced multi-objective catchment modelling and cutting-edge landscape visualisation tools are being brought together in the Building Catchment Resilience Project to guide large-scale investment in catchment restoration activities.

Across the world, many of the catchments that provide essential food and water resources for large populations living downstream are in poor and declining condition. Vegetation clearing, frequent burning, modification of streams and channels, and overgrazing by livestock in headwater catchments have had significant impacts on catchment resilience.

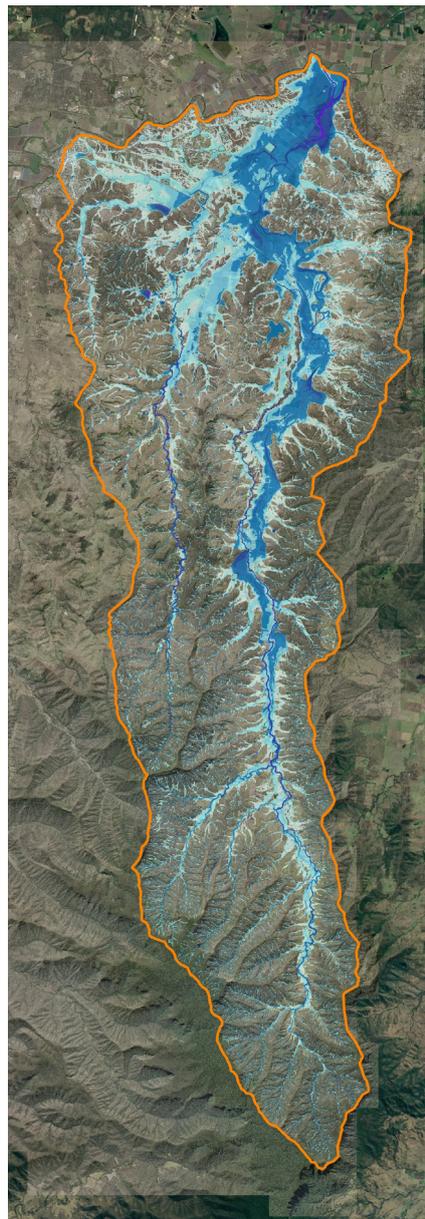
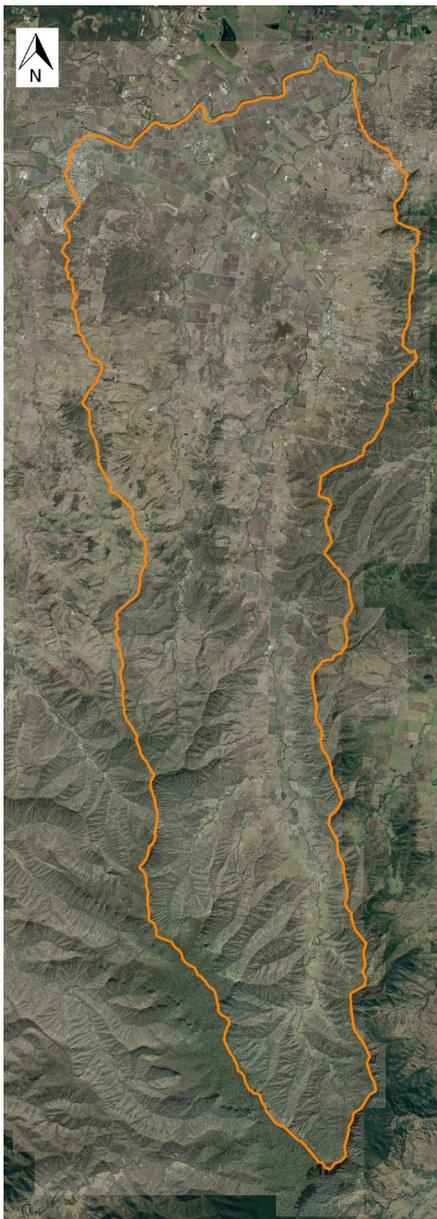
The vulnerability of river systems to extreme rain events has increased as a consequence of these changes in land use and management of our catchments and riverbanks. As we have witnessed in Queensland, the outcome has been greater flood damage, with rivers and streams overflowing, destruction of homes and public infrastructure, and losses of high-quality topsoil from productive agricultural lands. Sediment mobilised in floods affects the operation of water treatment plants and can threaten drinking water supplies. It also settles in reservoirs, which reduces their storage capacity, and in downstream harbours, bays and coastal areas, which obstructs shipping channels and smothers productive seagrass meadows.

The ability of our catchments to provide essential services is decreasing at the same time as the number of people dependent on them is increasing. Current efforts to address this problem have been largely ineffective because they have not been undertaken in the most appropriate areas or at the required spatial scale. A tool to facilitate and target investments in nature-based solutions to make catchments more resilient to extreme weather events is now being developed.

The Australian Rivers Institute, in partnership with The Ian Potter Foundation, has launched the 'Building Catchment Resilience' project. Innovative digital planning and visualization tools have been designed to explore realistic scenarios of the catchment, to facilitate discussions with investors and the community, and guide investment that maximises the benefits of catchment works in terms of flood mitigation, biodiversity, water quality and waste assimilation. The project builds on many years of collaborative research in the region, which has determined the causes of the problem and the most effective on-ground actions to address them. The tool is being developed and demonstrated in the Laidley Catchment in Southeast Queensland, including an on-ground research and monitoring component. Once proven, the tools will be developed to use in other catchment settings, nationally and overseas.



‘Major industries and public utilities that operate downstream in catchments are beginning to see the benefits of investing in restoration projects upstream to reduce sediment and nutrient loads, and ultimately lower costs to their operations.’



The Building Catchment Resilience project is supported by a \$1M grant from The Ian Potter Foundation, with additional funding and in-kind support from government, industry and research partners. The consortium members are:

- The Ian Potter Foundation
- Australian Rivers Institute, Griffith University
- Queensland University of Technology (QUT)
- Queensland Government
- Water Technology
- Queensland Urban Utilities
- Seqwater
- Port of Brisbane
- Healthy Land and Water
- SEQ Council of Mayors
- Lockyer Valley Regional Council

Pre-flood and mid-flood water levels in the Laidley Creek catchment corresponding to the January 2011 storm event.

