# Lethe Brook City
## Management Area Progress Report

### Summary of progress

The Lethe Brook catchment area is bounded by the High Ecological Value country of the Clarke Connor Range to the west and the Nationally Significant Goorganga Plains Wetland Complex to the east. The coastal plain between supports extensive grazing lands on 65% of the catchment and cane production across 18% of the catchment.

In 2007, the Lethe Brook catchment and estuary was rated as being in moderate condition relative to other catchment ares in the Mackay Whitsunday region. Between 2007 and 2013, there has been significant efforts by local farmers to improve management practices for improved water quality. The work of these farmers has established a firm foundation from which to expand landscape management and restoration activities for ecosystem condition improvements that will work towards meeting community goals for water quality and fish communities.

Third generation Lethe Brook farmer, Bill Blair

*"Farming is about always learning and modifying practices from the lessons learnt."*

### Agriculture implementation highlights

- Cane farmers have improved management of soil, nutrients and herbicides on almost 50% of the intensive cropping land in the catchment with Reef Rescue support
- Graziers have improved pasture management on 50 ha of pasture with Reef Rescue support
- 5 sediment detention basins have been constructed on cane production properties to improve the quality of water leaving the farm

### Ecosystem implementation highlights

- Riparian management has been improved on almost 7 km of Lethe Brook stream by graziers who have installed riparian fencing and off-stream watering points with Reef Rescue support
- Barriers to fish migration prioritised and fish community type and abundance surveyed to inform system repair works
- A critical barrier to fish migration has been removed with the construction of a rock-ramp fishway on a Lethe Brook key reach
- Ongoing feral pig control with aerial baiting, shooting and trapping programs

### Future priorities

Grazing and cane management practices that reduce phosphorus and nitrogen loads in the Lethe Brook catchment area are the highest priority for continued improvement of event water quality. Management practices that reduce other nutrients and residual herbicides also remain a priority.

System repair actions that improve flow in wetland areas and restoration of mangrove and saltmarsh to support fishery nurseries as well as the removal of instream barriers are highest priority. Restoration of instream habitat to support improved bed and bank staibility are also important future activities to improve the ecological condition of the catchment.

*A key barrier to fish migration has been removed with the construction of this rock ramp fishway on Lethe Brook*

# Lethe Brook Management Area

## MANAGEMENT PRACTICE CHANGE ADOPTION 2007 - 2013

| Land Use | Management Practices | Key Pollutant | 2007 % Adoption | 2014 % Adoption Target | 2014 % Adoption Achieved | Effort realised | % of target | Draft 2021 % Adoption Target | Cost $ '000s |
|---|---|---|---|---|---|---|---|---|---|
| Cane & Horticulture | Soil | PN PP | D C B | C B A | D C B A | H | 143 | *New management practice adoption targets and implementation costs will be determined in consultation with the community and stakeholders during the Water Quality Improvement Plan update process continuing throughout 2014* | |
| | Nutrient | DIN FRP | D C B | C B A | D C B A | M | 70 | | |
| | Pesticide | | D C B | C B A | D C B A | M | 68 | | |
| Grazing | Soil | PN PP | D C B | C B A | D C B | L | 3 | | |
| Existing Urban Management | Nutrient | DIN FRP | D C B | C B A | | tbc | tbc | | |
| New Urban Development | Soil | PN PP | D C B | C B A | | tbc | tbc | | |

Dated practice | C Common practice | B Best practice | Cutting-edge practice

## EVENT WATER QUALITY LOAD REDUCTION 2007 - 2013

| Key Pollutant | Event Freshwater Quality Values | | | | | Draft Cane & Horticulture Priority | | | Draft Grazing Priority | | | | Cost $ '000s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Objective 2050 | Condition 2007 | Target 2014 | Achieved 2014 | Draft Target 2021 | Soil | Nutrient | Pesticide | Soil | Riparian | Nutrient | Pesticide | |
| DIN Dissolved Inorganic Nitrogen µg/L | 300 | 575 | 410 | 460 | 410 | L H | L H | | | | L H | | 401 |
| FRP Filterable Reactive Phosphorus µg/L | 30 | 49 | 35 | 39 | 35 | L H | L H | | | | L H | | |
| PN Particulate Nitrogen µg/L | CC | 120 | CC | 119 | CC | L H | L H | | L H | L H | L H | | 634 |
| PP Particulate Phosphorus µg/L | CC | 28 | CC | 28 | CC | L H | L H | | L H | L H | | | |
| Total Suspended Sediment mg/L | CC | 38 | CC | 38 | CC | L H | | | L H | L H | | | |
| Ametryn µg/L | 0.04 | 0.06 | 0.04 | 0.05 | 0.04 | L H | | L H | | | | | 214 |
| Atrazine µg/L | 0.21 | 0.28 | 0.21 | 0.22 | 0.21 | L H | | L H | | | | | |
| Diuron µg/L | 0.66 | 0.94 | 0.66 | 0.66 | 0.66 | L H | | L H | | | | | |
| Hexazinone µg/L | 0.25 | 0.33 | 0.25 | 0.27 | 0.25 | L H | | L H | | | | | |
| Tebuthiuron µg/L | CC | <LOD | CC | CC | CC | | | | | | | L H | # |

CC = Current condition; LOD = Limit of Detection which is currently 0.01 µg/L for all herbicides

# Tebuthiuron is not a priority due to consistently low levels of detection across the region

## ECOSYSTEM HEALTH IMPROVEMENTS 2007 - 2013

| Value rated | System rating (A=excellent, E=poor) Objective 2050 | Condition 2007 | Target 2014 | Achieved 2014 | Draft Target 2021 | System repair actions | Draft Priority | Cost $ '000s |
|---|---|---|---|---|---|---|---|---|
| Flow | B | D | C | D | C | Management and reinstatement instream and floodplain flow | L H | Costs to implement system repair actions for ecosystem health improvements will be determined after management practice adoption targets have been set. |
| Barriers to Migration | A | C | B | B | A | Removal of barriers to migration | L H | |
| Instream Habitat | A | C | B | C | A | Restoration and stabilisation of priority reaches | L H | |
| Riparian Vegetation | A | B | A | B | A | Manage and monitor riparian vegetation to maintain condition | L H | |
| Estuary Modification | A | C | B | C | B | Active restoration and management to encourage recovery of estuarine condition | L H | |
| Mangroves & Saltmarsh | C | E | D | E | D | Management strategies developed to maintain tidal flow and support mangrove and saltmarsh protection and regeneration | L H | |