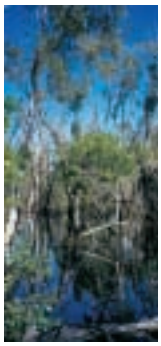
Executive Summary



ES.1 Summary

Reach Environs

Reach environs throughout the Burnett River catchment ranged from being poor to very good (Map 4). The Lower Burnett, Upper Barambah and Lower Barambah subcatchments were given moderate to poor condition ratings, while the North Burnett, Central Burnett, Kolan, Burrum and Boyne subcatchments were given moderate to very good condition ratings.

The poor condition ratings given for the reach environs are often attributed to extensive land clearing adjacent to streams for the purpose of cattle grazing and the impacts caused by uncontrolled stock access to riparian land. Grazing of cattle was evident at 86% of survey sites throughout the Burnett catchment, occurring commonly on cleared native pastures or thinned native pastures.

Subjective assessments of disturbance within the reach environs revealed that a majority of sites were subject to moderate, high, or very high disturbance. Grazing was the most common local disturbance factor recorded in the reach environs, followed by road and bridge/culvert structures.

Bank Stability

Banks were generally stable or very stable throughout the catchment (Map 5), despite approximately 43% of the lower banks and 64% of the upper banks being completely bare of vegetation.

Although stream banks were generally stable, erosive processes were documented at most sites throughout the catchment (Map 5). Erosion was the most common process documented, recorded at

• *Riffle: Moonda Waamba Creek (#483)*

68% of sites. It was recorded predominantly at bends for both upper and lower banks, at points of seepage and at irregular locations on the upper banks. Aggrading processes were documented at 22% of sites, commonly recorded at bends on the upper and lower banks. Bank slumping was documented at 21% of sites, recorded predominantly at bends on both the upper and lower banks, and at some irregular locations along the upper banks.

Factors identified as contributing towards bank instability throughout the catchment include the presence of stock, clearing of vegetation and runoff.

Bed and Bar Stability

Beds were moderately stable or very stable for a majority of stream lengths. Less stable beds were identified in the Boyne subcatchment (Map 6).

Although the condition ratings indicated relatively stable bed and bars, subjective assessments of overall stability at sites revealed some evidence of erosion and aggradation (19% and 18% respectively). Bars were recorded in the stream bed at 38% of sites, covering a mean 30.5% of stream bed. They occurred most commonly at stream bends as point bars (35% of sites), at irregular locations along the stream (27%) or as islands (28%).

• *Unstable banks: Mondure Creek (#274)*

Bank erosion was the dominant process identified as affecting bed stability, while fallen trees (40% of sites) and vegetation (48%) were common occurrences maintaining bed stability.

Channel Diversity, Habitat Types

Channel habitat diversity throughout the catchment was generally low, with all subcatchments generally exhibiting low to very low condition ratings (Map 7). These low ratings are a result of few habitat types being represented at individual stream lengths. The analysis process is based on the theory that a greater range of habitats within a stream will support a greater diversity of instream flora and fauna. This therefore suggests that streams surveyed in the catchment are less diverse in regards to habitat types and instream flora and fauna. However, this does not necessarily mean that there is something wrong with the system, as channel diversity may be naturally low.

Pools were the dominant habitat types recorded in the catchment followed by runs and riffles. Substrate material for both pool and run habitat types was generally comprised of fine sand and an average organic matter content of 22%. Substrate material of riffle habitat types consisted primarily of medium sized sand and an average organic matter content of 23%.

Riparian Vegetation

Riparian vegetation across the catchment was generally in poor condition (Map 8).

However, ratings were recorded across the range. Upper Barambah and Lower Barambah subcatchments were rated the worst, with a majority of streams receiving poor to very poor condition ratings (67% and 74% of stream lengths respectively). Poor conditions can generally be attributed to clearing of riparian vegetation and to the extent to which exotic plant species displace native vegetation.

The average width of riparian vegetation recorded at sites was 19 m (range 0.5-200 m), while the mean percentage bare of vegetation in the riparian zone was 14.9%. The most prevailing structural types identified were small to medium size trees and grasses.

Vegetation was generally characterised by *Eucalyptus* spp. (91% of sites), *Casuarina* spp. (57%), *Callistemon* spp. (52%), *Acacia* spp. (47%) and *Lomandra* spp. (42%). Exotic plants were recorded at most survey sites (82% of sites), predominantly in the shrub and herbaceous layer. Common species identified include *Lantana* spp., *Macfadyena unguis-cati* (cat's claw creeper) and *Xanthium pungens* (noogoora burr). Heavy infestations of *Macfadyena unguis-cati* were identified in the Kolan and Lower Burnett subcatchments.

Aquatic Vegetation

A majority of stream lengths (86%) in the catchment had aquatic vegetation in poor to very poor condition (Map 9).

These poor ratings reflect the low abundance of aquatic vegetation recorded in streams throughout the catchment. Although the abundance was low, the diversity was generally good, with native vegetation dominating most streams. Ephemeral streams in the west of the catchment would naturally exhibit poor aquatic vegetation.

Vegetation structural types identified at sites include submerged vegetation, predominantly characterised by filamentous algae, emergent vegetation characterised by rushes and sedges and floating vegetation often characterised by *Lemna* spp., *Wolffia* spp., *Spirodela* spp. (duckweeds) and *Azolla* spp.

• *Creek bed overgrown with vegetation: McCoy's Creek (#287)*

Vallisneria gigantea (ribbonweed) a native submerged plant, which is identified as an important habitat for the *Neoceratodus forsteri* (Queensland lungfish), was recorded in most streams throughout the catchment. Greater abundances of this species were recorded in the Upper Barambah and Boyne subcatchments (24% and 15% of streams respectively).

Aquatic Habitat

Across the catchment the condition of aquatic habitat was generally very poor to moderate (86% of sites) (Map 10). Some of the better sites were located in the North Burnett and Kolan subcatchments, where a majority of sites were in moderate to good condition.

Logs, branches, terrestrial leaves and twigs were the dominant instream habitat types, while canopy cover and vegetation overhang were the dominant stream cover types.

At the time of survey, passage for aquatic organisms was restricted. A majority of the streams surveyed had no passage or moderately restricted passage (74% of streams). At 'water mark' passage would still be moderately restricted. Passage was generally restricted by barriers such as weirs, log jams, low features (easily by-passed) and culvert, bridge and ford structures. It is estimated that flow at one-third to two-thirds bankfull would be required to overcome these barriers.

Recreation and Conservation Values

'Undeveloped rural' settings were the dominant recreational opportunity types recorded in the catchment (65% of sites), followed by 'semi-natural' areas (21%), 'developed rural' areas (5%), 'roaded-natural' areas (6%) and 'pristine natural' areas (3%).

Assessment of the conservation value of sites was varied, with 30% of sites having poor to very poor conservation value, 23% having moderate conservation value and 47% having good to very good conservation value. Areas with significant conservation value were recorded in the Burrum and Kolan subcatchments. These subcatchments were given good to very good ratings for 81% and 75% of sites respectively.

Overall Condition

An assessment of the catchment's overall condition revealed that 28% of the streams surveyed were in good condition, 40% were in moderate condition and the remaining 26% were in poor condition. No section of stream length was rated as being in overall very good condition (Map 11).

• *Good scenic value: Cedar Creek (#38)*

ES.2 Conclusions

Major findings of the State of the Rivers survey in the Burnett, Kolan and Burrum River catchments are:

- The Lower Burnett, Upper Barambah and Lower Barambah subcatchments displayed moderate to high disturbance in the reach environs.
- Stream banks were relatively stable throughout the catchment.
- Diversity of channel habitat types was generally low, with most stream lengths dominated by pool and run habitat types.
- A majority of streams had restricted passage for aquatic organisms. Passage was often restricted by barriers such as weirs, log jams and fords.
- Riparian vegetation across the catchment was generally in poor condition, due to the clearing of native vegetation for agricultural purposes and invasion by exotic species. The average width of the riparian zone was 19 m.
- Instream aquatic habitats were generally moderate to very poor across the catchment, exhibiting few features in the streams to provide habitat for aquatic organisms. Some of the better streams were located in the North Burnett and Kolan subcatchments.
- Sites with significant conservation value were recorded in the Burrum and Kolan subcatchments.
- There is a need to implement measures which will prevent riparian and instream environments being further degraded. Preservation of riparian vegetation, stock management and revegetation of degraded riparian land should be a priority.