

## **Executive Summary**

### ***ES.1 Summary***

#### **Introduction**

This report provides an assessment of the Thomson River, Barcoo River and Cooper Creek and their tributaries. The study assesses the physical and environmental condition of these streams at the time of survey (May 1994), relative to their presumed natural or original condition. Remnants of near-natural stream systems within the catchment give an indication of what the original state of the systems might have been and provide a comparative benchmark upon which survey ratings for disturbed systems can be based. The basic approach was to assess the ecological condition of streams in terms of the condition of the instream habitats. The survey method is designed to be independent of flow conditions and water levels at the time of assessment.

#### **Reach Environs**

The condition ratings of those lands adjacent to the streams surveyed in the Cooper Creek catchment did not fall below a moderate outcome, with 78% of stream length rated in very good condition. The lesser rated streams were located in the Upper Barcoo River and Alice River subcatchments associated with grazing of both cattle and sheep and the resultant change of vegetative cover from woodland to cleared or thinned vegetation.

Throughout the study area land use was predominantly grazing of a mixture of sheep and cattle or grazing of cattle or sheep on their own. Most of this grazing occurred on native, little disturbed woodland or grassland.

#### **Bank Stability**

Stream banks were generally considered to be very stable with isolated tributaries exhibiting unstable to very unstable conditions, resulting mostly from erosion processes. Erosion was recorded along 86% of stream length occurring at obstacles along the lower banks

Overall, natural processes of instream flow and over bank runoff were identified as influencing the stream bank stability, with the added influence of stock movement an important contributor to bank instability. Those subcatchments showing the highest proportion of their stream banks unstable were the Landsborough Towerhill Creeks and Alice River.

#### **Bed and Bar Stability**

Stream beds across the catchment were predominantly moderately stable to stable. However a full range of condition ratings were recorded from very unstable to very stable. Instability of the stream beds was predominantly through the processes of aggradation, exhibited in the form of sand bars in the streams.

Distribution of streams with unstable beds through the catchment did not show any particular pattern but the subcatchments of Torrens Creek and Cornish Creek, Darr River and Vergemont Creek, Alice River and Thomson River had 40% or more of their stream length rated poor and very poor. The Darr River and Vergemont Creek subcatchment had the longest stream length rated very unstable.

Grazing activity was recorded as the primary influence on stream bed stability along with natural processes of bank erosion.

## Channel Diversity

The diversity of stream channel habitats across the study area was very low. This means that within the streams there was a small number of different channel forms, eg. waterholes, riffles and runs, present at each survey site. Generally across the catchment runs, waterholes and riffle habitat were the most recorded habitats.

This low diversity would suggest that species occurring within the streams would also be limited to those suitable to the habitats available and therefore likely to be limited in their diversity.

## Riparian Vegetation

Vegetation along the stream banks associated with the presence of extra moisture in the streams is known as riparian vegetation. This vegetation was rated predominantly in good to very good condition across the catchment, although the full range of ratings were recorded.

Poorer ratings for riparian vegetation were attained in the Kyabra Creek, Wilson River and Cooper Creek subcatchments. These ratings were attributed to the form of the vegetation in these subcatchments which was had low structural diversity, dominated by low tree canopy and little understorey, although ground cover was extensive. The narrowness of the riparian vegetation zone along these streams also contributed to these ratings with the mean width for the catchment being 29 metres, but in these subcatchments the mean was between 13 metres and 17 metres. Across the study area 32% of survey sites had riparian vegetation greater than 30 metres wide.

## Aquatic Habitat

The presence and diversity of habitat features (logs, woody debris, rock faces), within the streams and along their banks (cover from vegetation canopy and overhang) was assessed and rated to provide an aquatic habitat condition rating. Across the catchment the streams were rated as having poor to very poor aquatic habitat, although moderate to very good ratings were recorded.

A diverse range of instream habitats was recorded across the catchment but generally occurred individually or with one or two other habitats but not with a large number of different habitats at each site. Because of this streams are rated poorly for this characteristic. Cover provided from the stream bank vegetation was extensive across all streams of the catchment.

## Scenic, Recreation and Conservation Value

Scenic value and recreation opportunity of the catchment streams were recorded and shown to be rated predominantly good. This assessment was attributed to the inherent natural beauty of the stream settings, the scenic rural settings and artistic merit of the landscape. Recreation opportunity was stated mostly as undeveloped rural with some streams having semi-natural or pristine natural recreation opportunity.

Recreation activities recorded along the streams was shore fishing, fishing from small boats, camping, nature appreciation and swimming.

An assessment of the stream lengths for their conservation value showed that more than half of the stream length of the catchment had good to very good value with only 11% considered to be of poor to very poor value. These values related to the presence of good remnant habitat for aquatic plant or animal species, reasonable remnant wildlife corridors and good representative riparian vegetation.

## **ES.2 Outcomes**

- The lands adjacent to the streams were generally in good condition, but there was a potential threat to the ecology through the use of these areas for grazing and where clearing of native vegetation was occurring to change the pasture composition.
- Stream banks were generally stable, although there were stream subsections which exhibited eroded banks.

- Beds of streams were also mostly stable but exhibited a greater range of condition ratings, with the dominant process being aggradation of the bed which was attributed to be resulting from the influence of stock.
- Riparian vegetation was mostly rated as good to very good.
- Recreation and scenic values for the catchment show that it is highly valued with fishing being the primary recreation that occurs along the streams of the catchment.
- A conservation value rating of the streams showed that more than 50% of the stream length was considered to be good to very good.

### ***ES.3 Conclusions***

The general feel generated from this data indicates that the streams of the catchment were in moderate to good condition. There are issues which have been raised from this survey which management practices over time could take care of but which should be raised. Primarily the issues are to do with clearing of vegetation adjacent to streams and the unrestricted access of stock to the stream banks and beds.

Vegetation clearing was identified as an issue affecting the reach environs in the Alice River catchment where the major land use was grazing on cleared and thinned forest land. The situation has been noted even though the environs rating was good, and the riparian vegetation was rated good to very good with half the survey sites having riparian width of 11 metres to 20 metres wide.

Access of stock to the streams was identified as affecting the stability of the stream banks at 41% of sites and stream beds at 35% of sites. Stock in these areas can disrupt the natural processes of ecosystems by introducing nutrient to the water, inducing erosion of soil, trampling of stream habitats and grazing young plants preventing recruitment of young to the ecosystem. These factors combined can result in disturbance to the natural ecological processes of streams leading to threats to instream and riparian flora and fauna species.